

CLGE GA – SEP 2016 - Riga, LV

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The Surveying Professional and their place in the Connected Digital Economy





“The most dangerous phrase in the language is ‘we’ve always done it this way’.”

Grace Hopper (1906 – 1992)

The Way We Worked...



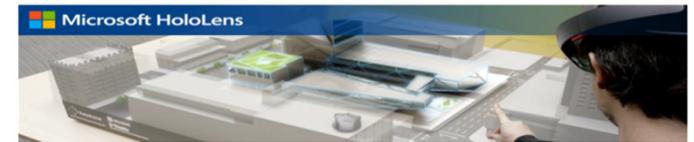
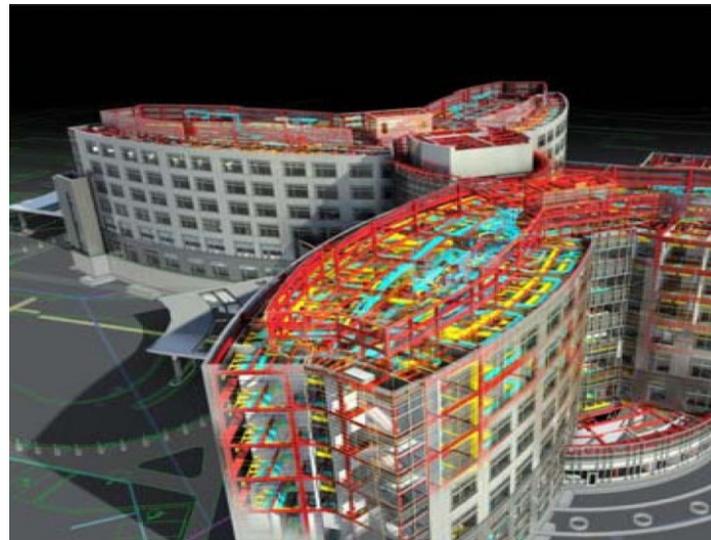
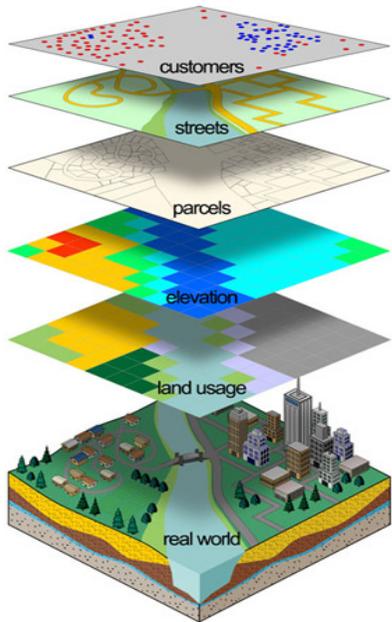
**Taken from the UK Channel 4 program
“The Worst Jobs In History”**

<https://www.youtube.com/watch?v=huYuhumO2p8#t=22m30s>

≡ The Way We Worked...



Times are Changing...

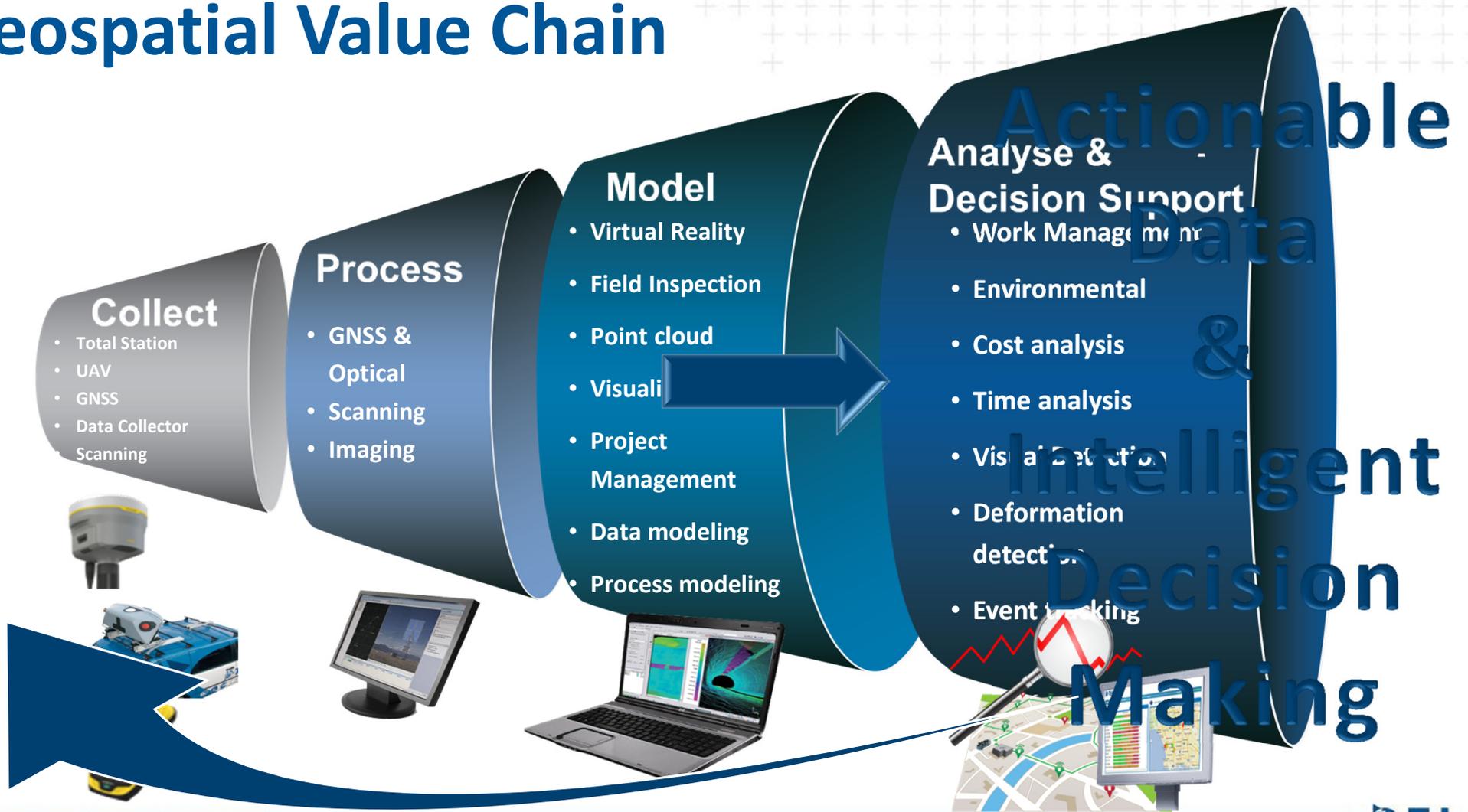


Yesterday

Today

Tomorrow

Geospatial Value Chain



What does this mean for the surveyor?

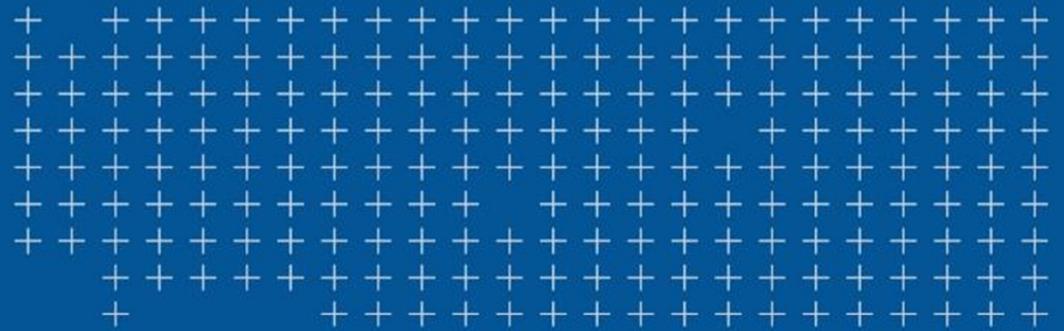
- Its imperative that, today more than ever, the data creator understand how the data will be used and by who.
 - Only then can a data capture method be deemed fit for purpose and potential value-add opportunities found. Always follow the data.
- Consider your customers customer requirements.
 - What are trying to achieve and what are their needs?
- Think in terms of whole-project life-cycles rather than single jobs.
 - Where else can the land surveyors capabilities and services add value?
- Evaluate how you communicate and provide deliverables to your customer.
 - Customers expectation of collaboration and transparency is increasing.



The Workshop



- Overview of two Trends of Connected Digital Technology
 - The Construction Continuum
 - The Smart City
- The role of the surveying professional
 - Feedback on the members' involvement in these cycles
 - Identify areas for value-adding and for collaboration

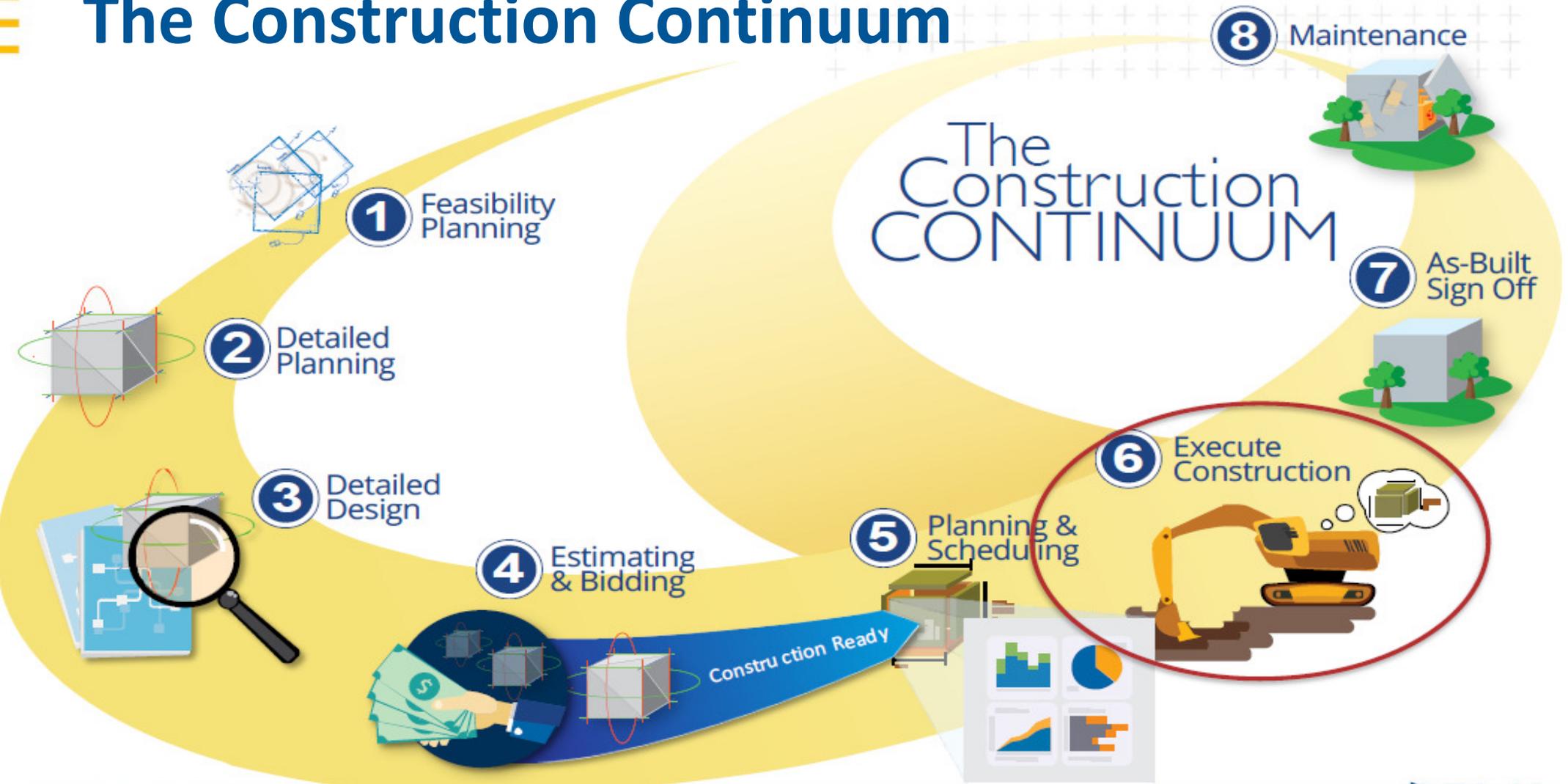


To be continued...



...tomorrow in the Workshop

The Construction Continuum



Inefficient Processes

- **“Between 40 and 50 percent of all construction projects are running behind schedule... same as previous years”**
 - Construction Management Association of America (CMAA), “6th Annual Survey of Construction Owners”, 2005
- **1/3 of every dollar spent on construction is wasted**
 - 2000 Construction Users Roundtable (CURT) study
- **Waste due to interoperability costs AEC industry \$5.2B/year and owners \$10.6B/year**
 - 2004 National Institute for Standards and Technology (NIST) study

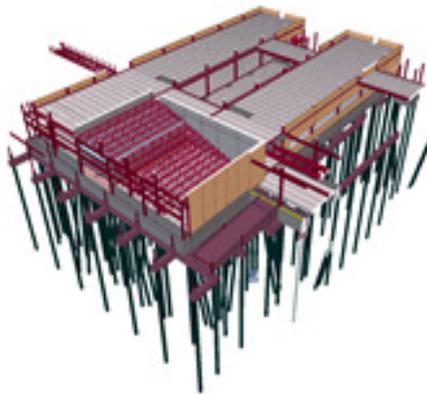
Transformation Enablers



Spatial Context



Connected Networks

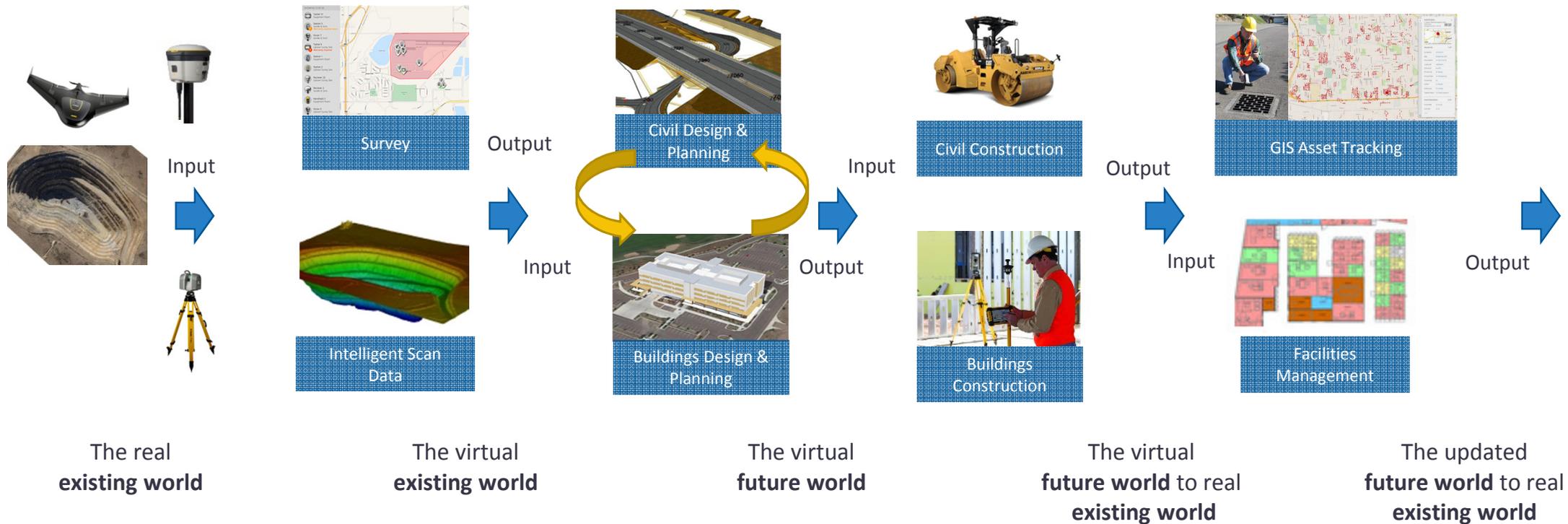


BIM



Collaboration

Digital Data Driven Workflow



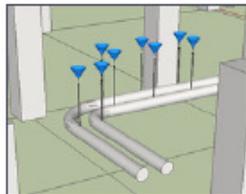
Trimble's Answer - Trimble Connect

- Enables the management of projects from field to office to deliverables and the collaboration of the various stakeholders engaged through that process
- Cloud based
- Existing workflows and integration points are respected
- Intelligent data handling
- Field equipment management
- Engines for data processing
- Lightweight access for decision making and project tracking
- Security and access management

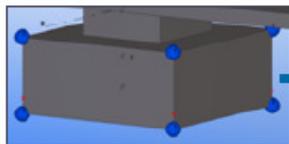
Design to Field



**AUTODESK
REVIT**



SketchUp



Tekla



Trimble Connect



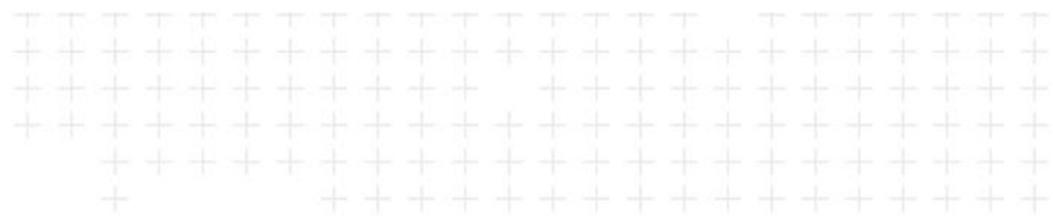
Trimble Field Link: 2nd Floor Flatness Verification

Surface Report

Date	Monday, October 15, 2012
Time	2:10:52 PM
Contractor	Miler Mechanical
Trimble Field Link Job	2nd Floor Flatness Verification
Total Points	500
High Points	12 (2%)
In-Tolerance Points	247 (49%)
Low Points	231 (46%)
Highest Elevation	113' 11.34"
Median Elevation	113' 0"
Reference Elevation	113' 6 1/4"
Lowest Elevation	113' 5 1/2"
High Contours	0
Total High Area	0.381 SF
Total High Volume	0.011 SF
In-Tolerance Contours	0
Total In-Tolerance Area	134.061 SF

Surface: A.5-5.4
Reference Elevation: 113' 6 1/4"
Tolerance: 1/2"
Shoot

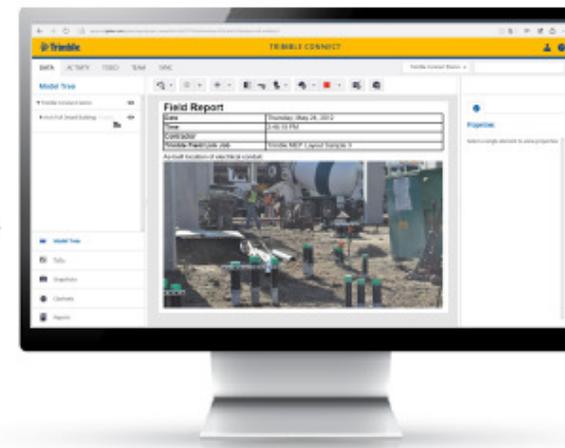
Field to Office



Trimble Connect



Project Manager



Priority	Label	Description	Status	Assignee
⚠	FR-1	Inserts not placed in correct location.	New	Chris Keyack

What makes a digital city smart?

A smart city is a digital, urban environment that uses sensors, machines, and people for direct input towards decisions focused on sustainable economic development and improved quality of life.

Awareness and Context for Decisions

Smart improves situational awareness.

Using sensors, machines, and people for direct input leads to better-informed decisions.

Integrated and Embedded to Transform Workflows

Smart is woven into the fabric of a city's processes and operational systems.

It fundamentally transforms workflows.

Smart is Collaborative

It enables distributed responsibility between stakeholders. It improves communication and reduces errors.

Digital City Components



Collaboration, Engagement

- Citizens + Industry + Government
- Breaking silos, Networking, Crowd-sourcing
- Process transparency



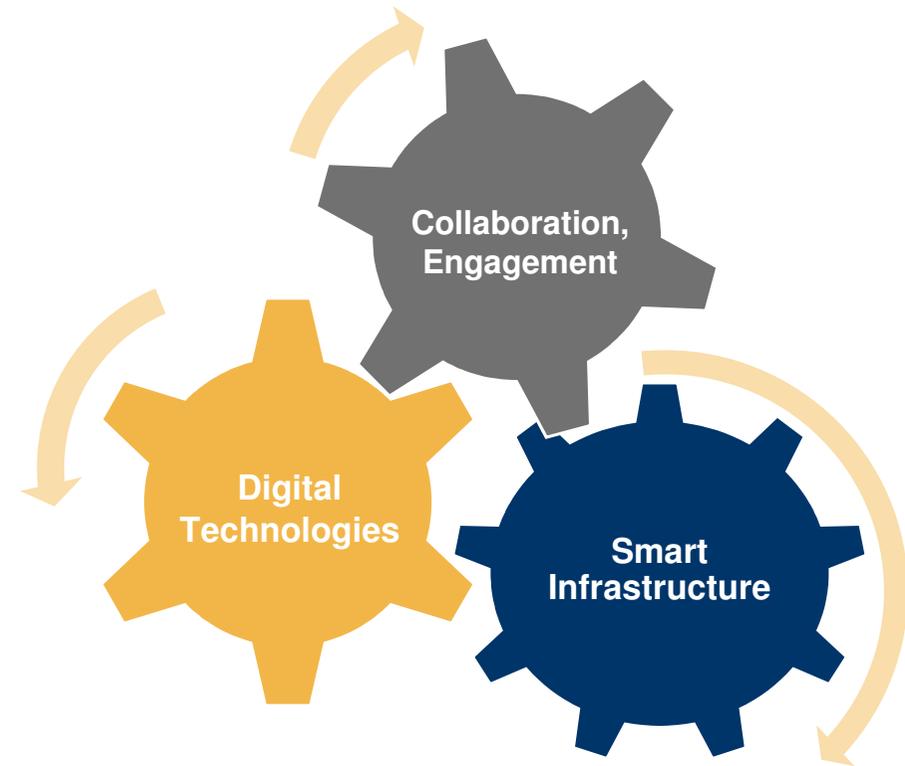
Digital Technologies

- Connectivity for info sharing
- Smart sensors and systems
- Open data access



Smart Infrastructure

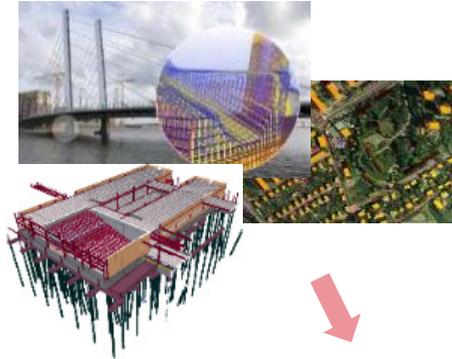
- Energy, Water, Trains, Buildings
- Sustainability, Reliability, Efficiency
- Security, Safety



City's Development Cycle

Design

GIS + BIM + CIM
Data interoperability
Process integration



Build

Transportation
Constructible
BIM
eGovernment



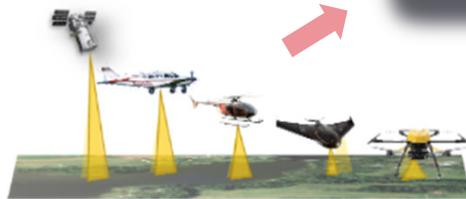
Operate and Maintain

Asset management
Operations and Work
Force Management
Field work execution



Plan

City models
Land use planning
Infrastructure planning



Data Capture & Processing Technologies

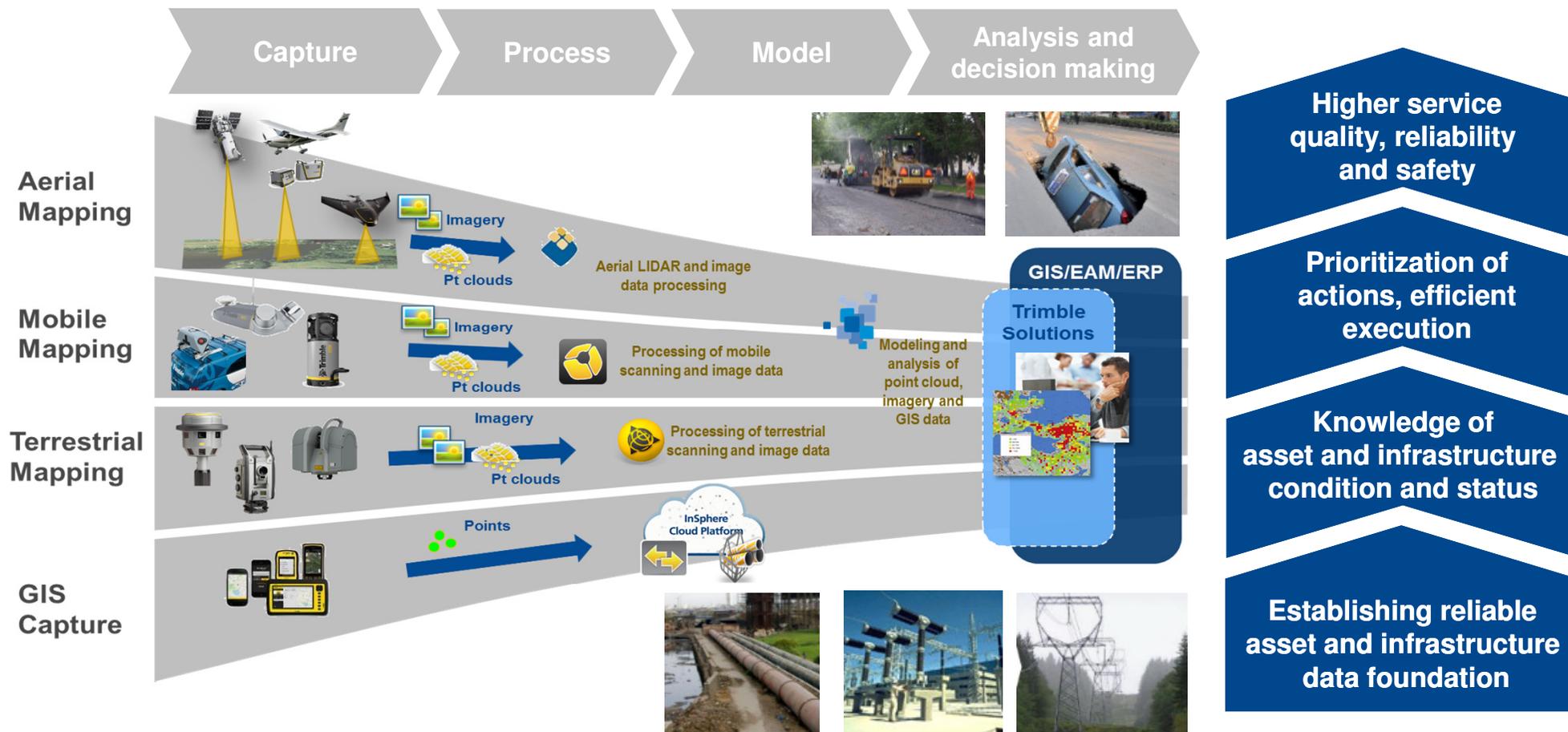
Trimble sensors, data capture and processing, spatial data



Collaborate

Industry collaboration
Citizen engagement

Data Driven Decision Making for Infrastructure Owners and Operators





Conclusions



- **Understand how the data will be used and by who.**
- **Consider your customers customer requirements.**
- **Think in terms of whole-project life-cycles rather than single jobs.**
- **Evaluate how you communicate and provide deliverables to your customer.**

Workshop comments (24 SEP 2016)

- The surveyor is a technician, the lifecycle should be explained to Government people so they understand the value.
- The BIM initiative in the UK is a positive way of forcing new ways of working
- Legislation in Latvia forces architects to ask surveyors to re-measure their work.
- At the end, initiatives that can save money are the ones that will get traction.
- In Croatia, the Surveyor is part of the « project team » by law.
- As survey instruments become more and more affordable, construction sites can work « as surveyors »
- Maintenance in construction (point 8) takes 95% of the cost, how to involve surveying more?
- Few money is used in the first stages (planning, etc) but it's where it can save the most later.
- In Denmark, each project has different scope and workflows. Sometimes the digital data is thrown away after (point 6)