Data is worthless without real-time insights.
• TURNOVER €1.8 BILLION
• 2.8 M CUSTOMERS
• 6.2 M SUBSCRIPTIONS
• ANNUAL INVESTMENTS €250 MILLION
• 4700 EMPLOYEES
• OPERATIONS IN 14 COUNTRIES
Elisa’s digital transformation journey

- **Fewer incidents**
  - 77% of all faults solved before they are visible to the customer
  - 70% Incidents since 2011

- **Happy customers**
  - -15% Customer calls
  - 79% Faster resolution time

- **Flat CAPEX & OPEX**
  - Production OPEX (index)
  - CAPEX (%)

- Predictive actions
Case Elisa

Network automation has been the key to success

- Fully automated Network Operation Center (NOC)
- Closed-loop Self-Organising Network
- People and process transformation

Incidents -70%
Customer complaints -15%

4+ million checks
4000+ changes

1 person manual optimisation
0 person Network Operation Center
We accompany your business on its way to Industrie 4.0, from gaining visibility to being prepared for future events.

How can an autonomous response be achieved?  "Self-Optimising"

What will happen?  "Being prepared"

Why is it happening?  "Understanding"

What happens?  "Seeing"

*To assess your Industrie 4.0 maturity level, visit i4mc.de/en/
Elisa Smart Factory Management

Traditional Approach

ISA-95

L4 Business Systems (ERP, SCM, PLM) Governance & planning

L3 Production Execution (MES / MOM)

L2 Process Monitoring (HMI-SCADA)

L1 Process Sensing, Manipulating (PLC)

IIoT

• Connectivity
• Virtual data lake
• Real-time visibility
• Machine learning
• Augmented Reality

3D Factory

Predictive maintenance

Solutions

End2end cockpit

Guiding UI

IIoT Creates A New Layer of Digital Technology

PLANT & CORP. MANAGEMENT

MAINTENANCE

QUALITY

WORKERS

• Make **better and faster decisions** with real-time visibility
• Reduce **downtime** with condition monitoring & predictive analytics
• Improves product **quality** with real-time execution monitoring and quality validation
• Improve worker **efficiency & safety**
The Internet of Production* framework ensures access to all relevant information sources to digital businesses for efficient decision making.

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*Source: Prof. Schuh 2016
Tools to optimize the plant

Smart Factory Management
- Managing a complex entity with real-time data
- Human response: faster reaction
- Subsystem automation: less repetitive work
- System optimization: work smarter

Incoming material logistics

Sub processes optimization
- Process 1 Prediction model
- Process 2 Prediction model
- Process 3 Prediction model

Plant process optimization
- Simulation model for bottleneck identification and elimination

Outbound product logistics
- Separate models for productivity, quality and uptime
- Anomaly detection at multiple levels; establish ‘golden operation’ benchmarks
Case examples
Case: E4TC DFA in RWTH Aachen
Case: E4TC eLAB in RWTH Aachen
Case: e.GO Car Factory
Case: Process Industry Plant I
Case: Danfoss Power Electronics
Case: SMT production line
Case: SMT production line
Elisa Smart Factory provides digital insights for real-time monitoring on machinery shipped to your customers.
Case: Procter & Gamble e2e Cockpit
Factory Dashboards, Inbound – Line - Outbound
Elisa Smart Factory’s technical foundation offers the necessary **flexibility to grow with its IIoT challenges**.

**Pilot:** Elisa Smart Factory harmonizes the digital *representation* and *handling* of maintenance errors and issues. This reduces *maintenance efforts*, *improves schedule accuracy* and *process performance*.

**IIoT Rollout:** Elisa Smart Factory provides a technical architecture, that is *scalable* and *versatile* to face all *IIoT challenges* that occur within a manufacturing environment.
## Agile Smart Factory implementation

<table>
<thead>
<tr>
<th><strong>Data and KPI model</strong></th>
<th><strong>Reporting architecture and visual concept</strong></th>
<th><strong>Fast prototyping</strong></th>
<th><strong>Pilot rollout and validation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand available data and their structure</td>
<td>Define information model and aggregation levels</td>
<td>Present and validate Elisa solution</td>
<td>Integrate cockpit/ smart factory solution in existing IT infrastructure</td>
</tr>
<tr>
<td>Match data with use case driven requirements</td>
<td>Define data sources and connectivity</td>
<td>Set up Minimal Viable Product</td>
<td>Define and test use case based interaction concept (e.g., shop floor meetings) to use solution in daily operations</td>
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<td></td>
<td>Design UIs (cockpit, 3D images)</td>
<td>Agile solution design</td>
<td>Agile Prototyping (e.g., Dashboards)</td>
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<td>Proof-of-Concept with stakeholders</td>
<td>Process pilot and validation</td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td><strong>Data Modelling</strong></td>
<td><strong>Information management model</strong></td>
<td><strong>Results</strong></td>
</tr>
<tr>
<td>System independent model of required data for chosen KPIs</td>
<td>Use case related information management model</td>
<td>Defined KPI set for given monitoring scope</td>
<td></td>
</tr>
<tr>
<td>Defined KPI set for given monitoring scope</td>
<td>IT gaps analysis, e.g. MES System</td>
<td>Integrated realtime data flow and reporting for situation analysis</td>
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<td>Validated usage approach in the organization, and buy-in</td>
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</tbody>
</table>
**How do we do it:** We 3D model your factory and integrate all relevant data to provide digital insights in **4 weeks**

- **Kickoff & project definition**
  - On-Site visit for **use case analysis** and IT-OT-landscape screening

- **PoC**
  - PoC with data and insights for one **carefully chosen use case** we show you the impact of full digital insights

- **Pilot Integration**
  - After the PoC we partner with you to integrate **all relevant data** into your digital shadow, and provide you with **data analytics competencies**

**Results:**
- **Reduce downtime** 5-10%
- **Improve yield** 10-15%
- **Reduce cost** 5-8%
- **Increase productivity** 5-8%
- **Increase OEE** 2-5%
- **Enhance quality** 8-13%
Thank you!

smartfactory@elisa.com