State-of-the-arts Construction Sites

-Digital Transformation and Autonomous Machinery-

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Kazuyuki Suzuki

Lineup of construction Equipment

Bulldozer

Hydraulic excavator
(Crower-type)

Hydraulic excavator
(Wheel-type)

Wheel loader

Dump truck

Articulated dump truck

Motor grader

Hydraulic excavator for Mining

PC8000

Machine specification can vary, depending on the country or region

Construction, Mining and Forest job sites

Smart Construction

Construction Equipment

Autonomous Haulage System

Mining Equipment

Utility Equipment

Forest machines

DANTOTSU Value

DANTOTSU Value (ESG solutions through the creation of customer value and improvement of earnings)

Workplaces of the future: Safe, highly productive, smart and clean

[Advancement of Construction]
Commitment to safety and productivity

- ◆Optimization platform and solutions business strategies

SMARTCONSTRUCTION

LANDLOG

AHS/IAHV

IntelliMine

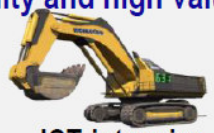
[Advancement of Machine Operations]
Commitment to "visualization " of machine operations

- ◆ Preventive maintenance by applying IoT and AI
- ◆ Lifecycle support under serial number-based management
- ◆Next-generation KOMTRAX

Next-generation KOMTRAX

[Advancement of Machines]
Commitment to high quality and high value

- ◆Automation, autonomous operation, electrification, remote controlling



ICT-intensive model

Electric shovel

Battery LHD

DANTOTSU Product

DANTOTSU Service

DANTOTSU Solution

Level enhancement
Speed acceleration

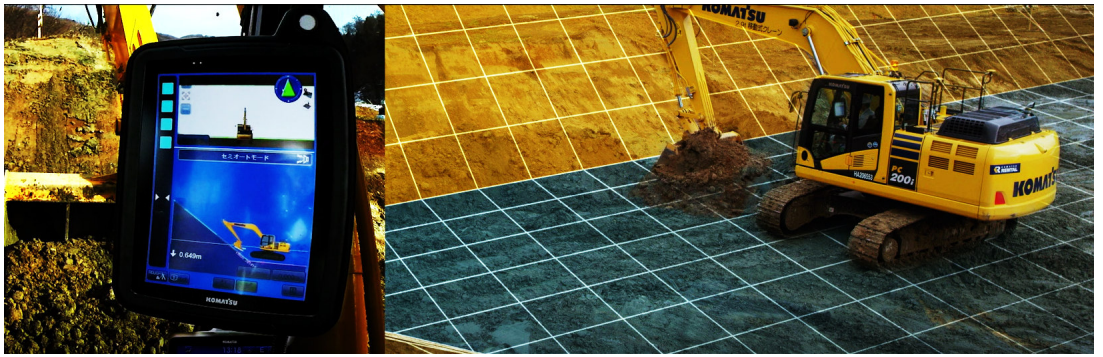
Enhancement

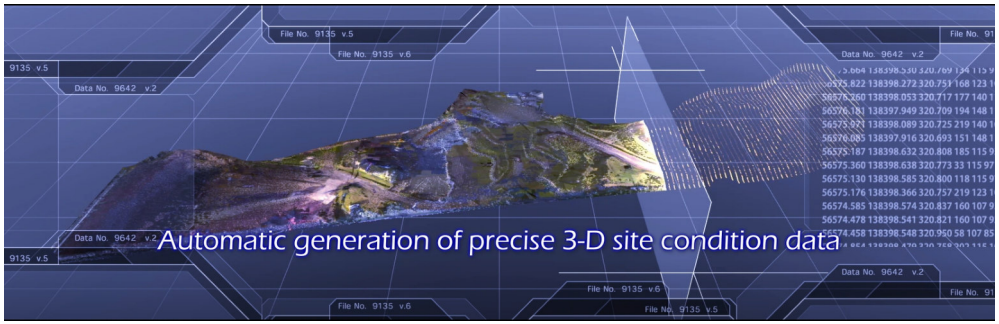
Conventional level and speed

Value

Expansion of the value chain

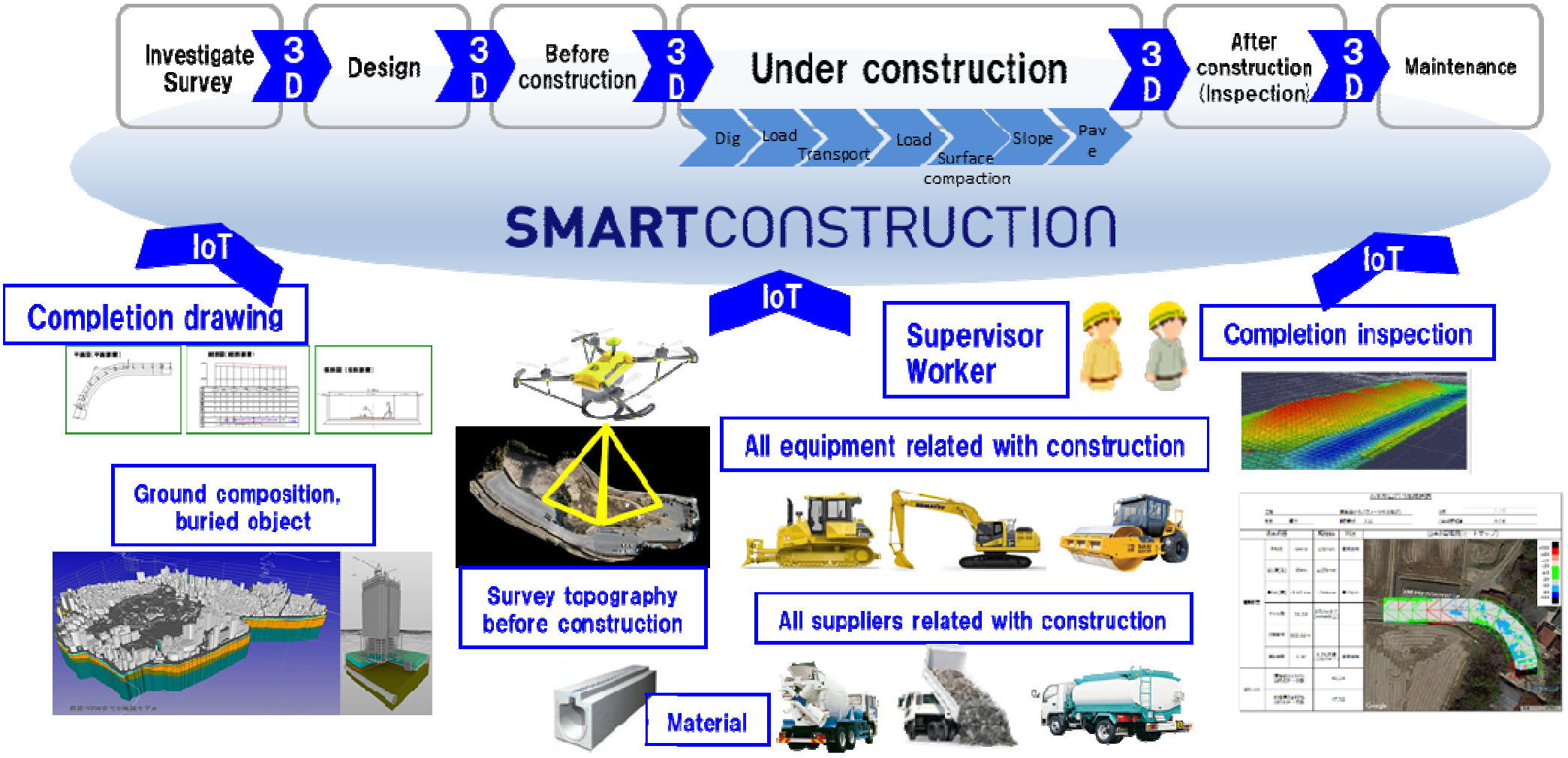

現場に、未来がやってくる。




Automatic generation of precise 3-D site condition data

SMART CONSTRUCTION

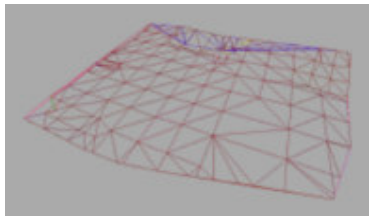
Whole construction process is connected with 3D data
(All things such as relative persons, equipment and other things are connected.)



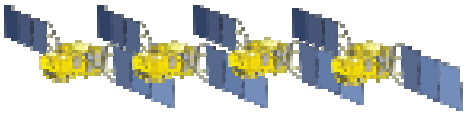
Technology of ICT machines

Equipment is controlled automatically on 3D design data.

3D model



GNSS
(Global Navigation Satellite System)



Cylinder with stroke sensor
Stereo camera
GNSS antenna
Control box

IMU
Controller
GNSS receiver
Internet modem

Correction data
RTK-GNSS
(Real Time Kinematic)

GNSS
Private company
to provide
correction data

CORS.
Continuously
Operating
Reference
Station

Roadmap to Construction Workplaces of the Future

Level5
Optimization of Construction

Level4
Automation of Construction Planning

Level3
3-Dimensional Construction Planning

Level2
3-Dimensional Topographical Map

Level 1
3-Dimensional Design Data

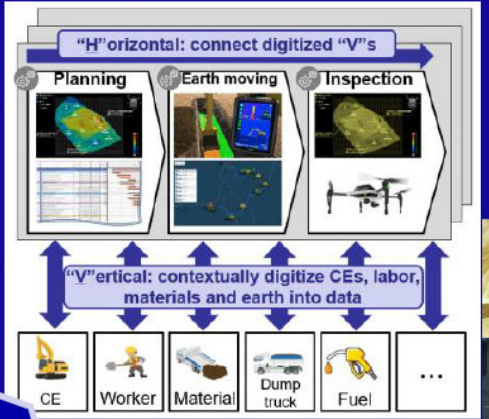
Workplaces of the future: Safe, highly productive, smart and clean

Processes【Optimization Level of Construction】

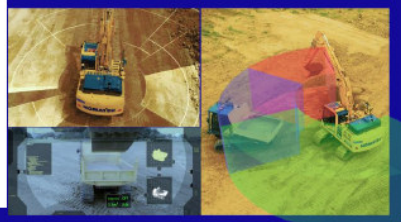
LANDLOG

"Visualization" of workplace data

Digital Transformation of Construction



- Automatic generation of daily tasks from daily optimized construction plans
- Collaboration and autonomous operation of equipment on the workplace

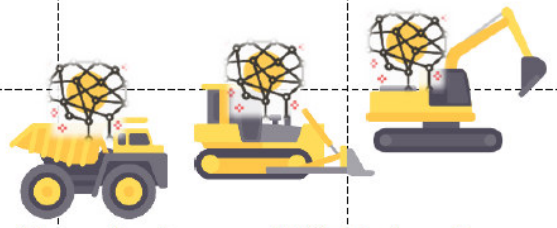


ICT Construction

ICT-intensive construction & machines

Visualization of progress
Utilization of topographical data

KomEye



Introduction of advanced ICT-intensive models

Conven-tional

Products【Level of Automation and Autonomous Operation】

Level 1	Level2	Level3	Level4	Level5
Limited Operation Support	Advanced Operation Support	Advanced Solo Automation	Advanced Collaborative Autonomous Operation	Advanced Decision-making Autonomous Operation

Automated Future Construction Job Site

Key Words

◆Recognition ◆Planning ◆Safety ◆Cooperation ◆Autonomous

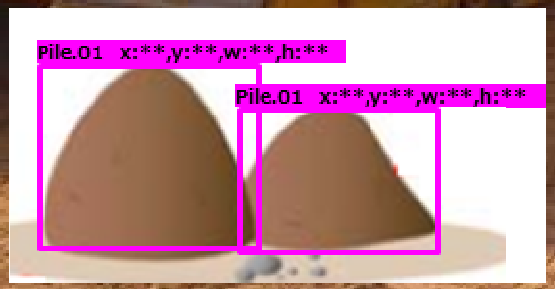
AI *IoT* *Big data*

Autonomous Excavator

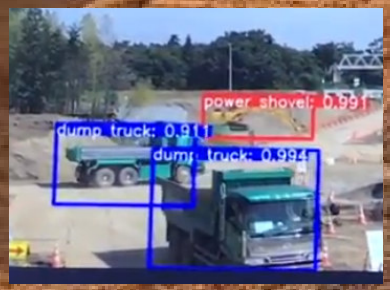
Autonomous Truck

Autonomous Bulldozer

Material Recognition



Truck Recognition



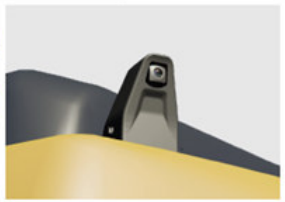
Object Detection

Autonomous Construction Demonstration

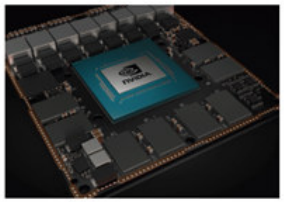
Autonomous Construction Demonstration

Autonomous EXCAVATOR

Cameras

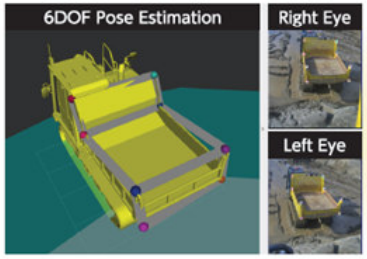


Processor

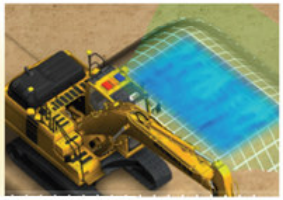


Terrain Sensor

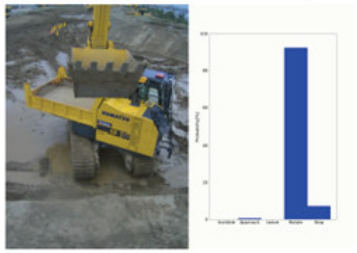
AI Truck-Bed Detection



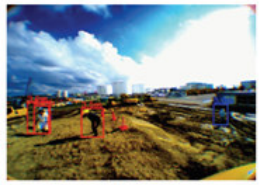
Terrain Mapping and Excavation Planning



AI Truck Status Detection



AI Human Detection



DANTOTSU Value

FORWARD Together for Sustainable Growth

Future construction equipment
(Automated, autonomous, electric and remote-controlled)

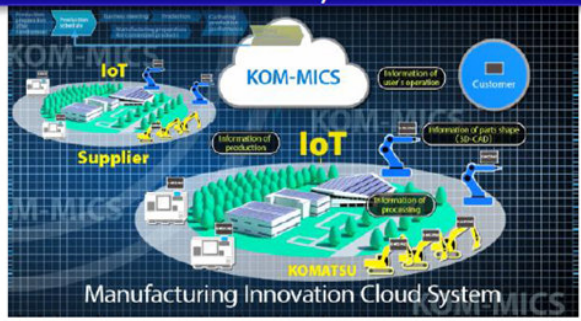
Optimization platform and solutions business
(Reduction of environmental impact and improved safety and productivity)

Promotion of smart forestry
(Circular environmental protection)

ICT-used smart forestry

Entry into planting

Future Plant
(Connected plants with Zero impact on environment and workers)



Thank you for your attention!