HERE Lidar Data
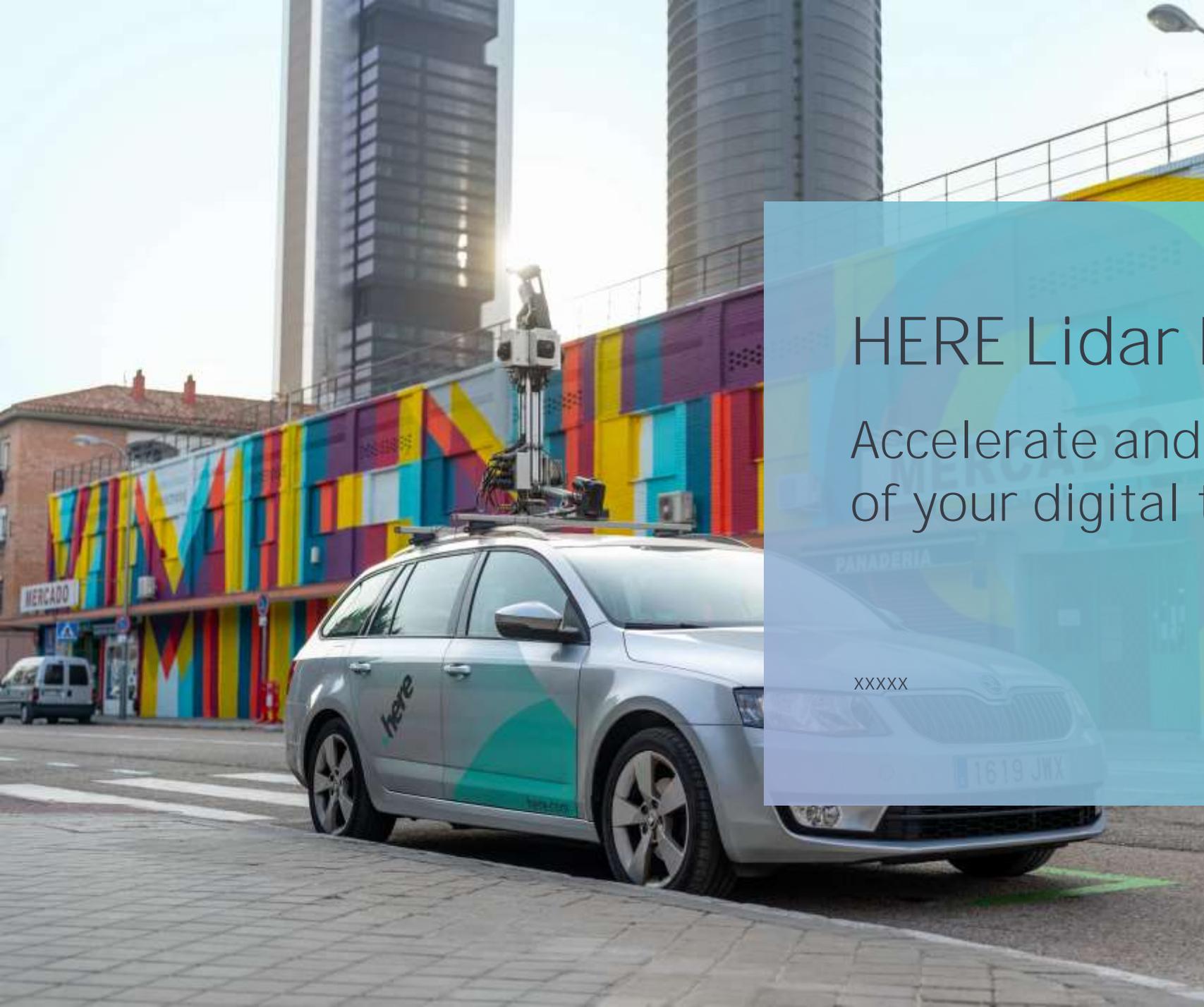
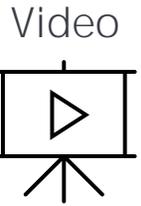## Accelerate and reduce cost of your digital twin projects

xxxxx

Product Overview

HERE Lidar Data is high-definition, street-level data collected with a laser at 700,000 points/second, a sophisticated and powerful data source with the potential to serve 3D data needs for multiple industry segments.

Leveraging our True Vehicles, HERE has collected a vast library of lidar data, unique in its global coverage of ~5M kilometers in 50+ countries and growing.

Now customers can access our existing repository of lidar data through a simple online interface that allows users to browse, select, purchase and download data for their area of interest.

Data is georeferenced and colored using HERE's panoramic imagery to provide additional context and is made available within 3-5 days for any area HERE has previously driven.

Product Features

Data access via an intuitive self-serve interface integrated with HERE Marketplace
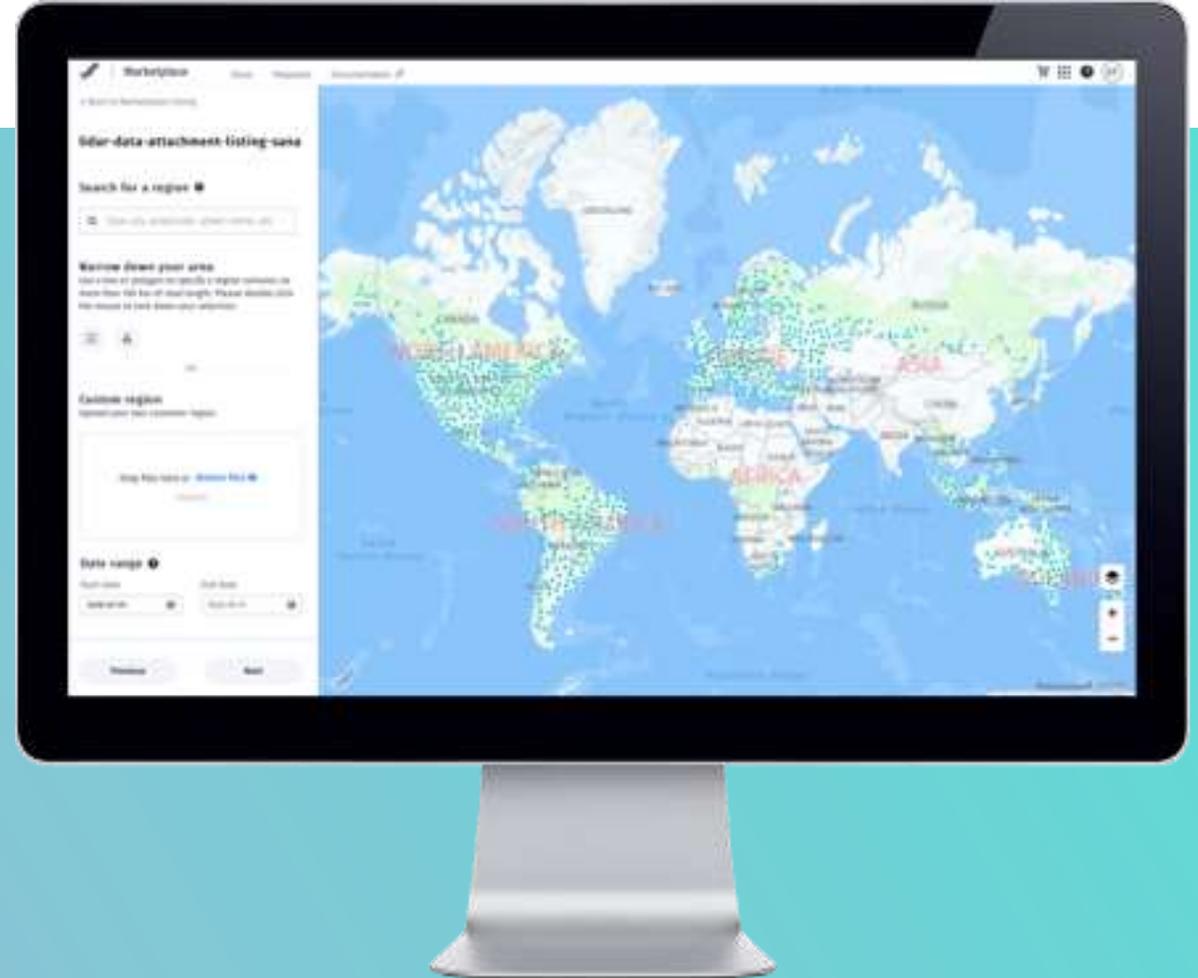
Order submission
On account creation in HERE Platform, customers can log in to the HERE Lidar Data portal and select an area of interest. Lidar data availability and age can be checked on the Map. Once the order is submitted, the data is processed in the backend.

Order access
The customer gets access to the catalog in Marketplace by subscribing to the listing created to submit the order.
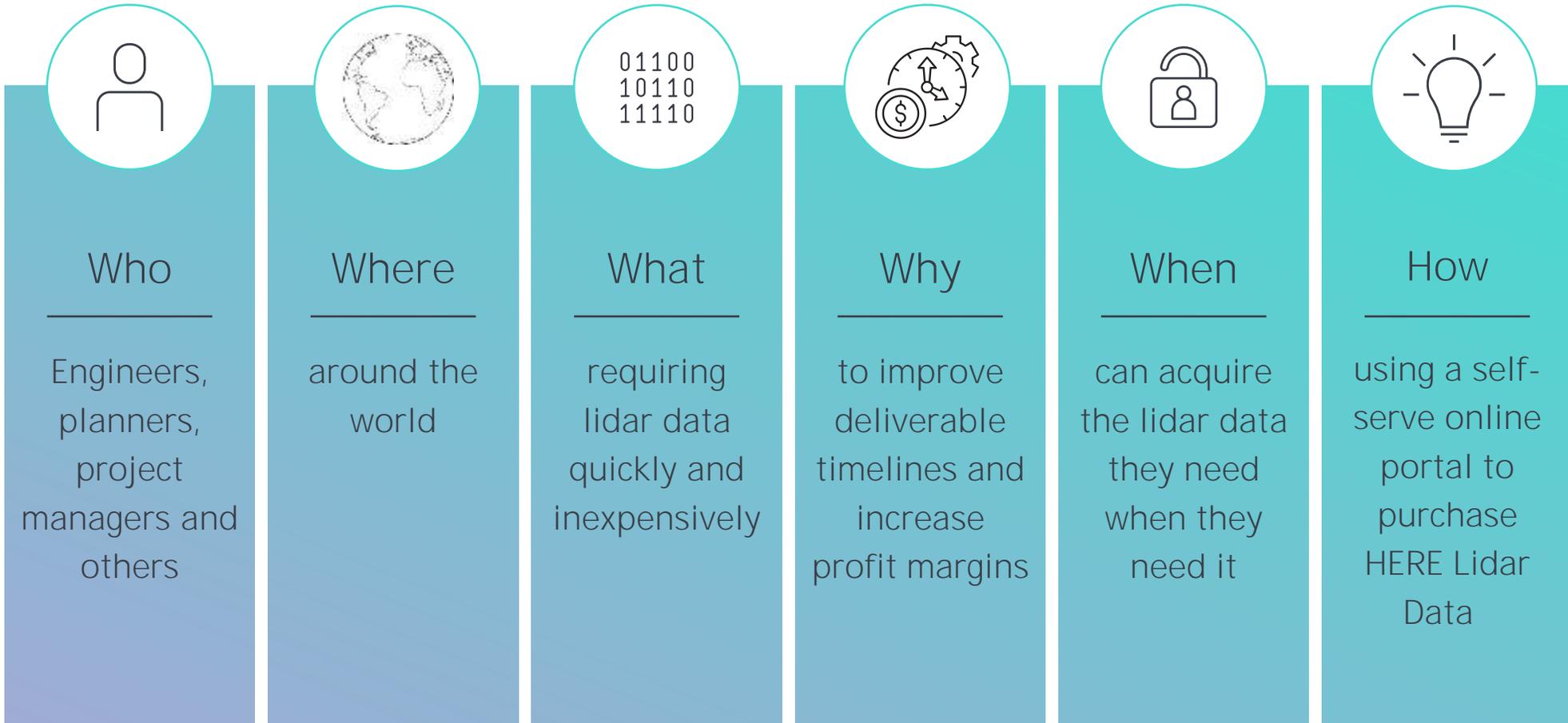
Data download from HERE Marketplace
On completion of the backend process, the data is pushed to the catalog in Marketplace and can be downloaded by the customer.

HERE Lidar Data

Value proposition

Who	Where	What	Why	When	How
Engineers, planners, project managers and others	around the world	requiring lidar data quickly and inexpensively	to improve deliverable timelines and increase profit margins	can acquire the lidar data they need when they need it	using a self-serve online portal to purchase HERE Lidar Data

HERE Lidar Data

Use cases by market segment

Public Infrastructure & Maintenance

Infrastructure analysis to determine position and condition of features and surroundings

Road profiling /pavement quality analysis

Infrastructure planning, maintenance & management

Signage location & management

Construction / Architecture/ Engineering & Analytics

Site selection & analysis

Planning & design

Simulations

Integration with BIM*

Utilities / Telecoms

Pole and wire inventory and asset management

Power pole and line assessment

Vegetation monitoring and line rating reports

Feature classification

Network planning & design

Insurance

Risk assessment & mitigation

**Military / Security

Mission /scenario planning

Simulations

Intelligence analysis
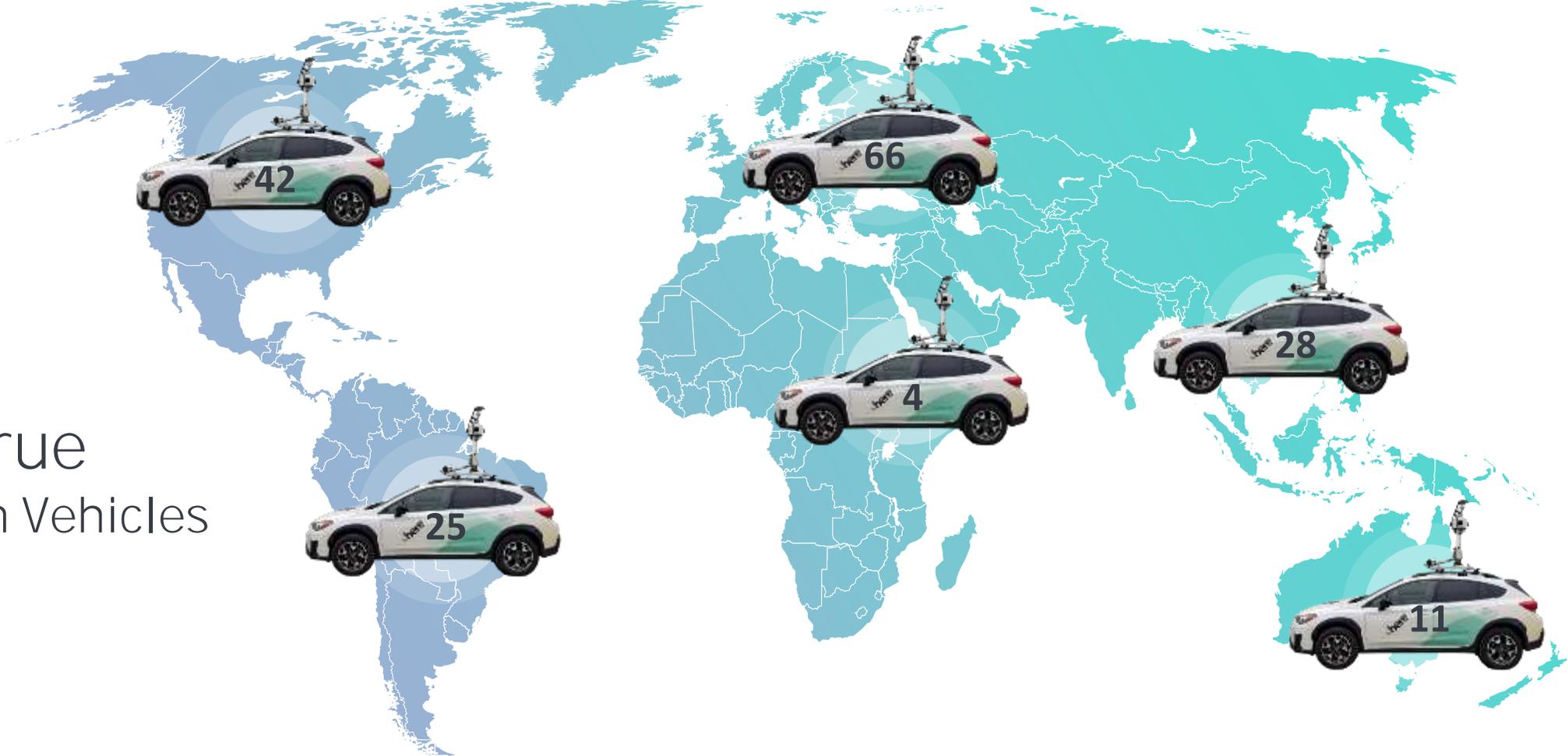
*BIM: Building Information Modelling
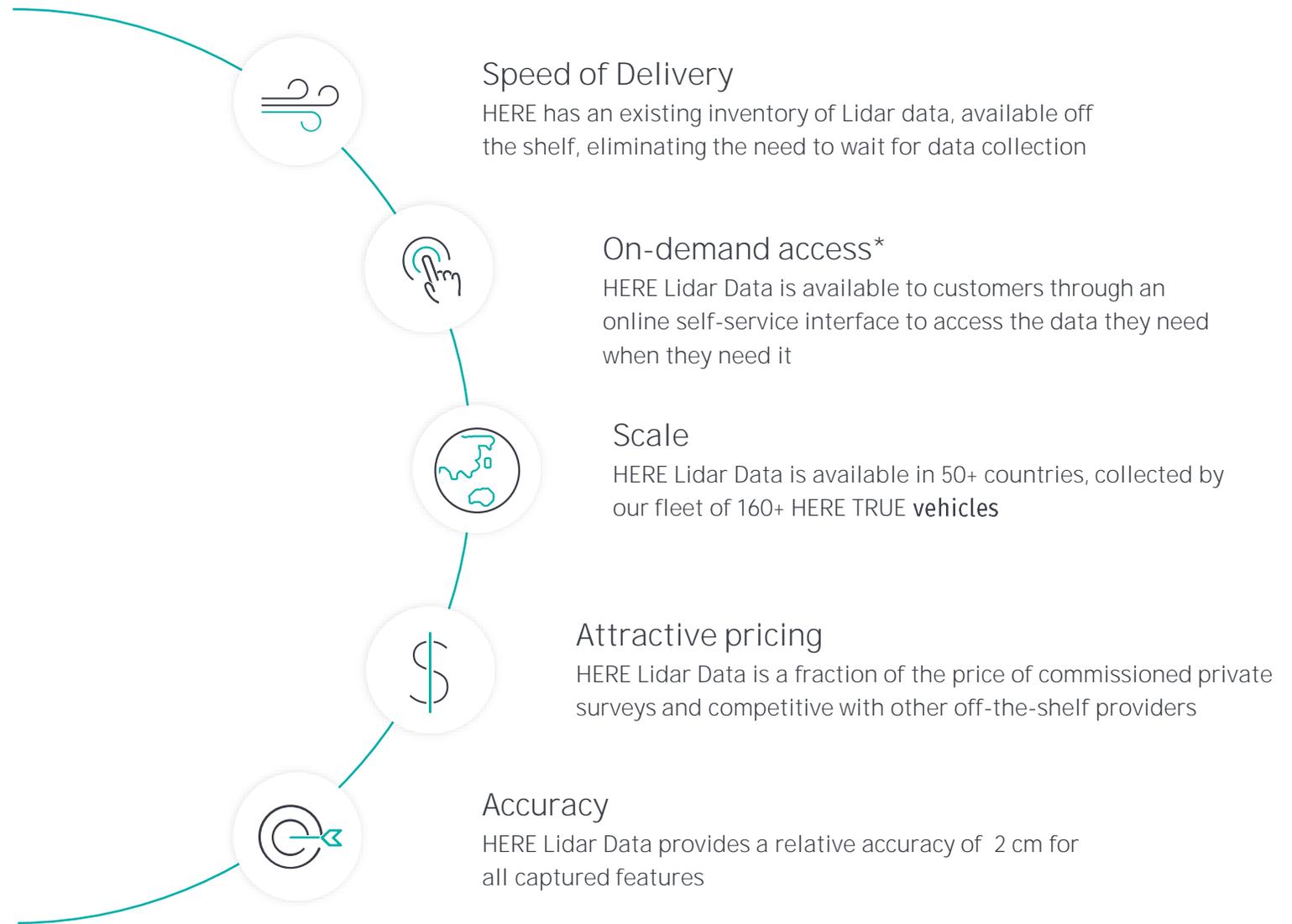
Product Coverage

>50 countries and territories

Suspended until further notice from SLT

AMER

Argentina
Brazil
Canada
Chile
Colombia
Mexico
Peru
USA

APAC

Australia
Indonesia
Malaysia
New Zealand
Philippines
Singapore
Taiwan
Thailand

EMEA

Albania	Czech Rep	Israel	Poland	Spain
Andorra	Denmark	Italy	Portugal	Sweden
Austria	Estonia	Kosovo	Qatar	Switzerland
Azerbaijan	Finland	Kuwait	Romania	Turkey
Belgium	France	Latvia	Russia	UAE
Bosnia &	Germany	Lithuania	Serbia	UK
Herzegovina	Greece	Luxembourg	Slovakia	
Bulgaria	Hungary	Netherlands	Slovenia	
Croatia	Ireland	Norway	South Africa	

HERE True Rig Count & Global Distribution

176

HERE True
Collection Vehicles

USP

Speed of Delivery
HERE has an existing inventory of Lidar data, available off the shelf, eliminating the need to wait for data collection

On-demand access*
HERE Lidar Data is available to customers through an online self-service interface to access the data they need when they need it

Scale
HERE Lidar Data is available in 50+ countries, collected by our fleet of 160+ HERE TRUE vehicles

Attractive pricing
HERE Lidar Data is a fraction of the price of commissioned private surveys and competitive with other off-the-shelf providers

Accuracy
HERE Lidar Data provides a relative accuracy of 2 cm for all captured features

*currently served by HERE

& custom collection capabilities for your own project or site
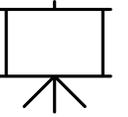
Value Proposition

Why HERE Mobile Mapping vs competitors?

Automated

- **HERE's** *off-the-shelf LiDAR data* is readily available for many areas, reducing cost of custom collection.
- *HERE True Vehicle collection* can quickly fill any coverage gaps substantially reducing collection time from traditional methods.
- Advanced *AI driven data annotation services* reduce the need for in house processing and asset identification.

Customizable

- HERE *Professional Services* advisors work closely with you to tailor the solution to your specific use case and requirements to look beyond just data collection, providing *deep location service expertise and insights*.
- Easily select what you want from our simple service catalog allowing you to only *pay for what you need*.

Global Scale

- **Leverage HERE's** *global footprint and scale* to deliver the right solution where you need.
- Fleet of *175+ advanced collection vehicles* can be quickly deployed to meet your timelines.

Detailed use cases

Detailed use cases

Target Markets	Customer Objectives	Use Cases
Public Sector • Local municipalities • DOTs • Infrastructure planning	• Improve road infrastructure • Maximize resources • **Meet citizen's needs** • Improve mobility	• Pavement profiling/quality analysis • Infrastructure maintenance & management • Signage location & management • Infrastructure analysis to determine position and condition of features and surroundings
Construction • Architectural firms • Engineering companies	• Cost containment • Customer satisfaction • Timely project completion	• Site selection and analysis • Planning & Design • Simulations • Integration with Building Information Modelling (BIM)
Utilities • Public utilities • Private providers	• Production, transmission and distribution of public utility services to customers • Sustainability • Customer satisfaction • Profitability	• Accurately conduct surveys and manage inventories • Accurate vegetation monitoring and line rating reports • Power pole and line assessment • Feature classification • Network planning & design
Insurance • Insurance companies • Insurance SW providers	• Financially guard against unpredictable life occurrences	• Risk assessment • Risk mitigation

Telecommunications
• MNOs
• Site selection companies
	• Remain innovative
	• Attract new customer segments
	• Launch innovative services to generate new revenue streams
	• Optimize networks and operations
	• Reduce costs
		• Network planning
		  • Digital surveys
		  • Location of encroaching overhead wires, light poles, road signs, etc.
		• Network design
		  • RF propagation modeling & simulation
		  • Line of sight modelling

**Military / Security HERE Lidar Data	**Any opportunity related to "Military End Uses" and "Military End Users" needs to be assessed on a case-by-case basis. Military End Uses and Military End Users in most cases requires a license by the EU and US authorities. Therefore, it is not prohibited with the proper license.	• Mission /scenario planning • Simulations • Intelligence analysis

Public Infrastructure use cases

Pavement profiling/Quality analysis

- Calculation and analysis for roads & highways e.g., pavement analysis, road asset management, road damage assessment
- Mapping, matching and modeling roads, highways, and railways corridor projects

Road planning, maintenance & management

- Identify the best position and condition of road features and their surroundings
- Optimize road planning and maintenance through LiDAR data to capture every detail along a highway corridor, including road barriers, cracks in the road surface, ditches, and overhead wires etc.
- Corridor modeling, design, and maintenance

Signage location & management

- Digital asset and signage management
- Road signs increase safety by providing maneuver instructions enhancing drivers' confidence by notifying them of important situations such as road closures, construction zones and speed limit changes that are not on the on-board or on-device map
- Lidar data can help identify the best location for road signs for optimal visibility

Construction, Architecture & Engineering use cases

Site Analysis & Selection

- Lidar Data allows to capture sites and surrounding buildings as they exist in the real world, and help select the best location for a brand new building or structure

Planning and Design

- Instrumental in design, modelling and visualization of new projects
- Lidar scanning is an invaluable tool for accurately documenting and representing buildings and interiors in vivid digital detail

Simulations

- Run project simulations to optimize design and smooth integration into the existing landscape and surrounding structures

Integration with BIM

- Lidar data can be integrated into Building Information Modeling (BIM), an intelligent 3D model-based process for architectures, engineers, and construction professionals that allows more efficient planning, design, construction and building management

Utilities use cases

Accurate survey & inventories

- Accurate/rapid survey of overhead lines and wires
- Complete inventory of connectors, transformers, poles, etc.
- Land classification/optimal location of irrigation areas & dams, industrial areas, power plants, transmission, smart cities, railways, ports, and airports

Vegetation monitoring and line rating reports

- To reduce the chance of blackouts caused by vegetation encroachment on power lines
- To reduce the chance of improperly rated lines that cost utilities and business billions of dollars

Feature classification

- To classify features such as towers, power lines, houses, and vegetation in planning public infrastructure

Insurance use cases

Risk Assessment & Mitigation

- Natural disasters pose great risks to human wellbeing, the economy and the environment that can be avoided / mitigated with high resolution topographic datasets such as Lidar

- Elevation, depth, ground surface faults, water elevation etc. can be critical for assessing potential natural disasters

- Lidar data can be fed into various simulation models to help in disaster prevention and mitigation analysis

  - Hazard Assessment and hazard maps

  - Landslide risk management

  - Flood risk maps / flood risk management

  - Typhoons and extreme rainfall

  - Earthquakes

Telecommunications use cases

Network planning

- Digital Site Survey: Remotely identify suitable cell site candidate locations and determine geometry associated with deployment RF equipment

- Assess location of encroaching overhead wires, light poles, road signs, tree foliage, etc.

Network Design:

- RF propagation planning
  - Lidar Data can be used in RF propagation modeling and simulation tools/software platforms to identify optimal xyz positions for placement of antennas for maximum reach and efficiency

- Line-of-sight (LoS) modeling & simulation:
  - To determine optimal xyz positions to telecommunications equipment to minimize occlusion from signal pathway objects

Reference cases

Reference

Digital twin modelling
- Infrastructure planning
- Road maintenance
- Sign and road asset inventory and reporting

HERE Solution:
- Lidar Data
- Maps

Case study   Video

CUSTOMER STORY
- Global infrastructure software development company
- The client supports the creation and management of the world's infrastructure, including roadways, bridges, airports, skyscrapers, and industrial and power plants, as well as utility networks
- Bentley delivers solutions for the entire lifecycle of the infrastructure asset

BUSINESS CHALLENGE
- Need of accurate and continuously updated street level data to build digital twins
- High, recurring cost of physical asset inspection and visualization of hard-to-inspect locations, e.g. by DOTs
- Compliance with federal and state requirements

IMPACT

Acceleration of projects through an increased speed of integration of data	Lower inspection and maintenance costs. Reduce onsite visits and enable visualization of hard-to-reach locations	Accurate modelling, dimensioning and site interrogation without having to leave the office for measure-ups

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Reference

Infrastructure planning

HERE Solution:

- Lidar Data (unclassified 3D
lidar point clouds)

CUSTOMER STORY

- Leading construction company based in Australia
- The client has built a platform that leverage spatial computing, digital engineering to support project managers
- This platform collects, cleans and validates data for multi million-dollar infrastructure projects

BUSINESS CHALLENGE

- Construction projects budgets poorly handled control and recurrent schedule overrun, lack of planning
- Lack of transparency with contractors
- High volumes of accurate lidar data required to feed the platform in a short time frame

IMPACT

Accelerate projects, and minimize risks of schedule runoffs

Effective budget management

Visibility and transparency via a single ecosystem for all projects

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Reference

Enable network planning for launching 5G in pilot city

HERE Solution:

Custom Collection **–** CPC & SLI Data

Key solution components:
- LiDAR and street level imagery (SLI) collected via custom drive using HERE True vehicles.
- ~8,000 miles of city roadway mapped.
- CPC LiDAR and SLI data anonymized, quality reviewed, and delivered via preferred client format.

CUSTOMER STORY
- Industry leading telecom company launching new 5G network in a pilot city
- 5G technology was emerging and largely untested from a network design perspective
- Successful pilot could enable accelerating company's learning curve for subsequent cities

BUSINESS CHALLENGE
- 5G technology required developing a network plan that maximized line of sight coverage
- Roll-out timeline was accelerated requiring reduced planning time making traditional physical surveys a challenge
- Leveraging LiDAR data would require very fresh data to ensure accurate network design

IMPACT

Highly accurate, quality LiDAR data ensured accuracy of planning process

Digitized network planning enabled scenario modeling and visual site inspection via SLI prior to boots on the ground

Automated custom collection greatly reduced data collection time and ultimately cost over traditional surveys

Generic ref cases

Business Problems Solved

Public Sector (Local municipalities & DoTs)

Problem

- Improve road infrastructure
- Maximize resources
- **Meet citizens' needs**
- Improve mobility

Solution

The use of lidar data allows for efficient urban planning, and cost-effective infrastructure building/maintenance

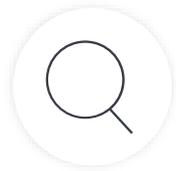As well as the deployment of smart cities, roads, highways and railway corridor projects

Impact

- Reduce infrastructure maintenance costs
- Help prioritize repair priorities
- Expedite decision making & project completion
- **Increase citizens' satisfaction**

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Business Problems Solved

Architecture/Engineering

Problem

- Increase planning efficiency
- Reduce project timelines
- Improve planning accuracy
- Increase design precision
- Time effective modelling

Solution

Using lidar data, architects and engineers can expedite project timelines and are able to model with higher precision, thus spending more time in design vs modeling and drafting

Impact

- Substantial project savings
- Expedite planning – especially during Covid when access to sites for measuring might be restricted
- Faster decision-making due to abundance of heritage data
- Improve modelling accuracy using this rich data w/many more points of information
- Quicker project turn around
- Very satisfied customers

Business Problems Solved

Utilities
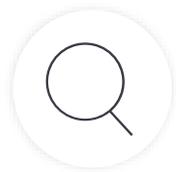
Problem

- Production, transmission and distribution of public utility services to customers
- Sustainability
- Customer satisfaction
- Profitability
- Field visits are costly and time consuming

Solution

A wide range of groups in the utilities space, e.g. engineering and construction teams, encroachments and line maintenance can derive benefits from Lidar Data in the modelling of industrial areas, power plants, smart cities, railways, ports, and airports

Impact

- Accurate/rapid survey of overhead lines and wires
- Complete inventory of connectors, transformers, poles, etc.
- Mapping as-built infrastructure for dams, power plants, etc.
- Accurate and rapid identification of obstructions
- Location of encroaching overhead wires, light poles, road signs, etc.

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Business Problems Solved

Telecommunications (MNOs, Site aggregators)
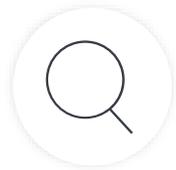
Problem

- Deploy 5G networks quickly to support new services and generate new revenue streams while controlling deployment costs
- Optimize networks and operations
- Attract new customer segments
- Retain existing customer base

Solution

Lidar Data provides 3D buildings, roads and high-resolution land cover classification for metro areas that are instrumental for mobile network planning
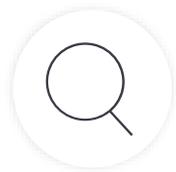
Impact

- With the detailed information provided by Lidar Data, telecommunication companies are able to deploy 5G networks faster and more cost effectively, identifying the best position for the new infrastructure to accelerate service rollout and reach the highest number of users

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Business Problems Solved

Insurance

Problem

- Data collection is expensive & time-consuming
- Extreme weather events require better data
- Good modeling requires good data
- Location-specific data needed for targeted policies & claims

Solution

With lidar data, insurance companies can get highly detailed location-specific insights for risk modeling to provide fact-based policies and review claims

Impact

- Reduced data collection costs
- Faster access to required data
- Improved risk modeling
- Better insurance policy pricing
- More reliable claims reviews