

Virtual reality design studio

UC-win/Road Ver.17

3D Real-Time VR Software

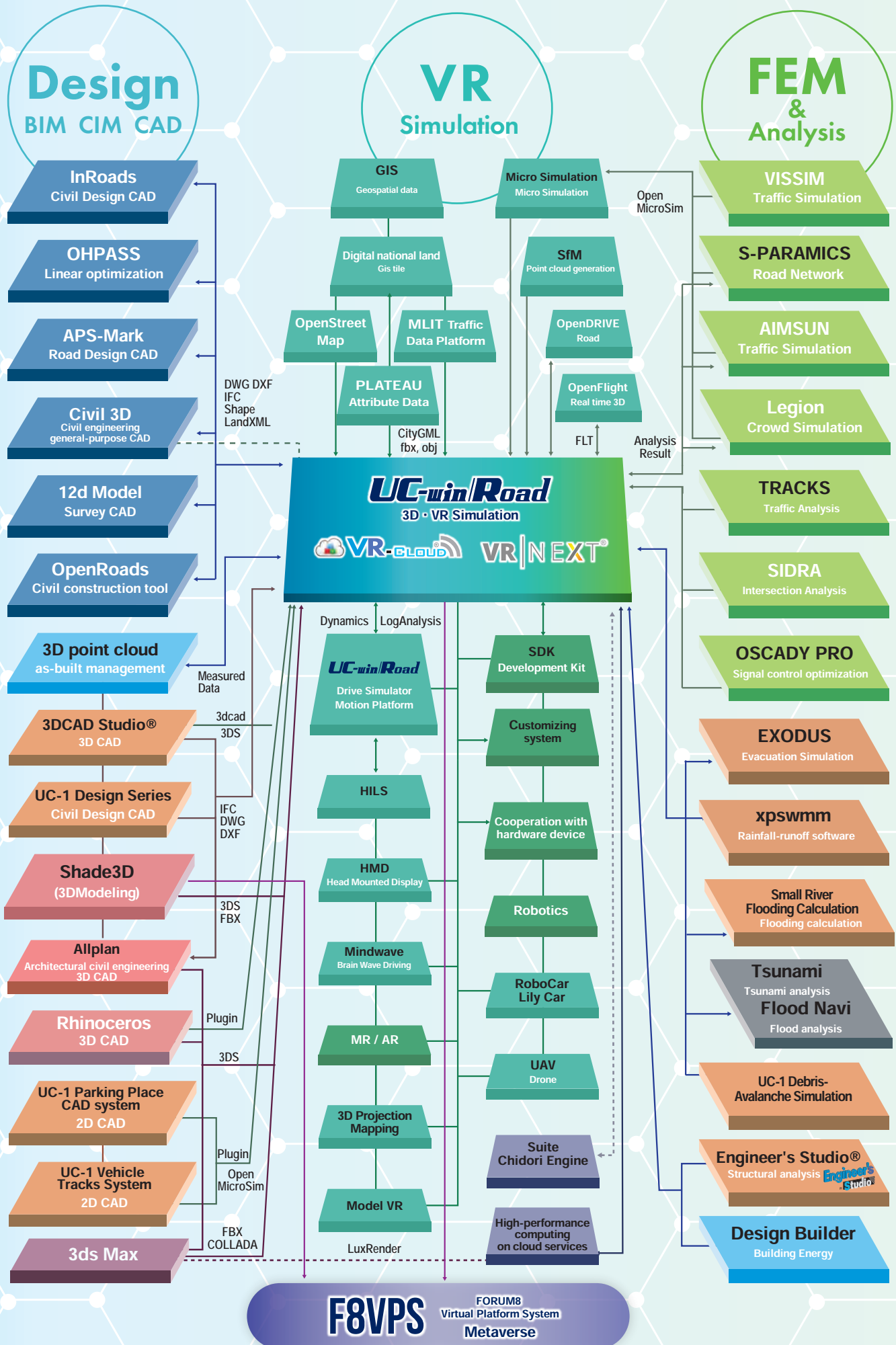
Shade3D
3DCG Software

F8VPS
Virtual Platform System

Suite
CHIDORI
Engine
cross-platform 3D engine

3D VR Solutions

FORUM8 comprehensive platform solution centered on UC-win/Road

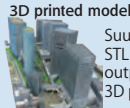


Develop a linkage between software, cloud, and system of civil architecture, structure design, and analysis.

Suggest "IM&VR Solution" that is an integrated solution by BIM/CIM&VR on VR platform

CG・Modeling Shade3D

All-in-one 3D CG software made in Japan that can do everything from modeling and rendering to animation and 3D printing



Support for STL file output for 3D printing



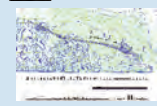
Linkage with BIM/CIM products is possible.

BIM/CIM Design Check Tool

Enables the import of IFC files and supports BIM/CIM design checks according to the "Operation Guideline of BIM/CIM Design Check Sheet" formulated by The Japan Ministry of Land, Infrastructure, Transport, and Tourism.



ALLPLAN 3D architectural civil CAD for BIM/CIM



Game Development

Suite
Chidori
Engine



F8VPS Metaverse

Allows to recreate a digital twin of any of type of environment such as an exhibition hall, convention center, office, factory, campus, etc. Can be linked with ERP systems for HR and task management, and smart devices.



VR-CLOUD

Cloud type VR application for Android

Utilized for 3D VR navigation, drive simulation, and design discussion

VR|NEXT® VR engine for next-generation cloud computing

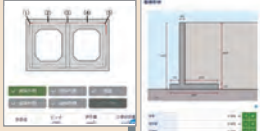


Display 3DCAD data on cloud and manage all data. Real-time rendering of simulation and analysis result

UC-1 Civil Engineering Design Series

UC-1Cloud Auto Design Series will be integrated free of charge!

Rough design with minimal input is possible. Multi-device support allows you to manage design files on cloud database.



Creation of drawing, 3D model, and 3D bar arrangement from structural designs

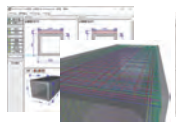
3D bar arrangement CAD

Bar arrangement display, interference check



Rebar data 2D drawing data

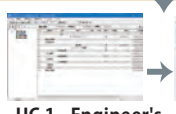
UC-1 series



Civil engineering design 2D/3DCAD



Data cooperated with the addition software



UC-1 Engineer's Suite Addition

Construction Accounting Software Suite

FEM analysis series

Engineer's studio

64bit support. Dynamic nonlinear analysis of 3D laminated plate and cable

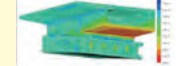


FEMLEEG

Comprehensive finite element analysis

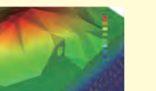
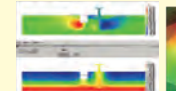
WCOMD Studio

2D dynamic nonlinear analysis of RC structure



Geotechnical FEM analysis series

Geotechnical analysis using topographic data



Virtual reality design studio

UC-win/Road

Road planning / improvement of intersection



Traffic simulation



City planning / review of scenery



Road optimization / measures for traffic safety



City planning / redevelopment



Plan of disaster prevention and disaster reduction



Immersion and flood 3D hazard map



Tsunami simulation



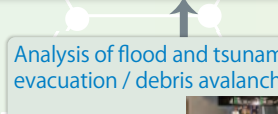
Construction planning and management



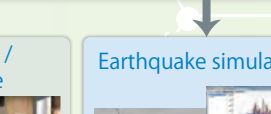
Civil construction



Architecture



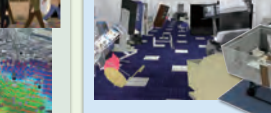
Evacuation drill simulation



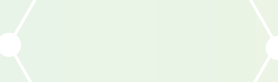
Construction and management of bridge



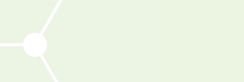
UAV



Analysis of flood and tsunami / evacuation / debris avalanche



Earthquake simulation



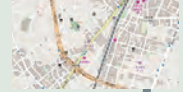
Support of survey /Use of point cloud

Imports point cloud for terrain patch and 3D modeling. Streamlines the processing of hundreds of millions of point cloud thanks to the enhanced LOD display.



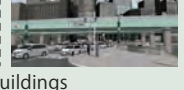
Standard terrain data

Imports terrain data and aerial photos from electronic land map



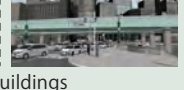
Open StreetMap

Import terrain and buildings



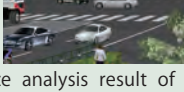
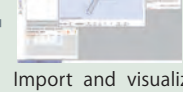
PLATEAU (CityGML/FBX format)

Import terrain and buildings



Traffic analysis Junctions/TRANSYT

Import and visualize analysis result of traffic lights and vehicle location



Test and training by using drive simulator

Safe Driving Simulator



Snowblower Simulator

8DOF Simulator



Other Simulations

<Medical/ manufacture/ agriculture>

Testing senior driving Institute review IT agriculture



MAIN FUNCTION

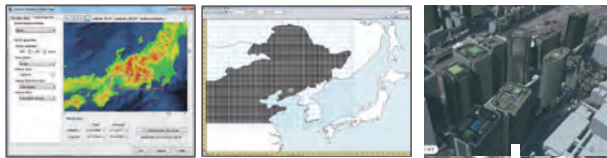
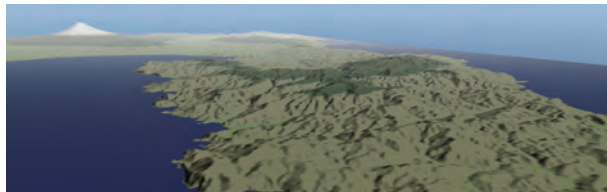
UC-win/Road Ver.17 Basic Functions

Virtual reality design studio

UC-win/Road Ver.17

Standard data / CAD data

- Terrain data and map are included in the database.
- Arbitrary terrain and world geographic coordinate system conversion
- Import of OpenStreetMap road data
- Pasting of satellite photos, DXF/XML conversion, 3D and 2D terrain editing
- Exchange of 3D and 2D data with CAD by Shape, IFC, and DWG



Expansion of CityGML and PLATEAU support

It is possible to import road, building, bridge, etc. from PLATEAU, a 3D city model project promoted by the MLIT.

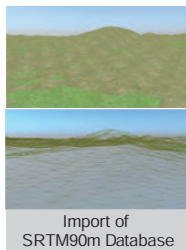
Digital map of Geospatial Information Authority of Japan

50m mesh (elevation)
Geographical Survey Institute
Authorization (2000, #173). 5m
mesh (elevation), GIS map import



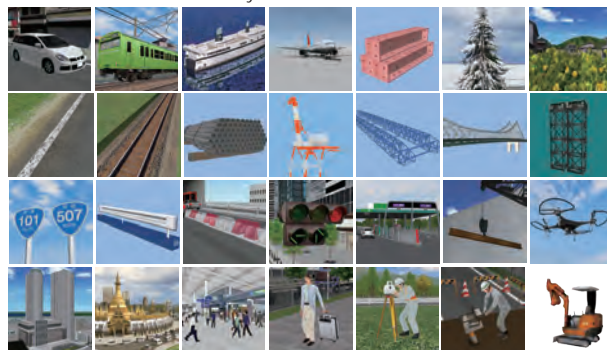
Geographical features of the world

- 50m topographic mesh of New Zealand
- "CGIAR-CSI SRTM 90m Database" for all parts of the world geographical features of China and Australia
- SRTM(90m mesh) / ASTER(30m mesh)
- BlueMarbleNextGeneration (500m mesh) (Support the topography of the seabed)
- World geographic coordinate system conversion tool authorization (#603)
- Highly accurate terrain can be created whilst specifying its resolution



Efficient VR data creation assistance through the use of standard models/textures and an extensive download DB

In addition to the standard data including 3D models and textures, extensive downloads are available directly from the UC-win/Road DB on the Internet.



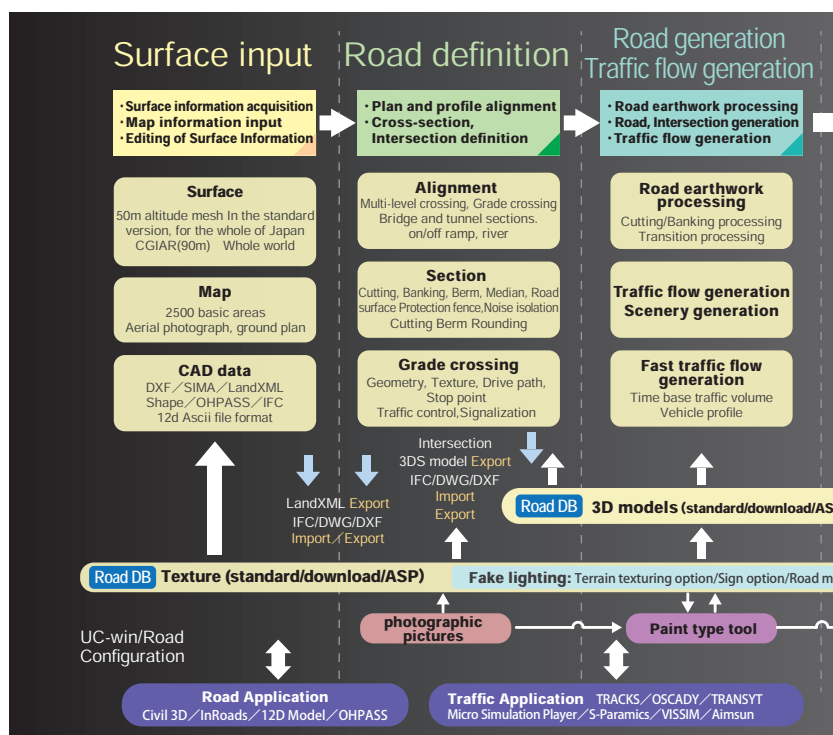
Also, useful editing and movement tools are available, allowing scaling up and down, movement, rotation, inclination and arrangement of models. Action setting offers generation and motion control of moving models.



Creating a complicated road is made easy in UC-win/Road

All sorts of lines such as roads, rivers, lakes or flight paths can be set up with parameters or free hand drawing and roads, tunnels, bridges, rivers or walking routes can be automatically created.

Tunnel and bridge sections are set by the definition of a horizontal road alignment and the vertical alignment. A cross section can be defined very accurately in that cutting and embankment can be processed taking berm into account, not to mention textures can also be assigned. Alignment / cross section generation feature helps you create roads with complicated geometry very easily.



Various data linkage

Survey and Investigation Schematic and detail design

•Terrain data linkage

- Input/output of point cloud data → Terrain generation
- IFC data import/ export
- LandXML
- Shapefile
- UAV Plugin
- 12d Model Plugin



Point Cloud Plugin



IFC Plugin



LandXML Plugin

•Data linkage with UC-1 Design Series

- Data Linkage with Road CAD
- IFC data import/ export
- LandXML
- DWG Plugin



Point Cloud Plugin



IFC Plugin



LandXML Plugin

•Data linkage with 3DCAD

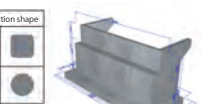
- Shade3D
- Allplan



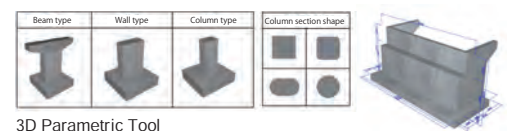
Point Cloud Plugin



IFC Plugin



LandXML Plugin

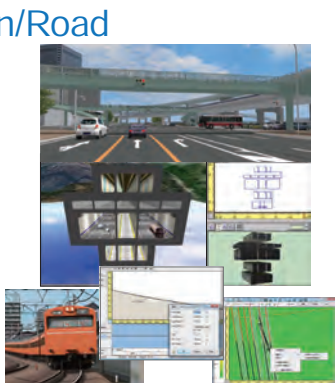


LandXML Plugin

3D Realtime Virtual Reality Software UC-win/Road is advanced software that enables the creation of large scale 3D spaces for all sorts of projects by simple PC operations and with which you can give a variety of presentations in real-time.

UC-win/Road Awards

- **Won the Special award of the 8th CSAJ Alliance Award**
Awarded product: UC-win/Road for SaaS (Current name :VR-Cloud®)
- **Awarded with "Outstanding Technology Award" at the Construction Technology Expo, Kinki, 2003**
- **SOFTWARE PRODUCT OF THE YEAR Awarded**
in "Social/life category / public category"



Traffic flow creation

Traffic flow creation by traffic volume setting and ratio of Traffic Generators / Flow by vehicle type. Control of collision.

Large-scale VR support

64bit native support
It's possible to create data from the size of a dice to several hundred kilometer road structure in the same space.

Dynamic display of LOD and the smooth processing of vast terrain and many fine models.

Edition, Output VR simulation

- Path, Flight path
- Walk through
- Scripting
- Scenario

- Scenery point of view, Before/After
- Traffic simulation
- Manual driving
- Context

Weather
Rain, Snow, Fog fine settings
Volume fog, Road mirage, Wind direction, Wind speed, Water splashing, Wiper

Sky, Clouds, Terrain
Terrain penetration, Texture change, Height, Thickness, Density...

Vehicle models
Vehicle performance model
Motion Platform

Tsunami

2-D Visualization
Wire frame
3D Cockpit

Visual options tools

Performance
Field of vision,
View distance
Occlusion culling
Memory watch

Efficacy, Adjustment
Angle of view, Light adjustment,
Sound Cockpit, Compass

Sun position
Date, time, latitude switching
Stars, Moon display

Lighting
Spot, headlight, Shading

Fire and Smoke

Display/Hide switching
Roads, Trees and shrubs, Signs, Models, Driving cars, Sun position,
Wave, Shadow, Lakes, Position map, Dashboard, Simulation panel

IFC Import
DWG/DXF
Import/Export

3D trees, MD3/FBX model: Create new building/Parametric/FBX/2D, 3D text /Video wall

UC-1 design series
Engineer's Studio®
Ground analysis series

IFC Export
AVI Export
PovRay Export
3DS Export

Tsunami Analysis Data
Import

Analytical Application
EXODUS / xpswmm

3DCAD Studio®
VR→DWG

UC-1
Debris Avalanche Simulation

IFC, Shape, LandXML, DWG etc. are supported. With its extensive data integration, it can be used as a 3D platform for a variety of applications, expanding the world of engineering without limits.

Various displays with the Visual Options Tool.

Traffic simulation of road hazards are also available.

Also available are real-time control of time, weather, and lighting. You can display day and night scenes with a range of lighting conditions using the artificial light feature. Generating traffic streams based on traffic volume, vehicle profiles, traffic light configurations, as well as simulating traffic obstructions, disasters and accidents can also be carried out.

Real-time VR operation by simple operations.

A variety of functions helping presenters

Driving simulations

UC-win/Road supports several driving modes (speed of car, lane changing, height of viewpoint, viewpoint switching in 8 directions) and dynamic movement of viewpoint (from other cars, up and down, turn head). Automatic flight and walk-throughs are available with the flight path setting (editing in the 3D display is supported). More advanced simulation can be performed with manual driving and support for a 3D cockpit and multi-monitors.

Simulation and Design Check

- **Data linkage with UC-1 design series**
 - 3D reinforcement CAD
 - 3DCAD Studio®
- **Data linkage with analysis**
 - Engineer's Studio®
 - Debris flow simulation
 - EXODUS Plugin
 - xpswmm Plugin
- **Data linkage with traffic APs**
 - OSCADY PRO
 - TRANSYT
 - Aimsun
 - VISSIM
 - S-PARAMICS
 - TRACKS
 - SIDRA

Construction

- **Construction simulation**
 - 4D simulation
 - Soil volume calculation
 - Quantity calculation

Maintenance

- **Digital twin**
- **Inspection**
- UAV Plugin

3D reinforcement CAD

4D Simulation

Soil volume calculation

UAV Plugin

Shade3D

BIM/CIM design check tool

Engineer's Suite

CG Rendering

FEM Analysis

Quantity calculation

Suite Accumulation

Camera position switching by Before/After

Before, After, and user specified display of model, sign, and tree up to 20 patterns

Scenario

Set various moves to models and simulate scenarios with possible events and conditions to be tested makes viewers to understand the meaning of VR creation.

Operation flow

Driving start → Pass point A → Pass point B → End of driving

Flow of scenario

Start → Outbreak of Event 1 → Outbreak of Event 2 → End

Outbreak of Event 1

- Model movement
- Conduct of result, etc
- +Message
- +Audio, sound effect

Outbreak of Event 2

- Model movement
- Conduct of result, etc
- +Message
- +Audio, sound effect

Easy and detailed setting

Products Overview

Plug-in and Option Price

Examples of Practical Use

Road Support System

System Solution

5

CityGML Data Export

Open data simplifies operation

The PLATEAU project of the Ministry of Land, Infrastructure, Transport and Tourism is in the process of creating 3D city models of Japanese cities. For UC-win/Road, FORUM8 has also worked on adding a function to import these city models. UC-win/Road 17 added the ability to output in CityGML format. This is intended for use where UC-win/Road is used as a platform to create and edit city models and output them from UC-win/Road.

UC-win/Road can output LOD1-2 building models and LOD1 road and terrain models, etc., to enable the output of the basic set of models in PLATEAU's Standard Operating Procedures for 3D city models. LOD stands for the Level of Detail. The LOD1 building model represents an untextured model with extruded building outlines, while the LOD2 building model is a textured building representation. When PLATEAU's CityGML is loaded, the CityGML data can be re-exported with the same information as the CityGML data, so that the original information can be reproduced and output as much as possible except for the parts that have been changed. If a building model is created as a solid shape using Shade3D or other software, it can be output as a solid shape to CityGML data.

Import of Flood Navi Data

Visual simulation

The Tsunami Plug-in has been equipped with a function to download inundation data from the Flood Navi system of the Ministry of Land, Infrastructure, Transport and Tourism, enabling visual simulations of inundation using the data on UC-win/Road. In the zone function of UC-win/Road, specify the area to be downloaded from the Flood Navi. Once the data has been imported, it is possible to check water level changes over time and visualize gradients to create a realistic representation of the water surface by using the Tsunami Plug-in function.

Improvement of Road Editing

1.Undo/Redo

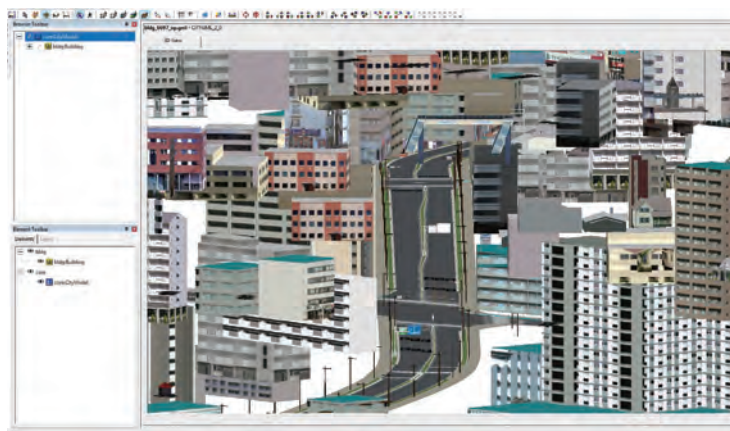
The Undo function on the plane editing screen has been improved to undo up to 10 previous operations. The Redo function to cancel the previous Undo operation has also been added. The possible number of undo/redo operations can be changed in the application option settings. The default is 10, but this can be changed to suit your application and memory status. The particle size in the Plan View screen has been improved and the function is also available in the Vertical Curve Editor Form, Road Section Editor, and Terrain Patch Editor.

2.Save and Import Road Alignment

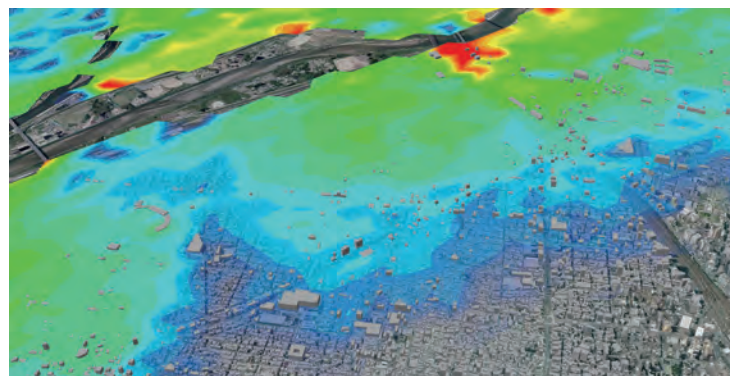
Export/Import and copy/paste functions for road alignments will be available in the Plan View. The road cross section and road surface texture used in the alignment are saved along with the alignment, allowing for accurate reproduction of the road geometry and materials. Multiple roads can be selected and saved and imported, including on-ramps and off-ramps. Copy and paste is handled via the clipboard, making it effective when integrating multiple project data by launching two or more UC-win/Road applications.



UC-win/Road city models



CityGML output from UC-win/Road is displayed in the viewer

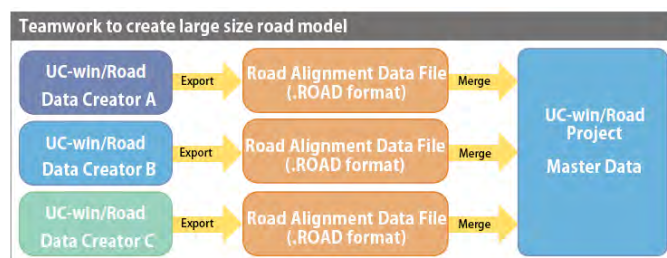


Simulation on UC-win/Road using Flood Navi data



Animation on the MLIT's Flood Navi

In addition, exported road alignment data can be shared with several data creators and imported as needed to improve data creation efficiency. Each road data is assigned a unique ID, and when exported roads are imported into the same project, the user can merge them after choosing to keep or overwrite the original roads. The save and load functions are also available on the longitudinal alignment editing screen, for the longitudinal alignment, road cross section, and road surface texture.



3.Change Road Start/End Point

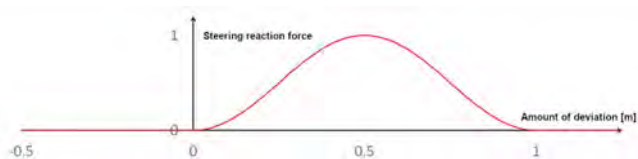
It is possible to swap the start and end points of any road in the plan view. This is useful, for example, if you have created a road alignment and then realize that the one-way direction is reversed and want to correct it. Previously, it was necessary to delete the alignment and add an IP point in the opposite direction. In addition, when this function is applied to a road with roadside objects, tunnels, or bridges, their positional relationships are preserved. The positions of roadside objects, tunnels, bridges, etc. within the alignment are updated based on the original end points so as not to change the appearance of the road.

LKA

LKA is short for Lane Keeping Assist. In actual vehicles, LKA detects the white line of the lane, and if the car crosses it, it sounds an alarm or applies torque to the steering wheel to bring the car back to the center of the lane. UC-win/Road Ver.17 has a function to represent this LKA movement. The function calculates the amount of deviation from the correct lane and computes the force applied to the steering wheel and the amount of steering wheel correction according to this deviation and speed. The reaction force on the steering wheel is reflected in game controllers that support force feedback and compatible with various driving simulator hardware that supports torque control. In addition, it is possible to play a pre-set warning sound when the vehicle deviates from its lane. Assuming the linkage between this function and external systems, it can acquire the calculation results of this function in real time, enabling it to be used in the research and development of HMI and traffic safety systems linked to the LKA function.



LKA function



LKA parameter setting

Improvement of Speed Limit

Previously, speed limits were set based on the initial speed at the time of traffic flow generation and the motion control point. The improvement this time allows actual speed limits specified to each road in real world to be reproduced in UC-win/Road. The set speed

limit values can be switched between scenarios and the API. It is also possible to retrieve information about the speed limit in use. This facilitates repeated experiments and data analysis under various traffic conditions.

Python API

[Overview]

Python API has been released to support simulation development with UC-win/Road. So far, data cooperation has been provided through Delphi SDK, JavaScript, and C++ API for UC-win/Road. The Python API enables easy and efficient data integration with UC-win/Road.

[Function]

It provides the same functionality as the C++ API, including driving simulator control, real-time model control, main screen camera control and UI control such as menu and buttons.

[COM]

The Python API uses Microsoft's COM, and since Python provides a COM library, users can easily program using the Python API without caring about COM programming. Also, because it is developed in COM, it can be used not only with Python, but also with C#, JavaScript, MATLAB, etc.

[Efficient Programming and Run]

With Delphi SDK and C++API, users create plug-ins and load them into UC-win/Road to run them, but with Python API, Python scripts are executed from the ribbon menu, script screen, and scenario events in UC-win/Road, allowing the script to be executed immediately after changing the program without restarting UC-win/Road. It is also possible to run scripts from external applications such as Visual Studio to work with UC-win/Road. Users can program and debug in a familiar environment. Python also has a variety of other useful libraries that allow users to efficiently create programs to link with UC-win/Road.

VISSIM Linkage

UC-win/Road and VISSIM can be linked even if they are installed on the different PCs. When a cluster linkage is established and the master PC is cooperated with a VISSIM, the vehicles operated by the multi-user client are also sent to VISSIM.



Vehicle and pedestrian flow analysis by VISSIM is imported into VR
(The 21st 3D VR Simulation Contest on Cloud Essence Award
"VR Simulation Reproducing Traffic around Hon Atsugi Station" Oriental Consultants Co., LTD.)

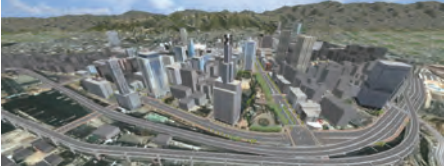
FUNCTION

UC-win/Road main functions

UC-win/Road has a variety functions for planning and designing, traffic simulation, driving simulation, and vehicle research and development. Here are the main features.

Supporting 64-bit native application

- This 64 bit support utilizes the full resources of the PC.
- Long road simulation in a wide terrain is available. The terrain is created more realistic by fine mesh.
- A lot of models can be located. Individually modeled buildings can be displayed smoothly in the urban space simulation.
- High quality textures.
- Visualization of analysis results.

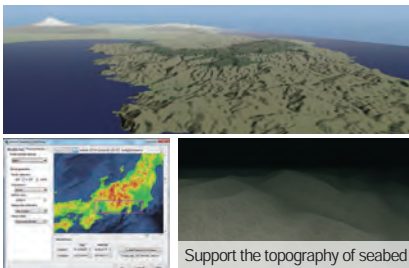


Digital map of Geospatial Information Authority of Japan

• 50m mesh (elevation)(Approved number: 2000,#173)
Format of 5m mesh (elevation)

Geographical features of the world

- The geographical features are enhanced.
- Using the "CGIAR-CSI SRTM 90m Database" for all parts of the world, geographical features of China and Australia are installed in UC-win/Road.
- SRTM(90m mesh), ASTER(30m mesh)
- BlueMarbleNextGeneration (500m mesh) (Support the topography of the seabed)
- Highly accurate terrain can be created whilst specifying its resolution.
- The large terrain exceeding 100km in area can now be generated.



Support the topography of seabed

Online map information

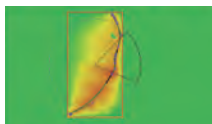
Map information from OpenStreetMap and Geospatial Information Authority of Japan can be imported

Coordinate system information and conversion **NEW**

Import accurate terrain by applying elevation from nearest data on the map

linear parameter abstraction

Calculates the road IP-point curve parameter automatically from point sequences acquired by GPS.



Road-Terrain matching process

Deal with terrain matching processing in addition to cutting and banking by road generation.



Terrain command leveling

No banking / cutting processing

River, road cross section

Planar and longitudinal alignment is now possible.



Vertical curve of railroad

Ability to draw the centerline for railway surveying and the centerline of structure for construction surveying, transition curves and vertical curves, cant of a railway track, railroad switch. Trains can be made to travel over multiple tracks.

Transition Curves: Clothoid, Cubic parabola, Sine half wave length curve.

Vertical Curves: Secondary parabola, circular curves.



Transparency of cross sections

Transparency rates of parts are selectable in the cross section editor. Transparency of transparent panels and translucency of a sound insulation wall or balustrade can be expressed easily.



Improved cuttings and banks and rounding of a small stage

We have improved the setting method of cuttings and banks. It allows the setting of width, angle of slope and textures for each stage of the right side and the left side. The rounding can be set for the berm.



Earthwork volume calculation

Calculates approximate volume of the earthwork by using the 3D shape of roads and terrains created in the software



Generating forests

This feature allows the establishment of up to three types of tree model (per session) and automatic generation of between several hundred and several thousand tree at predefined locations. Collective deletion is also available.



Enhanced intersection function

More intersection types including rotary and L type are now available for generation. Complicated flat crossing and road signs are supported through 3DS output editing. The improvement realizing for vehicles to run on the model at intersection was added.



Intersection function

The function to generate road surface texture semi-automatically. It reduces the work load of texture generation work.



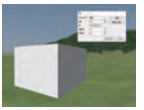
Object batch move function

Moves objects within the freely selected rectangle range on the road plan view all together by a specified offset value



Tool for editing building

Users can create 3D building models in any shape they wish whether it is square, circle, free form, or a combination. It shows the front-back, right-left, height and size and texture of surface for both day and night.



Zone function

Various calculation and operation to freely defined zone.



3D text

Generation and arrangement of 3D text on 3D space are available.



Video wall and video player

Animation video display including cylindrical screen can be reproduced as 3D object.



Visualization of fire and smoke

Present various phenomena including fire, bonfires, stream from hot springs and smoke from chimneys. Smoke and fire can be set inside tunnels.



Parametric 3D modeling

Sign, stairway, escalator, fence by parametric input can be generated. In case of stairway, the width, height, number of bars and texture can be assigned.



FBX 3D model

FBX file used for various kinds of models is supported. It supports the animation function, transparent texture, lighting effect, and import of Collada file including SketchUp etc.



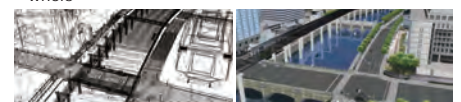
LOD (Level Of Detail) function

LOD Function is used in the display of the MD3 Character, 3D Model, FBX Scene.



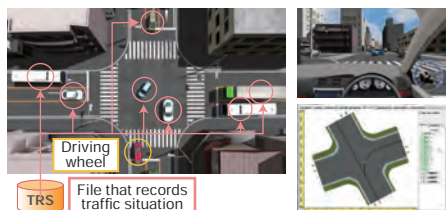
Import / export DWG and DXF

- Innovative function supporting CIM
- Import (3D/2D): cross section of roads, models
- Export: by category (model, linear and terrain etc.), whole



Traffic simulation function

- Packetization of vehicle.
- Setting probability of each route group.
- Motion control point in the event transition.
- Setting the number of stranded vehicles.
- Scenario within an intersection.
- Save traffic conditions (Control scenarios / scripts / contexts using traffic snapshot function)
- Improvement of scenario function Vehicle speed, lane(s), speed limit can be dynamically assigned.
- Various commands against leading vehicle can be applied to traffic flow, vehicle within a scenario played by Micro Simulation Player)



Signal control/ Traffic simulation with road Hazards

Traffic simulations based on vehicle performance are supported. It is compatible with various traffic rules, signal control and traffic lane control, and car lights and signal expression in traffic simulation are available.



Traffic Rules Setting

Traffic rules for Japan, New Zealand, China and Korea are loaded by default and moreover new rules can be added freely.

Off-Road Function

Users can drive vehicles around the 3D VR space using a steering wheel, a game controller or the keyboard in UC-win/Road.



Traffic connector

The virtual type which connects between moving nodes can be defined and the traffic movement can be set from edit window of plan view or main menu.

Vehicle configuration/waypoints

Configuration of driving routes, starting positions, running behind other vehicles (e.g.trains), sound configuration and railroad crossings, by setting action control points, is available.

Display revolving wheels,steering angle

With vehicle plug-in, displaying revolving wheels and the steering angle is possible by defining the front and rear wheels.



Walking simulation

Speed alteration while walking is available. Walking operation with mouse was added.

Movement of walking crowd

It's the function which the user can set an area of the 3D environment within which the pedestrians can walk.

- Start point, destination point, and the average number of pedestrians can all be assigned.
- Different pathway types can be assigned(station, stairs, escalator, etc.).
- Supports link connection (elevator and waiting room).
- Supports profile of multiple pedestrians.
- Ability to search for the shortest pathway.



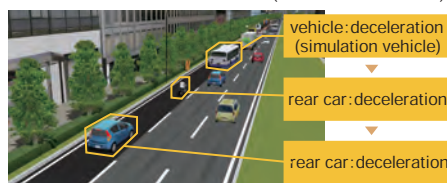
VISSIM

Visualization of traffic analysis reading the result of traffic analysis of VISSIM.



Interaction function

The interference check on the traffic flow and self-vehicle course generated from various traffic analysis softwares, such as VISSIM and S-PARAMICS.(within less than 200m)



Navigation

Dividing movement mode and simple viewpoint operation clearly, support the viewpoint operation in a movement mode.

Movement mode	Possible viewpoint operation
Free movement	rotation, moving back and forth, horizontal and vertical movement, free flight, satellite movement, jump
Running, Flight, Driving	Rotation, rotation on an axis of object, satellite movement
Walking	rotation, jump
Chasing	rotation centering around object, satellite movement



Special weather effect and illumination UpGrade

The function of rain and snow expression is lifelike. Fog, thunder, wiper (Can be operated with the axis of the upper surface of the windshield) and water splashing can specify the execution area.



Artificial light/Shading

A simulated lighting feature is offered by alternating textures for day and night. It will turn to night texture automatically in tunnel.



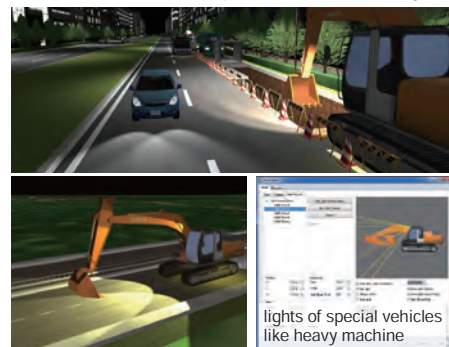
Lighting function

The spot light and head light function allows the simulation of night time and lighting.For instance, you can lit signal lamps, vehicle headlights, or show the effect of light through windows in buildings.



Light of vehicle

Can be set individually for each vehicle. Rear lamps, backlights, fog lamps, side lights, 10 extension lamps, and the lights of special vehicles like heavy machine in addition to current brake lamps, wipers, and hazard lights.



Tunnel lighting function

Setting the color and strength of tunnel lighting is available. The effect is applied to the traffic vehicle going into tunnel and an adjunct of road.



3D stereo display

Passive method which outputs the image to multiple screens with parallax, and Active method which outputs to one screen from side to side using Quadro video tip, produced by NVIDIA are supported. Wide-screen can be available.



Context (Environmental conservation)

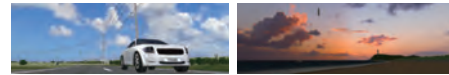
The function which can save various environmental setting in one context and are able to execute context in one click.



User variable number : Scenario control, log output etc

Sky dome function

The Sky dome function is where the sky can be rendered inside of the 3D environment. It is now possible to map various textures on it.



High precision rendering

Reflection on lake, auto creation of the sky according to the time. Improved performance and quality.



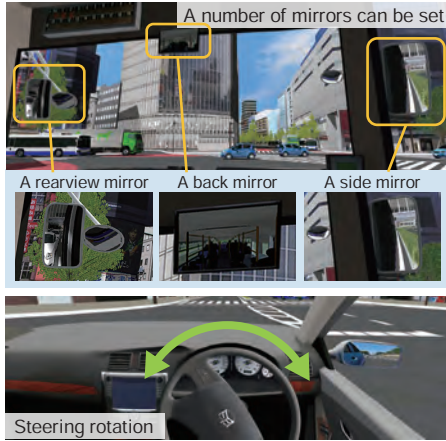
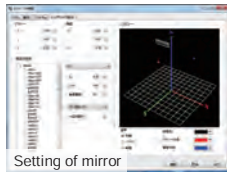
Object reference function by object custom ID

Manual driving

Support for manual driving as well as traffic flow based on vehicle performance by vehicle type.

Vehicle cockpit setting

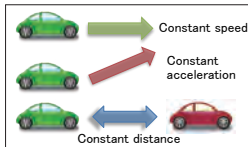
Side mirrors, rear-view mirror, and car navigation system (display any view) can be displayed in 3D cockpit in real time. Multiple mirrors can be set. Steering rotation is also drawn.



Vehicle control

The Micro Simulation Player feature plays previously recorded motion, and the following vehicle control modes are added.

- Specified speed and acceleration: Strictly keeps to the specified value, for travel along a road in any direction.
- Travels while maintaining the specified distance with the vehicle of interest.



Constitution of vehicle movement model

The expression of more realistic movement is now available by implementing model of overall vehicle movements, engine and each transmission from engine to wheel.



Edge blending

When projecting via several projectors, the screen on the edges between the projectors can be smoothly displayed. Pitch angle of the projector is also supported.



Full screen, simulation panel

Displaying full screen is possible. Control panels whose panel position and command can be customized. Ribbon interface support.



Driving simulation function

As vehicle dynamics model that accurately calculates vehicle's physics is included in UC-win/Road, it is possible to perform calculation taking into account the engine, transmission, vehicle weight and center of gravity, tire's frictional coefficient.

- ABS (Anti-lock Braking System) is now supported.
- Significant improvement in that the characteristic of torque converter, which transfers rotating power from an engine to the transmission, are modeled very precisely in car with an automatic transmission.
- The concept of half clutch control has been added.



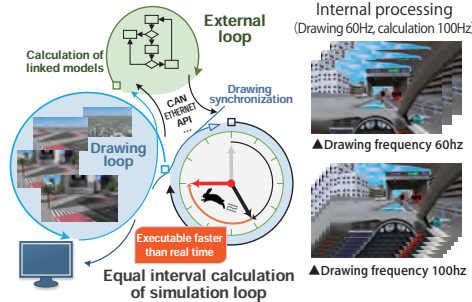
ACC/Automatic driving function

ACC function and self driving function in driving simulation are added. It can switch the manual driving and automatic driving. It also allows to recognize the traffic signals and limited speed. Automatic speed / steering control Brake assist, Superposing display of preceding vehicles' information.



Calculation frequency control and SILS function

Linkage with external simulation model, calculation loop at a constant period, and individual setting of calculation period and image update period. CAN bus and Ethernet can be connected.



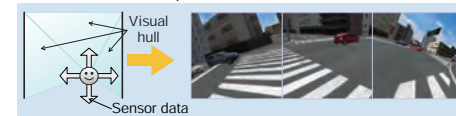
Function linkage with CarSim

Version 8 is applied to the vehicle movement simulation using the set value of road friction coefficient.



CAVE System, Head Tracking

Calculates and renders the subject's view point and visual hull based on his/her position relative to the screen.



Road attribute

Setting the difference of friction coefficient on road surface in every texture is available.



Audio system

By employing OpenAL, a variety of surrounding sound, the car's sound (sound of engine tire, wind, tunnel reflection sound) are supported. Lowpass filter is supported.

- Sound of rain and squeal (slip), sound reproduction of 4 different wheels.
- Different sound qualities are used for walking and driving. The sound quality and volume changes according to the amount of rain.
- Sounds can be output from other audio devices connected to the special speaker by means of the scenario setting.



Force feedback

Automatic vibration deriving from road material and road shape and constant vibration within the area is transferred to the controller.



Head Tracking

The head tracking function is a plug-in used for receiving a driver's eye position information while he/she is driving in real-time from sensors such as Kinect, and sending that information to UC-win/Road itself.



Trailer running function

Cab model and trailer model are set separately, and they are controlled as different models are connected.



2D horizontal plane view

Frames and information of 3D models, roads, and vehicles can be displayed. Simulation status can be seen at glance.



3D Navigation (3D mouse)

3D mouse like "Space Navigator", which can be used simultaneously with a normal mouse, allows an intuitive operation in 3D space.



Operation via game controller and keyboard



Linkage with remote controller

Operation without using a keyboard or mouse by assigning UC-win/Road functions



Universal UI plug-in

Various kinds of contents of images, videos, Web pages etc. can be browsed and searched with intuitive and user-friendly interface via 3D icon.

Plug-in Option

Standard plug-in / Plug-in option (additional cost)

U . . . Ultimate
D . . . Driving Sim
A . . . Advanced
O . . . Optional for additional cost

Terrain / Open Data / Point Cloud

Real time VR supports
400,000,000 point cloud.

Point Cloud Modeling

U A

This plug-in displays 3D point cloud data to VR space correctly. Extracting data file during loading, additional data loading, and fine adjustment of display position such as parallel move in VR space and rotational transfer are also possible. Moreover, this plug-in has functions to create TIN data (land and ocean bed) based on the point cloud, paste texture image, and assign colour of aerial photo. Supports LOD display for ease of use with hundreds of millions of points of data.



[Source: Shizuoka Point Cloud DB], CC license 4.0 international (<https://creativecommons.org/licenses/by/4.0/legalcode.ja>)

Photo-processing extension plug-in Option

O

Uses photo-logs to add color to point cloud data. When point cloud is collected uncolored or low accuracy due to the spec of measuring device, unfavorable weather condition, this plug-in is the ultimate solution (Requires Point Cloud Modeling Plug-in)



Before coloring

After coloring

Data Linkage

OSM (OpenStreetMap) Plug-in

U A

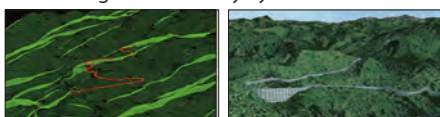
Imports OSM data including road, tunnel, and bridge. Road name, road type, carriageway width settings are available.



InRoads Plug-in

U A

Data linkage with Bentley Systems' "InRoads"

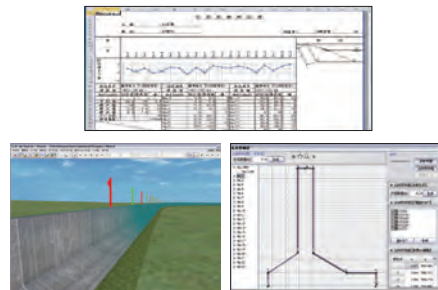


Plug-in for 3D point cloud and post-processed road management report

Dekigata Plug-in

O

The difference is measured from the design data and the point cloud data (actual measurement value) and each post-processed road management report is created. If the design data has already been maintained with LandXML etc., the post-processed road management report can be made easily by way of acquiring the postprocessed road in 3D laser scanning.



Analyze multiple photos, restore 3D coordinates (point cloud), and generate 3D model

SfM (Structure from Motion) Plug-in

O

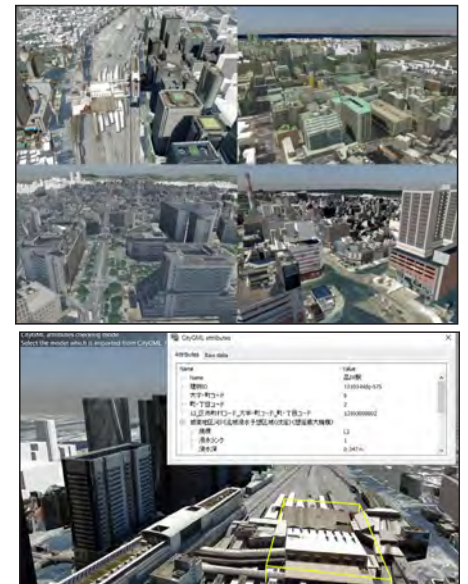
SfM Plug-in requires only a regular digital camera, which makes 3D data modeling much more accessible. SfM plugin allows photos to be loaded into UC-win/Road and analyzed to generate models.



CityGML Plug-in

O

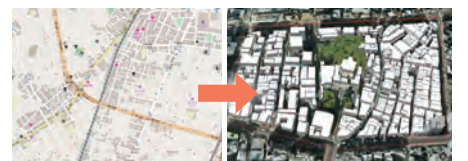
CityGML format of the city model created by PLATEAU can be read and the building model can be placed on UC-win/Road.



Online map import Plug-in

O

Ability to import feature information such as buildings and forests from online maps such as OpenStreetMap. To do this, simply define the area where you want to download features from by creating a zone around the area of interest, and then import them. This will automatically download them and display the buildings and forests within the 3D VR environment. These can then be edited at will



S-PARAMICS Plug-in

U A

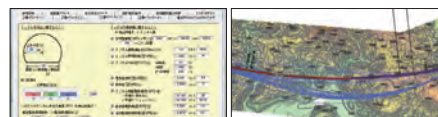
Linking with S-PARAMICS in which the road shape data can be exchanged.



OHPASS Plug-in

U

Visualizes calculation results of OHPASS



12d Model Plug-in

U

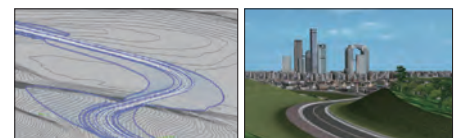
Data linkage with 12d Solutions' "12d Model"



Civil 3D Plug-in

U A

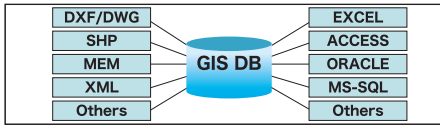
Data linkage with Autodesk's "Civil 3D"



GIS Plug-in

U A

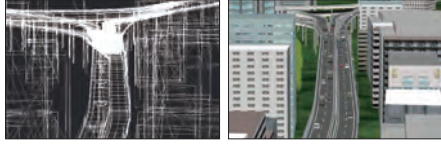
Import/Export GIS format file



DWG Tool Option

U A

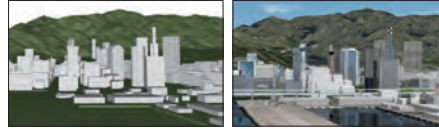
Data exchange between DWG format file and UCwin/Road



IFC Plug-in

U A

Import IFC format terrain data



OpenFlight Plug-in

O

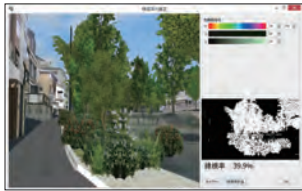
Export/Import OpenFlight format data from/to UC-win/Road



Linkage with Plant Plug-in allows users to perform assessments with more detailed tree models Assessment Plug-in

O

Assessment plug-in enables to perform VR and simple assessment by using a variety of realtime simulation functions of UC-win/Road. Green view rate, sunshine obstruction, and prediction of reflected light can be evaluated. Tree growing simulation is feasible. Setting of direction and angle of sunshine shows a result in VR.



Computing the green view rate



Plant growth depiction



Solar panel reflection check



Solar panel reflection simulation



Sunshine/Shadow simulation

Linkage between 3DCAD and CAD promotes enhancement of CIM solutions

3DCAD Studio® Linkage Plug-in

U D A

3DCAD format can directly be imported from 3DCAD Studio® to the virtual environment in UC-win/Road. IFC format is also supported.

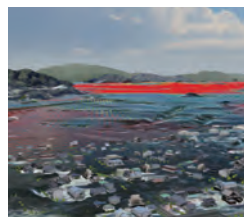
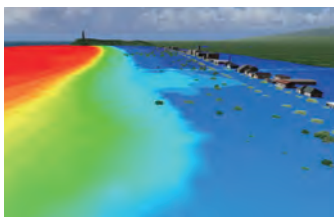
External analysis results linkage

Visualizes results of various tsunami analysis programs

Tsunami Plug-in

U

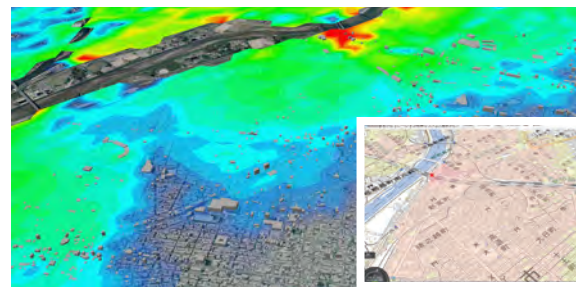
This is the universal plug-in which enables to reproduce and visualize the various simulation results, of such as tsunami analysis code developed by university and research institution and even of commercial-release tsunami analysis program.



Linked with Tsunami Plug-in Import of Flood Navi Data

NEW

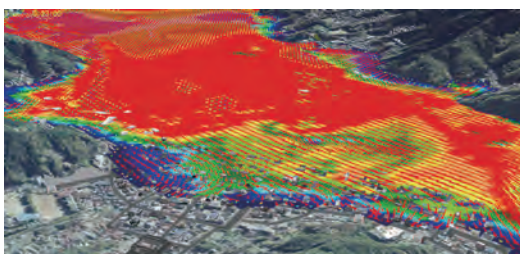
A function to enable visual inundation simulations on UC-win/Road using data from the Flood Navi system. It is possible to check water level changes over time and visualize gradients to create a realistic representation of the water surface by using the Tsunami Plug-in.



Dynamic 3D simulation of flood analysis result xpswmm Plug-in (for Tsunami)

U A

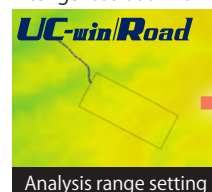
This is a dynamic 3D simulation of the tsunami analysis result by xpswmm. Tsunami expression function by UC-win/Road. Location, range, and height of tsunami can be set.



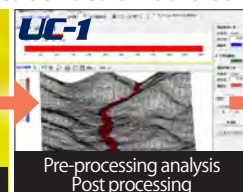
Visualize debris flow simulation and result analysis Debris Flow Plug-in

O

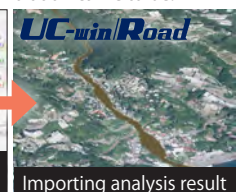
The UC-1 Debris-Avalanche Simulation uses "Debris-Avalanche Simulator (Kanako)" developed in the Graduate School of Agriculture, Kyoto University, as a solver. FORUM8 has built the robust function that pre-processes and post-processes the data to be analyzed so that a debris-avalanche analysis can be run effectively in a series of process while incorporating the solver, and that's how this intelligent solution named UC-1 Debris-Avalanche Simulation came to be.



Analysis range setting



Pre-processing analysis
Post processing



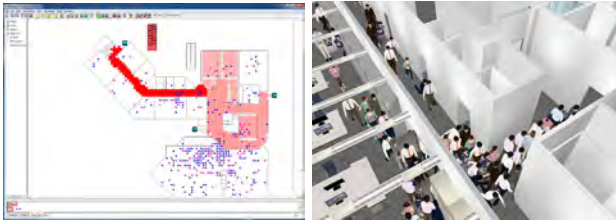
Importing analysis result

Evacuation analysis simulation

EXODUS Plug-in

U A

Data link of UC-win/Road and "EXODUS/SMARTFIRE" which was developed by Fire Safety Engineering Group (FSEG) in the university of Greenwich (England), fire analysis allows the viewing of the simulation result in 3D VR space. The scenario function visualizes results of evacuation simulation.



Place sound sources and sound receivers within a VR environment and simulate sound spreading through the space

Noise Simulation Plug-in

U A

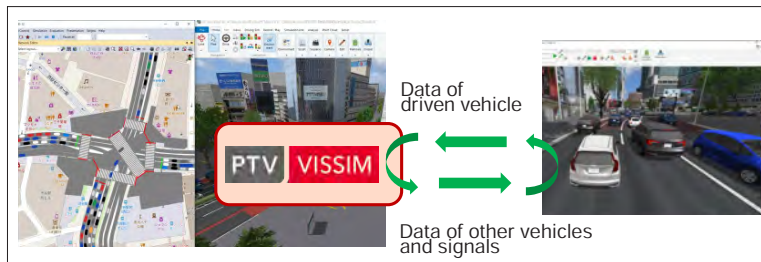
In consideration of the influence of earth surface, a structure, a building, etc. the sound pressure level in each audience point on an audience side is analyzed. Noise simulation consists of input part, analysis part, and results view part.



VISSIM Link Plug-in

O

Real-time linkage of UC-win/Road and VISSIM to consider driving operation in analysis models.



OSCADY PRO Plug-in

U A

Data linkage with a traffic light optimization software "OSCADY PRO"



Sidra Plug-in

U A

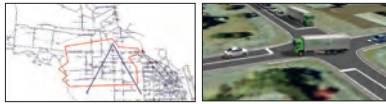
Data linkage with an intersection design software "SIDRA"



TRACKS Plug-in

U A

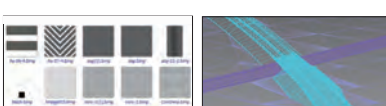
Data linkage with a soil use and traffic modeling system "TRACKS"



Export Scene Plug-in

U A

Export terrain, 3D model, road, tree, etc. in 3ds format



Run various types of simulation animation which is depicted as 3D model movement (Correspondence to VISSIM)

Micro Simulation Player Plug-in

U D A

This plug-in allows users to play simulation results created in other applications. XML format saving simulation results are defined and open for users so that they can customize simulations on UC-win/Road VR environment. This function connects many applications to UC-win/Road including all traffic micro simulation (cars and trains), 4D plan management software, object move inside plant, and transportation of heavy machines for civil engineering.



Evacuation simulation

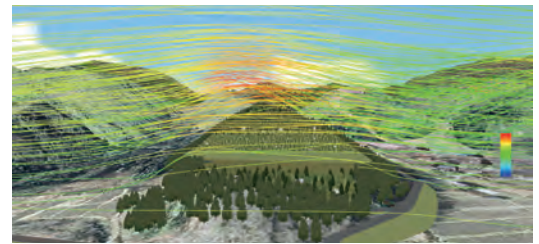
Analysis of traffic accident

Correspondence to VISSIM

Sophisticated analysis environment by using high-performance computing Super computer Fluid Analysis Link plug-in option

O

It is possible to simulate the complicated flow of water including turbulent and heat transfer by importing the water analysis tool "OpenFOAM". Visualization of the stream line from VTK (Visualization Tool Kit) file is also supported.



Legion Link Plug-in Option

O

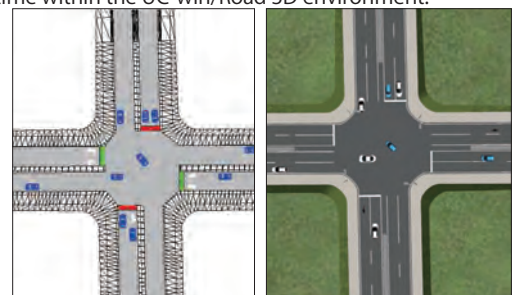
Developed by Legion Co.UK.Legion, the Legion Studio software simulates and analyzes pedestrian movements correctly. A multi-agent type crowd simulator handles pedestrians and individual behaviors with various characteristics, and can be used for evacuation time analysis, risk assessment, and creation of risk maps in emergencies.



Aimsun Link Plug-in

O

Vehicle behavior and signal phase from Aimsun (traffic modeling software that allows you to model roads and intersections, assign signal phase and traffic, and run mesoscopic and hybrid simulation based on the assigned conditions) can be reproduced in real time within the UC-win/Road 3D environment.



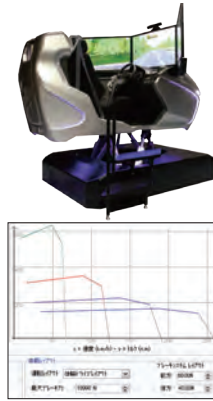
Linkage with Driving Simulator and Hardware

Full-scale four-wheel vehicle type drive simulator package system

Driving Simulation Plug-in

U D

With the UC-win/Road software and a driving simulator made of real car compartments supplied by leading OEM coupled with the software, a much more realistic driving simulation can be experienced. Compared with a conventional driving simulator, the cost-performance has improved substantially. Users can create simulation data on their own. In addition, vehicle dynamics can be reproduced very realistically.



System that assesses driver's driving skill Drive Diagnosis Plug-in

O

System that assesses driver's driving skill. You can assign scoring criteria and also store assessment results for each driver.



Log Export Plug-in

U D

Coordinate information, direction, speed and steering angle of a driving vehicle can be output to a log. Traffic flow and characters can be saved in the CSV format or output UDP in real time through a network. The distance from your own vehicle to a specified model can be exported to a log file. You can define the types of data and the order in which you wish to export them to a log file at your own will.

HUD (Virtual Display) Plug-in Option

O

Images of another view or in mirrors are displayed on the main screen, and it can be used as 3D screen in 3D space. Edge blending at the time of projecting via several projectors is supported. Available as a mask feature.



cycleStreet Link Plug-in

O

Virtual cycling system "Cycle Street Series City Edition" (Developer: FLOVEL CO., LTD) is linked with UC-win/Road that renders a panorama image of 3D VR environment on 3 screens. As you cycle, the CG moves according to the speed of the rotating pedals, allowing you to get some exercise as if you're playing a game.



Wheelchair Plug-in Option

O

The driver actually sits in a wheelchair and drives in a VR space through a monitor or head-mounted display (HMD) without moving the wheelchair itself. The driver's driving skills can also be evaluated.

Scenario Plug-in

U D A

Assigns individual movements or event scenarios into models and the virtual space.

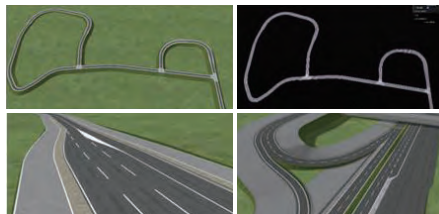


Automatic speed control

OpenDRIVE Plug-in

U D A

Reduces costs for creating simulation environments by importing road networks (road, lane) created in external software into UC-win/Road via OpenDRIVE®.



Export VR road data in CSV format

DS Course Converter Plug-in

O

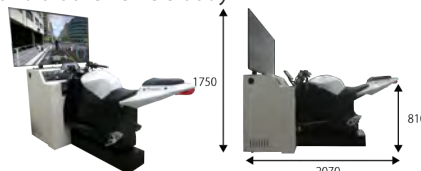
Entering road data output in CSV format in third party's program, roads of UC-win/Road can be recreated in those products.



Motorcycle Simulator Option

O

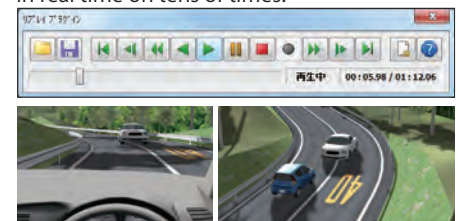
Using parts from the actual vehicle, the model can operate the engine, accelerator/brake, lights, etc. in the same way. It also has the ability to generate steering reaction force, switch between AT and MT vehicles, and tilt the vehicle body



Replay Plug-in

U D

Records and reproduces vehicles, pedestrians, etc. which move every moment over 1 second in real time on tens of times.



Computing fuel consumed by driving

ECO Drive Plug-in

U D

Calculates fuel consumption and carbon footprint of driving. Calculates fuel consumption and carbon footprint of driving using driving log by UC-win/Road, and makes a graph

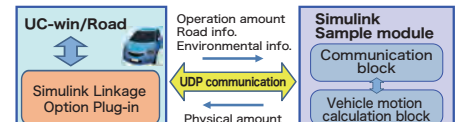


Check accidents from outside the vehicle during driving simulation.

Simulink Plug-in Option

O

Send/Receive the information of own vehicle in UC-win/Road via MATLAB/Simulink and UDP communication



Steering Torque Control Option

O

SENSO-Wheel (steering controller) allows to link with dynamics of UC-win/Road, which enables to experience the steering operation that is similar to the one of actual vehicle in 3DVR environment.



Simulation Real-time Linkage option

O

Transfers simulation results in VR environment to TCP/IP in real-time. Override of own vehicle control and HUD display commands such as messages and images for the HMI simulation are also available.

UC-win/Road for RoboCar® Plug-in option

This VR simulation system will link UC-win/Road with car robotics platform "Robocar®" in which the robot technology is mounted and controls the 1/10 scaled model car on a model road by driving in VR space.

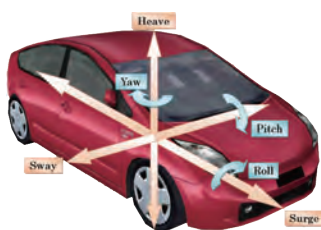


Log data UDP Receiver Option

Receives log data exported from Log Export plug-in by UDP communication and outputs CSV file.

Links the software to the motion platform hardware Motion Platform Plug-in

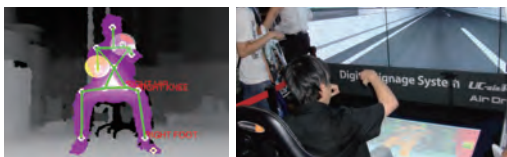
An optional driving simulation feature that links the software to the OEM motion platform hardware of INNOSIMULATION, Inc.



Handless driving simulation with infrared sensor

Kinect Plug-in Option

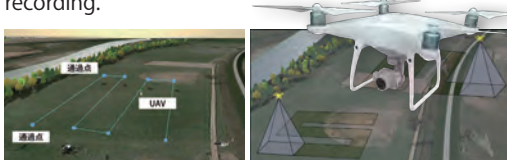
Enables information from Kinect™, a motion sensing input device that enables users to control and interact with their console/computer without the need for a game controller, to UC-win/Road.



Flight plan creation, remote operation, and log acquisition by collaborating with 3D VR

UAV Plug-in option

You can create a flight plan by selecting passing points in UC-win/Road and adding actions on the points such as taking photo or starting video recording.



CAN Signal Link option

Send/Receive the information of own vehicle in UC-win/Road via MATLAB/Simulink and UDP communication.

A/D board link option

Receives data from UC-win/Road via analog digital signal. Work with data in UC-win/Road.

HIL Linkage option

Operating UC-win/Road data by collaborating with HILS

D-BOX Plug-in

Required for the cooperation with D-BOX motion

Laser Sensor option

This option simulates laser sensor, and you can customize UC-win/Road to transfer data of distance from the irradiating position, coordinates of objects, and the object via network.

Speed Meter Display Plug-in option

Speed, idling engine speed, and turn indicator of the vehicle you are driving in UC-win/Road are displayed on the separate monitor. By customization, it can be displayed on another PC.



Camera Sensor Base Plug-in

Enter camera lens characteristics and sensor physical information, and accurate distorted image simulation by pixel can be performed. "Equidistance projection", "Equisolid angle projection", "Stereographic projection", "Orthogonal projection", and "Arbitrary lens distortion table" are supported.

Camera Sensor Link option

It can be used as a platform for wide a variety of developments and simulations such as development of a function to generate simulation image of the actual camera and the simulation of laser sensor using depth information.



Projects images to multiple monitors by synchronizing multiple PCs

Cluster Plug-in Option

UC-win/Road Cluster allows more than 4 channel display per PC and can synchronize two or more PC and output the image to a lot of monitors. It can be used for a simulator using a 360-degree domed screen and 6K digital signage. It becomes possible to secure the constant performance without an influence from the number of channels. Synchronizes multiple PCs within a network to enable multiple drivers to race on a same track.



HTC VIVE Plug-in

Cooperation between UC-win/Road and HTC VIVE HMD (Head Mounted Display) allows users to experience VR environment.



FOVE Plug-in

For linkage between the Head Mounted Display "FOVE 0" and UC-win/Road.

Quest Rift Plug-in

Exports image with distortion for Quest Rift lens.

Download Data Base of 3D model, texture, VR data

For UC-win/Road, a data base with over 8200 materials including 3D model, texture, section, and sample data is available for the efficient simulation data creation. Users can directly download and use them during the maintenance support term.

3D Model

It makes data creation more efficient by using various standard models. With this, setting up the model editing tool and movements of models is easy. It enables the loading of the structure models designed in UC-1 series or UC-win and import the 3DS models with the textures created by other 3D tools as well.



Construction machinery

Movable model of construction machines manufactured by Hitachi Construction Machinery Co., Ltd.
(Material provider and copy right: Hitachi Construction Machinery Co., Ltd.)



Number of models **3D models 4349 / Textures 4100 / Sections 109 / Sample data 115 / FBX scene models 4 / Video wall 1** (As of 01 April 2022)

3D 2D Trees

3D Tree leaves / bark / blossom
2D Tree high evergreen tree / middle height evergreen tree / low evergreen tree / high deciduous tree / middle height deciduous tree / low deciduous tree / high flowering tree / middle height flowering tree / low flowering tree / foliage plant

MD3 character human models

Character human / animal

FBX scene models

Vehicles / Equipment / Running models

Road vehicles passenger car / track, trailer, cab / bus, taxi / bicycle, motor bicycle / special vehicles

Vehicle interiors shinkansen / railroad vehicles / new traffic vehicles

Airport, Harbor facilities harbor signal

facilities / harbor signal facilities / river improvement facilities
Aviation, Shipping airplane (large) / airplane (middle, small) / ship (large) / ship (middle, small)

Construction machinery
Temporary facilities

Buildings / Facilities / Structure models

Building, House, Store, Steel tower office building (high) / office building (middle) / apartment house / house / commercial building, market / industrial institution / public facility / power transmission steel tower

Railroad structure, Road structure superstructure / substructure / road structure / gate / pedestrian bridge / sign pole / marking

Railroad institution, Road institution superstructure / signal, alarm / station / street light / road restriction equipment / others

Park institution toy / building / others

Others billboard / regulation / disaster / others

Roads / Traffic / Traffic sign textures

Road surface, Railroad surface road surface / railroad surface / others

Banking, Cutting planting / concrete block / concrete spraying / others

Guardrail, Curbstone, Sidewalk, Bridge

truss / girder

Tunnel

Intersection pavement / sidewalk / houmen

Road sign directions sign / regulation sign / guidance sign / watch sign / auxiliary sign / railroad sign / evacuation sign / local road signs

(Korean / Chinese / American / New Zealand / French / Malaysian / British / Thai / Dutch / Irish / Vietnamese / German / Indian / Singaporean / Spanish / Colombian / Brazilian / Finnish / Australian / Turkey / Lebanon / Poland / Portugal / Sweden / Switzerland / Iceland / Italy / Austria / Philippines / Taiwan)

Road marking directions marking / regulation marking / others / korean road marking / chinese road marking

Backdrop building (high) / building (middle) / building (low) / house / forest / fence / others

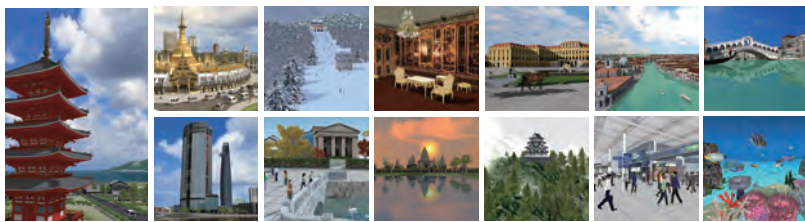
New building / River / Cockpit / Sky / Sky dome / Flag / Terrain / Water surface / Fire, Smoke / Others

Sections

Video wall

Example

A variety of UC-win/Road VR data including domestic and overseas sites and world heritages



Disasters / Regulation

It supports the models / textures of road hazards. (materials provided by Road Management Technology Center)



Construction Method

It supports textures for each construction method. (materials provided by Hirose Corporation)



Shade3D models Texture

Excellent default textures, default textures of slopes, cuttings, road surfaces, pavements, walls etc. are available. Sky and terrains can be mapped as default, and many special textures such as trees and signs can be arranged according to their specified commands. The textures for cockpit inside vehicles are also available for use while driving.



Collection of Shade3D Practical Data, aerial photographs, 3D building models

Option for additional cost

Shade3D CG Data-input Support Service

3D modeling, 3D printing, and animation creation with Shade3D

FORUM8 provides the data creation service for 3D modeling, 3D printing, and Animation. This service covers the wide range of VR/CG data creation from 3D modeling and texture generation to simulation data creation.



Collection of Shade3D Practical Data Forest Series

•12 model series including 3D models of cityscapes, human shapes, interiors, plants, etc. are now available.

■ Price
 USD 180 per series

■ Series
 Forest of City 1/2, Forest of Human, Forest of Vehicle, Forest of Underwater Life, Forest of Flower, Forest of Interior, Forest of Interior 1/2/3, Forest of Office, Forest of Houseplants

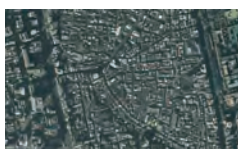


Aerial photographs

Digital Ortho images covering entire Japan

GEOSPACE Aerial photographs

■ 1 mesh starting at US\$100 (single license) km²
 ■ Units provided :
 1) 2.0km×1.5km / 1 mesh (3km²:unit of national basic map)
 2) 4 mesh starting is available for sale.(in case of basic)
 (Provided by NTT GEOSPACE CORPORATION)



3D Building/City Models

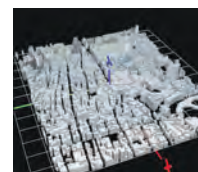
High-precision
 3D building/city data

3D Building Model

•Building shape models via laser measurements
 •"Terrain" + "Solid" model data with a 6km² or 9km² lot
 •Areas provided: Main areas in Kanto, Chubu, Kansai and the government -decreed cities (approximately 10,000 km²)

■ Cost

•3D building data / terrain data original data
 price:each US\$1,000 / km²
 •Converting data for UC-win/Road 3D building data
 US\$1,500 / km² (deleting polygons, dividing layers (for textures))



3D City Model Data

•3DS, or other standard formats
 •Available Area: Chiyoda Ward, Sumida Ward, and Edo-gawa Ward, Tokyo
 •The total of the three area: 10 square km
 •The base-map is aerial images from 2009

■ Price

US\$5,814 (Provided by SIRADEL, France)



GEOSPACE 3D solution (NTT GEOSPACE CORPORATION)

We can create area data from "3 square km". Area can be added by one square km.

•3D polygon data of building height

Price: US\$150/square km
 Format: Shape, OBJ, etc.

•Point cloud data

Point cloud data of terrain surface including land, road, bridge, building, plant. Format: csv, txt, etc.



•Numerical surface layer model data

Numerical surface layer model data of terrain surface including terrain, road, bridge, building, plant. Size: 3 square km-. Format: tiff, OBJ, VRML, etc.

*Contract for GEOSPACE 3D Solution is required.

Integrated solution utilizing VR on cloud

VR-CLOUD® Ver.6.3

Registered trademark No.5445551

VR-Cloud® is a consensus building solution which uses 3D and VR on a cloud server. As long as you are connected to the Internet, you can take control of VR space even on a thin client. Android™ client is supported.

Ultimate

Driving Sim

Advanced

VR-Cloud® Collaboration (VR-Cloud® is included)

US\$5,500

VR-Cloud® Standard (a3S Server License is included)

US\$3,360

(tax excluded)



Standard

Various kinds of simulation can now be experienced very smoothly by implementing a unique transmission technology "a3S".

[Operation mode (viewpoint, movement)]

- Freemode (Free view point position by interactive)
- Various kinds of simulation (road running, Flypass flying and free walking)
- Executing a script (Automatic presentation), scenario and replaying video
- Selection of vehicle model for driving simulation
- Manual driving using keyboard (patent obtained)
- Multi client and operation by the acquisition of operation authority have been supported.
- Setting for context (collective setting), traffic flow and preferences ON/OFF
- Displaying homemenu (data summary, favorite, browsing history)
- Client of Android™ version can acquire the location information using GPS
- xpswmm simulation (results of flood and tsunami analysis etc.)
- Addition of the edit function: Addition of the 3D model uploading function
- Addition of the 3D model uploading function
- VR-Cloud® SDK and VR-Cloud® script plug-ins are implemented



Driving simulation



Walking simulation

Experience VR-Cloud®!

Special Page:

<http://www.forum8.co.jp/english/vr-wr/vc-taken-e.htm>



Utilize for competitions and contests



arcbazar + Project VR



16th 3DVR Simulation Contest Grand Prix (Meiwa Sky Support Co., Ltd.)



Virtual Design World Cup Student BIM & VR Design Contest on Cloud

Rhino® Plug-in

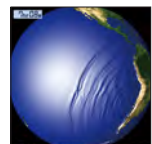
With the combination of VR-Cloud®, Rhinoceros® can be browsed by VR-Cloud® user.

Optional for additional cost



Registered trademark No.5459336

New service with the advanced calculation feature of high performance computing



Tsunami numerical analysis support service (Image provided by Professor Imamura of Tohoku University)



Image rendered using LuxRender

"Kobe lab. provides High-performance computing on cloud services in the "Advanced computational science support laboratory, Foundation for Computational Science(FOCUS)" constructed near the next generation super computer "K". We provides the service using supercomputer which supports for more than 22 Tera-FLOPS (22 trillion calculations per second).

Registered trademark No.5549194



Best suited for VR-Cloud®!
Compact & low cost high-speed graphics server
Small server that can fit the latest graphic cards easily. Compared with the standard 19-inch rack servers, UMD can support high-speed graphic calculation while achieving space-saving and low cost.

Collaboration

In addition to functions of Standard version, 3D bulletin board, scenery evaluation, annotation, photo, conference by multiple users, and other advanced VR utilization on cloud are available.

[Manage, operate, save 3D model]

- 3D model list saved in published data is available on client. Arranged 3D models can be moved freely from client side.

[3D bulletin board, annotation, landscape evaluation]

- Creation of discussion and annotation on VR space, display of icons, response from other users
- Landscape evaluation in VR space by marking, output of HTML list

[Photo]

- Icons can be displayed in VR. Users can view, edit, and delete photos.
- Camera position can be selected from GPS on Android™

[Conference by multiple users]

- View sharing, communication by text, video, and voice
- Access restriction by password



Display of 3D icons



Discussion function



Landscape evaluation function

Case studies

Tomohiro Fukuda laboratory of environment and energy engineering, Graduate school of Osaka University

Remote meetings including hand drawing design meetings can be easily conducted by data sharing

Mizuki Shigeru Road × VR-Cloud® Ver.6.1



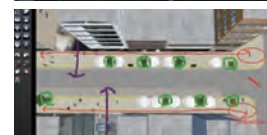
In a renewal plan of Mizuki Shigeru Road promoted in Sakaiminato city, VR data of the concrete plan is created and shown to persons concerned and citizens for PR and a consensus building of the design plan. The VR-Cloud® is used for a remote design meeting by sharing the data.

VR-Cloud® Collaboration function



Example of design meeting

Inputting handwritten design on the main screen. Discussion using video conferencing system (Skype).



The viewpoint can be selected freely.



Discussion and 3D icon of annotation

A kit for UC-win/Road customization developer

UC-win/Road SDK Ver.17

API for customizing UC-win/Road. Allows free option development like basic UC-win/Road plug-ins. Real-time data linkage with in-house developed software.

[Specification (UC-win/Road / Delphi 10.4 Berlin / C++ / JavaScript / Python)]

- Correspondence to UC-win/Road Ver.16 International
- API created with Embarcadero® Delphi® 10.4 (Delphi® 10.4 is required) Supports C++/API / JavaScript / Python.
- Real-time display of large space. 3D models for dynamic LOD and performance setting help smooth dynamic display.
- A simple menu development provides a special menu for client.
- Real-time data linkage with in-house developed software.

[Products configuration]

- Library folder: Various library files required to compile the plug-in are stored.
- Plugins folder: Source code of various sample programs is stored. Compiling and executing it would help you understand the features that are controllable in SDK.
- Help file: English only

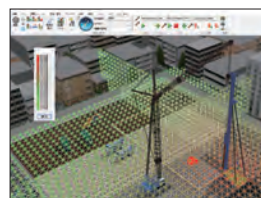
[API functions]

- Editing, reading and writing data

[Development of various input and output Plug-in]

- Data linkage with the software developed by your own is feasible.

[Development Case]



Noise simulation

Place sound sources and sound receivers within a VR environment and simulate sound spreading through the space. In consideration of the influence of earth surface, a structure, a building, etc. the sound pressure level in each audience point on a audience side is analyzed. Noise simulation consists of preprocessor (input part), mainprocessor (analysis part) and postprocessor (Results view part).

VR-Cloud® SDK

A customized development kit of script operating on VR-Cloud® client

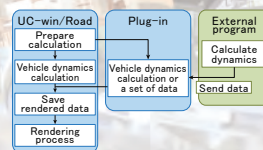
The following list indicates what can be achieved by using the scripting language (AngelScript) and a commercial text editor, importing the program into the system via the VR-Cloud® script plug-in. The script language is very similar in structure to C/C++.

- Customizing the user interface of VR-Cloud® client such as adding new menu and buttons.
- Developing many different GUIs each one specific for different content to be published on-line
- Assigning various different kinds of commands such as those used to change the camera (viewpoint) position and the environment, as well as commands used to initiate driving



UC-win/Road SDK Ver.17	US\$3,000
VR-Cloud®SDK (VR-Cloud® Standard is required)	US\$3,360
a3S (Anything as a Service) SDK	US\$3,360
a3S Server License	US\$4,400
a3S Client (10 clients)	US\$4,400
Unlimited clients	US\$5,500
	(tax excluded)

Control Driving Simulation



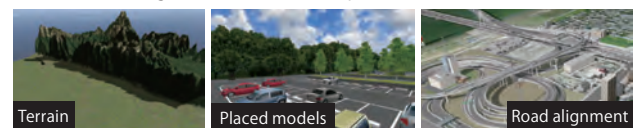
Creative drawing via OpenGL control



Control model/character in real-time



Browse and change static data that comprise the whole VR environment.



a3s (Anything as a Service) SDK

A customizing kit of data transmission library "a3S" used for general application development

a3S

[The Development of a cloud system using our cutting-edge architecture]

- a3S is FORUM8's in-house developed multimedia cloud technology
- allows high quality video and audio to be supported and streamed
- This SDK allows you to use the various functions that a3S has to offer to develop a cloud computing application.
- Supported Platforms: Windows (Android, Linux, iOS will be supported in the next version.)
- Development Language: C/C++, Delphi™

[Supports both public cloud and private cloud]

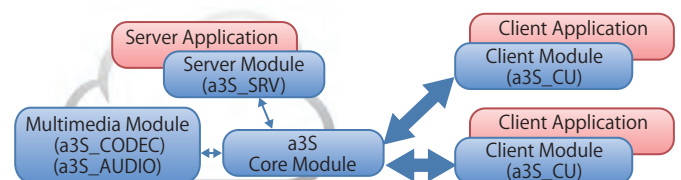
- Cloud based data sharing systems and large-capacity data transmission services
- Video hosting and video on-demand services
- Chat features, bulletin boards, and message services
- Cloud based gaming services
- Developing a cloud version of the existing application

[Core modules of a3S multimedia cloud system]

- a3S Protocol: Connects the core parts controlling TCP protocols, the server and each and every client. It also controls commands, and manages the synchronization and authorization system.
- a3S Multimedia: Encodes and decodes the videos via the latest video compression techniques, and enables audio streaming without occupying too much CPU.
- a3S Data: Data management system which allows transmission of up to 4GB of data at one time

[Example of creating a system using a3S]










- VR-Cloud® was developed using a3S technology. This software has the ability to enable high-quality real-time images and sound, such as that of moving vehicles, to be sent from a server running the Interactive 3D VR Simulation software UC-win/Road, to client machines so that they can share and interact with the 3D VR environment.
- An individual client's key strokes, mouse events, and GPS coordinates, as well as images captured by a camera are sent to the server and they are reflected in UC-win/Road's 3D environment running on the server.



Product price list

Software application

Supported language UC-win/Road: Japanese/English/Korean/Chinese/French/Italian
*UC-win/Road Trial version is available for download from our website.

UC-win/Road Ver.17	Ultimate	 UpGrade	US\$17,200	Top-level products including all plug-ins*1
UC-win/Road Ver.17	DrivingSim	 UpGrade	US\$11,000	Including ECO drive, drive simulator, micro simulation player, etc.
UC-win/Road Ver.17	Advanced	 UpGrade	US\$8,800	Including point-cloud modeling, Civil 3D, InRoads, xpswmm, 12d Model, 3D model export
UC-win/Road Ver.17 Standard		 UpGrade	US\$6,000	Including 3D model export, DWG tool plug-in, IFC plug-in
UC-win/Road Ver.17 CIM Lite		 UpGrade	US\$4,800	The same Plug-in configuration with Standard License, without the functions of the driving simulation and scenario performance
UC-win/Road Ver.17 Multi User Client Version		 UpGrade	US\$1,080	Products for multi-driving features synchronizing multiple PCs via network for multiple drivers
UC-win/Road Ver.17 Presentation Version		 UpGrade	US\$600	Products with presentation features such as visual option tools
UC-win/Road Ver.17 Cluster Client Version		 UpGrade	US\$600	Product for client PC of cluster option (displays load distribution multi monitor by several PCs)
UC-win/Road Ver.17 Free Viewer		 UpGrade	No charge	This free viewer product allows you to move around the 3D environment as well as play and replay scripts. Supports data output via FORUM8 plug-in
VR-Cloud® Client Ver.6			No charge	Installed in Windows/Android OS, this product allows you to see and operate the VR-Cloud® data

*1 Additional options (VR-Cloud®, SDK, cluster, motion, RoboCar®) are not included.

Plug-ins

Plug-in option name	Ultimate	Driving Sim	Advanced	Standard CIM Lite	Price	Detailed
Driving Simulator Plug-in (Including SensoDrive Simulator Plug-in)	<input type="radio"/>	<input type="radio"/>	—	—	US\$3,360	Four-wheel vehicle Drive Simulator Packaging System
ECO Drive Plug-in	<input type="radio"/>	<input type="radio"/>	—	—	US\$3,360	Calculates fuel consumption while driving a car
Replay Plug-in	<input type="radio"/>	<input type="radio"/>	—	—	US\$1,730	Records the movement of models of vehicles and pedestrians and replay
Log Export Plug-in	<input type="radio"/>	<input type="radio"/>	—	—	US\$3,360	Coordinate information, direction, speed and steering angle of a driving vehicle can be output to a log.
Scenario Plug-in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	—	US\$1,730	Controls the VR environments in response
Communication Plug-in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	—	US\$3,360	Web-based Communication system
Micro Simulation Player Plug-in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	—	US\$3,360	Record and play a simulation in OpenMicroSim format
Parking Lot Plug-in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	—	US\$800	The parking drawing data made by "Parking lot drawing system" can be imported
VR-Cloud® Plug-in (including a3S SDK server license)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	—	US\$3,360	A consensus building solution which uses 3D and VR on a cloud server
VR-Cloud® Script Plug-in	*requires VR-Cloud® Plug-in	<input type="radio"/>	<input type="radio"/>	—	US\$3,360	Customize script that works on VR-Cloud® client
VR-Cloud® Collaboration Plug-in	*requires VR-Cloud® Plug-in	<input type="radio"/>	<input type="radio"/>	—	US\$5,500	3D bulletin board, scenery evaluation, annotation, photo, conference by multiple users
Point Cloud Modeling Plug-in	<input type="radio"/>	—	<input type="radio"/>	—	US\$1,730	VR modeling by using point cloud data for UC-win/Road
Civil 3D Plug-in	<input type="radio"/>	—	<input type="radio"/>	—	US\$750	Data linkage with Autodesk's Civil 3D
EXODUS Plug-in	<input type="radio"/>	—	<input type="radio"/>	—	US\$3,360	Data linkage with University of Greenwich's EXODUS
GIS Plug-in	<input type="radio"/>	—	<input type="radio"/>	—	US\$2,840	Convert GIS format file into UC-win/Road
InRoads Plug-in	<input type="radio"/>	—	<input type="radio"/>	—	US\$750	Data linkage with Bentley Systems
OSCADY PRO Plug-in	<input type="radio"/>	—	<input type="radio"/>	—	US\$1,180	Data linkage with TRL's OSCADY PRO
xpswmm Plug-in Ver.2 (for Tsunami)	<input type="radio"/>	—	<input type="radio"/>	—	US\$3,360	Data linkage with XP Software's xpswmm
Noise simulation Plug-in	<input type="radio"/>	—	<input type="radio"/>	—	US\$3,360	The spread of sound is simulated on VR space
Export Scene Plug-in	<input type="radio"/>	—	<input type="radio"/>	<input type="radio"/>	US\$800	Output the files of terrain, 3D model, road, tree etc. in 3ds format
DWG Tool Plug-in	*requires Export Scene plug-in	—	<input type="radio"/>	<input type="radio"/>	US\$800	Data exchange between DWG format file and UC-win/Road
IFC Plug-in	<input type="radio"/>	—	<input type="radio"/>	<input type="radio"/>	US\$800	The terrain data in IFC format can be imported
12d Model Plug-in	<input type="radio"/>	—	—	—	US\$750	Data link with 12 Solutions Pty Ltd.'s 12d Model
Munsell Colour Space Output Plug-in	<input type="radio"/>	—	—	—	US\$2,320	Convert the scene displayed on the main screen into the "Munsell color system"
Export For Free Viewer Plug-in	<input type="radio"/>	—	—	—	US\$750	Output data file for UC-win/Road Free Viewer.
Tsunami Plug-in	<input type="radio"/>	—	—	—	US\$3,360	Visualize the result of shrink-wrapped tsunami analysis program
OHPASS Plug-in	<input type="radio"/>	—	—	—	US\$5,500	Visualize the result of calculation by the optimal highway pass search system
OSM Plug-in	<input type="radio"/>	—	<input type="radio"/>	<input type="radio"/>	US\$750	Visualize OSM (free map data) in 3D space easily and quickly
Online Map Import Plug-in	<input type="radio"/>	—	<input type="radio"/>	<input type="radio"/>	US\$800	Import building data from online maps
Quest Rift Plug-in	<input type="radio"/>	—	—	—	US\$500	Output movies with the lens barrel distortion
OpenDRIVE Plug-in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	US\$800	Import road network (road, lane) from 3rd parties' software
CityGML Plug-in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	US\$800	Import and arrange CityGML models created with PLATEAU




*2: VR-Cloud® a3s Standard + Forum function + Slide Presentation function

Additional options

*3: For only system development *4: "3D Scene Export Plug-in" is required. *5: Configuration: 3 slave PCs & 1 server PC

Motion platform Plug-in Option*3	US\$8,600
D-BOX Plug-in Option	US\$8,000
VR seat Plug-in Option	US\$3,000
Wheelchair Plug-in Option	US\$3,000
Motorcycle Simulator Option	US\$2,000
Remote access Plug-in Option	US\$3,360
Simulation Real-time Linkage Option	US\$5,000
HIL Linkage Option*3	US\$18,000
RoboCar® Plug-in Option	US\$3,360
AIMSUN Link Plug-in Option	US\$3,000
OpenFlight Plug-in Option*4	US\$4,000
DS Course Converter Plug-in Option	US\$4,000
Legion Plug-in Option	US\$800
Simulink Connection Plug-in Option	US\$4,000
Driving Diagnosis Plug-in Option	US\$4,000
Steering Torque Control Option*3	US\$9,000
cycleStreet Link Plug-in Option	US\$1,180
Cluster Plug-in Option*5	US\$8,600
HUD (Virtual Display) Plug-in Option	US\$3,000
Speed Meter Display Plug-in Option	US\$3,000
FOVE Plug-in Option	US\$3,000
HTC VIVE Plug-in Option	US\$3,000

Associated Products

UC-win/Road SDK Ver.17	US\$3,000
VR-Drive	US\$780
UC-win/Road Education Version (for students who are 18 years old or younger.)	US\$540
Shade3D Professional Ver.24  UpGrade	US\$980
Shade3D Standard Ver.24  UpGrade	US\$480
Shade3D Basic Ver.24  UpGrade	US\$198
Shade3D Block UI Programming tool	US\$100
UC-win/Road Data exchange tool	US\$1,430
UC-win/Road data exchange tool for APS-Win	US\$1,730
UC-win/Road Video tutorial (Japanese/English/Korean/Chinese)	US\$300
City Design Tool (UC-win/Road 3ds Max Plugin)	No charge




VR-Cloud® Cloud Server configuration example

(UC-win/Road per 1 data)

	UC-win/Road Ultimate configuration	UC-win/Road Advanced configuration	UC-win/Road Standard configuration
VR-Cloud® Ver.6 Collaboration	US\$20,000	US\$14,000	US\$10,800
VR-Cloud® Ver.6 Standard	US\$18,000	US\$12,000	US\$8,800




Academic Price

An Academic License can be provided for educational purposes and used by teachers, lecturers, academic researchers, and students.

	UC-win/Road Ver.17 Ultimate	US\$13,760
	UC-win/Road Ver.17 Ultimate 5 licenses pack Subscription	US\$21,700
	UC-win/Road Ver.17 Driving Sim	US\$8,800
	UC-win/Road Ver.17 Driving Sim 5 licenses pack Subscription	US\$15,600
	UC-win/Road Ver.17 Advanced	US\$7,040
	UC-win/Road Ver.17 Advanced 5 licenses pack Subscription	US\$12,100
	UC-win/Road Ver.17 Standard	US\$4,800
	UC-win/Road Ver.17 Standard 5 licenses pack Subscription	US\$8,200
	UC-win/Road Ver.17 CIM Lite	US\$3,840
	UC-win/Road Ver.17 Multi User Client Version	US\$864
	UC-win/Road Ver.17 Presentation Version	US\$480
	UC-win/Road Ver.17 Cluster Client Version	US\$480

Mindwave Plug-in Option	US\$3,000
Camera Sensor Base Plug-in	US\$8,000
Camera Sensor Link Option*3	US\$20,000
Log data UDP Receiver Plug-in	US\$3,000
CAN Signal Linkage Option*3	US\$9,000
A/D Board Linkage Option*3	US\$18,000
3D Point Cloud / Dekigata (Work Progress Control) Plug-in Option	US\$3,160
Photo-processing Extension Plug-in Option	US\$2,320
SfM (Structure from Motion) Plug-in Option	US\$5,000
Laser Sensor Option*3	US\$18,000
Debris Flow Plug-in Option	US\$3,360
Rhino® Plug-in Option	US\$1,000
Kinect Plug-in Option	US\$2,320
UAV Plug-in Option	US\$3,000
Assessment Plug-in Option	US\$3,500
Super Computer Noise Plug-in Option	US\$180/month
Super Computer Fluid Analysis Link Plug-in Option	US\$3,360
VISSIM Link Plug-in Option	US\$3,000
Gaze Tracking Plug-in Option	US\$3,000
Object Detection Plug-in Option	US\$3,000
4D Simulation Edition Option	US\$2,000
Earthquake Simulator Plug-in Option	US\$4,000

Subscription Contract Price (for one year)

UC-win/Road 	US\$6,880	Presentation Version	US\$240
UC-win/Road 	US\$4,400	Cluster Client Version	US\$240
UC-win/Road 	US\$3,520	UC-win/Road SDK	US\$1,200
UC-win/Road Standard	US\$2,400	Shade3D Professional	US\$392
UC-win/Road CIM Lite	US\$1,920	Shade3D Standard	US\$192
Multi User Client Version	US\$432	Shade3D Basic	US\$79

Subscription cost of first year is free.

Subscription cost of first year has been included in the product price.

[Support information]

- Software upgrade
- Technical inquiry (Email, Tel)
- Maintenance and update notifications via email
- Download service

Rental License

License for the use scheduled for less than one year

Software application	2 Month	3 Months	6 Months
	US\$7,740	US\$9,116	US\$11,180
	US\$4,950	US\$5,830	US\$7,150
	US\$3,960	US\$4,664	US\$5,720
Standard	US\$2,700	US\$3,180	US\$3,900
CIM Lite	US\$2,160	US\$2,544	US\$3,120
Multi User Client Version	US\$486	US\$572	US\$702
Presentation Version	US\$306	US\$360	US\$444
Cluster Client Version	US\$306	US\$360	US\$444

Floating License

Allows access to the latest product from any PC

Software application	2 Month	3 Months	6 Months
	US\$12,900	US\$15,308	US\$18,920
	US\$8,250	US\$9,790	US\$12,100
	US\$6,600	US\$7,832	US\$9,680
Standard	US\$4,500	US\$5,340	US\$6,600
CIM Lite	US\$3,600	US\$4,272	US\$5,280
Multi User Client Version	US\$810	US\$961	US\$1,188
Presentation Version	US\$516	US\$612	US\$756
Cluster Client Version	US\$516	US\$612	US\$756



2000 May 1.00.00 **UC-win/Road** Release

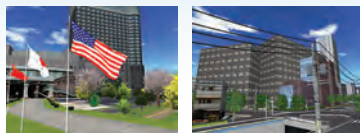
Jul. 1.01.02 Switching from Japanese to English / lane changing.

Dec. 1.01.12 Editing function for elevation points.

2001 Jun. 1.02.00 Custom terrain handling / XML terrain loading / Shadow, rain, snow, wind / ramps / Flight paths / driving on the right side of the road

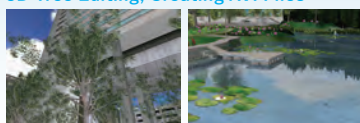


2002 Jun. 1.03.00 World geographic coordinate system / Movable parts for 3D models Rivers / Road Markings, power lines, flags / Before / After



Sep. SOFTWARE PRODUCTS OF THE YEAR WINNER!

2003 Jun. 1.05.00 Data merging / Lakes, Cutting / Movement of models by dragging / Measurement between models / **3D Tree Editing, Creating AVI Files**



Sep. 1.06.00 2D view window, Support for multiple monitors.



2004 Jun. 2.00.00 Traffic generation / Travel route / Lighting effect textures / **Script functions / MD3 characters**



Sep. 2.01.00 Forest generation / **Wheel base setting / Pivot setting**



2005 May 3.00.00 **Traffic lights plug-in** / **Road obstacle plug-in** / **Indicator and brake lights**



Dec. 3.01.00 Drive simulation and cockpit / L-shaped intersection / **POV-Ray / LandXML**



2006 May 3.01.02 UC-win/Road for Civil 3D

2006 Sep. 3.02.00 Support for French and Chinese (Formosan) / Vehicle group / Display and hide vehicles / Multi view display / **Tracks plug-in**



Nov. 3.02.11(SP1)

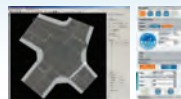


Level of detail LOD of 3D Trees / Save camera views / Rear-view mirror side mirror and car navigation in 3D cockpit / Expanded script commands

2007 Jul. 3.03.00 Space Navigator 3D mouse / Advanced game controller settings / draft mode / shadow expression / Internationalization (UNICODE, traffic rules etc.) / Support for creation of transparent road crosssections / real-time shading



2008 Aug. 3.04.00 Edit traffic texture and building / Full screen / Simulation panel / Driving interaction / Scenario / **Driving simulation plug-in / Shape file plug-in**



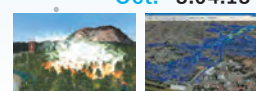
2009 Feb. 3.04.04 Scenario function expanded / Vehicle wheel rotated / Displaying rudder angle function / UC-win/Road data and DB supported / **GIS plug-in**



Feb. 3.04.05- **Micro Simulation Player plug-in**

-Oct. 3.04.13 **Motion Platform option**

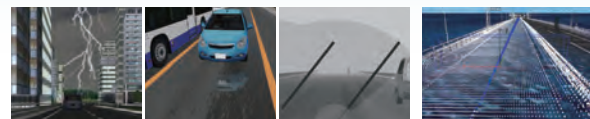
Fire and smoke expressions / **Eco-Drive plug-in** / **OSCADY plug-in / xpswmm plug-in**



Nov. 4.00.00 Lighting function / 3D stereo display / context Cuttings rounding function / traffic connector / Support landscapes of the world / **Integration of plug-ins**



2010 Aug. 5.00.00 **UC-win/Road for SaaS Plugins** / FBX LOD Creating rivers / Improvement in road section edit / 3D texts / Vehicle dynamics model / Navigation function / Special weather function / **Point cloud data modeling Plugin**




2011 Jan. 5.00.03 It supports Korean, Chinese (Simplified, Traditional) / Micro Simulation Player / VISSIM import

Jun. 5.02.00 Improved vehicle dynamics model /

Italy version to be available / Tunnel lighting / Keyboard driving / Avatar display / Road attribute / Animated steering wheel / VISSIM to be supported / **Noise analysis / Replay function / Cluster function**



Jun.  **VR-CLOUD** 1.00.00 VR-Cloud® Release

Dec. 6.00.02 **EXODUS Plugin / Replay Plugin /**
 Movement of walking crowd / Animation of
 FBX model / RoadDataViewer / **IFC Plugin /**
12d Model Plugin / Tsunami simulation /
 Terrain 5m mesh / Improvement of smoke
 visualization / **Plugin for loading parking model**
 New weather visualization /
 Extended driving simulation



2012 Dec.  **VR-CLOUD** 2.00.00
 -Feb. -2.02.00

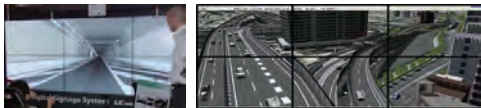
Android™ client /
 Improvement of latency / Japanese, English and
 French / Log output for access and error /
 Mouse wheel operation / Video encode function



Mar. 6.01.00 World File support for street map import
Fluid analysis plug-in
 VTK visualization tool kit
Munsell color space output plug-in
Legion plug-in



Apr. 7.00.00- **Cluster option 3D model output plug-in**
 -May 7.01.00 Off road function / Sky dome function /
Presentation function of xpswmm plug-in /
 Video card manufactured by ATI has been
 supported / **Sidra plug-in /** Road
 frictioncoefficient μ by linking with CarSim
 is supported / AutoCAD Civil 3D 2012



Apr.  **VR-CLOUD** 3.00.00-3.01.00
 -May

Audio supported / Online help / JP/CH/KO supported
 xpswmm simulation (analysis for flood and tsunami)

Sep.  **VR-CLOUD** 4.00.00

Home menu / video in script and scenario
 Selection of the vehicle model for driving simulation

Oct. 8.00.00 **Expanded cluster function / Multimedia support**
 Improvement of headlight and sound /
Tsunami plug-in / Expanded Driving
 simulation function / Motion control inside
 an intersection / Log output / FBX 2013 /
EXODUS, Micro simulation player scenario /
 Line shape for railway /
Improved Loading parking modelplug-in /
 Terrain creation / Mirror function
 Lighting function / Wiper function



2013 Dec.  **VR-CLOUD** 4.01.00-4.02.00
 -Apr.

Photo function and 3D bulletin board /
 Conference function / Performance
 improvement by auto reset of traffic
 amount and environment



2013 May 8.01.03 UC-win/Road free viewer output plug-in

9.00.00 Expanded traffic simulation function /
 Parametric model / Driving trailer /
 FBX models
Cluster system for multi users' operation /
Expanded Micro Simulation Player

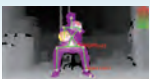


2014 Jun.  **VR-CLOUD** 5.00.00-5.02.00
 -Apr.

Improvement of user interface
 and home menu
 VR-Cloud® script plug-in



Apr. 9.01.00 ACC Automatic driving / Universal UI plug-in
 added / **Function to control the other vehicles**
via scenario function / Kinect plug-in /
Scenario control of traffic snap shot /
Photo-log Point Cloud Modeling Plug-in



Jul. 10.00.00 Import/export DWG
 Functions of train and crowd movement
 enhanced / Head tracking / **Clustering**
Aimsun plug-in / Oculus Rift plug-in
Driver training plug-in



2015 Jan. 10.01.00 Supports aerial photo import for reference
 points / Supports LandXML railway alignment
 Texture compression /
 Falling off while walking
AutoCAD Civil 3D 2015 support

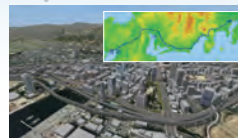
Feb.  **VR-CLOUD** 6.00.00

3D models can be selected / 3D model uploading
 Saving of UC-win/Road Project / **Rhino plugin support**

2016 Jun. 11.00.00- Lens simulation Rendering engine overhaul /
 -Oct. 3DCAD Studio® plug-in / **OSM plug-in /**
VR-Cloud® plug-in / Sfm plug-in /
cycleStreet linkage Plug-in / Oculus plugin /
UAV plug-in / Digital national land map plug-in



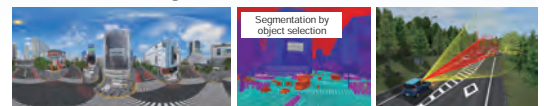
2017 Feb. 12.00.00 Support for 64bit native / SILS simulation control
 -Jul. -12.00.01 and cluster synchronization method /
 Information display in 2D view / User variable
 number / Camera Sensor Base plug-in /
 Object reference function by object custom ID /
 Quick building/ Batch movement of object /
UAV plug-in Ver.2 / Simulink plug-in /
OpenFlight plug-in / Assessment plug-in /
log export / HTC VIVE plug-in / Simulation Real
Time Link / A/D Board Linkage / Laser Sensor
Option / Driving Simulation Plug-in · Sfm Plug-in



2018 Feb. 13.00.00 Earthwork volume calculation / Zone function /
 -Jul. -13.01.02 Enhanced OnlineMap Import plug-in option /
 Improved conversion accuracy of latitude and
 longitude and rectangular coordinates /
 Model integration /
 Parallel process of road model creation
 Improved driving algorithm for traffic flow
Replay plug-in / Civil 3D plug-in
Improved Point Cloud modeling plug-in
HTC VIVE plug-in / UAV plug-in
FOVE plug-in / D-BOX plug-in



2019 Oct. 14.00.00 360 degree video creation / Shader customization
 Enhancement of Simulation Real Time Link Plug-in
 Object detection / Linkage with gaze tracker
 Linkage with VISSIM



2020 Apr. 14.01.00 4D Simulation Plugin
 Enhanced GSI tile reading function of
 the Geospatial Information Authority of Japan
 Expanded recording capabilities Enhanced
 acoustic simulation function



Jul. 14.02.00 Enhancement of linear calculations and
 spreadsheet
 Improvement of road driving function
 FBX file output
Improvement of log output function

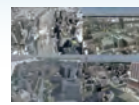


2021 Feb. 15.00.00 IFC file support extension



nD multidimensional
 simulation / C++ API /
 Improved drawing speed

2022 Jun. 16.00.00 CityGML import
 OpenDrive import
 Multi user scenario
 Road section CSV
 input/output
 UAV plug-in:
 Emergency stop button



2023 7月 17.00.00 CityGML data export
 Flood Navi support
 VISSIM linkage
 VISSIM2023 support
 VISSIM TCP/IP linkage
 VISSIM multi user
 Python Interface (COM API)



Examples of Practical Use

VR Utilization / Proposal introduction, User introduction

Bridge/Tunnel

3DVR is effective for choosing the type of bridge. Designs from such FORUM8 software as "UC-1 Series", "Engineer's Studio" can be imported as bridge models in "3ds" format. Visual examination of bridge type and color, and shadow analysis with consideration to different times of the day and the times of the year are possible - using the driving simulation, pedestrian view and flight simulator, interactive assessment can be carried out effectively.

Lighting up bridges can be displayed.



Scene of a car running over Great Seto Bridge



Comparison of VR Model with actual photograph
(Left: actual photograph; Right: UC-win/Road Visualisation)

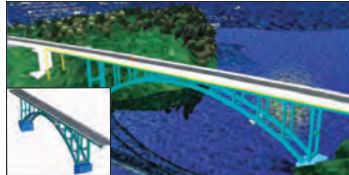


Nippon Koei Co., LTD.

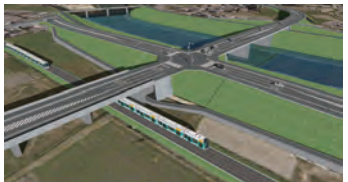
Suspension bridge



3DS export from Engineer's Studio®



11th 3DVR Simulation Contest
"Aiming for "Alleviating traffic jams in the original route especially near railroad crossings and narrow bridges"."
Nishitetsu C.E. Consultant Co., Ltd



5th 3DVR Simulation Contest Excellent award
"Machida city, Aibara-Tsuruma line simulation"
Bureau of Construction Tokyo Metropolitan Government
Minami Tama Higashibu Construction
Office/Japan Bridge & Structure Institute, Inc.



Display fine shadows projected from the bridge

13th 3DVR Simulation Contest
Honorable Judge Award
"Construction VR Simulation for the bridge replacement"
SOZOTECH



15th 3DVR Simulation Contest Nomination Award
"Simulation of bridge girder construction via overhang construction technique"
Sumitomo Mitsui Construction Co., Ltd.



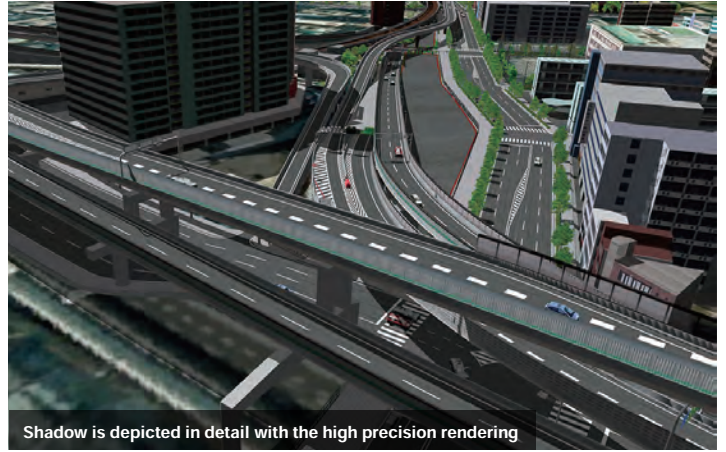
Inside the Tunnel



Tunnel lighting



17th 3DVR Simulation Contest Honorable Judge's Award
"VR simulation of evacuation from Metropolitan Expressway Yokohama Kita line"
Kanagawa Construction Bureau, Metropolitan Expressway Company Limited



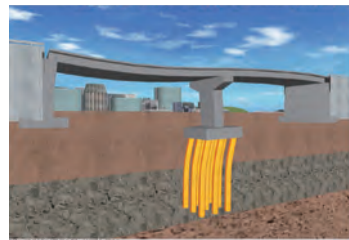
Shadow is depicted in detail with the high precision rendering

Visual comparison of a bridge before and after the removal of elevated highway on Metropolitan Expressway (Nihonbashi River)



Before After

Import 3D models from Engineer's Studio®



Incidental work on bridge surface using "Segment Wings for an Arched New-bridge Method".
Posted on "Advanced Project" No.6



"Segment Wings for an Arched New-bridge Method" can shorten construction period and at the same time take surrounding landscape into consideration.

8th 3DVR Simulation Contest GRAND PRIX
"VR Data for Ohashi Junction of Metropolitan Expressway"
Metropolitan Expressway Company Limited



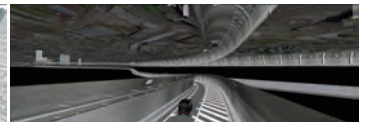
2 spiral curves in a highway covering 70m height difference



Four-branches intersection on limited land



Plan as the second longest tunnel in the world



Modeling of Shinjuku Line-Shinagawa Line Tunnel



Examination of travel-supporting measure with Drive Simulator



Studying Position optimization of the display
7th 3DVR Simulation Contest Honorable Judge's Award
"Simulation of an evacuation in an aging society using 3D VR"
Taisei Engineering Co., Ltd.



Railroad

Just as with the simulation on roads, railways and other mass transit systems can be simulated - flying junctions, underpass, overpass and other structures can be created easily for planning, and for redevelopment of stations, 3D VR is ideal for designing Pedways and other facilities.

Railway simulation



16th 3DVR Simulation Contest
"Reproduction of the tramway line and its surroundings in Omuta city"
Keisuke Ijiri office



13th 3DVR Simulation Contest
"Tokyo Metro Simulator"

Tokyo Metro Co., Ltd.



10th 3DVR Simulation Contest
"System for checking the position where equipments are installed"
Japan Railway Construction, Transport and Technology Agency



17th 3DVR Simulation Contest

"VR simulation for Hokkaido Shinkansen Sapporo station design and construction"
Hokkaido Railway Company



Train Simulator VR (details:P64)



Harbor/Airport

For models of harbors and airports, simulation of a large area is possible with aerial photographs. Sea routes of vessels can be defined, enabling dynamic expression of various vessels. Also, by defining airplanes as flight models, take-offs and landings can be visualized. For coastal and underwater environments, reflection on the water can be visualized and diverse 3D models are available.

16th 3DVR Simulation Contest

"Education training of Haneda Airport by VR simulator" Meiwa Sky Support Co., Ltd.

Take-off and landing of airplanes can be defined by flight paths



Underwater models



Gantry crane



Ship handling simulator



17th 3DVR Simulation Contest
"VR data for ship operation simulator"
AKISHIMA LABORATORIES (MITSUI ZOSEN) INC.



Traffic

Traffic flow and vehicle profiles can be altered in traffic simulation, which also takes into consideration vertical slopes and the vehicle performance. The traffic after the opening of a new bypass or a large attraction, such as a shopping mall, can be simulated, and linkage with such traffic analysis software as "TRACKS" enables UC-win/Road as a simple visual 3D traffic simulation.

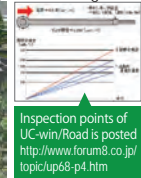
12th 3DVR Simulation Contest Grand Prix

"VR Simulation for Traffic Regulation to Divert Traffic During Night Construction"



Traffic simulation Clearing house

Japan Society of Traffic Engineers



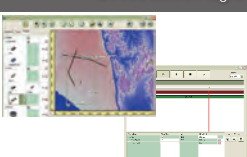
The 18th 3D VR Simulation Contest
Honorable Judge Award
"Hanshin Expressway Vehicle Trajectory Simulation"
(Hanshin Expressway Company Limited)



Micro simulation player plug-in



S-PARAMICS Plug-in



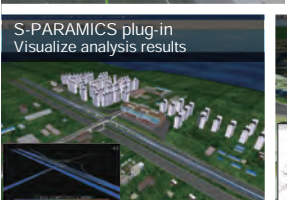
OSCADY PRO plug-in
Traffic light design software



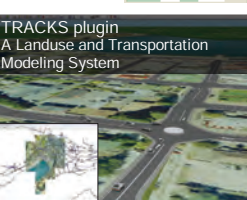
VISSIM plug-in
Load traffic flow analysis results,
run traffic simulation



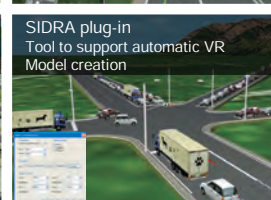
S-PARAMICS plug-in
Visualize analysis results



TRACKS plugin
A Landuse and Transportation
Modeling System



SIDRA plug-in
Tool to support automatic VR
Model creation



Aimsun plug-in
Dynamic traffic distribution function



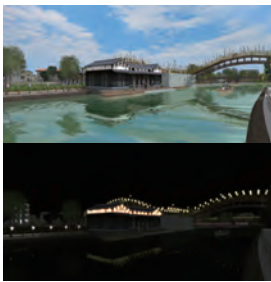
The 18th 3D VR Simulation Contest
Honorable Judge Award
"VR simulation for consensus creation in
the traffic nodes improvement project"
(Asahi Sokuryo Sekkei Co., Ltd)



Urban planning

When designing parks and streets, the simulation is ideal for deciding where to plant trees and which trees to plan, since all of the four seasons in 5 or 10 years from now can be visualized. For redevelopment of streets and other public spaces, 3D traffic simulation and dynamic city simulation with 3D human models are ideal. Using the artificial light feature, the cityscape at day and night can be evaluated.

Landscape assessment of day and night



9th 3DVR Simulation Contest
"VR utilization for consensusbuilding toward landscape formation of design city, Kobe"

Directorate general for Kobe city planning



14th 3DVR Simulation Contest
"Kitsuki City jokamachi (castle town) future proposals"

Kitsuki City, Oita Prefecture



Maebashi Kurashi Tech promotion
"Digital Twin Safe Driving Scoring"



11th 3DVR Simulation Contest
Simulation for urban planning in front of Hokuriku Shinkansen "Iiyama station"

Iiyama city



14th 3DVR Simulation Contest
"Dream Zone - Creating the Town You Want to Return!"

Awaji City Yumebutai Sustainable Park, Compact City Project



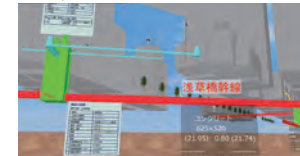
15th 3DVR Simulation Contest
"Mizuki Shigeru Road in Sakaiminato City"



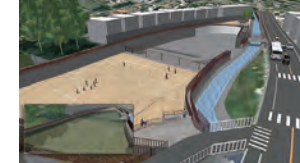
Posted on "Advanced Project" No.7
Landscape and aesthetics simulation with scenarios to review the "Rekimichi Project" and other road projects centered around the world heritage Himeji-jo Castle.



The 16th 3D VR Simulation Contest Idea Award
"Integration of 3D models from sewerage pipe line investigation data (Kanno Jyoho Katsuyo Yugen Sekinin Jigyo Kumiai)"



The 17th 3D VR Simulation Contest Honorable Judge Award
"VR data utilized for Nanase River renovation plan" (Kyoto Kogakuin High School)



13th 3DVR Simulation Contest
"Residential Building Design VR Simulation for N House"

atelier DoN



16th 3DVR Simulation Contest
"A redevelopment proposal based on a model of the maritime area in Kisarazu city"



12th 3DVR Simulation Contest
"VR Model of Osaka's Underground Shopping Mall"

Graduate School of Osaka University



"City and Architecture blog" series by Mr. Tomohiro Fukuda is published in Up&Coming. FORUM8 challenges to model 3D digital cities of cities and architectures introduced in his article.



River

For use in river improvement and maintenance projects, movement of the water and reflection on the surface can be utilized.

The 18th 3D VR Simulation Contest
Honorable Judge Award
"Bridge light-up simulation along Meguro River"



6th 3DVR Simulation Contest
"Hosei University around Ichigaya Campus VR Simulation"

Civil and Environmental Engineering, Faculty of Engineering and Design, Hosei University



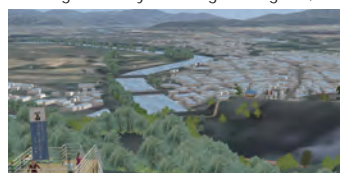
Use VR for tourist information and history presentations

Exhibition system using touch sensors



16th 3DVR Simulation Contest
"A proposal for the initial improvement of the government-designated historic site of the ruin of Aterazawa Tateyama castle in Oe, Yamagata using 3D point cloud data"

Sagae Survey Civil Engineering Co., Ltd.



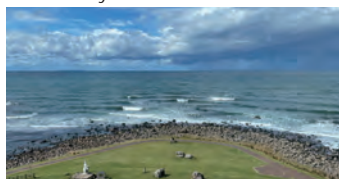
17th 3DVR Simulation Contest
"Test VR data for projection mapping on Enyuji Temple"



Tourism

It can be used for tourist project proposals with exhibition systems and publications using VR.

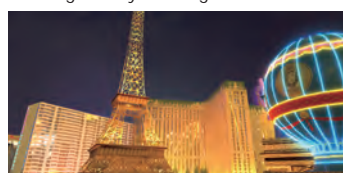
AR tourism service
Nikaho City, Akita



Virtual Tour 3D Digital City Kamakura

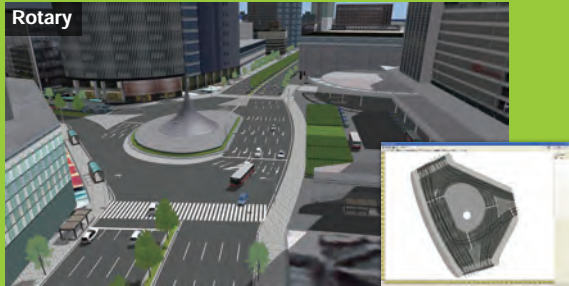


3D Digital City Las Vegas

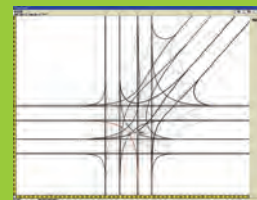


Road Simulation

For evaluation of slope designs, such as cutting and banking of the road and small ramps, simulations from inside and outside the vehicle with variable traveling speed are available. Using the wide range of functions available, it is possible to generate pedestrian crossings, pedestrian bridges, tunnels and bridges easily, and to visualize in detail complicated shapes, textures drive paths and traffic rules of junctions, and the On/Off ramp feature allows quick creation of intricate interchanges. Traffic profiles can then be set according to hourly traffic volume and vehicle type and the traffic simulation can be used to visualize the congestion of roads and comparison of traffic condition in a road network with and without bypass projects.



▼Traffic Generator / Traffic Flow Traffic is generated according to vehicle type ratio and hourly traffic volume to produce a traffic flow that allows collision prevention.



The 18th 3D VR Simulation Contest Nomination Award
"VR simulation of social infrastructure planning"
(Toho Development Co., Ltd.)



14th 3D-VR Simulation Contest
"Design of the cloverleaf interchange"
Qingdao Municipal Engineering Design Institute, China



9th 3DVR Simulation Contest
"Proposal of underground installation of Hanshin
expressway and improved city using VR"
Faculty of Policy Studies Kansai University



6th 3D-VR Simulation Contest
"Ishikawa-cho Junction Simulation"
Kanagawa Construction Bureau,
Metropolitan Expressway Company Limited



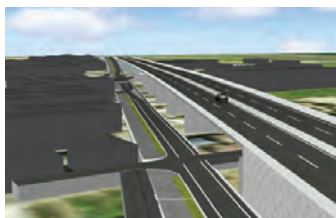
The 14th 3D VR Simulation Contest Honorable Judge Award
"Underground rapid road design project"
(RIOH)



The 18th 3D VR Simulation Contest Idea Award
"Snow blower simulator"
(NICHIGO CORPORATION)



Sim. of Nagano Higashi bypass after completion

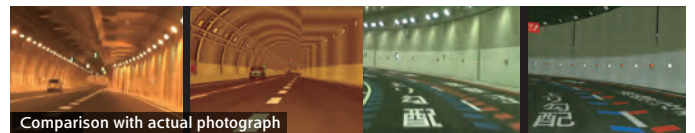


Daishi Junction



8th 3D-VR Simulation Contest
"Ohashi Junction of Metropolitan Expressway"

Metropolitan Expressway Company Limited



Posted on "Advanced Project" No.6
"Nagano Higashi bypass" that is part of "Nagano
circular street" connecting bureaus outside Nagano
city and runs along Chikuma River for the purpose of
easing traffic congestion.

Posted on "Advanced Project" No.5
"Kawasaki longitudinal expressway" and "Daishi
ventilating station" under construction, that would
collectively create a wide road network connecting
several major roads.

Route 3/4/15 in Tama



Matsuyama circ. rd. / Botchan Stadium



Posted on "Advanced Project" No.5
Intersection improvement and construction of
carriageways & walkways on "Route 3/4/15 in Tama"
and "Route 3/36 in Machida", one of the top priority
urban-planning projects for the region.

Posted on "Advanced Project" No.1
"Matsuyama circular road" expected as a
foundation of local vitalization in addition to
traffic congestion mitigation.

Comparison of VR Model with aerial photograph of the Tokai Circular



Comparison of VR Model with actual photograph of the Hokusei Bypass



Construction Simulation

UC-win/Road can be used for 3D construction simulation of land reclamation, erection of temporary structures, underground electric wire installation, visual examination of pedestrian overpass removal and construction simulation with moving models - there are 3D models of heavy machineries with moving parts available. UC-1 series temporary works and ground 3D model are also available.

Construction Stages

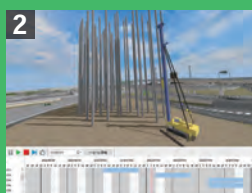
5th 3D・VR Simulation Contest Grand Prix
"Construction Simulation of Daishi Junction and Daishi Ventilation Facility"
Kanagawa Construction Bureau, Metropolitan Expressway Company Limited

1. Earth retaining / ground improvement : drive a sheet pile and a ground reinforcement pile.
2. Pile compaction : driving a PHC pile and a SC pile with pile driver.
3. Excavation/foundation/backfill : excavation with backhoe and foundation compaction
4. Reinforcement steel erection : reinforcement steel erection with 100t crawler crane
5. Erection of scaffolding/Pouring Concrete/Precast Concrete erection : SRC skeleton completed
6. Finishing Exterior wall/curtain wall erection : exterior finishing work
7. Dismantling scaffolding/waterproofing the roof/interior-completion : finish dismantling scaffolding

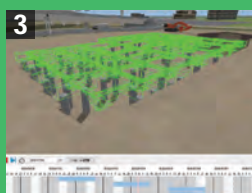
4D simulation



Before Earth Reinforcement



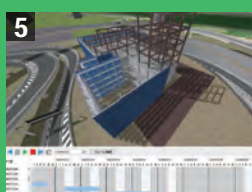
Piling



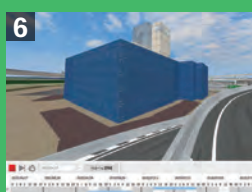
Excavation, foundation, backfill



Reinforcement steel erection



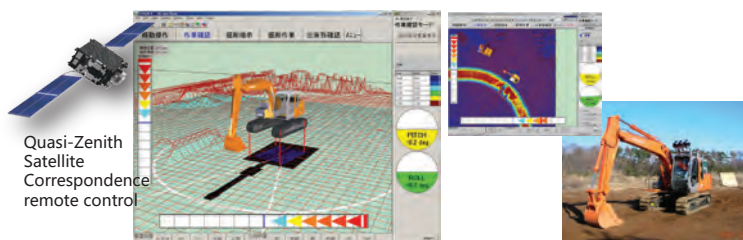
Scaffolding, ConcCrete Pouring, Precast Concrete Erection



Exterior and Curtain Wall

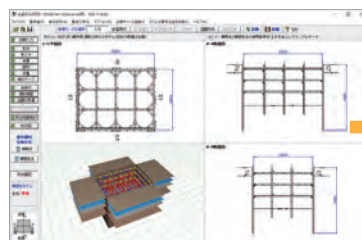


After Dismantling of scaffolding and waterproofing the roof and completion

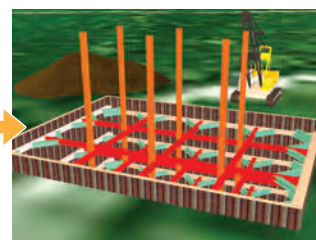


Quasi-Zenith Satellite Correspondence remote control

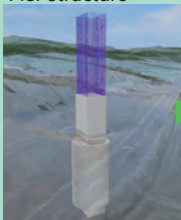
Man-machine interface
Joint research with "Japan Construction Method and Machinery Research Institute Public Works Research Institute"



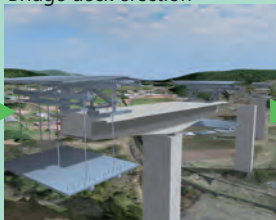
UC-1 Temporary sheathing work design 3D model utilization



Pier structure



Bridge deck erection



Driving simulation



15th 3DVR Simulation Contest

"Simulation of bridge girder construction via overhang construction technique" Sumitomo Mitsui Construction Co., Ltd.

Display Simulation

Arrangement and space plan in the exhibition booth or showroom can be created efficiently. Simulations for a variety of purposes are available: visibility of signboards and panels, traffic line through the booth, evacuation in the case of an earthquake or a fire, navigation to the site, and usage on cloud.

Simulate several exhibition venues and showpieces



FORUM8 Design Festival Hall Navigation (Shinagawa Intercity Hall)



Shinagawa Sta. turnstile



Towards Konan exit



Skyway walkway



Skyway walkway



Intercity entrance



Walk through Skyway



Walk through Skyway



Down the escalator



B1F Hall entrance

Proposal

A variety of simulations provided by VR can be applied not only in urban plans but in various fields such as disaster prevention and mitigation, evacuation study, medical care, education, and tourism.

Disaster prevention VR

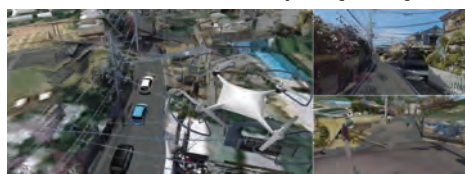
The 3-D disaster representation of presentation is possible for disaster prevention such as "flood" simulation by water level alternation feature and traffic simulation with road failures.

3-D tsunami simulation



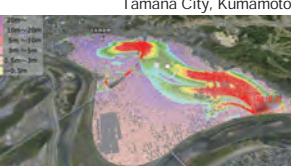
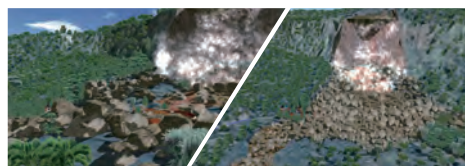
"VR data utilized for Nanase River renovation plan"
Kyoto Kogakuin High School

"Tsunami rapid evacuation education system"
Akita Prefectural Industrial Technology Center
Akita University



"Debris avalanche simulation"
Gunma University Engineering Department

"Flood/Evacuation simulation using PLATEAU"
Tamana City, Kumamoto



"Using VR to Communicate to the Locals Over Debris Avalanche Countermeasure"
Mitsui Consultants Co., Ltd.



Debris-Avalanche simulation



Using "Kanako" developed in the Graduate School of Agriculture, Kyoto University, as a solver.

Flood and earthquake disaster simulation



16th 3DVR Simulation Contest
"i-hazard map PROJECT -Proposal of the next generation i-hazard map concept-"
Mitsui Consultants Co., Ltd.



16th 3DVR Simulation Contest
"VR for research on the effects of digital signage on driving operation and driver performance"
University of Seoul



12th 3DVR Simulation Contest
"VR Simulation that uses Tsunami/Evacuation Analysis Results"
Pacific Consultants Co., LTD.



Evacuation Fire VR

Advanced Evacuation/ Fire VR simulation has been available by linking with the evacuation software "EXODUS/SMARTFIRE" developed by the Fire Safety Engineering Group at the University of Greenwich.

Linkage with "EXODUS / SMARTFIRE"

The calculation method using EXODUS was approved by the Tokyo Fire Department

Calculation method by evacuation analysis EXODUS is certified as Evacuation calculation method certified by Tokyo Fire Department".

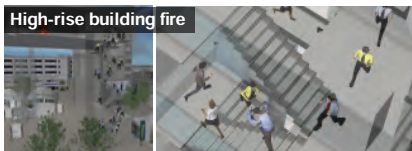
Flight accident



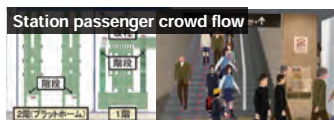
Tunnel fire



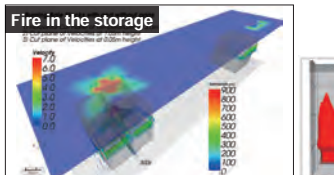
High-rise building fire



Station passenger crowd flow



Fire in the storage



"Evacuation simulation of Nijibashi"
Transportation Network Center Building J
(Shanghai T.E.F Building Safety Consulting Co.,Ltd)

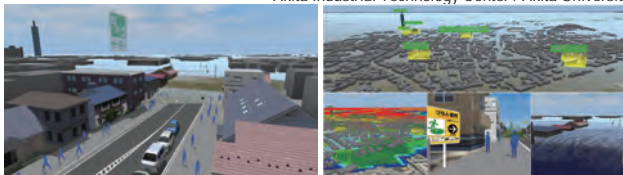
◀ Simulation test of covering material

Left: SMARTFIRE simulation prediction
Right: Actual test data



"Education system of rapid evacuation from tsunami"

Akita Industrial Technology Center / Akita University



"VR simulation of evacuation from Metropolitan Expressway Yokohama Kita line"
Kanagawa Construction Bureau, Metropolitan Expressway Company Limited



Training system for tunnel administrator via VR
BMIA(France)



FORUM8 won
"International tunnel award"

FORUM8 Co. Ltd. won the award under the category Safety Initiative of the Year in the "2011 NCE International Tunnelling Awards" with BMIA, France on December 1st, 2011.

The new simulation standard of a Chikko type evacuation guidance system
(Chief of Standard Planning committee: Yukio Ota)



Medical VR System

Solution in a hospital and medical front using 3DVR

Introduction and its purpose of VR

- Improvement of medical front
- Communication with local community
- Share new design concept with staffs and hear their requests
- Energy saving and environment-friendliness
- Secure the clear materials to make some decisions and risk management strategy



Review and confirm the image of the hospital's interior

Rehabilitation of stroke patients

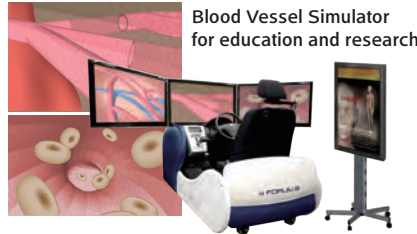
A virtual driving simulator for assessing driving skill of patients undergoing rehabilitation. Patients' health condition and maneuvering skill can be tested.



Case study: "Road monitoring system" Temasek Polytechnic (Singapore)



Artificial knee joint implant surgery simulation



Blood Vessel Simulator for education and research

Poor eyesight expression



Colour blindness expression

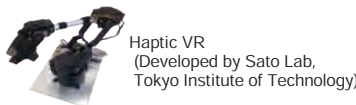


Telemedicine system

VR-Robot coordination system that actually controls the robot in accordance with operations performed within VR space



Systems using haptic technology are being considered for training in diagnosis and surgery.



Haptic VR (Developed by Sato Lab, Tokyo Institute of Technology)

Wheel simulator (P.73)



Driving Simulator for seniors (P.68)

Training flow



Drunk driving simulator



Rehabilitation & Healthcare solutions

Fitness and disease prevention by using IT

Driving simulator system for rehabilitation

Driving a car activates the brain and can be a rehabilitation of physical functions. It can be used for a training for rehabilitation such as improving driving skills and observing traffic rules.



Driving determination and reaction diagnosis simulator (Iwakura Hospital)



Safe driving evaluation diagnostic simulator (Medical corporation upper wing Kiriwakai Tsum Urayasu Hospital)

System to assist fitness and get rid of lack of exercise

Subjects can improve their physical strength while enjoying the exercise in the VR space according to their purpose and level. Users can create VR contents flexibly with UC-win/Road for each purpose. The system is able to be cooperated with other devices, and for example, a simple system configuration such as steering + pedals or HMD.



Entertainment

By linking VR with advanced technologies and various devices, FORUM8 offers content and systems that can provide effective and education and learning experience visually and intuitively. It can be used for various purposes by customization, such as public relations exhibitions and highly appealing promotions.

10th 3DVR Simulation Contest

Kamen Rider, cyclone racing simulator (TOEI Company, Ltd)
Dodge the attacking Shockers and approaching rocks and flames to aim for the goal!



13th 3DVR Simulation Contest

Tokyo Metro Simulator (Tokyo Metro Co., Ltd)
In addition to stopping at the station, you can experience driving the train over a railway bridge and through a tunnel.



15th 3DVR Simulation Contest

Mizuki Shigeru Road in Sakaiminato City (Sakaiminato City)



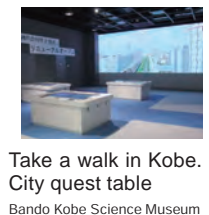
Horse riding simulator (KidZania Koshien, 2016)

Horse riding experience at "Horse Park" in KidZania Koshien.



17th 3DVR Simulation Contest

Autonomous driving simulation of mining dump truck
Hitachi Construction Machinery Co., Ltd.



Take a walk in Kobe. City quest table
Bando Kobe Science Museum



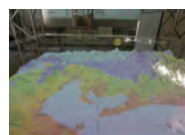
3D Stereo DS
Hamagin Space
Science Center, 2009



ITS Driving Simulator
Toyota Auto Salon
Amlux Tokyo, 2011



Projection Mapping Table
State of the Art Technologies
Expression Association



3D visualization (3D model for mapping)
Nagoya Univ. Disaster
Mitigation Research Ctr.



Tsunami evacuation training system
Technology Center /
Akita University



Kobe city center 1/1000 city model
Directorate general for
Kobe city planning



Virtual "town" model
Construction Technology
Exhibition Hall (Construction
Fun Techno Hall) Expo 2008

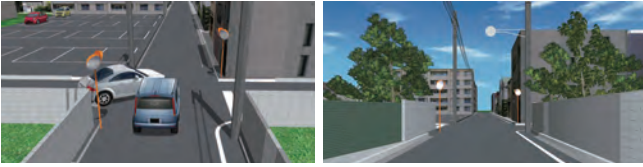
Traffic accident VR

VR is very useful for the simulation of accidents

Traffic accident simulation



3D Modeling by VR based on accident record, etc.(Provided by Keio University)



Store planning simulation

Utilize VR for various plans and simulations

- 1.Flow line plan of people and vehicles (large-scale store)
- 2.Building and Parking arrangement plan
- 3.Green space plan(large-scale store)
- 4.Lighting plan
- 5.Advertising pillar / billboard arrangement plan
- 6.Simulation including surrounding roads
- 7.Flow line plan of inside the store
- 8.Security guards arrangement plan



VR System

We are also developing the customized system including the hardware with a core of UC-win/Road technology such as various kinds of driving simulator, VR simulator, ITS simulator, walking simulator and GIS system etc.

Hardware response system Tracking sensor / Face mount display / 3D stereo viewing

Large 4K VR Stereoscopic Driving Simulator
(NILIM, 2021)



Driving Simulator for seniors
(Meijyo University, 2012)



Driving simulator for highly sophisticated research purposes
(Kyushu University, 2012)



Vehicular Dynamics Research & Evaluation System –High-Precision Driving Simulator
(Nagoya University, 2015)



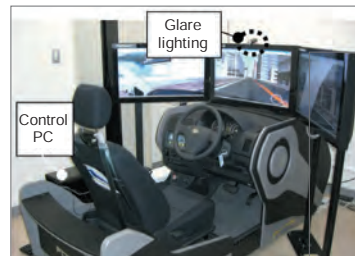
Drive simulator (Isuzu Motors Limited, 2018)



8DOF Traffic Safety Simulator
(Highway Ministry of Transport in China, 2014)



Driving simulator for highly sophisticated research purposes
(Kyoto University, 2012)



Posted on "Advanced Project" No.6
"Driving Ability Simulator" for senior drivers that measures and evaluates visual sense and ability of recognizing and judging in a real driving simulation.

Driving Simulator
(Toyota Auto Salon Amlux Tokyo, 2011)



ITS Driving simulator
(Toyota Auto Salon Amlux Tokyo, 2013)



Driving Simulator
(Hamagin Space Science Center, 2009)



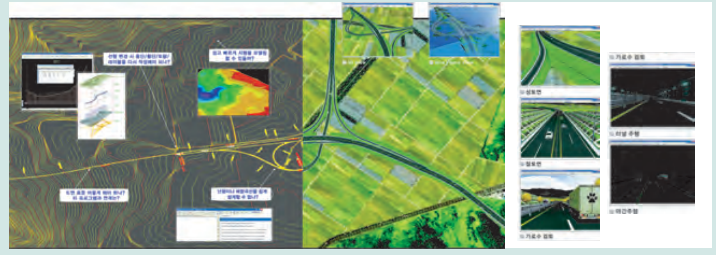
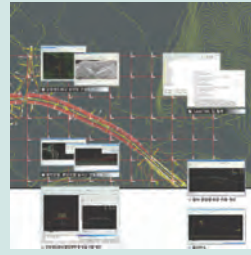
Development program

Examples from overseas

Overseas users have been utilizing UC-win/Road VR. It has been introduced in design companies, engineering companies, government agencies, universities and research institutes, and further projects are in the pipeline.

Korea/CAD&VR utilization cases

RoadProjector - Civil 3D - UC-win/Road



Global Dealer Network International Partners / International Offices / Dealer network

FORUM8 Technology Development (Shanghai) Co., Ltd
Qingdao FORUM8 Software Technology Co., Ltd.
Taiwan FORUM8 Software Technology Co., Ltd.
FORUM8 Vietnam Limited Liability Company
Offices : London
Overseas Agencies : China (Beijing, Tianjin, Dalian, Shenzhen, Hong Kong, Taiwan), Korea, USA etc.



Shanghai, China



Beijing, China



Hong Kong



Brazil



Paris, France



Kuala Lumpur, Malaysia



New York



New Zealand



Hanoi



Thailand



Bahrain



Korea



Taiwan



Venice



Strasbourg



Santorin, Greece



Ho Chi Minh



Vienna



Boston



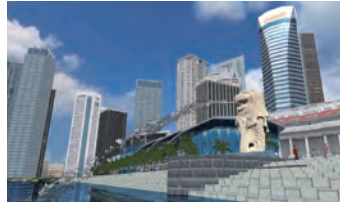
Melbourne



Myanmar



Singapore



Peru, Machu Picchu



Volos



Iodz



User Examples

Use of the 3-D-based visual tools, which is the easiest tool for improved basic designs, consensus building with residents, and improved accountability for public projects, will be a standard design approach in the near future. UC-win/Road has already been utilized as a standard tool by users in diverse fields.

Up&Coming User Introduction

Excerpts from our public relations magazine user introduction

Construction and Water Department, Iiyama City, Nagano Pref.

<http://www.city.iiyama.nagano.jp/>

Digital Garden City

MOVIE <https://youtu.be/ftRYZkcMZMg>

Town Planning Section / Shinkansen Station Area Development Section
Expectation Rises Towards Opening of "Iiyama Station" of Hokuriku Shinkansen (the Bullet Train) Along with Town Planning in Progress Simulation with UC-win/Road Is Used for Study in the Office and Public Relations

- Environment of the City and Positioning of the Hokuriku Shinkansen: Active climate in introducing ICT
- Possibility of VR Focused on Use of UC-win/Road
- From the New Station Circumference to Design of Town Planning



Kobe Enterprise Promotion Bureau

Kobe City Government

Digital Garden City

MOVIE <https://youtu.be/vUbK1rB6g5I>

Making Efforts in Invitation of Enterprises and Industrial Promotion through Spreading Simulation Using Supercomputer. Utilize UC-win/Road Data for Urban Plan Also in Activities of Inviting International Conferences

- Urban Strategy with Emphasis on Design, New City Administration Drawing Attention
- Working Both for the City and FOCUS, KEPB Supports Industries with the Supercomputer
- Diverse Ways of Using VR, Cooperation with FORUM8 Evaluated
- Towards Wider Dissemination of Simulation



Shikoku Regional Development Bureau, MLIT

Matsuyama Office River and National Highway

<http://www.skr.mlit.go.jp/matsuyam/>

Simulation by 3-D Real-time VR Makes a Difference At Local Meetings and the Open House

- Covering the river Shigenobu and the Ishite, and main national highways in Chuyo and Toyo region
- New congestion mitigation measure in Matsuyama urban area - Matsuyama Outer Ring Road Project
- Operating a driving simulator using "Road", diverse availability is noted



Himeji City

System Management Div., General Affairs Dept., Mayor's Office, Street Construction Div., Road Dept., Construction Bureau

<http://www.city.himeji.lg.jp/>

To Emphasize Development of Environment for Utilizing IT on a Agency-wide Scale in Accordance with the Master Plan and Computerization Plan of the City - Focusing on the potentiality of 3D Space Simulation, the Tool Supports Examination of Various Projects in Relation with Historical Resources Including Himeji-jo Castle, a Cultural Site of World Heritage

- Towards Town Planning in Consideration of Regional Characteristics Including Himeji-jo Castle
- Idea of Utilizing 3D Space and the Role of Internal Communication Section



Ministry of Land, Infrastructure, Transport and Tourism (MLIT) Planning Division, Planning and Research Administration Department, National Institute for Land and Infrastructure Management (NILIM)

NILIM Takes Responsibility of Developing Related Technologies for Infrastructure DX Promoted by MLIT Part of Utilization of BIM, CIM, and VR, Introduced "Large-scale 4KVR Stereoscopic Driving Simulator" and "VR NILIM" Taking Opportunity of Coronavirus Crisis

- Introduction of large 4K VR stereoscopic DS as a research platform, with an eye toward collaboration with the DX Data Center
- New public relations tool "VR NILIM" expected to be used for further development
- Focusing on ICT's wide flexibility and great potential for development



▲ "VR NILIM (Kokusoken)" that represents Asahi Office of NILIM using FORUM8 Virtual Platform System (F8VPS) It allows not only a virtual tour within the premises but also replay of introduction movies of experimental facilities.

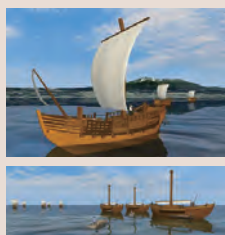
Nikaho City, Akita Prefecture

Digital Garden City

<https://www.city.nikaho.akita.jp>

The Kujukuri Islands of "Kisakata" Originated in the Sector Collapse of Mt. Chokai 2,500 Years Ago, a Place Visited by Basho Spectacle of the Transition through the 1804 Kisakata Earthquake to the Present Reproduced Using FORUM8's AR/VR Technology.

- Reproducing Kisakata Loved by Basho and Others
- Creating AR Capable of Reproducing Kisakata from Sector Collapse of Mt. Chokai to Present, including Kitamae-bune
- Development to WebVR, with a View to Further Effective Use in the Fields of Tourism and Education
- Key to Broad Applicability of AR/VR is Imagination in Line with Regional Issues



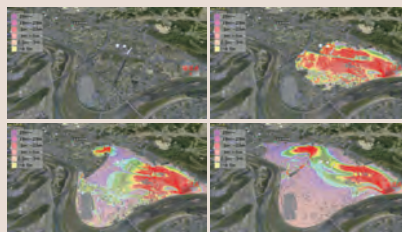
Tamana City, Kumamoto Prefecture

PLATEAU

<https://www.city.tamana.lg.jp>

Applying 3D Urban Models of PLATEAU to Visualization of Disasters Building Simulation of Flood and Evacuation Based on 3D VR Realistically Reproduced by UC-win/Road

- Focus on Inviting Enterprises, Improving the Living Environment, and Promoting DX for a Sustainable Municipality
- From Formulation of a Location Suitability Plan to Realization of a "Dynamic Hazard Map"
- Building a Digital Twin for More Advanced Utilization in Disaster Prevention and Community Development
- Digital City Using UC-win/Road Becoming a "Common Language" for Citizen Engagement



Vehicle Information and Communication System Center (VICS Center)

<http://www.vics.or.jp/>

MOVIE <http://www.forum8.co.jp/user/UC95-user-VICS.html>

VICS - Supports Safe and Comfortable Driving Through Vehicle Information Realizes VICS-DS for a New Service Based on UC-win/Road-DS

- Progress for 16 Years and Current System
- Outline and new services of VICS
- Development Stream of VICS-DS



National Agency for Automotive Safety & Victims' Aid Safety Guidance Department

<http://www.nasva.go.jp/>

To Aim at Contributing to Realizing Secure and Safe Society Through Automobile Accident Prevention and Support to Victims - "NASVA Net", Internet Aptitude Diagnostic System Using 3D VR-based Driving Simulation Diagnosis as Its Core, Has Started Its Service—

- "Preventing, Supporting, and Protecting" as the Mainstay of the Services of NASVA
- The Existing Constraints and the New System Development of VR Application in an Aptitude Diagnostic System
- The Overview of "NASVA Net"



Iwakura Hospital, Chiousha Medical Corporation

Rehabilitation Center

<http://www.iwakura-h.or.jp>MOVIE <https://youtu.be/HNt9PSeGQE8>

Practicing Essential Rehabilitation, Also with Original Approach to Supporting Comeback to Society of Patients Having Impaired Consciousness. Plans to Apply UC-win/Road DS-based "Simulator for Evaluating Driver's Judgment and Reaction" to Examining Whether the Driver can Drive Properly.

- Stance of Putting Emphasis on Natural Healing Power in bright and Spacious Environment
- Aiming at Changing Awareness about Rehabilitation
- Higher-order Brain Dysfunction and Its Influence on Driving



ARTC (Taiwan)

ARTC Automotive Research & Testing Center

<http://www.artc.org.tw/>

Riding comfort of autonomous driving is reproduced with a reality. This simulator is leading the automobile technology in Taiwan.

In order to reproduce the traffic situation in Taiwan with reality, this center introduced FORUM8's UC-win/Road and a driving simulator with 6DOF motion plate and researches the autonomous driving, vehicle behavior, and vehicle sensors that is being controlled by electron.



Japan Construction Method and Machinery Research Institute, JCMA

<http://www.cmi.or.jp>

Using UC-win/Road, JCMMRI Was Able to Address 3D Display Technology of Information for Construction Robot, Expanding Availability of 3-D Real-time VR

- Researches and development commissioned by public organizations
- Examining visions, formulating procedure plans, and ISO standardization for intelligent construction
- Treatment of 3-D data and interface with the human will be the key for Construction robot



East Japan Railway Company

Safety Planning Office, Tokyo Electrical Construction & System Integration Office

<https://www.jreast.co.jp/tesco/>

Leading Security of Project by the Expert Group on Railway Electrification Introducing UC-win/Road DS for Safety Measures in Access to Site by Work Vehicle

- Supporting Safe and Stable Operation of Trains through Electricity-related Services
- Emphasis on Human Resource Development Using "Juku-Suta" to the Fullest Based on the Concept of Safety Planning
- Risk-prediction simulator based on UC-win/Road
- Points of utilizing VR for Safety Measures



National Agency for Automobile and Land Transport Technology Automotive Safety Research Dept., National Traffic Safety and Environment Lab.

<https://www.ntscl.go.jp>

Research on Evaluation Methods for New Technologies and Support for Developing Standards for Collision Safety, Preventive Safety, etc.

New Stationary DS Introduced in Response to Growing Needs for Evaluation Related to Autonomous Driving and Elderly Drivers

- Position of Automotive Safety Research Dept., Unique Approaches to Research
- UC-win/Road DS Adopted for Evaluating Elderly Drivers
- Female Researcher Started Working on VR after Her Arrival, Creating Scenarios for Experimental Purposes
- Evaluate the Support System and Optional functions



Metropolitan Expressway Company Limited

Kanagawa Construction Bureau

<http://www.shutoko.jp>

Simulation of Travelling and Construction of Daishi JCT and Daishi Ventilation Station Demonstrated the Potential of Complex VR Representation of Buildings and Civil Engineering Structures

- Tunnel Section of "Trans Kawasaki Route" is Under Construction to Be Open in the End of 2008
- Team System supports Stance to Make the Best Use of IT
- Background of Adopting 3D-VR and its Secondary Effect at Daishi Ventilation Station



Central Nippon Expressway Company Limited.

Atsugi construction office

<http://www.c-nexco.co.jp/>

Atsugi construction office was opened for reconstructing of Tomei Expressway (Atsugi to Oimatsuda) in 1987. After finishing the reconstructing of Tomei Expressway, they deal Second Toukai Expressway.



Social Infrastructure Business Group, Osaka Branch, CHODAI CO., LTD.

<https://www.chodai.co.jp/>

Road Department 2, Design Maintenance Division 2

Having Created Numerous VRs using UC-win/Road for Various Road-related Planning and Design Work

Making Full Use of VR and DS for Increasingly Advanced Simulations, Including Support for BIM/CIM

- Based in Osaka, Responsible for Planning and Designing Various Roads
- Restarting Use of UC-win/Road About 15 Years Ago Made VR All the More Accessible
- Examples of Major UC-win/Road Applications in Recent Years, and Efforts to Strengthen the System
- Advantages of UC-win/Road, Increasing Needs for It to Support BIM/CIM



◀ Using UC-win/Road freely, plans before and after execution was visualized with 3DVR.

Oriental Consultants Co., LTD.

Transportation Policy Dept., Kantou Branch

<https://www.oriconsul.com/>

UC-win/Road to Utilize for Examining and Proposing Measures on Traffic Congestion and Traffic Safety / Attracted Attention in Studying Guidance by Color at Ohashi Junction, with Application Areas Getting Wider

- Aiming at "Social value creator" at 60th Anniversary
- Position of Transportation Policy Department, Its Original Approach
- UC-win/Road DS to Utilize in Examining Diverse Measures such as Guidance and Road Information Board
- Possibility of Utilizing UC-win/Road DS to Expand
- Stance of User Side and Development of VR technology



Pacific Consultants Co., LTD.

Structure Dept., Transport Infrastructure Division / Transportation Planning Dept., Management Division

<http://www.pacific.co.jp>

Accumulated CIM-related Elemental Technologies Including Simulation. Emphasis on Tsunami Evacuation Simulation, Making Best Use of Expertise in the Transportation Field

- Leading the Industry in Wide-ranging Fields After the 60th Anniversary of Foundation
- Forming an Original Strength Based on ICT
- Structure Dept.: Setting FORUM8 Products as the Basis
- Transportation Planning Dept.: Towards Development of Tsunami Evacuation Simulation Based on Accumulated Expertise in Transportation Systems
- Future Response Based on Practical Use of CIM



Nippon Koei Co., Ltd.

Overseas Consulting Administration

<http://www.n-koei.co.jp>

Placing More Emphasis on Long Span Bridges and Urban Viaducts that Require Advanced Technology

3-D Dynamic Nonlinear Analysis Tools are Effectively Used; 3-D VR Attracts Attention for its Potential

- The Present Conditions of Overseas Business Including Bridges
- "UC-win/FRAME (3D)" is Effective in FS of the Padma Bridge
- Starting to Use "UC-win/Road" at the Opportunity of the Tanjungpriok Port Project
- Managing Overseas Projects with Wiki



Docon Co., Ltd

<http://www.docon.co.jp>

Docon Co., Ltd has worked as the biggest foundation consultant in Hokkaido since 1960. Their business area is not only Hokkaido but also Kanto area, Tohoku area and so on with various fields.



TOYO-GIKEN Consulting Civil Engineers Inc.<http://www.toyogiken-ccel.co.jp>

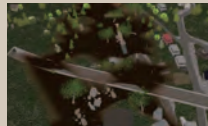
With Design of New Bridge as Main Business, Recently Accumulating Know-hows for Projects of Widening Existing Bridges
Having Introduced a Variety of FORUM8 Software Products, Elaborating Plans for Further Utilization of Them in Consideration of the Future Support for CIM

- Main Business Is Design of New Road Bridges; Covering Pedestrian Decks and Widening Projects as Well in Recent Years
- Introducing a Variety of FORUM8 Software Products, Relative Importance Increases Steadily
- Challenges in Supporting CIM and Future Expectation

**Mitsui Consultants Co., Ltd.**<http://www.mccnet.co.jp>

Diverse Approaches Including Academic-Industry Collaborative Research towards Improvement in Disaster Prevention Technologies about Phenomena of Movement of Sediment and Water. UC-win/Road Effectively Used to Meet Consensus Building or Explanation Needs

- Achievement over half a century for the central areas of river, roads and bridges, port and harbors
- MCC Institute to lead in-house dissemination of 3D data and development of ways of its use
- Committed to International Expansion of Disaster-prevention Business and Joint Researches with Universities
- Utilization of UC-win/Road in Diverse Areas

**Mitsubishi Estate Parks Co., Ltd.**<https://www.mec-p.co.jp>

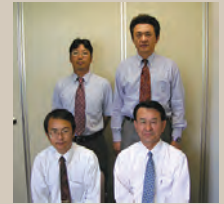
Consulting Business Division

Meeting Advancing Needs for Parking Lots with Unique Solutions Using ICT Using UC-win/Road for Visualization from Design Phase, Introducing Vehicle Trajectory Mapping System for examining articulated buses

- Renamed on April 1
- Actual Condition of Parking Lot Consultancy and Effective Utilization of ICT
- Introducing Vehicle Trajectory Mapping System to Meet the Needs for Examining Articulated Buses
- Linking Vissim with UC-win/Road for Effective Utilization
- New Approach to Advancing Needs for Parking Lots

**Nishitetsu C.E.Consultant Co., Ltd.**<http://www.ncec.co.jp>

- The First Design Dept. to Take Charge of Roads
- Computer Committee Takes Leadership in Incorporating IT in the Whole Company
- The First Project Using Forum8 UC-win/Road Plans In Other Projects
- Plans In Other Projects
- Future Business Environment and Positioning of UC-win/Road

**Shinshu Co., Ltd. Design Department**<http://www.shinshucl.co.jp/>

Producing Results in the Kinki Region focusing on Water-related Services and so on, and in Recent Years on Bridge Repairs, Traffic Management, and Disaster-prevention-related Services. Diverse Products of Ours Introduced to Expanding Use of VR and Analysis-related Software towards New Development

- Through 50 years since its foundation, a Unique Foothold Established in Kinki with Design, Development, and Environment as Main Areas
- Use of FORUM8 Products and Emerging Needs
- Application of UC-win/Road and Expectation for 3D VR Technologies
- To Utilize Advanced ICT for Repair Design

**Central Consultant Inc.**<http://www.central-con.co.jp>

Second Bridge R&D and Waterworks Group, First Road R&D Group, Tokyo Regional Department

Progressive incorporation and utilization of ICT and the bold, yet gentle approaches to innovation. A long advocate of UC-1 product line turned UC-win/Road enthusiast

- Supporting the Social Infrastructure Maintenance for almost 50 years Through High Tech
- Bridge, Waterworks, Road - FORUM8's Role in the Company
- Using ICT to Full Effect
- Keeping Eyes on the Latest CIM (Construction Information Modeling / Management) and VR

**Takenaka Civil Engineering & Construction Co., Ltd.**

Technical Department, Technology and Production Division

<https://www.takenaka-doboku.co.jp/>

Supporting Company-Wide Technical Issues or CIM.Develops 3D Design and Development Support System Based on UC-win/Road with FORUM8

- Leading Technical Support for wide civil engineering work project
- Job site needs and CIM correspondence are coupled
- Development of "3-dimensional design and development support system"
- Utilization system and future development

**Obayashi Corporation**<http://www.obayashi.co.jp>

Information Planning Section, Division Management Dept., Civil Engineering Division

Quick to Take Advantage of 3D Models, Various Advanced Cases of CIM to Attract Attention.

Securing Availability of Different Software Programs with UC-1 Engineer's Suite to Prepare for Unforeseen Situations, Expecting UC-win/Road for Supporting CIM

- Accumulated Tradition and Technology for over 120 Years
- Building ICT Environment for Risk Management and Increasing Production Efficiency in Construction Sites
- CIM Applied to 57 Items over a Wide Variety of Construction, with an Outstanding Unique Approach
- Adoption of UC-win/Road and its possibilities for CIM

**SHIMIZU CORPORATION**<http://www.shimz.co.jp/theme/sit/>

Center for Safety and Reliability Engineering, Institute of Technology

Research and Development of Safety and Reliability Technology for Disaster Such As Earthquakes in Terms of Software, Hardware, and Skill. Reproducing Different Earthquake Vibrations on the Top Floors of Skyscrapers With a Large-stroke Shaking Table Using UCwin/ Road, Possibility to Development Widened

- Aiming at Development of New Technology Required Based on a Hard Look at What Things Will Be Like in 10 Years
- Positive Use of Advanced ICT for Earthquake Countermeasures etc.
- Large-stroke Shaking Table Using UC-win/Road Installed in Advanced Earthquake Engineering Laboratory
- Utilization of E-Spider and Its New Possibilities

**Maeda Corporation**<https://www.maeda.co.jp>

ICT Promotion Group, Civil Engineering Technology Department, Civil Engineering Division

Supporting ICT Application According to the Conditions of Civil Engineering Sites, Paying Attention to Total Optimization as well as Productivity Improvement Groping for Effective Use of UC-win/Road, ES, and Diverse Types of software, and Leading Further Development

- New Development through INFRONEER Holdings
- Effective Application of UC-win/Road to Traffic Restrictions and Earth and sand Transport Operations
- Expanding Use of UC-1 Series and ES in Design in a Wide Range of Fields
- Selection of Tools According to Design Conditions and Evaluation of Results

**OKUMURA ENGINEERING CORPORATION**

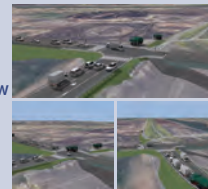
DX Promotion Group, Technology Division, Environmental Development Department

Focusing on Introduction of ICT and Development of New Technology

That Promptly Meets the Needs of Job Sites

Application of UC-win/Road to Traffic Congestion Simulation Reflecting Actual Roads and Traffic Flow

- Responding to the Need to Introduce ICT and DX in Civil Engineering Works, Establishing a Specialized Group in the Technology Division
- Making Full Use of UC-1 Series in On-site Support Operations of Technology Division
- Traffic Congestion Simulation Linking AI-based Traffic Measurement and UC-win/Road
- New Development in the Use of UC-win/Road, Application of AR/MR and F8VPS Also Expected

<https://www.okumuradbk.co.jp>**SenseTime Japan Ltd.**<https://www.sensetime.jp>

MHI Sensing Dept., Automotive Business Unit

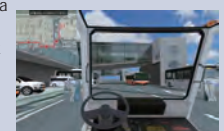
Committed to Uniting State-of-the-Art Computer Vision Technologies and Manufacturing Know-how of Japan. UC-win/Road DS Utilized for Development and Demonstration of Driver Monitoring System

- Aims and Development of Japanese Base by Company Originated in Hong Kong Laboratory
- Approach for Japanese Market Explored Using Technology of Its Parent Company to the Fullest
- Aiming at Developing DMS by Original Approach
- Evolving Needs, Further Functional Extension UC-win/Road Expected

**Meiwa Sky Support Co., Ltd.**<https://www.meiwa-skys.co.jp>

Supporting Safe Flight of ANA etc. Through Ground Handling Service in Haneda Airport. Built Up DS for Educational Training Using UC-win/Road, Winning Grand Prix in the 16th 3DVR Contest

- Expanding Ground Handling Business in Haneda over a Half Century
- Investigation for Possibility of Utilizing ICT for Efficient Cargo Transportation
- Approach to Building Up DS for Training to Drive Vehicles in the Airport
- Evaluation of DS and Next Target



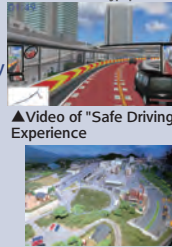
Isuzu Motors Limited

Isuzu Plaza

<http://www.isuzu.co.jp/plaza/>

Established in April 2017, "Isuzu Plaza" Embodies Company's Contact Point with Clients and Local Community / DS to Experience Latest Technologies for Large Vehicles Built Up with UC-win/Road, Gaining Popularity

- For Providing Environments Where a Wide Variety of Visitors Can Enjoy and Grow Interest in Automobiles
- Unique Ideas Found Everywhere to Have Visitors Perceive Three Themes with Bodily Sensation
- Process of Embodying DS and Current Use



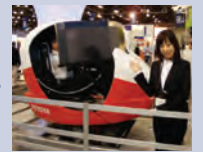
▲ Video of "Safe Driving Experience"

Toyota Motor Corporation

<http://www.toyota.co.jp/tech/its/>

Strategy Planning Dept., IT & ITS Planning Div.
TS Vision Painted by an Automobile Manufacturer Towards Actualization of a Sustainable Mobility Society – Approach with Autonomous and Vehicle-Infrastructure Cooperative Systems. Taking a Concrete Form With Focus on DS of 3D VR as a Prerelease Trial Tool of Services –

- Current of ITS Promotion and Efforts of TOYOTA
- 3D VR Trial Simulator Installed at The 15th World Congress on ITS (NY)



▲ Safety driving supported system simulator with infrastructure cooperative system (UC-win/Road Drive Simulator)

Kawasaki Heavy Industries, Ltd.

<https://www.khi.co.jp/>

Systems Engineering Department, Marine Machinery System Division, Energy System & Plant Engineering Company
A Comprehensive Heavy-industry Manufacturer Promoting Marine Machinery System Technologies Globally. Simulating Hybrid Propulsion System by Linking House Model with UC-win/Road

- Founded as a Shipyard More Than 120 Years Ago, Kawasaki Keeps Expanding Its Foot and Globalization
- Committed to Disseminate Advanced Propulsion System Products
- Constructing Simulator for Hybrid Propulsion System Step by Step
- Further Improvement in Reality and Support for Autonomous Ship Planned



Denso Corporation

<https://www.denso.com/jp/>

Electronic Control Components Division

Committed to Realization of Safe and Secure Mobility Society in Consideration of New Needs Such as Automated Driving UC-win/Road to be Utilized for Developing a Simulator that Allows Bodily Sensation of Performance of 2-Drive EPS

- Diverse Business Expansion and the Roles of Division
- Developed 2-Drive EPS to Clear Hurdles by Making the Best Use of Advantages of EPS
- Process of Developing DS Capable of Bodily Sensing the Effect of 2-Drive EPS
- Evaluation on EPS DS, and Expectation Towards New Possibilities



▲ VR images of the EPS drive simulator



▲ "2-Drive EPS" exhibited in DENSO Gallery



Pioneer Corporation Business Planning Dept.,
Autonomous Driving Systems Business Dev. Div. / Advanced Dev. Section,
Engineering Dev. Dept., Product Management Div.

<http://pioneer.jp/>

Supporting Advanced Driver Assistance and Autonomous Driving Technologies Being Developed at an Increasingly Fast Rate. Exploring New Cockpit HMI Experiencing the Bodily Sensation of Originally-Proposed In-Vehicle Context Awareness Using UC-win/Road-based Simulators

- Car Electronics Business as its Pillar, Received High Evaluation for the World's First Diverse Commercialization
- Towards Dev. of Cockpit HMI for Advanced Driver Assistance / Autonomous Driving
- Construction of IVCA and Dev. of Cockpit Demonstration Machine Based on UC-win/Road
- Evaluation and Expectation of Simulators and Their Development in the Future



▲ In-Vehicle Context Awareness (IVCA) exhibition system



MOVIE <https://youtu.be/y3f3hfT94GM>

Denso IT Laboratory, Inc. Research & Dev. Group

<http://www.d-itlab.co.jp>

Vehicles to Have Improved Networking and Intelligence, Raised Importance of Related IT Such as Software Introduced UC-win/Road for the Development of Next-generation HMI, Need for Advanced Simulation Growing

- Proposing Vehicles and Society in the Near Future that Use Cutting-edge IT
- Weight on Free Way of Thinking Leads to Wide Commercialization of Research Outcome
- UC-win/Road Introduced for Research to Find Out Desirable HMI
- Accumulation of Data Is a Key to Improving Software



▲ Utilizing DS for research use based on UC-win/Road



▲ HMI team members



▲ Research areas

MOVIE https://youtu.be/hEq_M-L1qTE

Aisin Seiki Co., Ltd. (AISIN)

<http://www.aisin.co.jp/>

The 2nd ITS Group, The 1st Electronic Engineering Dept.

AISIN Proposes Solutions for Realizing Sustainable Community That Are Safe and Enjoyable. Simulator to Offer Near-Future ITS Experience Built up with UC-win/Road

- Expanding Global Network and Business Fields AISIN will reach its 50th Anniversary Next Year
- UC-win/Road Introduced in DS for "ITS World Congress Busan 2010"
- DS Design Renewed in "ITS World Congress Tokyo 2013" Functions Upgraded to Get Real Feeling of "Contact Between People and Automobile in the Near Future"
- Needs for DS and its Future Possibilities of Use



▲ ITS simulator (AISIN original design)



▲ Functions Upgraded to Get Real Feeling of "Contact Between People and Automobile in the Near Future"



Professor Fumihiko Imamura (Tohoku University)

New Year 2013
Special interview

Professor Edwin Galea (University of Greenwich in the UK)

Using the latest analysis of tsunami or evacuation to prepare for disaster prevention.

-Professor Imamura, mastermind of tsunami analysis project via the Supercomputer K, teams up with the authority of evacuation, Professor Galea, for some future insights.

Professor Imamura is a world-renowned authority of tsunami research and the vice director of the International Research Institute of Disaster Science in Tohoku University and Professor Galea is a worldly expert of evacuation research. Together, they combine and complement the expertise of one another to provide some future outlooks and visions.



Faculty of Environmental and Urban Engineering, Kansai University

<http://wps.itsc.kansai-u.ac.jp/geo-env/staff/>

Geo-Environmental Engineering Laboratory, Department of Civil, Environmental and Applied System Engineering,
Developing Various Studies with Main Focus on Rock Slope, Paying Attention to Use of 3D VR from an Early Stage
Engineering Approach to Regional Revitalization Using Groundwater, Introducing UC-win/Road for its Visualization.

- For 130 Years in Osaka as its Base, Kansai Univ. Aims at Hub Function for New Research
- Major Three Fields Studied by the Lab
- Doing Research on Groundwater in Ono-shi, Utilizing UC-win/Road for Integrated Visualization of Above and Under the Ground
- Use cases of UC-win/Road



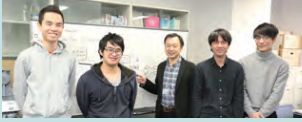
Shibaura Institute of Technology

Advanced Driver Assistance Systems Laboratory
Department of Machinery and Control Systems
College of Systems Engineering and Science

<http://www.web.se.shibaura-it.ac.jp/tosi-ito/>
MOVIE <https://youtu.be/FUFtoMwqH4I>

Analyzing Driving Characteristics, Optimum Assistance by Means of Systems and Provision of Information Investigated With Research on Biological Reaction During Autonomous Driving in Consideration, Traveling Is Reproduced Using UC-win/Road DS

- Positive Utilization of ICT to Investigate Advanced Driver Assistance
- With Autonomous Driving in Consideration, Unconscious Behavior of the Driver and Advanced Mobility Focused on
- Introduction of UC-win/Road DS and the Current Aim of Experiments



▲ Members of Department of Machinery and Control Systems, College of Systems Engineering and Science, Shibaura Institute of Technology



▲ Utilizing the data of Tokyo Metropolitan Expressway created by UC-win/Road for research

Kyoto University Graduate School

<http://www.um.t.kyoto-u.ac.jp/>

Logistics Management Systems Laboratory / Intelligent Transport Systems Laboratory, Department of Urban Management

Towards Establishing Sustainable, Safe and Comfortable Transport System with International Competitiveness Realizing Advanced Driving Simulation Experiment by Connecting Various Kinds of Functions to DS for High-level Studies

- Changes in Department of Urban Management and Its System
- Logistics Management Systems Laboratory Studying Urban Logistics Systems with Unit for Liveable Cities
- Intelligent Transport Systems Laboratory ICT is Essential for Smarter Use of Transport System
- Limits of Experiments in a Real Car and Needs for DS
- Actions of the Laboratories After Adopting DS



▲ Members of the Logistics Management Systems Laboratory and Intelligent Transport Systems Laboratory



▲ Joint study with Hanshin Expressway (Images provided by Assistant Professor Toshiyuki Nakamura)

Aichi Prefectural University

Oguri Lab, Department of Information Science

<http://www.ist.aichi-pu.ac.jp/>

Accumulating knowhow for biometrics processing for driver status analyzation. Integration of self-developed systems with UC-win/Road for the highest realism.

- Using ICT to assist in the manufacturing process and contribute to the regional society.
- Analyze driver status through biometrics signal processing
- Vehicle operation and condition management
- Incorporation of UC-win/Road into custom driving simulator
- Future outlook for the driving simulator and the processing knowledges gained.



Graduate School of Engineering, Hokkaido University

Laboratory of (Hagiwara) Advanced Mobility and Transportation Engineering, Division of Engineering and Policy for Sustainable Environment

<http://www.eng.hokudai.ac.jp/labo/kyoku/>

Emphasis on Research and Development of Driver Behavior Mainly on Visibility and Infrastructure in Relation with It Applying UC-win/Road DS to Study Based on a Hard Look at Automated Driving Society, Capable of Reproducing Winter Road Surface with VR

- Hokkaido University Boasting of Its History of More Than 140 Years, Positioning of Laboratory
- Expanding from Focus on Driver Behavior to Most Recent Automated Driving
- UC-win/Road DS Adopted for Examining Driver Behavior Using ACC in Winter
- Final Year of Research and Utilization of VR in the Future



Bunkyo University

Transport System Laboratory,
Department of Information Society,
Faculty of Information and Communications

<http://open.shonan.bunkyo.ac.jp/~tslab/>
MOVIE <https://youtu.be/epxLh8gpt7g>

Simulation Technology Used for Evaluating Traffic-related Measures and effects of New Technologies Building Up Platform That Can Be Used for Experiments at Low Cost Using UC-win/Road DS

- The Country's First Faculty of Informatics Focuses on Connection of ICT and Society
- Lineage of Researches through Transport System Laboratory
- Introducing UC-win/Road in aiming at advancement of simulation
- Research Subjects to be Widened by Utilizing DS Based on UC-win/Road
- New Possibilities Brought About by DS and Future Development



National Institute of Technology, Oita College

Mae Laboratory, Department of Civil and Environmental Engineering

<http://www.oita-ct.ac.jp>

MOVIE <https://youtu.be/4qcAvZNuty8>

Using Multiframe for Many Years for Framing Analysis through Studying Structures UC-win/Road and Debris-Flow Simulation Introduced When Participating Disaster-resilient Mind Education

- Participation in Unique Activity for Support Project of The National Institute of Technology (NIT), Japan
- Making full use of ICT, They Make Diverse Efforts in Structural Analysis, Designing Environment or Landscape
- How to Introduce and Use UC-win/Road and Other FORUM8 Products
- Future Direction of Research and Application of ICT



▲ Shallow water equations based tsunami attack simulation with the idea of disaster prevention on software

Chuo University Acoustic Systems Laboratory, Department of Precision Mechanics, Faculty of Science and Engineering

<https://toi-lab.com/>

Quick to Pay Attention to Making Comfortable Sound According to Situations, Also Developing into Smart Sound Design / With UC-win/Road Used for Constructing Experimental Environment VR for Sound Quality Evaluation and Comfortable Sound Design

- With Research Base in City Center, Having Advantages Such as Industryacademia government Collaboration
- Idea for Sound Quality Improvement and Concept of Comfortable Sound Design
- Utilizing Diverse ICT, Unique Research Developed in Broad Areas
- Introducing UC-win/Road for Studies on Vehicles, Future Development and Challenges of Studies



▲ Lab members around DS applying the experimental environment of UC-win/Road in the anechoic room



▲ Experimental environment for evaluating appropriate alarm sound created with UC-win/Road (simulation executed by switching day and night, clear and rainy sky)

The University of Tokushima, Graduate School, Institute of Technology and Science

Faculty of Engineering, Department of Civil and Environmental Engineering, Urban Infrastructure Design Lab

<http://design-lab.vis.ne.jp/>

MOVIE <https://youtu.be/3SrZQOTfKc4>

Towards Development of Information-presentation Technology for Bicycles Suitable for Visibility Characteristics of the Users. Introduced a Bicycle Simulator Based on UC-win/Road

- Positioning of the Urban Infrastructure Design Lab. Flow of Research with bicycles as its Core etc.



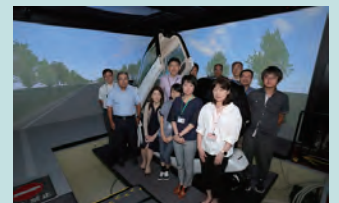
Nagoya University Human Factors and Aging Lab., Green Mobility Research Institute, Institute of Innovation for Future Society

<http://hflab-nu.com/>

MOVIE <https://youtu.be/dbsDRGmZGAo>

Influences of Aging on Driving to Study for "Mobility Society to Help the Elderly to Lead an Active and Joyful Life" Boasting of the World's First Function, 4K Five-Screen 3D Stereoscopic CAVE Driving Simulator Developed Jointly with FORUM8

- Changes in His Own Research and Development, and Flow of VR Use There
- Towards Study on Hallmarks of Aging with Nagoya Univ. COI as Its Base
- Development, Utilization, and Future of a Large Five-Screen 3D Stereoscopic DS



Tohoku University

New Industry Creation Hatchery Center (NICHE)

<http://www.niche.tohoku.ac.jp/>

MOVIE <https://youtu.be/2Cm9TJzzF9A>

Engaged in Research on Earthquakes, Automated Driving, and HMI as Main Subjects with Originally Advanced DS DS to Link Accumulated Data and UC-win/Road Constructed for Project of Ministry of Education, Culture, Sports, Science, and Technology

- Position of the Tagajo Base of NICHE
- Flow of his Researches Utilizing the Features of DS
- Flow of Introducing UC-win/Road and Features of DS for the Purpose of Research
- New Development of Use of UC-win/Road, and Expectation Towards Future



▲ DS system for research use configured by Associate Professor Yamabe and others

Graduate School of Human Sciences, Osaka University

Applied Cognitive Psychology Laboratory / Behavioral Science for Safety

Diversified Studies from Viewpoint of Behavioral Science with a Pivot on Psychology and Safety
Potential of Research Widening with Utilization of Virtual Space Based on UC-win/Road

- First faculty/graduate school in Japan to be named "Human Science"
- Distinctive approaches in both research fields
- Background to the introduction of UC-win/Road DS
- Diverse research development through the use of the DS
- Future research directions and expectations for DS use



▲ Study of Behavioral Changes in Car Drivers as a Result of Design of Railroad Crossing Signs

<https://www.hus.osaka-u.ac.jp/>

MOVIE <https://youtu.be/TyZIFWYpS-I>

Meiji Institute of Autonomous Driving (MIAD)

http://www.isc.meiji.ac.jp/~jido_u_n/en/overseas/

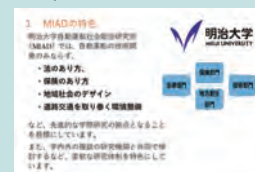
MOVIE <https://youtu.be/YRUhldZ5KXM>

Studying a Wide Range of Interdisciplinary Issues in Consideration of Society Where Autonomous Driving Technology Is Implemented
Collaborating with External Organization to Study on Multiple Themes Using UC-win/Road

- Legal and Insurance Focused Approach at MIAD
- Collaboration between MIAD's legal and insurance fields and Tohoku University's engineering approach
- Diverse research through introduction of UC-win/Road DS and utilization of DS
- New possibilities opened up by collaborative research across humanities and sciences



▲ Visualization of collected 3D laser point clouds with UC-win/Road



Urayama Gakuen School Corporation

Toyama College of Business and Information Technology

<http://www.bit.urayama.ac.jp>

MOVIE https://youtu.be/od_JLTWUjJU

Leading Practical Vocational Education in Solving Local Issues and Responding to the Needs of the Times
UC-win/Road Introduced with Establishment of a New Department of Architecture, VR Classes Given in All Departments from the Beginning of the New Academic Year

- Focusing on Human Resource Development That Meets the Needs of Local Community and the Times
- Some classes Started with UC-win/Road Introduced, in All Departments from the New Fiscal Year
- Future VR Development



Okayama Information College, Sanyu Educational Group

Depts. of Information Specialists and Information Systems

<https://www.oic-ok.ac.jp>

MOVIE <https://youtu.be/bfB8YG206X0>

For Developing Human Resources to Meet Society 5.0, with Weight on Acquisition of Qualifications and Development of Practical Skills Based on Cultivation of Humanity
Focusing on 3D Model Creation with Shade3D, Also Considering Web-based 3DVR Space Construction

- Two Information-systems-related Depts Adopting Shade3D
- Attention Focused on FORUM8's VR Solutions, for Establishing Special Lectures and Classes Using Shade3D
- Utilization of Technologies as a Means to Be Aimed Considering the potential of VR



Faculty of Societal Safety Sciences, Kansai University

Ito Seminar

https://www.kansai-u.ac.jp/Fc_ss

MOVIE <https://youtu.be/y3yuXzm5ITE>

Research on Mechanisms of Injury Incidence and Effective Methods for Damage Reduction Based on Mechanical Engineering
Expanding Possibilities of UC-win/Road DS Centered on Driving Behavior Analysis

- Building a Unique Approach to Facing Natural and Social Disasters through Integration of Humanities and Sciences
- Exploring Measures to Mitigate Damage from Traffic Accidents by Making Full Use of a Variety of Techniques from a Mechanical Point of View
- Use of UC-win/Road DS and Expanding Research Development
- Focus on the rich functions of UC-win/Road DS and seek to create more reality
- Best Part of Simulation Common to FEM and DS



▲ The actual situation of an accident with a bicycle and the surrounding environment are faithfully created with VR to reproduce the situation just before the collision at the timing of running into the road

School of Creative Science and Engineering, Faculty of Science and Engineering, Waseda University

Digital Garden City

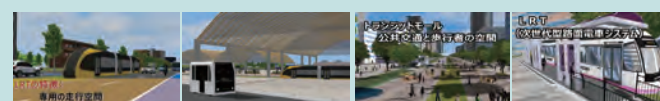
Morimoto Laboratory for Transportation Engineering and Urban Planning

<https://www.waseda.jp/sem-morimoto/>

MOVIE <https://youtu.be/mnj0P6GmCQI>

Research on Urban Transportation and Land Use from Both Physical and Cyber Space
UC-win/Road Used to Share the Future Vision Among a Wide Range of Stakeholders in Diverse Research Scenes of Urban Planning.

- Supporting Urban and Transportation Planning of Government Agencies through Research
- Using UC-win/Road as a Tool for Urban Planning for Nearly 20 Years Since the Early 2000s
- Emphasis on Visualization of the Vision of the Future City as a Communication Tool
- Focusing on EBPM in Urban Planning and Looking Forward to Children's Digital City Experience



▲ An early application of UC-win/Road to create a VR representation of the future LRT operating in Utsunomiya City.

▲ To discuss the future city with everyone, "Image of Ikebukuro in 2050", when the LRT is introduced, was created using VR.

Kyoto Kogakuin High School

Urban Design Area, Community Planning Field, Project Engineering Course
Promoting Use of Advanced ICT for Inquiry-based Learning in "Project Seminar"
One of the first High Schools to Introduce UC-win/Road, Achieving Excellent Results in the Simulation Contest

- From Introduction of UC-win/Road to Its Use for Various Regional Issues
- Impressions of UC-win/Road and Development of Its Use by the New Third-year Students
- Anticipating the Growing Need for VR, Looking to VDWC as a Challenge



▲ Mr. Oshita with new third-year students in the Urban Design Area

<https://cms.edu.city.kyoto.jp/weblog/index.php?id=300254>

MOVIE <https://youtu.be/8U94d1B1IQ8>



▲ 3D VR Simulation Contest on Cloud Awards

Setsunan University, Department of Business Administration Tsukada Lab.

Metaverse projects developed through problem-solving learning by mixed-grade seminar teams
Exploring the use of F8VPS in infrastructure maintenance and management in joint research between industry and academia

- Design business ideas through the Metaverse
- Deploying metaverse projects for various purposes such as personnel/recruitment, digital archives, job hunting support, etc.
- Highway maintenance management by linking point cloud data and metaverse
- Expectations for the WebVR platform that turns free ideas into businesses



<https://www.setsunan.ac.jp/>
MOVIE <https://youtu.be/lfEtbBmCCAI>



▲ An ongoing project by the Infrastructure Management Research Group, led by Kansai University, involving Setsunan University and FORUM8, to automatically inspect and manage data on public structures in a metaverse space.

Chulalongkorn University Smart Mobility Research Center, Faculty of Engineering

Conducts research on traffic issues in Thailand by using 6DOF simulator with Nagoya University and shares the study results

- Conducts experiments on senior driver's driving behavior Introduced DS to solve "carsickness" issue
- The same platform as one being used at Nagoya University enables the comparison of study result
- Safety, ITS, and motorizing are three main components of study. Driving simulator accelerates the study
- Assault new study themes by utilizing the 6DOF DS
- Develops original driving simulators



▲ The 5-screen VR driving simulator delivered to Nagoya University and Prof. Haraguchi

©Nagoya University

Prof. Tetsunori Haraguchi
Nagoya Univ.

www.me.eng.chula.ac.th



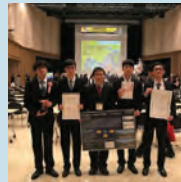
▲ FORUM8's 6DOF Driving Simulator introduced in June 2017

Beijing University of Civil Engineering and Architecture Department of Transportation Engineering, School of Civil & Transportation Engineering

<http://www.bucea.edu.cn/>

Efforts in Personnel Development Contributing to Making Smart City and Transportation, Studies on Various Solutions Also Developed / Experimental Environment Expanded Based on UC-win/Road, To Realize Support for Automated Driving and Coordination with Biological Information

- Living Up to High Expectations of Education and Research Based on Laboratory
- Diverse Activities through Actual Projects Centering on ITS and Simulation
- Novel Lesson Developed after UC-win/Road, Also Applied to Real Project
- Towards Study of the Transportation Planning of the Next Generation Based on Traffic Environment Peculiar to China



Wuhan University of Technology

Intelligent Transportation Systems Research Center

<http://wts.whut.edu.cn/>

Utilizing VR for the R&D of traffic safety evaluation / accident analysis and measures
Expanding and developing the driving simulator by using UC-win/Road and SDK

- Intelligent Transportation Systems Research Center
- Road traffic safety and information group
- Reason and purpose of the introduction of UC-win/Road

▼ UC-win/Road Driving Simulator used at the Intelligent Traffic Systems Research Center



▲ The 17th 3D VR Simulation Contest Nomination Award
VR data for Evaluation of road markings for speed reduction on Wuhan Yangtze Great Bridge

Morgan State University Safety and Behavioral Analysis(SABA) Center

Mutual research on driving behaviors of automobiles and bicycles / Research on driving behaviors and effects of road signs by using UC-win/Road DS and eye-tracking system

- Applied Science Research Laboratory that supports municipal, state, national and global efforts to solve traffic safety and mobility challenges
- Achieving this mission through software-assisted research on driver behavior.
- Adding an extra dimension to research by enabling accurate traffic data to be visualized through interaction.
- New areas of research to look at include equity, bicycling for all, people with disabilities, traffic signage and pavement design, traffic planning and traffic demand forecasting



◀ Collaboration using driving simulator



▲ UC-win/Road eye-tracking system is used for the research



▲ They also studies on situations that would be difficult and dangerous to do in real life including the simulation of pedestrians rushing into the road.

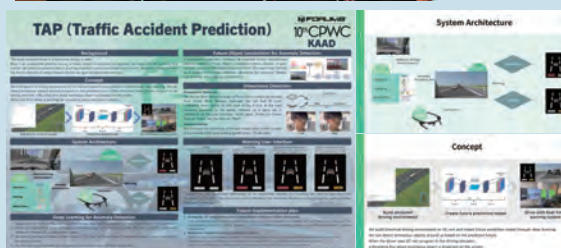
Kookmin University Automotive Engineering

Promote Software R&D to Apply AI to Autonomous Driving
Won Grand Prix of CPWC with Driver Warning System Cooperating with UC-win/Road and Using Deep Learning

- Current Utilization and Equipment of UC-win/Road
- Won Grand Prix of CPWC



▲ Simulator experiment using UC-win/Road



<https://www.kookmin.ac.kr>
MOVIE <https://youtu.be/IL9k8plyofk>

◀ Dr. Sang Hun Lee (right) and the students of KaI

◀ Poster of the work winning Grand Prix of the 10th CPWC

University of Greenwich

<http://www2.gre.ac.uk/>

How should we develop the latest perception provided from tsunami and evacuation analysis into current tsunami prevention

- Evacuation analysis in a urban area and larger region
- Evacuation analysis linked with internet
- Research about the behavior of people evacuating in the past flood disaster
- A lot of applied visualization cases
- Evacuation training a lot of people can take part in on cloud



BMIA

<http://www.bmia.fr/>

Tunnel manager who needs to make an appropriate judgment when the accident occurs
The accident and fire are visualized by UC-win/Road for the training

- Realistic representation by simulator "UC-win/Road" for the accident training
- Behavior of trainee is registered to output the evaluation report
- High-evaluation for the software development kit for the linkage of UCwin/Road with the original system
- Expectation of the world first system, practical use for a wide range of issues such as traffic congestion

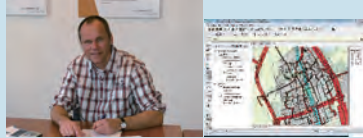


Omnitrans International BV

<http://www.omnitrans-international.com/>

From evacuation modeling, land-use, to traffic inter action
Improved function with the linkage of UC-win/Road

- Support for a variety of project based on traffic planning and modeling
- Linkage with FORUM8

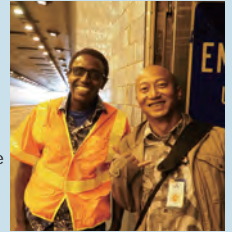


State of Hawaii – Department of Transportation

<http://hidot.hawaii.gov/>

Integrating highway point-cloud data and real photographs through UC-win/Road

- Has adopted digital cameras and LIDARs since the year 2003.
- Has been recording and collecting photos and point cloud data of highways.
- Adopted the Linear Referencing System, to represent the relationship between road position and route distance.
- Combined point cloud data and photos through UC-win/Road.



Shanghai SEARI Intelligent System Co., Ltd. High-speed Bridge and Tunnel Division

Supporting promotion of smart cities and transportation centering on expressways in China
Assuming emergency of Hangzhou Bay Bridge, Training System Developed Using UC-win/Road

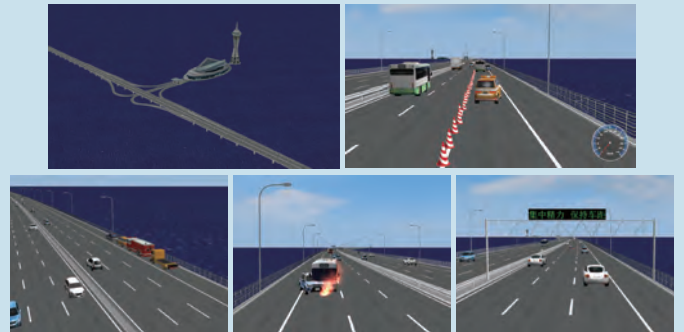
- Opening Up Domestic Market Centering on Making Smart Transportation, Cities, and Architectures
- Efforts of Division on Smart Transportation as Its Core
- Developing Simulation System of Emergency Rescue Drill for Long Span Bridges Using UC-win/Road
- Potential of UC-win/Road Attracts Attention with Future Application Expected



Drive simulator for drill using UC-win/Road

▼3D Simulation system of emergency rescue drill for road traffic operation based on 3D VR and multi-user cooperative operation

<http://www.seisys.cn/>



Central Police University (Taiwan)

Vehicle doors suddenly opened from inside and vehicles unexpectedly cutting across the road are reproduced in VR. The simulators for training of safety driving in Taiwan.

- Dangerous situations specific in Taiwan are reproduced using UC-win/Road DS
- The investigation of the effect on driving given by drinking



▲Winning of The 17th 3D VR Simulation Contest on Cloud Idea Award was reported on the web site of the Taiwan government



<https://www.cpu.edu.tw/>

◀FORUM8 driving simulator delivered to Central Police University



▲Taiwan police elites and instructors

◀A female police officer having training on driving simulator

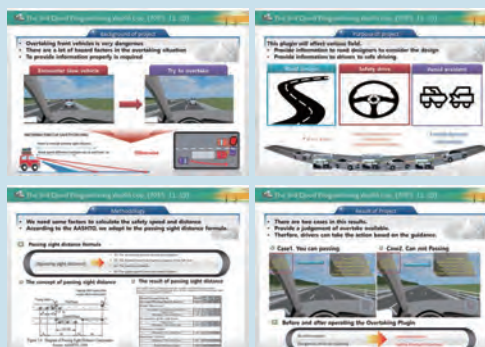


University of Seoul

Department of Transportation Engineering
Laboratory of Intelligent Transport Systems (ITS)

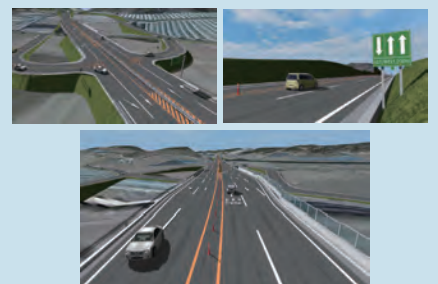
Aiming at being Mecca in Korea of research on "traffic users and Intelligent Transport Systems"!

- Main research performance of ITS laboratory
- Now and Future



▲The 3rd CPWC Nomination Award
Safety notification of when overtaking car through on Screen Display

www.uos.ac.kr/



▲The 12th 3DVR Simulation Contest on Cloud Honorable Judge's Award Design Award "The Use of VR Simulation of a New Type of Road"

VR/CG data generation and technical support service using UC-win/Road

UC-win/Road Support System

The service undertakes data generation tasks concerning UC-win/Road such as the generation of 3-D VR simulation data, 3-D models, and textures

Urban development

Urban Development



City planning VR including buildings.
"Visualize" various information, provide best technical consulting

- The ocean and mountains seen from the city and beloved by local people - we create a VR of a target development and reproduction area including surrounding terrain and nature. We support the city planning in consideration of terrain, environment, traffic, and disaster prevention essential for a consensus building.
- The current scenery and planned scenery after development can be compared from any positions in VR space such as windows of buildings and houses, sidewalks, and moving vehicles.
- In addition to architecture, important city elements such as road, intersection, and traffic can be reviewed easily. Users can share the image of active move of human and vehicle and bicycle. This will be effective to simulate railroad, new traffic system, and station square redevelopment.
- We help engineers to operate and explain the VR space.

Redevelopment review VR simulation

This is a material for the review of redevelopment plan including planned roads and a new traffic system. We created buildings in the planned area and faraway landmarks and imported buildings in surrounding areas in IFC format. The data includes context settings about switch of landscape before and after design, season select, change of time and weather, and camera position switch. One driving scenario on the planned road, terrain edit, and plant rendering are available.



City VR simulation



Landscape VR for review of city planning

Total extended distance(A)	8.030km
Man-day (B)	4.300
Option work Man-day(C)	11.500
Aerial photographs,Coverage	TBD
Total	US\$40,700



Waterfront redevelopment VR



Tram simulation VR

City development VR simulation

This is an assessment material for a land development / area arrangement project. VR is used to check landscapes after area arrangement, as well as height differences in the developed land, and streets leading to the residential area from the planned roads. The simulation helps review the sunshine blocked by high buildings, and predict sunshine reflection to south and northern building when solar panels are installed on a low bulding roof. The 5m mesh is used for the terrain, and RoadDB sample models are used for surrounding objects and roadside objects. It has context settings of the winter and summer solstice. Assessment plug-in is used.

Total extended distance(A)	1.580km
Man-day (B)	4.100
Option work Man-day(C)	8.200
Aerial photographs	—
Total	US\$12,900

Urban intersection VR simulation

Large intersection in an urban area with 2 roads, a crossing, and tunnel are shown. It is possible to load point cloud and compare it with VR. Parking lots are arranged and important buildings are created in detail by FBX. Smoke that billows in the time of the tunnel accident is also shown.



Total extended distance(A)	1.705km
Man-day (B)	5.000
Option work Man-day(C)	9.400
Aerial photographs	TBD
Total	US\$15,800





Interchange DS experiment VR

We created a highway intersection VR data that can be used for driving simulator experiment. In the data, drivers simulate driving from a normal road to a highway via a toll gate. We created several merging and splitting scenarios. The VR has a high reality with toll gates and management facilities. ETC lane bars open and close. The scenario control can display other vehicle movement.

Total extended distance(A)	6.666km
Man-day (B)	5.100
Option work Man-day(C)	14.000
Aerial photographs	TBD
Total	US\$42,400



Junction VR simulation

This data contains a JCT with total of 8 ramps in both directions connected to other roads. The complicated road structure that a road connects to the main highway after merged by different ramps is correctly expressed. Users can drive all routes. One autonomous driving scenario is available.



Total extended distance(A)	10.895km
Man-day (B)	4.000
Option work Man-day(C)	10.800
Aerial photographs	—
Total	US\$47,800

Reproduce hazardous situations in VR and provides driving experience

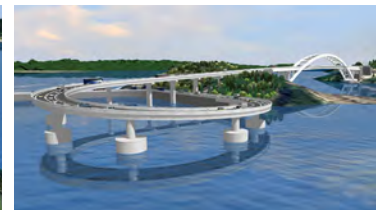
- Controls objects other than own vehicle (other vehicle, pedestrian, signal). Hazardous situations can be experienced and reviewed in real world.
- Date, season, and weather in the created course can be changed. Experiences via driving simulator are supported.
- The VR contributes to the check of issues such as drivability on junction or detour, visibility of road signs, and traffic limitation by visualizing it.
- Creates a driving course of autonomous driving. A cycling route can be created too. These driving courses help users to check roads from each view of cyclist, pedestrian, and driver.



Verification of automated driving with VR

Kushimoto Bridge/ Myouga Loop Bridge Simulation

Kushimoto Bridge and Myouga Loop Bridge (1.6km) to link Oshima with Kushimoto-cho, southernmost end of Honshu and road data model (0.3km) in Oshima. Kushimoto Bridge designed by Osaka office of Nippon Koei Co., Ltd. won the Tanaka Prize of Japan Society of Civil Engineering in 1999. This sample data is used as proposal of bridge preliminary design.	Total extended distance(A)	2.985km
	Man-day (B)	4.100
	Option work Man-day(C)	9.200
	Aerial photographs	TBD
	Total	US\$18,900



Refer to page 66 for drive simulator rental



WEB estimation service

https://www2.forum8.co.jp/road_est_en/

Calculates cost estimations of 3D VR simulation data on the web

Cost estimation standards and examples

Approximate estimate

Cost estimation per km (Excel sheet is open)

Bridge, On/Off ramp cross-section
Standard precision
Not subject to treat details of terrain
No extra work
Data creation cost About US\$3,800



Standard precision

Estimated Price

Direct personnel costs

[(Estimated distance A) * Work unit (per km) B + Option work unit C] * Engineer work unit cost D

Administrative costs

Direct personnel costs × 120%

General costs

Technical costs(Field survey cost etc.), Express charges(25% extra charge for overtime working etc.), software/hardware purchase costs, Apparatus rental/ transportation, Satellite photography costs, Transportation costs (actual cost), Work management costs

Standard cross-section
Low precision
Not subject to treat details of terrain
No extra work
Data creation cost About US\$2,100

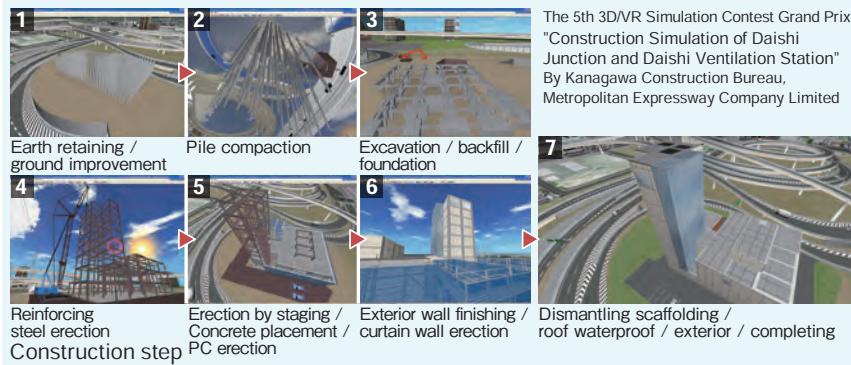


Low precision

Bridge, On/Off ramp cross-section
High resolution B
Not subject to treat details of terrain
No extra work
Data creation cost About US\$5,500



High resolution B



"Visualize" changes over time

- Easy to imagine construction step
- Utilize point clouds to express the current situation
- Easy to check cutting and banking, landscapes before / during / after development
- Not only construction staff members but also citizens can share and understand construction image.
- Support the data utilization for a new method presentation including video creation

Undergrounding construction VR simulation

Data of the undergrounding construction for 100m within a total of 500m-long road. The lane closer is also depicted, and normal road and limited road can be switched.

At the construction spot, the landscape switch shows the construction step and safety measures. Buildings, roadside objects, and pedestrians are reproduced.

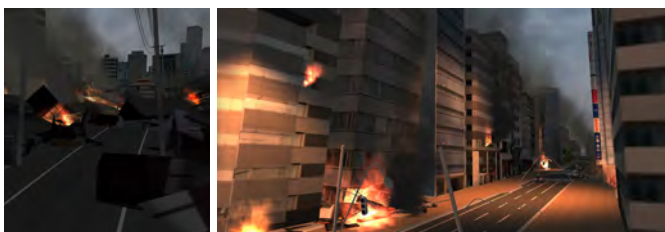
Total extended distance (A)	0.740km
Man-day (B)	4.100
Option work Man-day(C)	9.300
Aerial photographs	TBD
Total	US\$10,900



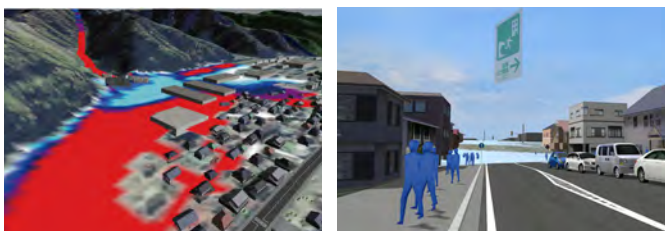
Disaster prevention / reduction simulation

Visualizes analysis results of tsunami, debris flow, and fire

- "Visualize" the range of damage and the arrival time
- Share images and utilize them for evacuation planning and training



Collapse by earthquake / fire



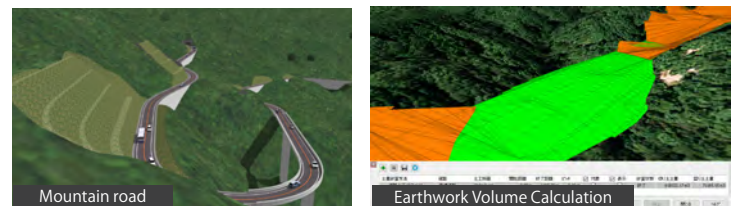
Debris flow

Evacuation training

Mountain Road VR simulation data

This is 2.23km of mountain road data. 1 tunnel and 1 bridge are set in the section. As to creation area, detailed current terrain is displayed, by creating the terrain patch data corresponding 1 meter mesh from terrain contour data (DXF). Cut slope / embankment in each side of road, such as berm are reproduced faithfully.

Total extended distance(A)	2.512km
Man-day (B)	5.700
Option work Man-day(C)	5.900
Aerial photographs	TBD
Total	US\$17,800



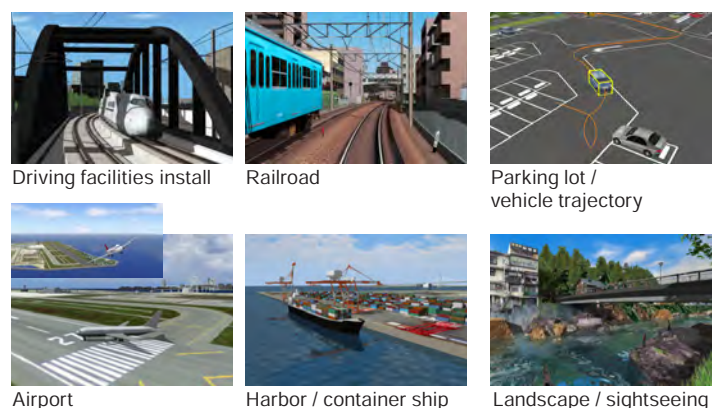
Bridge Erection VR simulation data

The data express the bridge erection steps of 560m of road across mountains and a ravine. All erection steps can be seen for the setting of movable models. Synchronizing truss erection with crane action provides the clear erection images and setting of road alignment provides driving images after construction complete.



Total extended distance(A)	1.074km
Man-day (B)	4.200
Option work Man-day(C)	11.400
Aerial photographs	TBD
Total	US\$14,000

Simulation



Driving facilities install

Railroad

Parking lot / vehicle trajectory

Airport

Harbor / container ship

Landscape / sightseeing

UC-win/Road Support service

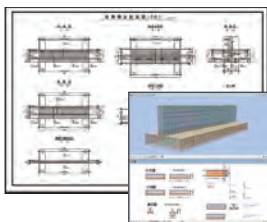
VR/CG data generation and technical support service using UC-win/Road

3D VR Engineering Service

Any drawings in 3D! - Allplan viwer and 3D Reinforcement CAD are supported.

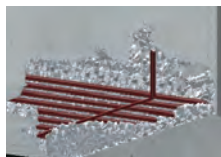
3D drawing service

3D drawings and 2D drawings are generated by using integrated BIM solution of Allplan series, developed by German CAD software maker Nemetschek. You can utilize it for various study, use for 2D drawing, development to the software having BIM function (IFC data conversion). The end result is based on the data submission and can offer it as Allplan 3D data (supports IFC) output. It is intended for construction and civil engineering structure. Allplan can continuously design and express any information which is required for lifestyle of buildings.



3D/2D bar arrangement drawing

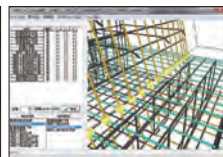
Cost estimation: 3D bar arrangement of drainfield	
2D & 3D Drawing Man Hour	12.1
Direct Labour Cost	US\$6,076
Research & Management	US\$7,292
General overhead expense	US\$-
Total	US\$13,368



Damage and repair of the existing structure



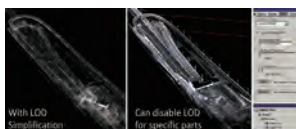
3D bar arrangement CAD for SaaS



Interference and cover thickness check of bar arrangement via 3D bar arrangement CAD

VR modeling supporting hundreds of millions point clouds 3D laser scan / VR modeling service

Supports point cloud measuring and modeling by 3D laser scanner.



Sample project
The data from "Umi-hotaru" parking area along the Tokyo Bay Aqua Line Expressway measured using Mitsubishi Mobile Mapping System (MMS).

Cost estimation example: 3D scan modeling	
Road	300m
Measuring spot	2 places
Modeling man-hour	1 day
Measuring and processing days / ppl	1day / 2 ppl
Total	US\$3,200

Engineering

Create real "model" from 3D models by using a 3D printer



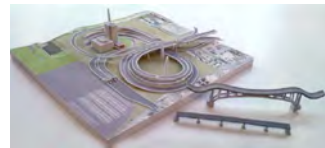
3D printing service

WEB cost estimation (Japanese)
<https://www2.forum8.co.jp/3dmodel/>

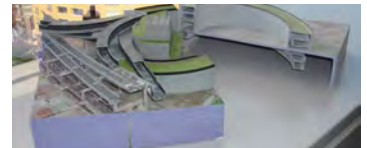
Create real models from 3D model by 3D printer. It can be output to projection mapping. Creates real "models" of all 3D models output from UC-win/Road, UC-1 series software, and Allplan.

Cost estimation: Creation of Daishi Junction model

The total working man-hour day (A)	2.6	General overhead expense(D)	US\$1,254
Man- hour (B)	US\$402	Material cost, indirect cost(E)	US\$480
Direct labor costs(C=A*B)	US\$1,045	Total	US\$2,780



Daishi Junction model



Ohashi Junction model

Cost estimation: Creation of Shinagawa station square model

<Shade3D model data creation>

Working man-hour day (A)	
3D model and texture creation	
• Exterior perspective / facility / vehicle	2.7
Optional work (B)	
Simulation settings	
• Animation setting / Data linkage	0.9
Data creation	US\$3,183



3D System's Zprinter660Pro

<3D model export>

Working man-hour day (A)	
Export data creation	
• Terrain, road alignment / model data arrangement	4.0
Expenses (E)	
Material cost, head depreciation	
• Range of model creation	18,750cm ³
Data creation	US\$5,900



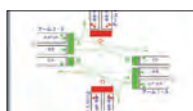
Shinagawa model

3D VR Simulation Service

Traffic analysis service by a traffic simulator and VR model creation service

Traffic Analysis VR Service

Traffic Analysis VR Service is a service that utilizes traffic analysis tool such as traffic simulation model for its analysis and creates VR model fit for the traffic simulation model in UC-win/Road. OSCADY PRO, TRANSYT, and Aimsun are supported as traffic simulator.



OSCADY PRO



TRANSYT



Aimsun (3D displayed)

Simulation

●OSCADY

This is a signalized intersection design calculation software developed by TRL in the UK, which evaluates intersections and calculates the optimal signal display.

●TRANSYT

A traffic flow simulation model developed in 1967 that captures traffic flow as a fluid. It also has functions to optimize signal offset and split. Road networks are easy to model and can be created in a relatively short time.

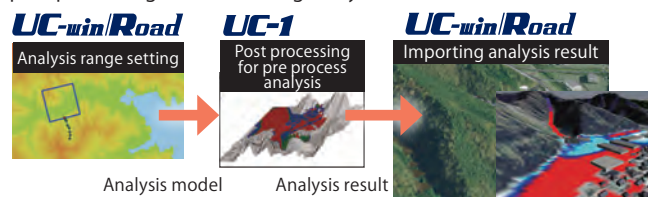
●Aimsun

This is a comprehensive traffic simulator developed by Spain's TSS, and in addition to micro-simulation models, it also includes a macro model equivalent to a traffic volume estimation model. A dynamic allocation function can reproduce parking lots, buses, public transportation such as LRT, pedestrians, and bicycles.

Visualize debris flow simulation and result analysis

Debris flow simulation

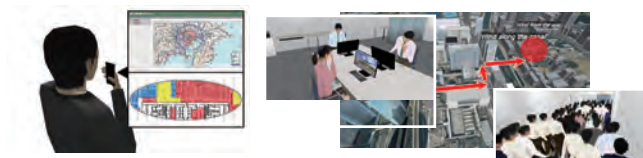
The UC-1 Debris-Avalanche Simulation uses "Debris-Avalanche Simulator (Kanakō)" developed in the Graduate School of Agriculture, Kyoto University, as a solver. FORUM8 has built the robust function that preprocesses and post-processes the data to be analyzed so that a debrisavalanche analysis can be run effectively in a series of process while incorporating the solver, and that's how this intelligent solution named UC-1 Debris-Avalanche Simulation came to be. It can execute analysis range setting, analysis model output, pre processing, analysis, post processing, and visualizing analysis result.



Supporting disaster simulation and training of BCP construction and operation.

BCP simulator

Create the shaking of earthquake and its impact in 3DVR, and uses for the situation explanation, response simulation, and BCP education at the time of disaster. Based on the scenario set, reproducing the situation within the company and the evacuation route when struck by a disaster, human resources and materials usable at each stage of the restoration, the office view during business continuity, the business state, exchange with customers, etc. in VR, and by utilizing in education and training, it helps accurate and smooth action at a time of emergency.



Sharing of the damage situation in cloud by utilizing BCP support tool. Check the progress of restoration and resume business

Evacuation start. Representation of the movement of people in collaboration with the evaluation analysis EXODUS.

Earthquake Damage Simulation Data Production Service

Earthquake simulation service

This service is aimed at visualizing the potential damage under an interior setting when an earthquake strikes, inside UC-win/Road. By inputting the velocity and acceleration to replicate the earthquake vibration, and assigning movement criteria to the placed models, we can simulate and picture how furnitures may fall or become damaged due to seismic activities. (Refer to P74 for system details)

The tsunami analysis by difference method of shallow water theory

Tsunami / Flood analysis VR simulation service

Tsunami representation function by real time virtual reality UC-win/Road. Tsunami generation by xpswmm cooperation and setting of tsunami position, range, and height by visual option is possible. Predicting the land flood range and the flood depth of the tsunami that could occur in the future by the difference method of shallow water theory. Wave power evaluation to a structure and flotsam transportation, calculation of wave height and speed of each mesh point, creation of tsunami height distribution map. We propose a model cooperating with the research of the tsunami engineering laboratory of Tohoku University (professor Fumihiko Imamura).

Interactive city modeling, a popularized city modeling method that incorporates VR

VR City Modeling System

We will propose VR City Modeling System as part of the consulting service within the municipality solution.

Case study: Modeling a safe and secure city

Facilitator: Hiroo Kasagi

(Representative of NPO Workshop for Sustainable Community and Japan Society for Impact Assessment)

In this case study, the vicinity of Nakameguro station where office buildings, shopping streets, and residential area coexist are visualized to evaluate its safety. In the first stage of the project, town watching was conducted and based on the observations, a map of the area was created. In stage two, we have visualized the map including its information on 3D VR space and held a workshop. Furthermore, by incorporating administrative information such as a hazard map to the VR city model, even potential risks that you usually are not aware of such as the risk of flood due to severe rainfall can be visualized for risk assessment in order to make residents understand the risks and come up with measures



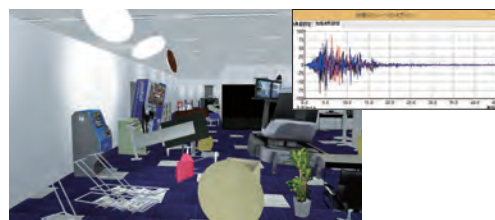
VR-Cloud® can be used for plan consideration or consensus building



Check the safety in Nakameguro

By doing analog work (workshop) on digital processing (VR), we were able to design the whole process of obtaining stakeholder consensus in a very intuitive and effective way.

VR data by UC-win/Road ("Nakameguro Safety Map")

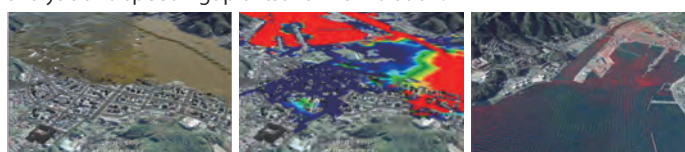


Objects falling due to earthquake



Tsunami numerical analysis support service

By using the tsunami analysis code developed by Imamura laboratory, carrying out creation of hazard maps, analysis support service applicable to evacuation estimation concerning tsunamis, and cooperation with UC-win/Road is possible. Linkage with high performance computer (page 18) realizes the large analysis and speedingup of tsunami simulation.



Support service by Arcbazar+ProjectVR



Arcbazar Support Service

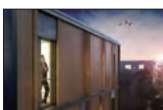
Services that make effective use of the architectural design competition website Arcbazar as a platform. Project VR was built as a system for promoting information symmetry, such as providing stakeholders with VR model of a proposed project and other sources of intuitive information subject to sustainability evaluation to assist in the client's decision making. Project VR is a fusion of the mechanism behind FORUM8's "Simple Self-Initiated Environmental Impact Assessment website" and cloud-based consensus building solution "VR-Cloud". A system that operates on Arcbazar platform as part of "Arcbazar Support Service", Project VR can add environmental impact as one of the criteria for project evaluation in a design competition and hence more values to submitted projects. We have held competitions by using a public voting function and a function to demand evaluation to family and friends.



FORUM8 HQ Showroom Interior Renovation

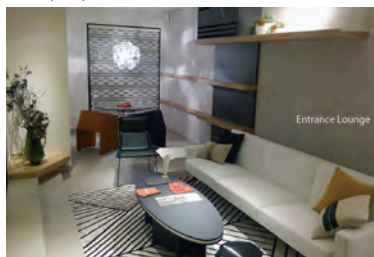


TAKANAWA HOUSE Landscape Design

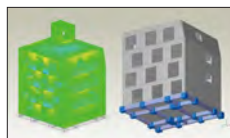


TAKANAWA HOUSE Facade Design

FORUM8 company dormitory TAKANAWA House (completed in August 2017)
Got proposals of facade from Arcbazar



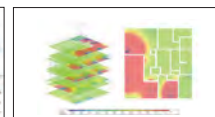
Stylish interior by TEAM IWAKIRI PRODUCTS.



FEM analysis
Plate FEM analysis using
Engineer's Studio



BIM design
BIM modeling, quantity
calculation, cooperation
with various software



Energy/CFD analysis
Energy analysis
and CFD analysis of
temperature difference
ventilation using
DesignBuilder

Propose cares and a simple check for various projects and VR utilization

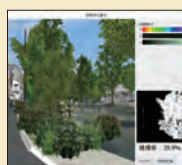
Simple Self-Assessment Support website

https://assessment.forum8.co.jp/assessment/php/description_en.php

Consisted in trust by NPO Workshop for Sustainable Community with the aid of Fund for Global Environment. Provide reference information including the free design support soft and support the business of companies and environmental NPOs by using VR utilized simple self-assessment.

Assessment plug-in

Allows users to perform environmental impact assessment and simulate the assessment result in VR at the same time. Green view rate, sunshine obstruction, and prediction of reflected light can be evaluated. Users can set the direction and elevation angle of the sun to retrieve sunlight reflection angles and display the hourly sunshine on a VR model.



Calculate green view rate



VR assessment case studies

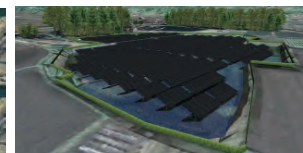
Sediment extraction (about 8ha)

3D VR landscape, change of sunshine and wind, and operation image of delivery vehicles. Open on the web to be used for area meeting and collecting ideas.



Solar power production A (about 900kW)

Plan to build solar power plant on the old site of fish farm. Visualization of landscape change, reflection effect, operation image of construction vehicles.



Road DB

Data preparation support, and provision of sample data and databases

In addition to the standard data including 3D models and textures, extensive downloads are available directly from the UC-win/Road DB on the Internet.

Road DB



VR Seminar

Expert training course for dealers and consultant

Free to charge

UC-win/Road Expert Training Seminar

For dealers selling UC-win/Road and consultants doing proposals of VR projects using the software. "UC-win/Road Introduction Strategy Program" to help you systematically acquire the knowledge and skills necessary to introduce UC-win/Road to your target companies. The program covers everything from approach to consultation, installation and follow-up as well as sales and technical aspects. Those who pass the examination will be certified as UC-win/Road experts.



Seminar for VR data creators using Advanced (Advanced)

Paid seminar

UC-win/Road Advanced VR Seminar

This seminar is for VR data creators who use UC-win/Road Advanced. The main focus is on data creation and presentation practice using UC-win/Road Advanced functions. This seminar is open to all participants of the UC-win/Road and VR seminar or the professional training seminar. Those who wish can take a "VR Engineer Certification Examination" after the seminar.

VR data creation practices and related applications seminar

UC-win/Road VR Seminar

Paid seminar

A seminar to learn VR data creation and related application utilization. Participants try data creation and VR presentation and learn advanced operation and useful information for 3D VR work. Suitable for those who are planning to apply VR in specific situations in the future. Those who wish can take a "VR Engineer Certification Examination" after the seminar.

Individual classes for professionals (3-day course)

UC-win/Road Simulation data creation training

¥99,000/1 person (Full capacity at 5 students)

Paid seminar

※Onsite training ¥198,000/1 person

▼Schedule

First Day		Second Day		Third Day	
9:30	Basic operation	9:30	Data creation (Advanced)	9:30	Model creation (UC-win/Road)
12:00	• basic operation, functions, case studies	12:00	• terrain generation	12:00	• model creation, simulation
13:00	Data creation practice (basic)		• road editing	13:00	Model creation (Shade3D)
16:30	• terrain creation, road definition	13:00	Data creation (Advanced)	16:00	• environment settings, modeling, file output
	• plane intersection, traffic setting	16:30	• ramp connection	16:00	Demonstrations
	• various functions		• simulation	16:30	• simulation samples
	• simulation				

CPD certified by Japan Society of Traffic Engineers
3D VR Road design & study seminar

Paid seminar

Road design with virtual reality Seminar

Adopting 3D virtual reality for the conventional road design process will provide a new sense to the evaluation and examination work that has been done with drawings and still images. participants can learn about the effectiveness and scope of 3D virtual reality while experiencing the creation of case study data.



UC-win/Road • UAV seminar supporting CIM and i-Construction
UAV Plugin • VR Seminar

Free of charge

After the explanation of the overview of UC-win/Road UAV Plug-in and the operation of UC-win/Road and data input, participants can experience the flight of an actual drone. We will also introduce how to download and utilize the shooting data.



Development of simplified features for road design study

Paid seminar

UC-win/Road SDK / VR-Cloud® SDK Seminar

UC-win/Road SDK is a development kit to enable the creation of applications and options for UC-win/Road, VR-Cloud® SDK is a software that enables the development of custom user interfaces using the Angel Script scripting language. You will be able to experience the process from installation of the development kit to creation of sample plug-ins and development of simple functions for road design study.



Self simplified assessment using VR seminar

Free of charge

VR City Planning System Hands-on Seminar

Mr. Hiroo Kasaoki, a facilitator of the consulting VR service "VR City Planning System", will be invited as a lecturer to introduce the "Self simplified assessment using VR" along with the significance and methods of using VR in participatory city planning and case studies.



UC-win/Road Driving Sim functions and plug-ins

Free of charge

UC-win/Road DS Seminar

A seminar on the functions and plug-ins of UC-win/Road Driving Sim, including how to create a driving course, the functions of vehicle motion models, scenario functions to define the simulation environment, log output, replay, micro sim, ECO drive, and motion support. Participants can try UC-win/Road from new data creation to scenario driving.



UC-win/Road Driving Sim functions and plug-ins

Free of charge

Arcbazar & Assessment VR Seminar

ProjectVR, which combines Arcbazar, an architectural design competition crowdsourcing site, with environmental assessment and cloud-based VR. Includes the introduction of Arcbazar and the operation experience of an innovative assessment method using 3D virtual reality.



3D Modeling Seminar

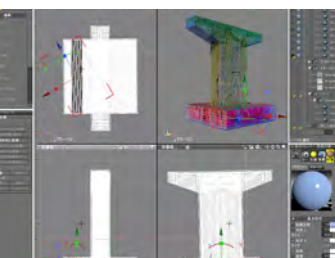
Shade3D hands-on seminar

Free of charge

An overview of Shade3D and its 3DCAD functions using NURBS modeling will be introduced. In the operation practice, participants will experience the photo-realistic rendering unique to CG software, the linkage between 3D data created with Shade3D and UC-win/Road, and various other functions.

Use Shade3D 3D models in UC-win/Road Shade3D-VR Application Seminar

The seminar includes the introduction of the outline and main functions of Shade3D and the experience of product operation and link with other software. Participants can try to import data from UC-1 design software into Shade3D, edit and output models, and read and simulate models in UC-win/Road.



3D Modeling Seminar

Shade3D Seminar (Advanced)

Paid Seminar

In this practical seminar, participants will be able to experience the possibilities of using Shade3D in their work, not only for creating 3D models, but also for various simulations and advanced rendering expressions in conjunction with UC-win/Road VR software.

Seminars for Juniors

Workshop for elementary and junior high school students

Paid seminar

Junior Software Seminar

Elementary and junior high school students create their own 3D space using UC-win/Road. This seminar is very popular among children, parents and teachers. Children can be familiar with software and enjoy learning it.



Learn with Block UI Programming Tool

Paid seminar

Junior Programming Seminar

Programming education became a compulsory subject in elementary schools and in junior high schools. This seminar is a programming seminar for elementary and junior high school students using the "Shade3D Block UI Programming Tool" which allows easy creation of 3D models by combining block commands like a puzzle.



Junior Seminar

Using Game Programming PC

Paid seminar

Computer Cramming School

Participants can learn everything from the basics of computer operation to simple programming in three months, including basic computer operations, LibreOffice and other software operations, and 3D model creation with Shade3D and block UI programming tools.



Details of Game Programming PC

Education / Training

A linkage between VR, advanced technology, and devices provides contents and systems realizing realistic and efficient experience.

Driver training & Driving diagnosis system

A 3D virtual model of a PCC (Pure Car Career) ship and a wharf to which the vehicles are unloaded and parked was developed to train drivers who unload vehicles. At the end of the drive they are assessed for driving/parking skill.



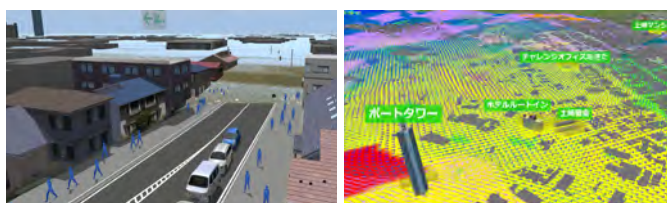
PCC ship driver training & drive diagnosis system

Qube Ports and Bulk

Education & Training

Tsunami evacuation training

An evacuation education system that we can learn how to escape rapidly from the area where a tsunami is predicted to come following the seabed earthquake. This system has affinity for residents in Akita city because the cityscape of inundated areas in the city is created in VR and they can experience how tsunami flows up to the city.



Education system of rapid evacuation from tsunami
Akita Industrial Technology Center / Akita University

Evacuation training and experiment in the chemical industry precinct by using walking VR simulator

VR data of an emergency evacuation plan preparing for chemical spill accident. The purpose of this simulation is to make an evacuation plan by examining the evacuation time and the recognition of evacuation signs.



Safe driving simulator for university students

This is VR data for a safe driving training simulator to train police officers. In addition to simulation of normal police business related to traffic accidents, this VR data has 25 traffic event scenarios such as traffic violations by pedestrians and other vehicles and the door of a parked vehicle suddenly opening from inside, etc. in order to show correct awareness of driving behavior. The university records response time, driving behavior, and important reminders while driving and uses the data for education and training.



Operation Environment

OS	Windows 10 / 11 (64-bit OS is recommended) *VR-Cloud® supports Android™
CPU	Greater than intel® i7 quad-core and 3.2GHz
Memory	RAM greater than 8GB
Hard Drive	SSD drive *At least 60GB free space is required for installment of the product including the terrain data and sample data. (At least 30GB free space is required for installment of VR-Design Studio.) *Enough free space is required if considering downloading from RoadDB and the working range for AVI recording.

Video Card	Greater than NVIDIA® GeForce 950 series GTX. Video memory greater than 4GB.
Display (Image Resolution)	More than 1920 x 1080 *Please use the default setting with the Aero theme valid for window design and the font size.
Option Drive	DVD-ROM drive
Sound Card	Arbitrary

City & Architecture Blog

Series

"City&Architecture Blog"

The 52nd article of "City and Architecture Blog", the popular series in Up&Coming, has been updated. Prof. Tomohiro Fukuda humorously introduces cities and architectures all over the world, and FORUM8 VR Support Group tries to model 3D digital cities. Fukuda Blog <http://fukudablog.hatenablog.com/>

**Introduction of attractive cities and architecture
Challenge to create 3D digital cities**

Assoc. Prof.,
Graduate School of
Osaka University

Tomohiro Fukuda



**Vol.62 Milan:
Salone**

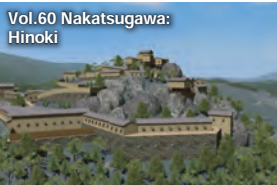


[City&Architecture Blog] <http://www.forum8.co.jp/topic/toshi-blog0.htm>

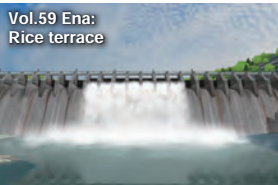
**Vol.61 Kisodani:
Emerald Green**



**Vol.60 Nakatsugawa:
Hinoki**



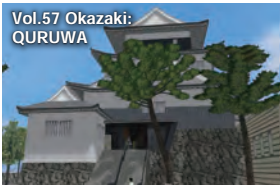
**Vol.59 Ena:
Rice terrace**



**Vol.58 Toyota:
toyocba**



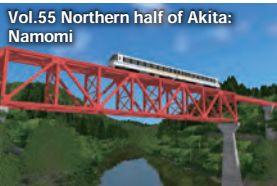
**Vol.57 Okazaki:
QRUWA**



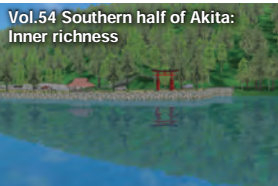
**Vol.56 Nagoya:
Morning**



**Vol.55 Northern half of Akita:
Namomi**



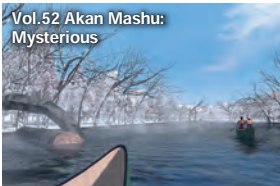
**Vol.54 Southern half of Akita:
Inner richness**



**Vol.53 Tango:
Dragon**



**Vol.52 Akan Mashu:
Mysterious**



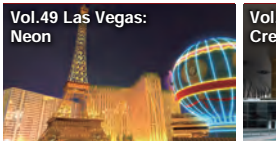
**Vol.51 Kurashiki:
Power of citizen**



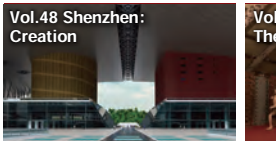
**Vol.50 Kamakura:
Here I come!**



**Vol.49 Las Vegas:
Neon**



**Vol.48 Shenzhen:
Creation**



**Vol.47 Wellington:
The southernmost capital**



**Vol.46 Kamiyama:
Scarecrow**



**Vol.45 Angkor Wat:
Look**



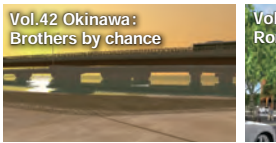
**Vol.44 Wucchi:
To a cultural tourism city**



**Vol.43 Ho Chi Minh city:
The king's law goes to the
hedges of the village**



**Vol.42 Okinawa:
Brothers by chance**



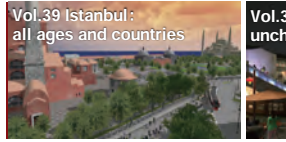
**Vol.41 Rome:
Rome was not built in a day.**



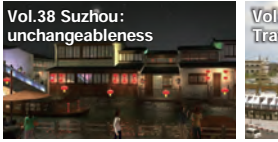
**Vol.40 Nanjing:
Old towers in misty rain**



**Vol.39 Istanbul:
all ages and countries**



**Vol.38 Suzhou:
unchangeableness**



**Vol.37 Myanmar:
Traveling across the country**



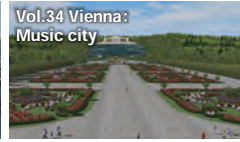
**Vol.36 Gujo Hachiman:
City of water and dance**



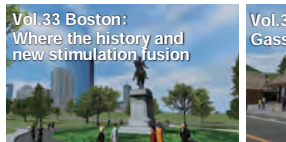
**Vol.35 Melbourne:
Multi culture**



**Vol.34 Vienna:
Music city**



**Vol.33 Boston:
Where the history and
new stimulation fusion**



**Vol.32 Nanto:
Gassho-zukuri**



**Vol.31 Sao Paulo:
Megacity in the South**



**Vol.30 Bungo-Ono:
Trip in the country**



**Vol.29 Taichung:
Asia University Museum
of Modern Art**



**Vol.28 Kyoto:
CAADRIA 2014**



**Vol.27 Nanshin, Nagano:
A Gamy Experience**



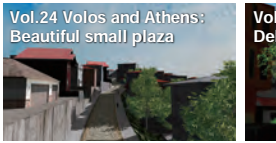
**Vol.26 Germany:
Freiburg and Goslar**



**Vol.25 Northern Switzerland:
Zurich and Weil am Rhein**



**Vol.24 Volos and Athens:
Beautiful small plaza**



**Vol.23 Netherlands:
Delft Blue**



**Vol.22 Singapore:
City-state of right
on the equator**



**Vol.21 Setouchi:
Naoshima**



**Vol.20 South India:
Chennai**



**Vol.19 Austria:
Newcastle**



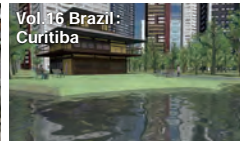
**Vol.18 HongKong and
Guangzhou: Zhujiang delta**



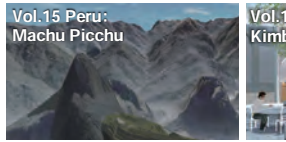
**Vol.17 Itako and Sawara:
Chiba and Ibaraki**



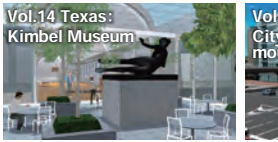
**Vol.16 Brazil:
Curitiba**



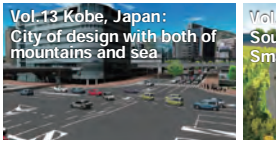
**Vol.15 Peru:
Machu Picchu**



**Vol.14 Texas:
Kimbel Museum**



**Vol.13 Kobe, Japan:
City of design with both of
mountains and sea**



**Vol.12 Cheju Island,
South Korea:
Smart Grid Island**



**Vol.11 Hamburg, Germany:
Hafencity**



**Vol.10 Strasbourg:
Tram and town planning**



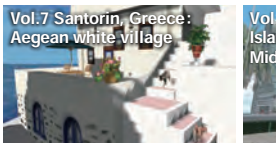
**Vol.9 Oumihachiman:
Deep town**



**Vol.8 Venice:
Town of water network**



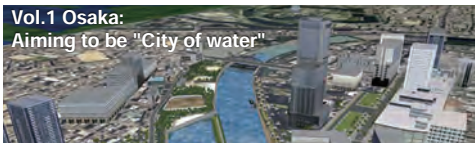
**Vol.7 Santorin, Greece:
Aegean white village**



**Vol.6 Bahrain:
Island nations in the
Middle East**



**Vol.1 Osaka:
Aiming to be "City of water"**



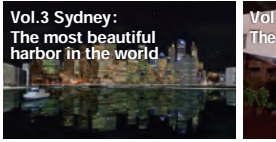
**Vol.5 Shinanomachi of sump
water of North Alps**



**Vol.4 India:
Taj Mahal**



**Vol.3 Sydney:
The most beautiful
harbor in the world**



**Vol.2 Taiwan:
The often-visited country**



Products Overview

Plug-in/ Option/ Lineup

Examples of Practical Use

Road Support System

System Solution

F8VPS

FORUM8 Virtual Platform System

Metaverse Creation Using Web VR Platform

Program Price From USD5,000~

F8VPS can Build a Digital Twin for Any Project!

The Web VR Platform System F8VPS (FORUM8 Virtual Platform System) is an application framework for metaverse. Metaverse that allows real-time communication using avatars can be created on web browsers such as PC, tablet, and smartphone

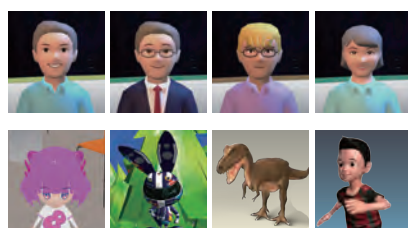
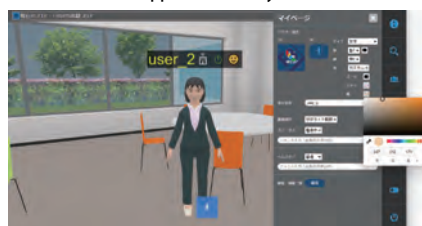
in a short time. It can also be provided as a customized product depending on the application, such as urban spaces, virtual offices, showrooms, campuses, events, and factory tours.

F8VPS Basic Functions

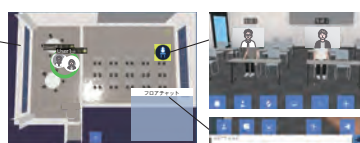
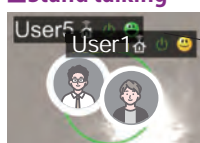
Avatar

Monthly Price: USD180/Account

Customize avatar appearance freely

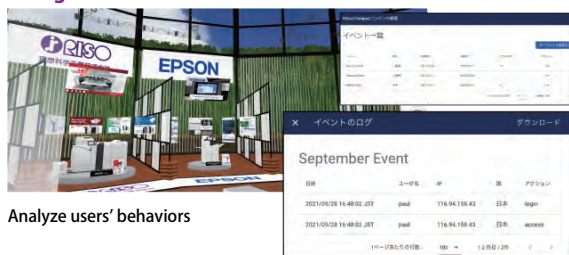


Stand talking



Talk with people nearby

Log function



Analyze users' behaviors

Login function



Manage visitors and acquire user information

web



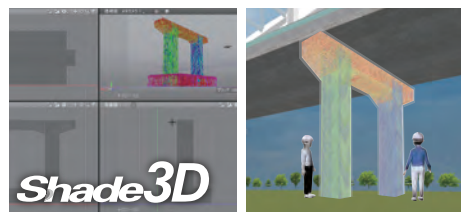
Various functions for smooth Web conference

Layout function



Model import is possible. Cooperate with Shade3D to create more beautiful virtual space.

Editor function NEW!



Edit contents and models on the browser. Easily place models created with Shade3D.

XR mode



Immersive 3D display using VR goggles and HoloLens

Point cloud display NEW!

By displaying large point cloud data on F8VPS and accessing the metaverse on a browser, multiple people can share on-site information and have remote discussions regardless of location.



Options

Virtual Voting

Option price USD1,100

Social communication tool for viewing and rating exhibits and competitions in virtual space.



System Development

Groupware / Suite ERP Linkage

From schedule and task management to cooperation with cloud ERP system

ERP



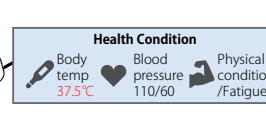
Health Management

Monitor health condition from mental health to heart rate



EC payment

Add the convenience of real store to virtual store



Application Examples

VR NILIM

Ministry of Land, Infrastructure,
Transport and Tourism (MLIT)
"VR NILIM" ▶



FORUM8 delivered "VR NILIM System" where the entire site of the institute's Asahi office is reproduced in VR. It allows viewers to freely explore each section of the institute site and check the introductions of each experimental facility and videos of study results. The system can be widely used not only for R&D to promote the infrastructure DX through public-private partnerships but also as a planning and public relations platform to publicize the activities of the NILIM, including the virtual NILIM tour.



Virtual EXPO

Akamatsu Co., Ltd.
"Akamatsu Hybrid Expo" ▶



Shikoku's first live and virtual hybrid exhibition was held. In a virtual venue using F8VPS, visitors could browse documents, watch promotional videos, and view products. A seminar corner by exhibitors, a lottery, and a questionnaire were also included, and a total of more than 1,000 people accessed the exhibition over the two days, making it useful for sales promotion.



FORUM8 Rally Japan 2022 Metaverse Experience

We have built the Toyota Stadium, which was used as a service park during the RALLY FAN FESTA held from November 10th to 13th, 2022, on metaverse.



Virtual Class using MR linked system

"Next Generation Communication Platform Using XR Technology" adopted by the 2021 Ministry of Economy, Trade and Industry's Next Generation Software Platform Demonstration Project

Using a virtual "remote classroom" on a 3DVR space, instructors and students can participate in classes both in VR space and in real space. We have confirmed the effectiveness of this system in terms of communication, including a sense of distance and talking to others, which provides a higher sense of realism than normal web conferencing.



Virtual Showroom

You can freely move around in the exhibition space and watch contents such as introductory videos and catalogs in 3DVR while getting automatic guidance. Since it is possible to virtually reproduce the real space using WebGL, as well as to share and introduce the information related to the place, various contents can be shared as if they were actually exhibited. This is available in either full VR or hybrid format.



Details ▼



Virtual Campus

FORUM8 Virtual Platform System (F8VPS) as the "Virtual Campus" with the purpose of information disclosure and public relations. The campus, buildings, laboratories, conference rooms, and event halls are reproduced in the 3D space, and viewers can watch the school introduction videos, check the introductions and related materials of each lab, and use the conference system as well as walk through the virtual space. It is used for the research showcase for overseas people, joint workshop, and other events.



Up&Coming Vol.133

Tokyo Tech ANNEX ▼



Employment and social participation support Metaverse Platform

Adopted as a "Fiscal Year 2023 Innovation Strategy Development Project" by The Mechanical Social Systems Foundation

F8VPS is linked with AI to optimize communication within the Metaverse space, to be used as a platform to support employment and social participation of people, mainly users who have withdrawn from society. The system is widely deployed as an environment and mechanism that enables all kinds of people to contribute to society.



Digital City Experience

Adopted for "Initiative for the Realization of Smart City (by U Smart Promotion Council)"

3D city model of the Utsunomiya urban area, which is publicly available as open data, and 3D models of social facilities and the future town of Utsunomiya, which will be newly constructed using the UC-win/Road VR simulation software and the Shade3D integrated 3DCG software, have been built on the F8VPS platform. The 3D city models constructed will be examined for effective use in school education, including tours of social facilities.



Support of DX Local Education and DX Disaster Management

Tsuru City Exploratory Tutoring School and Citizen's University × Tsuru University Multipurpose Classroom Building (tentative name) Development Project for Digital Human Resource Development

reproduced the Tsuru University campus as digital twin in the UC-win/Road environment, which was further developed into a metaverse using the F8VPS. This enabled open campus tours, educational training simulations, as well as drill simulations of disaster evacuation guidance in the digital twin environment.



Integrated 3DCG software supporting BIM



Shade3D Ver.24

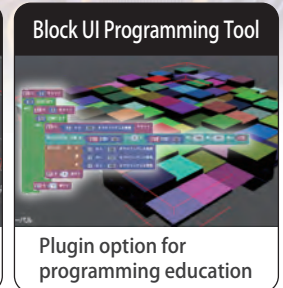
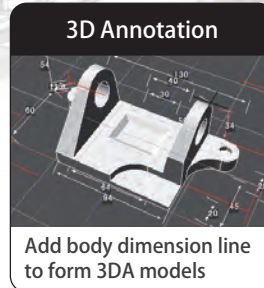
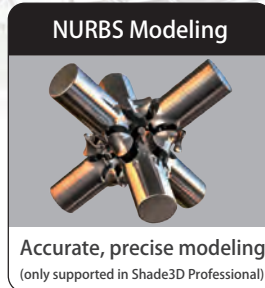
An all-in-one 3DCG software with all the functions needed for 3DCG creation, including modeling, rendering, animation, 3D CAD, and 3D printing. With over 500,000 units sold, it is used in a wide range of applications due to its intuitive feel, and can also be used as a modeling tool for UC-win/Road.

Professional
Standard
Basic
Shade3D SDK
Block UI Programming Tool
BIM/CIM Design Check Tool
(only supported in Shade3D)

US\$980
US\$480
US\$198
US\$800
US\$100
US\$400

Japanese/English/Chinese versions
Corresponding to the Certification
of 3D CAD engineer Grade-1
According to a research by Fuji Chimera
Research Institute, Inc.(31 August 2020)

Japan-made
3DCG software
Market share
NO.1



Basic functions

Shade3D has every feature needed to create 3D graphics. Shade3D allows flexibility in design unique to 3DCG software, and accurate modeling like CAD software.

【Modeling】

In addition to modeling with polygon meshes, primitive shapes such as spheres and circles, Shade3D also support modeling using Bezier curves.

- Polygon: Modeling with polygon meshes consisting of vertices, ridges, and faces.
- Free-form surface: A modeling method using Bezier curves by manipulating control points and handles.
- NURBS: A modeling method using "NURBS shapes" that are widely used in manufacturing and architectural design. (Professional version only).
- Linear: Road alignment data exchange using LandXML. **NEW**
- Standard Bone: By adding constraints to conventional bones, it is possible to create highly compatible joint structures **NEW**



【Rendering】

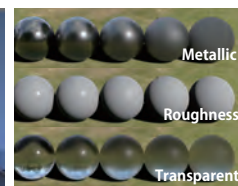
- Reproduce the atmosphere using ray tracing, path tracing, and photon mapping of global illumination. Users can also use wire frame for expression. In addition, VR panoramic rendering that supports stereoscopic viewing creates still images and videos that can be displayed in 3D with VR goggles.
- ShadeGrid: Rendering workload is distributed across multiple computers by running ShadeGrid Server in an environment where multiple PCs are connected via a TCP/IP network.
- Adopting physically-based rendering (rendering method that processes PBR, materials, light, etc. according to physics laws).
- PBR material: Based on the Principled BRDF, a roughness / metal degree parameter that expresses the texture of an object in the real world.
- GPU ray tracing that enables high-speed and high-quality image generation
- Polygon Reduction: In addition to new functions for converting near-landscape models into billboard and box models for far-landscape, the polygon reduction will be improved for practicality, ex. UV maintenance. **NEW**
- Input/Output Support in KTX Format (GPU compressed texture format) **NEW**



HDR rendering



Rendering time: 2 sec



PBR rendering



Billboard and box model converter

【Animation function】 METAVERSE

- Equipped with various functions such as deformation by joints, camera work, movement along the path, organic deformation by skin, reading of BVH, walkthrough, expression by physics calculation, etc.
- Supports polygon mesh deformation and merge by morph target. Users can create multiple facial expressions from a single facial model and merge them in proportion.
- Multiple keyframe animations can be kept in one scene. Character materials with various movements such as walking and running can be handled as one scene file.



Keep multiple motions by the multi-timeline



Merge multiple facial expressions by morph target

【Light source function】 METAVERSE

- Spotlight, surface light source, line light source, parallel light source, point light source, ambient light, light distribution by IES data
- Infinite light source such as sunlight, sunlight simulation by date / time / longitude / latitude is possible

【Surface material】

- Expression of milky transparent textures and cloud-like material **METAVERSE** such as basic colors, reflections, transparency, refractive index, texture wrapping, projection, UV mapping, ivory based on parameters and textures.
- PBR material: New parameters added to the PBR material, which is a physics-based texture rendering, are Clear Coat (secondary gloss) and Sheen (cloth).



【3D printing】

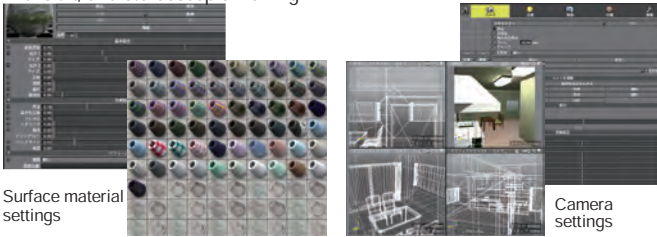
- Supports STL / OBJ files supported by many 3D printers, enabling smooth data exchange with 3D printers.

【Layout function】

- Four-view display of front, top, side, and perspective view (camera angle).
- Change the combination of display for drawings, select the split range of drawings, and change the shading display for each drawing.

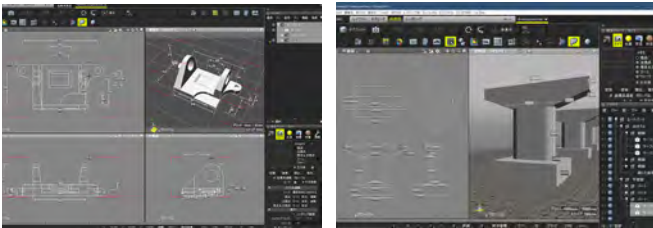
【Camera function】 METAVERSE

- Allows placing multiple cameras in a scene, with same settings as an actual camera such as zoom, pan, dolly, angle of view, tilt, film shift, lens swing, lens tilt, and stereoscopic viewing.



【3DCAD functions】

- Support creating 2D drawings.
- Clash detection for thick, non-perforated surfaces, general shapes, free-form surfaces, sweep bodies, rotating bodies, polygon meshes, and NURBS shapes.
- Arrange and align different NURBS shape data.
- Supports STEP / IGES files with data of area / volume / center of gravity.
- Output three-view drawings to AI / DXF format.
- Display 3DA (3D Annotated Model) with frame dimension lines.



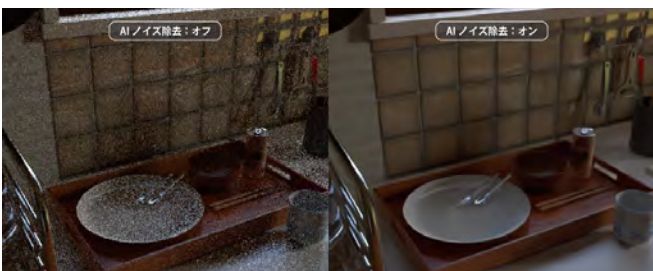
【Collaboration with UC-win/Road】

- Export models in 3ds, FBX, COLLADA formats and utilize in UC-win/Road.
- Models can be edited as it is placed in the 3D space of Shade3D.



【AI Denoise】

- The support of the noise reduction library developed by Intel will enable to efficiently remove high frequency noise with AI deep learning based filters.
- Supports rendering by path tracing method and GPU ray tracing method.

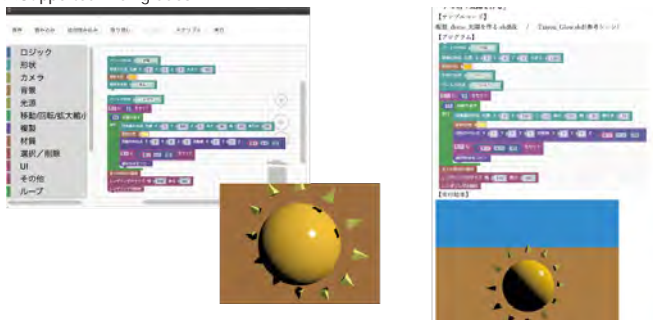


Block UI Programming tool

Sold Separately

- Users can use "block interface" adopted in academy programming education. In Shade3D, they can combine blocks to form a flowchart.
- Interface expanded to be specific to each of the business and education **NEW**
- The toolbox can be modified to suit the intended use
- Improved operability of the toolbox and workspace and addition of new blocks

※Supported in all grades



Interface for business

Sold Separately

BIM/CIM Design Check Tool

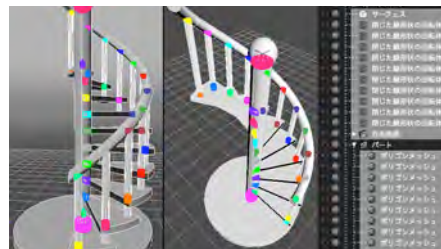
NEW

The Ministry of Land, Infrastructure, Transport, and Tourism has created "Operation Guideline of BIM/CIM Design Check Sheet March 2020" and "BIM/CIM Design Check Sheet". This tool is a separately sold option corresponding to these guidelines. It helps your efficient BIM/CIM design check with its functions to import and export IFC files, including IFC 4.3, the next version of IFC.



Clash detection tool is now compatible with other shapes beside NURBS

Now also supports thick, non-perforated surfaces, general shapes, free-form surfaces, sweep bodies, rotating bodies, polygon meshes.



IFC file import/export

A function to input/output files in IFC (Industry Foundation Classes) format, an international standard in construction industry. IFC file defines systematically the specifications of all the elements that make up a building. The function "IFC Information" allows viewing and editing such information.

IFC input, cooperate with 3D bar arrangement CAD, design verification data support

Supports import of design verification data files attached as an external reference to the IFC file output by 3D bar arrangement CAD. Information assigned during design can be confirmed on Shade3D, improving the efficiency of design verification.

Native support for Mac Apple Silicon

FBX input/output, COLLADA input (Professional), COLLADA output, glTF input/output (Professional) are now native to macOS (Apple Silicon). This significantly improves overall performance compared to Apple Silicon native support via virtualized middleware.

VR/CG data creation / technical support service

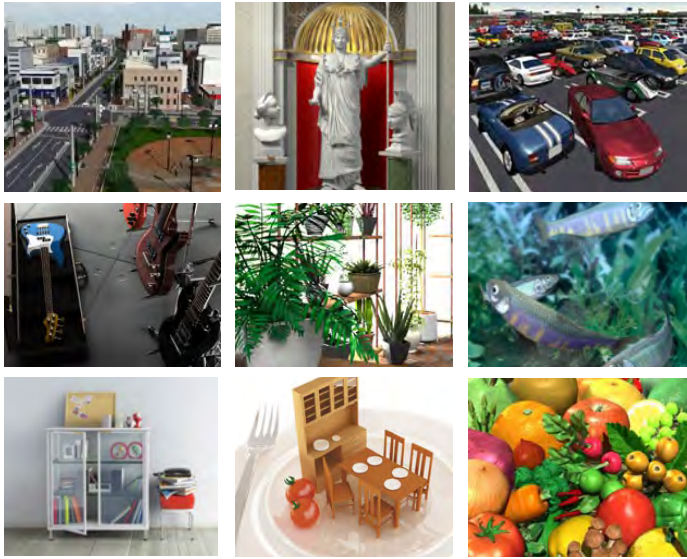
Services that support general VR/CG data creation using UC-win/Road

Our 3D data creation service not only provides Shade3D, but also supports VR/CG data creation in general, creating from 3D model and texture to simulation data.



Collection of Shade3D Data Forest Series

More than 7,000 ready-to-use data items such as cityscapes, human shapes, interiors, plants, etc. are distributed by series.



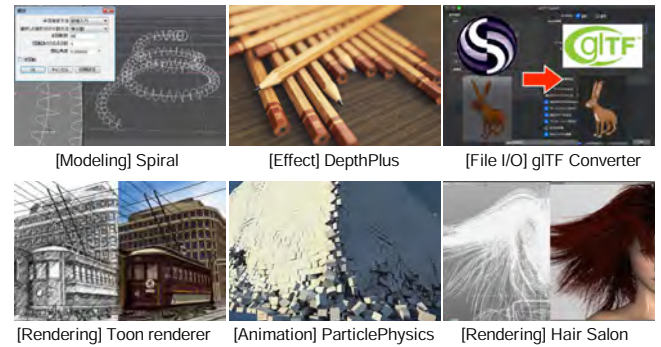
Shade3D SDK

As an option for Shade3D, we have released a plugin SDK for developing functions by using C++ language.

With this, you can create high-performance additional functions that are tightly integrated with Shade3D from simple solutions to advanced features. The plug-ins you create can be used for any purpose such as personal use and distribution to commercial use without restrictions.

Documents, sample plugins

Shade3D SDK also includes sample plug-ins and their source code, which can be used as a reference for how to implement functions and as a basis for developing new plug-ins.



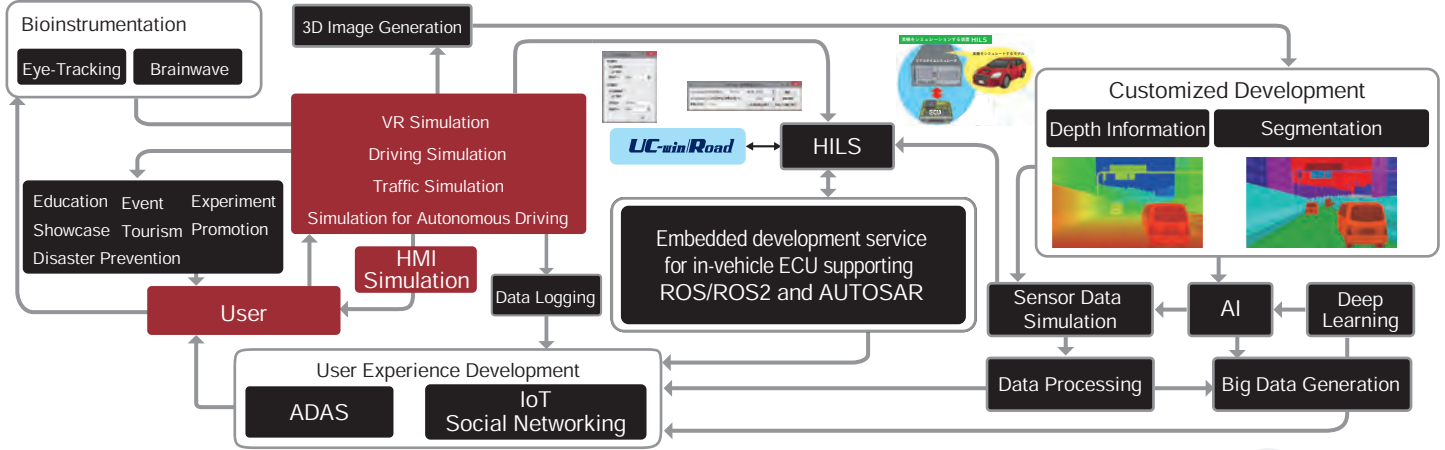
Main features

Category	Function	Basic	Standard	Professional
Interface	Supports 4K / stereoscopic display of perspective view preview	○	○	○
	Preview rendering / 2D plane template functions	○	○	○
	Display global illumination in the Figure window	-	○	○
	Workspace for CAD	-	-	○
Modeling	Polygon modeling / Free-form surface modeling	○	○	○
	NURBS modeling / Assembly function, interference, and measurement of NURBS surfaces	-	-	○
	Boolean operation (floating type)	-	-	○
	Voxelized mesh / polygon reduction / mesh editing tool	○	○	○
	Boolean modeling / primitive / line offset / mirroring	○	○	○
	Vertex bevel / edge bevel / merge / bridge	○	○	○
Surface material	Support 3D annotation (displaying dimension lines)	-	-	○
	Flat unwrap / UV alignment	-	○	○
	UV map editing / Direct light / Indirect light / Lightmap / Normal mapping	○	○	○
	Material parameter volume (volume rendering)	-	○	○
	Material parameters subsurface scattering	-	-	○
Camera / light / background	PBR material	-	-	○
	Adding walk camera	○	○	○
	Physical sky / Volume light	-	○	○
Rendering	Support soft shadow in ray tracing / light sources with light distribution (IES data)	-	-	○
	Maximum render size (pixels)	2K	4K	Larger than 8K
	Global Illumination: Radiosity	○	○	○
	Global Illumination: Radiosity Pro	-	-	○
	Stereoscopic rendering (VR panoramic rendering)	○	○	○
	Multi-pass rendering / GlowEffector / Illumination adjustment / Rendering history	-	○	○
	Surface material / light source quality adjustment	-	○	○
	ShadeGrid (number of server machine)	Limited to 1	Limited to 1	No limit
	Linear workflow	○	○	○
	Enhancement of preset rendering resolution function	○	○	○
Animation	Linear movement / Rotation / Scaling / Uniform scaling / Deformation animation by ball joints	○	○	○
	Animation settings using inverse kinematics	-	○	○
	Motion effect	-	○	○
UI	Support dark mode of Windows 10, 11 / macOS mojave	○	○	○
File	Export Adobe Illustrator AI	-	○	○
	Simultaneous output of three-view drawing (Adobe Illustrator AI / DXF)	-	-	○
	Import / export IGES (support NURBS shapes)	-	-	○
	Import / export FBX	○	○	○
	Import / export DXF 2D/3D	○	○	○
	Export Adobe Flash SWF / Adobe Illustrator AI (Toon renderer)	-	-	○
	Import SketchUp	○	○	○
	Import / export 3ds max (3DS)	-	-	○

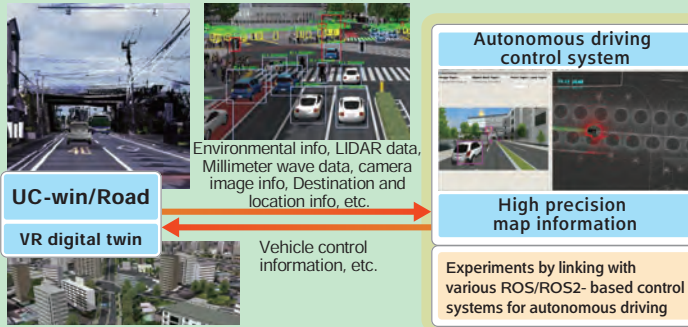
Most optimal VR simulation environment for autonomous driving and mobility R&D

Connection acceleration among various technologies and industries by UC-win/Road open data cooperation

The "Monodzukuri Nippon Grand Awards" is a system to honour people who are active in the forefront of manufacturing and are recognized as particularly outstanding. The METI, MLIT, MHLW and MEXT work together to hold this award every other year. FORUM8 was awarded the METI Minister's Prize in the "Connected Industries - Outstanding Collaboration" category in the field of "Manufacturing to support industry and society". FORUM8 was recognized for its work in creating new added value and solving problems by connecting machines, technologies and people through data sharing in collaborative areas.

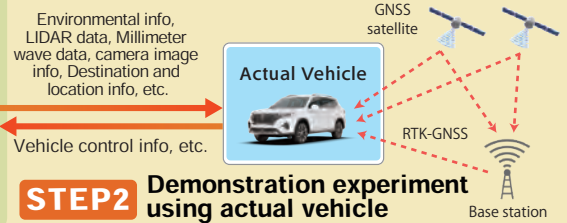


STEP1 Cooperation between VR and control systems for autonomous driving



Development to WebVR platform

- Construct database on cloud server. Utilize it as public data.
- Use for monitoring and actual operations



STEP2 Demonstration experiment using actual vehicle

UC-win/Road's Autonomous Driving / ADAS functions into the software package

UC-win/Road allows high fidelity reproduction of driving environments. Various events and driving conditions that may occur on a road can be set up into a driving scenario as well as traffic and crowd flow can be generated. UC-win/Road can be linked with HILS/SILS and this allows driving simulation in the loop linked with various hardware. It can be integrated with third party systems.

<p>Vehicle Control</p> <p>Transmits information about the vehicle in operation to outside and controls the vehicle according to external information.</p>	<p>Surroundings Detection</p> <p>Detects objects around the vehicle in operation and transmits the information.</p>	<p>Object Control</p> <p>Controls objects (vehicle, signal, static model, etc.) in VR space.</p>	<p>DS Course Converter</p> <p>Mutual conversion of course information with the vehicle motion calculation system.</p>	<p>Traffic Control / Shortest Path Search</p> <p>Transmits road information around the vehicle. Searches for the shortest route to the goal.</p>
<p>Car Navigation</p> <p>Road and vehicle conditions are displayed in conjunction with driving. Perform voice guidance and screen display.</p>	<p>Driving Information Input/Output</p> <p>Reflects steering angle and accelerator/brake input/output values of the driving vehicle to the device</p>	<p>Camera Sensor</p> <p>Send images in the format specified by the camera sensor. Compatible with blur and noise processing.</p>	<p>Laser Sensor</p> <p>Image information is transmitted from the laser sensor in the specified format.</p>	<p>White Line Detection</p> <p>The white line information in the specified range is transmitted from the vehicle to the outside.</p>

8DOF Traffic Safety Simulator (P.58)

- <Software>**
- UC-win/Road Driving Sim
 - Motion platform option
 - Cluster option
 - Cluster client x9
- <Hardware>**
- Order made dome type cabin (Real car cutaway body used)
 - All surroundings dome projection projector
 - 6 axis motion, payload 4,000 kg, maximum acceleration 0.5G



Vehicular Dynamics Research and Evaluation System-High-Precision Driving Simulator (P.60)

- <Software>**
- UC-win/Road Driving Sim
- <Hardware>**
- Large 5-screened 3D display
 - 4K Projector
 - Head Tracking
 - Motion platform option
 - Cluster option



Authorization Conforming to the driving simulator type approval standards driving simulator for driving schools

Approval by NPA 交L20-1 交L20-2 交L20-3 交L20-4

Certified Safe Driving Simulator (P.64)

- <Software>**
- UC-win/Road Driving Sim
- <Hardware>**
- 42 inches LCD monitor 3Ch
 - Parts / instrument panel, real car parts used
 - Active steering option (separate option)
 - Motion platform option (separate option)

UC-win/Road Compact Drive Simulator (P.64)

- <Software>**
- UC-win/Road Driving Sim
- <Hardware>**
- 32 inches LCD monitor 3Ch
 - Steering wheel and accelerator/brake pedal system made of real car parts
 - Steering for both side available, Automatic (Manual Op.)
 - Active Steering standard
 - LCD instrument panel Op.

Human - Vehicle - Traffic Flow Interoperable Driving Simulation System for Interactive Information Exchange (P.62)

- <Software>**
- UC-win/Road Driving Sim
 - Motion platform option
 - Cluster option
 - Cluster client x8
- <Hardware>**
- 1 person cabin (real car parts used)
 - 5 sheets of 60 inches LCD monitor
 - 6 axis motion, payload 650kg, maximum acceleration 0.7G
 - HILS/ECU emulator
 - Eye mark recorder



UC-win/Road Simple Driving Simulator for seniors (P.68)

- <Software>**
- UC-win/Road Driving Sim
- <Hardware>**
- 21.5 inches LCD monitor
 - Real car size simple steering
 - Accelerator pedal, brake pedal

UC-win/Road Simulator (P.65)

- <Software>**
- UC-win/Road Driving Sim
 - Motion platform option
- <Hardware>**
- 6 axis motion, payload 350kg

UC-win/Road Simple Simulator

- <Software>**
- UC-win/Road Driving Sim
- <Hardware>**
- 3 sheets of 42 inches LCD monitor
 - Controller for game, seat for game

Highway Driving Simulator (P.65)

- <Software>**
- UC-win/Road Driving Sim
- <Hardware>**
- 6DOF motion platform

UC-win/Road Driving Simulator Lineup



Flight Simulator



Racing Simulator

Blue Tiger Simulator

- <Software>** • UC-win/Road Driving Sim
- <Hardware>** • 22 inches LCD monitor 3Ch
• 2DOF motion platform
• Operation interface for Flight Simulator
• Seat Vibrator
*Drive type option supported



Train simulator (P.73)

- <Software>**
• UC-win/Road Driving Sim
- <Hardware>**
• 50 inches LCD monitor(Front)
• 42 inches LCD monitor(Side)
• Master controller and brake controller from real trains
• Meters



VR360 Simulator

Super-experience rolling simulator with VR Head Mounted Display & 360-degree rotation



© Graduate school of Kyoto University

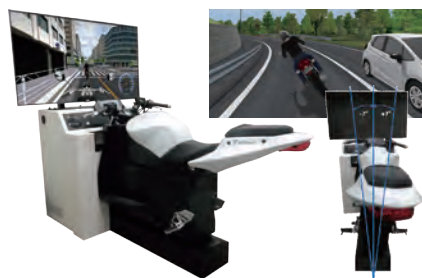
UC-win/Road 6DOF Driving Simulator

- <Software>**
• UC-win/Road Driving Sim
• Motion Platform option
• Cluster option • Cluster client x8 (Front x5, Both side mirrors, Rear view mirror)
- <Hardware>**
• Quarter size real vehicle driver's cabin
• 60 inches monitor 5Ch
• Rear view mirror (10.2 inches monitor) / Side mirror (7 inches monitor) x2
• 5.1 ch sound system
• 6DOF motion system



UC-win/Road Ship Operation Simulator

- <Software>**
• UC-win/Road Driving Sim
- <Hardware>**
• Small demo simulator (UC-win/Road is a separate option)
• Compact simulator for exhibition and guidance
• Start/Stop button
• Steering, acceleration, brake



Bike Simulator **NEW** (P.71)

- <Software>**
• UC-win/Road Ultimate + Motorcycle Simulator Option
• UC-win/Road Driving Sim + Motorcycle Simulator Option
• UC-win/Road Bike Simulator Option
- <Hardware>**
• Bike Simulator

VR Motion Seat

- <Software>**
• UC-win/Road Driving Sim
- <Hardware>**
• Head Mounted Display
• 3 axis motion, seat,
• Four-point safety belt
*Linkage with CV1, VIVE, and Gear VR



SimCraft Simulator

- <Software>**
• UC-win/Road Driving Sim
- <Hardware>**
• 40 inches LCD monitor 3Ch
• 3DOF motion platform
• High-grade steering controller for game
• Accelerator pedal, brake pedal (with load adjustment function)
*The motion configuration and other options can be supported.



Bicycle simulator (P.72)

- <Software>**
• UC-win/Road Driving Sim
- <Hardware>**
• 50 inches full HD monitor
• 3 axis posture sensor
• Bicycle



Wheelchair Simulator **NEW** (P.73)

- <Software>**
• UC-win/Road Ultimate + wheelchair plug-in option
• UC-win/Road Driving Sim + wheelchair plug-in option
• Wheelchair Plug-in Option
- <Hardware>**
• Wheelchair Simulator

8DOF Traffic Safety Simulator

The high performance large-scale driving simulator

8DOF Traffic Safety Simulator is the high performance large-scale driving simulator based on FORUM8's Real-Time Interactive 3D Virtual Reality Simulation & Modeling Software UC-win/Road. This was planned and built for the Research Institute of the Highway Ministry of Transport in China (RIOH) to be used in their traffic and safety research work in accordance with their detailed specification. In January 2009, FORUM8 received the order for customized development of this Driving Simulator an international tender and in February 2014, the Final Acceptance Test was complete, marking the completion of the entire project.

Expected outcome and functions

Function designed for driver behavior research

Having the ability to reproduce the driver's driving sensation accurately, the simulator enables the users to conduct driving behavior research to evaluate a whole host of 'human factors' which may affect road traffic system.

- Measuring and analyzing a driver's psychological characteristics and conducting research based on the results (lane change, acceleration / deceleration, turning, etc.)
- Researching the driving behavior of individuals divided into age groups (youth/adults/seniors, etc.)
- A function for researching the effects on traffic safety due to a variety of driver distractions (mobile phone, radio, etc.)
- The effect on traffic safety due to tiredness
- A function for researching the influence of alcohol, disease and drugs on traffic safety, and impaired driving behavior

Road traffic safety research functions

This simulator possesses road traffic safety research functions useful for research based on the status and design of the individual 'road' within the road traffic system.

- A function for road safety assessment at the design stage
- A function for road safety assessment at the management and maintenance stage
- Researching the technology for maintaining drivers' safety when they are traveling in special sections of the road (long downhill road, tunnels, sharp curves, intersections, etc.)
- A function that enables detailed research into driving safety under changing road conditions including lighting, induction, and visibility
- VR optimization design function for road landscape and traffic facility installation
- A function that enables detailed research on technology for maintaining road safety under conditions in which multiple drivers are operating within the same transport network

Traffic safety research under special environmental circumstances

This simulator enables the user to investigate the effects and subsequent driving actions under a range of different environmental conditions.

- A function for traffic safety research under bad weather conditions (fog, ice and snow, high and low temperature, snowstorm, wind, etc.)
- A function for traffic safety and emergency and security countermeasure research under extreme traffic conditions (traffic accidents, abnormal traffic incidents, etc.)

Other Functions

As the FORUM 8 Driving Simulator can faithfully reproduce the real driving sensation it has many other applications in driving behavior research.

- A function for reviewing traffic safety criteria and rules; the function also includes various other related technical features.
- A function that enables the validation of the latest in-vehicle ITS systems
- A function that reproduces traffic accidents and judicial test function.



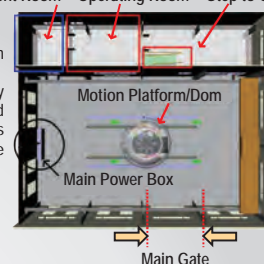
Image of the total system

The accompanying photograph shows the 8 degrees of freedom vehicle simulator which is based on a 6 degrees of freedom motion platform plus Yaw and X tables.

This system allows the user to be immersed in an extremely realistic environment, as similar to the real world as technically possible by utilizing a 360 degree view projection system within the dome. This was made possible via the UC-win/Road cluster system (UC win/Road is a real-time interactive 3D VR simulation & modelling software) along with the use of appropriate sound equipment and vibration devices etc. The vehicle and truck cabin's, which can be quickly and easily exchanged if needed, are set within a dome structure, along with the advanced management system including CCD camera, image monitor and recording system etc.

The traffic simulator and vehicle motion models consist of the most advanced system for measuring driver behaviour data, including eye-tracking etc., and are directly linked to UC-win/Road, which all leads to further advances within driver safety research.

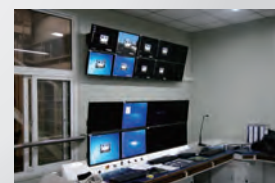
Equipment Room Operating Room Step to OP Room



Traffic Flow Simulator



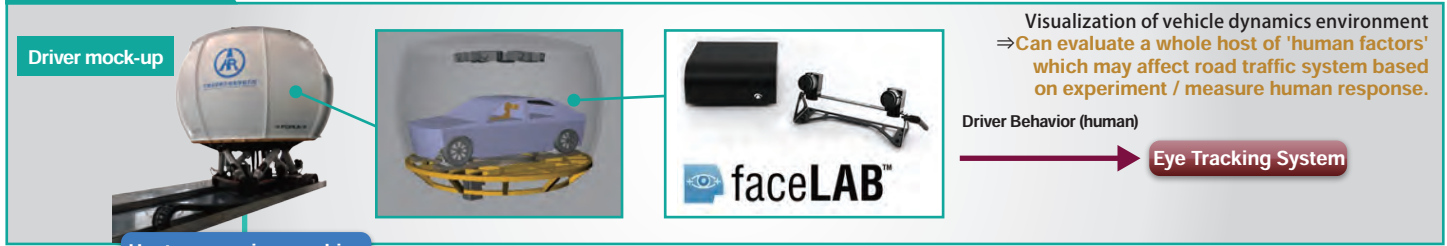
Vehicle Motion Simulator



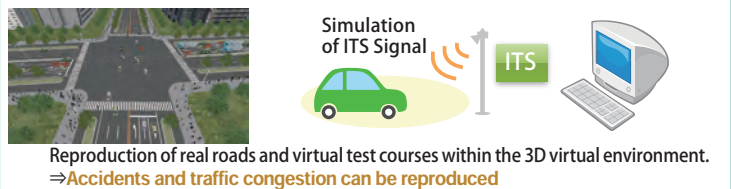
UC-win/Road

System Configuration

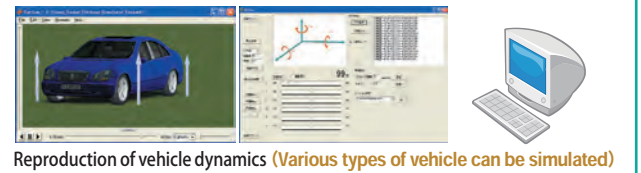
Driving Simulator



Traffic Flow Simulator (PTV Vissim)

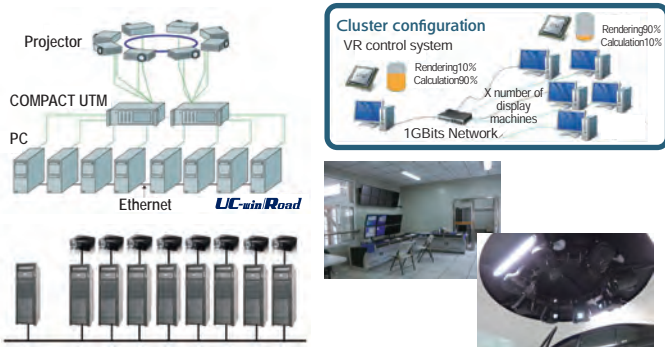


Vehicle Motion Simulator (CarSim/TruckSim)



Cluster Computer System -Cluster Computer System-

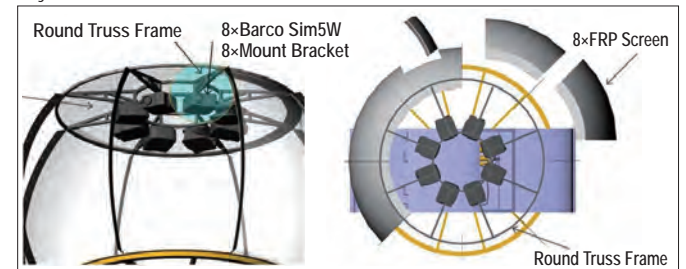
The Cluster Computer System is composed of 1 master PC for control and another 8 PCs for display. Each channel is rendered using its dedicated display PC, and 8 display PCs are synchronized using the master PC, allowing the projection of a video to the 360° doam-shaped screen.



Multi Projector System (8 units)

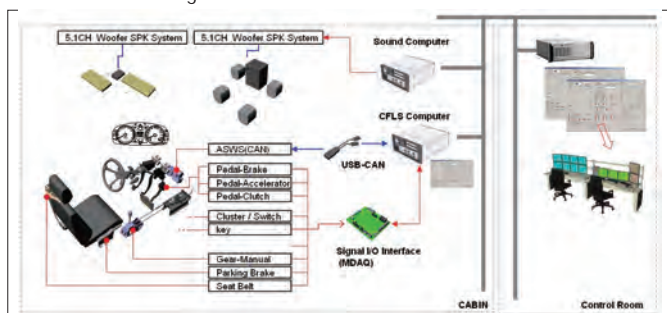
Barco SIM5R Projector

The multi-projector system within this high-performance simulator is composed of 8 individual projectors. Using edge blending technology, the system provides a 360° simulation environment for the driven vehicle. The direction and angle of the projectors was determined after simulation verification by an expert consultant. The projector system is structured in a way that does not obstruct the driver's view.



Real Car Cabin (Honda Accord)

The simulator incorporates the real cabin of a Honda Accord. The engine was removed to be replaced with equipment such as the electronic control system and acoustic PC. A PC power and a connection terminal for Internet connection has been placed inside the cabin. The original vehicle's steering wheel and accelerator / brake pedals are used to help achieve the real driving sensation.



Eye tracking System

face LAB is a product developed by Seeing Machines Inc., a spin-off company of the Australian National University (ANU). This system measures the motion of the face based on information from two video cameras that automatically track the person's face in real time. This software captures the facial features 3 dimensionally from an image, extracts the facial features and tracks these features. When a facial feature changes on the screen, it will keep tracking even when the head rolls fast or when part of the image of the face on the screen is distorted, by choosing a new feature dynamically. The output data is: eye movement, position of the head, rotation, tightness of the eyelid, movement of eyebrows and lips and the size of the pupil (pupillometer). A person's face naturally tells you a great deal about their mental state. By using this system we can measure a person's intentions and the degree of attention from examining the person's countenance.



Standard VR Model (UC-win/Road)

In addition to the ability to create VR models for driving simulation, UC-win/Road is equipped with the following 4 standard model types. All of them are real time VR models that can make effective use of the features of the driving simulator modeled from real roads. It provides a flexible driving environment by means of the scenario function, environment switching function and the switching of cabin and motion model.

Urban Road VR Data



We reproduced the urban area road network of the Chinese capital city having the "No. 3 loop line" of Beijing city as the center.

Mountain Road VR Data



The VR national road G109 has been designed to faithfully reproduce the road structure to provide a realistic feeling of acceleration and centrifugal force to the driver.

Highway VR Data



An actual VR model of national road G110 based on the design diagram of the extended road under construction.

Infinite Loop Road Data



This VR environment was produced to research 'fatigue driving' in which the driver keeps driving indefinitely using the newly developed "traffic connection" function.

Vehicular Dynamics Research & Evaluation System High-Precision Driving Simulator



Nagoya University

World's First※ Large-scale 5-screen Stereoscopic VR Driving Simulator Used For Vehicle Dynamics and Driving Behavior Simulations

*As of June 2015, no large 5-screen CAVE simulator has been known to also include a real cockpit, hence this is currently a true "world-first" attempt.

It is particularly optimized to take into account and to monitor human perceptions and traits by incorporating complex mathematical models, high-luminance & high-definition visual cues, realistic cockpit modules, and a highly responsive motion platform. The simulator is located inside the university's National Innovation Complex (NIC). It was first introduced and publicized during the June 12, 2015 opening ceremony of the complex.



National Innovation Complex (NIC) , Nagoya University

System Configuration

- 1 The five 240-inch, high-luminance 3D HD 2 displays deliver a 315 degrees field of view, allowing the driver to feel the sense of "presence" inside the virtual space through the combined effects of overlapping objects, the sense of depth and the sense of distance.
- 2 Most existing simulators require the driver to practice and become familiar with it first, but this simulator can be driven as if driving a real car. This can significantly reduce research cost and time, potentially allowing a larger research sample selection. These characteristics make the simulator very ideal for many driving behaviour and human-vehicle interaction oriented researches.

Motion & Motion-Control System (MOOG)

The 6-axis motion base by MOOG Inc. has 6 electrical cylinders that expand and contract to responsively simulate a 6-DOF (degree of freedom) environment. The cockpit seats installed above the platform will move in various directions according to the screen displayed.



Car Dynamics (CarMaker/CRUISE)

This simulator may be used for monitoring and evaluating numerous dynamic reactions due to various vehicular (e.g. gas, brake, steering, gear shifts) and environmental parameters (e.g. friction coefficient, road elevation, cross-wind)



Traffic Flow Simulator (Aimsun)

AIMSUN can be coordinated with UC-win/Road (VR-Design Studio) to allow enhanced real-time traffic simulation. This allows the visualization of dynamic route selection and is useful for ITS-related researches.



4K projector x4



Driving Cockpit

The cabin consists of all the needed driving components. It is also equipped with numerous sensors and audio speakers, to simulate as many factors as possible during driving.



Projector

4K Resolution, 120Hz frame rate, 3-chip DLP® 3D Active Stereoscopic Projector Christie Mirage 4k35



Resolution

4096 x 2160 pixels (4K)

Brightness (Maximum)

35,000 Center
(32,500 ANSI) -6.0kW lamp

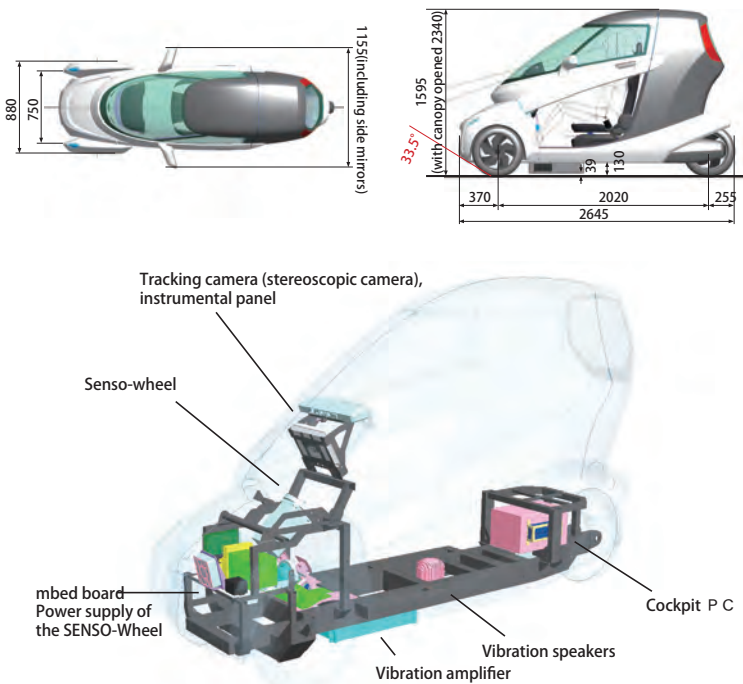
3D・VR Software UC-win/Road

This real-time 3D virtual reality soft allows users to create large-scale 3D environments easily on a standard PC, as well as performing various types of simulations



Fusion of full-scale VR and driving simulator

Structure and feature of the hardware components



- Natural depth by full-scale virtual reality
- Views change with the movement of perspective in real time



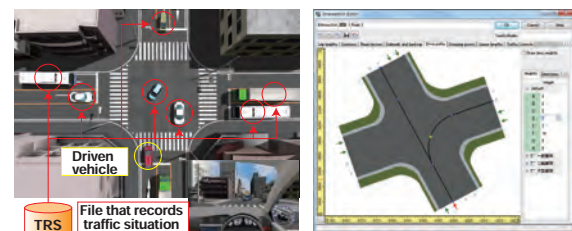
Total weight	300kg
Total length	2645mm
Total width	880mm (including side mirrors 1155mm)
Total height	1595mm (with canopy opened 2340mm)
Wheelbase	2020mm
Front overhang	370mm
Rear overhang	255mm
Front wheel tread	750mm

※Dimensions are based on the measurements in the DATA

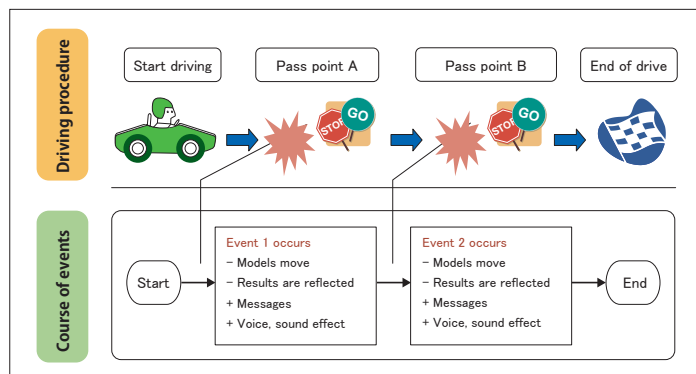
Features of VR software

- 3D driving environment can be freely created via UC-win/Road
- Standard plug-ins included
- Standard VR data is free and scenario customization is supported
- Various environments can be reproduced via visual option tools
- Supports high simulation needs by customization

UC-win/Road



Events to occur depending on the driving behavior (Scenario function)

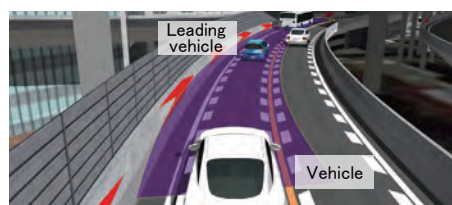


Reproduce traffic flow

Applications of this Driving Simulator

Study on vehicle acceleration/deceleration behavior for lower fuel consumption when following another vehicle through 3D driving environment delivering a sense of depth

By understanding the way drivers perceive the difference in traffic flow speed, an ideal vehicle acceleration/deceleration behavior for merging safely into the flow of traffic can be derived.



Research on the behavior of drivers driving under poor visibility by tracking their visual line

By understanding the how drivers move their eyes and body to check their blind spot or what's ahead when driving under poor visibility to confirm safety, vehicle geometry fit for safe and easy driving as well as driver assistance systems can be validated from a driver's perspective.



Research on driver fatigue/stress based on realistic driving sensation

Combination of realistic driving sensation and versatile features of the DS including the scenario editor function, log function, and replay function allows highly precise analysis of driver fatigue and stress.



Human-Vehicle-Traffic Flow Interoperable Driving Simulation System for Interactive Information Exchange



Kyushu University
Graduate School of Integrated
Frontier Sciences, Department
of Automotive Science

Driving simulator with 6 degrees of freedom
0.7G motion platform for highly sophisticated
research purposes

This driving simulation system realized by linking the driving simulator, traffic flow simulator, vehicle dynamics simulator, HILS/ECU simulator, and eye tracking system and integrating them all into UC-win/Road. Developed by FORUM8, this driving simulation system was delivered to Kyushu University Graduate School of Integrated Frontier Sciences on March 22, 2012, and is being updated.

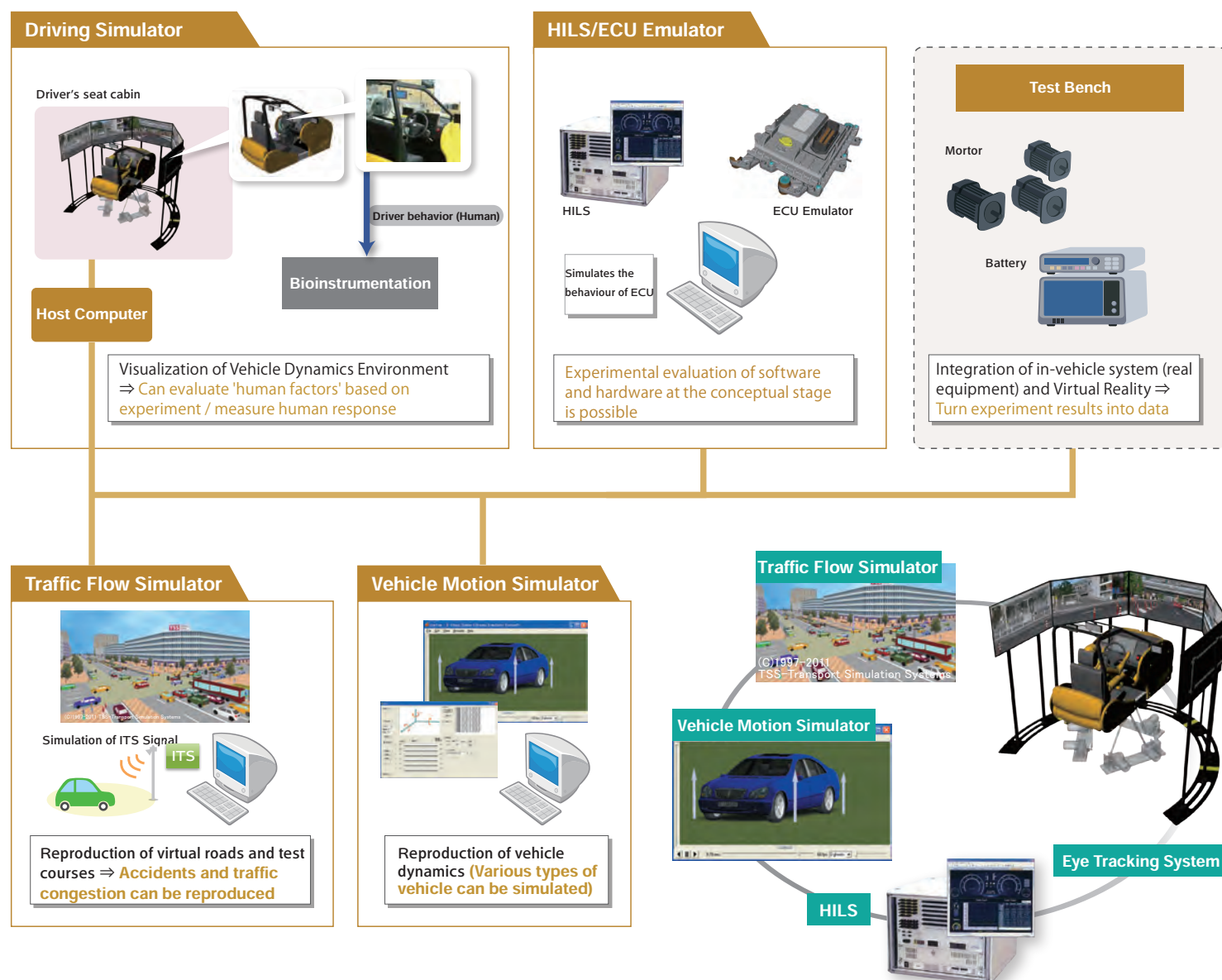


UC-win/Road

By leveraging on the flexibility and versatility of the UC-win/Road software, driving simulator, traffic flow simulator, vehicle dynamics simulator, HILS/ECU simulator, and eye tracking system were all linked together and integrated into UC-win/Road to expand its simulation capability.



System Configuration



Structure and feature of the hardware components

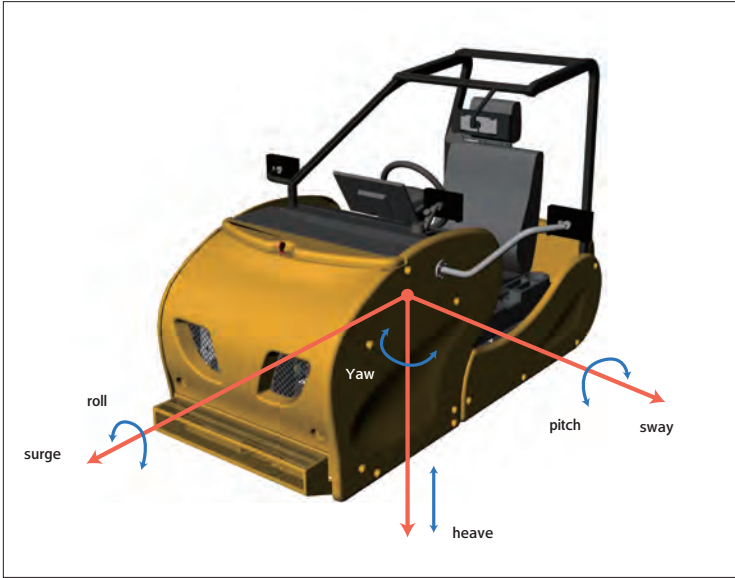
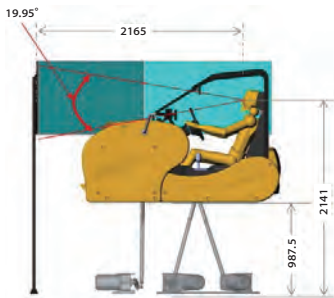
Motion Platform

The 6-axis motion base has 6 electrical cylinders that expand and contract to responsively simulate a 6-DOF (degree of freedom) environment. The cockpit seats installed above the platform will move in various directions whilst titling and rotating according to the screen displayed.



Monitor Assembly

The simulator consists of 5 sets of 60 inch 3D LED monitors to achieve a vertical viewing angle of 19.95°, a horizontal viewing angle of 202° and a refresh rate of 60 fps. Each monitor can be individually switched on and off using a remote controller.



Driver Cabin

The driver cabin is using a real car components with 1/4 the size of the actual driver's seat. The cabin consists of all the needed driving components, numerous sensors and audio speakers, to simulate as many factors as possible during driving.

Axis

6 axis motion platform simulates a 6-DOF (degree of freedom) movement - surge, sway, heave, roll, pitch, and yaw

Audio and Vibration System

A 5.1 channel consisting of four peripheral speakers and one woofer speaker is installed to simulate the sound of vehicle engine and surrounding vehicles through the simulation computer more realistic. Vibration speakers are also equipped to the driver's seat and crash pad for a highly realistic sound.

Linkage between UC-win/Road and HILS

By extracting driver inputs (operation of accelerator, brake, and steering) from the Driving Simulator and environmental conditions (height difference and frictional coefficient of road surface) from UC-win/Road to have the vehicle dynamics system within the HILS analyze driver's dynamic behavior, and then feeding the analysis results back to the host vehicle, a realistic VR driving simulation can be achieved in UC-win/Road. Communication between UC-win/Road and HILS is achieved through UDP, TCP/IP, etc.



LABCAR HiL Test System

Compact real-time testing system for in-vehicle ECU. Facilitates the testing of ECU control and diagnostic functions in the laboratory by performing the simulations required for ECU operation using models consisting of the driver, vehicle, and driving environment.

Expected Effects and Functions

Effect By linking the driving simulator, traffic flow simulator, vehicle dynamics simulator, HILS/ECU simulator, and eye tracking system and integrating them all into UC-win/Road, educational research activities in the interests of the next generation vehicles for an innovative information control can be promoted.

Used as an experiment environment for in-vehicle system (real car components) at the research and development phase.

Reproduction of virtual test courses and actual roads by a host computer (simulator)

Reproduction of virtual test vehicles by a Driving Simulator

- Enables vehicle tests that are not feasible on a test track (reproduction of accidents/traffic jam)
- Enables tests for in-vehicle systems to be run much more efficiently than when running the same tests on a test track

Applicable for a wide range of fields

• Driver Assistance System	• ITS contents	• Signal control
• Electric Power Train Motor / Battery System / Inverter	• Model based development of Hardware/Software with built-in ECU	• Prediction of an impact on traffic infrastructure
• Nnext generation car navigation	• HMI	• Accident analysis
		• Driver characteristic analysis

Research-purpose Driving Simulator has been delivered to Kyushu University

This driving simulation system was realized by linking the driving simulator, traffic flow simulator, vehicle dynamics simulator, HILS/ECU simulator, and eye tracking system and integrating them all into UC-win/Road. On May 13, 2012, the driving simulator was exhibited to the public for the first time since its delivery as one of the highlights of "Kyushu University Festival" held on Ito campus to commemorate the university's 100th anniversary. 106 people, many of them families, lined up to test drive the state-of-the-art simulator. The virtual test course is a 2 minute run that starts from a point in Taihaku-doori - a main street that runs across Fukuoka city - near FORUM8's Fukuoka Business Office and ends at Hakata station. Test drivers got very excited during the course of their drive as many of them acclaimed the driving simulator's cutting-edge technology by giving comments like "I'm really impressed with its ability to visualize so many aspects of the real world with high degree of realism. The image I'm seeing on screen is very pretty."

FORUM8 delivered another research-oriented driving simulator (6DOF 5 Channel) on March 2012 to Faculty of Engineering, Kyoto University Graduate School of Engineering, Kyoto University.



Four wheel in-vehicle simulator

It allows you to create several driving situations and re-create it under complete control. Recently Drive Simulator is widely used for vehicle system development or interaction research among drivers, vehicles, road and traffic, on ITS traffic system research.

● The features

- Driving environment in 3D environment can be freely created via UC-win/Road.
- Standard plug-in included
- Free standard VR data, support scenario customization.
- Various environments can be reproduced via visual option tools.
- Reasonable pricing mass OEM production
- Supports high simulation needs by customization

● Applications

1. Proposal of Drive Simulator

Research institute: University, Research & Development institute, Association
Road design: Road company, Consultant, Building firm
Exhibition & Publicity: Pavilion for publicity, Events, Road facilities
Road safety: Police, Driving school, Various associations, Non-life insurance company

2. Producing VR data & scenario service

Creation of VR data in a real and virtual environment, amusement, and games.

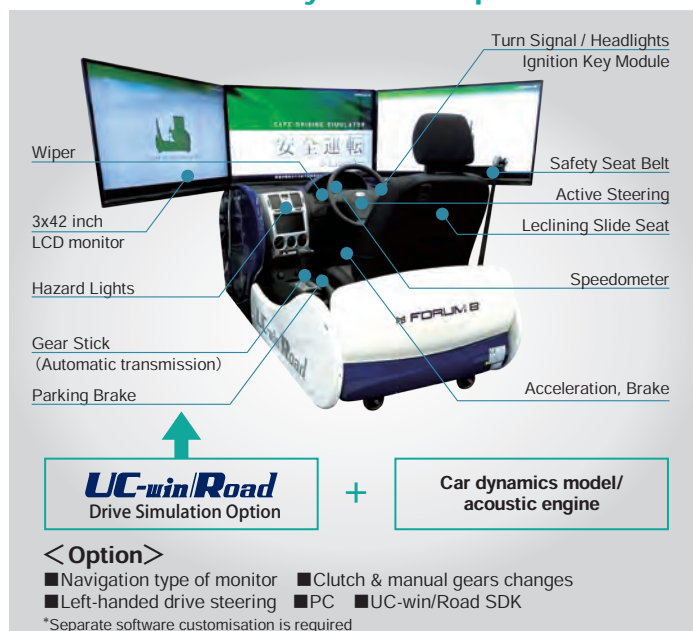
3. UC-win/Road customization·SDK

Wide range of customization. It supports users flexible utilization and redistribute the system SDK (Development kit)

4. Providing large dimensional and high quality 3D space

Railway simulation / high accuracy headlights / support for environment lighting

● Drive Simulator system component



● Compact Driving Simulator Component



UC-win/Road Simple Simulator

ECO Driving plug-in can be used. This allows you to calculate the fuel consumption and carbon footprint of individual vehicles while driving through a 3DVR model and support the function to edit a graph.

Basic configuration: 3 of 17" LCD monitors/1 of PC(screens supported)
Steering controller for game/Seat for game



UC-win/Road SensoDrive Simulator

Driving simulator supporting UC-win/Road force feedback

SENSO-Wheel (steering controller) allows to link with dynamics of UC-win/Road, which enables to experience the steering operation that is similar to the one of actual vehicle in 3DVR environment.



Developer of SENSO-Wheel
SENSODRIVE GmbH (Germany)
http://www.sensodrive.de/
Argelsrieder Feld 20 TE04 D-82234 Weßling
Phone: +49 (0) 8153 - 28 - 3900
E-mail: norbert.sporer@sensodrive.de

● System Structure

Option	SENSO-Wheel SD-LC
	Basic Stand
	Tabletop Rack
	USB-CAN Interface
	Steering Wheel Standard (Ø365mm) withflange

● Price for Drive Simulator (Packaging system)

Specifications	Order number		
	1	10	20
UC-win/Road Drive Simulator Basic configuration *1	US\$ 67,100	US\$60,400	US\$50,400
UC-win/Road Driving Sim	US\$ 12,100	US\$10,300	US\$8,400
Total price per System	US\$79,200	US\$70,700	US\$58,800
Item	1	10	20
Navigator type Monitor	US\$ 450	US\$380	US\$330
2DOF Motion Platform (500kg)Packed	US\$ 66,000~	-	-
3DOF Motion Platform (500kg)Packed	US\$ 79,200~	-	-
Left-hand drive, Clutch pedal (each software)	US\$ 1,100	US\$770	US\$550

The extra cost for package·shipping·carrying required/Free 1year support. not including PC

Optional products (price)

Cluster	(US\$9,460)	Motion platform	(US\$9,460)
Cluster client	(US\$660)	SDK (A development kit)	(US\$3,300)

Specifications	Rental terms		
	1day	1 month	1 year
UC-win/Road Drive Simulator Basic configuration *1	Basic fee US\$2,750 Additional fee (for 1 day) US\$1,000	Basic fee US\$10,000 Additional (for 1 month) US\$4,000	Basic fee US\$23,000 Additional (for 1 year) US\$15,000
UC-win/Road Demo Simulator *2	Basic fee US\$770 Additional (for 1 day) US\$300	Basic fee US\$3,000	Basic fee US\$7,000

Setting and Shipping fees

Free before and after 1 day of the shipping date or transferring date. Rental fees are charged before and after 2 or more days. Actual expenses for packing, transferring, and carrying in Setting fee: US\$550 (Free dispatching one engineer, but actual expenses for accommodation and travelling)

*1 1/4 Cabin, Full Instrumentation, 3ch. 42" LCD monitor, 5.1ch Speaker, Body Sound, CFLS Controller, Active Steering Wheel

*2 Price of Demo Simulator unit: US\$11,000/UC-win/Road Advanced: US\$8,800



UC-win/Road Experience Simulator

6 axis motion units Driving Simulator

The use of actual car steering mechanism gives you a sense of realism while driving. UC-win/Road Experience Simulator allows you to simulate driving environments in accordance with the rapidly improved car safety technology of ITS technologies (crash avoidance, decreased impact).

●Features

- 1.Possible to apply VR space freely and give various driving environments in real-time
- 2.Possible to implement various safety devices and give customization of the simulator
- 3.Standard VR data are free, support customization of scenario, events, and higher Hz
- 4.Compact body design
- 5.Realistic Maneuver
- 6.Easy setup and mobility
- 7.Standard equipment of each safety device

●Link with CarSim

By driving in the UC-win/Road Experience Simulator, the dynamic behaviour of various passenger vehicle driving parameters (accelerator, brake and steering wheel operation) can be analysed under a range of environment conditions (changes in the level of the road surface, friction coefficient, cross wind, etc.), real movement can be provided through motion and VR driving simulation can be carried out on UC-win/Road.



●Hardware System Composition

Dimension	W2810×D2320×H1985
Weight	650kg
Power Supply	200V 20A ×2systems 100V 15A ×1system
Max. Velocity	225mm/sec
Max. Payload	350kg

●6 Electric Axis Motion Unit

Motion performance	Movable axis		Movable scope	Peak acceleration	Max. Velocity
	Back and forth (X-axis)		±96mm	0.5G	225mm/sec
	Right and left (Y-axis)		±96mm	0.5G	225mm/sec
	Up-and-down (Z-axis)		±96mm	0.5G	225mm/sec
	Roll (X-axis roll)		±15dg	—	—
	Pitch (Y-axis roll)		±15dg	—	—
	Yaw (Z-axis roll)		±15dg	—	—
Pay load	Under350kgf	Power source	AC200V 50/60Hz single phase 4KVA		
Host interface	Ethernet				

●System Price Sample Quote

Product Name	Price
UC-win/Road Driving Sim	US\$12,100
Motion Platform Option Plugin	US\$9,500
6-DOF Motion Platform	US\$324,500
Total	US\$346,100

- * Customized safety features quoted separately
- * Default VR data model New Modeling Project: US\$1,000- / 1km
- * PC, installation, and delivery quoted separately.

●Rental price

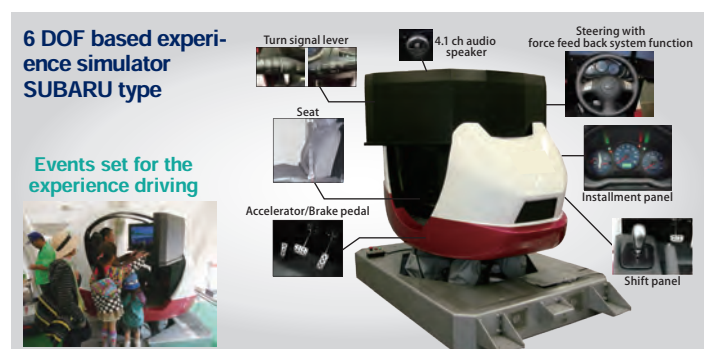
Specifications	1day	1 month	1 year
UC-win/Road Experience Simulator	Basic fee US\$4,600 Additional fee (for 1day) US\$1,800	Basic fee US\$18,500 Additional fee (for 1month) US\$8,800	Basic fee US\$46,200 Additional fee (for 1year) US\$41,800



UC-win/Road Highway Driving Simulator

Potential hazards on highway can be replayed by the driving simulator

Based on Subaru automobile's technologies, the simulator body adopted 6 electric axis motion unit (patented) and automobile technologies from Subaru automobile. The use of actual car steering mechanism gives you a sense of realism whilst driving.

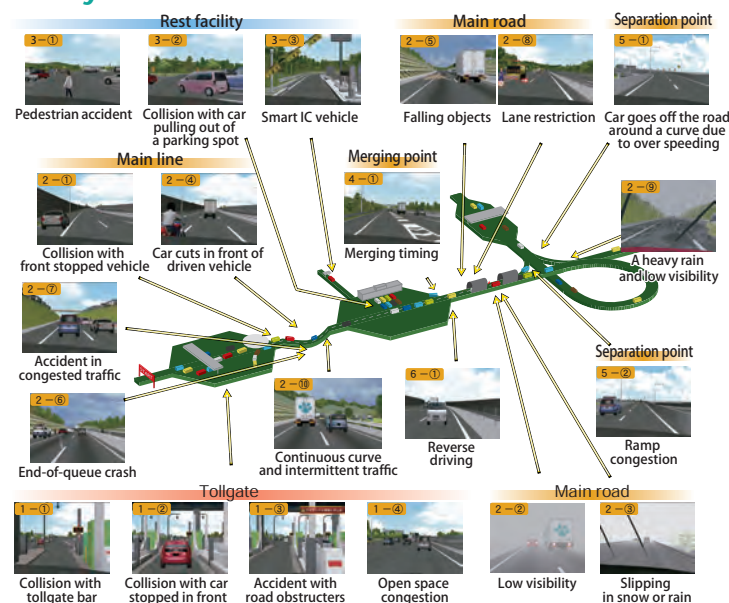


FORUM 8 has installed custom Highway Driving Simulator to Convention on Social Contribution of Highway on March 1st, 2010. From now the simulator will be used at events and exhibitions on highway and its facility.

●Main Body Specifications

Capacity	Capacity 1 Person
Seat	Passenger seat
Vehicle weigh	830kgf
Power Supply	AC100V 50/60Hz Single phase 1.5KVA
Main control device	PC supported Windows OS : WindowsXP
Image display device	26inch WXGA Color TFT-LCD Module 1366x768pixels x 3
Sound device	4.1ch system
Steering device	Force feed-back steering system and Accelerator/brake pedal system
Package	External panels (Front/Back) Urethane molded part External panels (side) GFRP molded part Inner panels ABS mold goods Frame Steel sheet frame
Rack	Steel base
Setting method	Moving with detachable casters

●Experiencing 21 hazardous events on highways and their facilities



●Electric 6-axis Motion Data

Motion performance	movable-axis	Movable scope	Maximum acceleration
	Front/back(X-axis)	±120mm	0.4G
	Left/right(Y-axis)	±135mm	0.4G
	Up/down(Z-axis)	60mm(P-P)	0.1G
	Roll(X-axis turning)	±0.192rad ±11deg	—
	Pitch(Y-axis turning)	±0.192rad ±10deg	—
	Yaw(Z-axis turning)	±0.192rad ±17deg	—
Payload	Under 350kgf		
Power Supply	AC100V 50/60Hz Single phase 1.5KVA		
Host interface	RS-232C D-SUB9 pin		

UC-win/Road

Safe Driving Simulator

Obtained type approval
from the National Public
Safety Commission

Approval from NPA

交 L20-1 交 L20-2
交 L20-3 交 L20-4

Price of
standard system
US\$78,000~

The Certified Driving Simulator System Approved For Use In Driving Schools

System Configuration



Price of Safe Driving Simulator

Product	Price
UC-win/Road Drive Simulator (Hardware)	US\$61,000
UC-win/Road Safe Driving Simulator (Software)	US\$17,000
Total	US\$78,000

Price of Subscription Service Contract (Annual cost from the 2nd year)

Subscription	Price
UC-win/Road Safe Driving Simulator (Subscription)	US\$5,700

Hardware Specification

Item	Specs
Driving equipment type	SDS
Cabin size (L x D x H)	2330mm x 2100mm x 1435mm
Space for cabin installation	3000mm x 3000mm x 1700mm
Cabin weight	220kg
Monitor	42inch 3CH
Power (cabin/PC/teacher's monitor)	AC100V / 50Hz / 60Hz / 1500W
Operating temperature	10~35°C
Operating humidity	20~70%
Storage temperature	-10~55°C
Storage humidity	Under 80%

UC-win/Road
Drive Simulation Option

Car dynamics model/
acoustic engine

Options

- Left-hand drive steering
- Motion equipment
- Clutch pedal/Manual gear change
- Cluster option

※Software customization is required.

Utilizing the latest 3DVR software this wide-angle simulator allows for an immersive driving experience.

There are currently 4 prepared training scenarios that have been approved for use in Driving Schools.

The simulator also includes a replay and diagnosis system to enable the proper assessment of the driver's abilities.

Certified training drills (1st grade driving license)

Item	Lesson on hazard prediction	Lesson on driving on highway	Lesson on location-specific conditions	Lesson on sudden braking
Approval number	L20-1	L20-2	L20-4	L20-3
Skill training (2nd stage)	No.13 "Anticipation of danger"	No.14 "Driving on highway"	No.15 "Special lesson"	No.11 "Sudden braking"
Course length	About 5km	About 16km	About 8km	—
Number of patterns	3	3	3	3
Course	Fixed	Fixed -With/Without ETC -Use/Not use service area	Fixed -2 routes	Sudden braking: Straight road Emergency avoidance: Straight road Curve: Curve to right/left, Selection of curvature radius
Driving condition	With ABS Dry surface	With ABS Dry surface	With ABS Dry surface	With/Without ABS Selection of max speed Surface: Dry/Wet/Frozen
Number of events	17-18	16-18	17-18	—
Learning situation	Hazard 12-13 Caution 5-6	Learning 9-10 Trap 5	Learning 17	—
Contents	Learn hazardous and cautionary situations when driving in residential areas and business districts	Learn driving on highway including on/off ramps and service areas	Learn driving in different weathers and unique locales	Experience sudden braking and curve (Right/Left, R20/40/60), making quick decision in an emergency (to avoid pedestrians or vehicles crossing all of the sudden)

By following the standards and guidelines set by the Japan Traffic Management Technology Association this drive simulator is geared towards driver education. Hazardous and unique situations can be experienced in a realistic and safe VR simulation environment. The Drive Simulator includes 3, 42-inch, monitors to further improve immersion in the 3D environment. The steering and pedals accurately represent an actual vehicle with active force feedback and a fully functional dashboard.

■ Lessons conforming to the certification standards



Lesson on hazard prediction

(1st grade driving license)
L20-1 / SDS-01DF1-001

Learn hazardous and cautionary situations by driving on 3 patterns of 5km long city street courses



Lesson on driving on the highway

(1st grade driving license)
L20-2 / SDS-01HF1-001

Learn driving technique necessary for driving on the highway by driving on 3 patterns of 16km long highway courses



Lesson on location-specific conditions

(1st grade driving license)
L20-4 / SDS-01AF1-001

3 patterns of about 8km long courses to learn how to drive in different weather, terrain, and other location-specific conditions.



Lesson on sudden braking

(1st grade driving license)
L20-3 / SDS-01BF1-001

Experience sudden braking
Experience sudden braking and braking distance with/without ABS on dry/wet/frozen roads



Lesson on sudden braking

(1st grade driving license)
L20-3 / SDS-01BF1-001

Experience curves
Right/Left, 3 curvatures (R20/40/60)

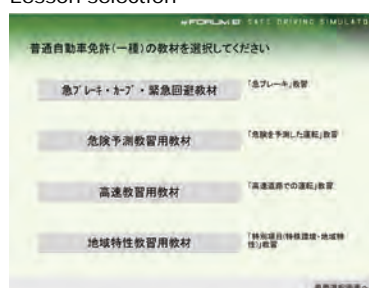


Lesson on sudden braking

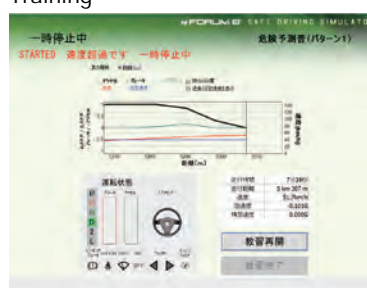
(1st grade driving license)
L20-3 / SDS-01BF1-001

Experience emergency avoidance
Actively avoiding danger by using the brake and steering wheel

Lesson selection



Training



Training result

教習走行データ・採点

走行データ: 危険予測 (パターン1)

項目	単位	採点
危険予測	500点満点	278
危険予測 (パターン1)	500点満点	23
危険予測 (パターン2)	500点満点	0
危険予測 (パターン3)	500点満点	85
危険予測 (パターン4)	500点満点	80
危険予測 (パターン5)	500点満点	90

Driving Simulator for seniors

(from documents created in the Yamamoto / Nakano Laboratory in the Department of Information Engineering, Faculty of Science and Technology, Meijo University)

Drive simulator used system to detect the reduction of cognition function, evaluate driving ability, and train driving skills.

Simulator basic system price
US\$12,000~

The purpose of this research is to develop a method and system to evaluate driving ability of senior drivers from their driving behaviors. We developed a system to evaluate the driving performance comprehensively from the measurement result of visual and cognitive abilities.

Simple Driving Simulator for Seniors

Diagnostic functions

- ① **Diagnostic Driving**: Drivers finish driving on diagnostic mode (without any advice). In case the accidents or problems occur, go to ②.
- ② **Diagnosis**: Analyze the results using the log and confirm the automatic diagnostic results. In case of the management system via master system, not only the diagnostic results but also information and elements used for diagnosis will be displayed (Displaying not only the diagnostic results on the drivers' screen but also the data of subjects can make the advice and explanation easier to understand).
- ③ **Training**: Start over with advices following the diagnostic results.



Case study of driving simulator to evaluate cognition function and driving ability



The 18th 3D·VR Simulation Contest on Cloud

Grand Prix
"Safety driving diagnosis simulator"
TUMS Urayasu Hospital

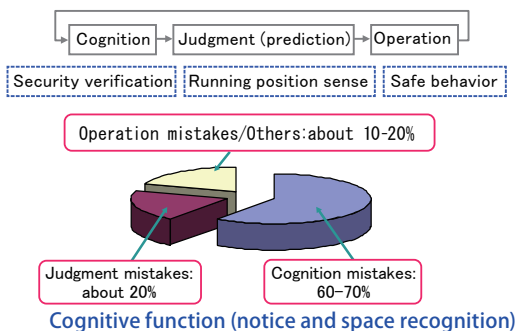
Nomination Award
"Driving determination and reaction diagnosis simulator"
Iwakura Hospital



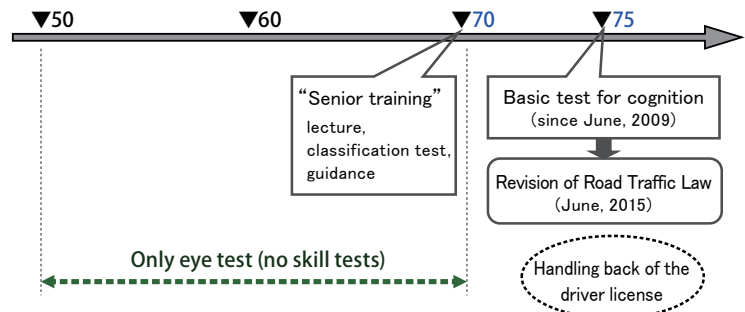
Measure and assess driving behavior of senior drivers

Driver skills

Accidents and degradation of driver skill (cognitive skill)

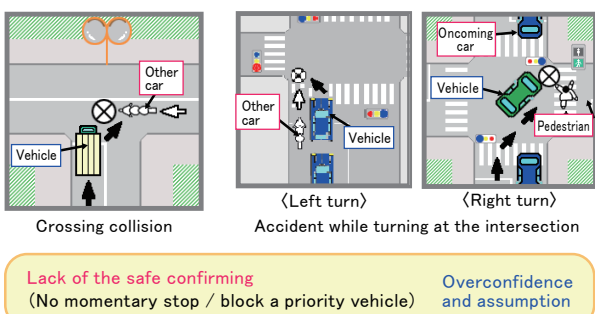


License renewal and driving ability checking



About evaluation of driving skills

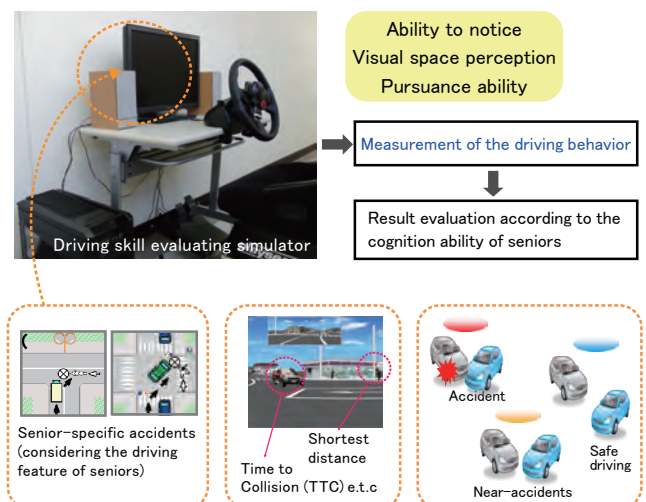
Patterns of the accidents by seniors



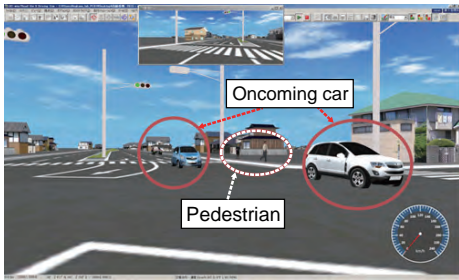
Evaluation of the driving skills (cognition)

- Lower notice for the plural objects → Ability to notice (valid view / dispersed attentiveness)
- Lower sense for the running position → Visual space perception (space cognition)
- Lack of the safe confirming → Pursuance ability (target / plan / performance)

Basic attitude for the driving ability evaluation

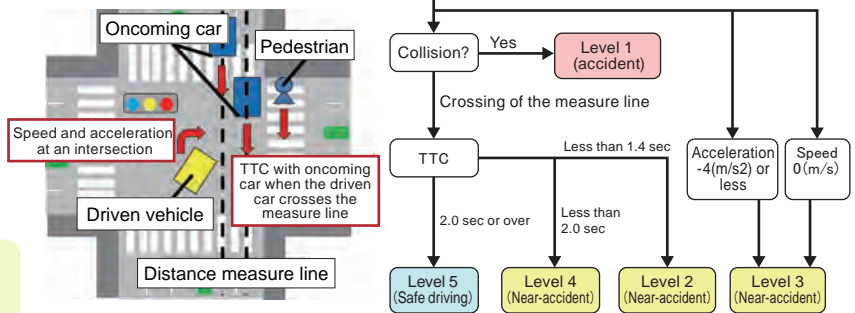


Evaluation on driver's ability to notice

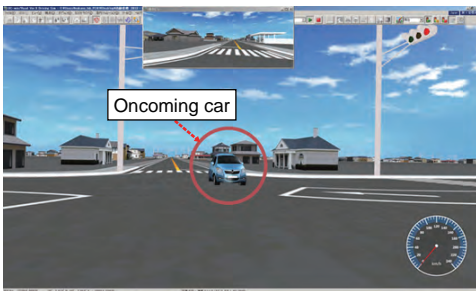


Right turn at the intersection

Collide or not collide with oncoming car or pedestrian
The shortest distance to pedestrian
Time to Collision with oncoming car
Presence or absence of sudden braking in front of pedestrian



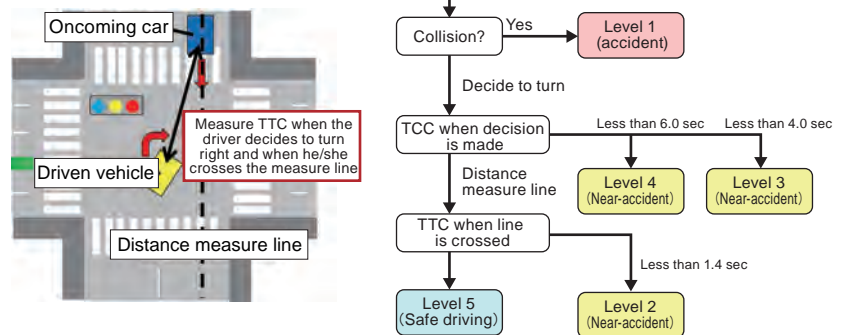
Evaluation of visual space perception



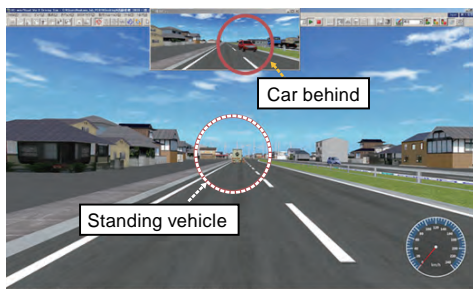
Right turn at the intersection

Collide or not collide with oncoming car
Time to Collision with oncoming car (TTC)

5 grade..→Time to Collision with oncoming car the moment the driver decides to turn right is used as a criteria to grade his/her visual space perception on a scale of 1 to 5.



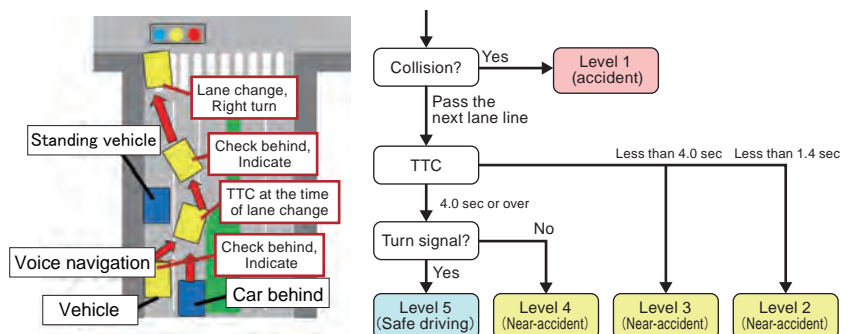
Pursuance ability evaluation



Make a lane change

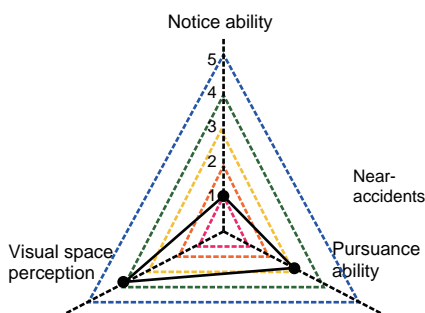
Collide or not collide with car behind or standing vehicle
Time to Collision with a car behind
Presence or absence of turn signal

Test the event that procedure and lane change are required. 5-grade evaluation by using Time to Collision with the car behind and the usage of blinker.



Results of driving skill evaluation

Results of driving skill evaluation



Diagnosis

Level	Notice ability	Visual space perception	Pursuance ability
5	Safe Driving	Safe Driving	Safe Driving
4	On the lane TTC<2.0 (s)	At the time of decision TTC<6.0 (s)	No turn signal
3	Stop in the oncoming lane / Sudden brake	At the time of decision TTC<4.0 (s)	During lane change TTC<4.0 (s)
2	On the lane TTC<1.4 (s)	On the lane TTC<1.4 (s)	During lane change TTC<1.4 (s)
1	Collision	Collision	Collision

Result displayed on a graph





Free for programming education & non-commercial use!

【3D Game Engine Suite Chidori Engine®】
<https://www.forum8.co.jp/product/suite/chidori/index-en.html>

Suite Chidori Engine is the renewed product of "Chidori®", the Japan's first cross-platform engine developed in 2006 and is available on a variety of platforms including PC as well as smartphones and game devices. It is equipped with all basic functions for application development, helping quick development. All functions are provided free of charge for programming education and non-commercial use as well as for students participating in competitions that FORUM8 cooperates with, such as U-22 Programming Contest by SAJ and Student Programming World Cup (CPWC).



Necessary environment for development

CPU: Intel386 processor or later
 Memory: 1 GB or larger
 HDD/SSD: 100MB or larger
 Graphics: OpenGL2.1 or later
 OS: Windows 10/11, macOS or later

Showcase

Cat and labyrinth



A puzzle game where you move boxes to create a movable path and guide the black cat to where the white cat is.

Brain training with moles



A sample game where you memorize the location and order of randomly appearing moles and touch them as you remember.

For Programming Education / Non-commercial Use

Platform	Max game release	License fee (excl. tax)
Windows® Android™ OS Apple® iOS (Platforms other than Windows® will be supported soon.)	∞	Free

Free license is provided for a programming education by educators, researchers, and students and for non-commercial use.

For Commercial Use

Platform	Max game release	License fee (excl. tax)
Windows® Android™ OS Apple® iOS (Platforms other than Windows® will be supported soon.)	∞	New subscription contract: ¥80,000 (annual license)

PC for GIGA school concept 3D game engine for fun programming learning
 Laptop equipped with "Suite Chidori Engine"

	Suite Game Programming PC	Shade3D/Game Programming PC
Model	 3D Game Engine "Suite Chidori Engine" Office Software "LibreOffice" ¥49,800 (incl.tax)	 3D Game Engine "Suite Chidori Engine" 3DCG Software "Shade3D" Programming "Block UI Programming Tool" Office Software "LibreOffice" ¥74,800 (incl.tax)
Program	<ul style="list-style-type: none"> Japan-made cross platform 3D game engine "Suite Chidori Engine" Free office software "LibreOffice" ※2 "Suite Data Eraser" (certificate sold separately) to erase the HDD 	
Spec.	Display: 14.1 inch Full HD CPU: Intel Celeron N4000 OS: Windows10 Pro 64bit	

Game

Train Game



【Railroad operator (for PC)】
http://store.steampowered.com/app/754410/_Railroad_operator/

【Train Simulator VR (for Vive)】
<http://store.steampowered.com/app/719600/VR/>

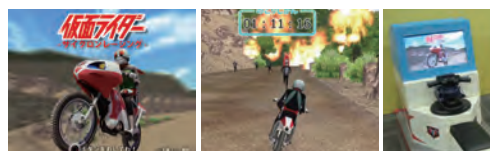


This is a train operation game created by using UC-win/Road functions. "Train Simulator" for Windows and "Train Simulator VR" for Vive are now on sale on STEAM! A new type railroad action game "Kurogane" for PSVR is under development!



Kamen Rider, cyclone racing simulator

TOEI Company, Ltd
 Dodge the attacking Shockers and approaching rocks and flames to aim for the goal!



Tokyo Metro Simulator

Tokyo Metro Co., Ltd.
 In addition to stopping at the station, you can experience driving the train over a railway bridge and through a tunnel



Horse riding simulator

KidZania Koshien
 Horse riding experience at "Horse Park" in KidZania Koshien



UC-win/Road Customization System

Unique system construction using high quality VR

UC-win/Road Ship Handling Simulator

Experience real training in VR under various conditions

Prevent accidents by simulating and training various conditions such as mist, rain, and wave. Many functions including view switch and replay.

Ship handling simulator consists of a variety of 3D/VR space expression with UC-win/Road. It allows easy representation of a high accurate VR space in easy method, and the construction of simulator for a variety of applications using scenarios / event functions and motion platform techniques. This is not only for the training of sailors or students but also for the investigation of the harbor environment landscape with the simulation of its facilities.



Simulations under various conditions such as rain, wind, mist, and wave.

Detail setting for wave parameter. High-precise wave expression.

Sample model of ship maneuvering simulator

The 17th 3D VR Simulation Contest on Cloud Semi Grand Prix
VR data for ship operation simulator
AKISHIMA LABORATORIES (MITSUI ZOSEN) INC.

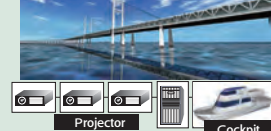
This VR data is created for a ship operation simulator used for training and research. Narrow sea with many passing ships such as Kanmon Straits, Straits of Malacca, and Tokyo Bay are modeled in this data. Other vessels, buoys, lighthouses, and flags and lights on the ships are also modeled so that trainees can practice steering in relation to those objects. In addition, this data is used for new vessel design and other research into new technologies.



Case example of developing ship handling simulator

Ex.1 Normal

plane screen



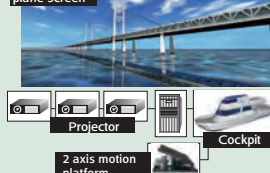
EX.2 3D stereo

Stereoscopic screen



EX.3 Normal + Motion Platform

plane screen



Related plug-in option

- Motion platform ■ Micro simulation player ■ Scenario
- Communication ■ Log output ■ SDK (Software Development Kit)

Case example of developing ship handling simulator

Reference price

The hardware can be customized based on your budget and purpose.

Type name	Details	Reference price*
Normal	Projector x 3, Edge blending	US\$75,500
3D stereo	Projector x 6, Edge blending additional hardware, Screen	US\$128,900
Normal + Motion platform	Projector x 3, Edge blending 2 axis motion platform	US\$238,000

*Total reference cost above including system development cost, not including the cost for PC, projector and cockpit.

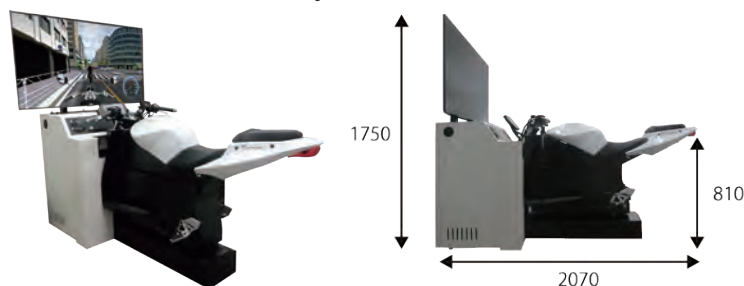
Demo Simulator Description

- Simplified simulator (UC-win/Road not included) ■ Start/Stop button
- Compact type for exhibition/demonstration ■ Handle, accelerator, brake installed

UC-win/Road Motorcycle Simulator

Full-scale real-wheeled motorcycle driving simulator package system

This is a driving simulator that can be linked to UC-win/Road VR to simulate driving. The parts are all from real vehicle, and function of real vehicle like the engine's on and off, accelerator, brake, light can be operated. It also features motor-controlled steering wheel reaction force generation, switching between AT and MT vehicles, and a vehicle body tilt function.



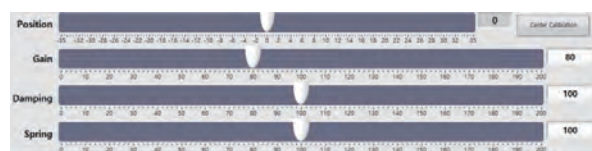
Body tilting function

The simulator has a function to tilt the car body $\pm 7^\circ$ to the left and right, and when driving around a curve on UC-win/Road, the steering value changes by tilting the car body, allowing the car to turn around the curve in the same way as a real car (self-steering). In addition, the simulator's internal motor control causes the car to return to its neutral position by accelerating from a tilted position (restoring force).



Handle reaction force

A motor-controlled steering wheel reaction force can be generated, and the reaction force varies according to the speed during driving. Reaction force parameters can be changed via touch panel.



Train simulator (train traveling simulator)

Train Simulator for R&D, Education & Training, PR & Exhibition

It has various applications

For research and development of cars and human engineering, for educating or training crews, for exhibition in museums and train expo, train driving game and so on.

From large one to small one

From entire cab including real scale crews' room, wide screen, and motion platform, to simplified version having only part of driver's console and PC screen for displaying.

Handling to both CG image and video image

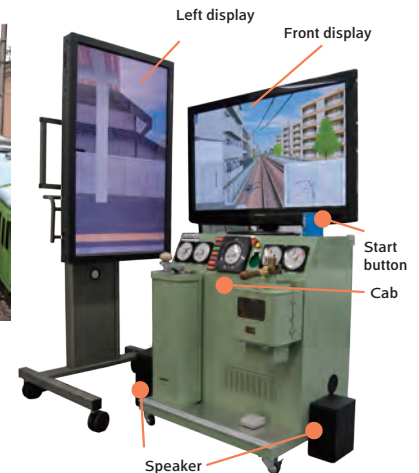
Depending on the situation, you can use CG which has high degree of freedom or video footage which excel in reality.

Generation of simulated situation which gives you a realistic feeling

Generation of simulated vision with high quality image and high drawing speed, sound produced by multichannel and multispeaker, motion platform giving the real feeling of acceleration and deceleration.

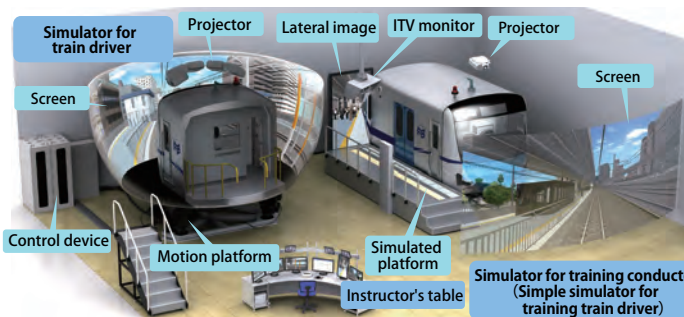
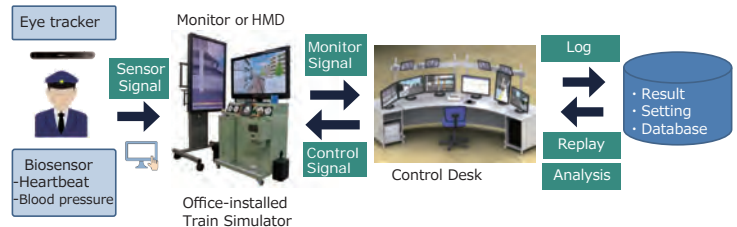
Simultaneous driving feature

Multiple trains/cars can be driven within the same environment, reproducing an even more realistic traffic condition.

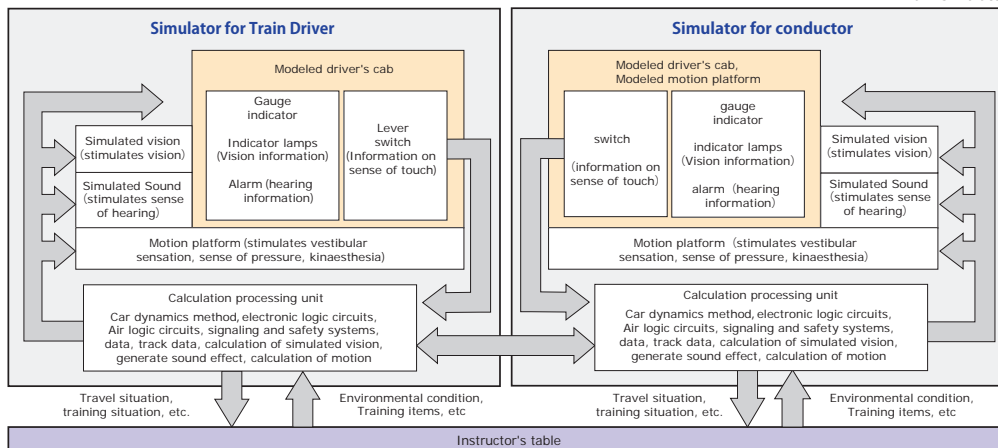


Compact Driving Simulator

Training configuration



Large scale train simulator (image)



▲6K Multi Cluster Digital Signage System (Multi simultaneous driving is supported)



Wheelchair simulator

Up&Coming Vol. 91
Collaboration news introduction

Linking wheelchair and UC-win/Road Driving Simulation

The driver can actually sit in a wheelchair and drive in a VR space through a monitor or head-mounted display (HMD) without moving the wheelchair itself. The driver's driving skills can also be evaluated. Additionally, the simulated wheelchair can be driven through a keyboard, gamepad, or by sitting in the actual wheelchair and using the joystick on the wheelchair to drive the model in VR.



Wheelchair Simulator Case Study

Department of Mechanical Engineering,
Faculty of Systems Science and Technology, Kansai University

The UC-win/Road VR environment is used for the video display portion of a wheelchair simulator, a result of research and development by Associate Professor Kurata of the Department of Mechanical Engineering, Faculty of Systems Science and Technology, Kansai University. A model of the wheelchair's speed and road surface resistance calculated by mounting torque-sensor wheels with separate drive for both wheels on the wheelchair simulator hardware itself is used as the wheelchair's motion model (dynamics). UC-win/Road is used for the display portion. In addition, actual measured data from the wheelchair simulator is loaded into UC-win/Road to verify whether it is possible to move within the VR space. Taking into consideration the degree of disability and the part of the body of the individual, this system will enable safer use of the wheelchair by recognizing the ideal form of electric wheelchairs in the future and the risk of accidents occurring when using a wheelchair.



Operation equipment installation location study system

Customization from Japan Railway Construction, Transport and Technology Agency, delivered in 2010.

Visibility system for various kinds of facilities for train railway using 3DVR function of UC-win/Road

- Visibility system for various kinds of facilities for train railway using 3DVR function of UC-win/Road
- The following basic items can be input as facilities which are related to visibility
Tunnel / cut earth / bridge over railway / sound barrier / lower way truss / platform / power pole



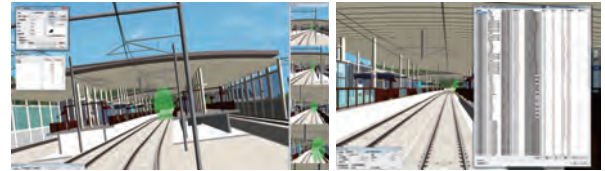
▲ Visibility check when passing by an oncoming train



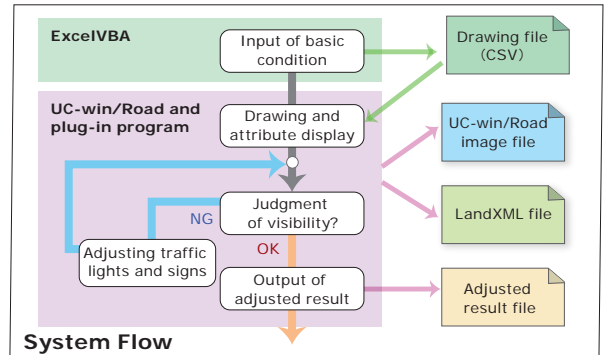
▲ Top menu



▲ Input the linear information



▲ Examine and edit visibility of signal



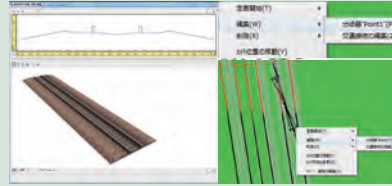
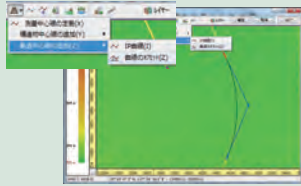
10th 3D-VR Simulation Contest GRAND PRIX

System for checking the position where equipments are installed
Japan Railway Construction, Transport and Technology Agency



UC-win/Road Features on railways

Center line of survey, center line of structure, transition curve/vertical line, and cant can be drawn. Import/export of transition curve by Land XML (transition curve: clothoid, cubic curve, sine half-wave curve. vertical line: quadratic curve, circular curve)

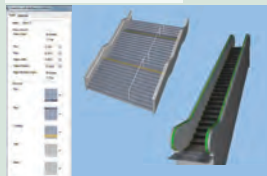


Parametric 3D modeling

Creation of an electronic message board, escalator, and stairs by entering parameters like depth, height, the number of bars, and texture.



Escalator, stairs



Bicycle simulator

In "traffic team instructed by" Professor Hideo Yamanaka, (Engineering Department urban design laboratory) of Tokushima University Graduate school Technology and Socio- Science Research Development, the Bicycle's simulator based on UC-win/Road is adopted for the development of bicycle's information display technology suitable for visual characteristics of users. It is possible to clarify the expected angle by the differences of the size of various signs and the posting interval or the influence which viewing time gives to visibility and to acquire the knowledge used as the standard of the information presentation suitable for the environment of bicycle use. Moreover, it is possible to build various experimental conditions as well as an eye mark recorder and a head posture sensor. By introduction of xperimental system using drive simulator, upon clarifying a bicycle user's visual characteristic,

it is utilizable for development and examination of an effective mark set in guidance and control of a bicycle for production of a road. Virtual cycling system "Cycle Street Series City Edition" (Developer: FLOVEL CO., LTD.) is linked with UC-win/Road. The originally developed speed sensor is incorporated into a commercial exercise bike, and a DLL (dynamic link library) to read the rotation rate from it is connected. It is linked with a three-screen panorama display with VR CG created with UC-win/Road.



The experiment using bicycle simulator



Awarded for Technology Prize in FORUM8 Design Festival 2011

Price for reference

UC-win/Road Driving Sim	US\$11,000
cycleStreet plugin	US\$1,180
cycleStreet hardware	US\$3,000
PC・Monitor	US\$2,800
Total	US\$17,980



Bicycle simulator

UC-win/Road Earthquake simulator

Plugin Option Price
US\$4000

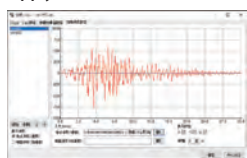
Support of physics model, VR earthquake simulator system, terrain deformation, physics customization

Simulate earthquake shake inside 3D VR building

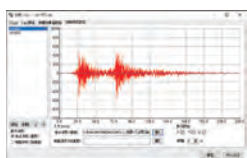
The first product in the industry that focuses on behaviors of furniture and fixtures shaking inside the room

On the 3D Virtual Reality Software UC-win/Road, damage situation and its effect of shakiness and collapse of furniture and lightings can be visualized in 3DVR with easy input. Specifically, shaking of furniture and fixtures is reproduced and overturning is instantly simulated by giving physical properties such as weight, center of gravity, and frictional force to objects. Collisions between objects are also detected. Motions such as drawers popping out of desks, and furniture colliding each other and moving another direction are also expressed. The earthquake sound and collision noise of furniture are also generated. In addition, the seismic wave form data published by the Japan Meteorological Agency can be imported to reproduce the actual earthquakes and simulate possible seismic wave forms.

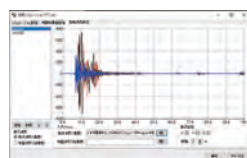
Apply vibration data to UC-win/Road



Great Hanshin-Awaji Earthquake (1995)



Great East Japan earthquake (2011)



The 2016 Kumamoto Earthquake (2016)



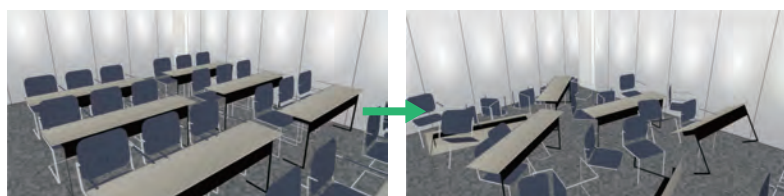
Import 3D model created in Shade3D



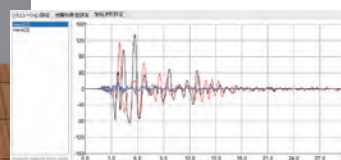
Reproduce shake of the whole building and furniture in building based on imported data.



Can be operated on UC-win/Road, so the representation is very similar to the real.



Analysis can be performed on a wide variety of structures without limiting the target.



Case study of earthquake simulator

SHIMIZU CORPORATION, Center for Safety and Reliability Engineering, Institute of Technology
(Installed a large-stroke shaking table in March 2015)



Research and development of safety and reliability technology for disaster such as earthquakes in terms of software, hardware, and skill. Reproducing different earthquake vibrations on the top floors of skyscrapers with a large-stroke shaking table using UC-win/Road.

Application of earthquake simulator

VR Motion Seat

Applicable for education and product development

A low-cost compact 3DOF motion seat shaking according to VR simulation of UC-win/Road



The 21st 3D VR Simulation Contest
2nd Prize (Excellence Award)

Simulation to Experience the Effect of Seismic Isolation Devices

NIPPON STEEL ENGINEERING CO., LTD.

Contents that allow subjects to experience the effects of seismic isolation devices that reduce damage to buildings during an earthquake were created. Using HMD-based VR and the Motion Seat, subjects can experience the differences in shaking between earthquake-resistant structures, seismically isolated structures, and vibration-controlled structures. Warehouses, condominiums, and office spaces were reproduced, and physical simulations of collapsing and falling fixtures and their sound effects were performed to produce the situation under such conditions.



Remote control system supporting Michibiki

Supporting the digital city construction using 3D space data in VR



Autonomous Flying UAV

Case example of developing simulator system

Past Installations

- Matsuyama Office River and National Highway, Shikoku Regional Development Bureau, MLIT (Open House), 2005
- High Technology Hall@TEPIA (Machine Industry Memorial Foundation), 2008
- Prior to opening of Ohashi Junction Metropolitan Expressway Co., Ltd. 2009
- AMLUX Toyota Co., Ltd TOYOTA AUTO SALON AMLUX TOKYO, 2011
- Construction Technical Pavilion (The Ministry of Land, Infrastructure and Transport Kanto ground Maintenance), 2007



HMD type 3D VR Experience System

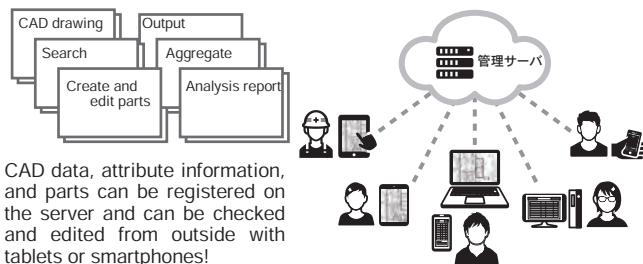
■ Daikoku PA (Kanagawa Construction Bureau, Metropolitan Expressway Company Limited) 2017

The 17th 3D VR Contest
"VR simulation of evacuation from Metropolitan Expressway Yokohama Kita line"



Cloud facility design and maintenance management CAD system

It is possible to share drawings with tablet devices and smartphones anytime, anywhere, from various companies in the construction and facility construction industries where drawings are utilized.



CAD data, attribute information, and parts can be registered on the server and can be checked and edited from outside with tablets or smartphones!

WebCAD system

Remote Control System for Heavy Machine by 3D VR

Linkage with 3D VR for integrated management, monitoring, and training of remote control

Simulator for remote control training

Kyushu Technical Office, MLIT

Building a reconstruction of the area around Aso Ohashi, which collapsed due to the 2016 Kumamoto earthquake. We are constructing a remote-control training simulator for compact type backhoe for the purpose of initial response in the event of a disaster by connecting a remote operation controller. The 2nd Prize winning work at FORUM8 The 19th 3D/VR Simulation Contest on Cloud.



Remote construction system that works with 3D VR

(former)Public Works research Institute

This system was jointly developed with the PWRI and Japan Construction Method and Machinery Research Institute. In response to the operator's wireless operation, you can receive information such as GPS installed in construction machinery, laser scanned terrain etc. via wireless LAN and reflect the movement to the movable 3D models in the 3D VR space to check the remote work status in real time. It can also be used as a work guide by superimposing CAD data on a live video and displaying it.



Training simulator

Autonomous driving simulation of mining dump truck

Hitachi Construction Machinery Co., Ltd

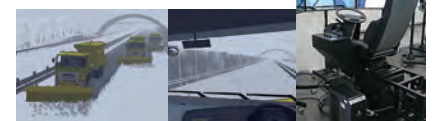
A simulator of a mining dump truck. A mining site is reproduced in VR with a scenario in which subjects must carry the load from the loading spot to a predefined unloading spot either by manual driving or using the AHS (AHS: Autonomous Haulage System). The 17th 3D VR Contest Essence Award winner.



Snowplow Operator Training Simulator

NEXCO Central

Co-developed simulator for training operators of snowplow. Consists of a three-sided display with a motion device, and also supports driving training for snow removal in the echelon formation by using up to 3 simulators.



Welding training simulator

A simulator system for education and training that allows unskilled workers to experience welding work by linking haptic devices and VR.



Snow blower simulator

NICHIGO CORPORATION

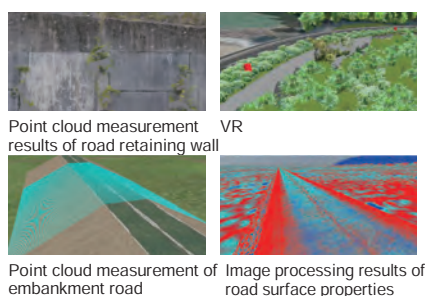
A simulator for the operation training of rotary snow blower. Displaying meters on HMD and combining steering, pedals, and buttons and operation levers simulating those on real vehicle reproduces the realistic driving environment and operation image. It computes the vehicle behavior and snow removal according to snow removal situation, and drivers can experience proper operations for each situation. The 18th 3D VR Contest Idea Award winner.



Civil construction system development

Property survey and diagnosis system using point cloud measurement data

The shape of the surface of tunnels, bridges, buildings, and other civil engineering structures can be measured as point cloud data using a traveling 3D laser scanner, and reproduced using high-precision 3D visualization technology. Based on the collected data, this diagnostic system can comprehensively evaluate the soundness of structures, including work progress management, periodic inspection of deformations, etc.



Point cloud measurement results of road retaining wall

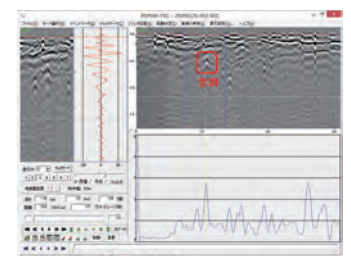
Point cloud measurement of embankment road

VR

Image processing results of road surface properties

Radar-based internal investigation and diagnosis system

By surveying the inside of the ground, roads, tunnels, civil engineering structures, etc. with a traveling non-contact radar, the system detects the layer thickness of concrete and asphalt lining, cavities behind the lining, buried pipes, reinforcing bars in concrete, etc. without contact, and visualizes defects and structures in invisible locations using 3D visualization technology. This is a diagnosis and maintenance system that can output 3D data as cross-sectional and longitudinal views at arbitrary cross sections.



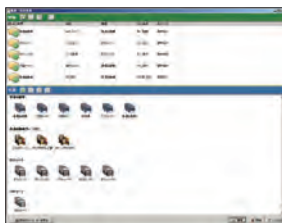
3DVR simulation is achieved by using the drawing information and by linking the creation of the trajectory mapping and the creation and design of the parking lot with UC-win/Road.

Vehicle Trajectory Mapping System Ver.4

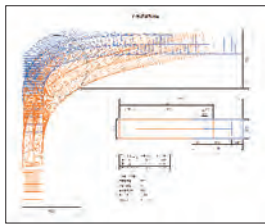
Program Price : US\$1,730

This allows the user to calculate and draw the trajectory of vehicles based on the figurative theories of "Style of right angle turning trajectory drawing of semi-trailer and full-trailer (JASO 2006-92), Society of automotive engineers of JAPAN, INC." etc. Driving simulation on visualized routes and existing routes and drawing vehicle trajectory and detailed vehicle shape can be conducted efficiently.

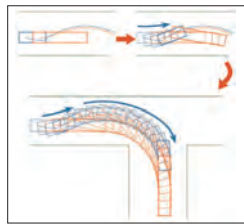
■ The correspondence car type



▲ Setting of registration of trajectory and vehicle



▲ Drawing check screen (Trajectory drawing for application)



▲ Trajectory check of a semi trailer moving back

Linkage with UC-win/Road

The trajectory can be represented in a 3D simulation by creating OpenMicroSim file and then reading it by UC-win/Road.

■ Parallel parking



■ Combination driving



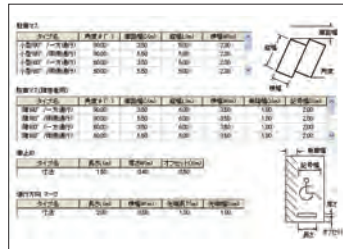
Parking Drawing System

Program Price : US\$1,430

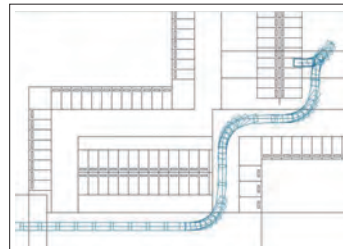
This is a CAD system which designs parking lots based on the parking standards with the figurative theories of "Standard Parking Regulations", "Road Design Standards" etc. (Drawing plan view). It allows the user to export the constructed parking drawing to CAD data which can be used in our "Vehicle Trajectory Mapping System".



▲ The arrangement of the parking boxes after drawing circumference and route.



▲ Setting the size of parking boxes



▲ Result of linkage with vehicle trajectory drawing system



▲ Reading and visualizing the parking lot model in UC-win/Road.

FORUM8 Parking Solution

By connecting CAD software to design and create vehicle trajectory diagram and parking lot and UC-win/Road provides the creation of a parking lot model using drawing information and 3D VR simulation, as well as integrated solutions such as an automatic parking system synchronized with RoboCar® and a vacant parking lot search and navigation system using VR-Cloud®.

Flow of parking reservation on VR-Cloud® Parking NAVI System



1. Select "Search parking lot" on a top screen. Available parking lot will be displayed on a list

2. Information. Input the required items and make a reservation



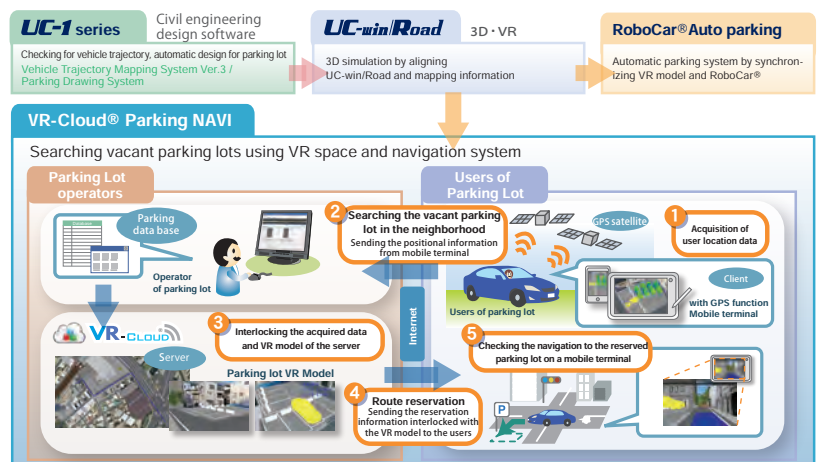
3. After applying, start navigating to the parking lot. Direction to travel will be displayed.



4. Confirm the parking position and surrounding situation.



5. Route can be check again.



Organic Parking

CEO & Founder : Kostas Terzidis
(Associate Professor, Tongji University, China)

This service was developed by Organic Parking in the US as the idea of making more eco-friendly society by reducing the time to search parking lots and easing congestion. This service is patented in the US and is currently undergoing international patent application. FORUM8 has granted the exclusive development and customization right with in Japan to Organic Parking, and is going to customize it for the domestic market.

Smart Sensing

Interactive simulation using sensing

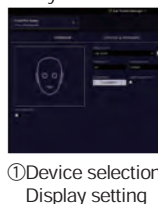
Handless driving using eye-tracking system

A wearable device that can measure eye-tracking data. It can be linked with driving simulation in VR space made with UC-win/Road.

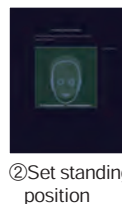
A driving simulation controlled with driver's eye movement. The Eye Tracking System is a stick-shaped, compact, and lightweight device that can be easily installed on a monitor or other device, and can be easily linked to UC-win/Road.



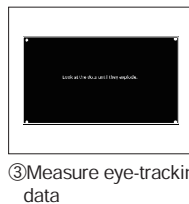
High-performance
next-generation
small eye-tracker



①Device selection
Display setting



②Set standing
position



③Measure eye-tracking
data



④Connect with UC-win/Road



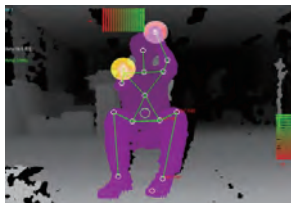
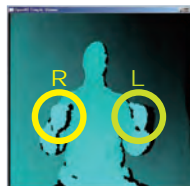
⑤Drive with eye movement

Handless driving simulation with infrared sensor

This system allows the operation of UC-win/Road by moving the arms as operating the steering in front of the infrared sensor. The positions of both arms which are detected by the sensor are converted into steering, acceleration, braking of vehicle.

●AirDriving & Gesture

A handless driving system that combines 3D motion input with gesture input. The steering can be operated same as actual steering control. Acceleration and braking can be distinguished by detecting the angles between the right toe opening right and left, and analog values are detected from the amount of pressure the driver exerts on the pedals. The system recognizes even the slightest movement, allowing for smooth driving.



AirDriving driving operation



6K Digital Signage AirDriving



6K Digital Signage Sky Walking

Drive simulation in UC-win/Road with the brain-measuring interface MindWave Mobile

MindWave Mobile developed by NeuroSky is a wireless stereo head device equipped with a brainwave sensor. It measures the brainwave of the wearing person that is sorted by differences of frequency like alpha and beta, and converts it to the psychological state such as degree of concentration and relax via the original algorithm. By using MindWave Mobile plug-in and cooperating with VR data, users can perform operations and simulations using the acquired data. In the drive simulation, speed of the vehicle is controlled according to the driver's degree of concentration. If the driver concentrates by staring at a point on the screen, the vehicle accelerates, and it decelerates if the driver gets distracted.



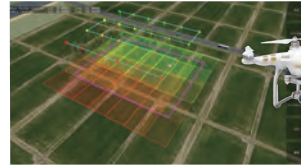
▲MindWave Mobile
(Neurosky)



▲"Brainwave visualizer" (Neurosky)

Crop management system using IoT devices and 3D VR

VR tractor simulator, VR rice planting simulation with gesture interface linking infrared depth sensor and UC-win/Road, counter-measures against damage by wild animals such as boars, monkeys, and deer, and cooperation with various devices including remote-controlled drone.

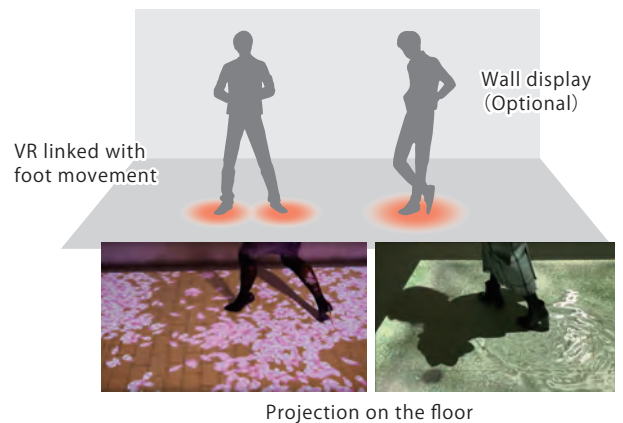


Interactive system using infrared sensing of floor surface

Create original spaces for experience

Interactive images and sounds are presented according to the movement of visitors through sensing, allowing to experience a video displayed on the floor and a shower of sound falling down. It can also be used for the entertainment at stores and showrooms. We offer flexible proposals for content and screen composition.

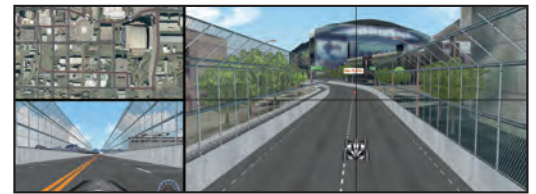
Example of linkage between UC-win/Road and sensing device



Multi-Cluster digital signage system

The interactive digital signage system uses a 6K display on multi-screens as well as the infrared depth sensor

This system can be interactively operated by using the function of gesture interface and motion capture. Xtion PRO is used for the infrared depth sensor. The signage is operated interactively compared to the previous digital display. We also provide this service and various products such as real time VR simulation using the multi cluster system and UC-win/Road, CG rendering using the supercomputer etc.



6K Multi Cluster Digital Signage System
(UC-win/Road Ver.9 Network Multi Driver function)

Sensing & MR/AR System

MR: Mixed Reality AR: Augmented Reality

HMD System

3D image output by Meta Quest 2 with extremely wide view angle Head tracking by the internal sensor

What is Meta Quest 2?

A Head Mounted Display (HMD) developed and provided by Meta (US) at a lower price than existing HMD. Head tracking by the internal sensor and 3D image output of wide view angle are available.

Display

Oculus Rift has an overwhelming wide field of view as a HMD. This is because the fish-eye model screen shows wearers the flat liquid crystal display as if they are looking at a semi-hemisphere projector screen in front of them. Combination with stereoscopic view due to the difference of view between right and left improves the immersion feeling into the VR space. In addition, existing HMDs display normal images owing to spending much cost to the optical system in order to reduce the lens distortion to the minimum, whereas the Oculus Rift renders source images so that wearers can see good images when seeing through the distorted lens.

UC-win/Road Oculus Plugin

The plug-in creates a stereoscopic 3D image with lens barrel distortion and tracks the camera view within UC-win/Road in line with the user's head movement using sensor data from Meta Quest 2.

Head Mounted Display System

Developed by Meta
<http://www.oculusvr.com/>

Varjo VR-2 Pro▶
Super-high resolution image through HMD as if seen with human eye (Hand tracking and SteamVR/OpenVR are supported.)



UC-win/Road with VR2
Super-high resolution VR

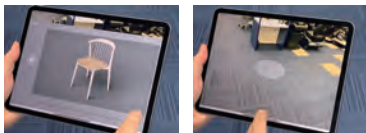


▲HTC VIVE

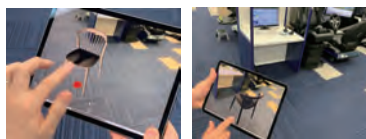
System Examples

AR application for reviewing furniture layout

Display 3D CG models on camera image



① Select a model ② Tap & put the model

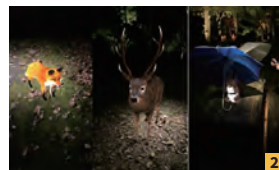


③ Move the model freely ④ Finish

VR/AR solutions



Reproduction of
Nikaho city
Kitamaebune (top)
and Collapse of Mt.
Chokai (bottom)



"Kawayunomori
Night Museum
Forest Picture Book"

HoloLens

Experience MR (Mixed Reality) with HoloLens
VR is superimposed over the real world

Linkage with UC-win/Road

Special application displays VR in the air. Accessing one data from multiple HoloLens, head directions of the others are also displayed.
*Customization required.

About HoloLens

A device for MR platform. Digital contents displayed on a translucent goggle are overlapped on the real landscape.

HoloLens

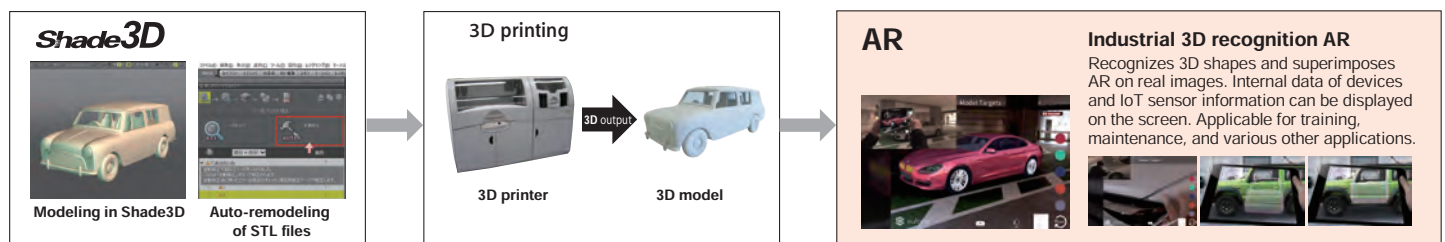
Developed by: Microsoft
<http://www.microsoft.com/en-us/hololens>



Industrial 3D recognition AR

FORUM8 cooperates with Premium Arts to provide industrial solutions using AR/MR.

Using a vehicle model output by 3D printing function, users can try the transparency of the internal structure, refer to attributes, and change the design with AR.



AR Mail From Harbin

"AR Mail From Harbin" was a collaboration of postcards and AR (Augmented Reality) technology. Divided plan views are drawn on back sides of postcards, and a 3D image appears when a smartphone is held over the aligned postcards. Pictures sent from sightseeing spots make receivers feel as if they were on site.



A system with AR engine



Shape markers printed on paper display VR data via the server.



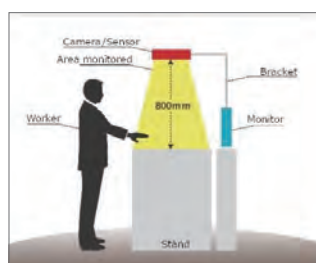
A prototype based on the drawing can be checked with 3D model and VR.



A set of services from a server construction to a creation of mobile device viewer can be provided.

System for checking manufacturing workflows (Xtion2)

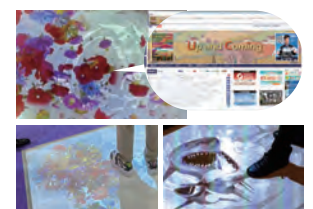
- System for checking work flow process using near infrared light sensor
- Work flow process can be checked check based on scenarios
- Expansion of the sensing range can allow the system check workers' flow line.
- Combination with AR devices such as HoloLens can build a training system that feeds information to workers in real-time during the training.



Face recognition system on Taptalk

The face recognition technology using camera image and the foot detection technology using infrared area sensor are adopted to project an interactively changing image on the feet of the visitors.

AI technology is used to recognize the contour features of the face, then the display image is automatically switched to a shark if the contour is curved, or a flower image if it is straight. A new function that links to our website by stepping on anywhere is also available.



UC-win/Road Physical Model and VR System

Simulation / presentation system in combination with physical model and VR

Technical Support: Assoc. Prof. Tomohiro Fukuda,
Graduate School of Engineering,
Osaka University

A new simulation / presentation system using physical models linked with VR vision data to form an integrated environment that has both technologies' merits. Information can be conveyed in a handy and accurate way to multiple parties with different levels of expertise and knowledge, from which planning and consensus can be effectively built.

Tool for examination with advantages of both physical and VR model

Advantage of VR: VR is highly flexible and expressive, and allows various considerations such as reproduction of traffic flow or changed weather conditions, which is impossible through a physical model.

Advantage of physical model: Physical model is more intuitive way to understand the overview of planning including the distance and size. Physical model allows various people to examine from the arbitrary viewpoints at the same time, understanding the whole city model simultaneously and touching the model directly.

Deciding the viewpoint under consideration in a physical model and displaying it in a VR model

The planning can be studied by easy and intuitive operation in comparison with VR only. In "UC-win/Road Physical Model and VR System", you can move in the VR space and make changes in the view direction by indicating the view points to examine with laser pointer on the model. The system consists of model, web camera, laser pointer, VR software "UC-win/Road", and display unit to view the VR display space. As a whole, the system consists of two functions: detecting laser pointer operation, passing detected information to UC-win/Road and representing it in VR space.

Proposal and quotation of system

FORUM8 will offer the proposal and quotation of "UC-win/Road support system" based on the requirements of each customer. With UC-win/Road Support system, 3D VR simulation data can be created based on their needs. The created VR data can be modeled by exporting VR data to the physical model using 3D printer in a short time with "3D physical model service" so that the physical modeled VR system can be effectively structured. Since the created data can be produced as a 3D physical model by "3D modeling service", customers can create Physical Model and VR System effectively.



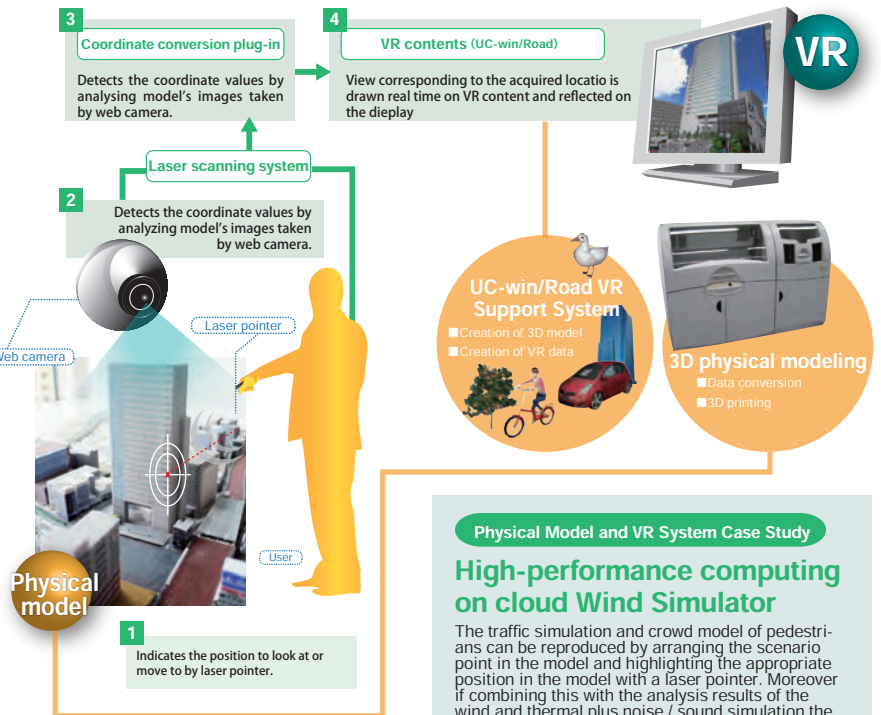
▲3D printer models



▲The area in front of Nakameguro station

▲Meguro Ginza Shopping Avenue

System



Quotation example: "Nakameguro Safety and Security Map" Physical model VR system

The proposal system with the physical model in Nakameguro. The maintenance condition of infrastructure in the basement and the inside space of building can be checked as "Area safety and security map" where the physical model and VR are integrated, and it can be used for the consensus formation in the city-development project.

VR data creation : About US\$32,000

3D physical model creation : About US\$38,000

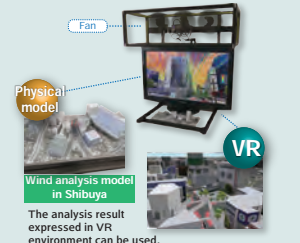
* Including the cost of ARToolKit license, Web camera, laser pointer, desktop computer, 42inch display, UC-win/Road Ver.5 Advanced x1 license, customization charge of UC-win/Road, and technical fee

Total: From US\$150,000

Physical Model and VR System Case Study

High-performance computing on cloud Wind Simulator

The traffic simulation and crowd model of pedestrians can be reproduced by arranging the scenario point in the model and highlighting the appropriate position in the model with a laser pointer. Moreover if combining this with the analysis results of the wind and thermal plus noise / sound simulation the results will be simply confirmed by VR. In "High-performance computing on cloud Wind Simulator", a fan generates the wind according to the viewpoint highlighted by the model based on the result of wind and fluid analysis by OpenFOAM. The strength of the wind and the wind direction can be reproduced as well.



FORUM8 Robotics State-of-the-art technology using robot

Autonomous Flight UAV

UC-win/Road UAV Plug-in

- Adding actions on the points such as taking photo or starting video recording
- Finally lands. Media files of photos and videos can be selected and downloaded from UC-win/Road over the wireless after finishing the flight
- It supports display of shooting range in real time, manage system for multiple UAVs, and its task allocation



Autonomous flight monitoring system

- Operation by mouse or keyboard. Wireless data communication via Wi-Fi.
- The computer in the UAV automatically controls the balance and easily enables the advanced movement of the UAV such as up and down, forward and backward, and left and right.
- Images can be monitored through a front camera or high-speed camera and recorded with FLY-DV camera in detail.
- Measures the position of AR.Drone by GPS
- 9DOF IMU (Inertial Measurement Unit) measures the acceleration, gyro, and earth magnetism, and confirms the direction of AR.Drone.
- It avoids the collision by using the infrared distance measuring sensor.



Micro Aerial Pilotless Scanning Sustum (MAPs)

Mapping of a large area through the use of a pilotless unmanned aerial vehicle (Drone).



UAV has been chosen as "The Robot for the Next Generation Social Infrastructure with Target Application in Onsite Inspection" by Japan Ministry of Land, Infrastructure, Transport, and Tourism (2014.10.July)

Bridge maintenance and management "System based on Autonomous UAV and 3D VR for Inspection and Assessment of Structures"



Adopted items

- 1 Close visual inspection of concrete bridges
- 2 Close visual inspection of floor board

Linkage of 3D VR and autonomous flight robot



FORUM8 2023 FIA WORLD RALLY CHAMPIONSHIP ROUND13
Rally Japan 2023
 AICHI/GIFU 11.16 THU - 19 SUN



FORUM8 Rally Japan Metaverse

Virtual FORUM8 Rally Japan 2023

F8VPS

FORUM8 VIRTUAL PLATFORM SYSTEM
 Web VR Platform



F8VPS metaverse space where you can virtually enjoy the special course of Toyota Stadium SSS, PR booth of the host city, etc.

Title Partner of FIA World Rally Championship

FORUM8 Rally Japan 2024



**FORUM8 will continue to support
 the event as an official title partner in 2024.**



ISO27001/27017 ISMS

ISO22301 BCMS

ISO9001 QMS

ISO14001 EMS



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