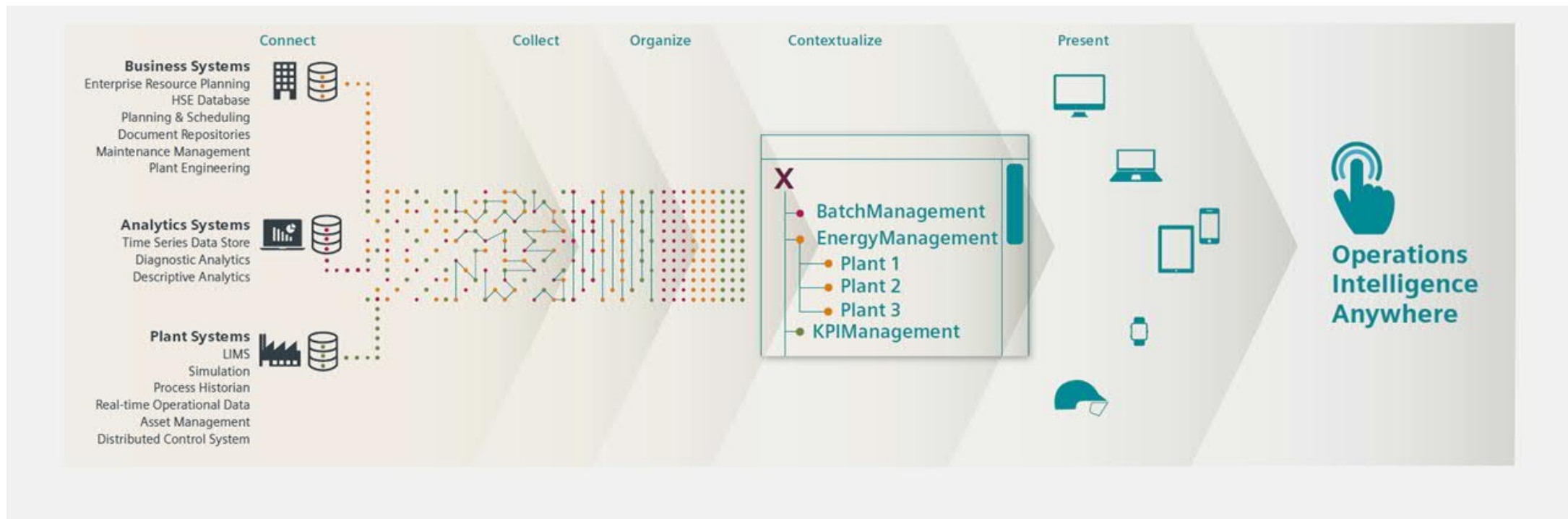


# Or here? Operations intelligence through asset transparency

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## Chemical Industry 4.0 A Formula for Investment

A study of the UK chemical industry's digital transformation and the building blocks of reliable return on investment from Industry 4.0

[siemens.co.uk/chemical](http://siemens.co.uk/chemical)

## Management summary

- Digital transformation is widely recognised as an imperative for the UK chemical industry.
- Senior management are demanding that the business case for investment in Industry 4.0 offers reliable return on investment.
- Experts from the sector interviewed for this study have outlined key building blocks - effective Industry 4.0 investments for the UK chemical industry - which help to deliver an accumulating return, while enhancing service levels offered to customers.

Typically, the key investment building blocks were felt to be:-



1. **Digitalise the physical environment**, so that equipment, plant and logistics can be controlled and automated through a digital interface. Many such feeds already exist in the chemical industry, but an intelligent audit is required to identify gaps.



2. **Standardise data protocols**, so that all digital data feeds can be easily combined, analysed and deployed, via a common standards data pool. Most firms are leaving legacy systems 'where they lie' and deploying ETL (Extract, Transform Load) interfaces to render data in common formats.



3. **Invest in applications enabled by the data pool**. Applications with high likely return on investment were identified as: plant monitoring; predictive maintenance; predictive quality; customised production; R&D optimisation; plant design; materials handling.



4. **Flow data exchange to the upstream supply chain**. This upstream connectivity is being driven by larger 'buyers' in the supply chain, embraces connections to contract manufacturers, and enhances 'track and trace' capabilities.



5. **Make the digital connection to customers**. As the industry offers increasing value through service, upstream digital integration needs to be reliable before offering integration to the customer (unless services can be offered without connection to suppliers).

# Linking to the main chemical industry challenges...

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Efficiency

Safety

Security

Flexibility

Productivity

Availability

24



# Unlocking Data in the Field

Highly  
Reliable  
IT Infra-  
structure

## Monitoring and Optimization

**NOA Application Platform**  
Valve Predictive Maintenance, NE131/NOA information model, Identification/life List



1 Non-Siemens components NOA information model

## Core Process Control

**NOA Access Point**  
PDM MS



**NOA Remote Connector**  
Sinema RC

**NOA Connector**  
PCS 7 ES/OS/MS/PDM

**CPU410-5H**

**NOA IT/OT Switch**  
XC200

**NOA Connector**  
IOT 2040

RIO w/o HART

**NOA Connector**  
CFU PA

**ET 200SP**  
HA

P420 (HART)

PS2 (PB PA)

LR560 (PB PA)

LR250 (HART)

4 ... 20mA

PROFIBUS PA

SCALANCE M  
Ethernet

PROFINET

Deterministic  
Control  
System

## IoT Initiatives

Condition Monitoring

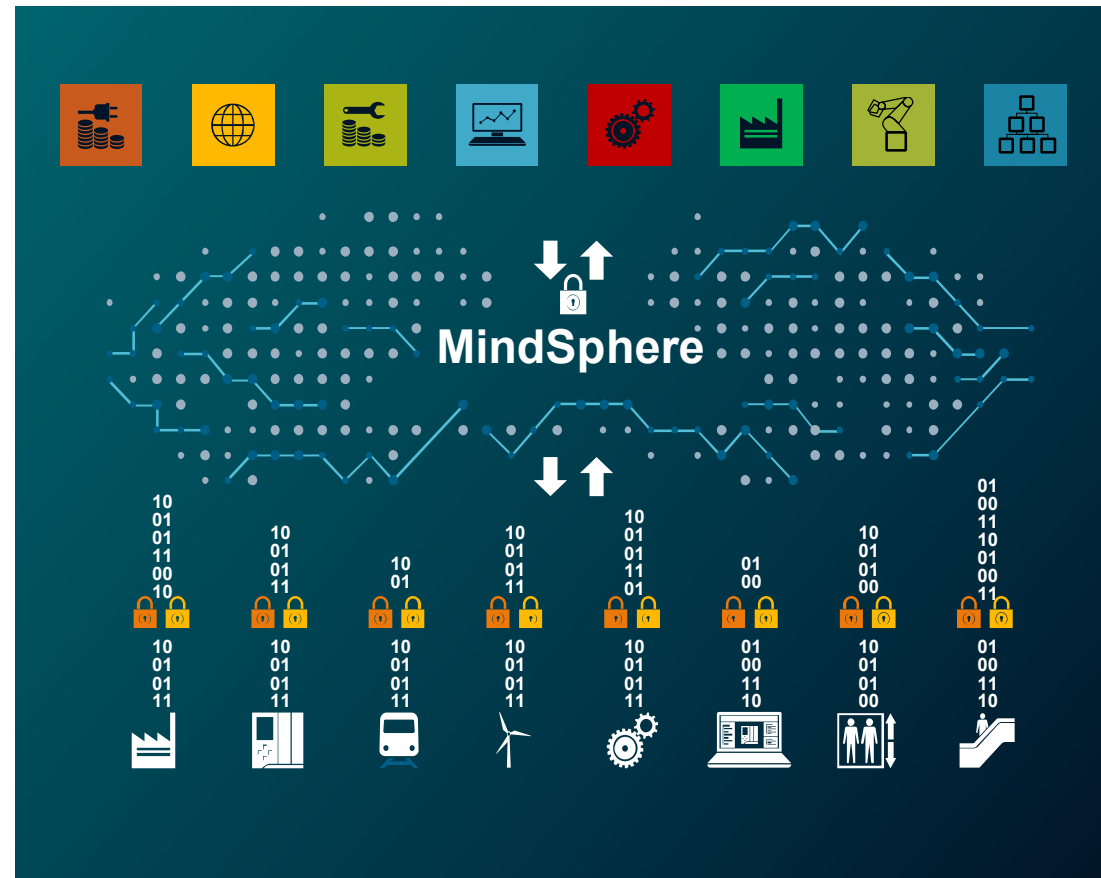
Operational Transparency

Predictive Maintenance

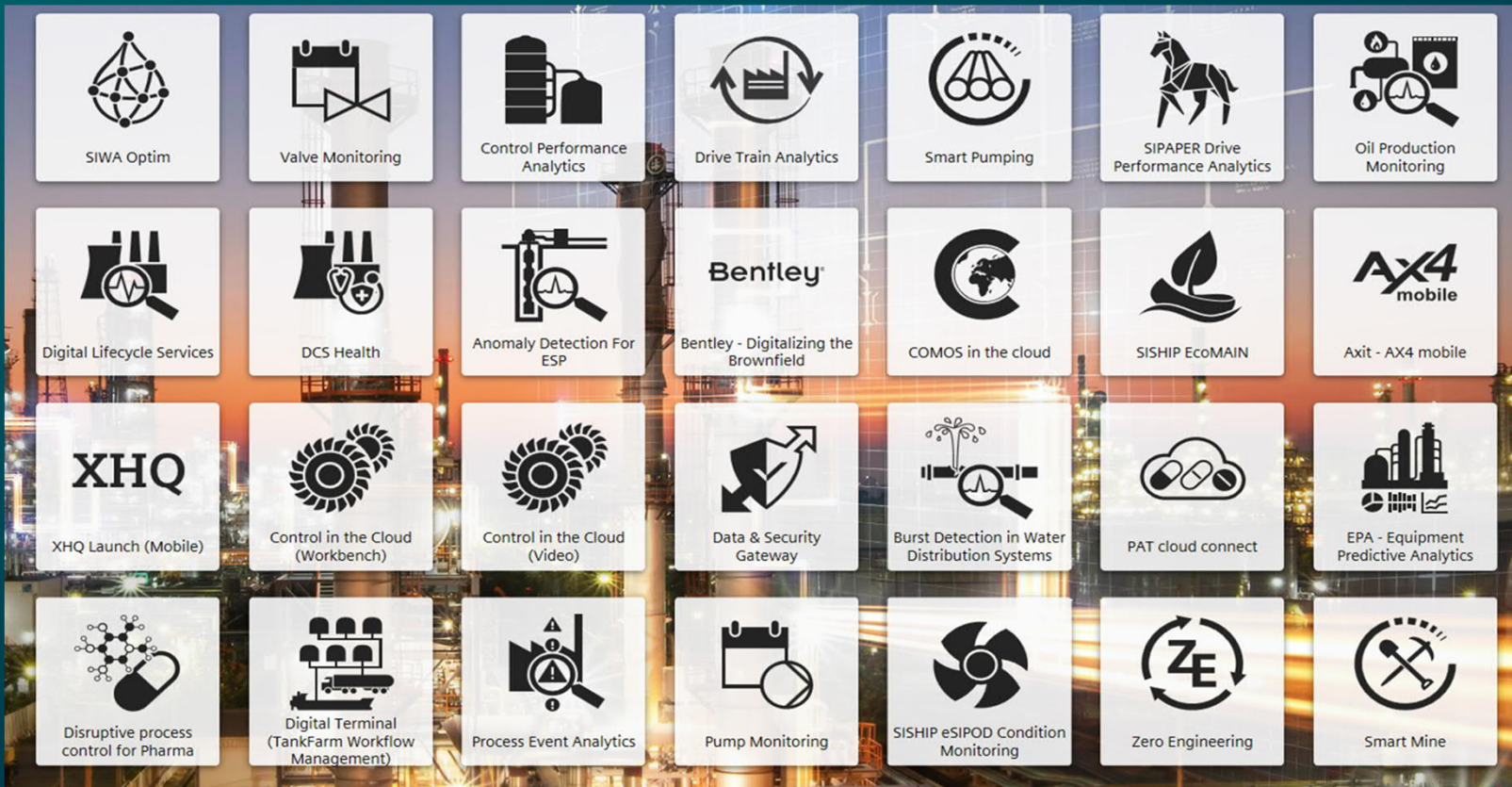
Performance Intelligence

Complete Digital Twin

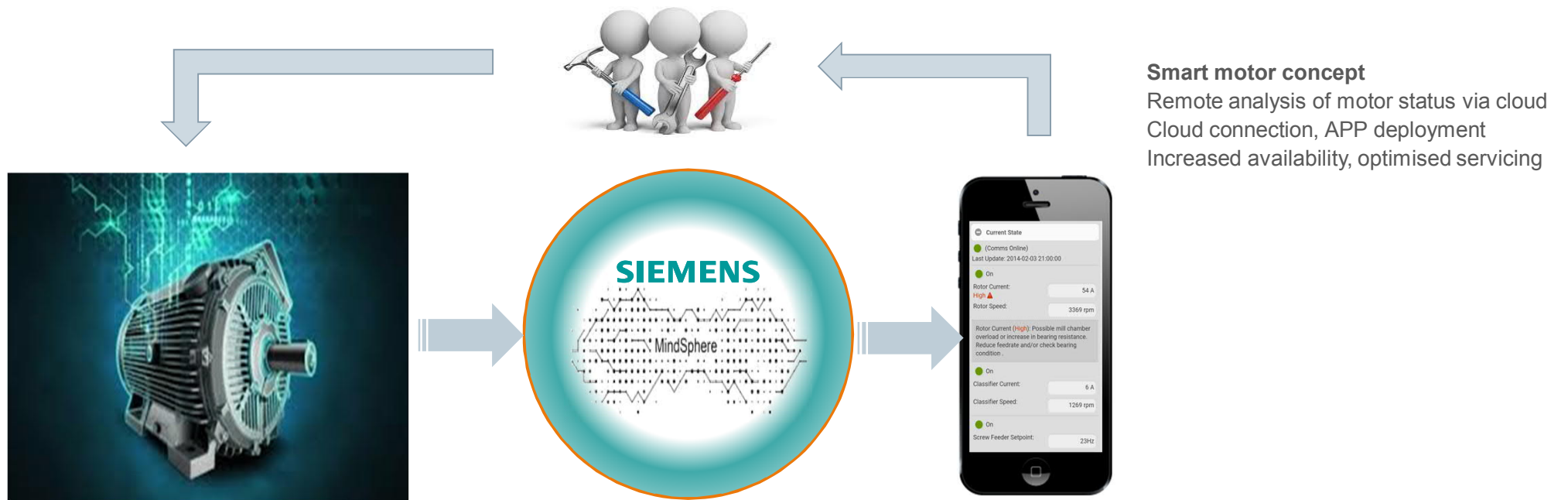
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# MindApps in Development



## Start digital asset management in the field.....



## Finish with visibility across asset silos (Escape your data jail)

- **Create Visibility**
- **Empower Decision Support**
- **Improve Efficiency**



Lab / Quality  
Data



Business Data  
& Supply Chain



Process & Operations  
Data



Inventory Data



Targets & KPIs



HSE Data



Planning &  
Scheduling



Maintenance  
Data



Documents



## Government Industrial Strategy – Made Smarter 2017

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<https://www.gov.uk/government/publications/made-smarter-review>

### Impact of Industrial digitalisation ...

- Boost UK manufacturing by £455bn
- Increase sector growth up to 3% a year
- Create a net gain of 175,000 jobs

**‘Industry-led review exploring how UK manufacturing can benefit from increasing adoption of digital technology through strong industry and government partnership’**

## Contact Information



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