

# Implementation of the Digital Mine

Siemens Minerals Week - Santiago, July 20th to July 22nd, 2021

# Pictures of the Future for the Mining Industry

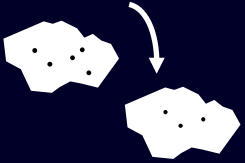
## Digitalization is a key lever to support the targets of the Mining Industry in 2030



**DIGITAL  
MINE**

Digitalization is the major key for increasing cost-efficiency and automation of operations and processes in the mining industry, especially in hazardous and hard to reach environments.

# Five fundamental drivers in the Mining Industry



## Lower Grade

- Continuous decrease of the average ore grade
- Less large high-quality deposits



## Go deeper

- From open pit to underground mine
- New underground operation



## HSSE

- Health, Safety and Security in harsh environment
- Awareness of environmental care
- Lack of skilled talents



## Costs

- CAPEX efficiency
- OPEX reduction
- Organizations and processes optimization
- Standardization



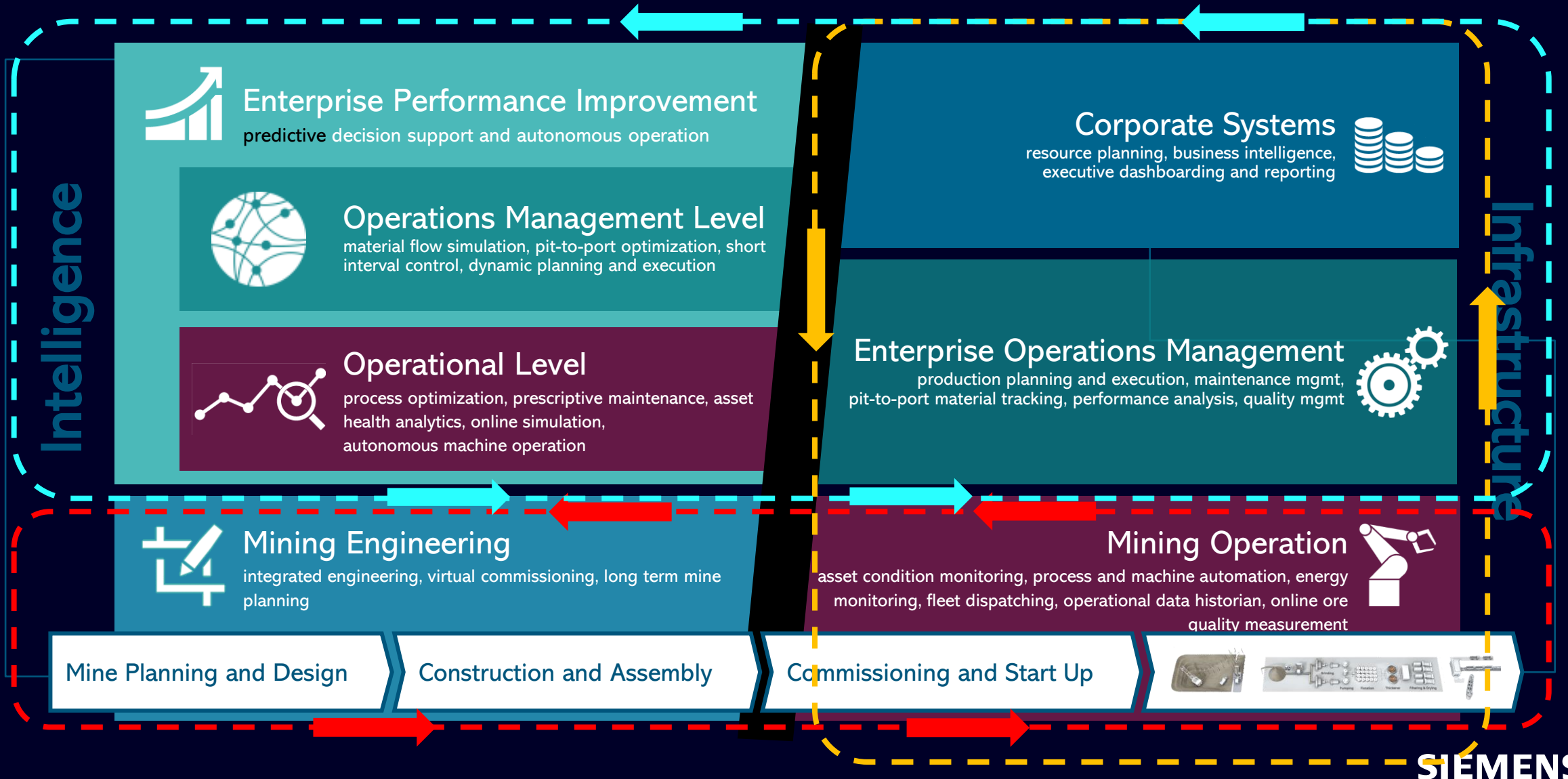
## Output

- Increasing ore recovery
- Asset Efficiency & Reliability
- Production and Resources efficiency

- Productivity is going down, costs are going up
- Development and commissioning of greenfield or expansion projects need to be accelerated
- Critical equipment has to have highest availability

# Digital Architecture for Mining Enterprise

## Empower customers to take right decisions along mining value chain



# Digital Transformation in Mining

## World today

Pandemic

Lower consumption

Copper price

Remote work

Economic crisis

Digitalization

Generation shift

## Digitalization Technologies



Cloud and Edge



Digital Twin



Big Data and Internet of Things



Reliability and operational excellence



Cyber Security



Analytics and AI

## Impacts in Industries

-20%

... global electricity demand and crude oil prices reduced by 60% in 2020

84%

...of businesses will increase remote work after COVID-19

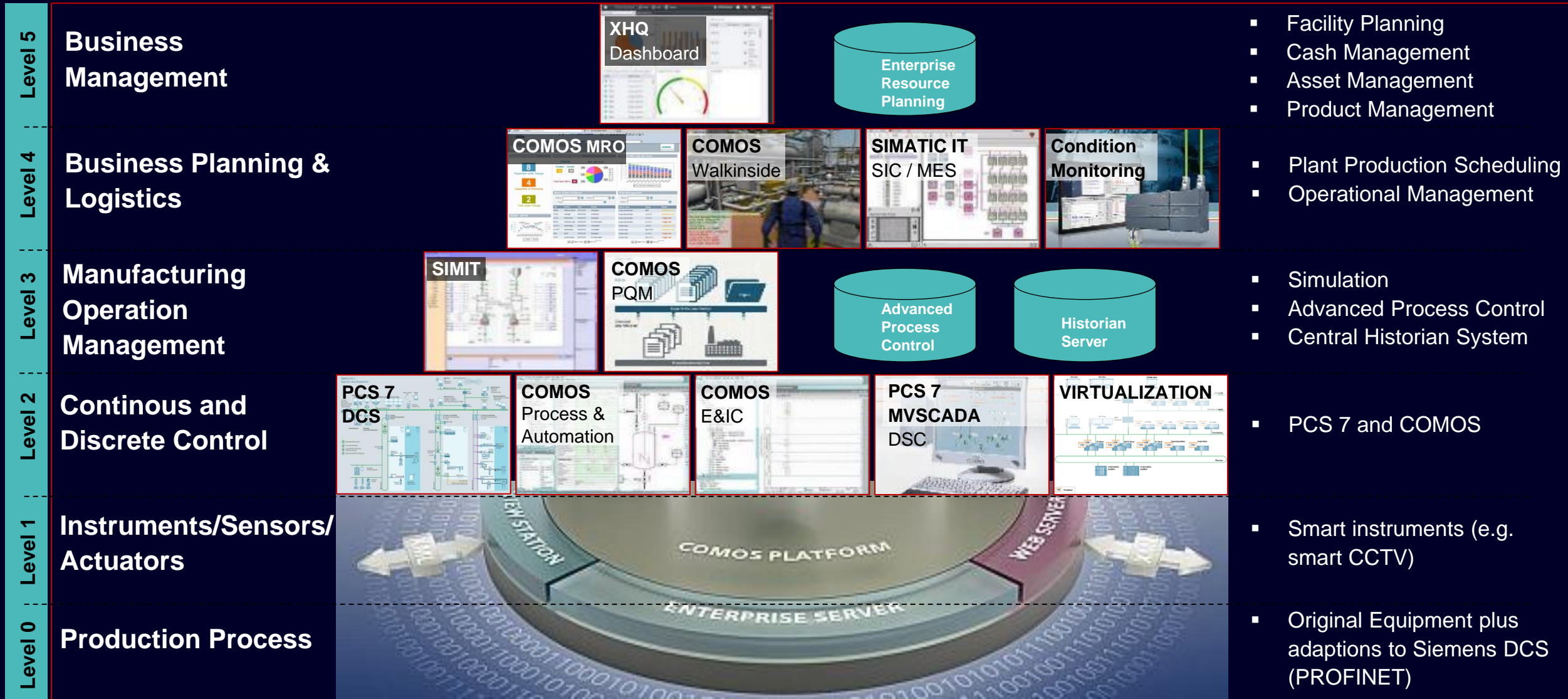
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... of millennials have the budget and authority to make enterprise technology purchases of \$10,000+. Baby Boomers are only at 23% and Gen Xers at 27%



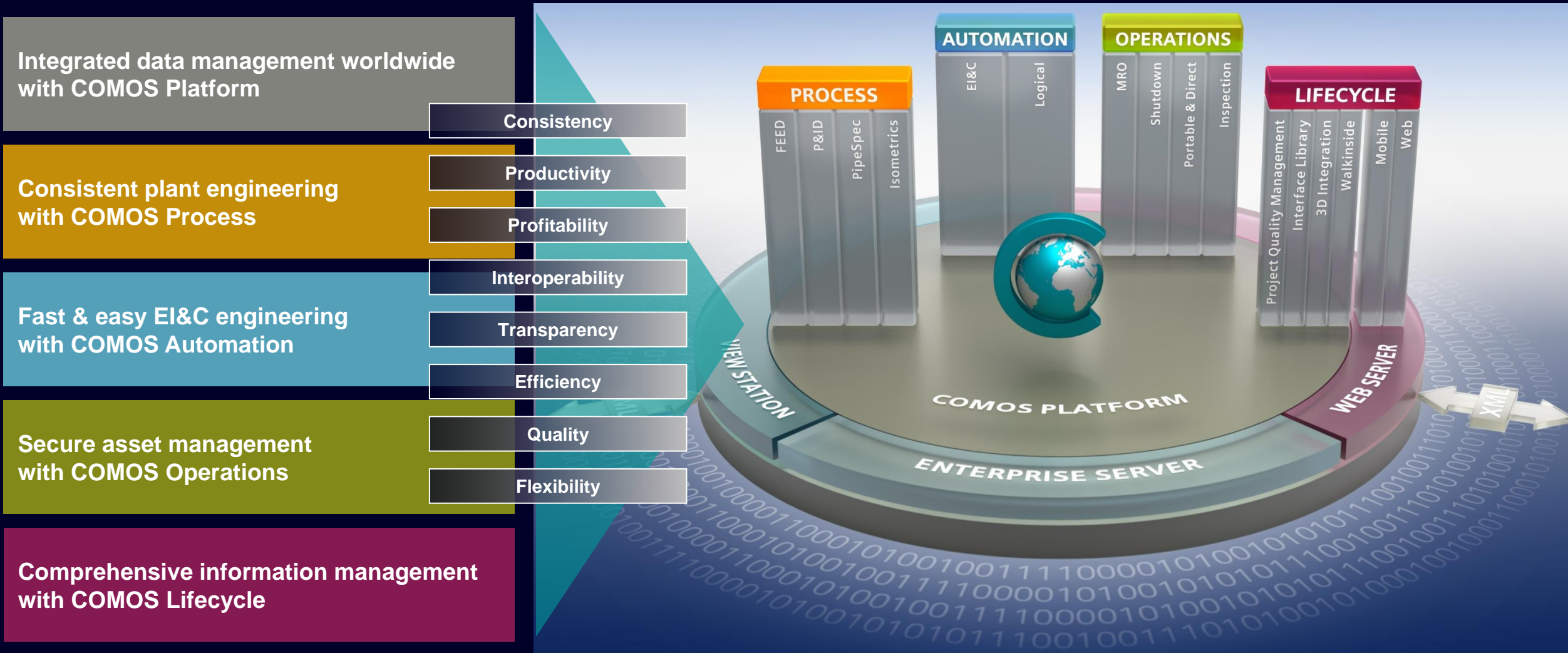
... Given the limited options of low-hanging cost savings in the current downturn, operators and suppliers are looking towards digital technologies to realize cost efficiencies

# Digital Mine Components acc. ISA 88 Part 5



# COMOS

## Maximum productivity for the entire plant lifecycle

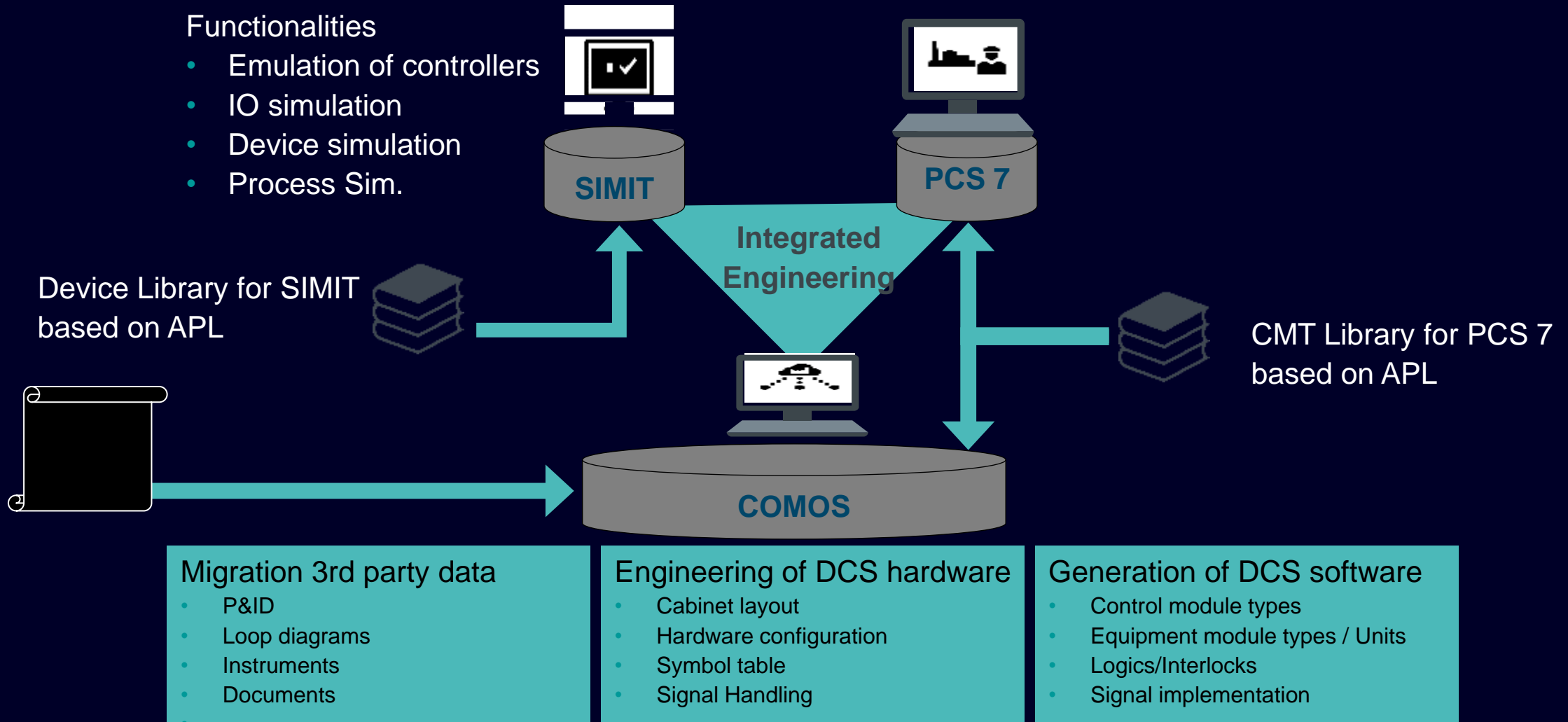


# Digital Mine

Comos as the engineering/configuration tool for PCS 7 and SIMIT

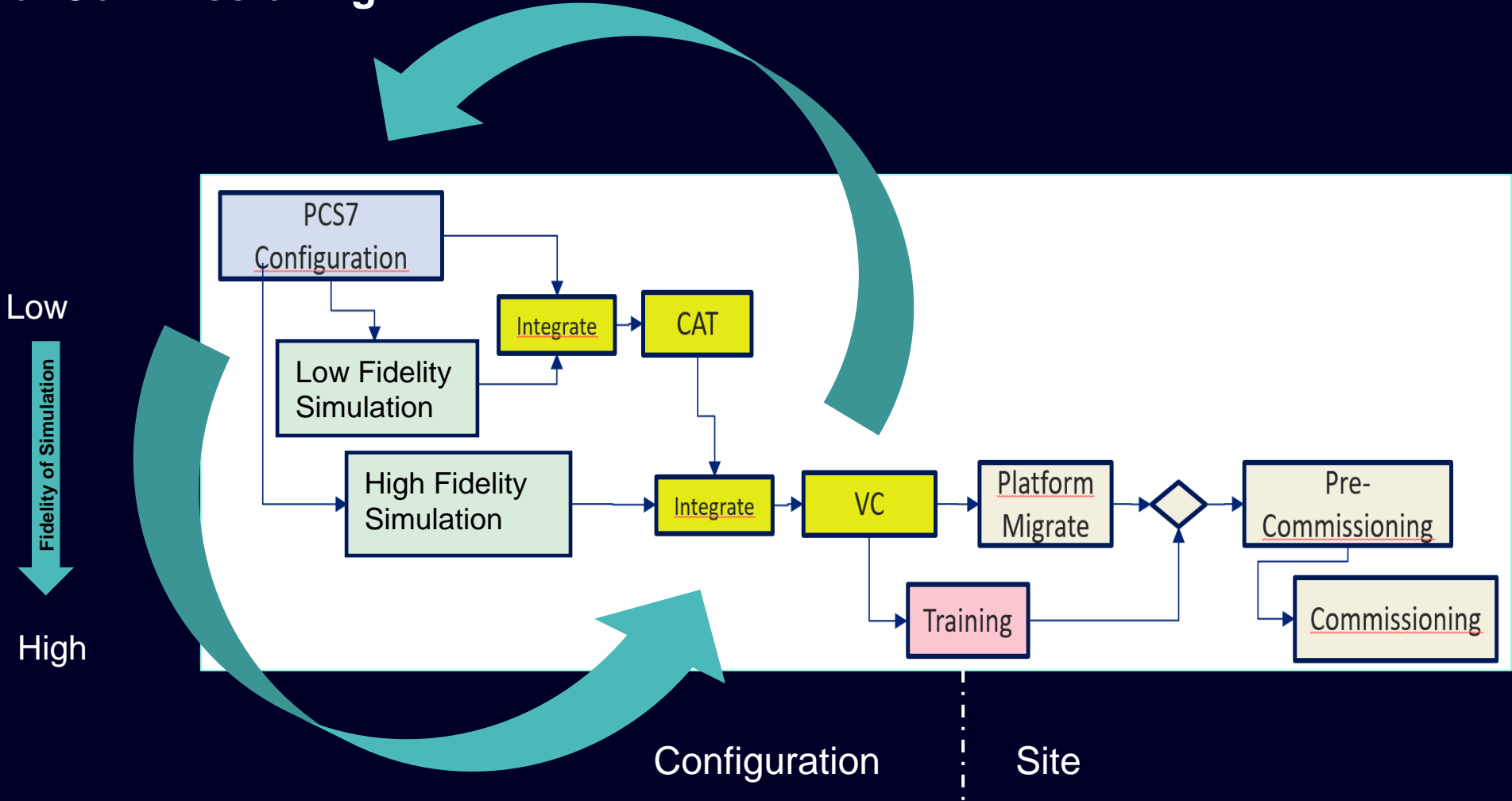
## Functionalities

- Emulation of controllers
- IO simulation
- Device simulation
- Process Sim.





# Virtual Commissioning



**XHQ**

# SIMATIC IT / MES

# | Contact

Published by Siemens 2021

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