Smart Digital Strategy for running plants

AFRY SMART PERFORMANCE SERVICES

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Digital strategy that delivers a financial impact

- Digital strategies are too often expensive but fail to deliver a strong financial impact. Based on AFRY's observations, two of the biggest causes for this are the following:

  1. "Digital Foundation" has not been clearly defined and properly implemented

  2. Value creation is not fully understood and does not drive development work

- AFRY's approach to digital strategy builds on decades of experience from the optimisation of production processes and the understanding of how you can achieve tangible results:

- **ROI**: by building on the technology understanding, AFRY will carefully identify concrete opportunities for EBITDA impact

- **Technology:** AFRY will define a clear technology-oriented roadmap for implementation, starting from the digital architecture. You can start small, but then later scale up to a full digital factory

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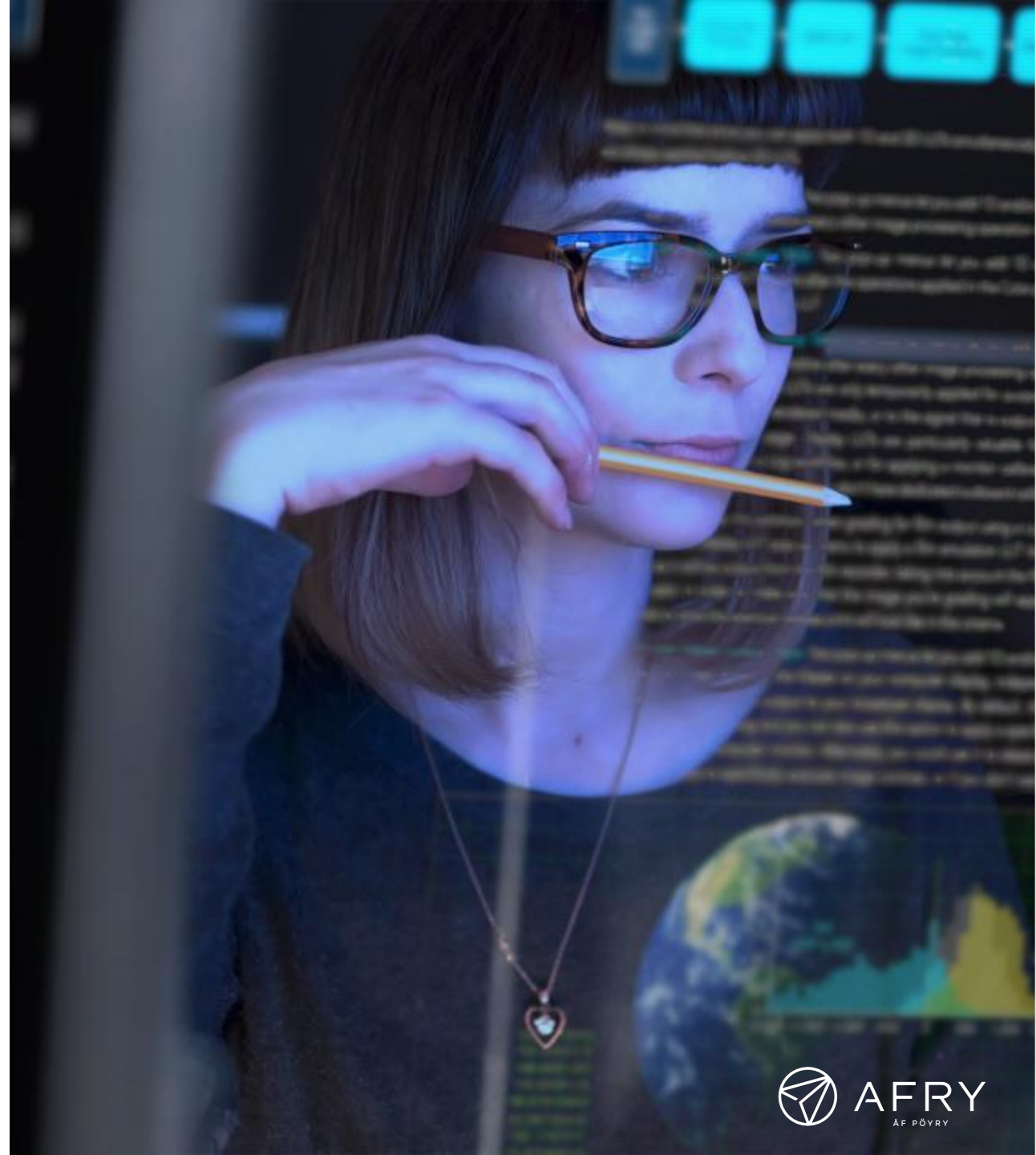
Smart Site approach: Key aspects of getting the Digital Foundation right

1 **Single Source of Truth**: Digital Foundation means that all data from different systems is available to digital development and it is of good quality

**2** **Platform Approach**: To simplify system integration and IT system landscape, a single platform should be available for all digital development. However, the platform must not come with a vendor lock-in, but must be open and enable the integration of solutions from different suppliers

3 **Low code development tools**: hard coding is expensive and slow. Modern low code tools for programming and system integration speed up digital development to a completely new level

4 **Industrial Edge** is the cutting edge technology for carrying out OT-IT integration and also a way for secure cloud computing in the context of industrial processes. It is a key part of Digital Foundation and modern digital architecture design
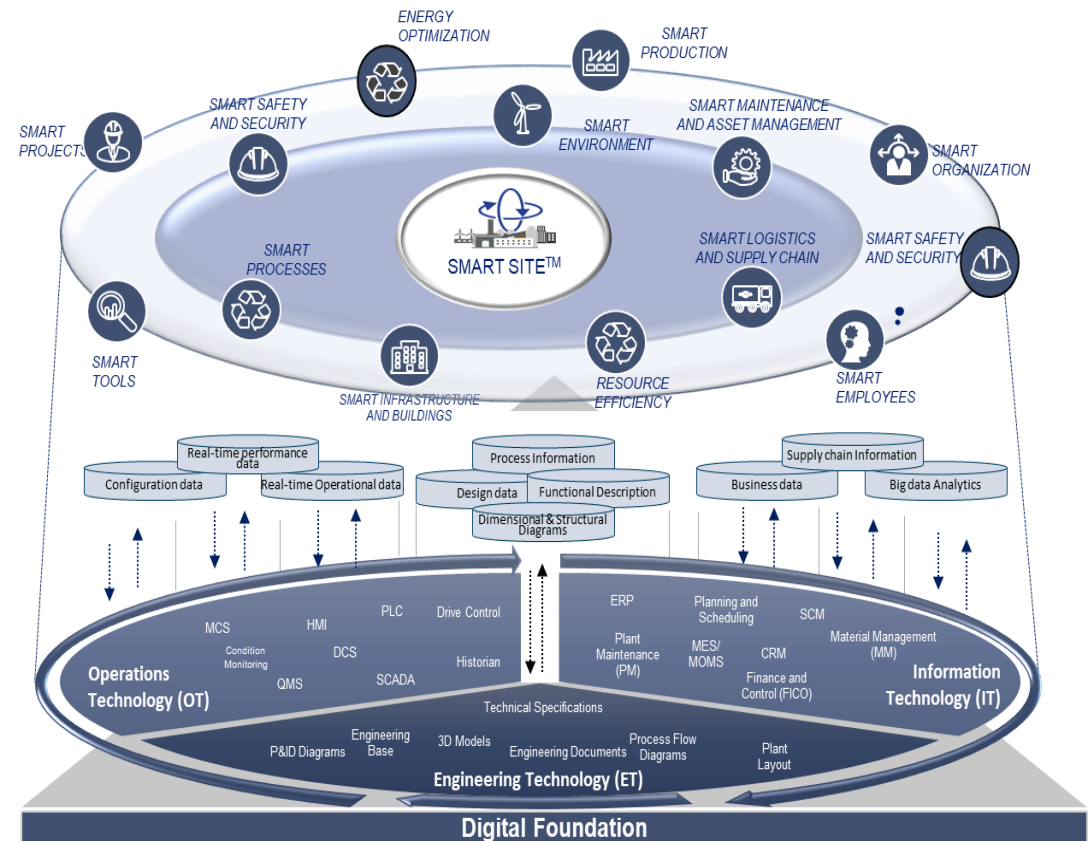
Breaking up silos: using Industrial Edge to build a Digital Foundation

CURRENT SITUATION AT ALL INDUSTRIAL SITES

DIGITAL FOUNDATION IMPLEMENTED
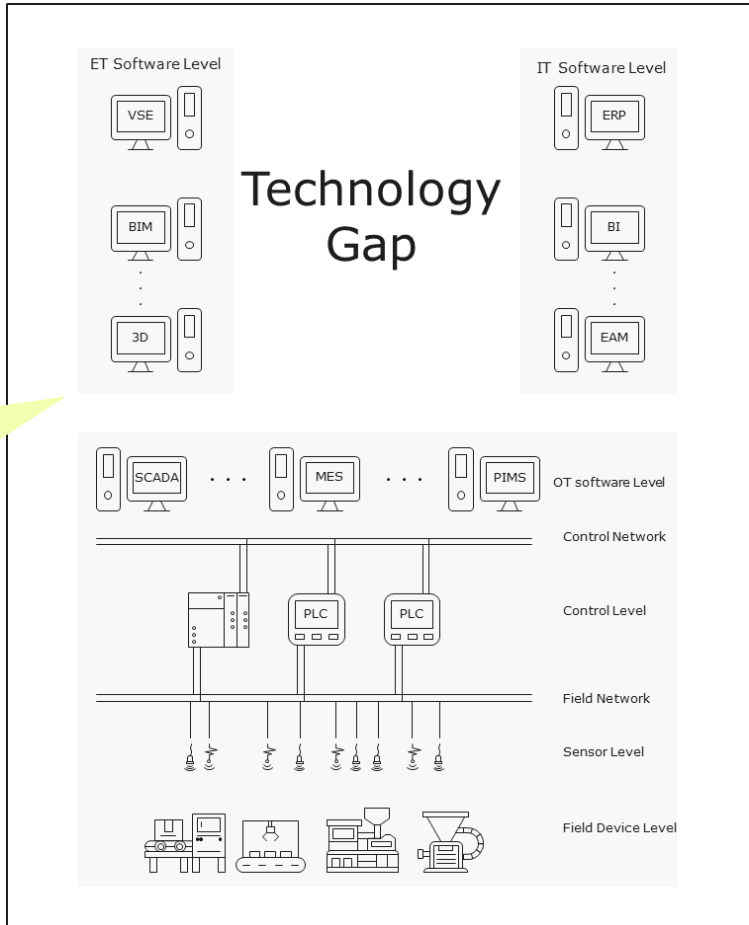
All systems are separated and data and software reside in silos
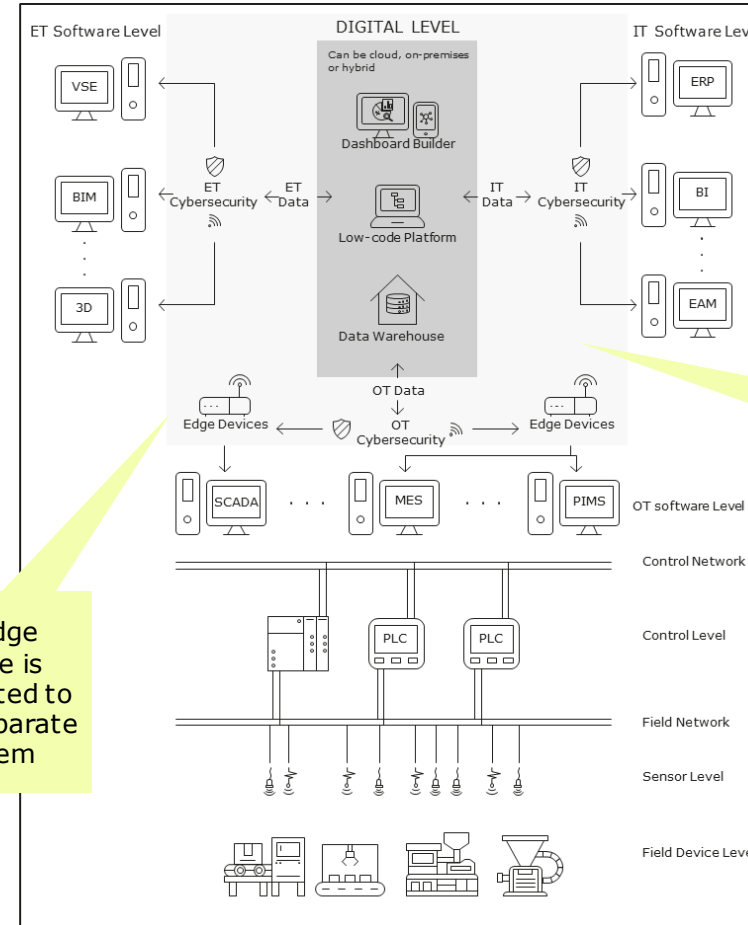
An Edge device is connected to each separate system

A Digital Level is created with the interconnected edge devices

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From where to start?

The digital journey demands knowledge of a whole new level of technologies, transforming not only software, but operation, culture, infrastructure and even automation approaches.

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The starting infrastructure

The smartest way to start is to define a solution that can make a process or a machine more efficient.

This makes it possible to focus on the results and not get lost in the digital technology.
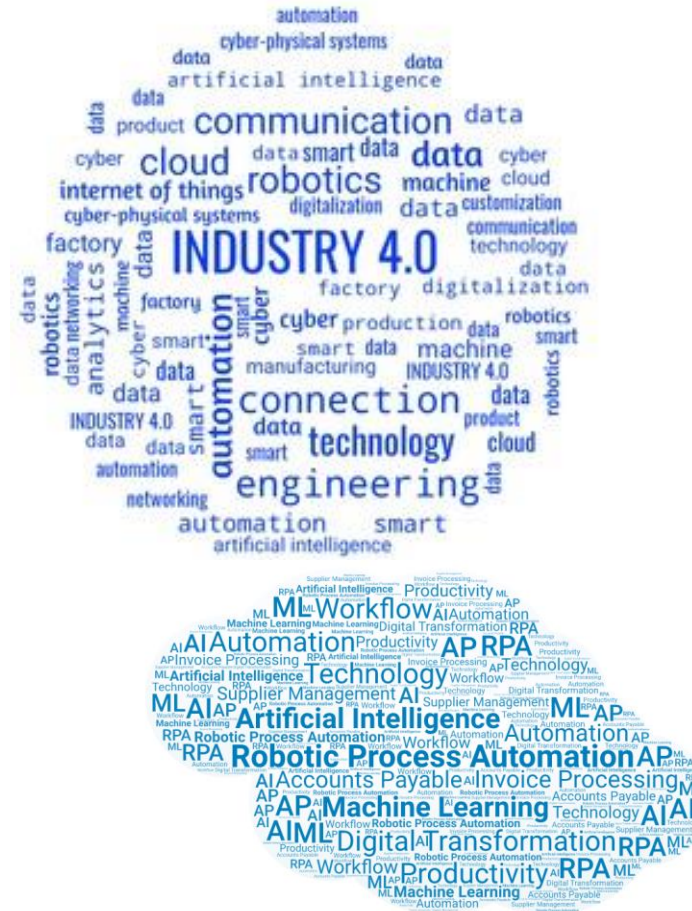
The minimum infrastructure you need is illustrated on the right:

Can be cloud, on-premises or hybrid

Dashboard Builder

Low-code Platform

Database
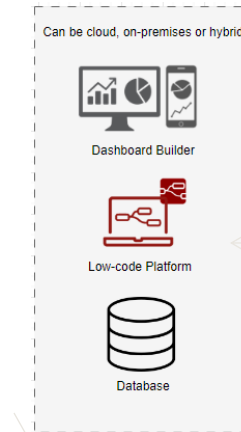
And one (or more) application to optimize your factory…

…that we call…

AFRY Smart Engines

An Edge device containing a cutting-edge and agnostic platform

PLC

A PLC / DCS with a standard industrial protocol interface

A machine / process to be optimized

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Start small and scale up fast

You can start with a single edge device with a low-code platform and dashboard builder to easily build additional applications
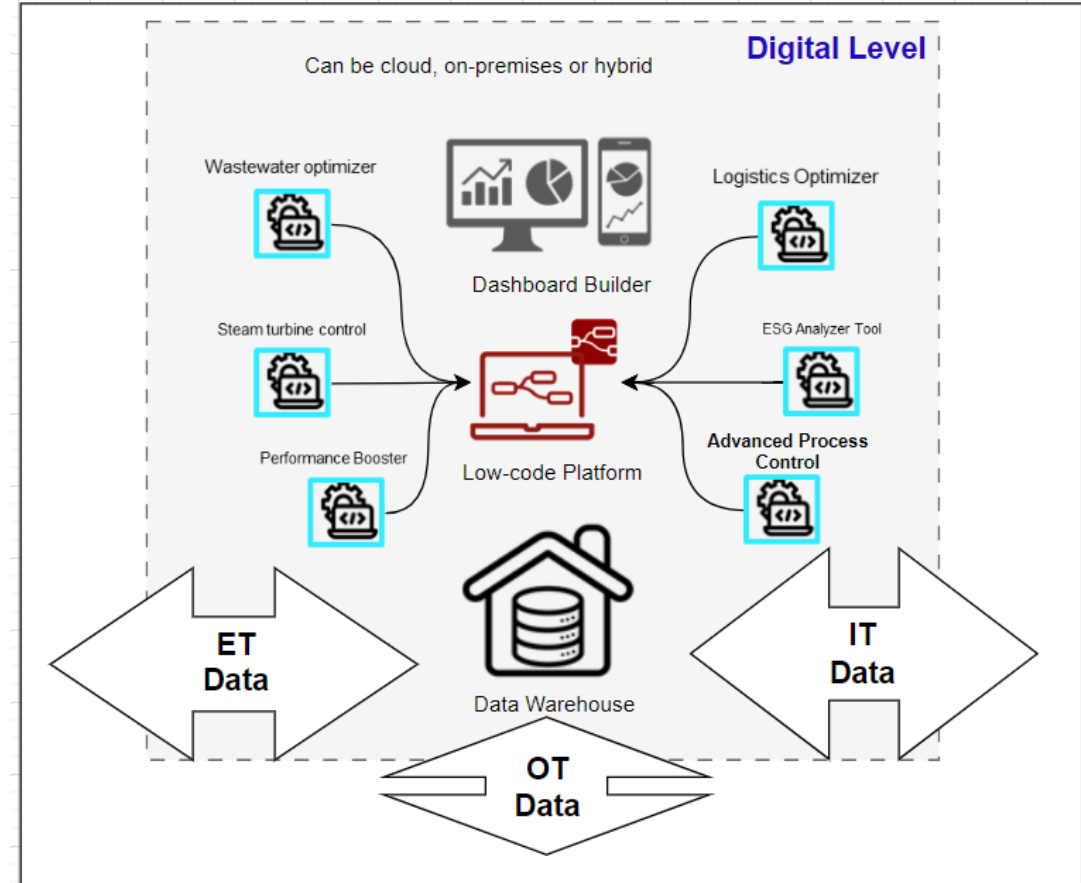
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On-premise approach

With this architecture, the data remains inside of the mill and must be accessed by AFRY's experts only through a secure VPN periodically, in order to check the performance and make some adjustments if necessary.

AFRY's Experts

Secure VPN

Edge device

DCS

Balance+   APC

Cloud-based approach

In this case, the optimization model works on cloud and alerts the experts (and the client) if something starts to work differently of it supposed to. This way, the actions can be taken faster, maintaining the optimisation.

Smart Digital Strategy focuses on the results: starting small, but aiming at a full digital factory

STEP 1

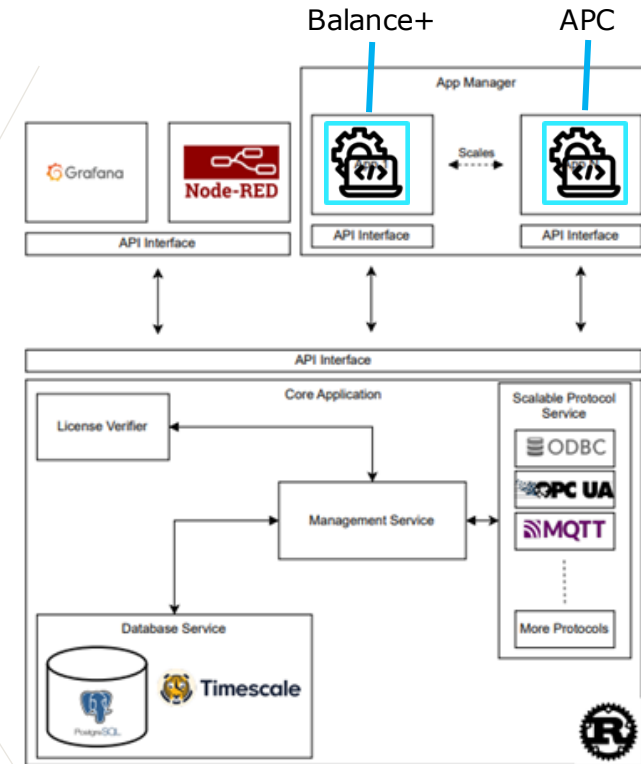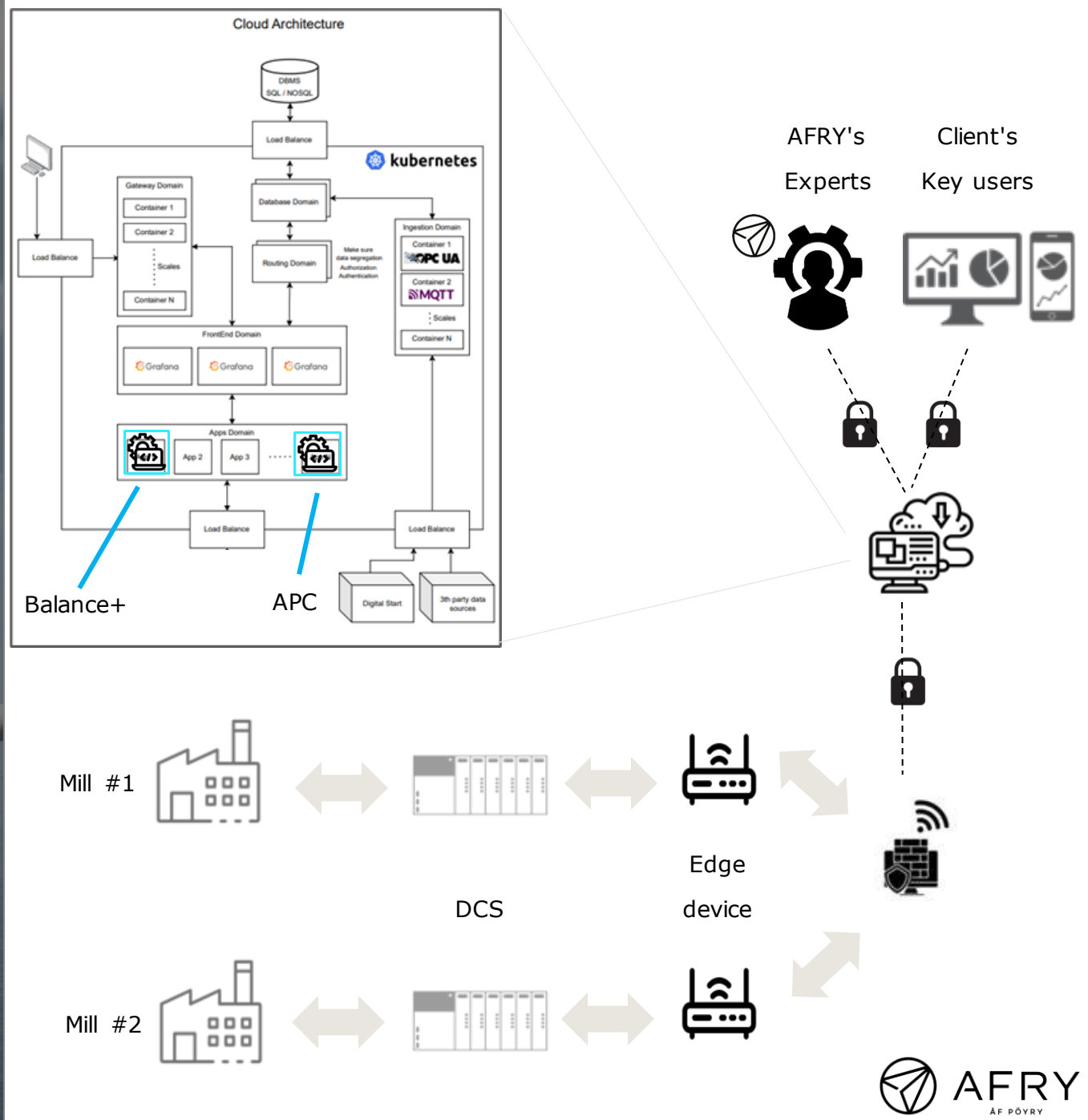| Understanding current status |
| :---: |
| Check IT/OT/ET infrastructure, databases, cybersecurity policies, technologies and bottlenecks |

Result
Report of as-is situation

STEP 2

Viability studies
KPIs definition, historical analysis, solutions definitions and evaluation of potential savings

Result
Functional Description Sheets with respective expected ROI

STEP 3

Delivering the Digital Model
Technical documentation, network diagrams, platform specifications, UX design and digital blueprint

Result
RFQs for start contacting the necessary suppliers

STEP 4

Roadmap for implementation
Digital architecture with minimum infrastructure to start, prioritization, timetable, business cases and Digitalization plan.

Result
Roadmap for implementation

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Examples of Smart Solutions

Kappa Analyzer

Client benefits:

- Maximised material efficiency
- Minimised chemical consumption
- Improved product quality and cost-effectiveness
- Better quality control over the process in general

Wastewater Management tool

Client benefits:

- Improve the control of the wastewater treatment process
- Minimise the downtime and enhances the process performance
- Helps operator to react to the alerts and deviations

Performance Booster

Client benefits:

- AFRY Performance Booster provides the organisation an online feedback regarding energy is being wasted.
- Quantified information on monetary losses at all organisational levels

Balance+

Client benefits:
- Improved boiler and plant efficiency (<2%)
- 10% higher sustained production in maximum load
- 3% higher sustained production
- 40% lower NOx formation
- 50% lower minimum load
- 10% reduction in house load
- 4% ramp rates
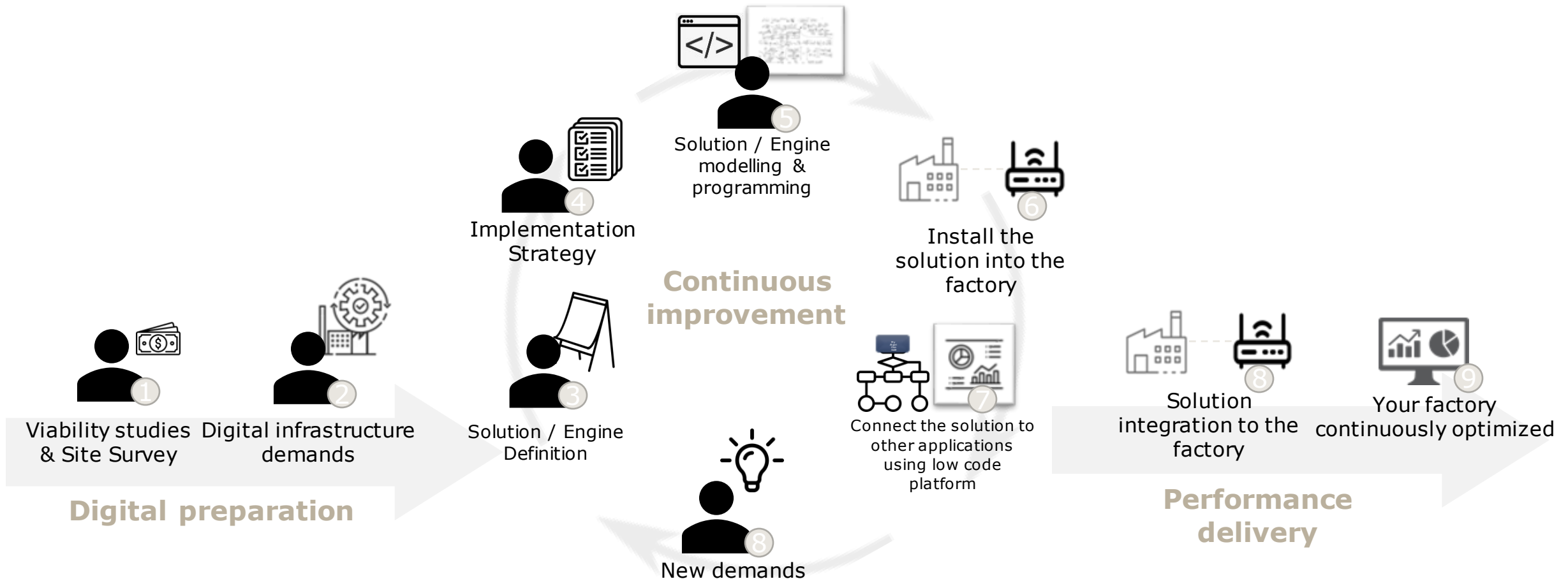
Energy Generation Optimiser

Client benefits:

– Energy Generation Optimiser automatically defines the optimum asset loading by using relevant data from various sources
– The optimised setpoints can be given for the operators or directly connected to the plant DCS

AFRY's expertise can be built into engines to address you specific digital needs

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The smart Solutions journey

AFRY can deliver continuously end-to-end solution, based on more than 50 years of process expertise and thousands of multidisciplinary specialists working together. This way, you can keep your brownfield competitive.

Solution / Engine modelling & programming

Implementation Strategy

Continuous improvement

Install the solution into the factory

Solution / Engine Definition

Connect the solution to other applications using low code platform

Viability studies & Site Survey

Digital infrastructure demands

Digital preparation

New demands

Solution integration to the factory

Your factory continuously optimized

Performance delivery

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And not the opposite way

Benefits

1) Investing in results, not just in digital tools
2) You will be the owner of your platform, your data and without vendor lock-ins
3) Respect your factory's budget and digitalization pace
4) From legacy systems to a complete digital infrastructure
5) See the return on your investments on the go
6) The same world-class services AFRY has provided for decades now in a digital format

A modern digital infrastructure to create applications by yourself or with any other vendor.

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Starting your digitalization journey

Establishing where you are and how to achieve the digital transformation

A Digital Transformation Plan for you to find the best way to start

Step 1: *Preparation*

- Site Survey
- Viability studies
- Digital architecture
- Solutions specification
- Platform definition

Assessment package

AFRY can support you in all areas of the digitalization journey

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A proper digital transformation demands many competences in order to create a solid path to future implementations

AFRY has decades of expertise and many success cases to demonstrate how it can be done in a secure and robust way

That's how AFRY is
Making Future

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Smart Performance Services

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