



be on site with infra3D





Novitas AG  
Christoph Meier  
Dr. Hansruedi Eggen

Swiss Economic Award 2015





be inspired...

Infrastructure has an immense property value and is a prerequisite for a functioning competitive economy. In this context, the modes of transport such as road, rail and waterways have a special importance. For the construction, maintenance and management of these assets, efficient solutions of data acquisition and management which enable an optimal planning of investment and maintenance costs are needed.

With joy, impressive passion and driven by innovation, our highly talented team always strive to realize and provide new solutions.

Crowned as the winner of the prestigious entrepreneur award "Swiss Economic Award 2015", we are highly motivated and we are always advancing the development of our infra3D services in order to constantly offer our customers the greatest possible benefit.

Dr. Hannes Eugster  
CTO

Christian Meier  
CEO

# About us

We are a highly specialized service provider in the road and railway infrastructure sector. With our measurement vehicle (acquisition system), we produce high-resolution 3D images and provide them to our customers as a video web service. Our product, the unique infra3D service, provides you with an intelligent, georeferenced and high-resolution 3D image data base, which enables you to service your infrastructure and carry out building design work. The infra3D service simplifies infrastructure maintenance, the management, planning, realization and documentation of constructions projects.

Infrastructure operators can analyze, map and measure accurately their roads or railway tracks without disrupting the traffic. In addition, a significant increase in efficiency and therefore cost savings are generated.

The infra3D service is available in different, sector-specific configurations to meet the highest demands.



## Who we are

iNovitas AG was formed in Muttenz (Switzerland) in January 2011 as a spin-off company of the Institute of Geomatics Engineering of the University of Applied Sciences and Arts Northwestern Switzerland. This intensive cooperation enabled a know-how transfer between the parties and remains important in the future for the innovative power of iNovitas.

In 2012, our first employee was hired, and at that time we also developed our first measurement vehicle.

Since 2013, the headquarters of iNovitas AG has been located in Baden-Dättwil. In 2016, the company already has 30 employees and has undertaken a lot of road, railway and water projects. Now iNovitas AG has successfully entered the international market. The company has local partners in Germany, Italy, Austria, Scandinavia, Poland, Turkey, Croatia and Romania. These partners have exclusive rights to sell and distribute the infra3D services in their areas/countries.

## Facts & Figures

- On average, our customers save **30% on costs and effort**.
- The meter readings in our vehicles say:  
over **62,000** km by road, **18,000** km by rail and **400** km along river banks.
- Over **320** projects successfully undertaken.



## Your benefit, your advantages

- With infra3D, you have the complete road and rail tracks directly on your desktop in the office or on the road anytime and anywhere. On-site field survey and measurements are reduced to a minimum.
- The web-client allows access from anywhere via web browser, without any software installation. Within seconds you are at any place you want.
- The operation is very simple, intuitive, and equally valuable for public administrators and engineers. Due to the high user-friendliness and acceptance, infra3D can be used across departments by everyone and provides an exceptional high potential to reduce costs and expenditure permanently.



These are our distinguishing features:



### Precision

Our infra3D image database facilitates measurement with centimeter precision. That is a world record.



### Unique

infra3D service is unique because iNovitas is continually developing the technology and realizing innovative projects that suit your needs.



### Increasing efficiency

Time-consuming and dangerous field work is not necessary thanks to infra3D service. That means our customers save time, money and their efficiency and occupational safety is increased.



### Versatility

infra3D service is flexible: sector-specific configurations and GIS & CAD integration allow you to adapt the service precisely to your needs.

## Your advantages with the infra3D

### Efficiency

The 360° view with its unique precision saves you time-consuming field surveys. They can be done virtually with infra3D, whenever and wherever you want. Collecting basic data can be done directly from the infra3D service.

### Precision

Unique precision enables you to carry out evaluation and assessment of road surfaces, cross-sections, markings, signaling or limit distances from your work place.

### Simplicity

The planning, presentation and communication of projects is simplified by the image database, which presents specific geodata and projects in their real context.



infra3D

### Flexible usage

The web-based use is simple and intuitive. The images can be used easily anytime from anywhere and are password-protected via web. Geodata can be collected and maintained simply and quickly.

### Integration capacity

The infra3D service can link to an existing geographical information system (GIS), as well as to numerous third party systems. Existing geodata can be refined. Data can be exchanged simply between a wide ranges of different systems.



# Technology

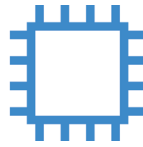
Our infra3D system solution comprises the mobile acquisition system, processing software components and a cloud service, which facilitates flexible distributed data evaluation and use via infra3D service.



## Acquisition system

Our specially developed mobile collection system can be used on various carrier platforms and is therefore very versatile. Raw images are captured with their applicable navigation data. They are processed in preparation for the 3D mono image sequences.

Special benefit: since data collection is carried out by measuring vehicles moving in traffic, the occupational safety for those involved is extremely high compared with usual field data collection. Also, no traffic obstructions arise. The infra3D acquisition system ensures the highest possible safety and efficiency.



## Processing

Our processing software components turn the raw images and navigation data captured by mobile into geo-referenced 3D mono image sequences. The infra3D image data base produced in this way provides a high resolution, digital, comprehensive image of the recorded infrastructure corridor. The detailed digital image facilitates virtual surveying and uniquely precise measurements with one click.

Processing steps:

- System and sensor calibration
- Direct / integrated sensor orientation
- 3D mono images data processing
- Build up of the infra3D database



## Cloud service

The cloud service offers maximum flexibility. The 3D image data base hosted in the cloud is available at any time to various clients and interfaces and facilitates distributed flexible use. So it can be accessed direct from your work place or when you are out.

### infra3D Web-Client:

Simple and intuitive functions enable a flexible gathering of information, dimensions or object mapping.

### infra3D Web-SDK:

Enables the integration of infra3D service into an existing geographic information system (GIS), as well as numerous third party systems.



## Range of application

### Administration of construction:

- Simple surveys, virtual on-site inspections
- Road condition assessment

### Civil engineering:

- Surveys through building inspection
- Visualization of facade textures for planning purposes
- Visualization of minimum space

### Civil service - Maintenance:

- Snow clearance / Cleaning
- Planning operation

### Partners and Engineers:

- Acquisition of basis data
- Project work / digital elevation models (DEM)
- Cross sections / point clouds

### GIS-data capturing and inventory:

- Efficient acquisition of the geodata
- Update data

### Police traffic service:

- Sight distance
- Traffic situations (crossroad situations)
- Markings / Signalling

### Rail infrastructure management:

- Acquisition of basis data
- Contact wire and clearance analysis
- Cross sections / Track condition assessment

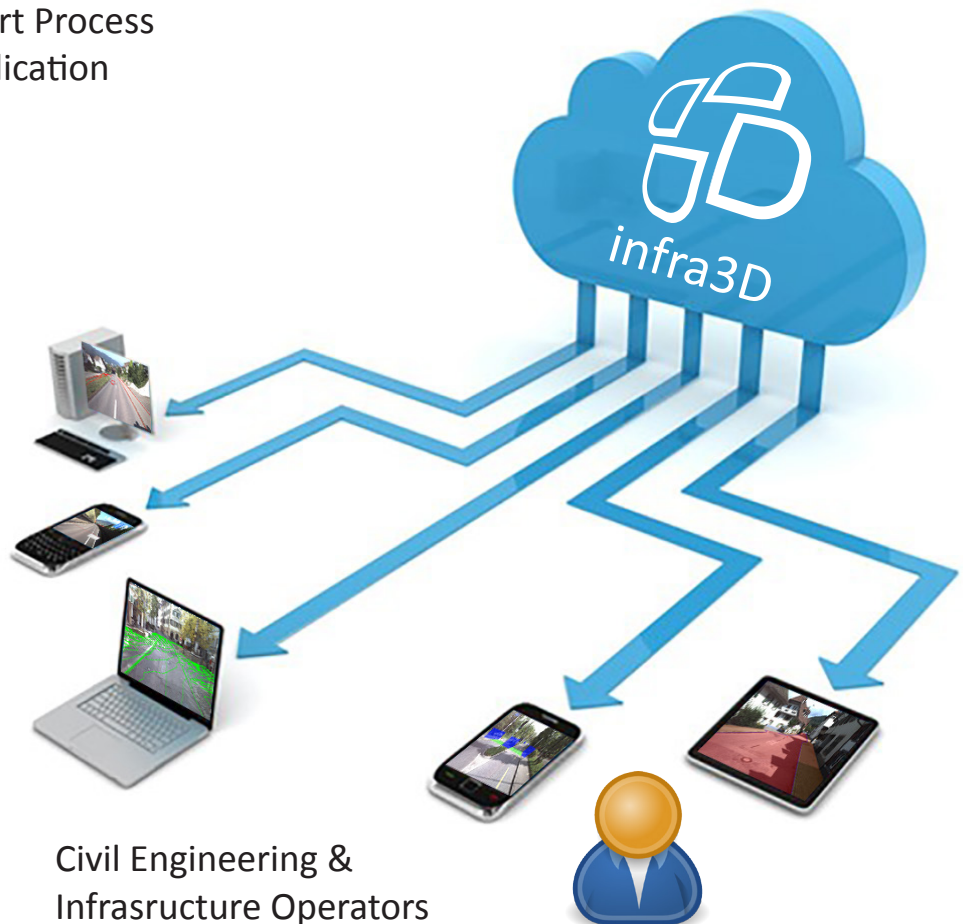


### Smart Process Application

Engineers &  
Construction  
Administrators



Civil Engineering &  
Infrastructure Operators





## Optimized for municipalities

Many work processes, particularly structural and operational maintenance of your infrastructure systems, require a wide range of spatial data. The infra3D service allows you to collect this data efficiently and flexibly, direct from your work place.

infra3DLocal enables you to assess the condition of a locality's roads. The precise digital image gives you comprehensive information for analyzing the condition of roads, makes it easy to extract cross-sections, markings of street furniture and limit distances. Virtual field surveys, georeferenced online-surveying and condition assessment mean that you do not need to do on-site surveys and so your efficiency is increased.



## Additional modules



**Advanced Georeferencing**



**Virtual Project Space**



**Geodata Visualization**



**Anonymization**



**Linear Reference Frame**



**Panoramic Images**

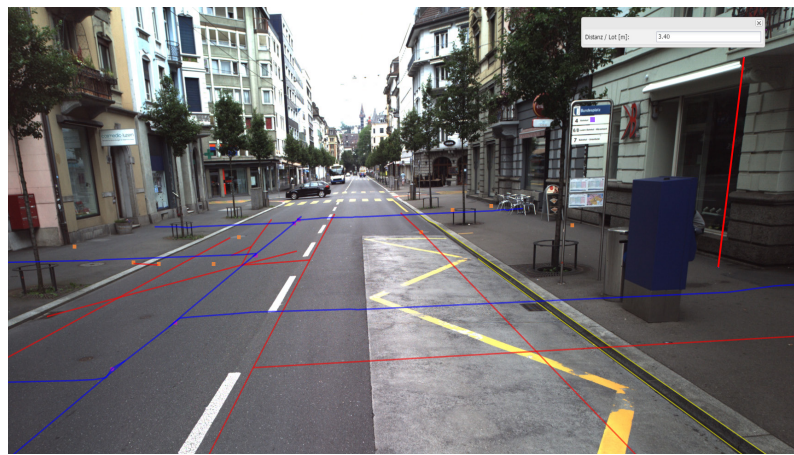
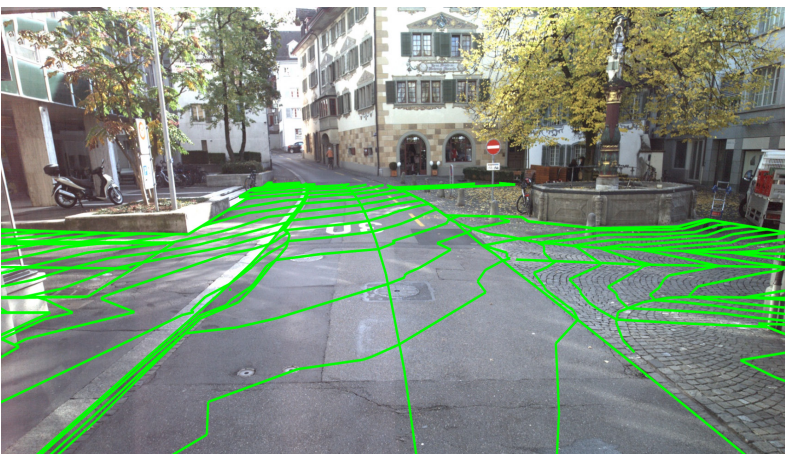


**Road Excavation Management**

## Have the city at your feet

The infra3D service facilitates the project planning and communication of infrastructure projects, extraction of spatial data and offers decision-makers the optimal basis for making their decisions

infra3DCity enables the administration to deal with project planning, mobility issues, road safety concerns or comprehensive mapping in your city from the work place. The exact digital image of the street space, accessible at any time, gives you comprehensive information about street furniture, markings, signaling and the condition of the road surface or the lighting. Online surveying and condition assessment on the screen saves you doing on-site surveys and therefore increases your working efficiency.



## Additional modules



**Advanced Georeferencing**



**Virtual Project Space**



**Geodata Visualization**



**Anonymization**



**Metrological  
Condition Assessment**



**Linear Reference Frame**



**Road Excavation Management**



**Panoramic Images**

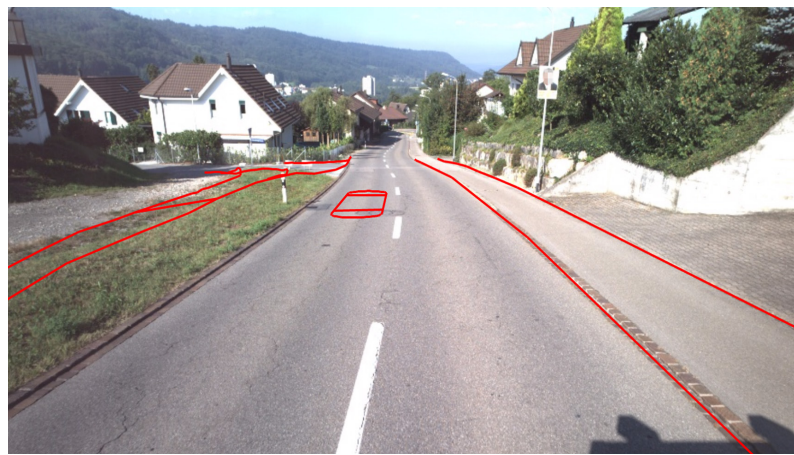
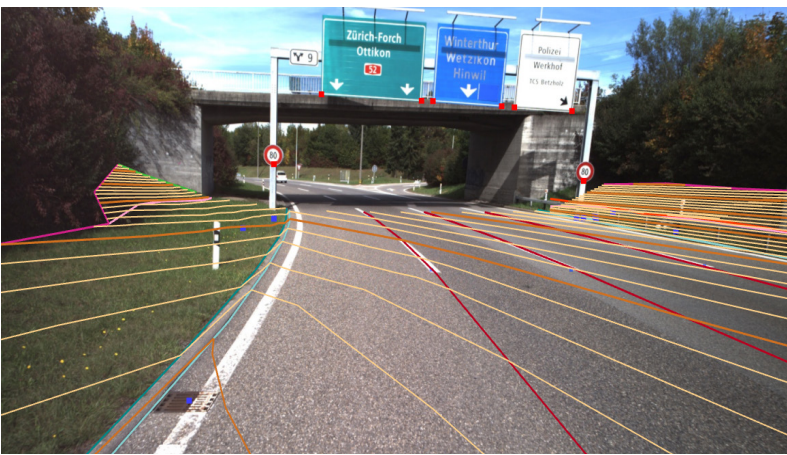


# infra3DRoad

## Brings the street space to you

Maintenance management and the maintenance of the streets demand a wide range of infrastructure-related data. Usually, time-consuming and often dangerous on-site surveys and measurements are required to collect the information necessary for evaluations and analysis. However, infra3DRoad brings the street network into your work place in three dimensions and high-resolution.

The highly detailed three-dimensional image of the entire street network enables you to carry out virtual field surveys, efficient inventories and maintenance of the street furniture, evaluation of the condition of the roads or simply to develop the basis for surveying projects.



## Additional modules



**Advanced Georeferencing**



**Virtual Project Space**



**Geodata Visualization**



**Anonymization**



**Linear Reference Frame**



**Clearance Analysis**



**Metrological  
Condition Assessment**



**Tunnel Images**



**Panoramic Images**



**NaviApp**

# infra3DRail

With the infra3DRail you will stay „on track“

The operation and maintenance management of infrastructures demands a great deal of precise information about the rail corridor. The usual way of collecting the relevant data is time-consuming and associated with risks or operational restrictions.

The unique infra3DRail service facilitates the efficient and flexible collection of data direct from your work place and thereby saves time-consuming field surveys.



## Additional modules



**Advanced Georeferencing**



**Virtual Project Space**



**Geodata Visualization**



**Linear Reference Frame**



**Clearance Analysis**



**Contact Wire Analysis**



**Tunnel Images**



**Nominal/Actual  
Axis Comparison**



**Track Quality Control**



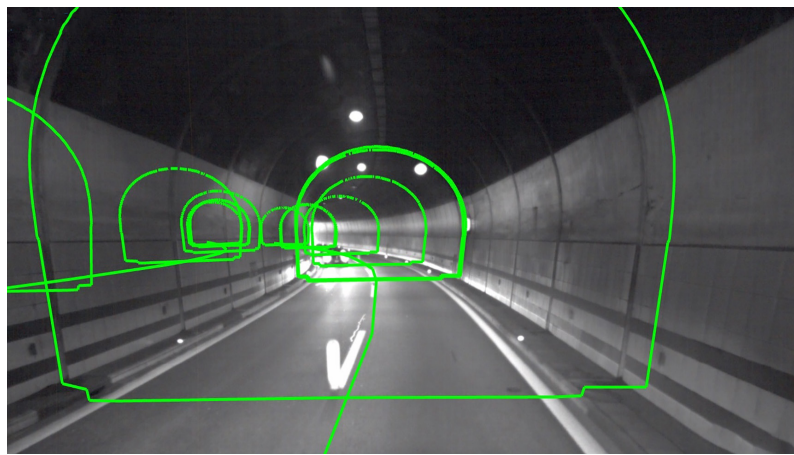
**NaviApp**

Find more information about additional modules on the last page.



## Efficient mapping, measuring and planning

Specific to the project, we create for you an infra3DEngineering with which you can simply and efficiently create mapping or elevation models with the desired level of precision and detail. We adapt the image data photographic configuration, as well as the precision of referencing to meet the needs of the project. Frame your evaluations and analyses and communicate them in an intuitive way to your project partners and clients.



- **Street furniture and inventories**  
Recording and maintaining various cadastral data and issues in the street and railway corridor
- **Implementations plans**  
Create plans simply and flexibly for the work carried out or its verification.
- **Surveys for building project planning**  
Simple mapping breaklines and individual points for the simple extraction of digital terrain models.
- **3D point clouds and image processing**  
Automatic extraction of dense RGB 3D point clouds for automatic derivation of road profiles or high resolution terrain models.
- **Road condition and structure evaluation**  
Visually road and building condition assessment, as well as change monitoring solutions.
- **Tunnel assessments**  
Precise geometric analyses and mapping work in tunnels with our Stereovision Client.

## Additional modules



**Advanced Georeferencing**



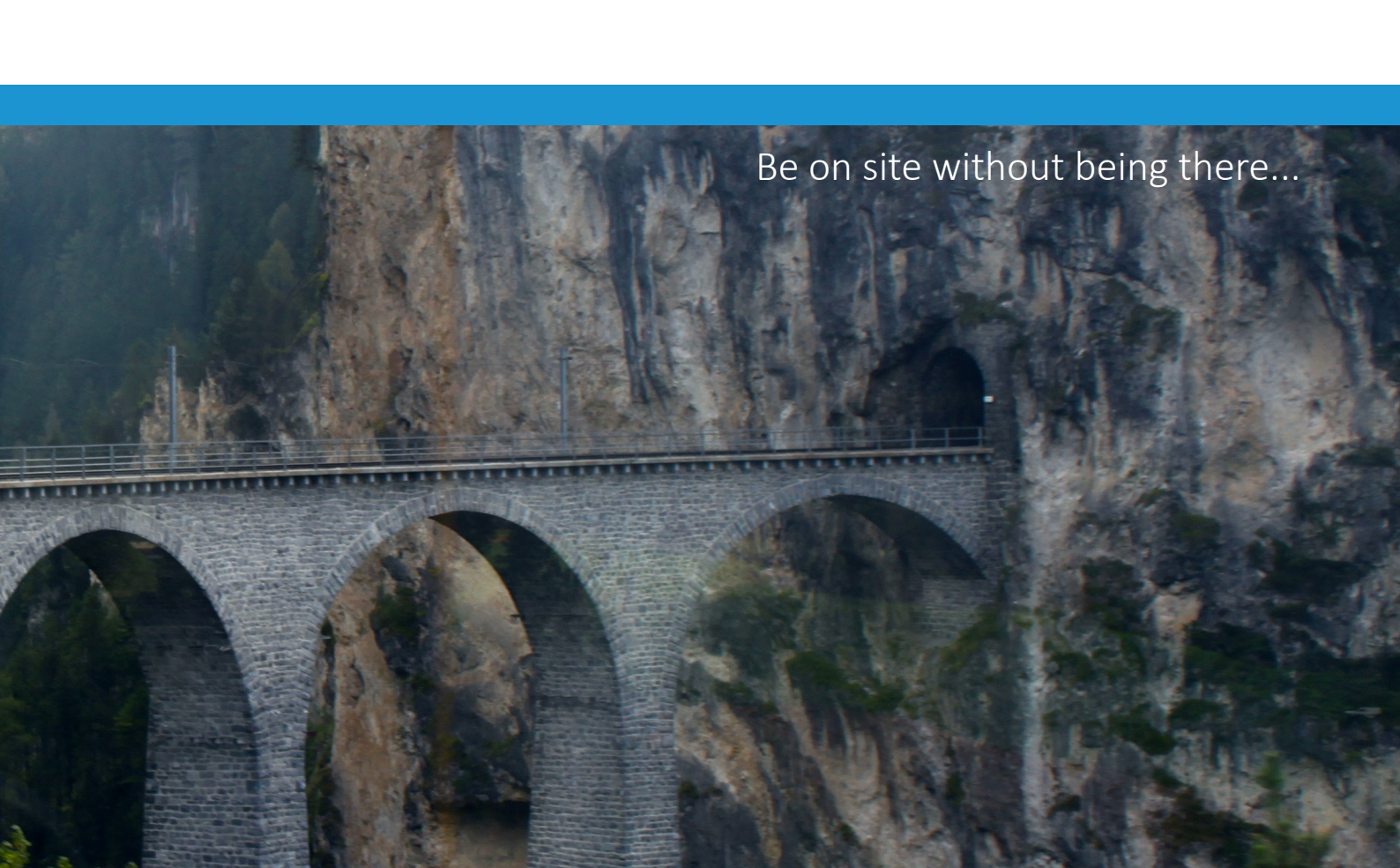
**Virtual Project Space**



## Additional modules

- **Advanced Georeferencing**  
The image data service can, where required, be enhanced to your specified level of accuracy for individual parts or in combination with a project-specific project service or the entire image data base. This requires suitable 3D control points in the specified project parameters.
- **Virtual Project Space**  
Make individual parts of your infra3D image data base available via Web Client to your project partners and third parties for project-specific evaluations and analyses. We provide you, as required, project-specific Web Client access with configurable functionality, viewable image sequences and special geodata layers.
- **Geodata Vizualisation**  
Numerous subjects such as data for pipe cadaster, property boundaries, gas, telecommunications, mapping, inventories, can be displayed in the infra3D Web Client. This allows you to use you spatial data, overlaid and correctly situated, variously in your visualization.
- **Linear Reference Frame**  
Orient yourself and your data by the road or rail axis. infra3D service can easily be supplemented by an additional linear reference frame. We would be happy to advise you about installation and your specific requirements.
- **Metrological Condition Assessment**  
Assess the road condition metrologically with infra3D image data collection. The simultaneous measurement campaign bundles your resources; it is efficient, economical and also environmentally friendly. By using an additional profile scanner, the transversal plane, ruts and depth of water level can, if required, be automatically recorded.
- **Panoramic Images**  
Gather extensive information about buildings and facades and with that, a better overview thanks to our high resolution panoramic images. The 3D-Mono images are being integrated into the panoramic images seamlessly, which makes it possible to use the familiar simple measurement methods in the merged parts of the panoramas.
- **Anonymization**  
The infra3D image data base can be pixelated to comply with data protection requirements. Get the most out of it by making your infra3D service available for public use.





Be on site without being there...

- **Tunnel Images**

Our additional configurable tunnel stereo system brings light into the darkness and brings tunnel tubes into the daylight and of the office. For special requirements, the tunnel tubes can also be lit according to your needs by active light sources.

- **Clearance Analysis**

Analyze the existing light space along the railway corridor systematically. This module allows you to present and pass through the infrastructure corridor in light space discs. Traverse the railway network with specified vehicle profile types and detect any problem areas.

- **Contact Wire Analysis**

This module offers the ideal basis for a systematic network-wide analysis of the lateral deviation and contact wire height related to the main track axis. With the infra3DRail, the catenary sag (curve) can also be determined.

- **Nominal/Actual Axis Comparison**

This module enables a systematic analysis based on the known nominal axis (track alignment). Any deviation from the nominal track position which needs to be corrected can be detected easily.

- **Track Quality Control**

The high resolution rail track scanner taken on measuring campaigns, records the railhead geometry and the track route in detail and with great precision. From this data the parameters track width, protrusion, torsion, longitudinal level, as well as the actual track axis are determined automatically and with a high degree of relative accuracy.

- **Road Excavation Management**

Road excavation can be quickly and simple managed with the infra3D web client. Our infra 3D enables you to be always up to date. You are able to find out existing or planned excavations very easily. The list of attributes which can be displayed in the infra3D web client, shows all the necessary detailed information about your road excavation.

- **NaviApp**

Our NaviApp allows navigation and precise localization of objects on your smartphone or tablet. The app is a virtual representation of your linear or axis reference system. It enables linear localization of information and determination of distances and directions to objects of interest on your road or rail network.



**WINNER**  
**SEF.AWARD 2015**

iNovitas AG  
Oberrohrdorferstrasse 1c  
5405 Baden-Dättwil  
Switzerland  
T +41 56 552 05 70  
info@inovitas.ch  
www.inovitas.ch