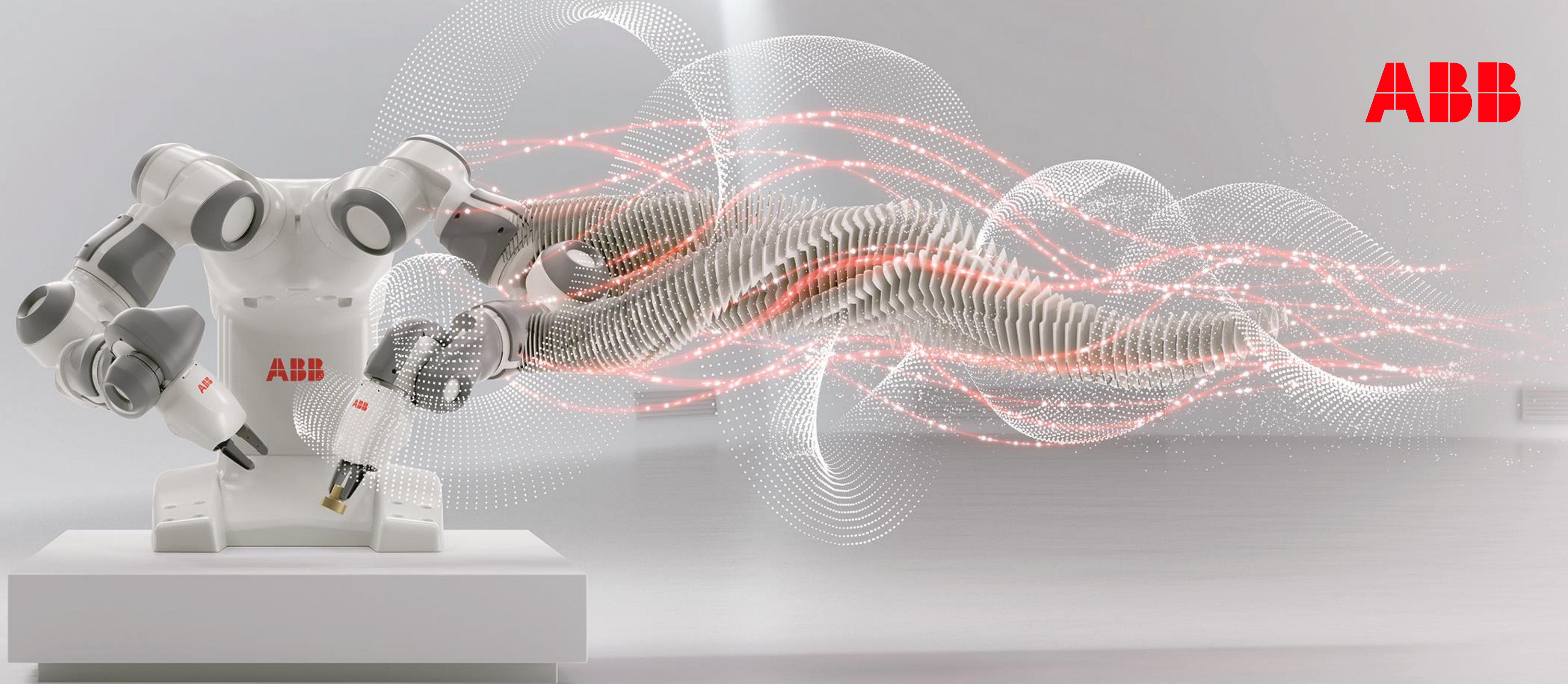

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Quantum leap in digital

Guido Jouret, Chief Digital Officer

About me…

Academic

Imperial College London

WPI

OSU Oregon State University

Professional

NOKIA

ENVISION

CISCO

IPSEN Innovation for patient care

Products

What it needs to create customer value through digital

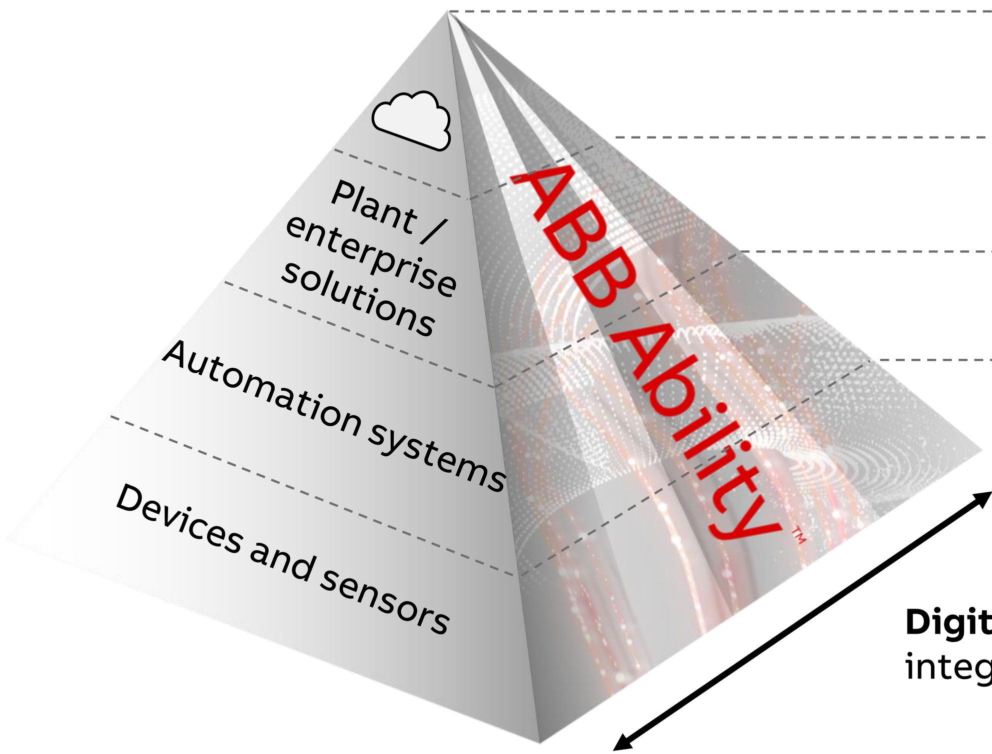
Customer value

Accelerators	Industrial collaboration platform	Horizontal leverage and vertical focus
Capabilities	Master the control loop	End-to-end solutions & services
Foundation	Installed base, customer access	OT[1], industry & digital expertise

[1]Operational Technology

Unlocking the ABB potential in digital

ABB Ability™: creating one common offering for digital end-to-end solutions



Build on customer trust, domain expertise, deep process knowledge

Open access, intelligent cloud

New end-to-end digital solutions

Closing the loop with connected devices

Digital ABB offering across businesses: integrate, penetrate, replicate

Far-reaching partnership with Microsoft

Developing next-generation digital solutions

End-to-end digital solution

Closing the loop at every level

Intelligent cloud platform

Customer access and trust

Domain and process expertise

Mastery of the control room

Connected devices, systems

Customer benefits

Integrated digital platform –

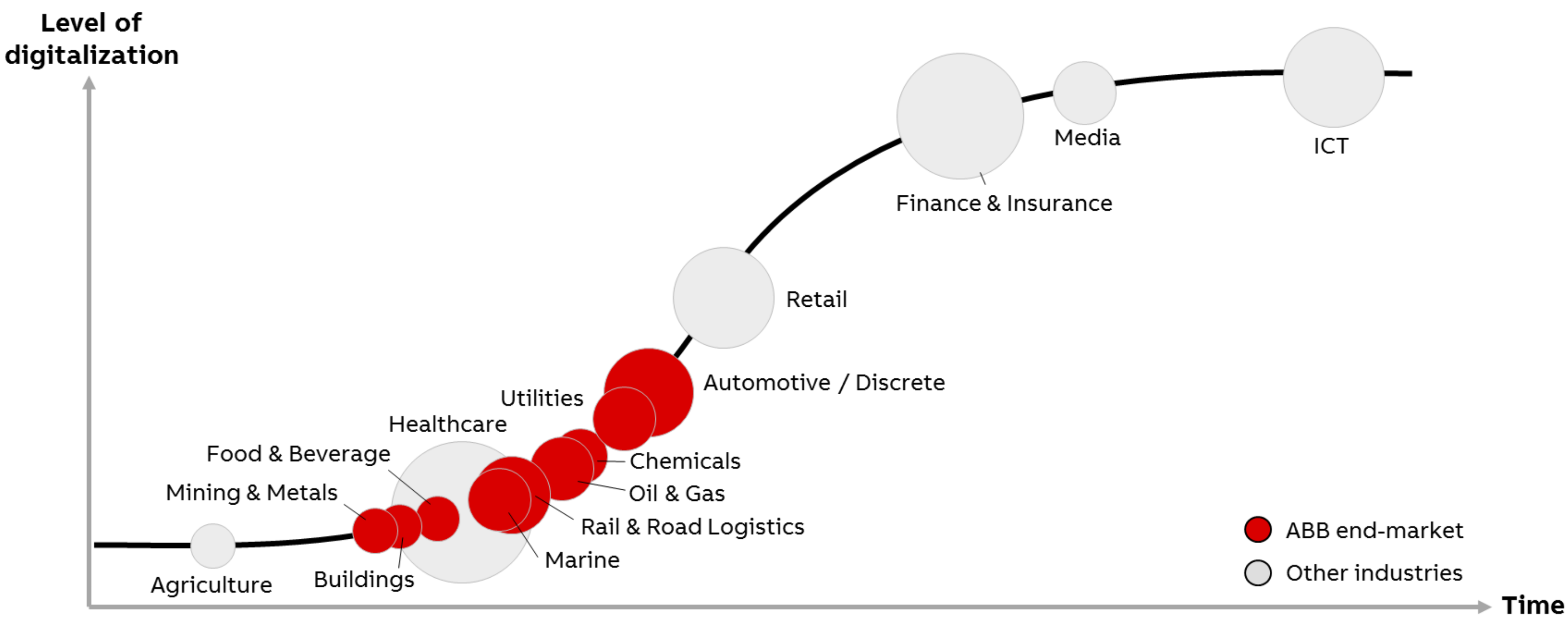
from device to system to cloud

Combined strength –

each partner leading in its respective area

Together building the world’s largest industrial cloud platform

ABB's end-markets are at the beginning of digitalization

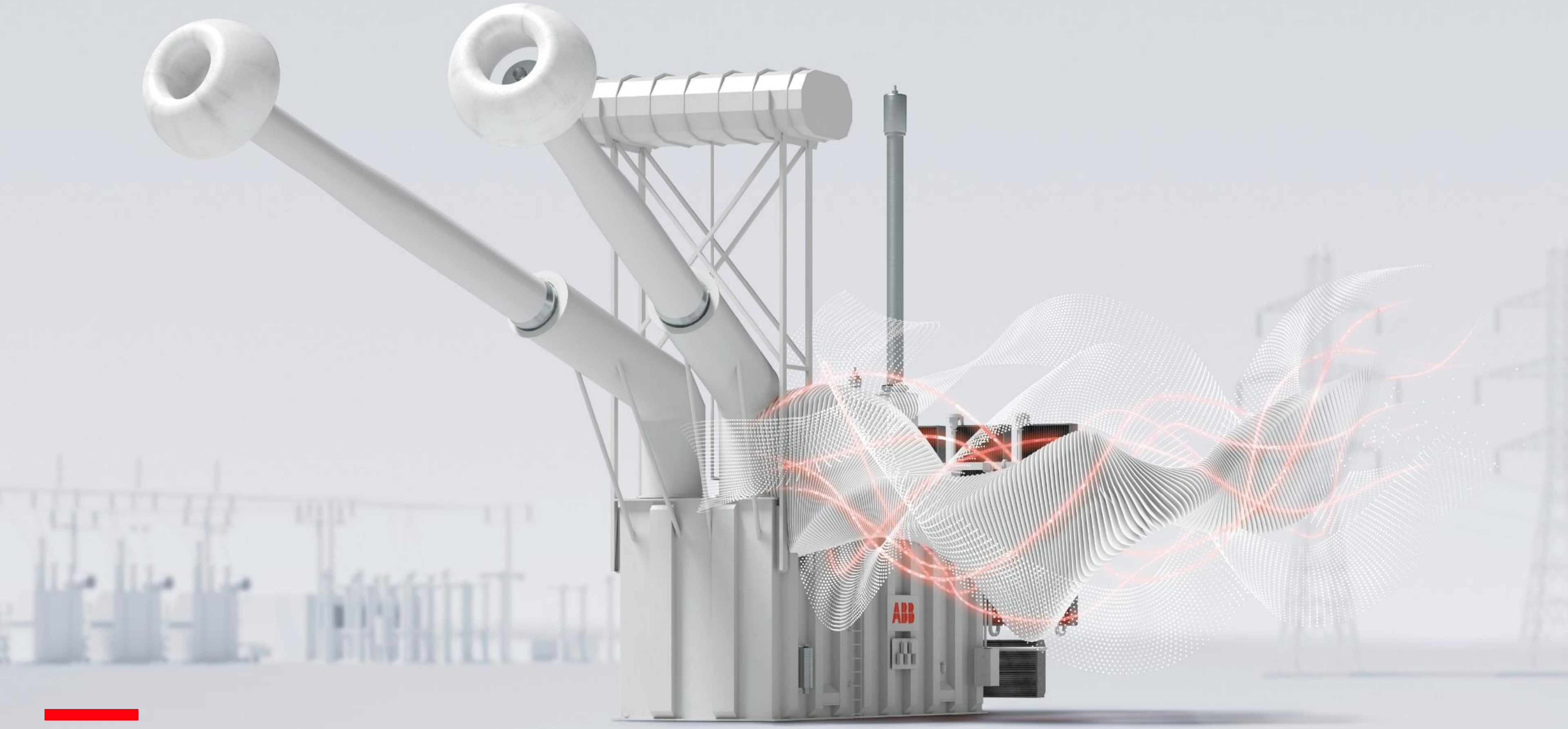


Note: relative size of industry for advanced economies
Source: ABB analysis

ABB already delivers unique digital value to customers

Examples of customer value creation with available solutions

Utilities Asset Health Center	**Customer benefit**: reduction in outage time, less maintenance
Mining Underground	**Customer benefit**: more uptime, lower energy consumption
Automotive Robotics	**Customer benefit**: faster planning, less downtime
Marine Integrated Operations	**Customer benefit**: fuel savings, less maintenance and repair, less administration
Building Automation	**Customer benefit**: lower energy consumptions, more comfort



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Digital solutions for transmission & distribution

ABB's end-to-end asset management

Massimo Danieli, Managing Director of Business Unit Power Grid Automation

ABB has a huge opportunity to leverage the energy revolution

Relevance

$80 bn annual costs from power interruptions to US electricity consumers[1]

> 95% of electricity goes through substations[2]

$160 bn annual OPEX and $180 bn CAPEX spending in the utility industry (transmission & distribution)[3]

Challenges

In mature economies a significant portion of power grid assets have reached the design lifespan

Critical substation assets have isolated condition monitoring systems, if any

Renewable energy needs flexible transmission

[1]2015 LBNL-58164; [2]ABB Power Grids,[3]McKinsey & Company

ABB

ABB unlocks significant customer value through digital

Bridging the gap between the physical and digital worlds

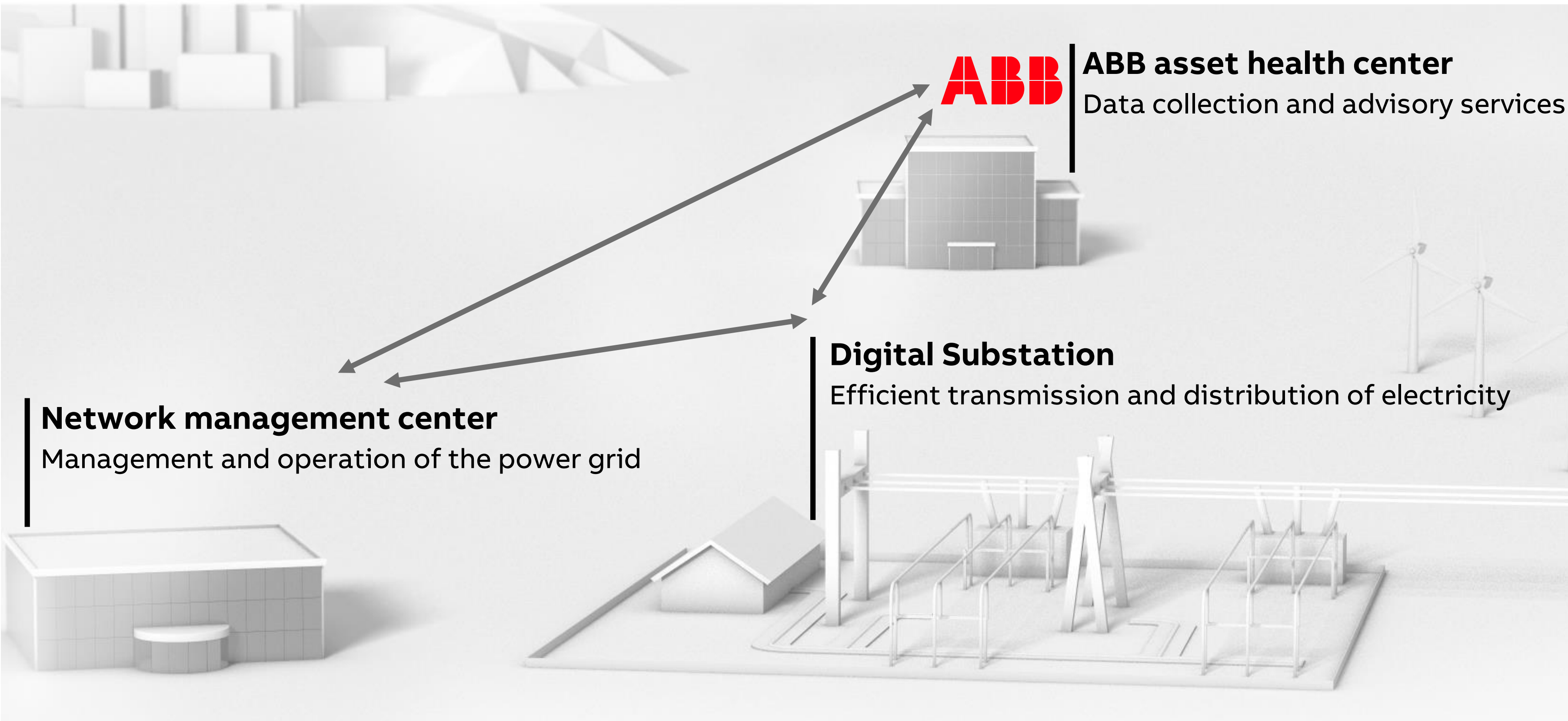
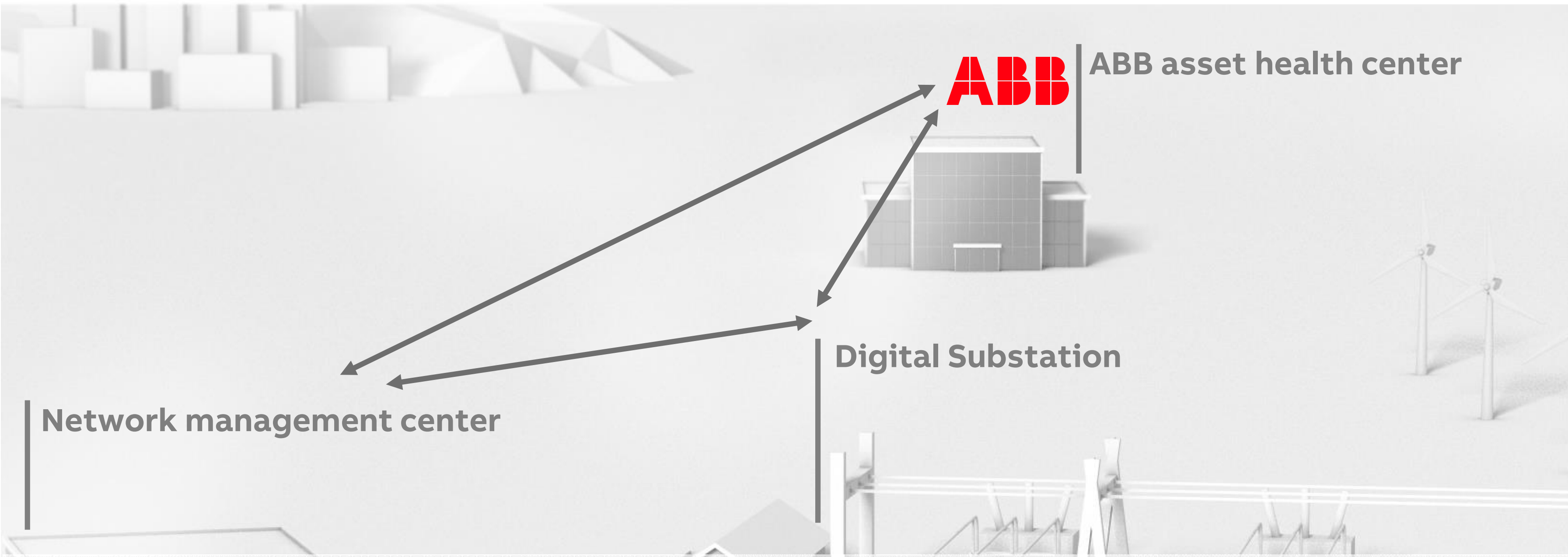


ABB unlocks significant customer value through digital

Higher efficiency in operation and maintenance

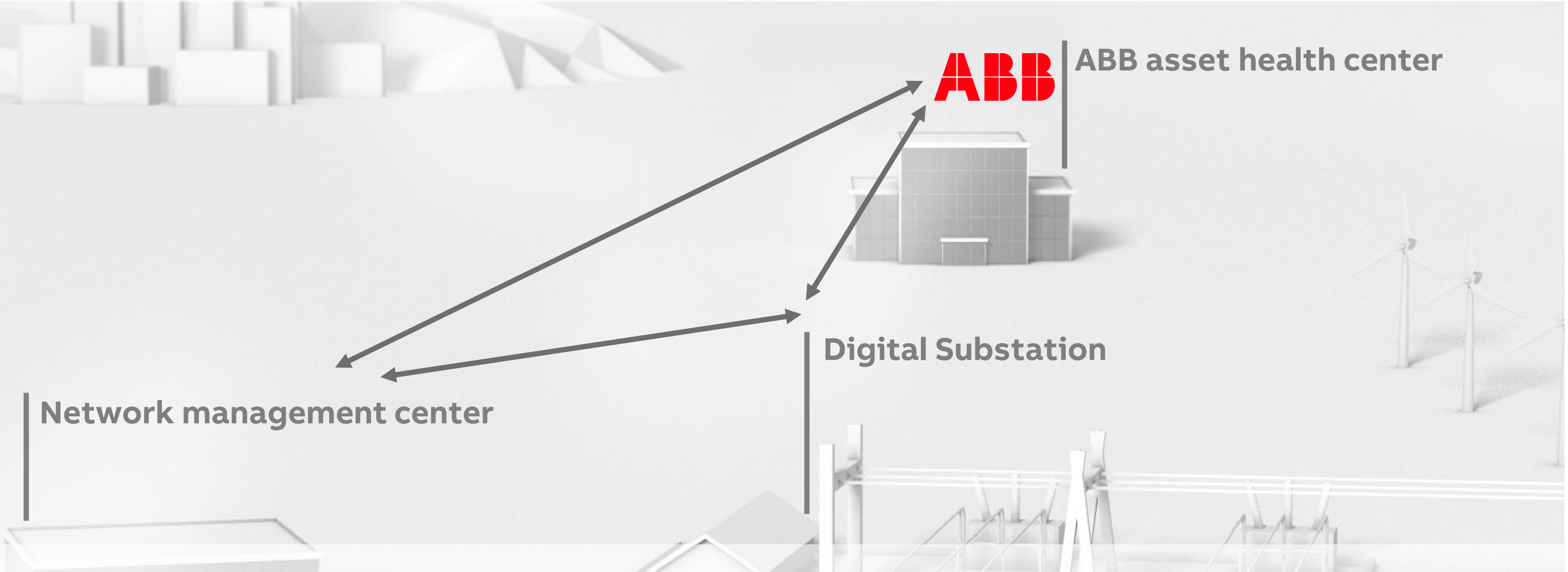


50% OPEX savings
for transformers and breakers
Up to 50% reduction in outage time

50% CAPEX savings related to footprint reduction
80% CAPEX savings on copper cables
Up to 40% reduction in installation time

ABB unlocks significant customer value through digital

Resulting in $360,000 annual savings per substation



$360,000 / substation / year

savings today through services and software

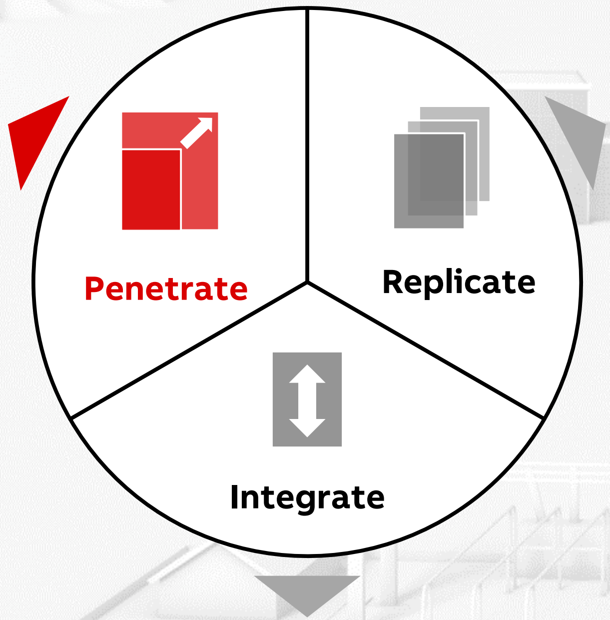
ABB unlocks significant customer value through digital

$23 bn in potential customer savings throughout the transmission and distribution market

$23 bn

yearly saving potential
through services and software

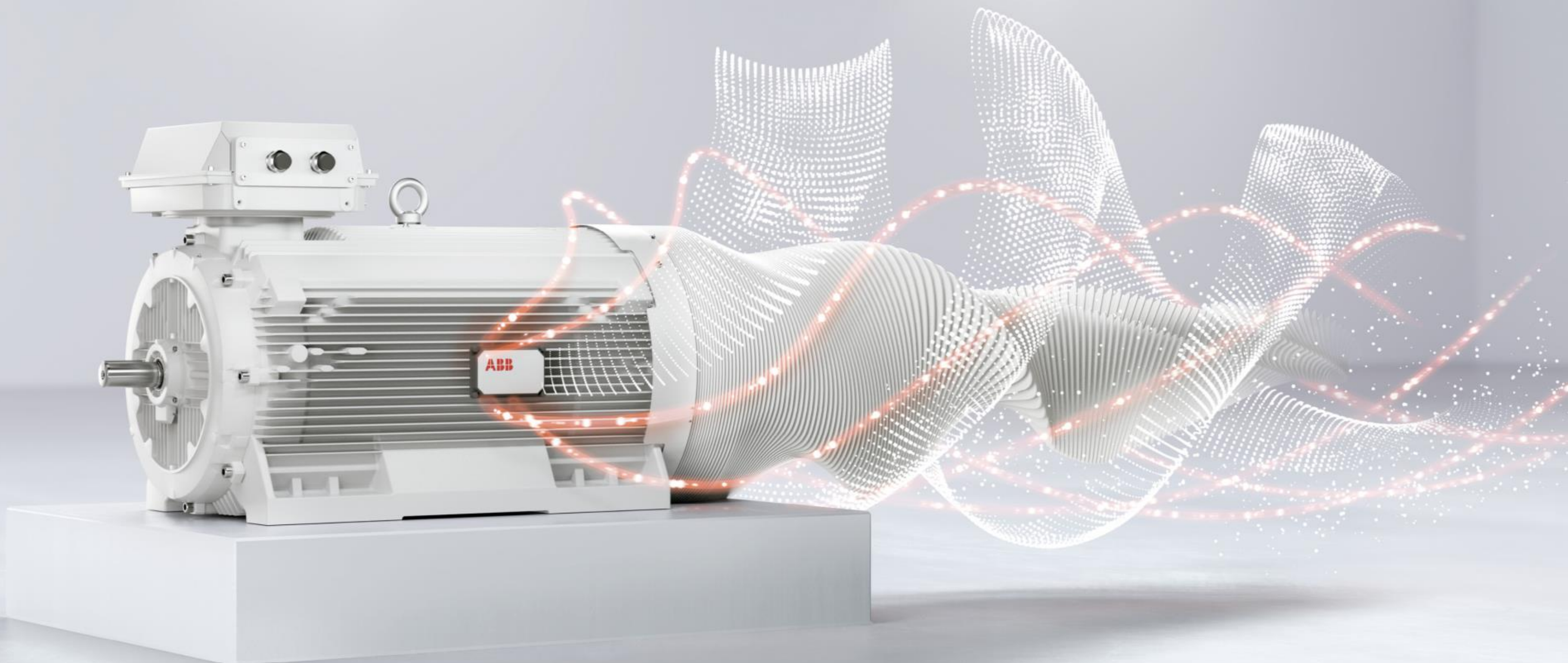
$360,000 / substation/ year
x
65,000 substations[1]



Replicate risk-based fleet maintenance approach in other ABB markets

Integrate and pull-through ABB and third-party offerings

[1]High-voltage, air-insulated substations



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Digital solutions for underground mining

ABB's integrated mining offering

Clive Colbert, Global Product Group Manager – Service Business Unit Process Industries

ABB has a huge opportunity to connect existing islands of information in underground mining

Relevance

18 tons of minerals and metals are produced annually per person in developed countries[1]

>7,5 mn people working in underground facilities[2]

$230 bn annual OPEX and $60 bn annual CAPEX spending in the underground mining industry[3]

Challenges

Declining ore grades, deeper and more complex underground mines in more remote locations

Inefficient utilization of mobile machines

High energy consumption

[1]MII.org; [2]ABB estimate; [3]McKinsey & Company

ABB

ABB unlocks significant customer value through digital

From the ventilation system to the cloud – ABB remote control center closes the loop

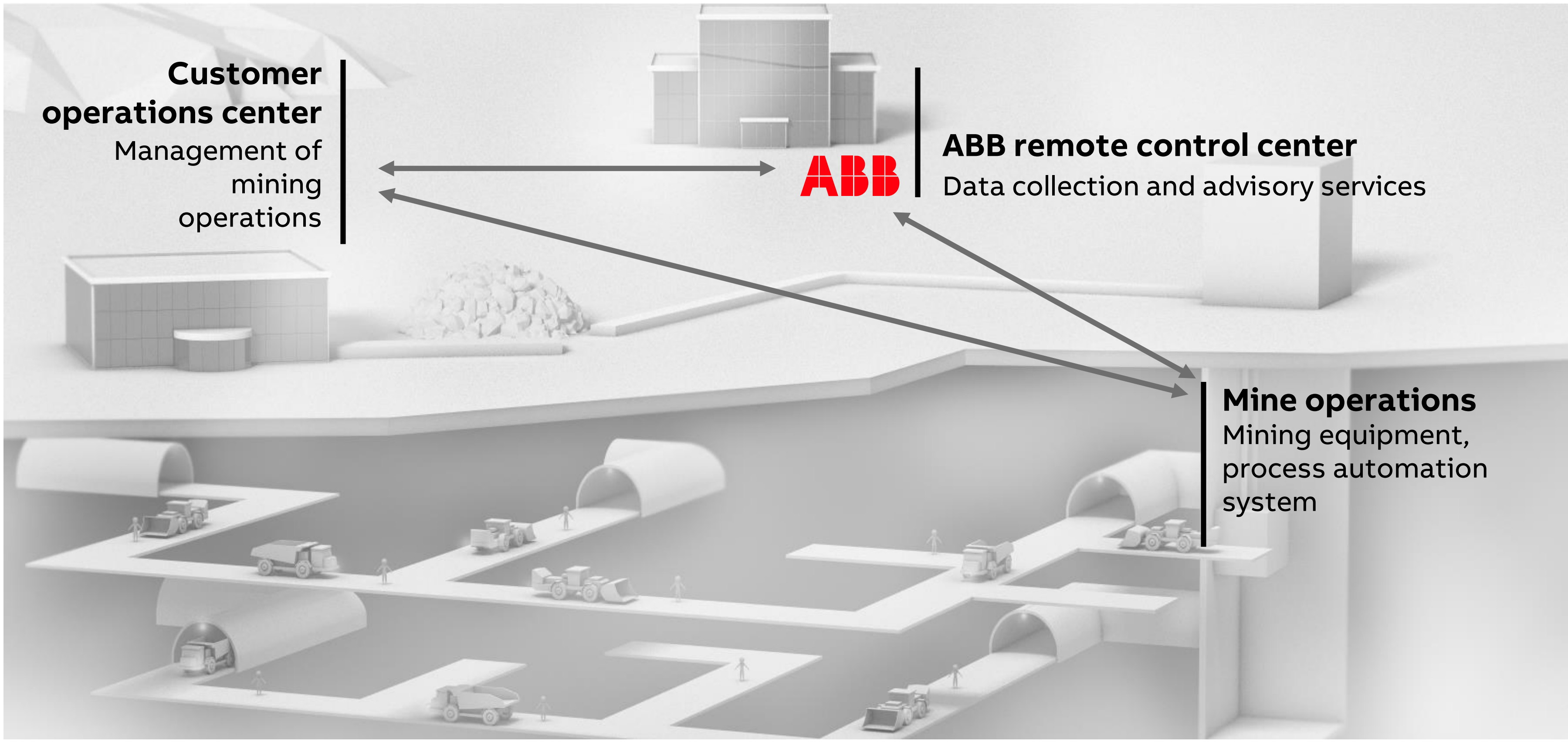
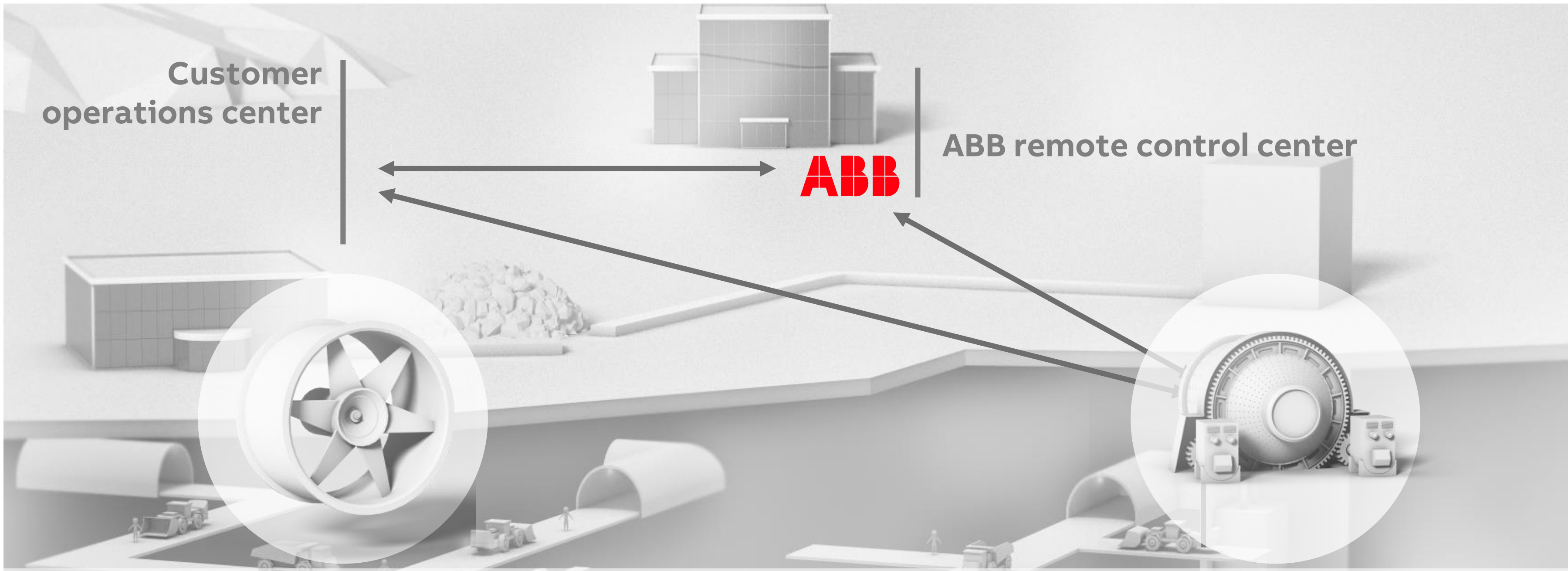


ABB unlocks significant customer value through digital

Optimizing mining processes in real-time



30 – 50% energy savings in mine ventilation

5% uptime improvement of mine hoists and gearless mill drives

ABB unlocks significant customer value through digital

Resulting in $5 mn annual savings per underground mine

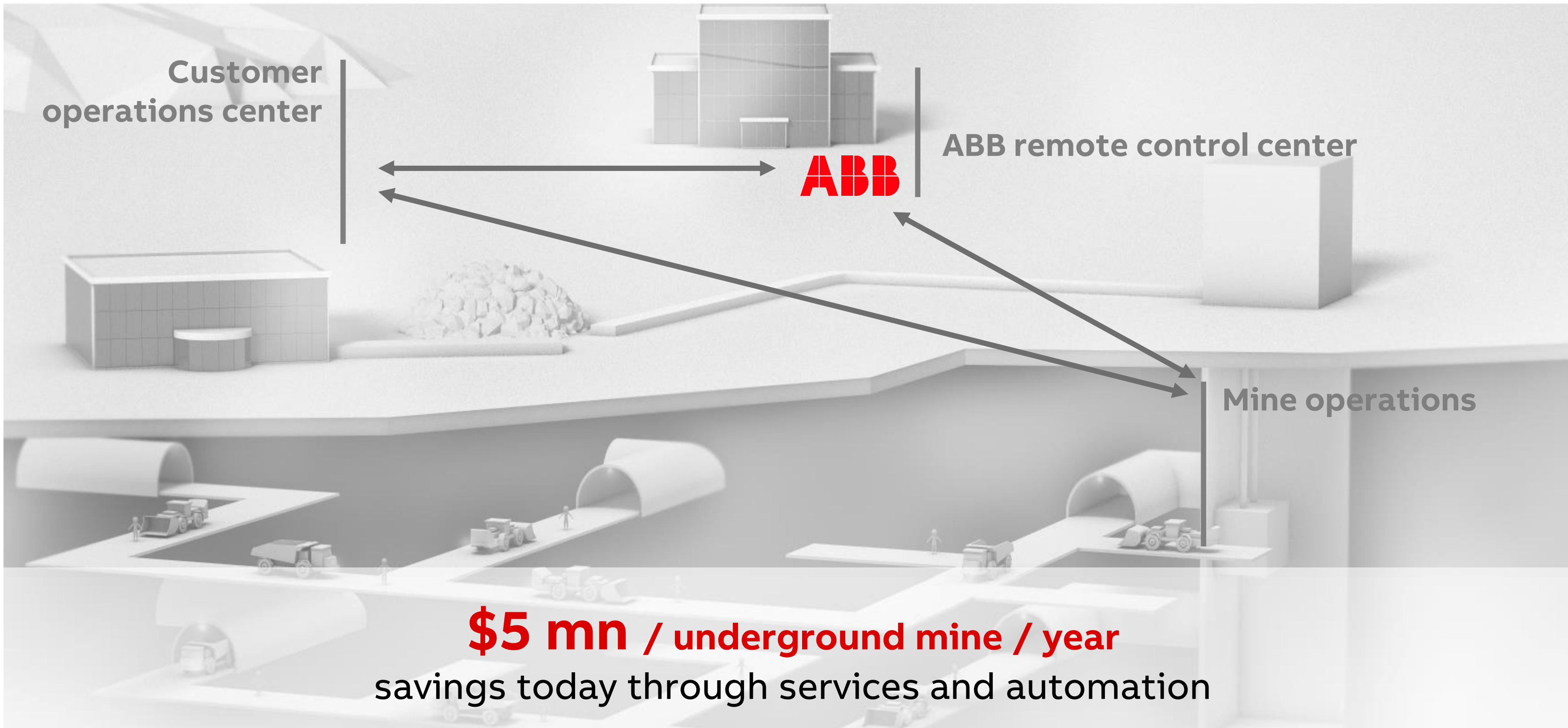


ABB unlocks significant customer value through digital

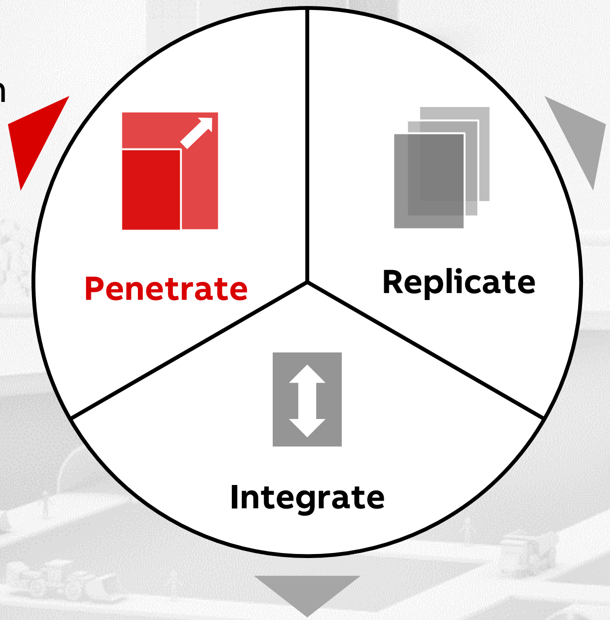
$7 bn in potential customer savings across the underground mining market

$7 bn

yearly saving potential
through services and automation

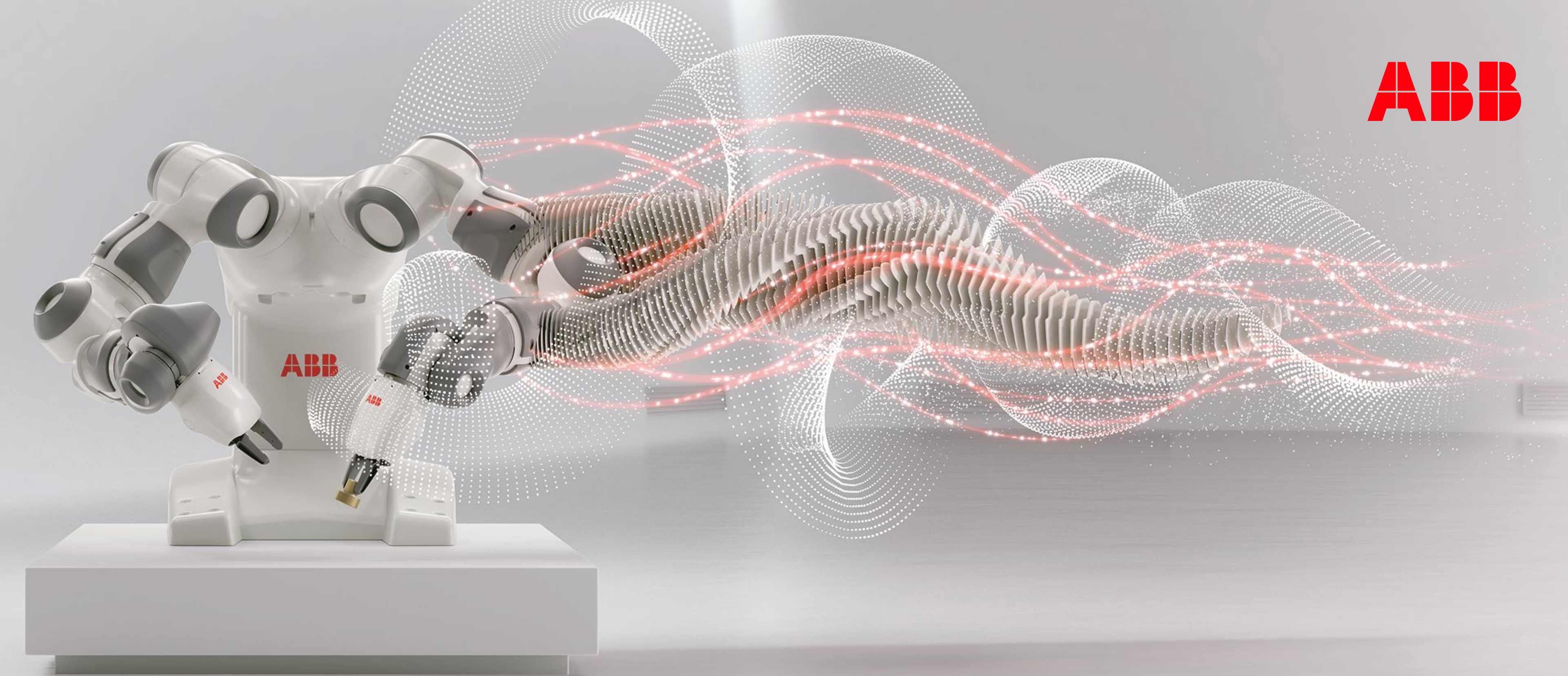
$5 mn / mine / year
x
1,040 underground mines

Plus 1,900 grinding applications



Replicate
remote services, power & maintenance systems and plant- / enterprise- level solutions for other industries

Integrate and pull-through
ABB and third-party offerings



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Digital solutions for automotive robotics

ABB's engineering and operations offering

Per Vegard Nerseth, Managing Director of Business Unit Robotics

ABB has a huge opportunity to shape the automotive industry

Relevance

With >500,000 units, the automotive industry is the largest user of industrial robots[1]

90 mn cars are produced annually[2]

$860 bn annual OPEX and $215 bn annual CAPEX spending in the automotive industry[3]

Challenges

Shorter launch cycles for car models

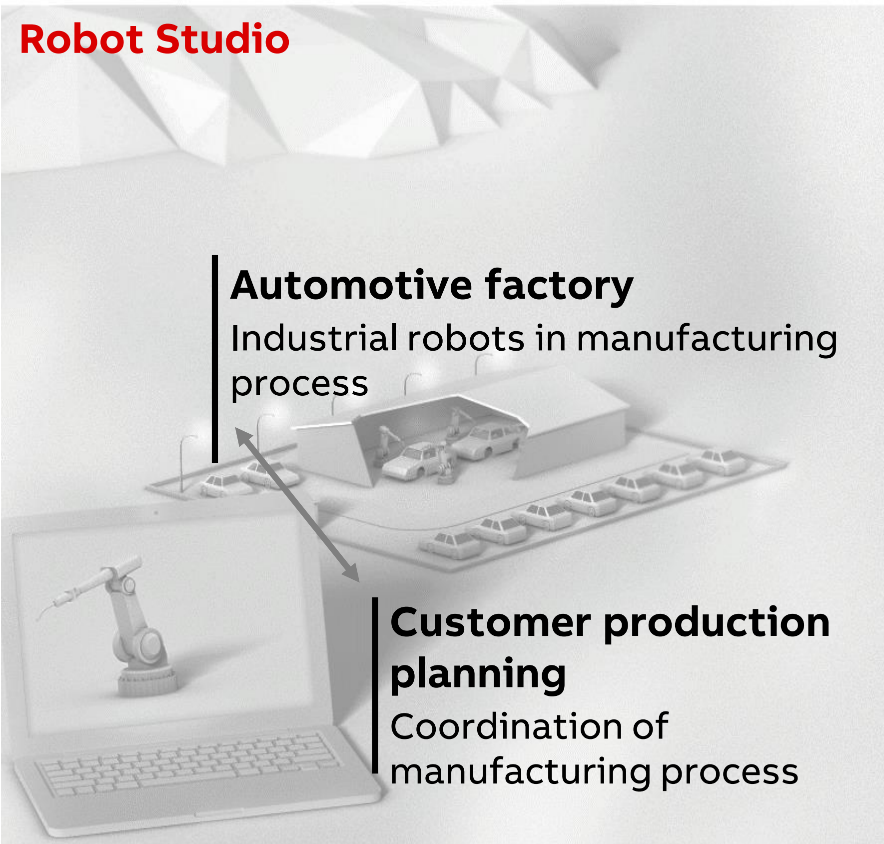
Insufficient shop-floor commissioning tools

$1.3 mn is the average cost of one-hour maintenance delay in a car factory[4]

[1]ABB estimate; [2]OICA, 2015; [3]McKinsey & Company; [4]Thomasnet.com

ABB unlocks significant customer value through digital

Optimizing the whole value chain: engineering , commissioning, operations and maintenance



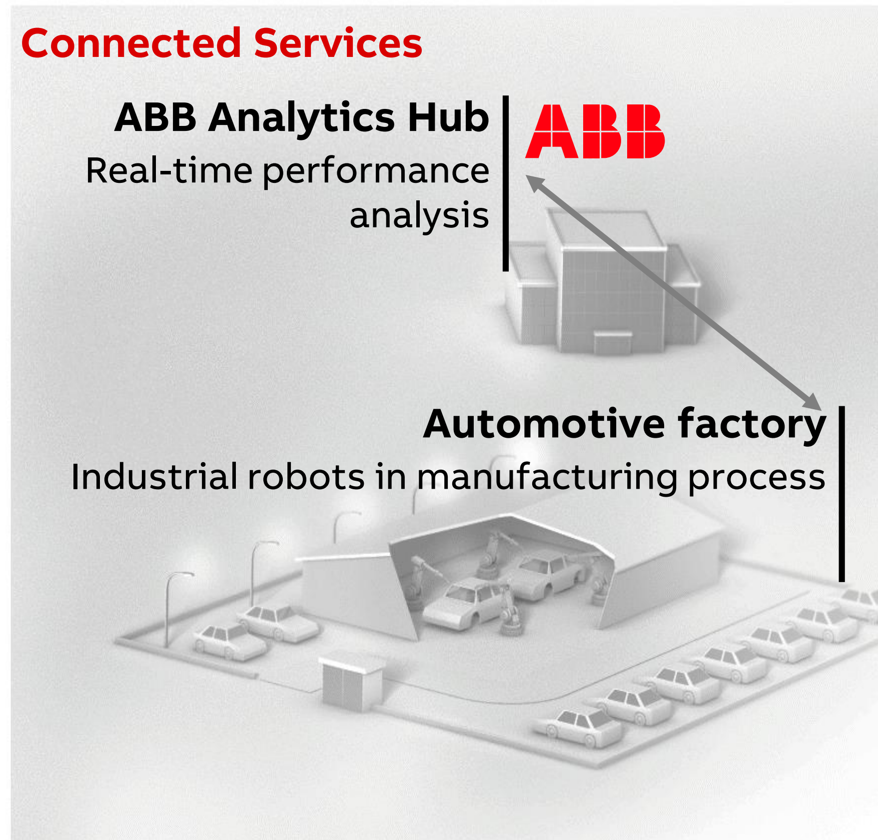


ABB unlocks significant customer value through digital

Robot Studio: engineering efficiency and faster ramp-up to full production volume

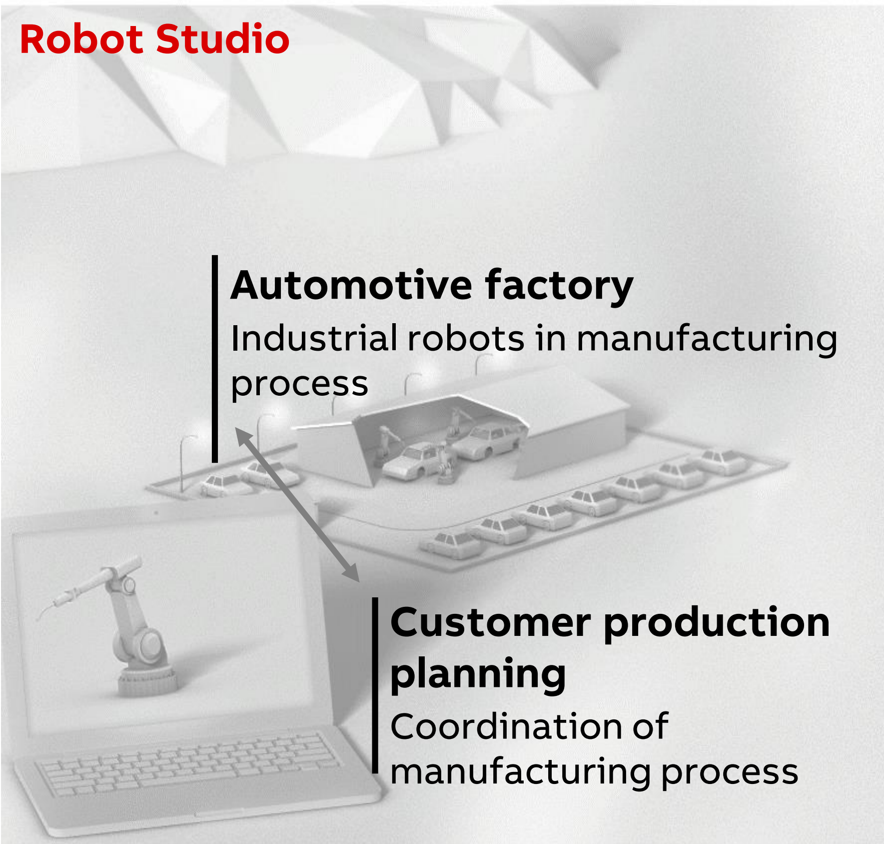


ABB unlocks significant customer value through digital

Connected Services: improved performance and reliability with less downtime

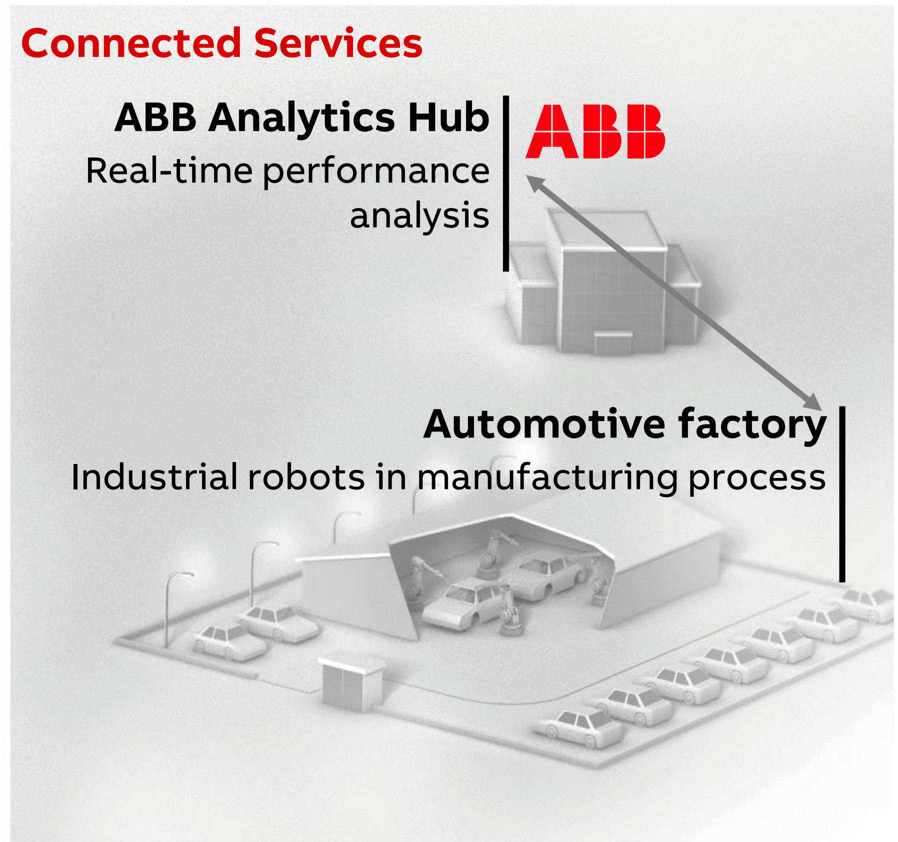
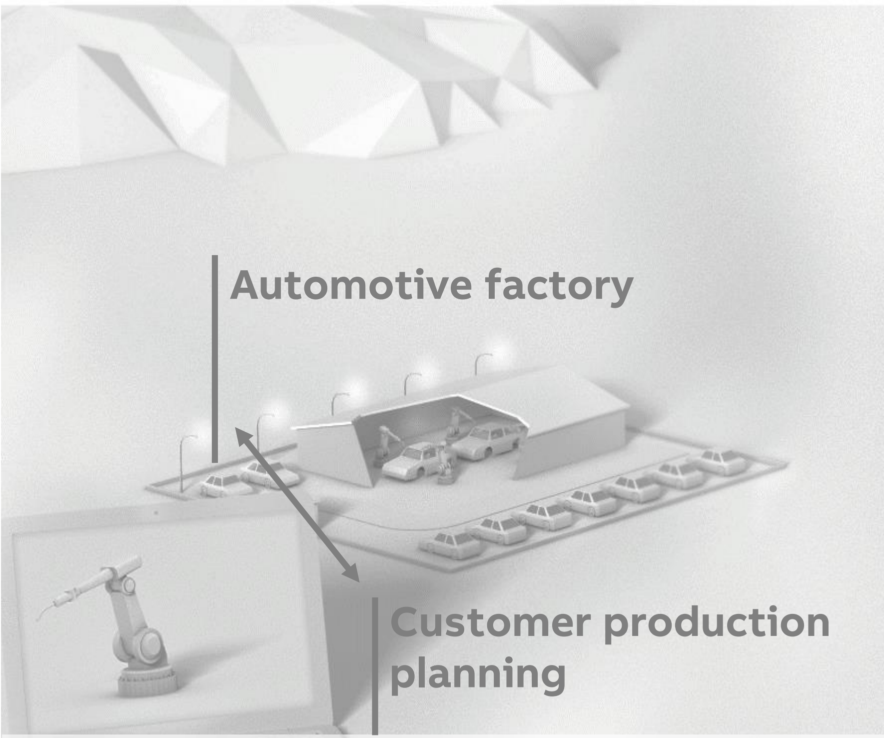
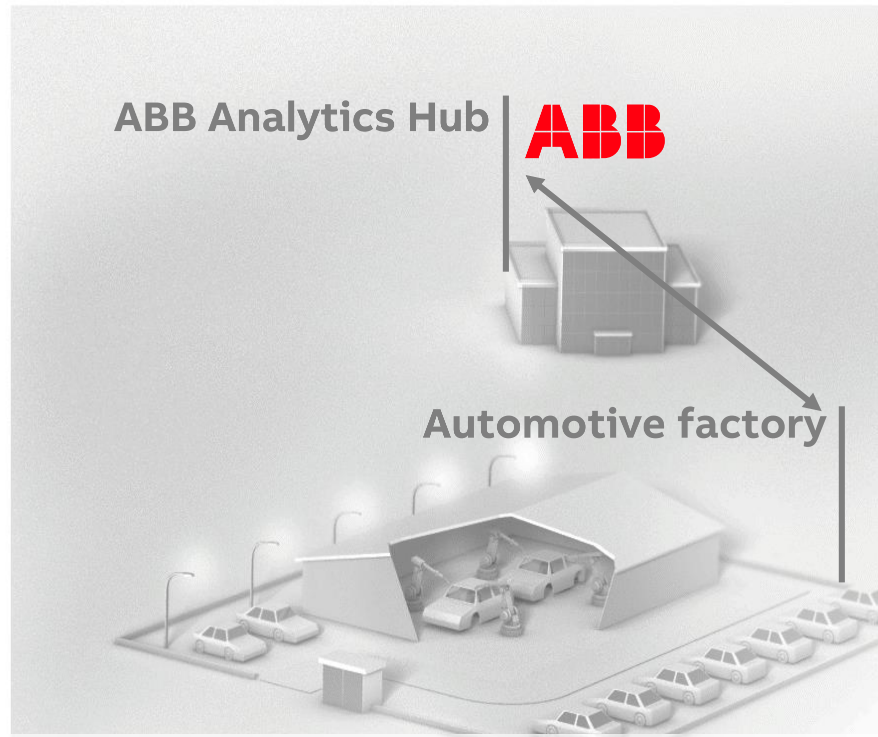


ABB unlocks significant customer value through digital

Optimizing planning and production



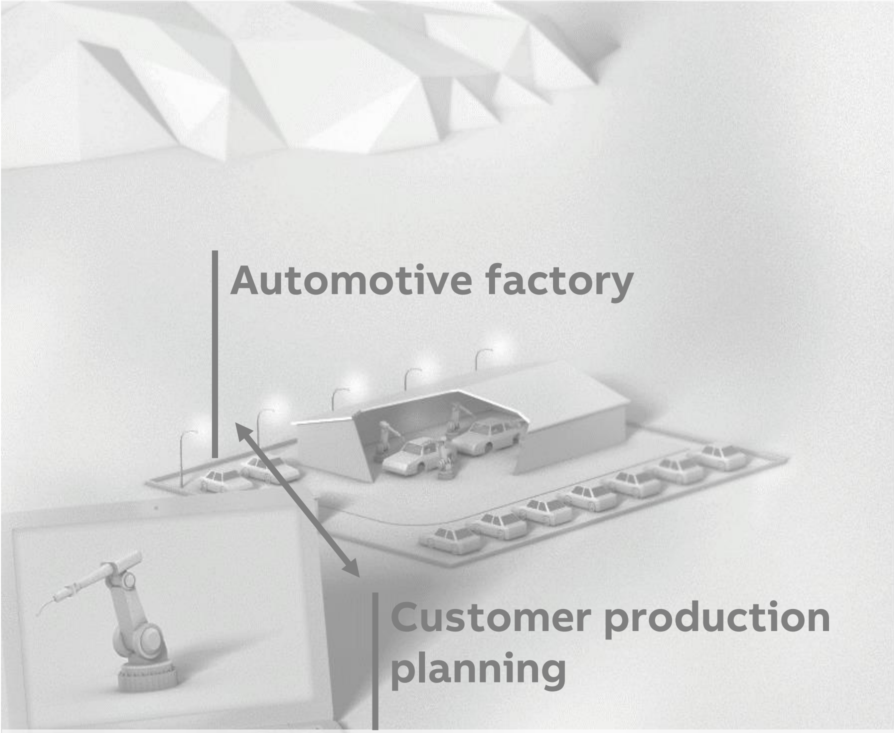
25% reduction in installation costs



25% reduction in unplanned down-time

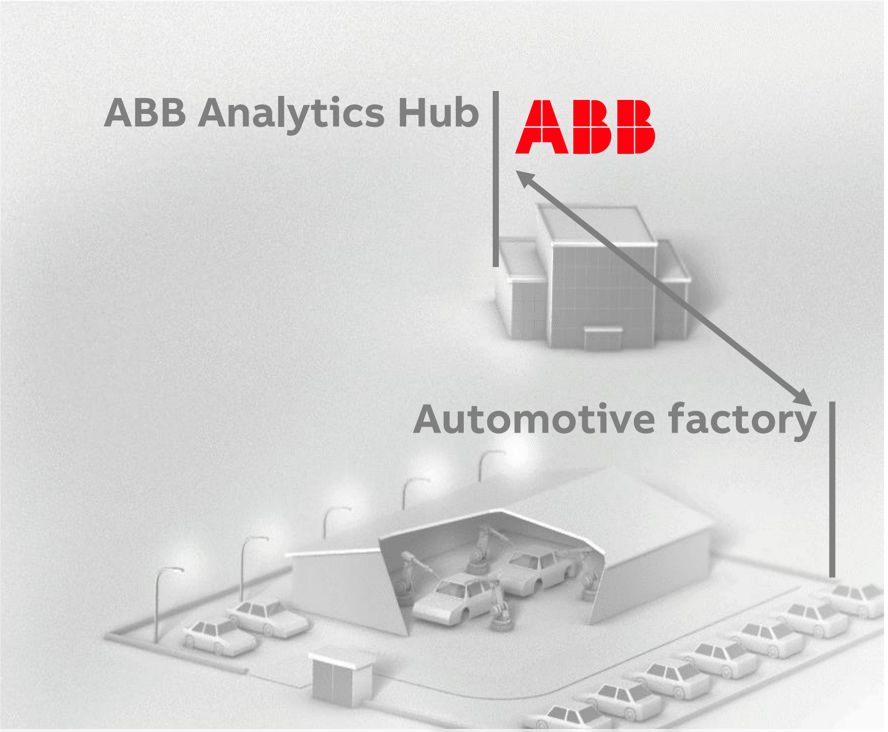
ABB unlocks significant customer value through digital

Resulting in $19 mn annual savings per plant



$5 mn / plant

CAPEX savings today through software



$19 mn / plant / year

OPEX savings today through services

ABB unlocks significant customer value through digital

$15 bn in potential customer savings across the market

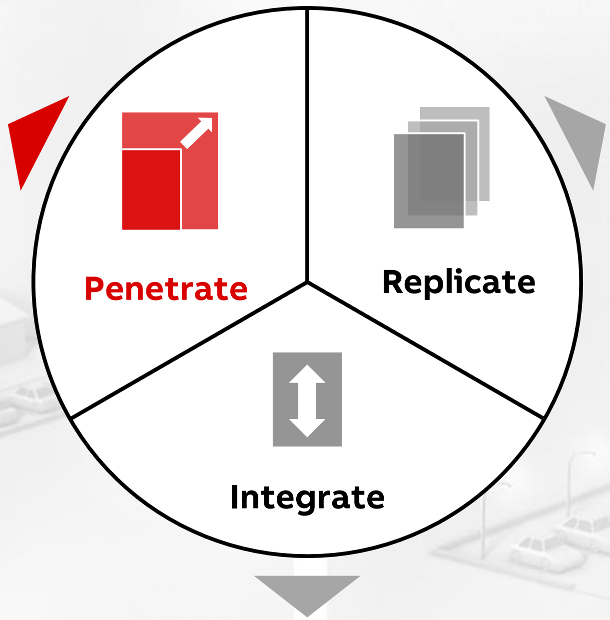
$15 bn

yearly savings potential through services and software

$19 mn / plant / year

x

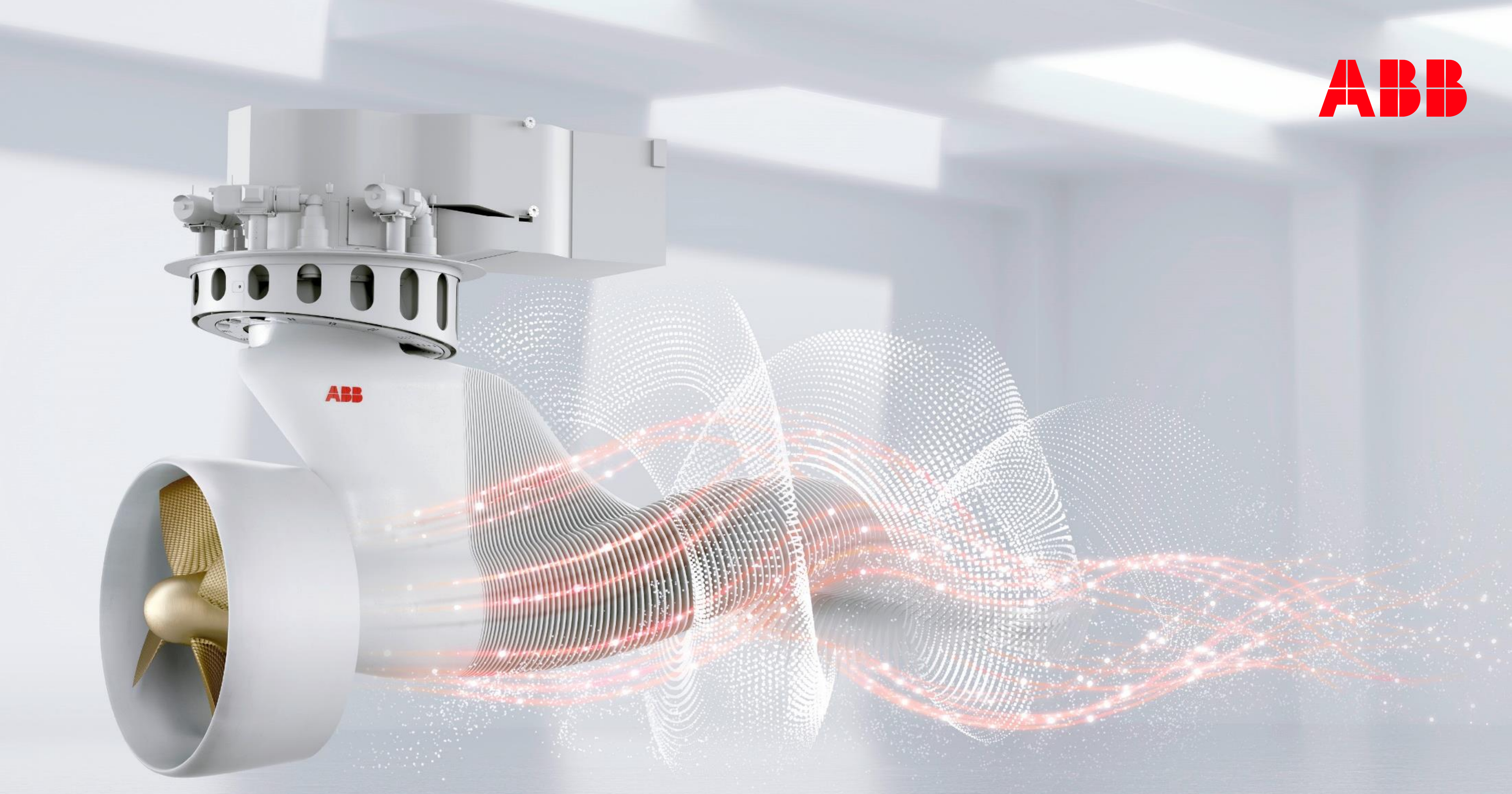
750 plants



Replicate planning and production solutions to other industries (e.g. electronics, food & beverage)

Integrate and pull-through ABB and third-party offerings

ABB



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Digital solutions for marine industry

ABB Integrated Operations

Juha Koskela, Managing Director of Business Unit Marine and Ports

ABB has a huge opportunity to drive efficiency in marine industry

Relevance

Global fleet of more than 90,000 vessels at sea[1]

Consuming >400 mn tons of fuel per year[2]

$450 bn annual OPEX spending in marine industry[3]

Challenges

New environmental, energy-efficiency and safety regulations

Overcapacity, low freight rates, slow economic growth

Incomplete and disconnected operational information

[1]Clarkson data; [2]ABB estimates [3]McKinsey & Company

ABB unlocks significant customer value through digital

From the propeller to the cloud – ABB Integrated Operations closes the loop

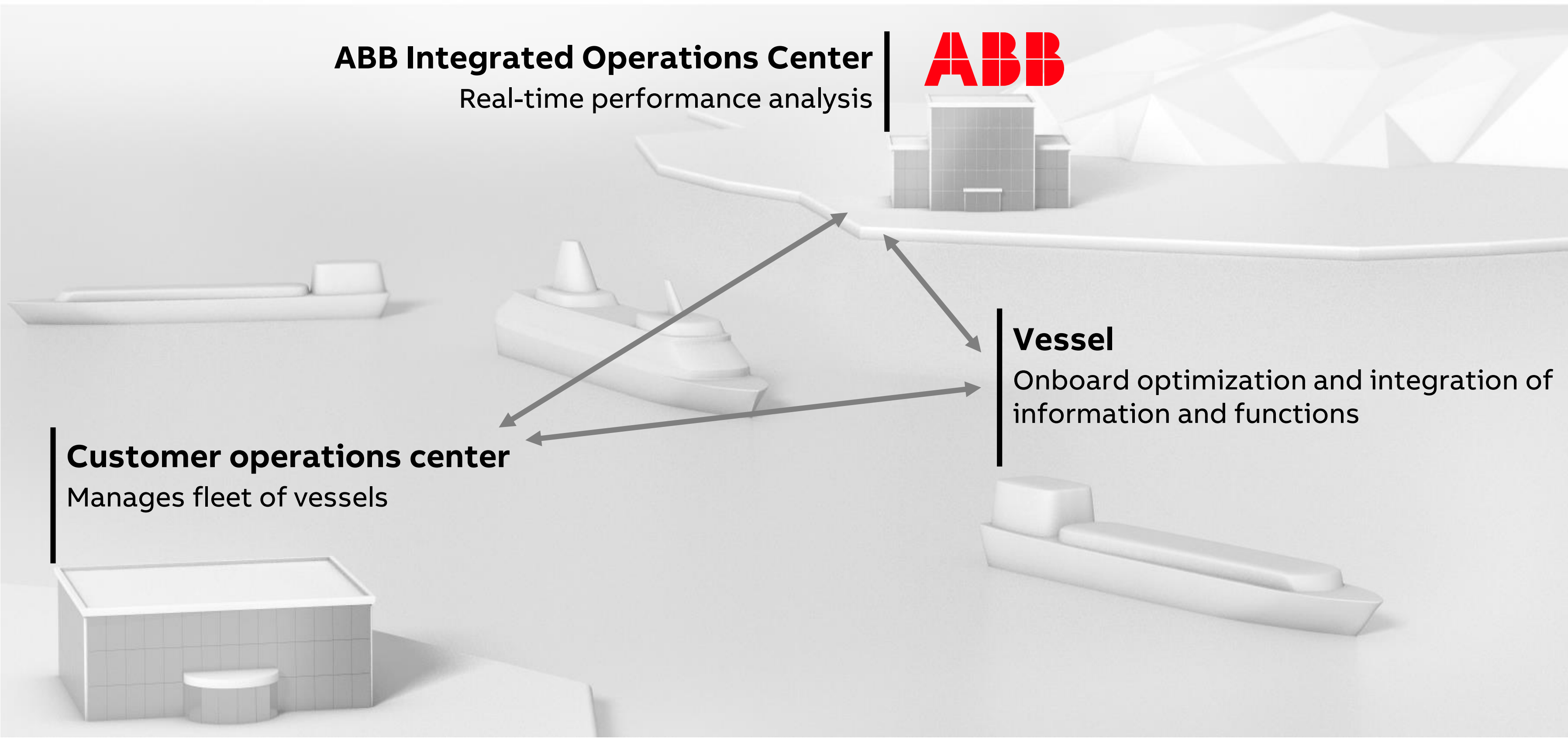
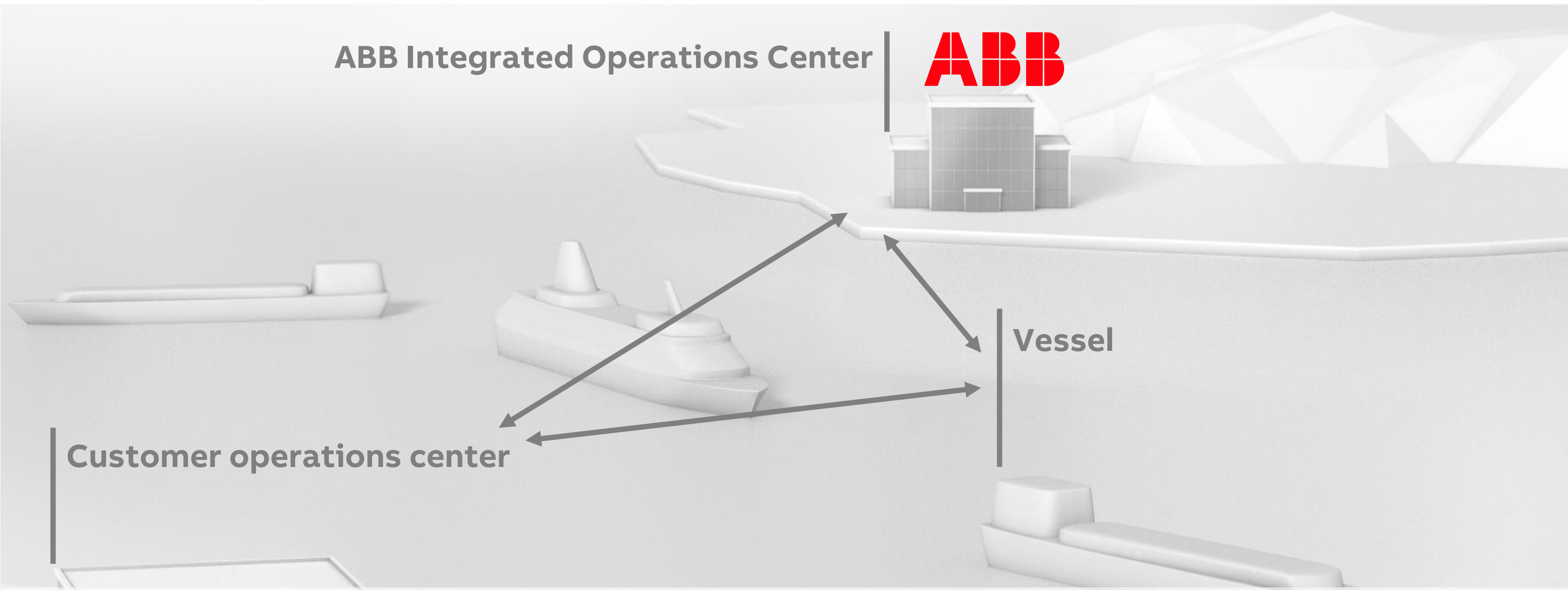


ABB unlocks significant customer value through digital

Higher productivity in overall operations and on the vessel

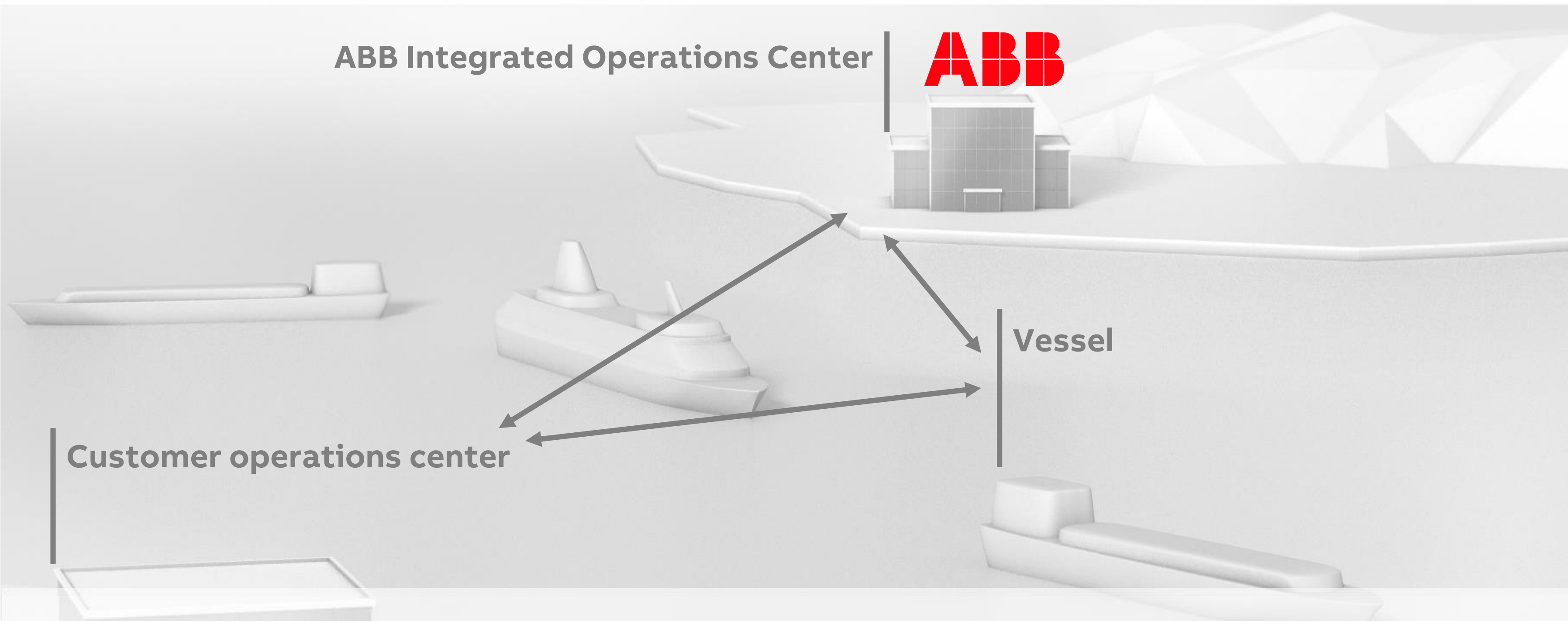


20% savings
in administration and coordination

20% savings in maintenance and repairs
Up to 5% fuel savings

ABB unlocks significant customer value through digital

Resulting in $350,000 savings per vessel



$350,000 / average vessel / year savings today through services and software

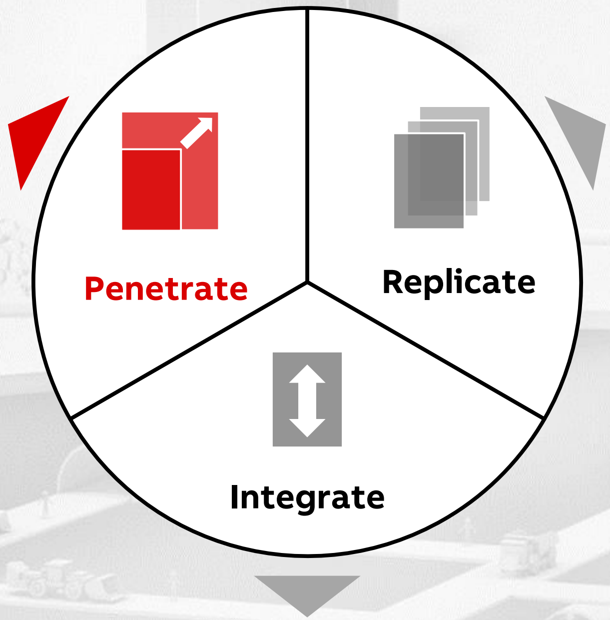
ABB unlocks significant customer value through digital

$32 bn in potential customer savings across the market

$32 bn

yearly savings potential
through services and software

$350,000 / vessel / year
x
90,000 vessels



Replicate
Integrated Operations solutions to other ABB customer sectors (e.g., ports, mining, oil & gas, pulp & paper, power generation)

Integrate and pull-through ABB and third-party offerings

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Digital solutions for buildings

ABB's connected, integrated control offering

Mike Mustapha, Managing Director of Business Unit Building Products

ABB has a huge opportunity to drive digitalization in buildings

Relevance

50% of the world's population live in cities, 70% in 2050[1]

Buildings consume approximately 60% of the world's electricity[2]

$600 bn annual OPEX spending on buildings[3]

Challenges

Inefficient energy use

Interoperability of intelligent solutions

Increasing speed of innovation requires future-proof platforms

[1]UN; [2]UNEP; [3]McKinsey & Company

ABB unlocks significant customer value through digital

Intelligent building functions controlled by communications protocols

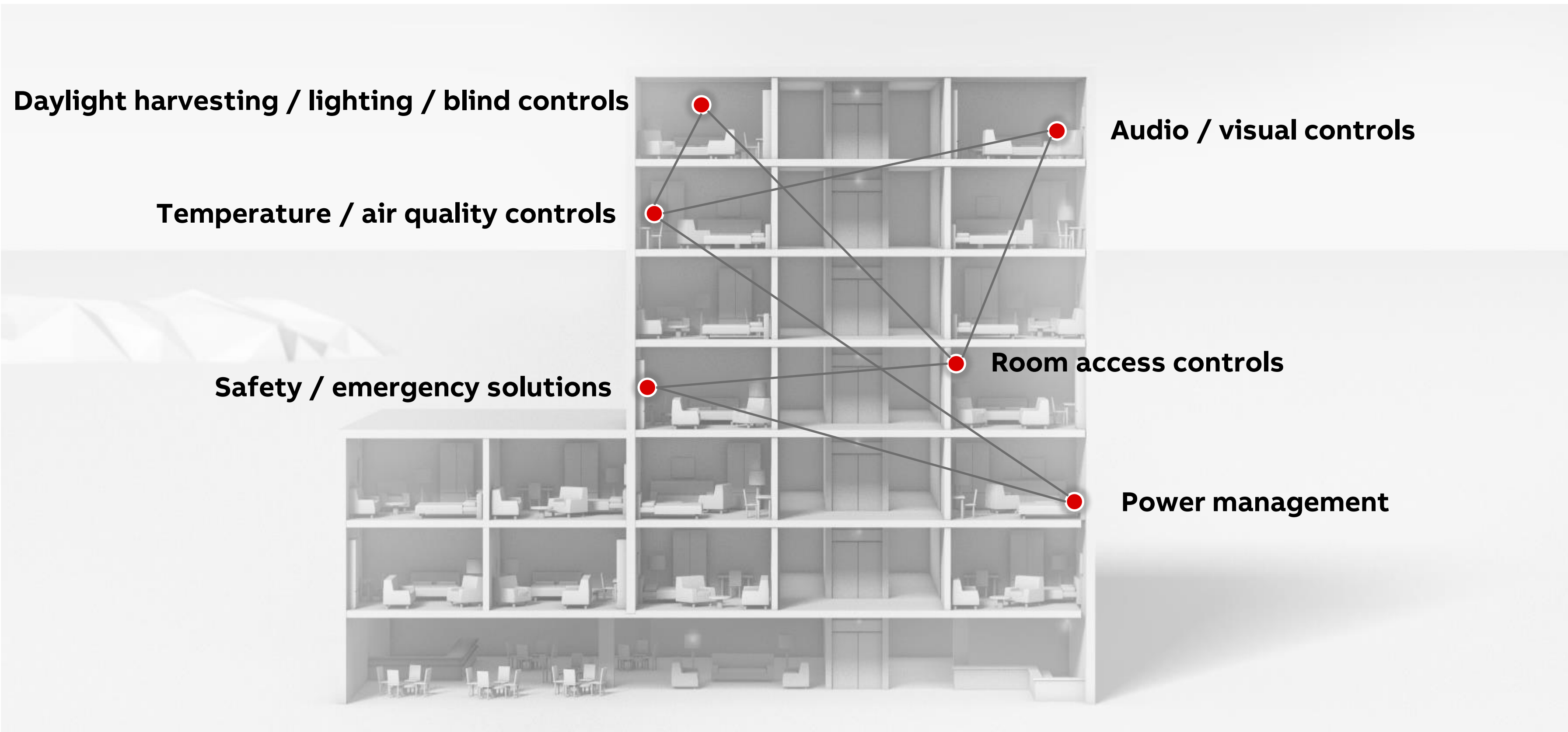
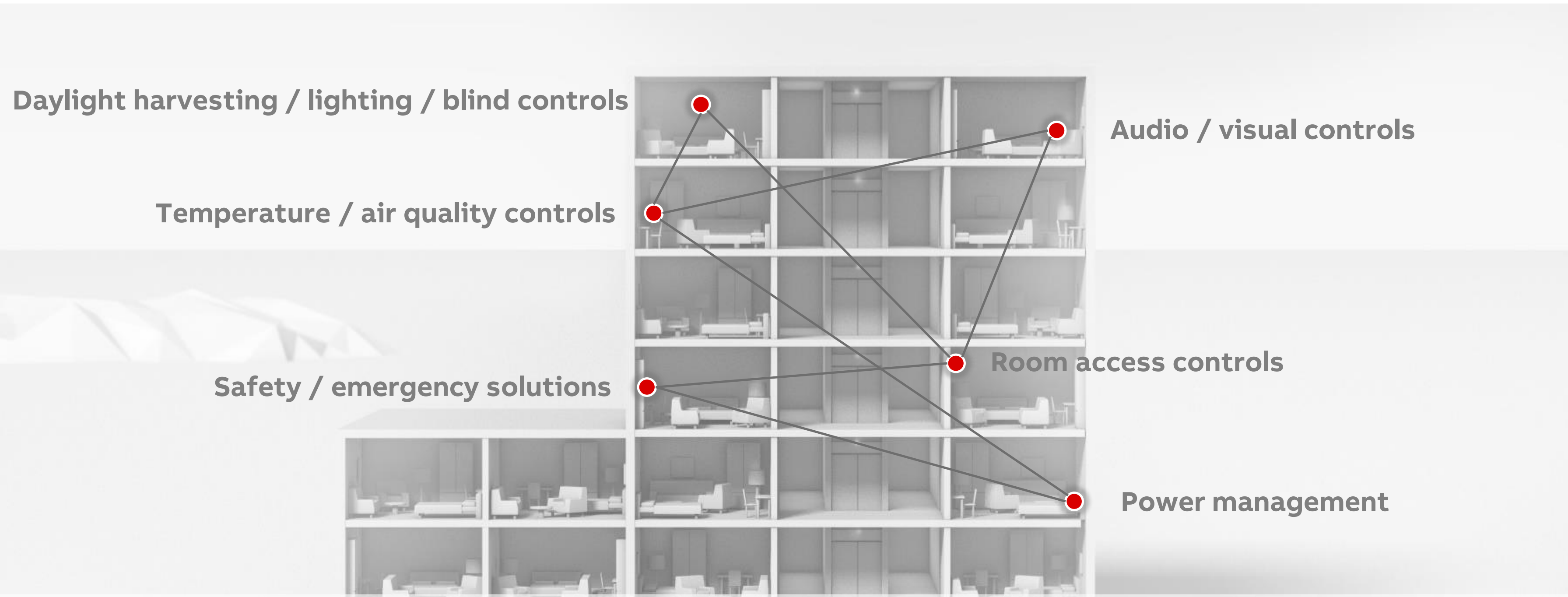


ABB unlocks significant customer value through digital

Making buildings smart with end-to-end solutions



Up to 30% energy savings and **20% lower maintenance costs** in intelligent buildings

ABB unlocks significant customer value through digital

$15 bn in potential customer savings throughout the hospitality buildings market

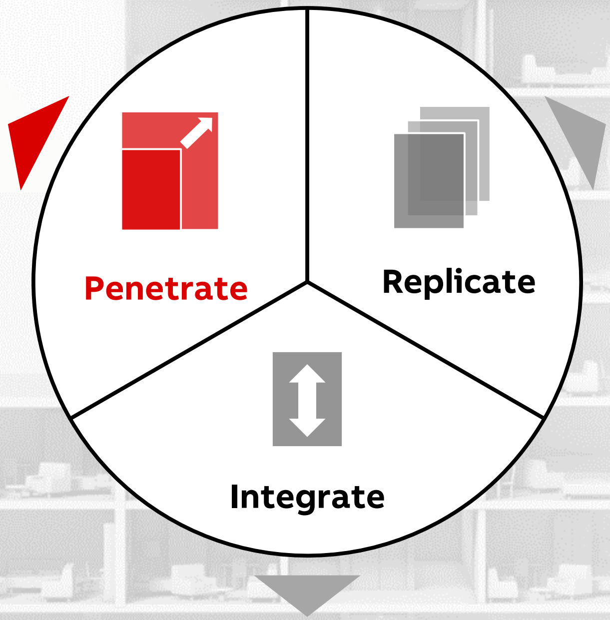
$15 bn

yearly savings potential
through building control

$2,500 / hotel room / year

x

5.8 mn rooms in 4/5 star hotels
(top 10 hotel chains)



Replicate
smart building equipment
to shopping malls, airports,
offices, sport arenas, etc.

Integrate and pull-through
ABB and third-party offerings

ABB

Customer value creation and ABB opportunity to capture

Showcases in 5 markets: **$90 bn** customer saving potential

ABB opportunity: **$2 bn**

Full potential in 5 markets: **$315 bn** customer saving potential

ABB opportunity: **$6 bn**

Full potential across 15 ABB key markets: **$988 bn** customer saving potential

ABB Ability™ to grow through digital

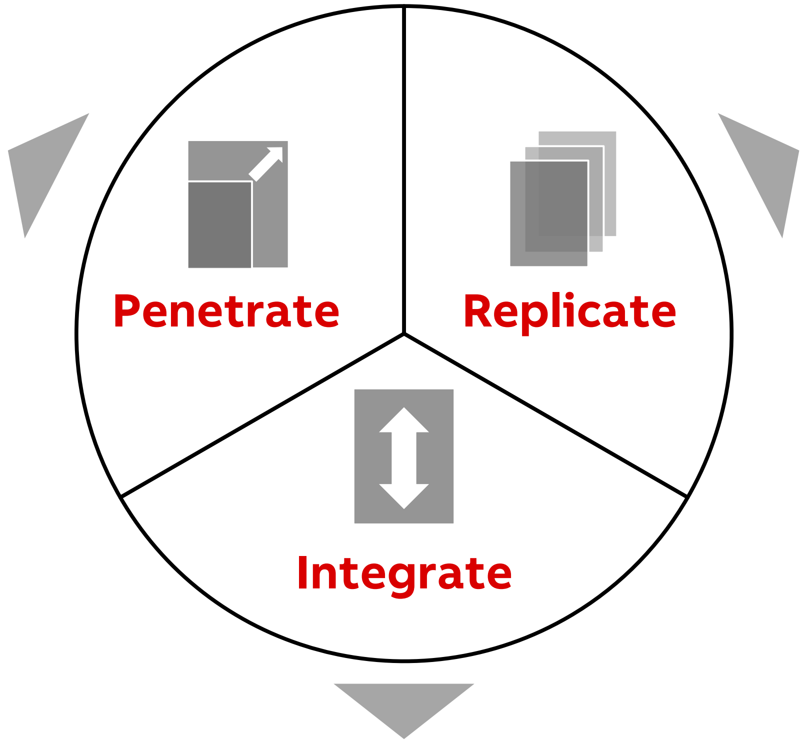
>$20 bn

annual business opportunity to be captured

What's next: integrate, penetrate, replicate

Leverage digital services across all market verticals

Penetrate:
more customers



Replicate:
repeatable solutions

Integrate: ABB Ability™

ABB Ability™

ABB