FESTO

Industrie 4.0
Le nuove prospettive per l'automazione industriale

Festo 4.0 per la Smart Factory

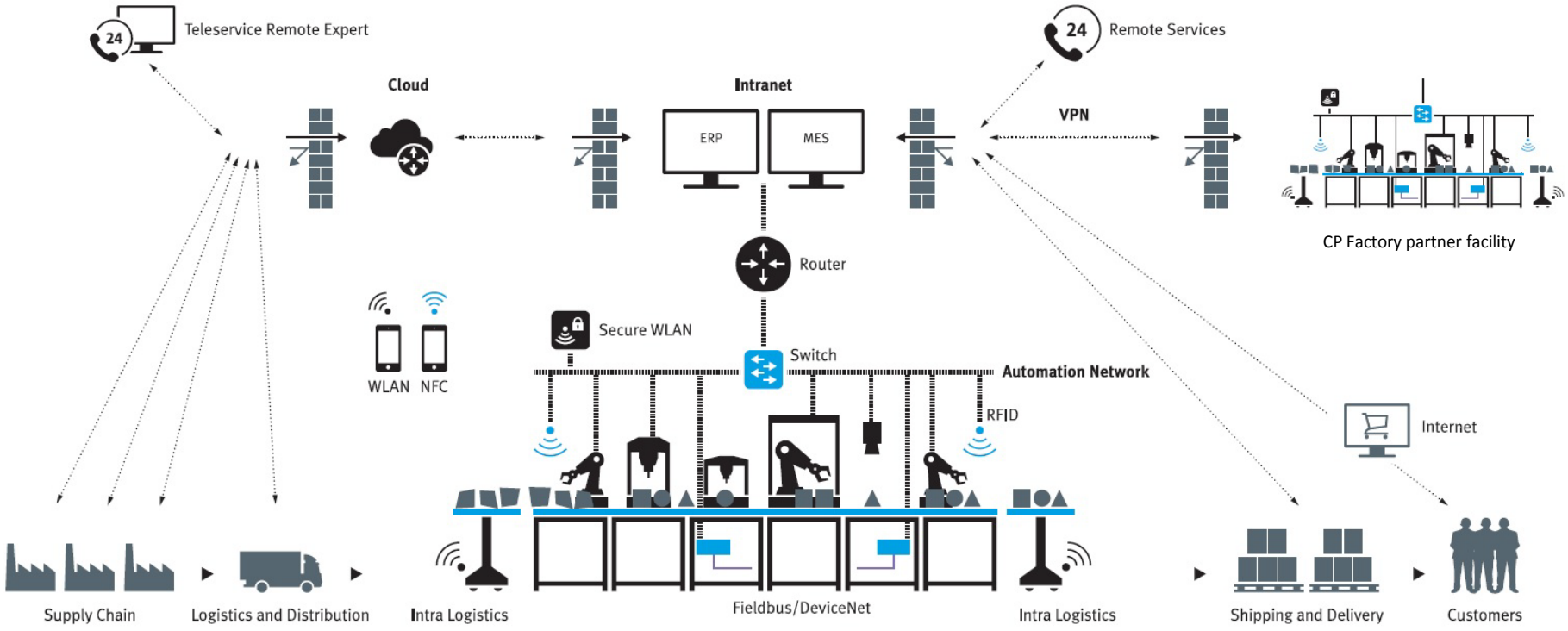
Dove troviamo l'ispirazione

Festo Technology Plant

- **Modularità in produzione**
- **Mobile Maintenance**
- **Infrastruttura Control e IT**
- **Organizzazione**

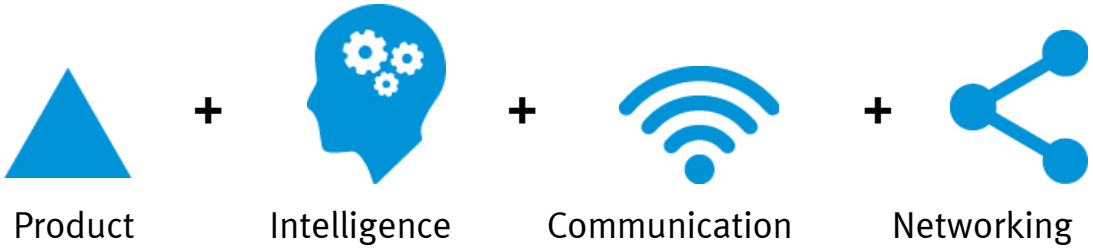
La fabbrica del futuro

Sistemi di produzione per una fabbrica interconnessa, adattiva, flessibile



Futuro e innovazione

Il prodotto integra intelligenza e capacità di comunicazione



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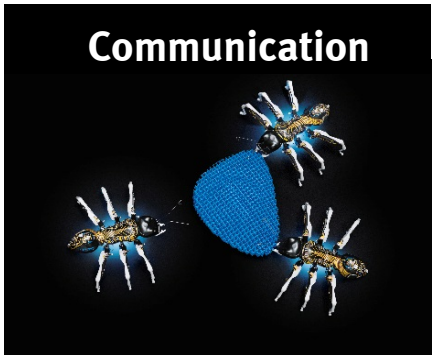
Industry 4.0

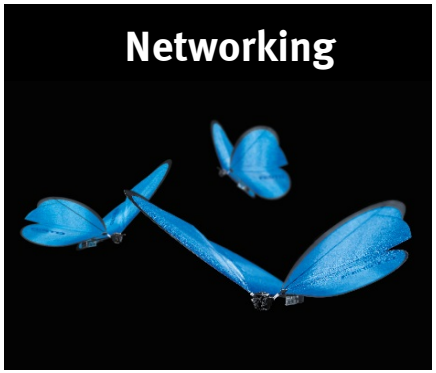
Value added services
- Analysis
- Condition monitoring
- Cloud services

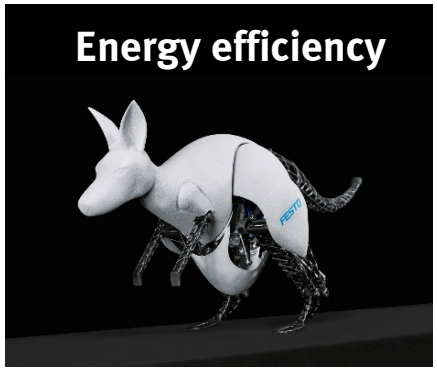
Business models
- Pay per user
- Predictive maintenance
- Customer support

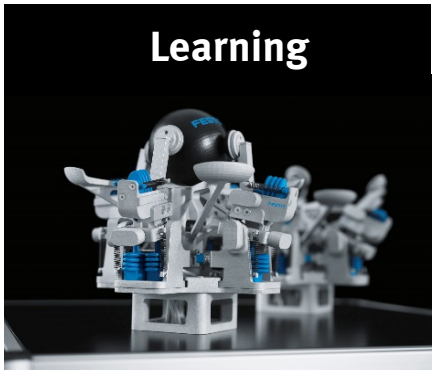
Ispirazione per automazione di fabbrica e di processo

Imparare dalla natura per la produzione del futuro



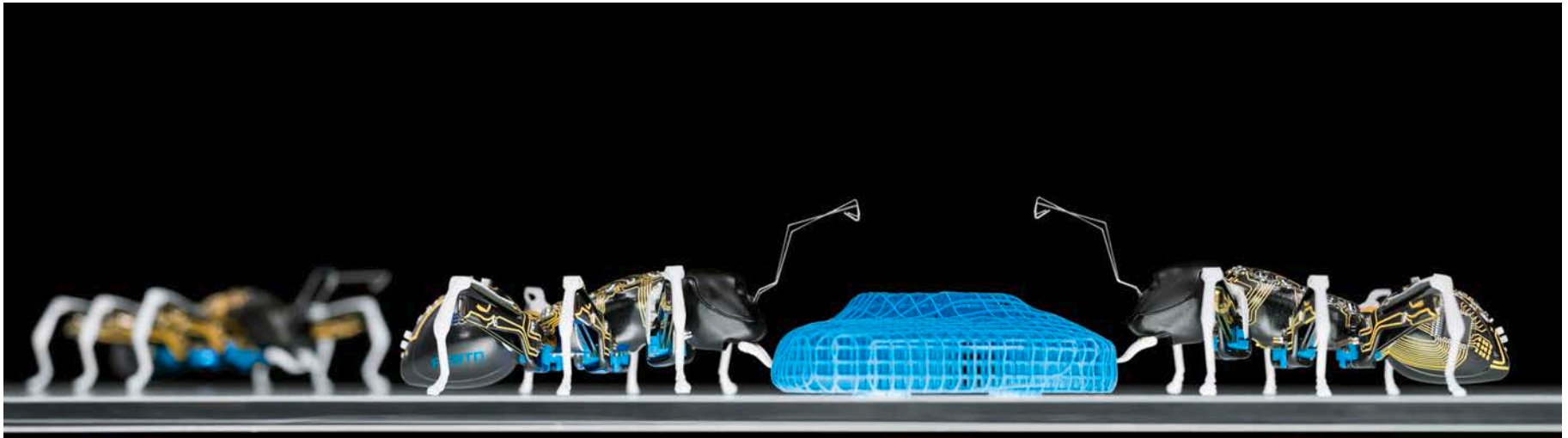






Sistemi autonomi integrati per l’esecuzione di operazioni complesse

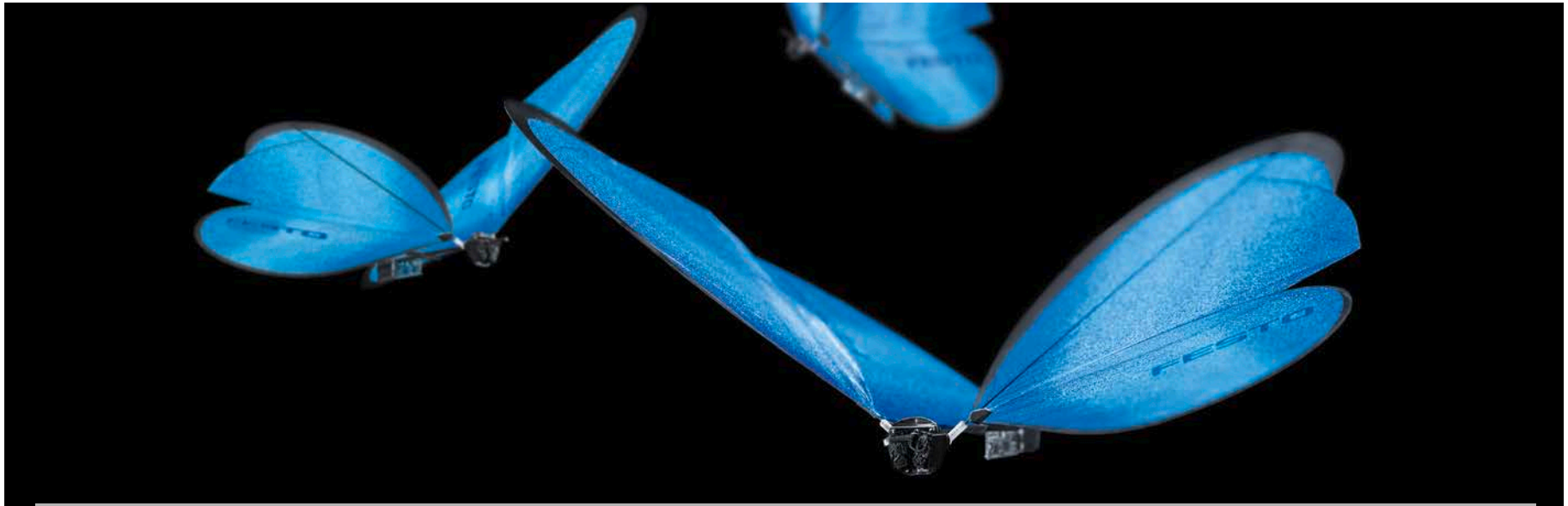
BionicANTs



- Algoritmi di controllo per la cooperazione tra sistemi indipendenti all’interno di un network
- Microsistemi altamente tecnologici
- Sistemi multi-agent con intelligenza distribuite
- Communicazione Wireless, sistemi di visione e floor sensor

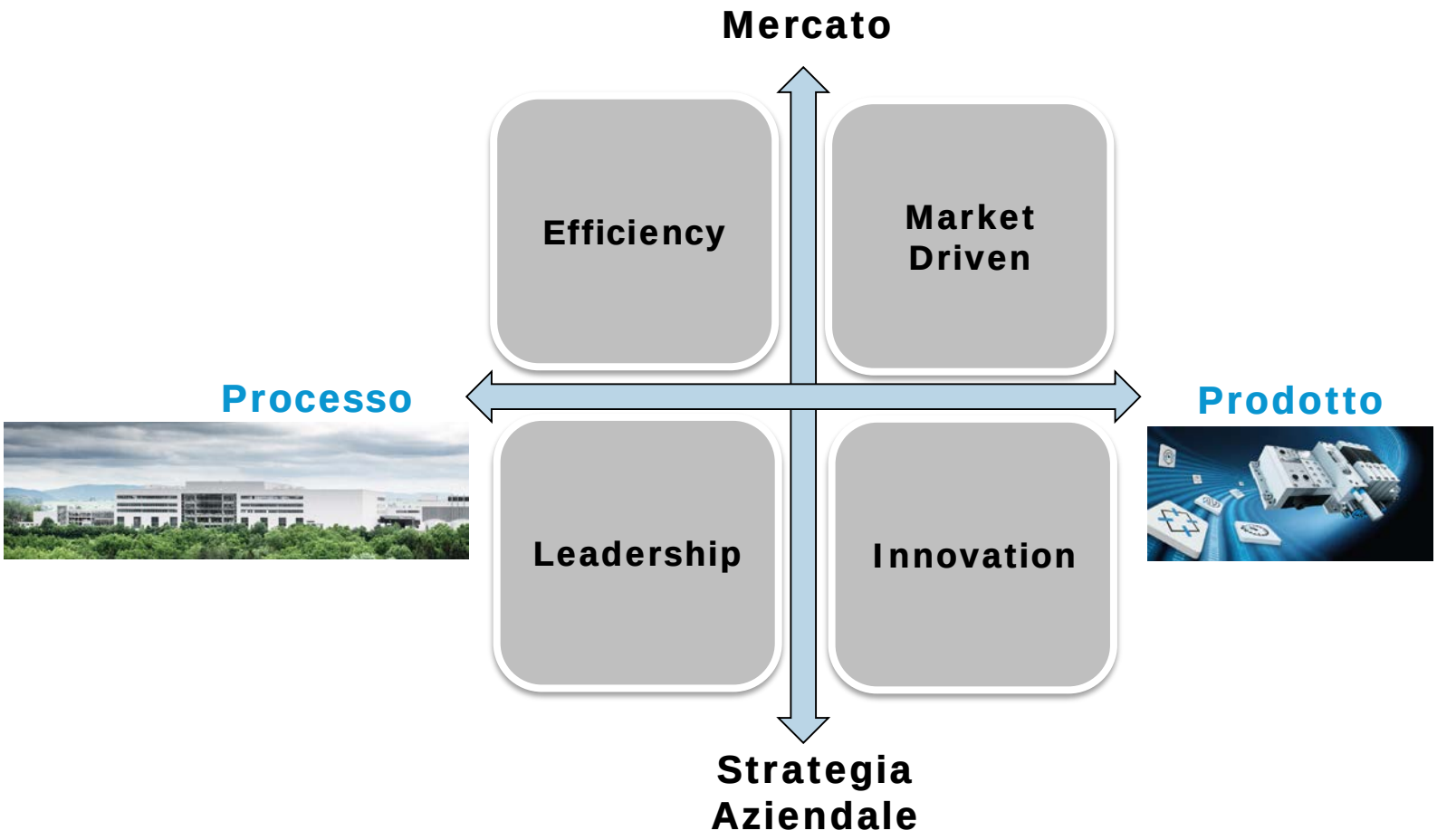
Data collecting continuo per movimenti coordinati

eMotionButterflies

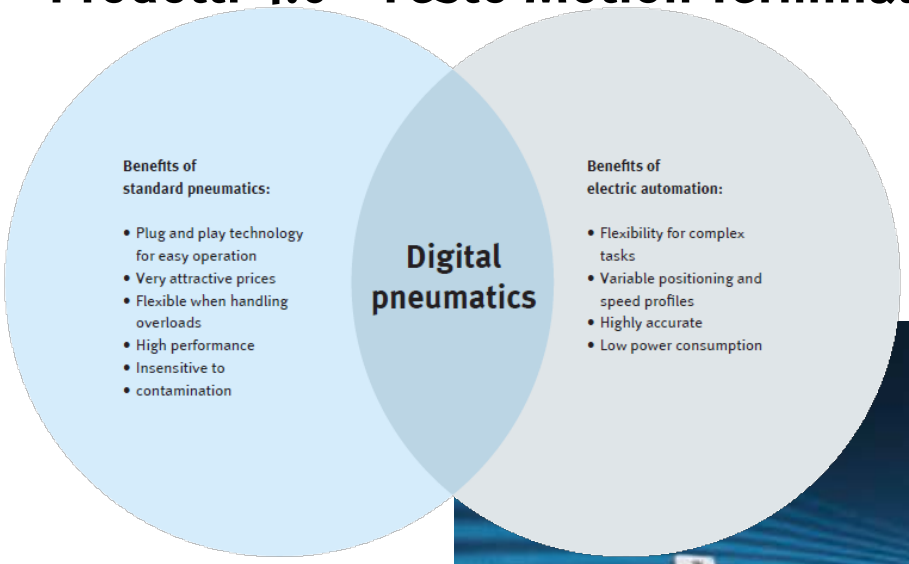


- Controllo e monitoraggio continuo
- Continua comunicazione real-time
- Tecnologia infrarossi per analisi posizione esatta
- Eccezionale stabilità computazionale per algoritmi anticollisione

Strategia Festo 4.0



Prodotti 4.0 – Festo Motion Terminal



sps ipc drives
ITALIA

Tecnologie per l'Automazione Elettrica
Sistemi e Componenti
Fiera e Congresso
Parma, 23-25 maggio 2017

Processi 4.0 - Scharnhausen Technology Plant

Competitività Globale

Riferimento per produzione valvole, unità di valvole, elettronica

- **Automazione intelligente con prodotti Festo**
- **Collaborazione on-site dei reparti (Eng – Prod – IT)**
- **Lean production / management**
- **Efficienza energetica**
- **Qualificazione personale/ learning factory**

Rendiamo sostenibile il futuro: Smart Factory 4.0

Automatizzato e flessibile

Flusso produttivo flessibile

Ottimizzazione energetica

Learning “taken for granted!”

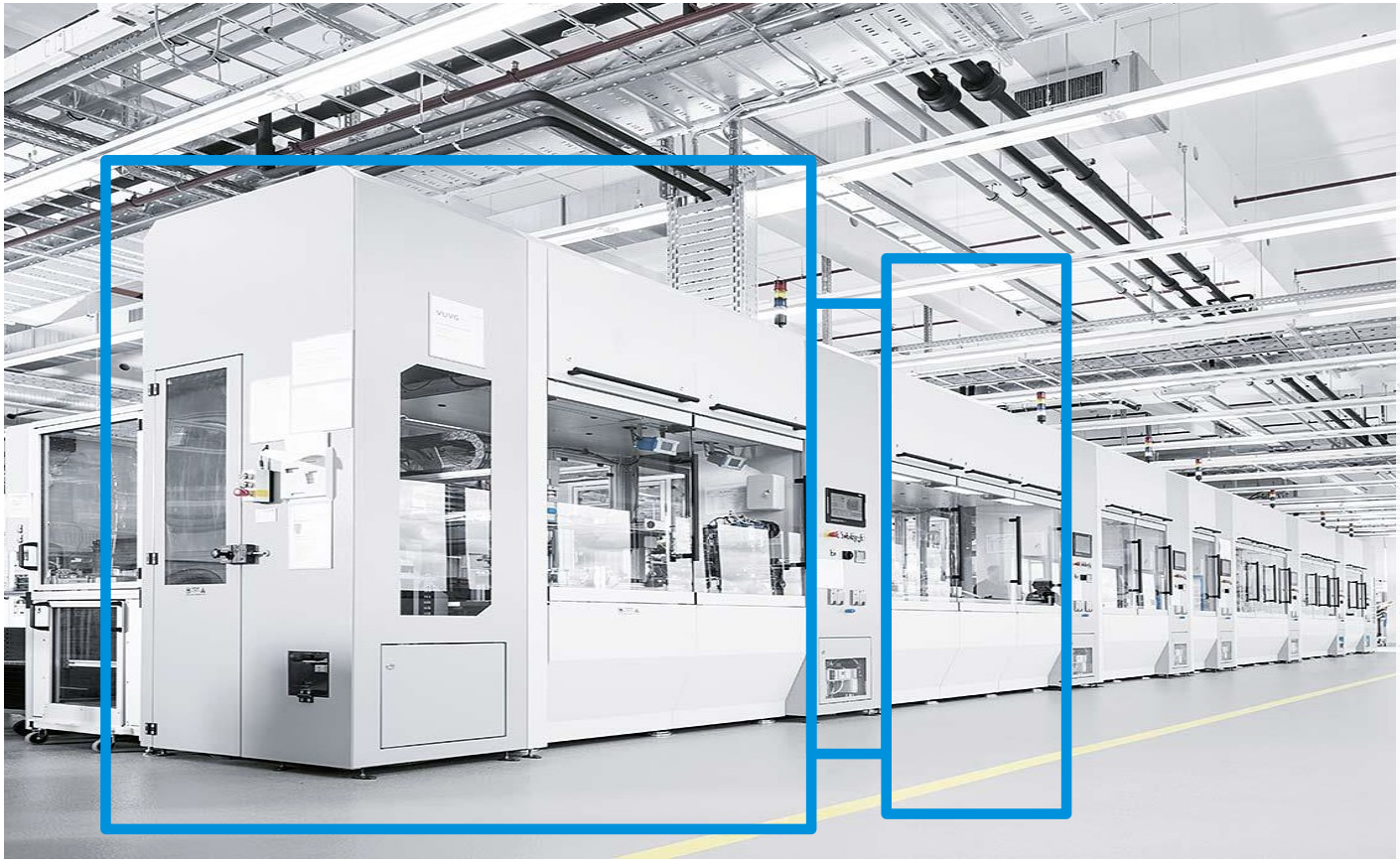
Riduzione costi, lotto adeguato alla domanda

Flusso di info e materiali continuamente ottimizzato

Edifici in Energy Network e efficienza in produzione

Continuo training on the job e Learning centre in loco

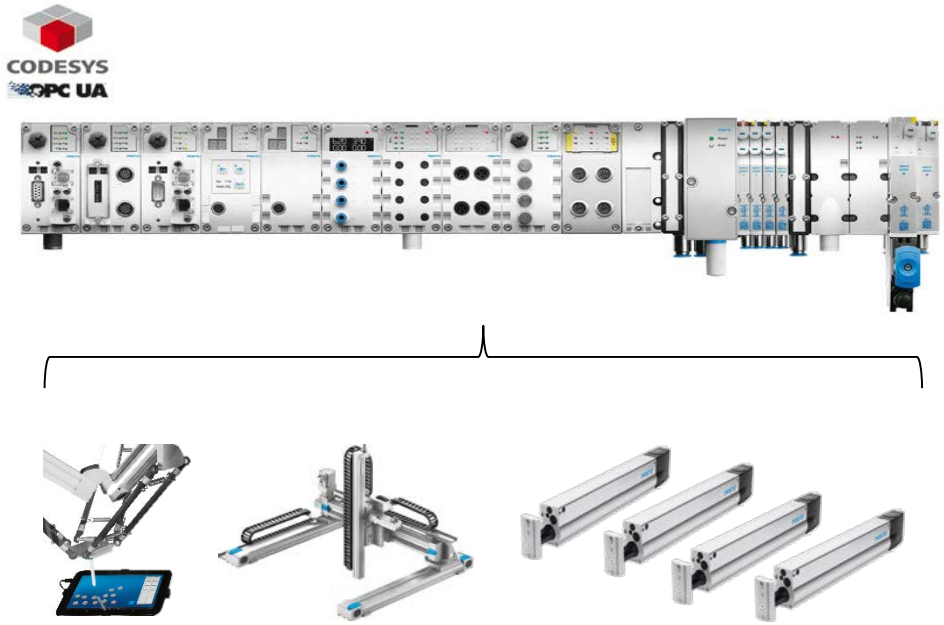
Macchina modulare e intelligenza decentralizzata



- Lotto economico da 10 a 10.000 Pz
- Produzione ottimizzata sulla domanda
- Flusso materiali ottimizzato
- Comando decentralizzato
- Interfacce standardizzate
- Produzione mix prodotto

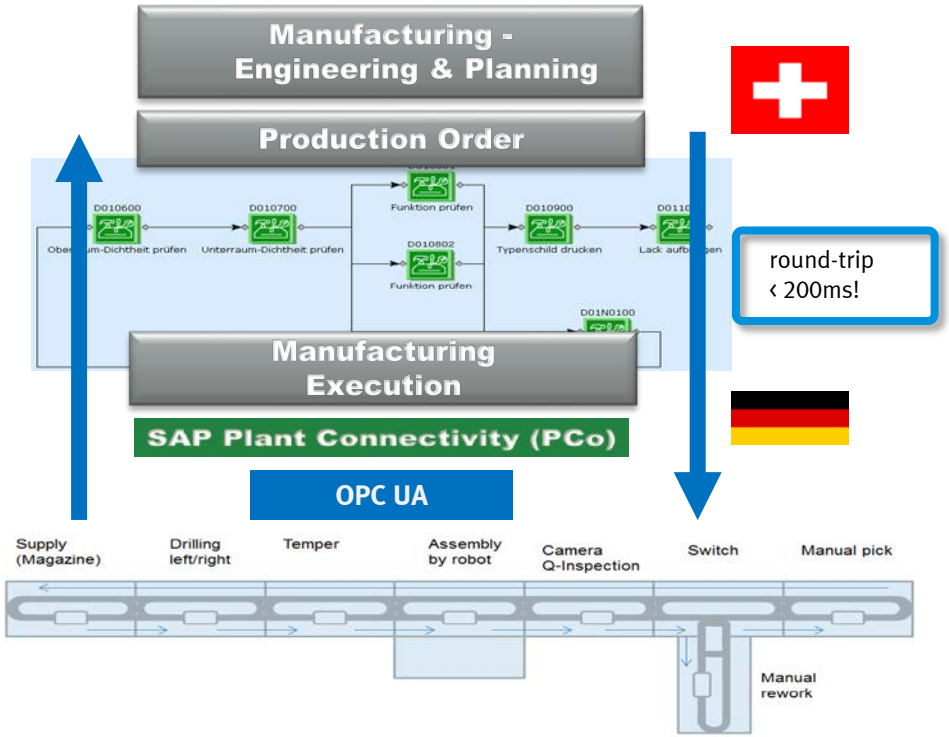
I sotto-sistemi si trasformano cyber-physical systems

Integrazione di “intelligenza” e capacità di comunicazione nei sotto-sistemi



Oppure nei moduli.

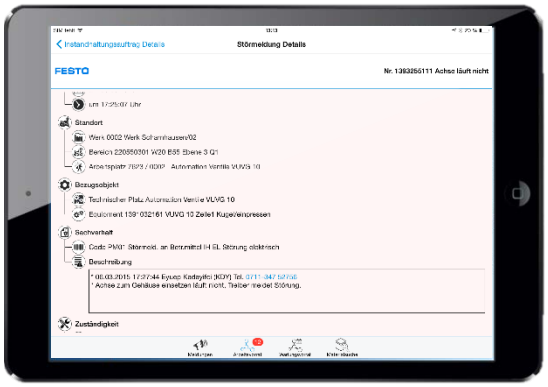
Full Process Control by SAP ME - direttamente da ERP ai PLC

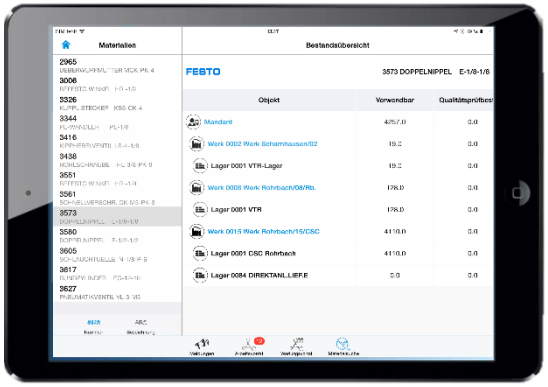


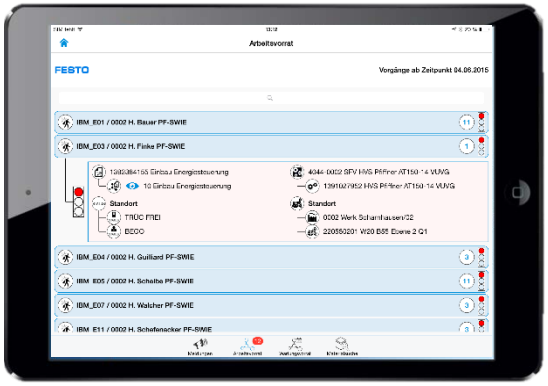
Workflow:

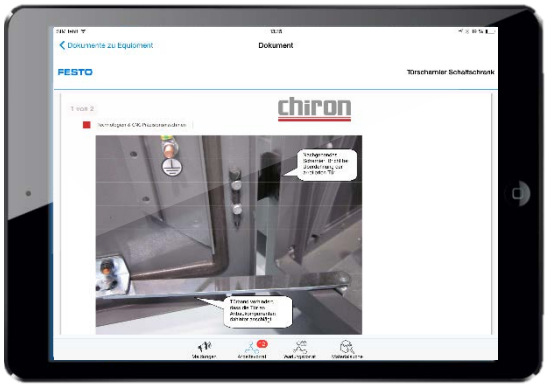
1) Dati rilevanti in ERP e SAP ME:
   - Routing,
   - Parametri PLC,
   - QM set points
2) Logistica integrata – Approvigionamento materiali grezzi
3) Esecuzioni delle lavorazioni – Misure direttamente in SAP ME
4) Controllo qualità direttamente da SAP ME
5) Il flusso operative macchina è basato sul risultato delle verifiche in SAP ME (es. Scartare il componente, dare il comando “next operation”...)
6) Il materiale si sposta per l’operazione seguente, richiesta parametri del PLC ...

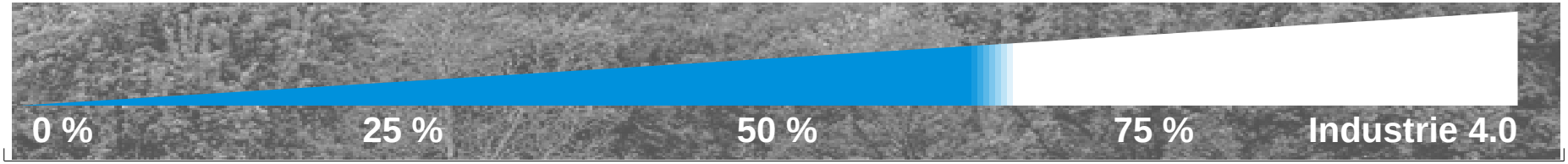
Mobile Maintenance – higher OEE and higher profitability



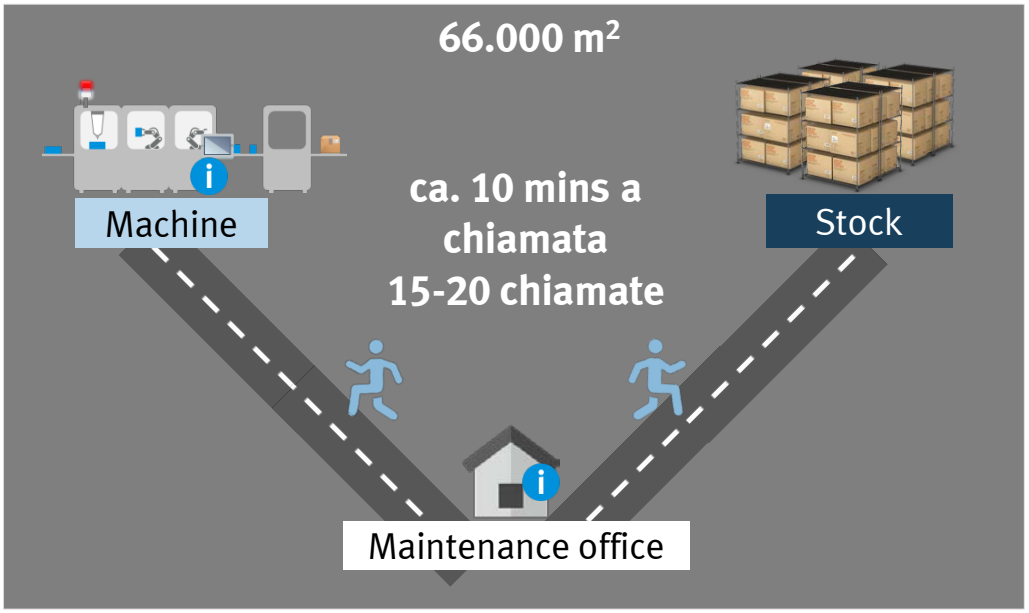


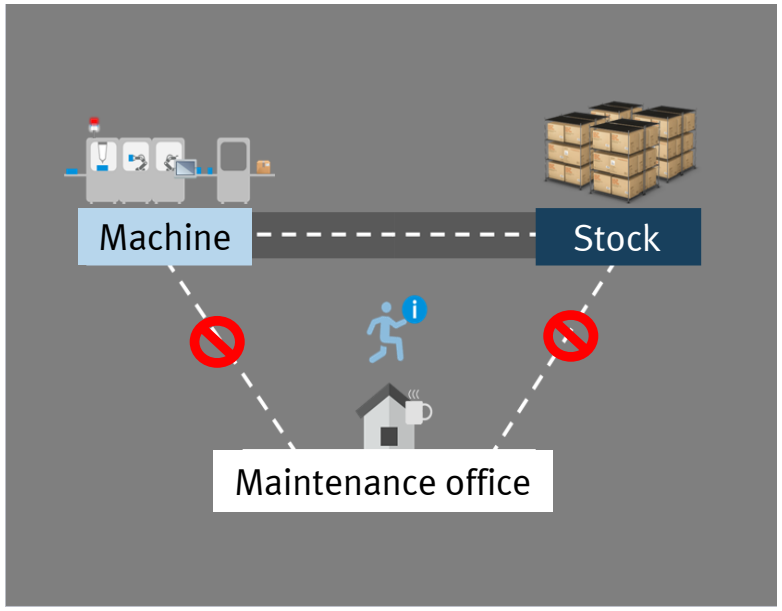






Mobile Maintenance





Weaknesses

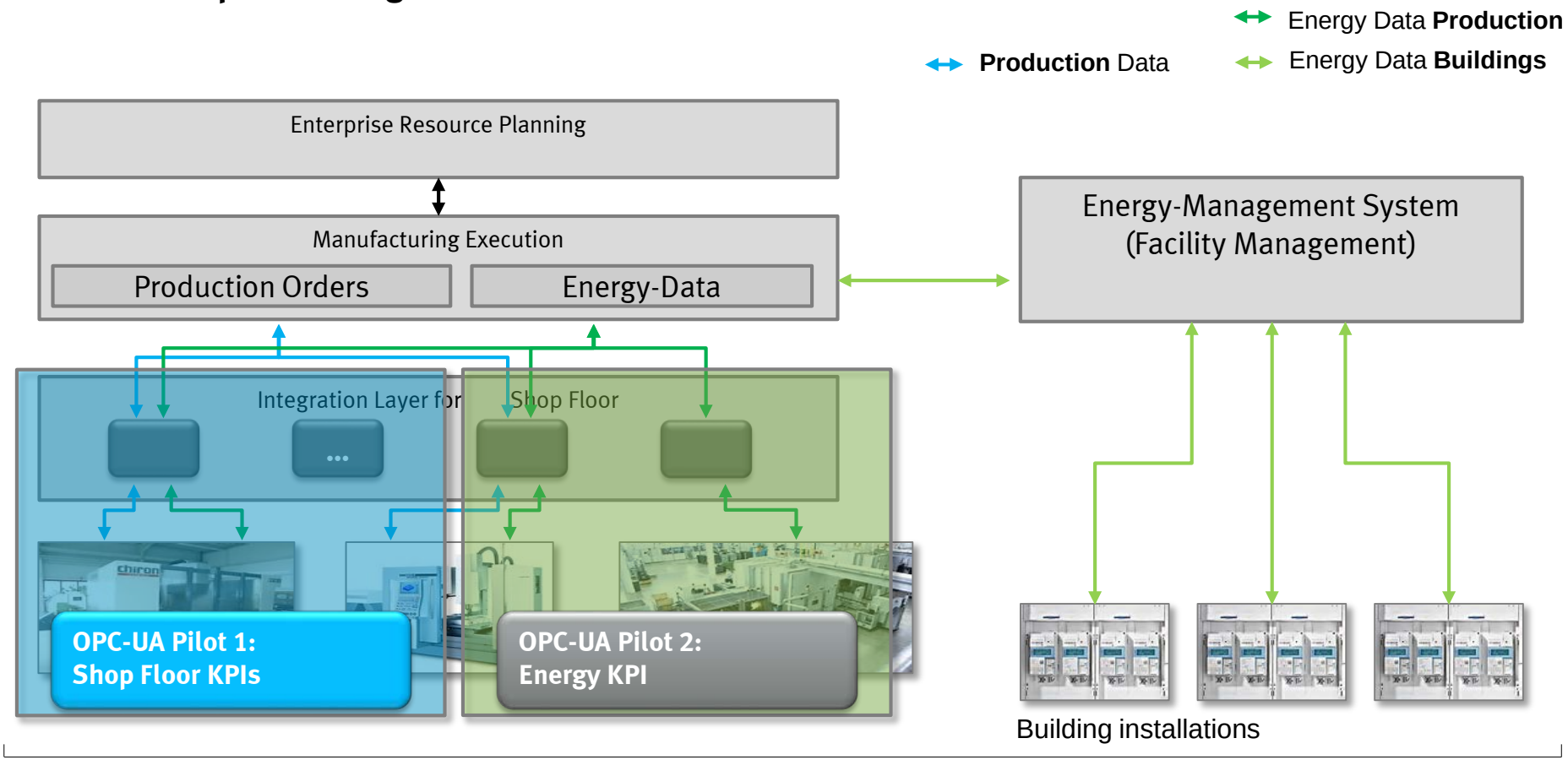
- Limited information on site
- Many places, long distance walks
- Reporting, Feedback, Status complicated at maintenance office, no work-flow

Optimisations

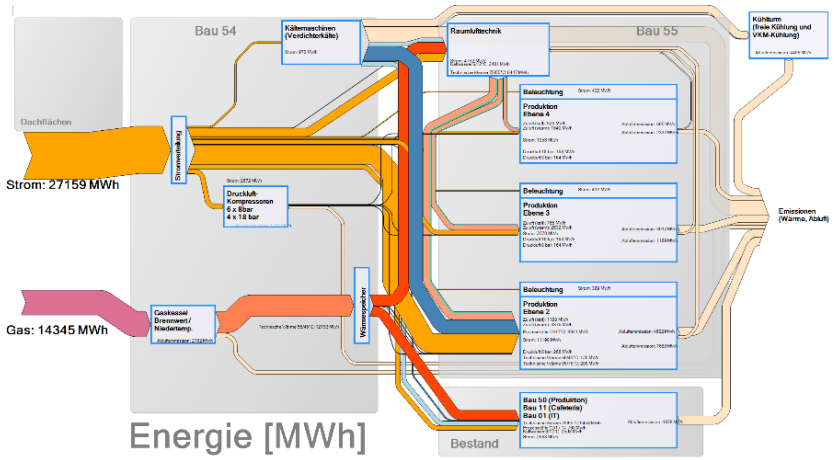
- Directe paths m-m
- Documents mobil avaiable
- Real time information
- Time & travel savings

Infrastruttura dati per KPI di produzione e KPI energetici

Gestione dei picchi energetici



Recupero energetico per i bagni galvanici



Risultati Ottenuti 2016/2017

1 GW less energy

100.000 € venting and light intensity

80.000 € lower pressure

1. Bottle-neck optimized work flow

(a chain is only as strong as its weakest part)

- adjust machine performance according to bottle neck situation
- Avoid buffer stocks, one-piece-flow
- Reduce waste of energy

2. Energy Peak management

- Avoid energy peaks
- start critical machines at different times
- reduces energy (electricity) bill by 1/3

3. Utilise available energy sources better

- pre-heat galvanic baths are by “waste” energy of other machines/compressors
- optimize these sequences in general, and daily depending on work-load

Digital Twin – La fabbrica digitale

Industry 4.0 Readiness

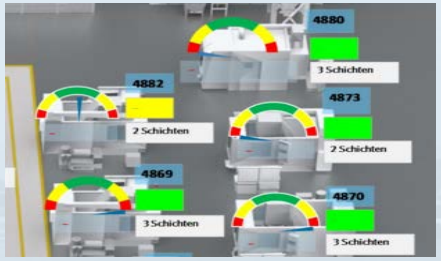
Digital Plant – Production Management

CHARACTERIZATION

- **Visualization** of machines and installation sites in **3D** = data basis for context-based information
- Gathering of (SAP-)data and **aggregation to KPIs** and its visualization
- Visualization is linked to the KPI cockpit

ADVANTAGES

- Uniform interface to access company data
- Linking of interdepartmental information
- Awareness of possible analysis



Location: W20 B55 / B50 | **Status:** Pilot

0 % 25 % 50 % 75 % Industrie 4.0

Scharnhausen Technology Plant

Spazio alle idee

„Ideenschmiede“

CHARACTERIZATION

- Project rooms with special equipment to stimulate creativity
- Linked and writeable wall to digitalize ideas and sketches
- Temporary work space
- Lockers for utilities

ADVANTAGES

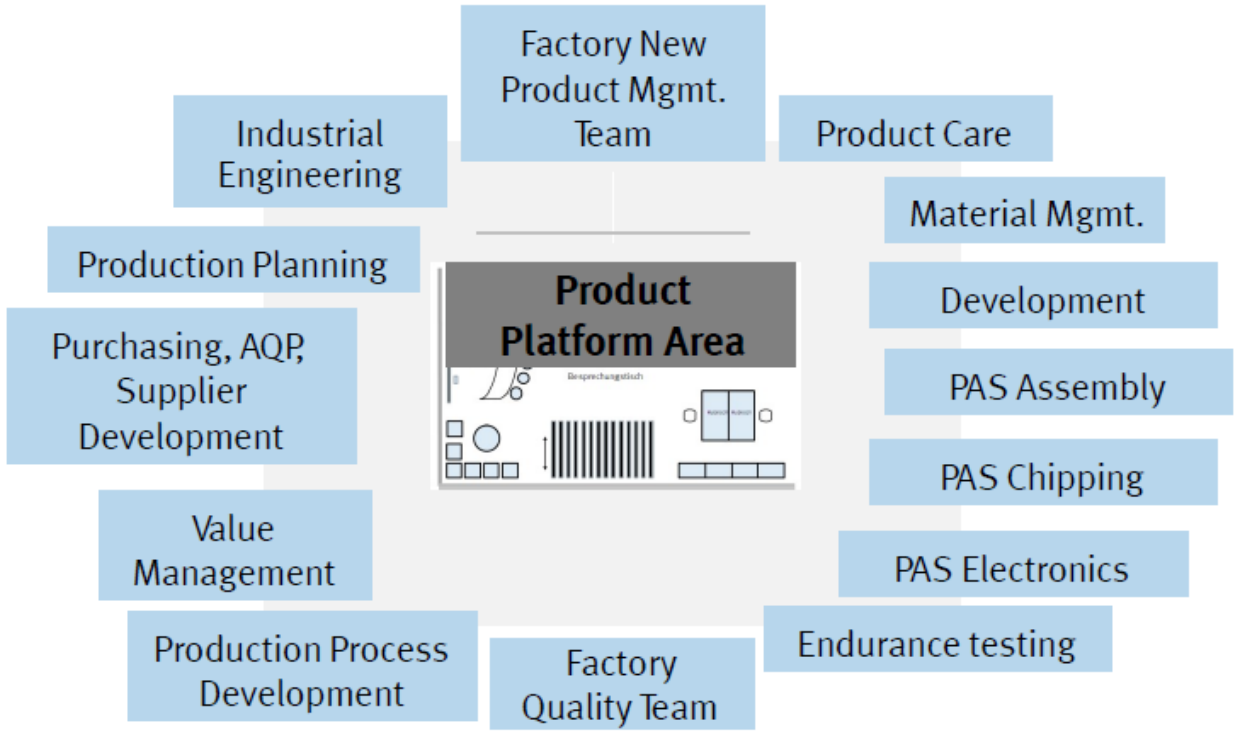
- Ideas can be digitalized
- Possibility of process prototyping
- Stimulation of creative potential
- Supports different types of meetings

Location: W20 B55 E4 | **Status:** in production since 04/2015

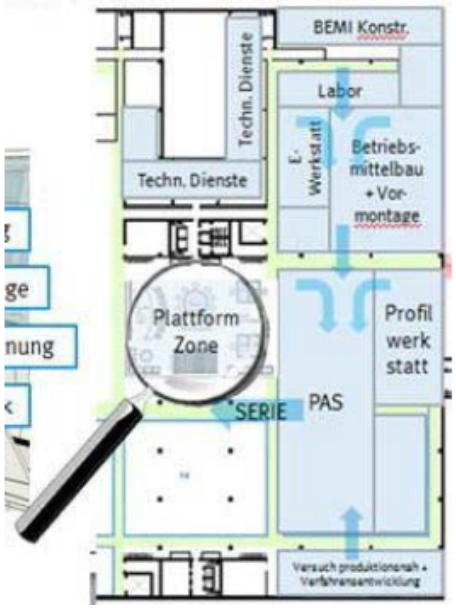
0 % 25 % 50 % 75 % Industrie 4.0

Platform space concept

Favorire l'interazione e la collaborazione tra le funzioni



PAS [PSP] = Production Start-up Phase
AQP = Advance Quality Planning



Benefici diretti sul Time to Market

Garanzia di competitività sulla produzione in volume, ma non solo...