

Topcon GNSS solutions supporting mapping, surveying activities and disaster management

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Program

- **Who's Topcon?**
- **Case 1.: GNSS Network Solution**
- **Case 2.: Control Agriculture Parcel Mapping**
- **Case 3.: Disaster relief**
- **Case 4.: Urban mapping**
- **Case 5.: Utility infrastructure survey**

Who's Topcon?

Who's Topcon?

Interest to use GNSS technologies in land surveying, road construction, hydrographic-surveying, precision farming, GIS data collection, urban mapping, disaster management and many other fields is continuously increasing.

Topcon is develop and manufacture different GNSS solutions to these different applications. Different applications need

- * Different accuracy levels**
- * Different field data sets (therefore and sometimes, also...**
- * Different and additional sensors and devices.**

Who's Topcon?



Who's Topcon?



Who's Topcon?



The leader in
Satellite Positioning

Who's Topcon?



The leader in
Satellite Positioning

Case 1.: GNSS Network Solutions

GNSS Network Solutions

Topcon offers a comprehensive array of GNSS network services, including

- * Hardware (receivers and antennas),
- * Management software,
- * Reference services and
- * GNSS Network connectivity.



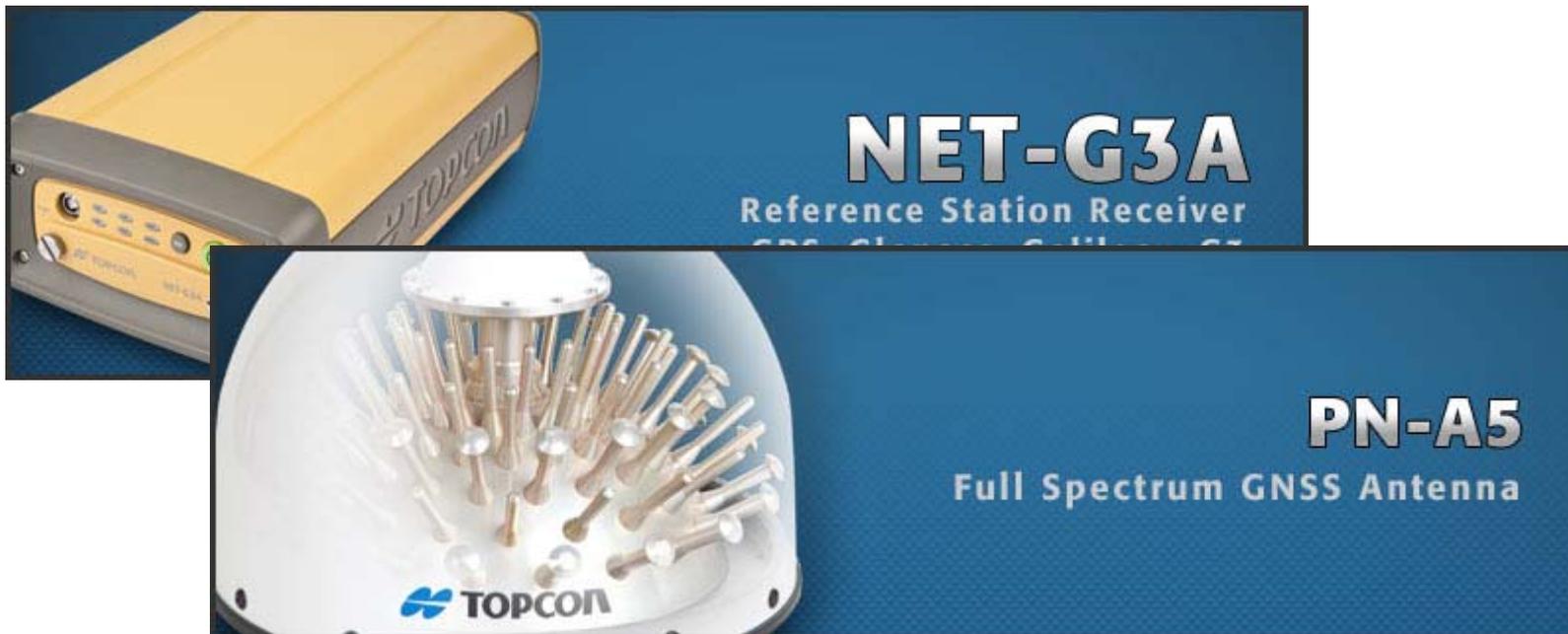
GNSS Network Solutions (cont.)

* GNSS Network Hardware and Software



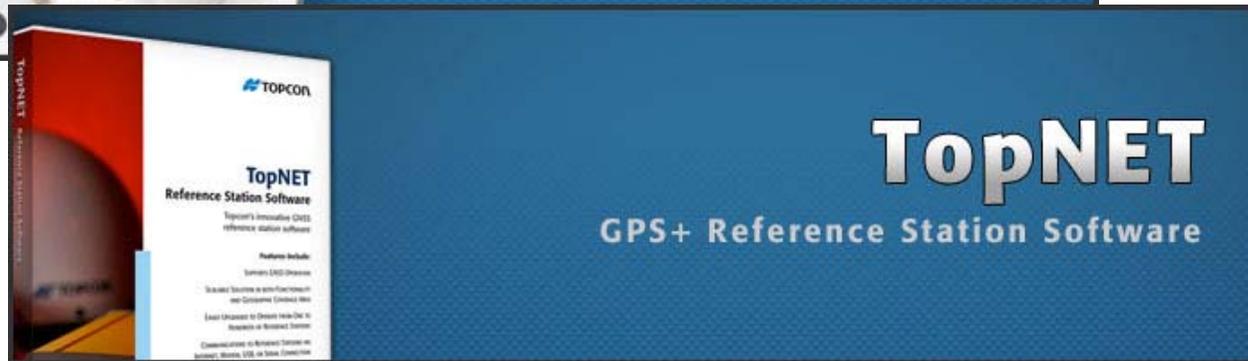
GNSS Network Solutions (cont.)

* GNSS Network Hardware and Software



GNSS Network Solutions (cont.)

* GNSS Network Hardware and Software



GNSS Network Solutions (cont.)

* Reference services and GNSS network connectivity

TopNET live GNSS Reference Network Real – Time Data Services

DGPS

Real Time, differential GPS corrections (DGPS) are computed and broadcast from each reference station. GIS and mapping customers will be connected automatically to the nearest reference station to maximize accuracy potential.

RTK

The Real Time Kinematic (RTK) service will automatically connect your rover to the nearest reference station using the low bandwidth, industry standard data format.

Network RTK

TopNET collects data from all the available Reference Stations and forms a correction field, where precise values can be calculated at any point inside the field. From these corrections and user's coordinates sent by the Rover (standard NMEA-0183 GGA message), TopNET simulates a Reference Station receiver located close to the Rover. The generated data are sent to the Rover using the industry standard RTCM 3.0 data format and used for obtaining precise solutions.

GNSS Network Solutions (cont.)

TopNET live Networks



EASTERN CANADA



TopNET *live*
NORTH AMERICA

Topcon's next generation
GNSS RTK Reference Network



Case 2.: Control Agriculture Parcel Mapping

INVEKOS On-the-Spot-Checks agricultural and forestry





Bavarian Ministry of Agriculture and Forestry

Bavaria / Germany



- Measure agricultural and forest parcels as basis for payment of Governmental grants (INVEKOS) to land owners
- Integrate GMS-2 into GAF brand GIS
- > 120 units in use in Agriculture Dpt.
- > 120 units in use in Forestry Dpt.

Rhineland-Palatinate /Rheinland Pfalz

- * Control of area of Vineyard parcels / INVEKOS
- * GMS-2 with Beacon Receiver BR-1 for secured area measurements following EU directives



Rheinland-Pfalz

AUFSICHTS- UND
DIENSTLEISTUNGSDIREKTION



Case 3.: Disaster Relief

Red mud (Kolontár, Hungary)

On 4th October, 2010 Toxic wastes (called “red mud”) from the alumina refinery Ajkai Timföldgyár Zrt flooded some parts of three Hungarian villages (Kolontár, Devecser and Somlóvásárhely), -- when the protection dike of the waste-reservoir with hazardous substances was broken.

Next day, the Hungarian Government declared a state of emergency in three regions of the country impacted by the toxic wastes spill.



Red mud (Kolontár, Hungary)

After the first week of shock, emergency actions and evacuations, the focus been changed to the cleaning from one side, and mapping the devastation and making further risk estimation from the other side. The basics of any risk analysis is fast and accurate mapping and surveying.



Red mud (Kolontár, Hungary)



Satellite images supplied nice overview of the disaster, also helped the public to follow the situation.

Red mud (Kolontár, Hungary)



GPS technology however helped the local, on the spot event mapping and the dike deformation survey.

The Topcon *IP-S2* Light Mobile Mapping System

- Survey Grade GNSS
- 360deg camera



The Topcon *IP-S2 Light* after tsunami



The Topcon *IP-S2 Light* after tsunami (cont.)



The Topcon *IP-S2 Light* after tsunami (cont.)



Case 4.: Urban Mapping

The Topcon *IP-S2 Compact+* Mobile Mapping System

For high accuracy positioning:

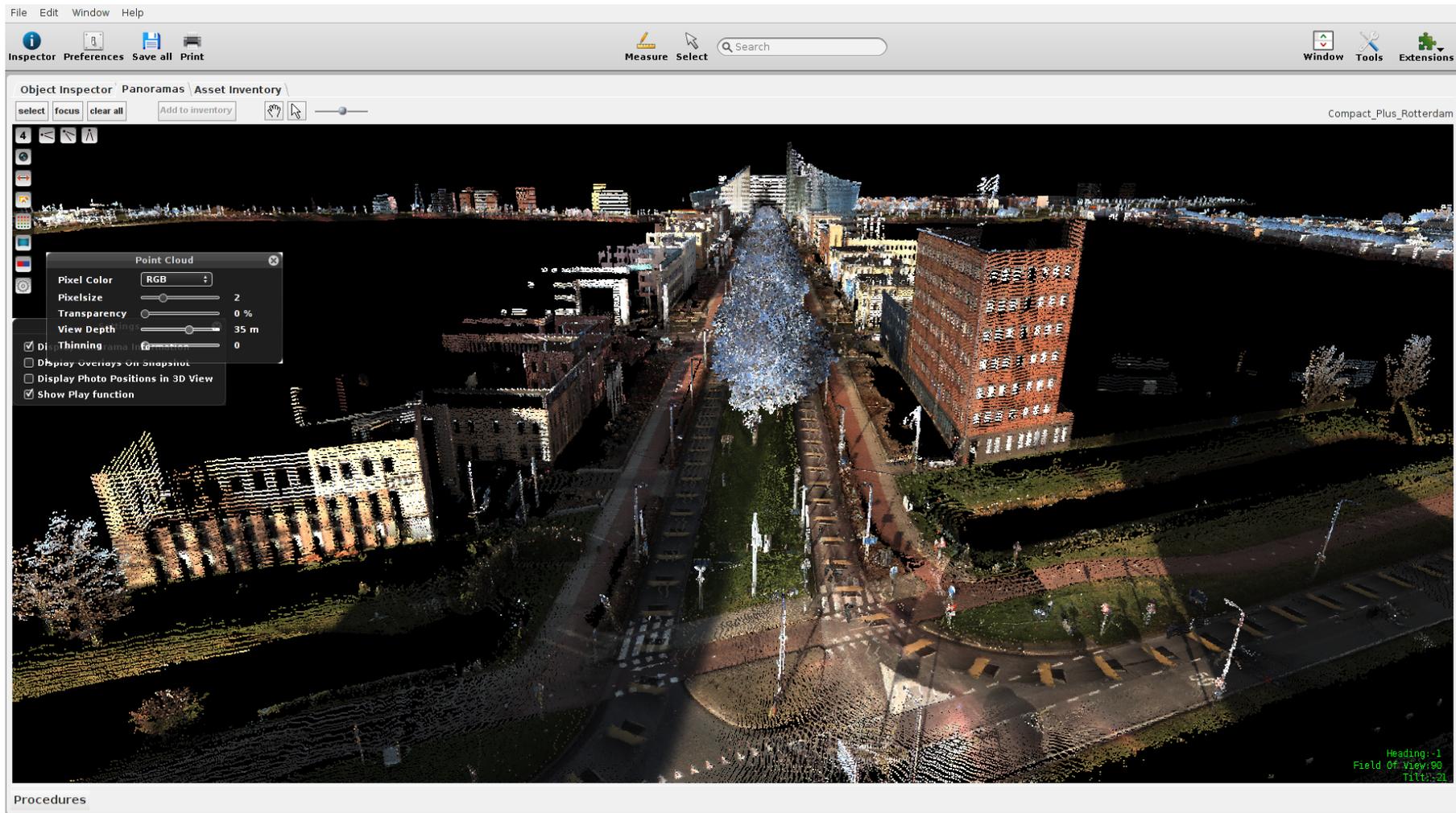
- Survey Grade GNSS
- **High accuracy INS**
- **Wheel odometer**

For high accuracy mapping:

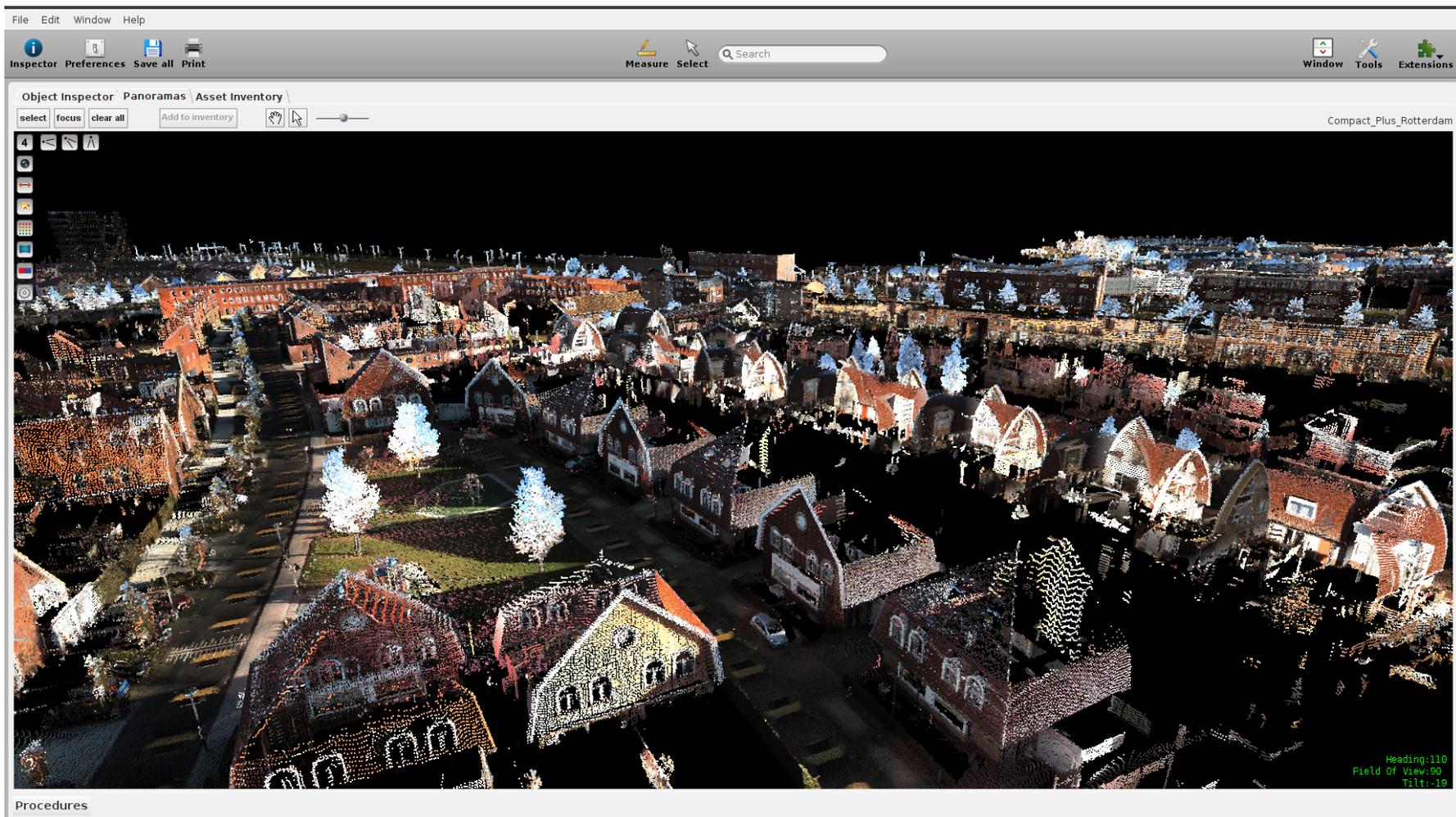
- 360deg camera
- **Up to 5 laser scanners**



The Topcon IP-S2 Compact+ Mobile Mapping System (cont.)



The Topcon IP-S2 Compact+ Mobile Mapping System (cont.)



Case 5.: Utility infrastructure survey

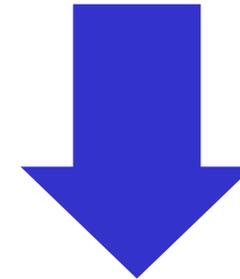
The *IP-S2 Compact+* Mobile Mapping System and the *GRS-1 GIS/GPS*



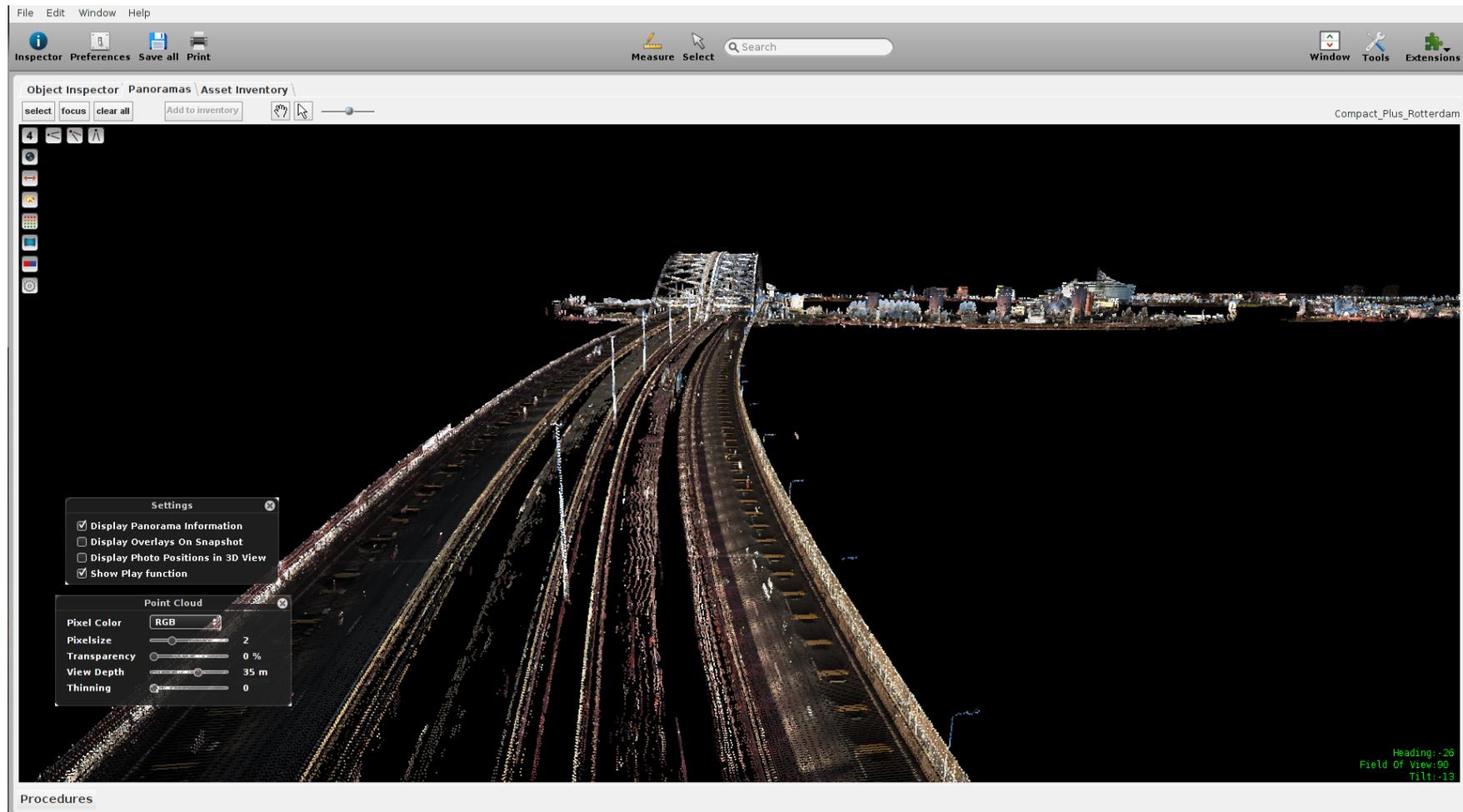
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The *IP-S2 Compact+* Mobile Mapping System and the *GRS-1 GIS/GPS*



The *IP-S2 Compact+* Mobile Mapping System and the *GRS-1 GIS/GPS*



Conclusions

- **With using modern GNSS networks to increase the accuracy and**
- **with using special sensors (scanners, imaging, etc.) together w/GNSS we can map fast and accurate**
- **...SO....**
- **Only our missing ideas can block us, where to use GNSS!**

- **In this presentation I showed only a few cases, but there are many!**

Any question?

Thank You!
Hvala!

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