Digital Transformation & Biomedical Transformation

Digitalization

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Professor of Digital Technologies
Digital Transformation Expert
Blockchain Expert

Definition 2

Digital is the convergence of multiple technology innovations enabled by connectivity"

"Digital transformation is the organizational change through the use of digital technologies and business models to improve performance"

- Global Center for Digital Business Transformation

Digitization & Digitalization

Digitization

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Digitization = Digital Change

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Digitalization

Digitization & Digitalization

Digitization = Digital Change

Digitalization = Digital Transformation

Digitization & Digitalization

Digitization = Digital Change

Digitalization = Digital Transformation

Digitalization = Digitization + New Digital Business Models

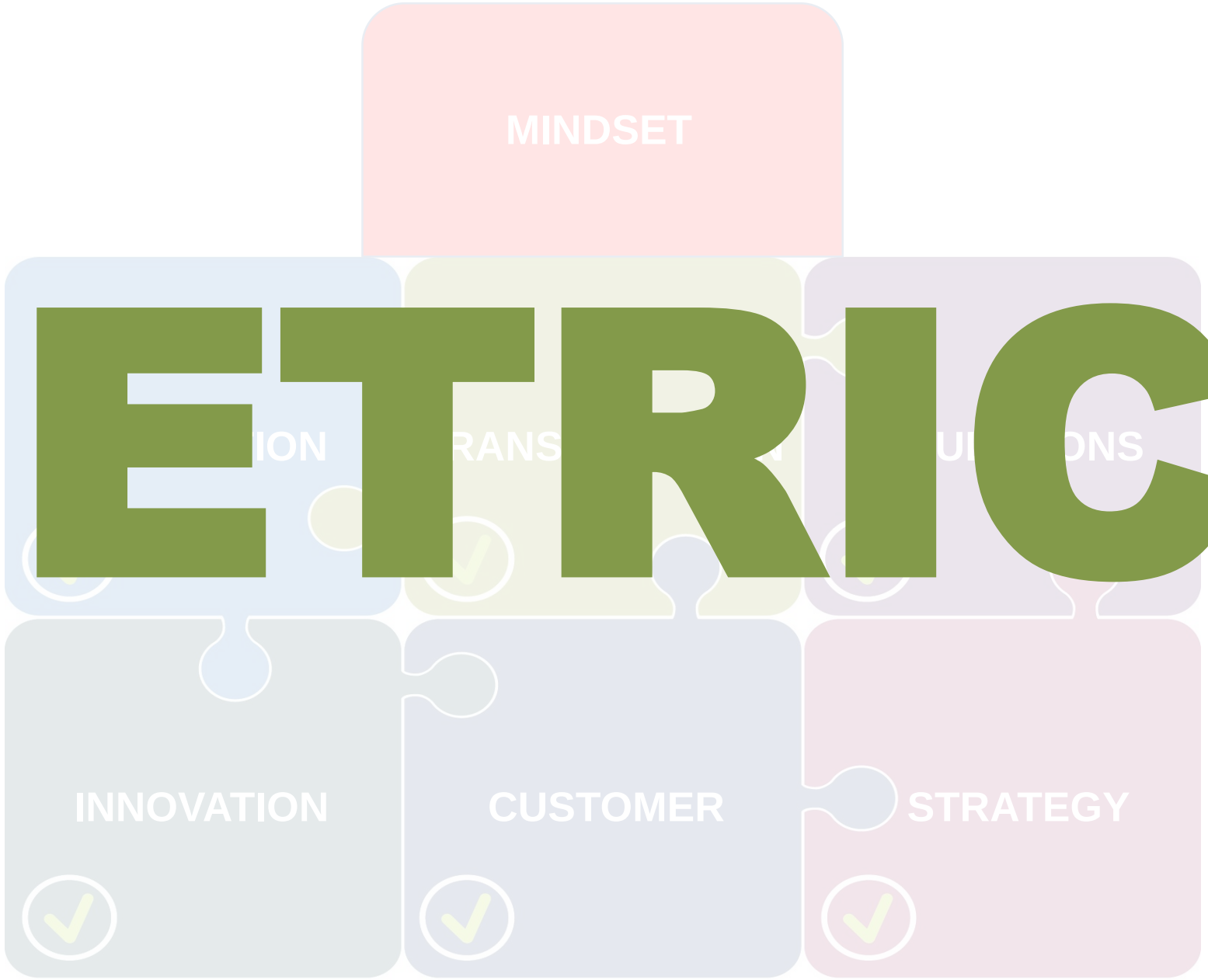
Disruptors & Disrupted

Digitalization

Uber	Airbnb	Alibaba	Amazon
Netflix	Spotify	Google	Facebook
Apple	Expert360	RoboAdvisors	Bitcoin
Skype	Linkedin	Dropbox	...

Nokia	Kodak
Blackberry	Motorola
Toys R us	Debenhams

Digitalization

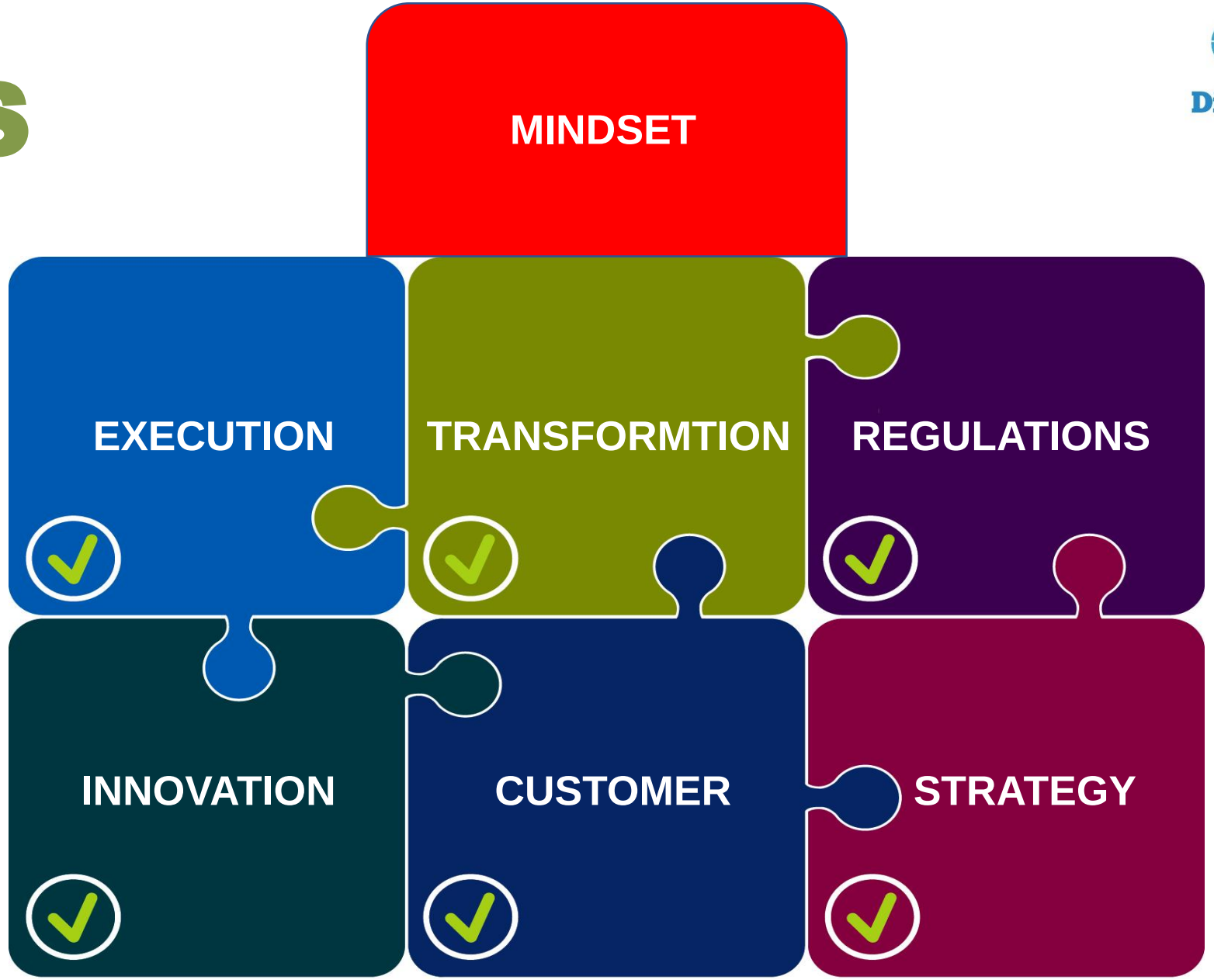


METRICS

Proposed by:
Professor Samir El-Masri

Information Classification: General

METRICS



Digitalization

Proposed by:
Professor Samir El-Masri

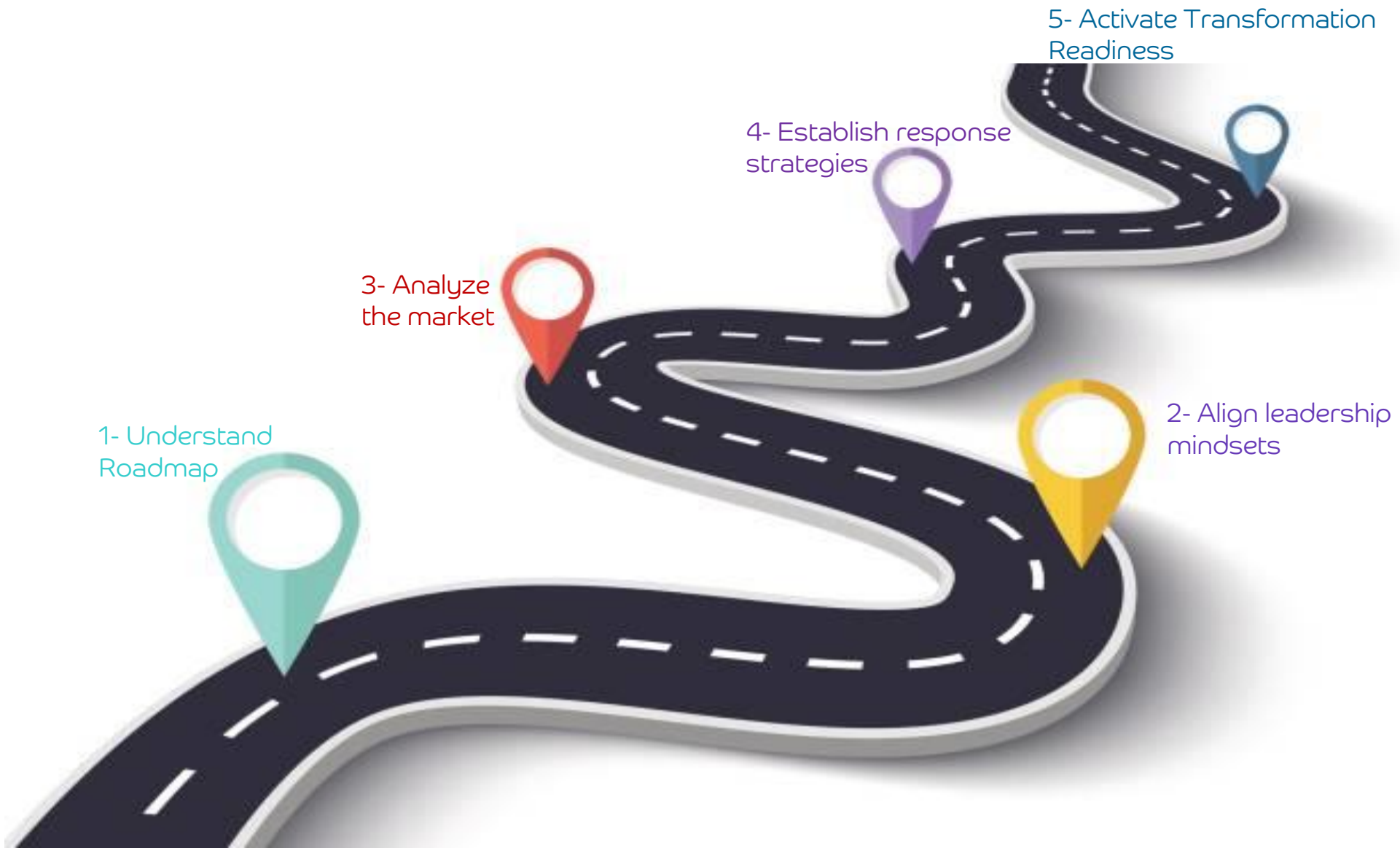
Information Classification: General

Roadmap of DT

Digitalization

Roadmap 1-6

Digitalization

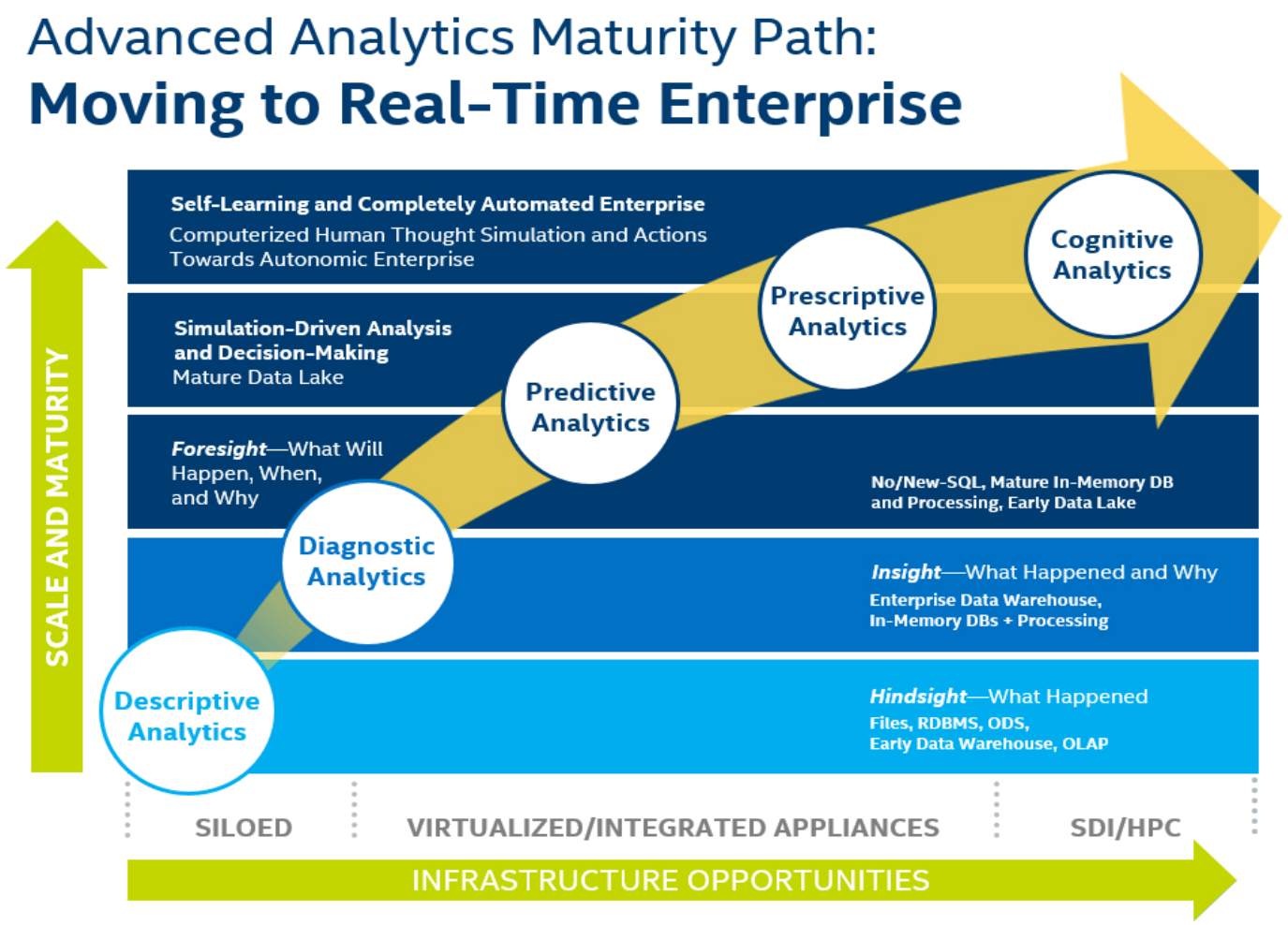


Roadmap 6-10

Digitalization

Phases: 1 - 5

Analytics and Artificial Intelligence



Artificial Intelligence

Expert System

Knowledge base

Data driven Analytical System

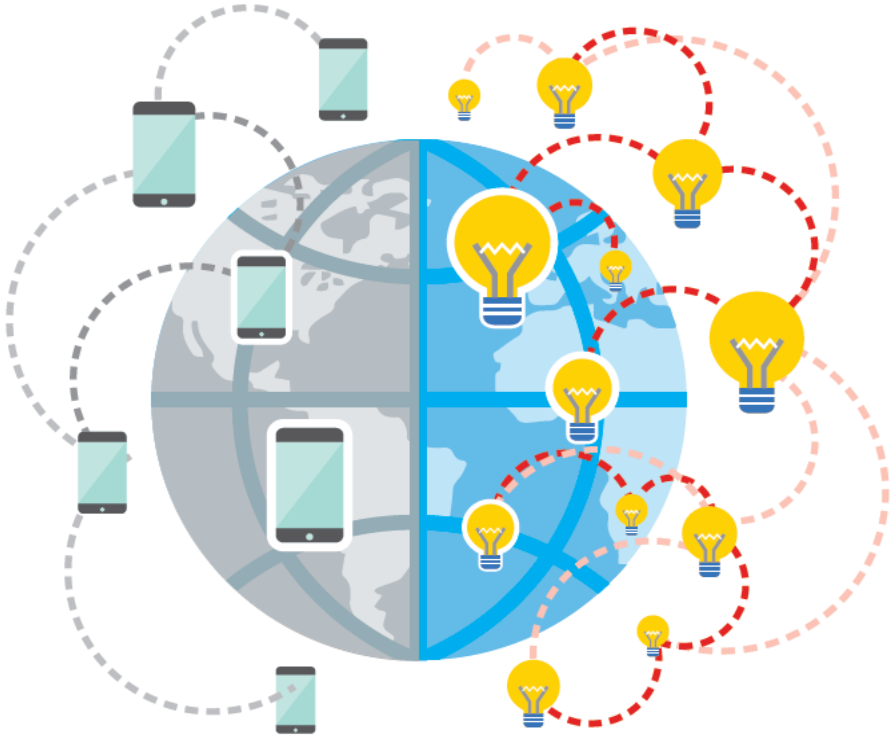
Based on Big Data Capability & Analytics

Information Classification: General

IOT & IIOT

Industrial Internet will bring $17 Trillion to the world economy by 2030

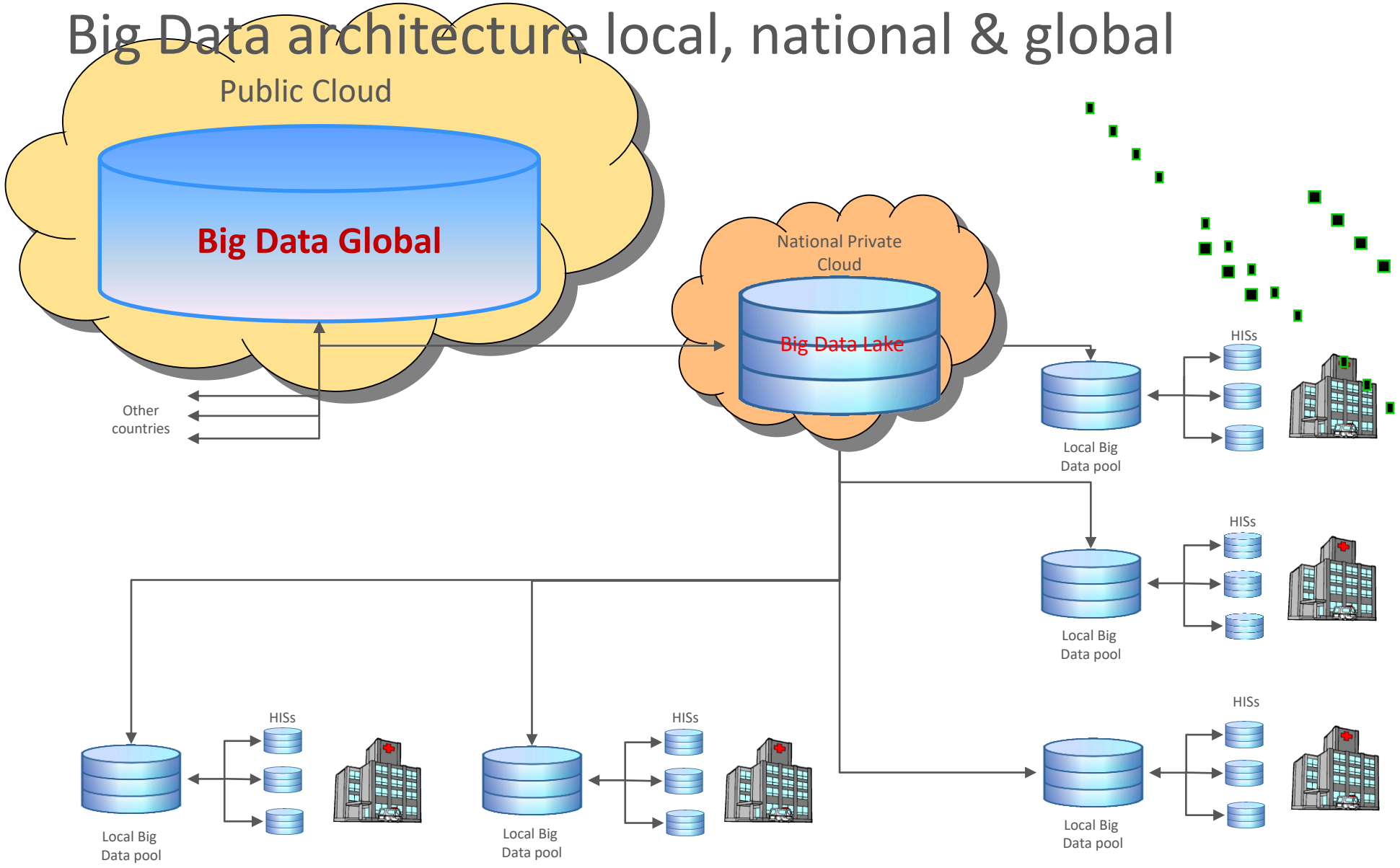
In 2015
there were about
5 billion
TOTAL
Internet-connected
devices.



While in 2020,
50 billion
machines will be
online.

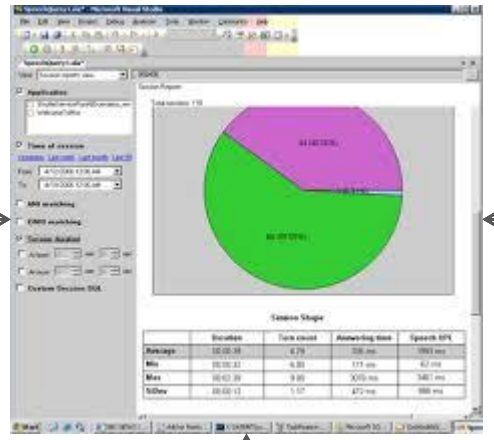
Information Classification: General

Big Data architecture local, national & global



Industrial IOT (medical images)

IOT Platform



Other Healthcare providers

Neonatal case

Neonatal monitoring and Data stream

Digitalization

- 72 hours storage
- Data taken on the top of hour

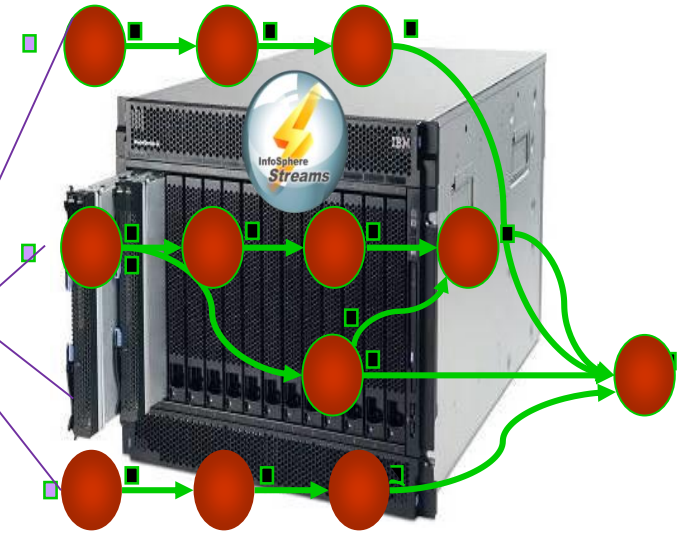
- Heart beats
  - Average 130/minute| 7800/hour
- Breathing
  - Average 35/minute | 2100/hour
- Blood oxygen levels
  - 60/minute | 3600/hour

Big Data Lake for NICU

Digitalization

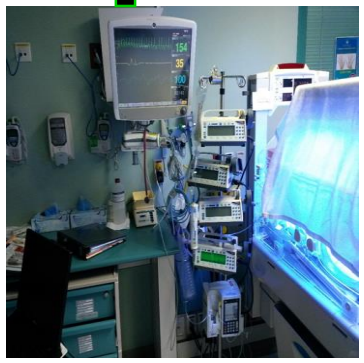
Canada

Australia



China

USA



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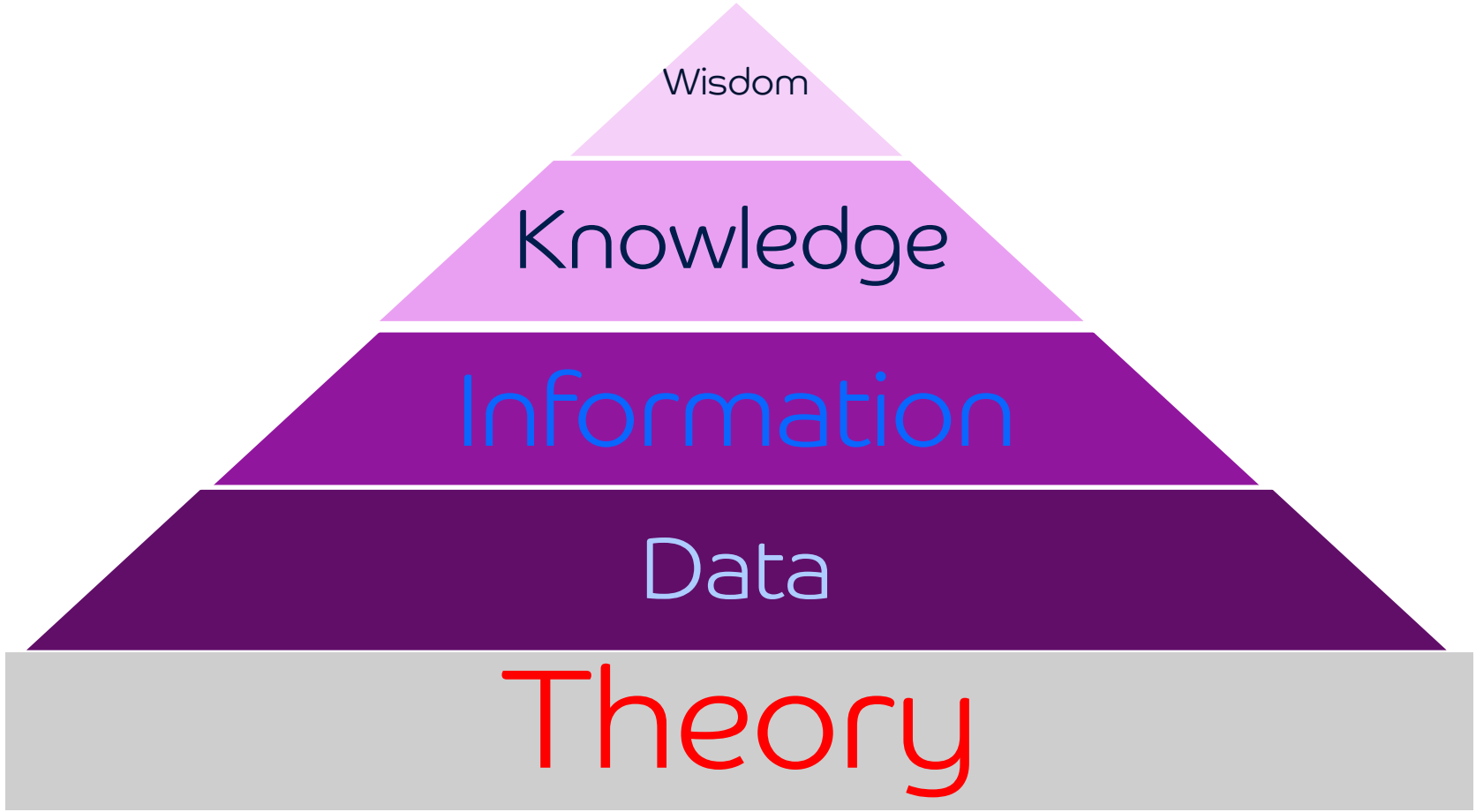
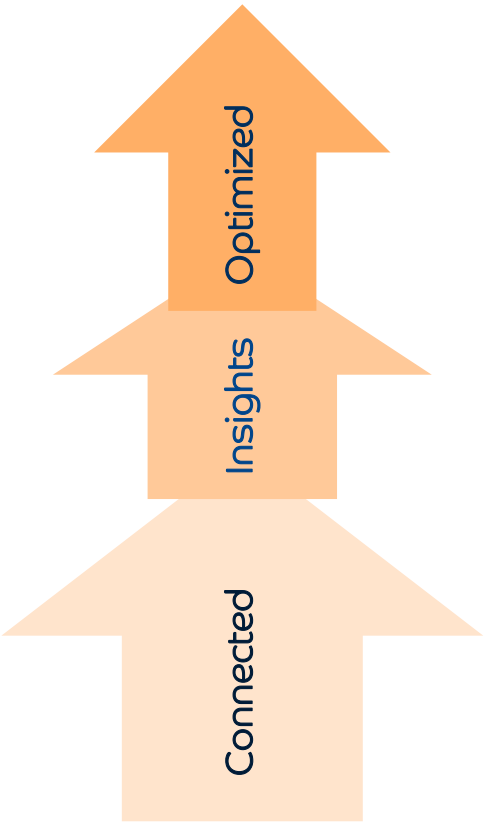
Asset Performance Management

Digitalization





The APM Journey for Biomedical Engineering

All Assets: Static & Rotating

Get Connected

MACHINE & EQUIPMENT HEALTH

- Connectivity
- Data Management
- Condition Monitoring
- Data Analysis
- Configurable Dashboards

Securely Connect Equipment

High Probability of Detection and Low False Positive Rate

Data-Rich Actionable Insights

Get Insights

RELIABILITY MANAGEMENT

Machine & Equipment Health Plus:

- Analytics Orchestration
- Analytics Catalog
- Configurable Workflows
- Event Management
- Case & Collaboration Management
- Knowledge Management

Confidence Around the Best Possible Outcomes

Identify Emerging Problems, Highest Risk Assets

Collaboration for Relevant Action

Get Optimized

MAINTENANCE OPTIMIZATION*

Reliability Management Plus:

- Performance Benchmarking
- Asset Maintenance Strategy/Scenarios
- Financially Optimized Asset Strategy
- Work Scoping, Prioritization, & Scheduler
- Inventory Optimization

Balance Performance and Reliability

Optimize Maintenance with Less Risk

Maintenance Strategy and Outage Planning

APM Outcomes

RELIABILITY
Increase availability and longer asset life

COST REDUCTION
Lower operating costs with greater efficiencies

RISK MITIGATION
Lower operations and financial risk

PROFITABLE GROWTH
Increase production for market advancement

APM Capabilities for Industrial Companies

- Monitoring and Diagnostics
- Asset Lifecycle Management
- Predictive Maintenance
- Operations Intelligence

ANALYTIC INSIGHTS

The Industrial Internet Platform

- Secure Connected Assets
- Industrial Data Management
- Industrial Data Science
- Mobility and Cloud

Digitalization

Time-based Maintenance Condition-based Maintenance

- IOT
- Blockchain
- AI

Digitalization