

UN-IGIF WORKSHOP FOR THE CARIBBEAN

The role of Technologies in Geospatial Information Management

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Trimble



The industrial revolutions

**First Industrial
Revolution
1765**

**Second Industrial
Revolution
1870**

**Third Industrial
Revolution
1969**

**Fourth Industrial
Revolution
Now**



First Industrial Revolution

- followed the proto-industrialization period,
- started at the end of the 18th century to the beginning of the 19th,
- biggest changes came in the industries in the form of mechanization,
- agriculture started to be replaced by the industry as the backbone of the societal economy,
- massive extraction of coal,
- significant invention of the steam engine that created a new type of energy that later on helped speed up the manufacturing of railroads, thus accelerating the economy.



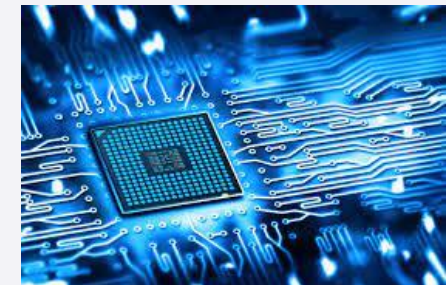
Second Industrial Revolution

- started at the end of the 19th century,
- massive technological advancements in industries that helped the emergence of a new source of energy—electricity, gas, and oil,
- creation of the internal combustion engine that started to reach its full potential,
- development of steel demand, chemical synthesis and methods of communication such as the telegraph and the telephone.
- inventions of the automobile and the plane at the beginning of the 20th century.



The three first industrial revolutions

- The First Industrial Revolution used water and steam power to mechanize production.
- The Second used electric power to create mass production.
- The Third used electronics and information technology to automate production.



Fourth Industrial Revolution

- digital revolution,
- fusion of technologies that is blurring the lines between the physical, digital, and biological spheres,
- velocity, scope, and systems impact,
- transformation of entire systems of production, management, and governance,
- billions of people connected by mobile devices, with unprecedented processing power, storage capacity, and access to knowledge.



Fourth Industrial Revolution

- artificial intelligence,
- robotics,
- Internet of Things,
- autonomous vehicles,
- 3-D printing,
- nanotechnology,
- biotechnology,
- materials science,
- energy storage, a
- quantum computing



Digital Transformation



AI



IoT



Big Data



Cloud



Drones



3D Printing



Virtual Reality



Augmented Reality



We differentiate at the connection of the digital and physical worlds



Collaboration & Interoperability

POSITIONING AND SENSING

Sensing and measuring
in a geospatial context

WHAT

MODELING

Software for design,
scheduling, visualization,
cost, maintenance
and operations

HOW

ANALYTICS AND OPTIMIZATION

Decision support,
predictive indicators

WHY



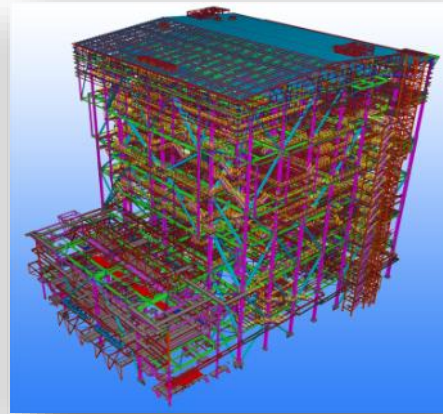
Core Industry Focus



Geospatial



Heavy Civil Construction



Building Construction



Agriculture



Transportation & Logistics



Transforming

THE WORK OF GEOSPATIAL PROFESSIONALS

A suite of advanced solutions across the entire data collection, processing, modeling and analysis workflow, leading to:

- Faster Project Completion
- Reduced Re-work, Labor
- Enhanced Quality
- Enhanced Service Capabilities
- Enhanced Worker Safety



Cadastral & Land Administration

GIS and Mapping

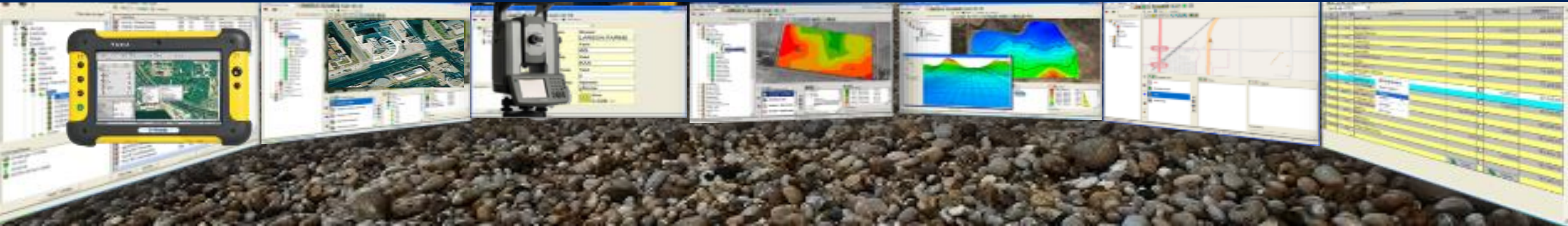
Surveying

3D Modeling & Imaging

Topographic

Data Analysis

Reporting



Transforming

AGRICULTURE – PLANNING, GROWING AND HARVESTING

Enabling more informed decision making, leading to:

- Higher machine utilization
- Lower seed, fuel and chemical costs
- Improved yield and profitability
- Reduced environmental impact



Machine and
worker optimization

Planning
and mapping

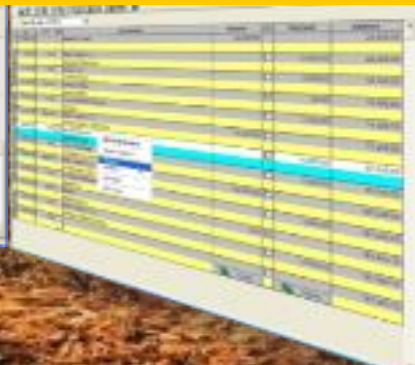
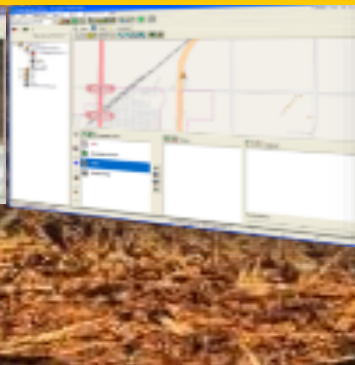
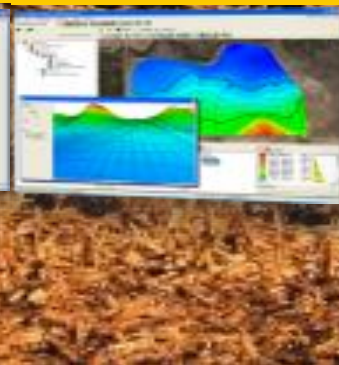
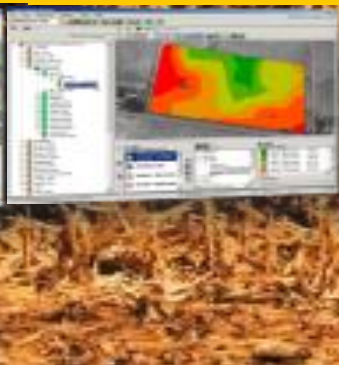
Prescription and
yield analysis

Asset
monitoring

Topographic
management

Productivity
recommendation

Financial
management





Transforming

HEAVY CIVIL CONSTRUCTION – PLANNING, DESIGNING, BUILDING AND OPERATING

Enhanced information, decision making and control across the entire project lifecycle, generating benefits including:

- Faster completion
- Reduced fuel, re-work, labor
- Enhanced worker safety
- Reduced environmental impact



Feasibility and
planning

Survey

Design

Estimation

Earthworks

Construction

Maintenance and
operation



Transforming

THE WORK OF BUILDING DESIGN, CONSTRUCTION & OPERATION

A suite of solutions for the entire design-build-operate lifecycle, generating results including:

- Faster completion
- Reduced re-work, labor
- Improved quality, collaboration & data flow
- Improved asset & facility lifecycle management

Feasibility and
Planning

Survey

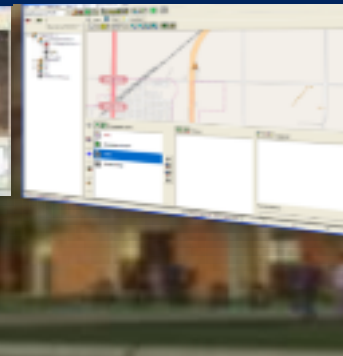
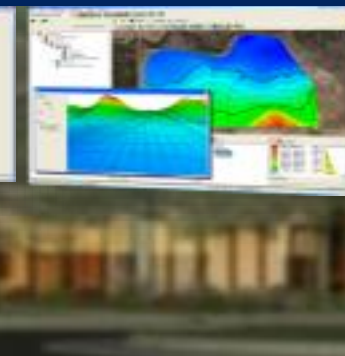
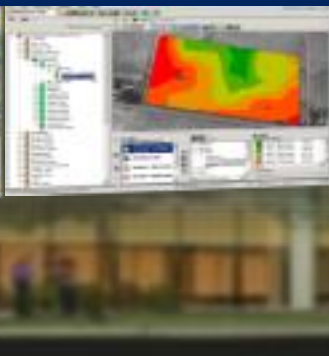
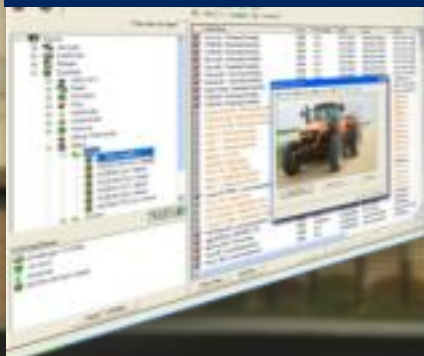
Design

Estimation

Fabrication

Construction

Maintenance and
Operation



Transforming

TRANSPORTATION & LOGISTICS




Trimble solutions for long haul trucking, field service management and construction logistics track and manage over 1,000,000 assets globally, operating on every continent.



≈30% Improvement

-  Productivity
-  Asset Utilization
-  Compliance

≈30% Reduction

-  Fuel Use
-  CO₂ Emissions
-  Claims Costs

Empowerment

-  Of Field Workers and Customers
- 

Long Haul Trucking

Driver Safety

Schedule & Dispatch

Field Service

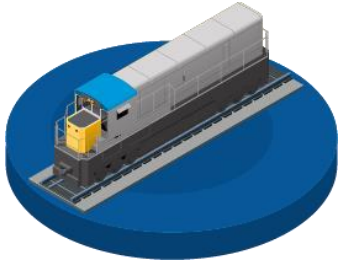
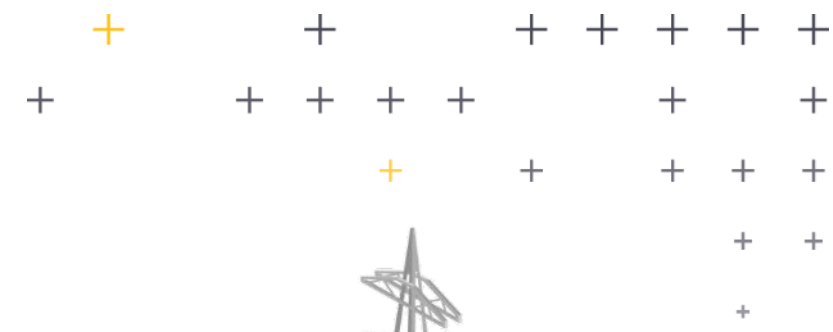
Diagnostics

Data Analysis

Reporting & Analytics



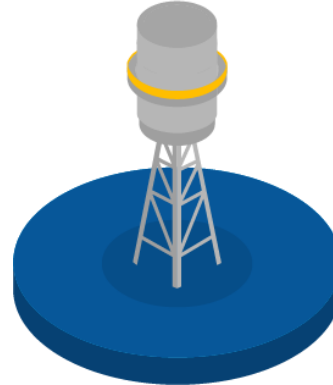
Emerging Businesses



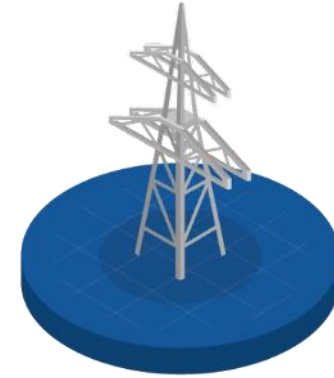
Rail



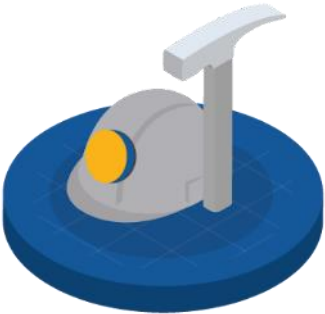
Environmental & Waste



Water Utilities



Electric Utilities



Mining



Forestry



Field Service



Oil, Gas, & Chemical



Transforming Water & Wastewater Utilities



Improving Asset Management and Performance



Optimizing Water and Wastewater Operations



Enhancing Worker Safety and Productivity



Improving Customer Service and Response



Reducing Leakage and Non-Revenue Water

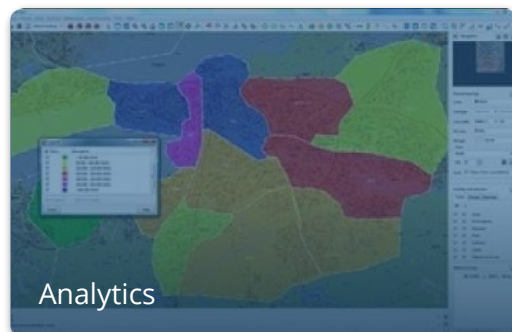
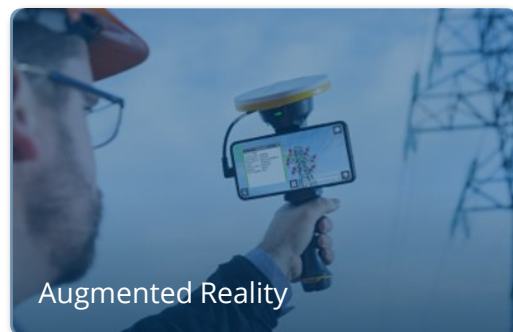
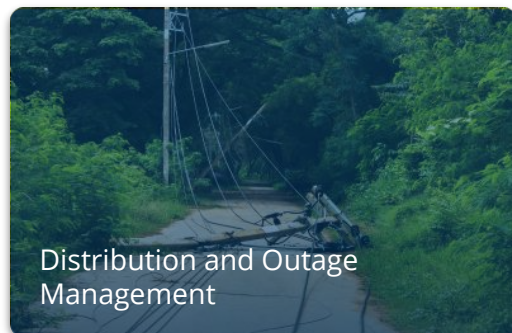
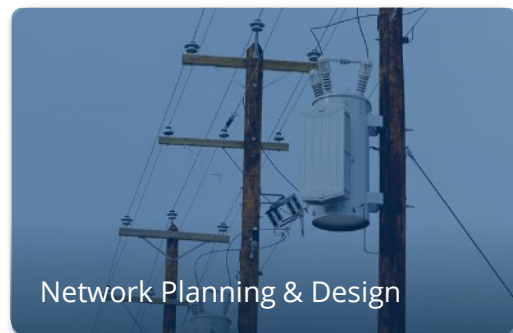
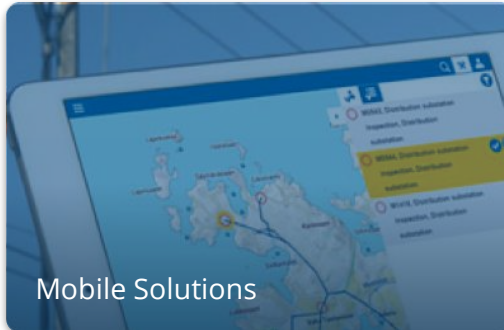
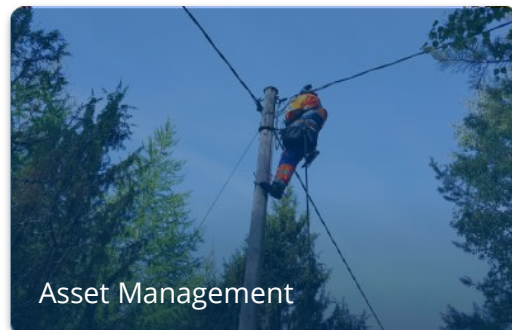


Minimizing Flooding and Environmental Impacts

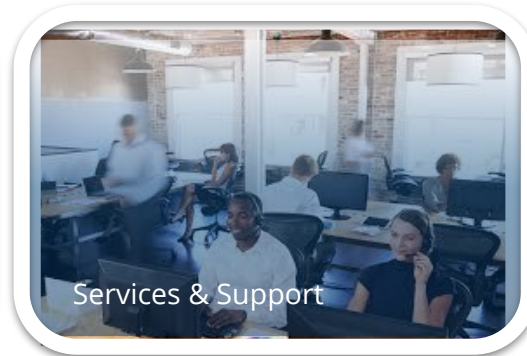
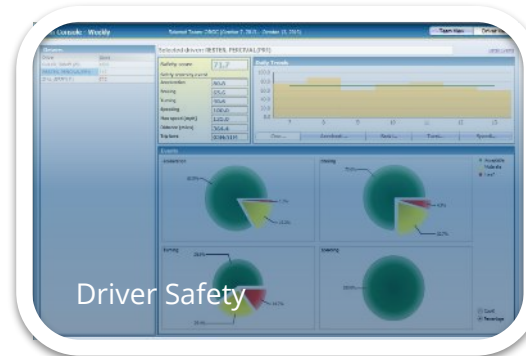
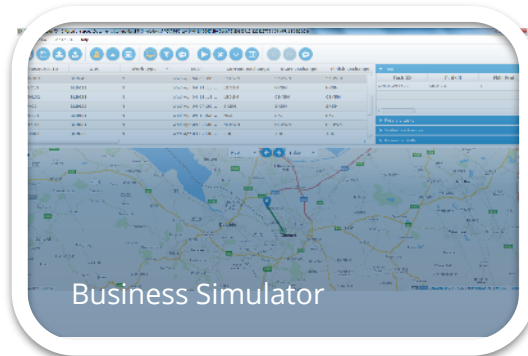
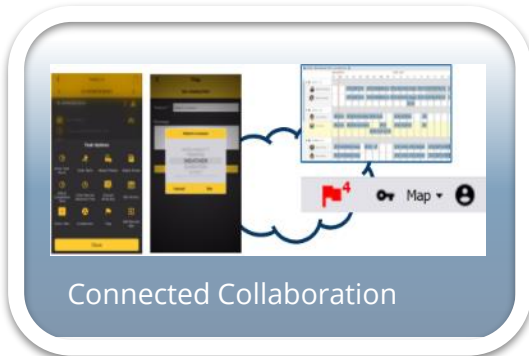
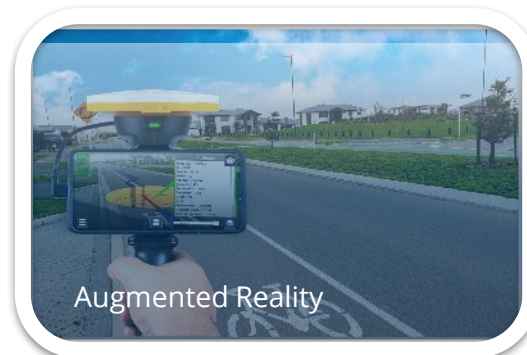
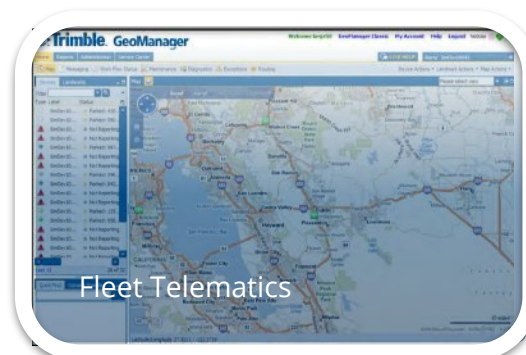
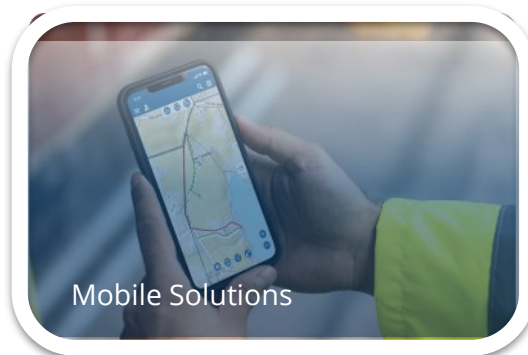
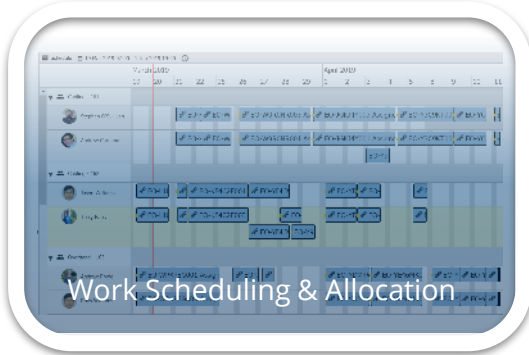




Transforming Electric Utilities

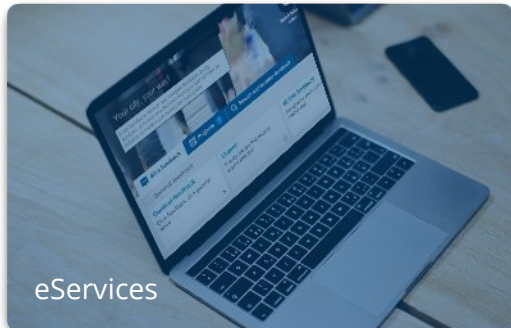
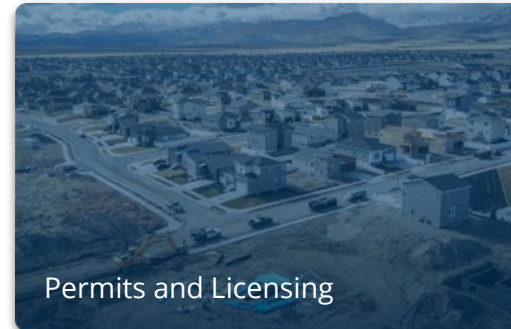
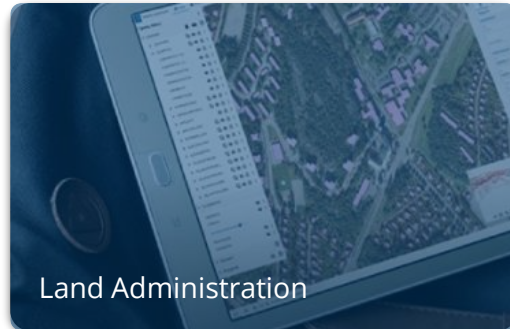
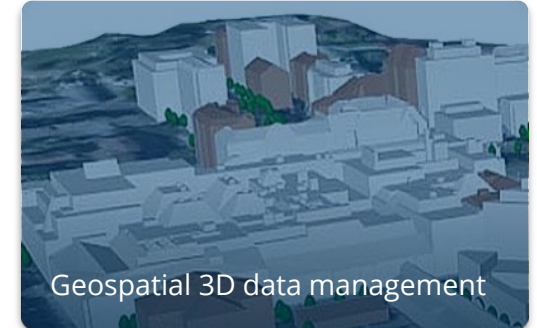
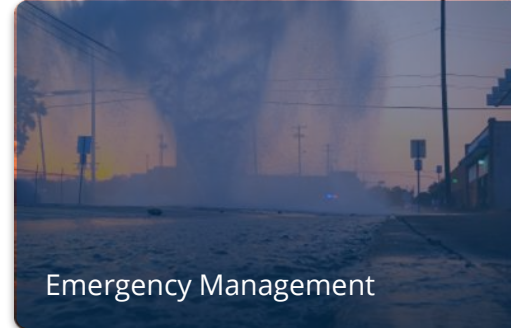


Transforming Field Services

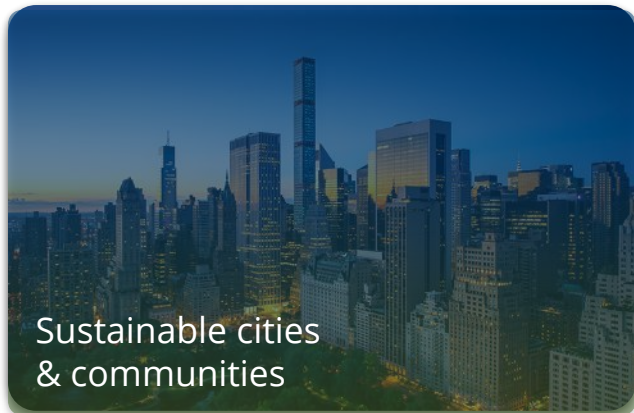




Transforming Government



Enabling a sustainable future



We have a responsibility to leave our world better than we found it

Questions?

