



**BIM & GIS - NEW DIMENSIONS OF IMPROVED
COLLABORATION FOR INFRASTRUCTURE AND
ENVIRONMENT**

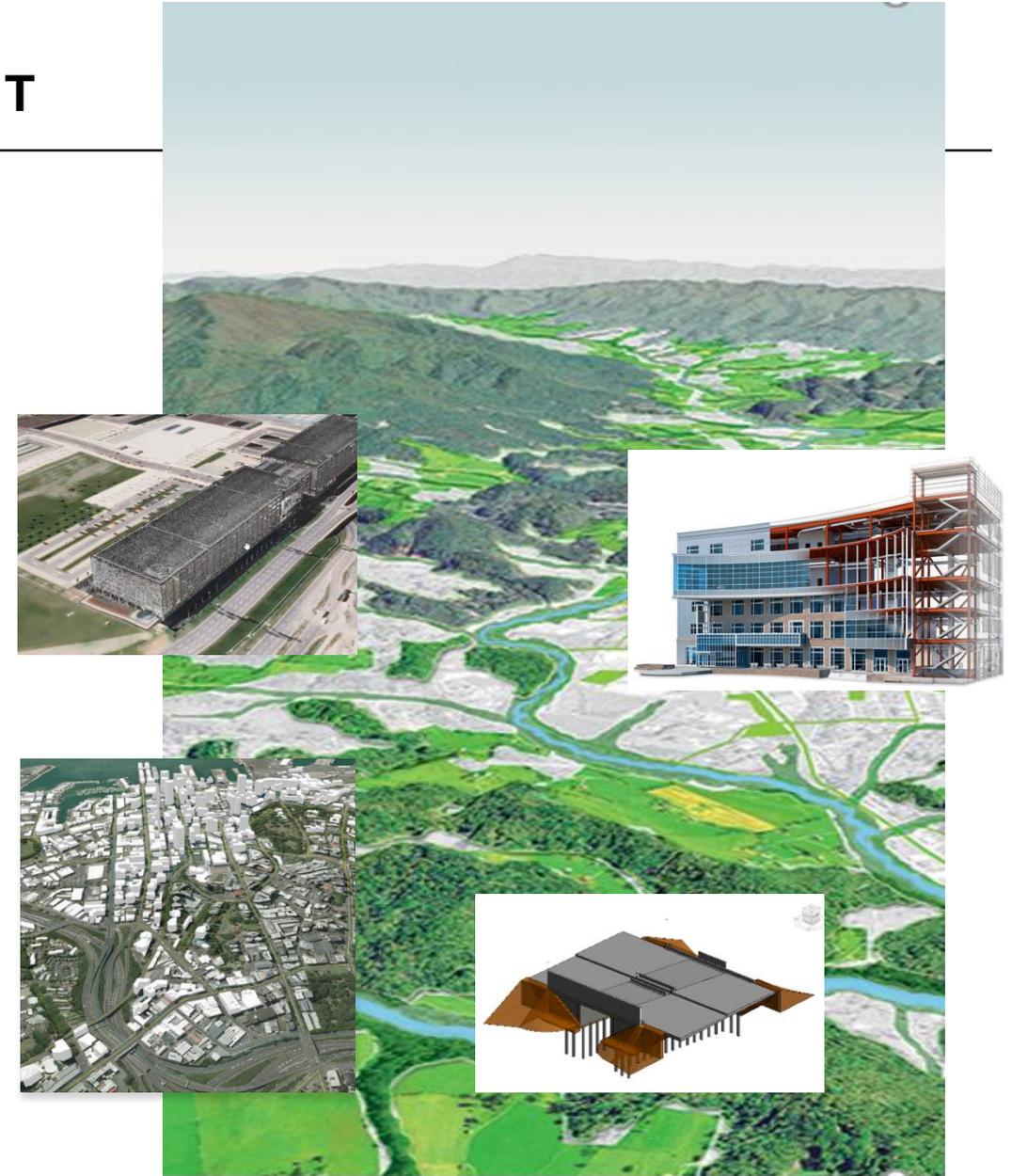
DLA, DESSAU
20TH INTERNATIONAL CONFERENCE ON INFORMATION
TECHNOLOGIES IN LANDSCAPE ARCHITECTURE
24TH OF MAY 2019

DR. A. CARSTENS
ESRI – BIM BUSINESS DEVELOPMENT

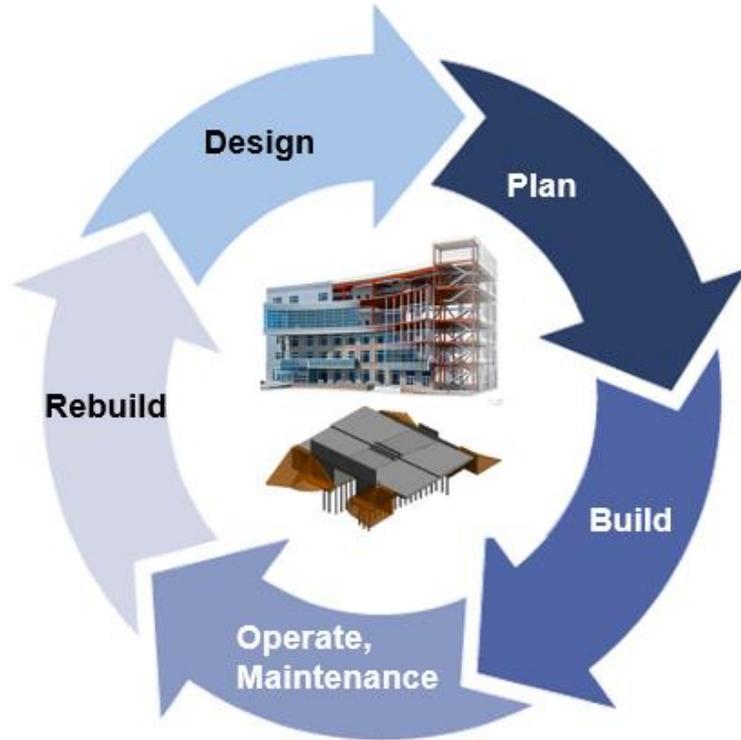
BIM AND GIS

DIGITAL TWIN IN DIGITAL ENVIRONMENT

- + Requirements for sustainable infrastructure increase
- + Adverse history of infrastructure projects – impact, costs, time, quality require substantial improvement
- + Fragmented view on project components and lack of cooperation inhibit holistic management
- + Link of BIM and GIS is basic requirement for cooperation



GIS-WORKFLOWS IN INFRASTRUCTURE LIFECYCLE



Plan, Design

- + GIS integrates BIM-models in 3D geospatial environment
- + GIS combines BIM-models in local context with Webservices by web-platforms
- + GIS provides spatial data for collaboration of AEC professionals and specialists

- ...
- 3D-CAD-BIM-models in GIS
- location & impact
- scenarios and alternatives
- detailed design

Build

- ...
- preparation schedules
- construction progress
- collaboration platform
- survey
- monitoring

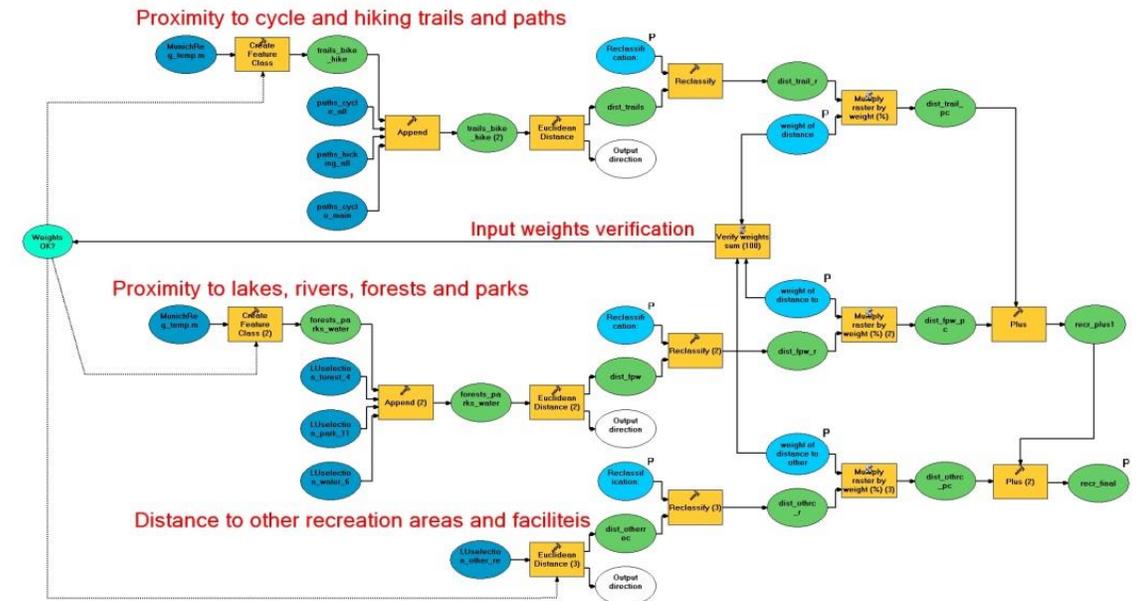
Operate

- ...
- asset management
- maintenance
- sensor data / IoT
- remote sensing
- Objektdaten
- emergency plan
- evcuation

BIM AND GIS AUTHORIZING SYSTEMS



- + Digitization
- + Integration BIM and GIS
- + Digital Transformation
- + Workflows – overcome system limits



BIM AND GIS - DIGITAL TRANSFORMATION



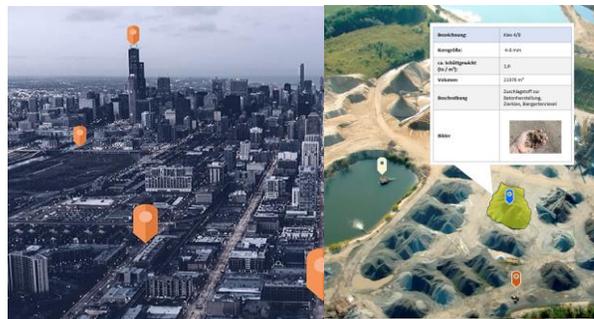
GIS & BIM Integration



Content



Advanced Analytics



Location intelligence

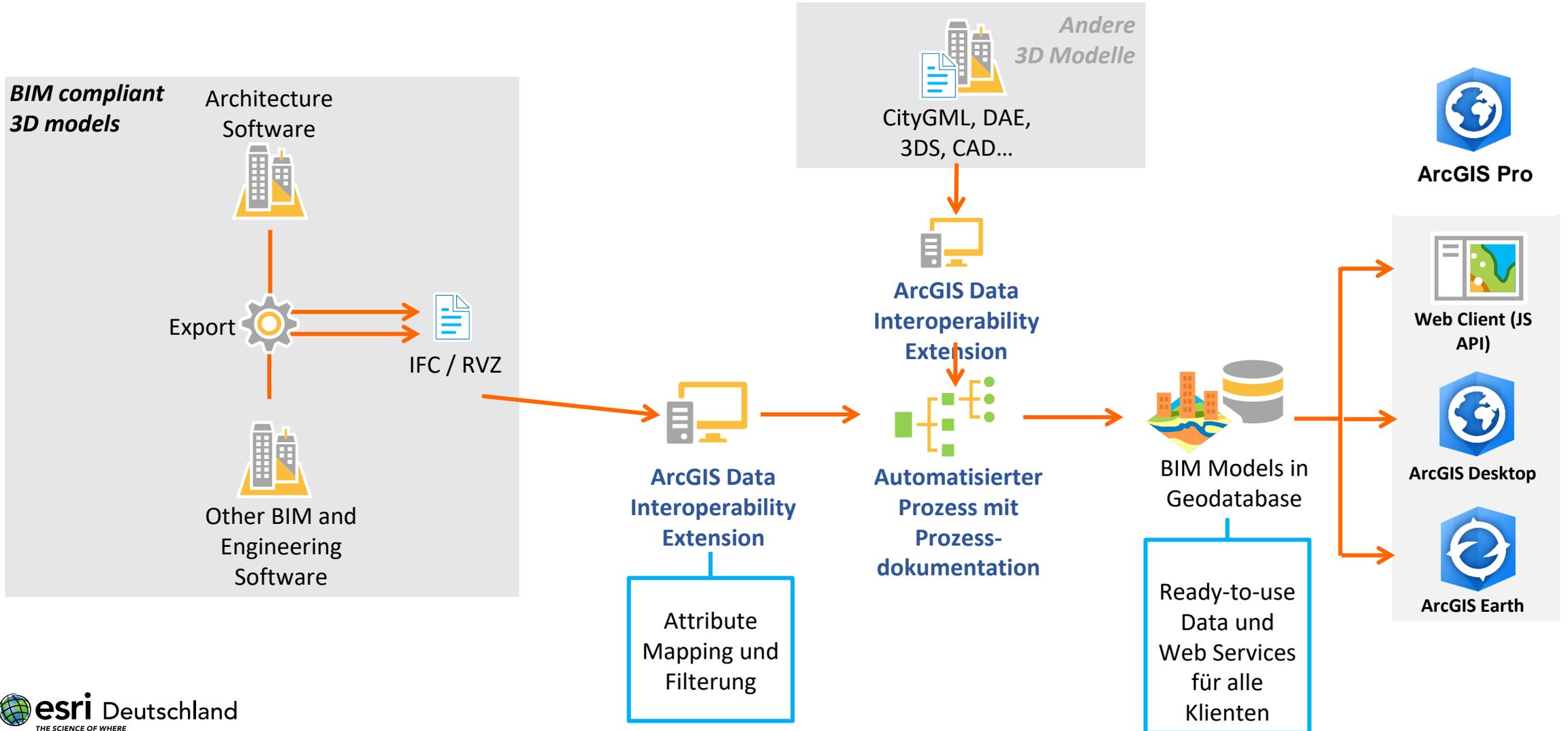


Situational Awareness

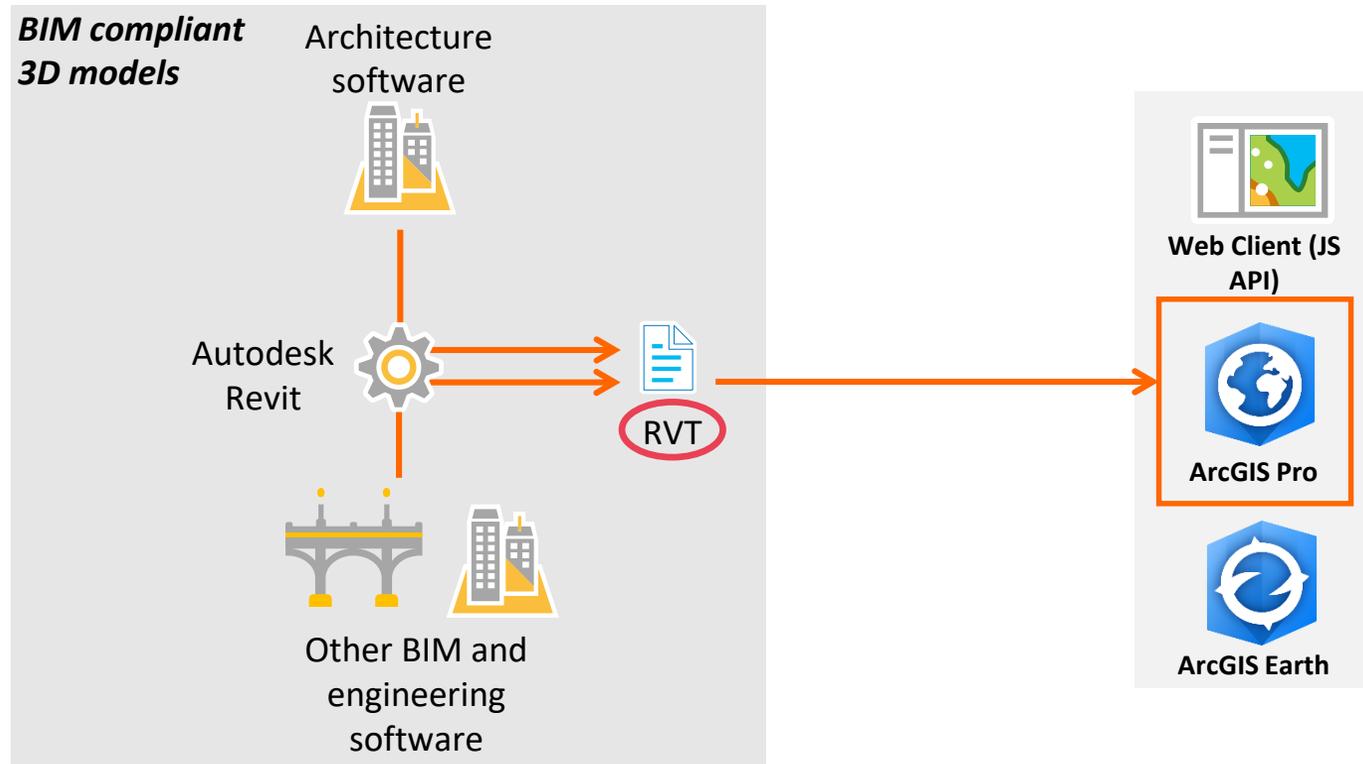


Digital Workflows

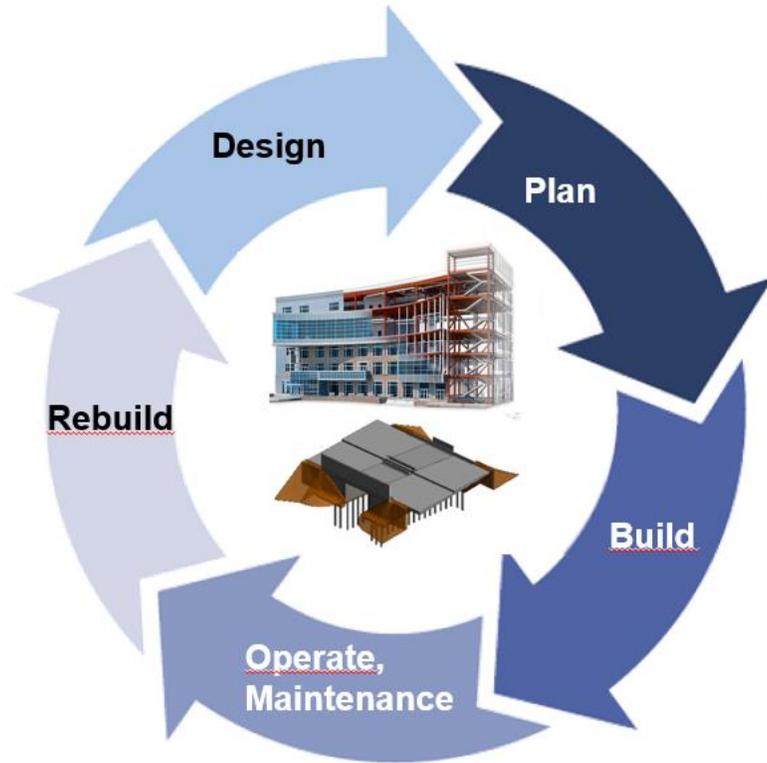
INTEGRATION OF 3D CAD-BIM MODELS IN ARCGIS WITH FME



DIRECT READ OF 3D BIM MODELS (REVIT) WITH ARCGIS PRO



PARTICIPANTS IN INFRASTRUCTURE-LIFECYCLE



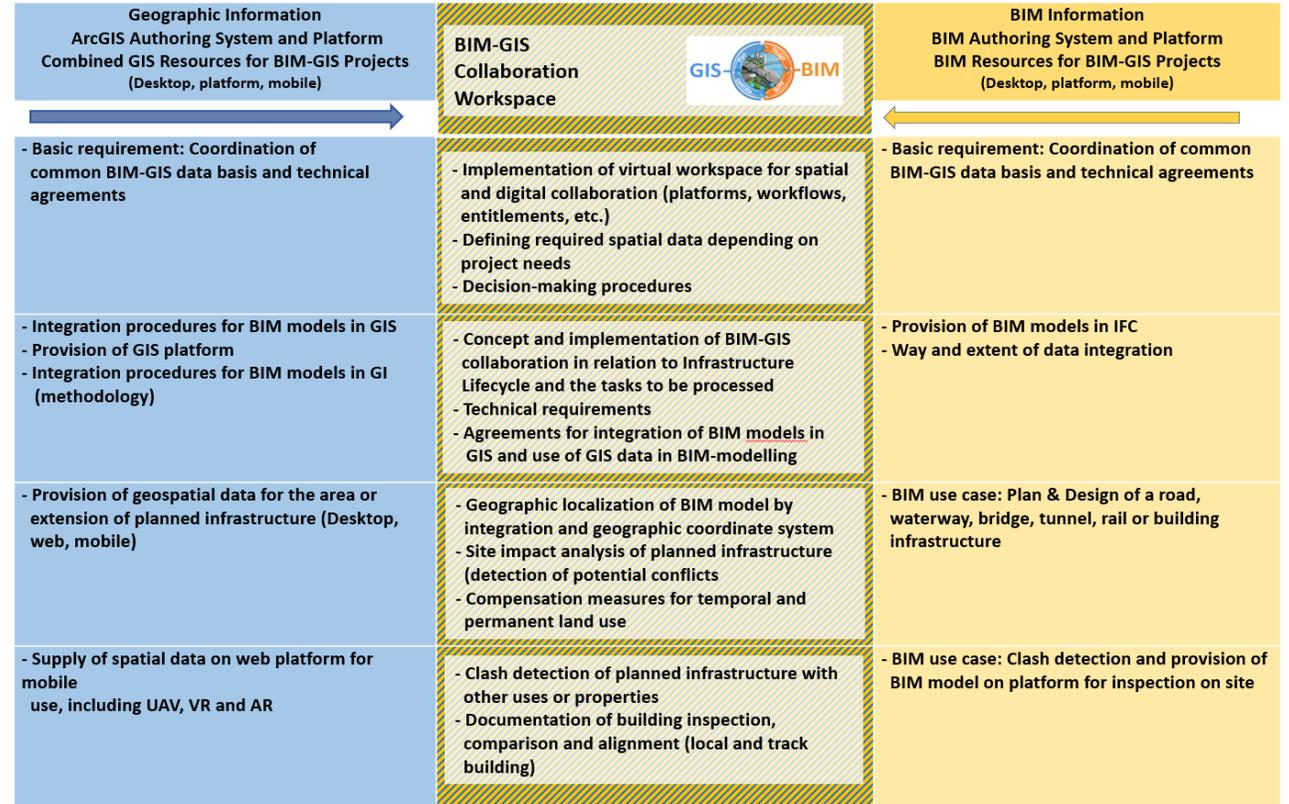
Participants – public and private

- > Building owner
- > Project developer
- > Environment assessment engineers
- > Construction engineers
- > Architects
- > Project managers
- > Construction companies
- > Approvers
- > Operators
- > Facility managers



BIM & GIS COOPERATION MODEL

- + Cooperation of specialists
- + Common data base
- + Integration of object models in spatial data
- + Integration of workflows
- + Use cases:
 - > Mobile access to any relevant data (plans, documents)
 - > Virtual and augmented reality on site
 - > Clash detection on site
 - > Geotechnics (subsoil)
 - > Monitoring



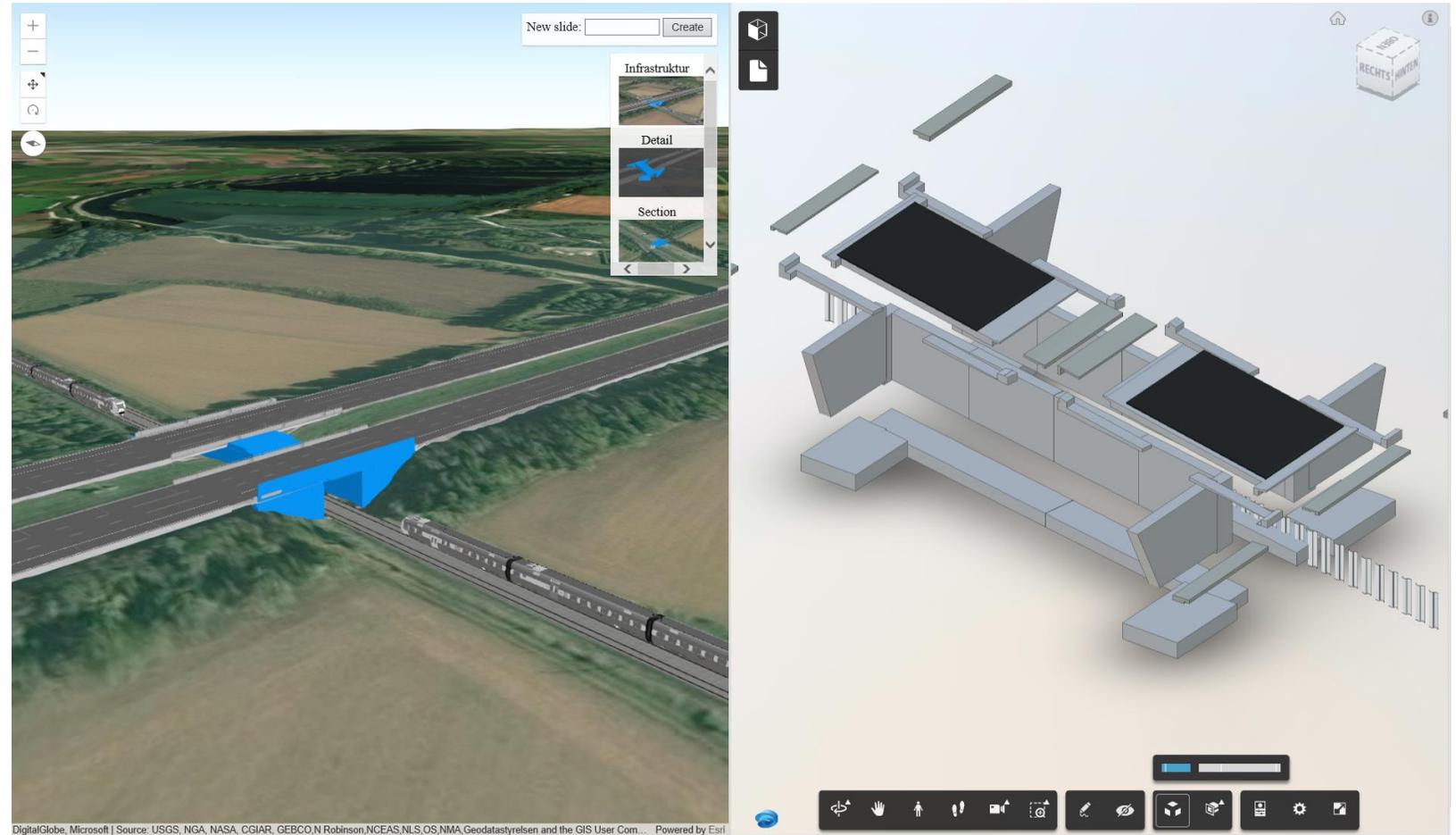
BIM UND GIS – AUTHORIZING SYSTEMS

- + Left: 3D GIS-System
- + Right: 3D CAD/BIM System
- + https://oertac.github.io/BIM_Berlin/
- + Özgür Ertac 2018



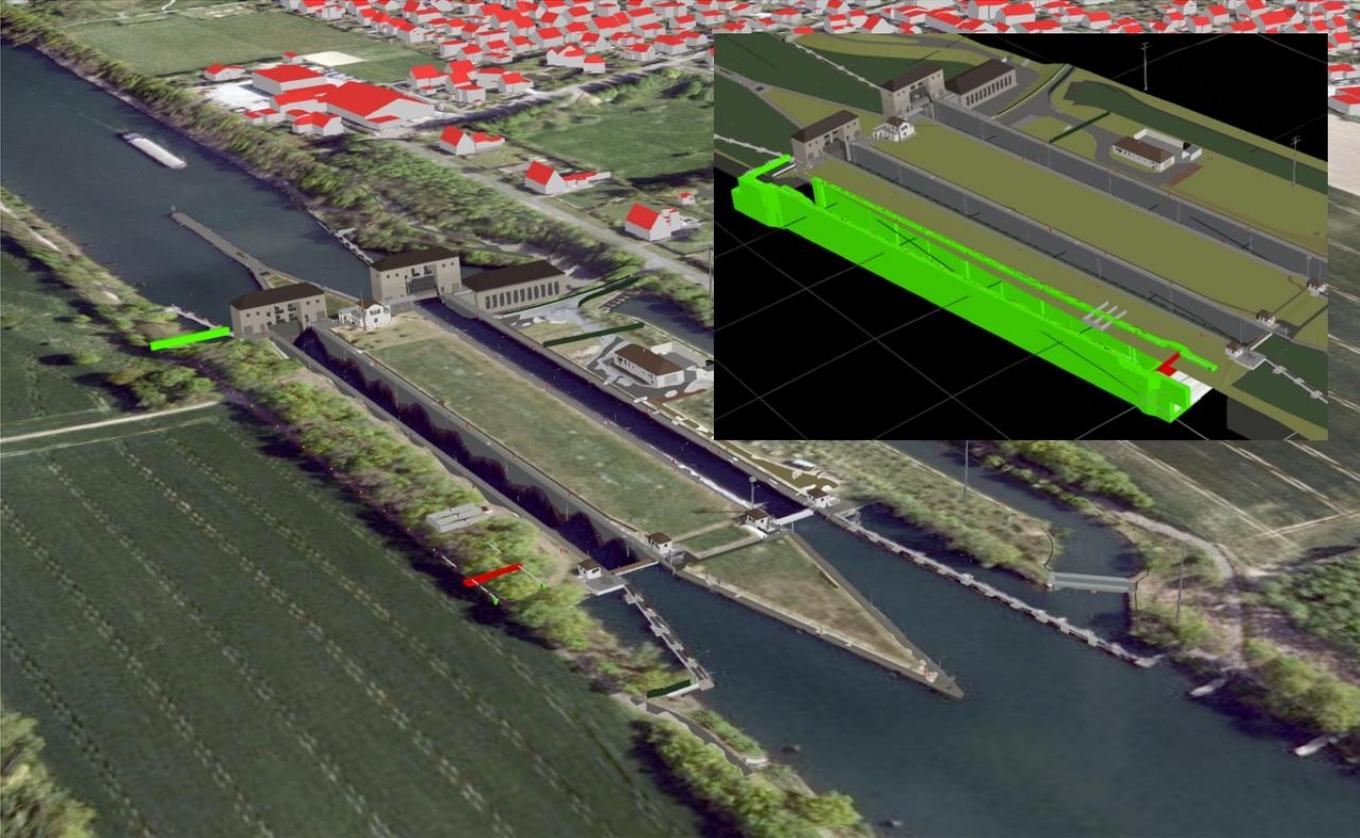
BIM UND GIS - AUTHORIZING SYSTEMS

- + Left: 3D GIS-System
- + Right: 3D CAD/BIM System
- + <https://oertac.github.io/A99-slides/>
- + Özgür Ertac 2018

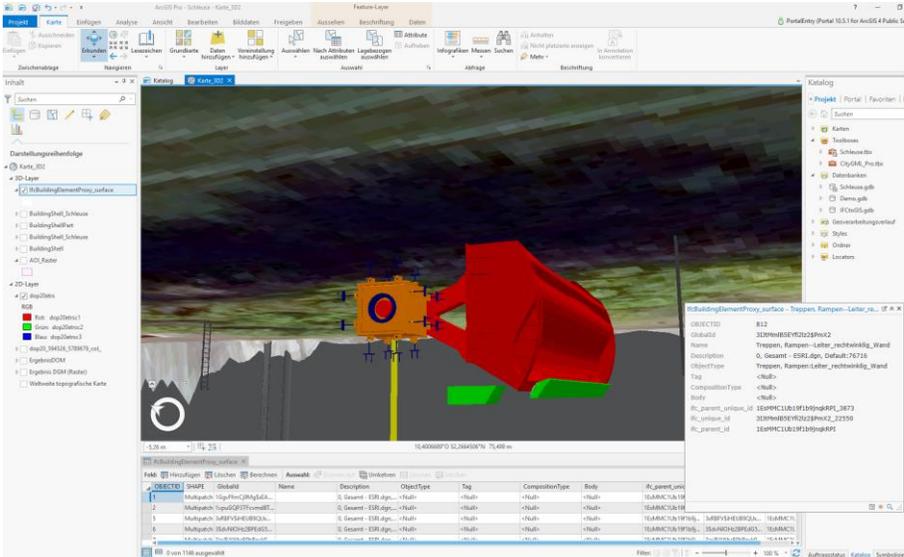


BIM-GIS INTEGRATION SHIP LOCK

BIM Object from Microstation (DGN) in IFC Format – integration with FME



Ship lock underwater



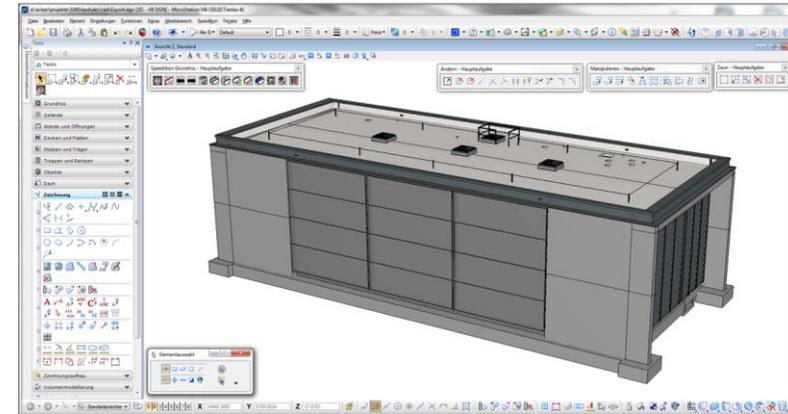
WSV - Neubauamt Hannover, 2017

INTEGRATION OF BUILDING FROM LASERSCAN

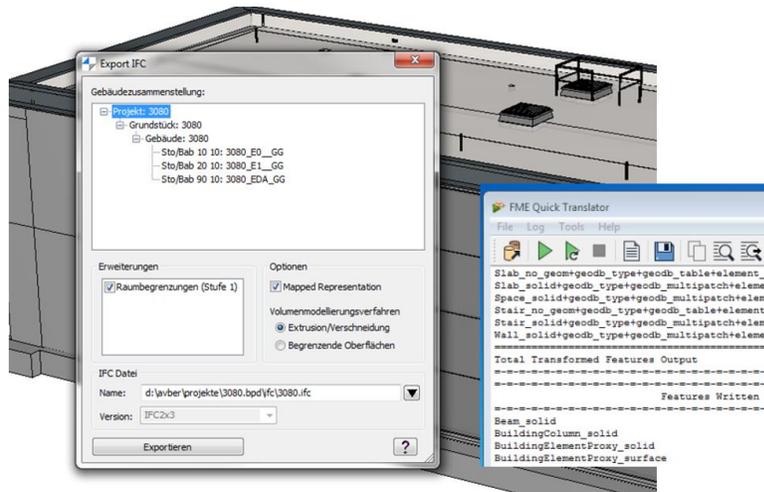
+ Laserscan



+ Daten-provisioning in CAD



+ Data migration

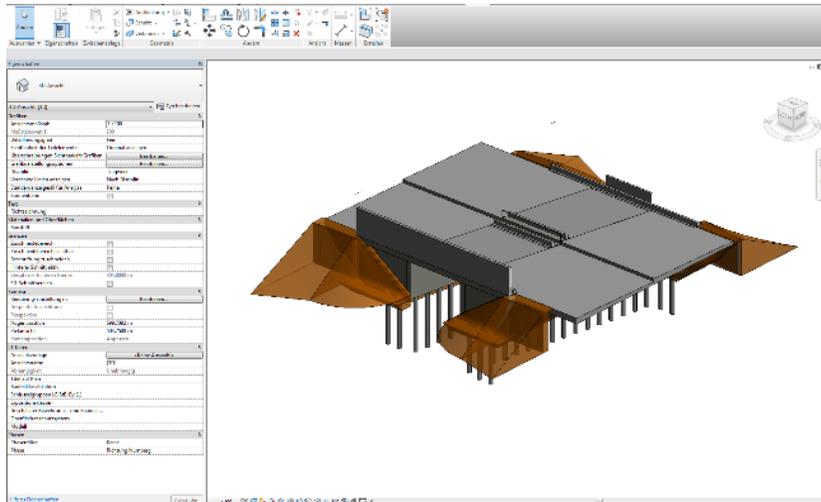


+ Data integration

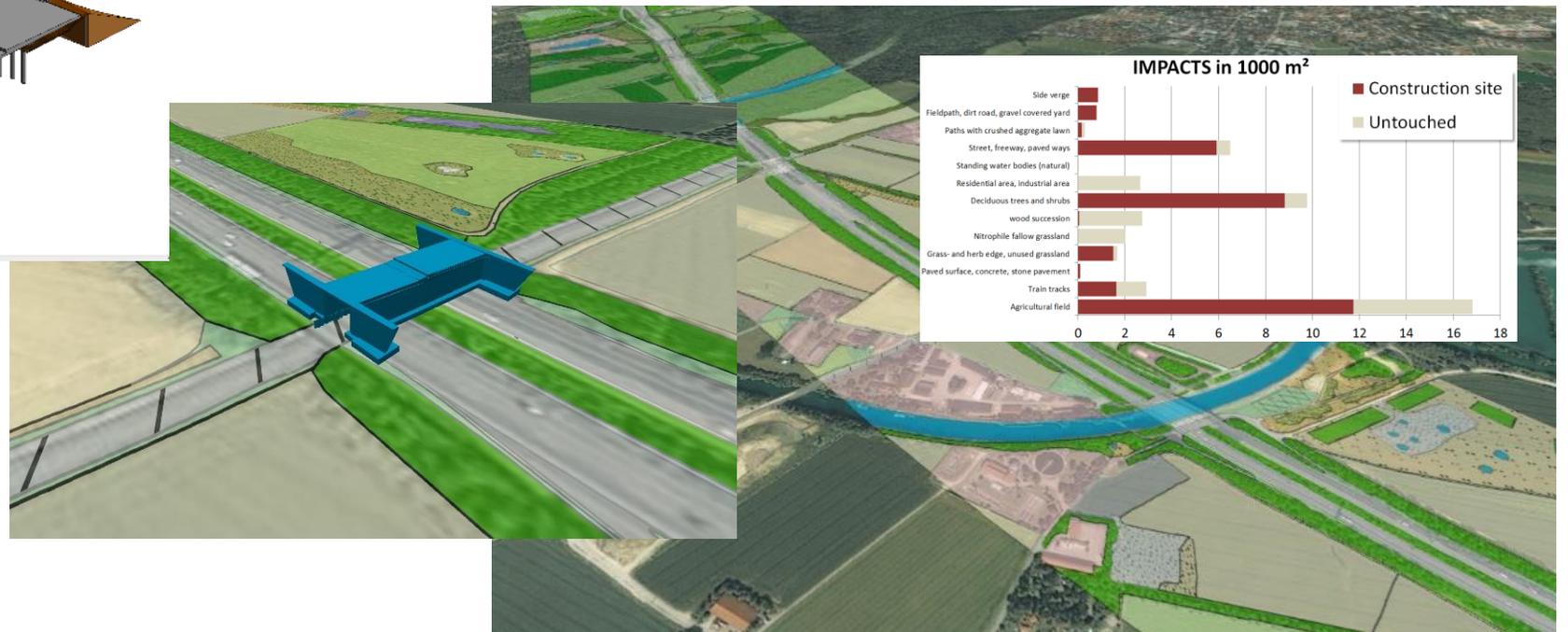


BIM-GIS INTEGRATION – FOR IMPACT ASSESSMENT OF BRIDGE

Integration of BIM Object of a bridge (project A 99) from Autocad (IFC-Format) in ArcGIS



SSF Ing. und PSU, 2016/2017



STRATEGIC PARTNERSHIP OF AUTODESK AND ESRI

+ Autodesk – Esri Partnership

- > since November 2017
- > common Software-Development

+ BIM and GIS

- > Seamless use of object models in ILC
- > Integration of IoT (Sensors)
- > Improved cooperation in BIM-GIS-Projects
- > Reliable costs and deadlines
- > Better risk management



BIM



GIS



Jack Dangermond President Esri Inc. - Andrew Anagnost CEO Autodesk, Nov. 2017

AUTODESK AND ESRI LINKS

- + InfraWorks ArcGIS Connector (online); Autodesk Connector for ArcGIS; Video with example from Min 31:35-47:00
- + Video Infra-Works ArcGIS online connection <http://civil-community.autodesk.com/2018/05/may-16th-webcast-autodesk-esri-partnership-bim-gis/>
- + Video short <https://www.youtube.com/watch?v=wnLSaa-V2ok>
- + InfraWORKS connects data from ArcGIS online – guide <https://knowledge.autodesk.com/support/infraworks/learn-explore/caas/CloudHelp/cloudhelp/ENU/InfraWorks-UserHelp/files/GUID-1AA167E3-F419-4828-84E9-3364266C6A38-hm.html>
- + <https://knowledge.autodesk.com/de/support/infraworks/learn-explore/caas/CloudHelp/cloudhelp/DEU/InfraWorks-UserHelp/files/GUID-AFF4B76A-F6C1-455C-805C-95DF98189806-hm.html>
- + Direct read of AUTOCAD Revit-Models (BIM) with ArcGIS Pro <https://pro.arcgis.com/en/pro-app/help/data/revit/adding-revit-data-to-arcgis-pro.htm>
- + Coordinates <https://pro.arcgis.com/en/pro-app/help/data/revit/about-georeferencing-revit-or-cad-data.htm>

ESRI IN DEUTSCHLAND UND DER SCHWEIZ

DAS UNTERNEHMEN

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THE SCIENCE OF WHERE