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REGIONAL SEMINAR 2012

EMEA

The Power of Data

verallia

PIT –
Process Control with Industrial IT systems

Presented by **Harald Zimmermann**

Director R&D, Verallia Deutschland

Agenda

- Vorstellung der Verallia (Glas-Allianz)
- Technische Prozesse der Behälterglasproduktion
- Anforderungen an die Industrial IT
- Strukturieren der Prozessdaten mit dem Kegelmodell
- Konsequenzen und Beispiel-Modelle
- Status und Ausblick

Behälterglas für Getränke und Lebensmittel

Saint-Gobain Oberland AG

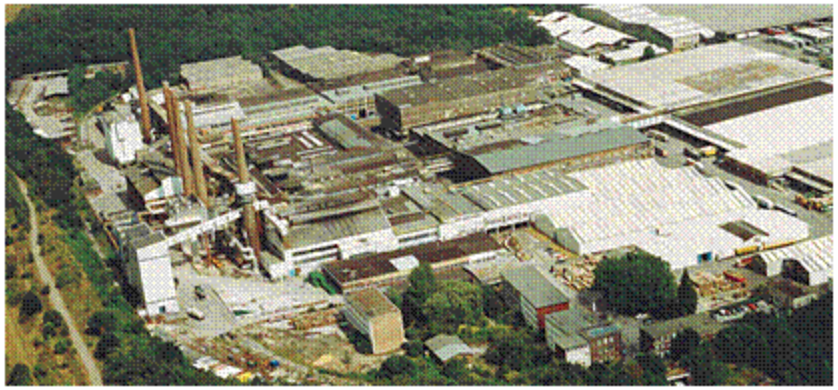
Produktions-standorte

Saint-Gobain Oberland AG

Produktionsstandorte

Werk Bad Wurzach

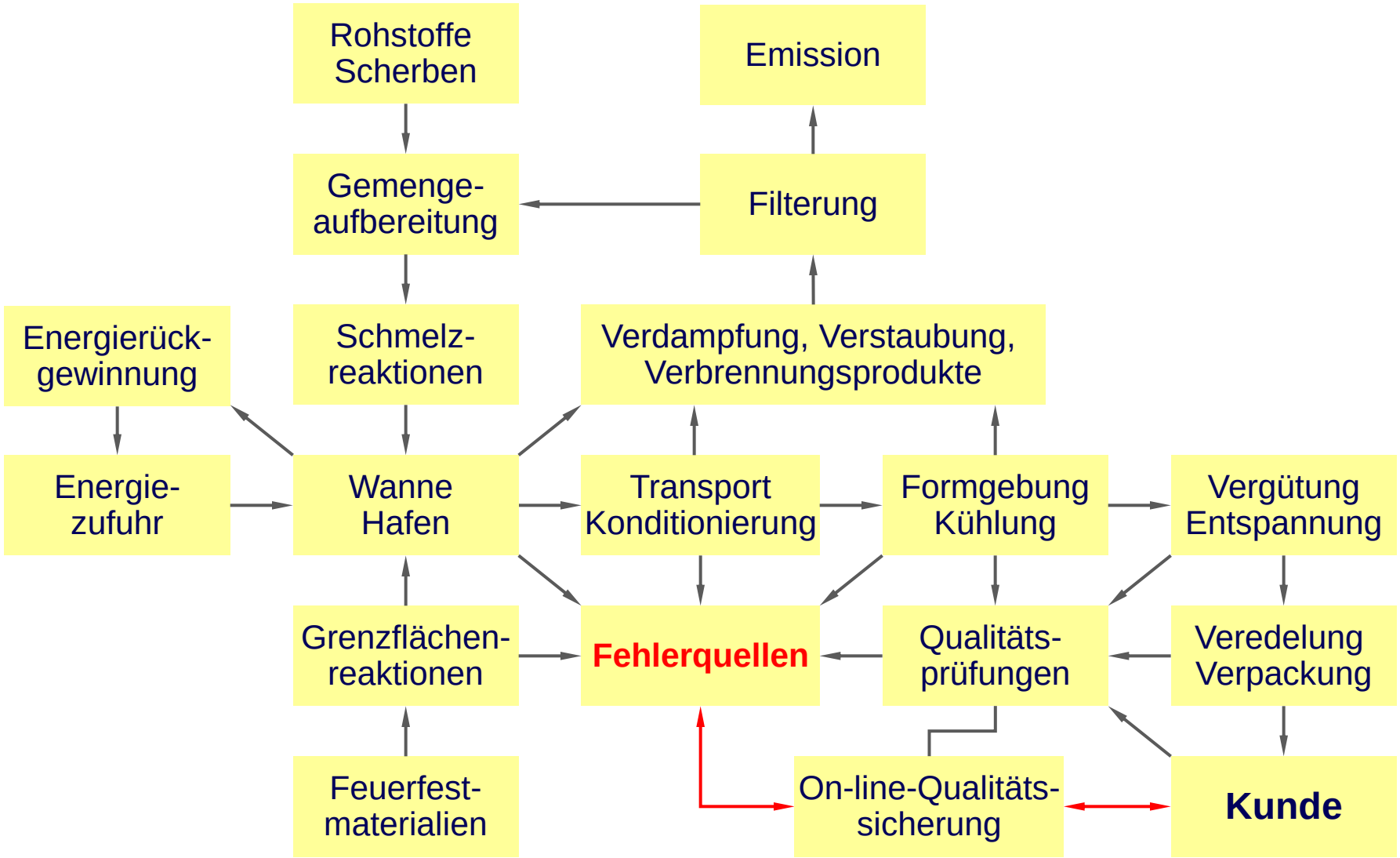
Werk Neuburg



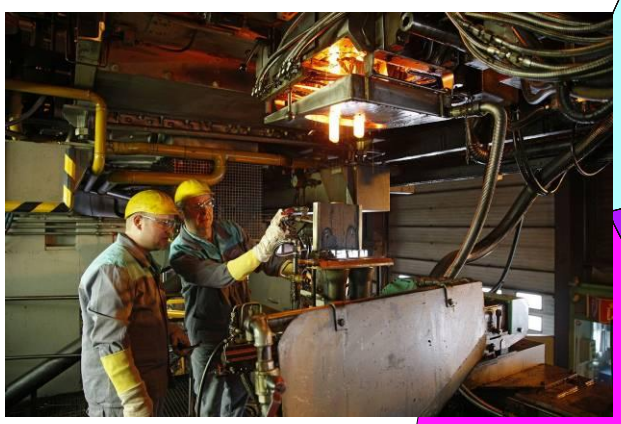
Werk Essen

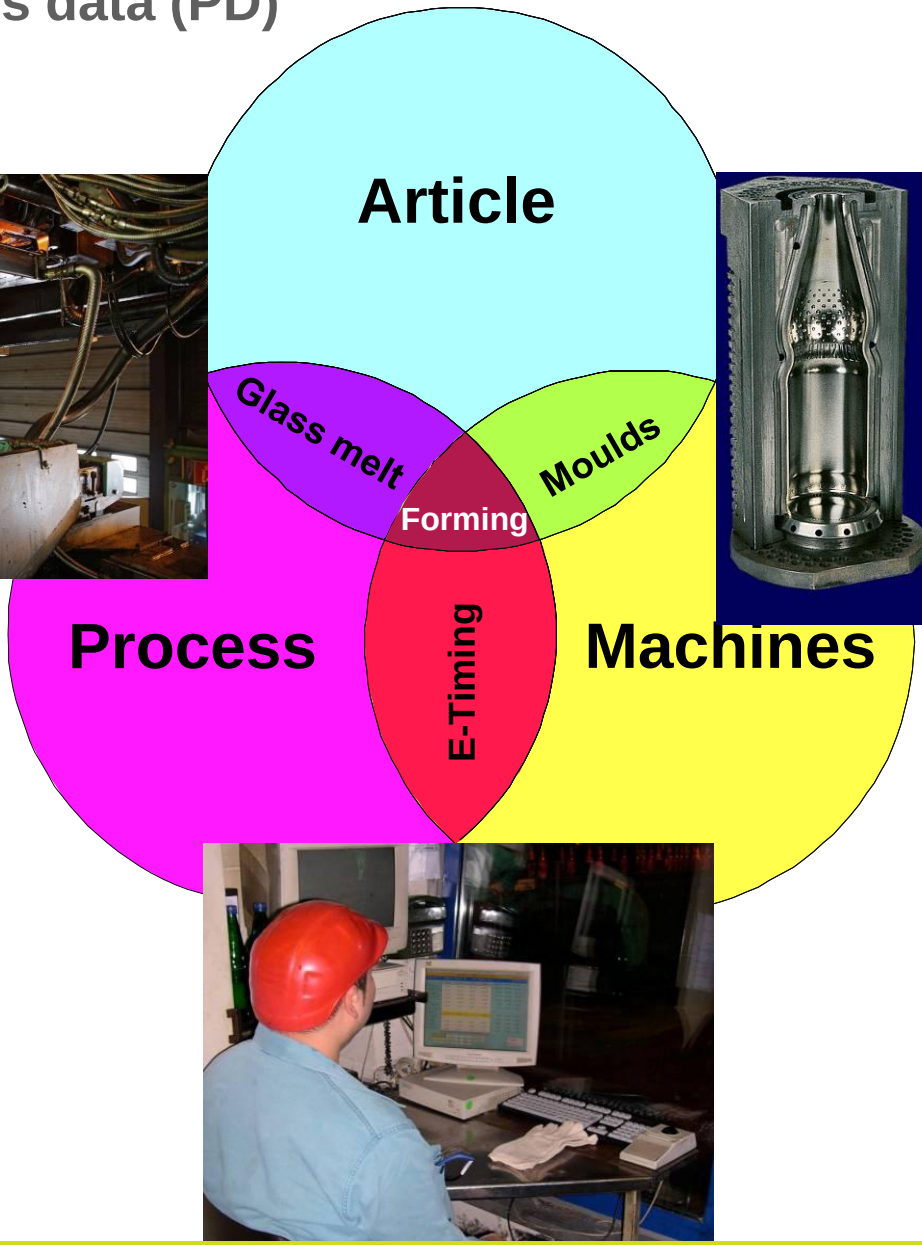
Werk Wirges

Stand der Technik:
Verfahrensschema Glasproduktion



PIT: Sources and usability of container glass process data (PD)





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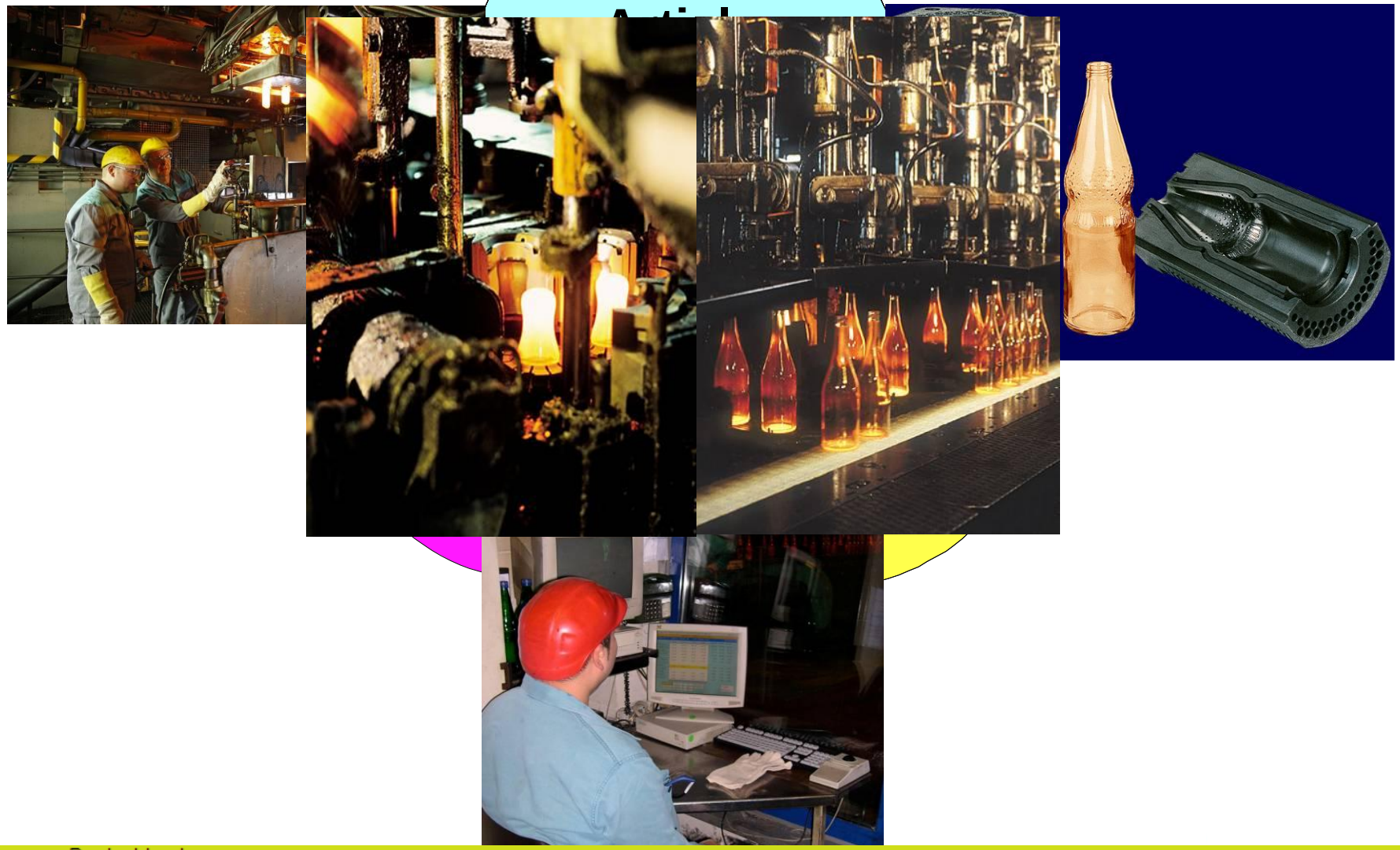
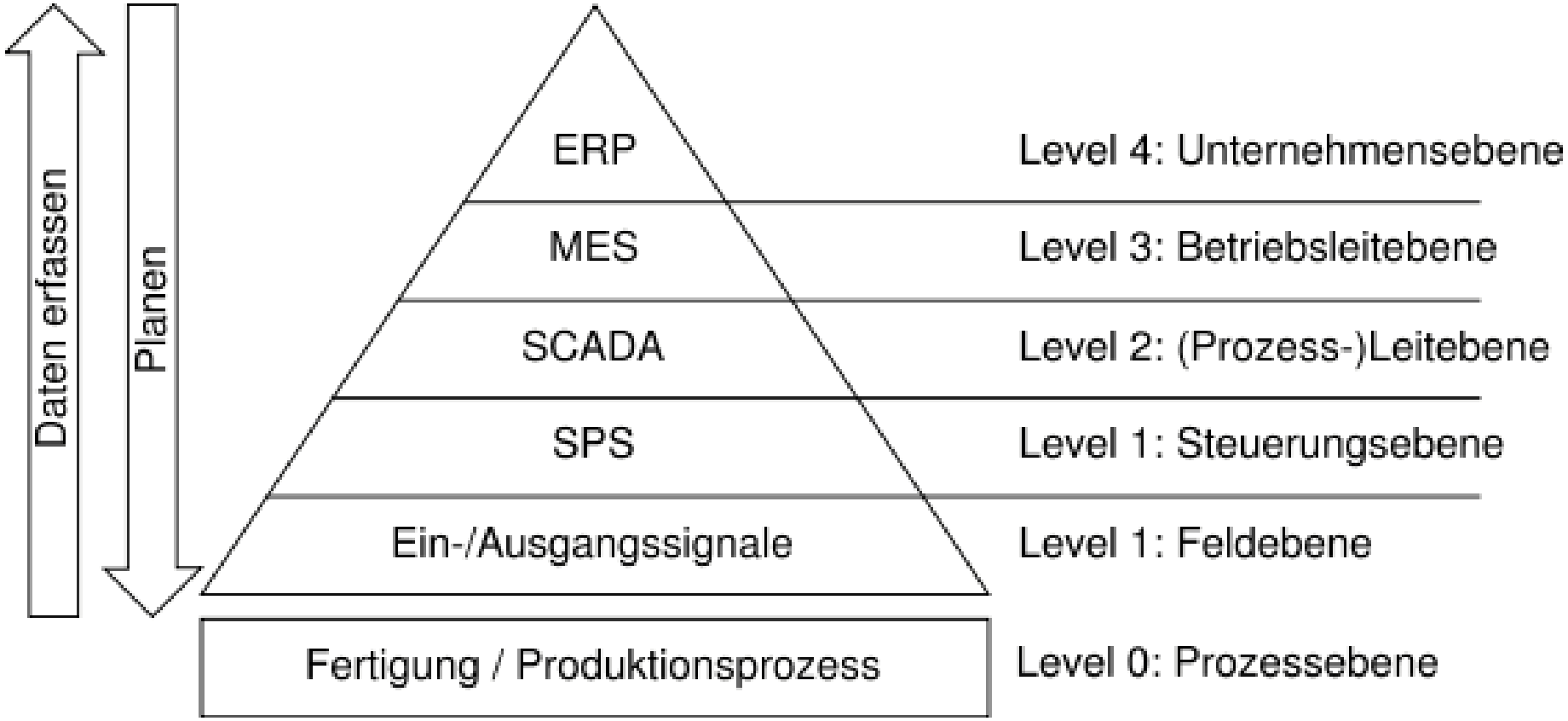


Request and task for R&D

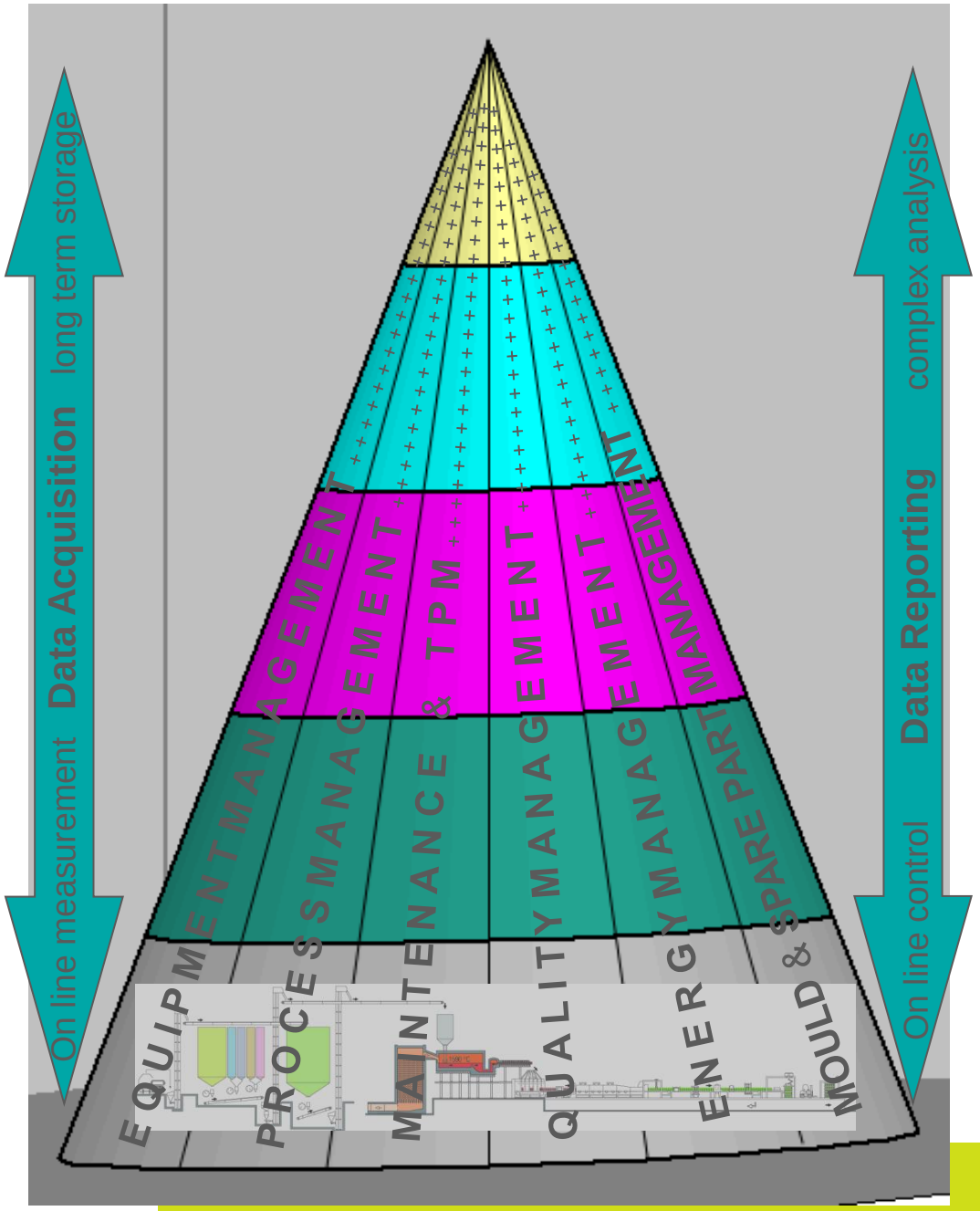
- Optimisation of processes and work organisation
  - Common data base for ... a easy job preparation
  - ... reporting in all levels
  - Abolishing of dispensable, time depending and disputable reports
  - Standardising and Optimising of PIT data and workflows
  - **Process optimisation by process control**
  - Basic preparation for Supply Chain Management
- To achieve that we have to optimise the industrial IT systematic
  - Best possible structure of industrial IT systems
  - Minimising subsystems and maximising IT standards
  - Organisation of interfaces between the standard systems
  - Creation of an international reporting system
  - KIS: Keep it simple, especially the handling

⇒ PIT = Prevention of wasting

Normalized from ISA-95: Pyramid of Automatio
A Basic Model for IIT Structures, but not complete!



The Industrial IT Cone for Container Glass Industry



Level 4 – Enterprise Resource Planning (ERP)

Company (Data) Processing

Level 3 – Manufacturing Execution Systems (MES)

Plant (Data) Processing

Level 2 – Supervision Control and Data Acquisition (SCADA)

Process (Data) Control

Level 1 – Field Level

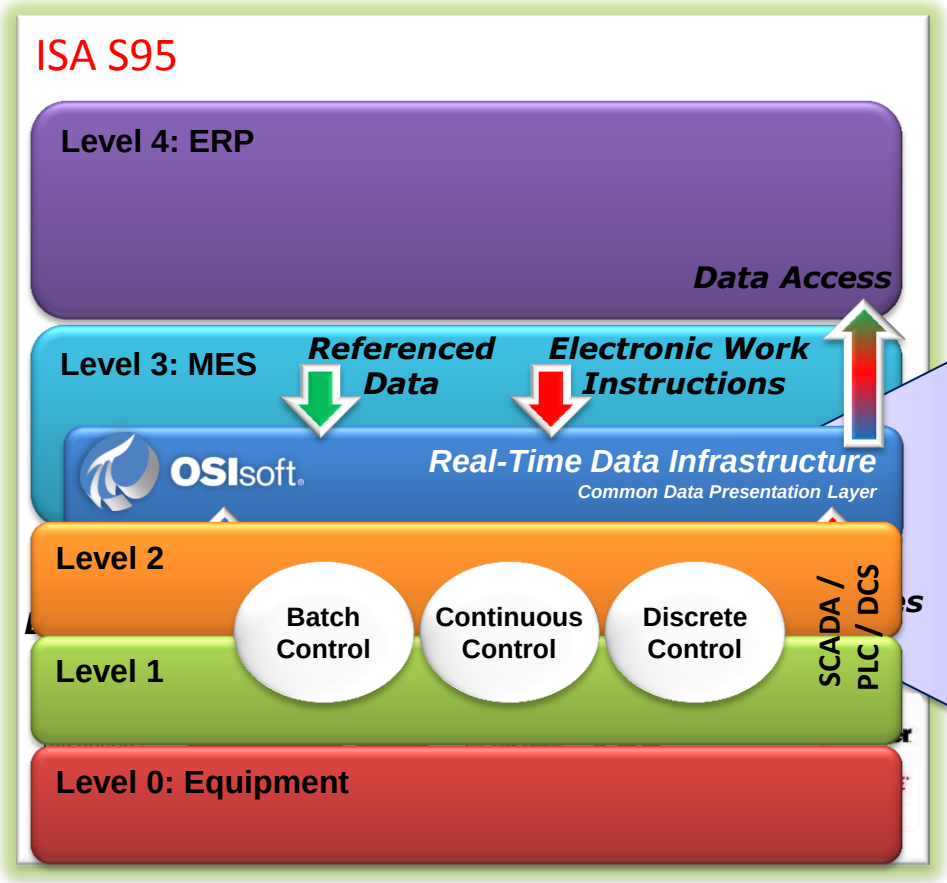
Process (Data) Measurement

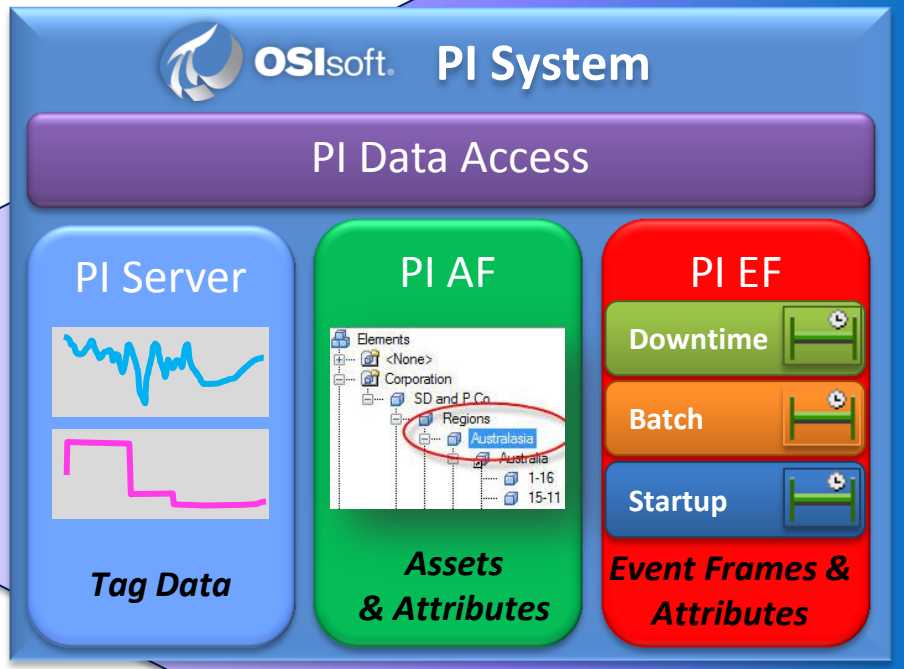
Level 0 – Process Level

Production Data

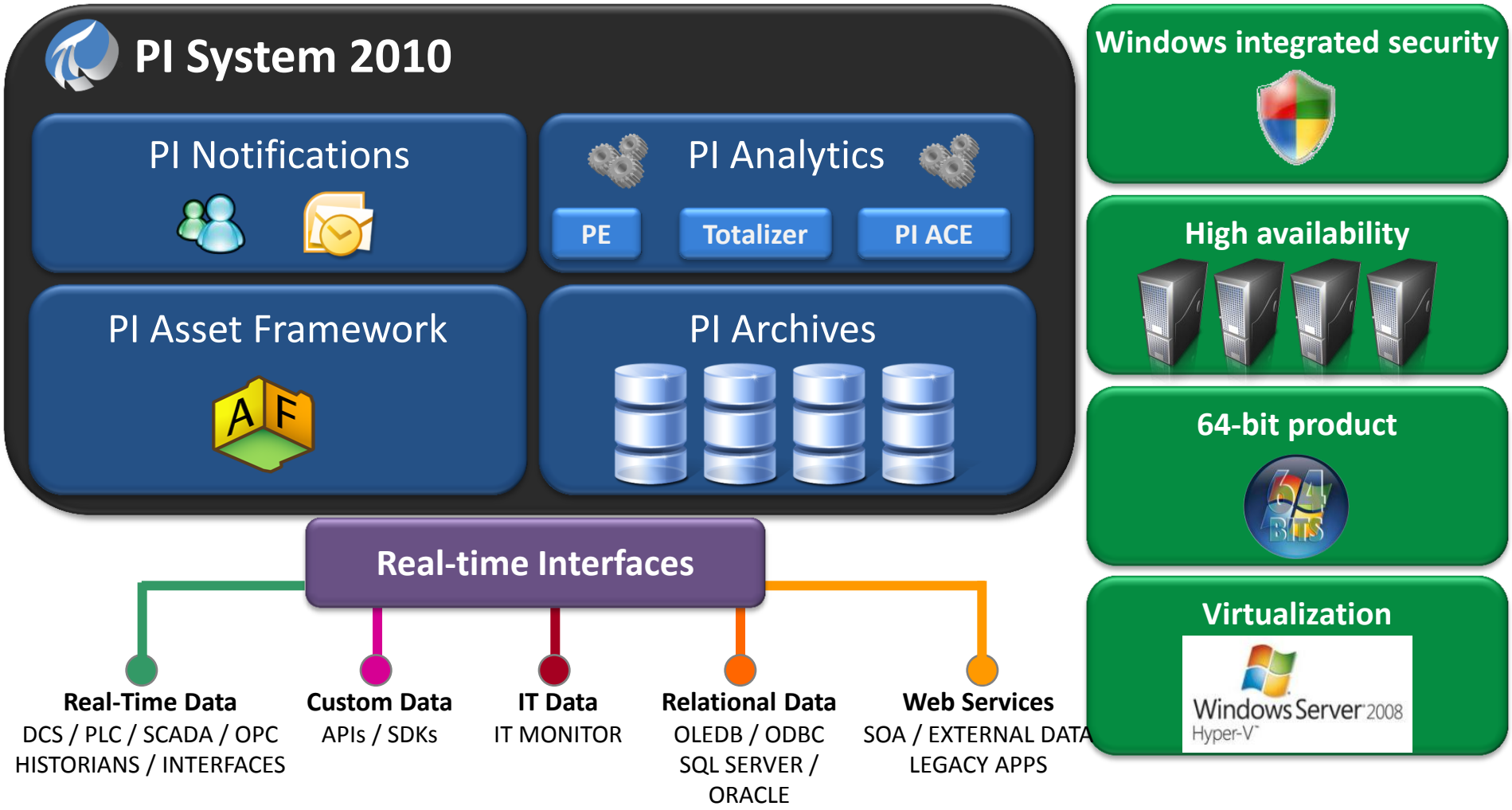
(Process & Hardware)

Aggregation – PI System Data Infrastructure



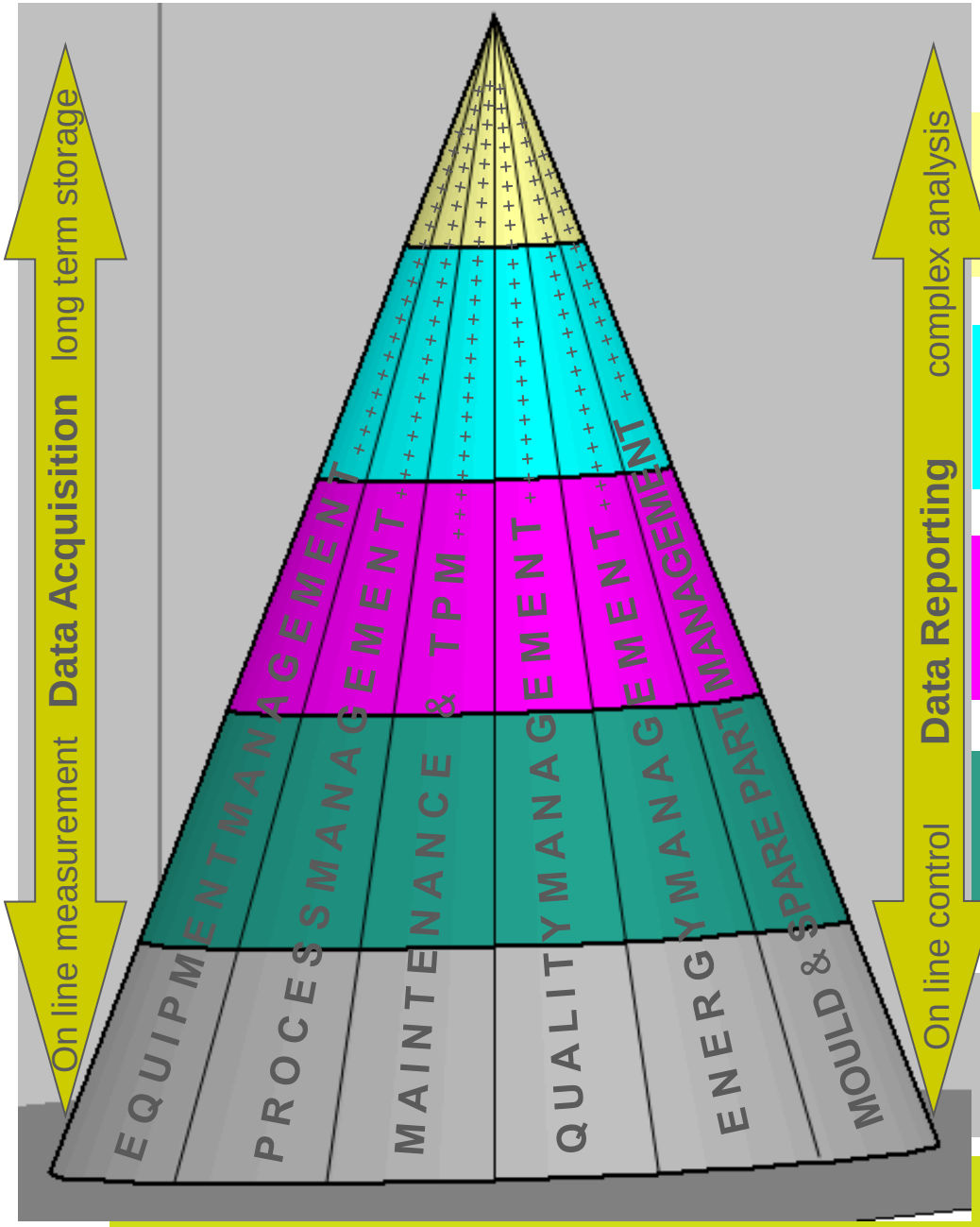


PI System 2010



Verallia`s Choice for PI as IIT Connector

Process Data Warehouse Level 0-4
PI (Plant Information System)



Level 4 – ERP
SAP (FI-CO-MM-PS-PP-PM-QM)
Alfresco, Provetto

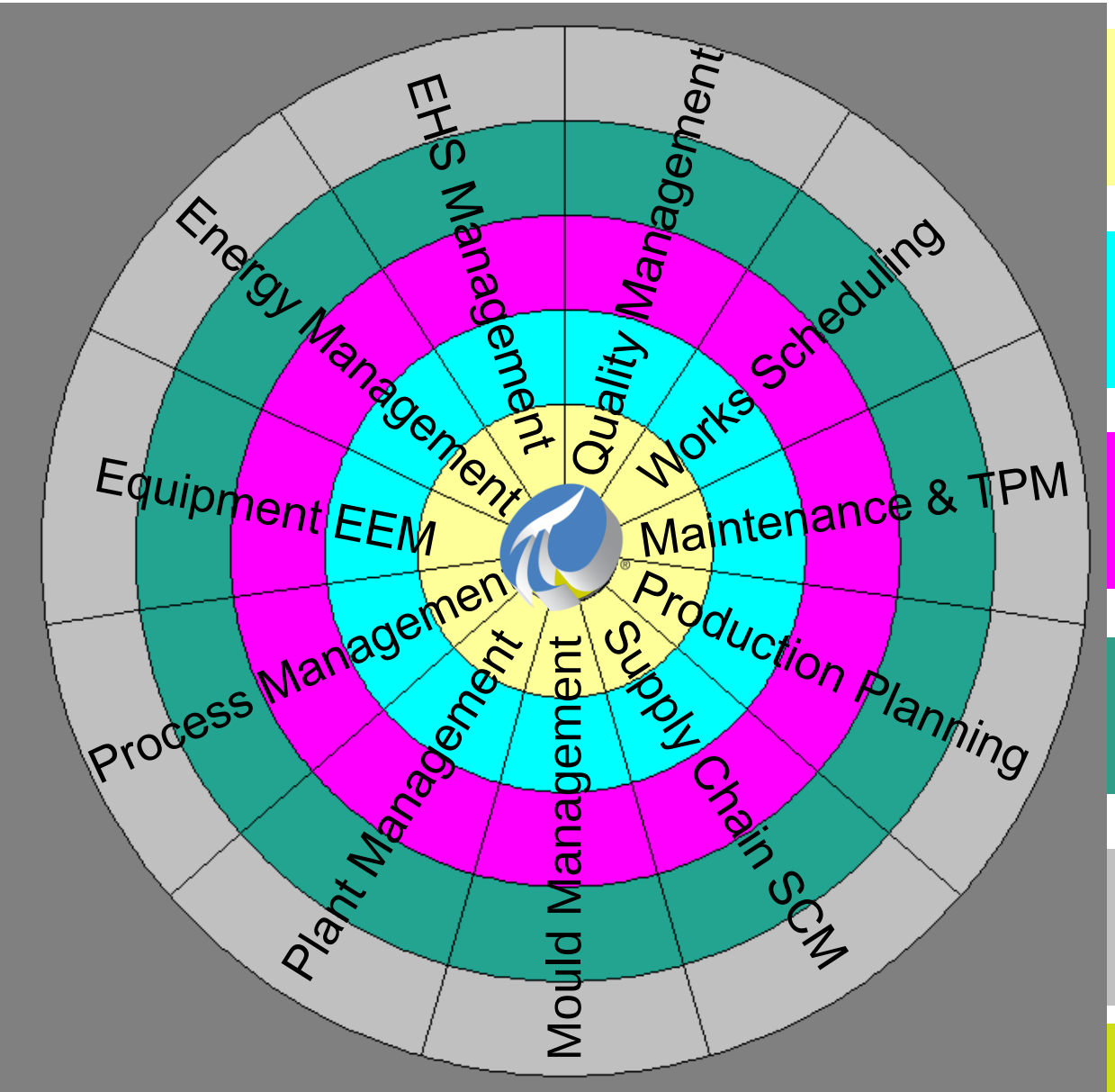
Level 3 – MES
ProE/PDMLink, GlasData, SIL+AIDOP, PalTr, Legato, ...

Level 2 – SCADA
Siemens PLCs, ABB PLCs, Graphpic, APMS, ...

Level 1 – Field Level
Sensors & Actors: TMTM, PPC, Pyrometers, Thermocouples, Drives ...

Level 0 – Process Level
Batch Processing, Melting, Conditioning, Forming, Inspecting, ...

The Verallia IIT Cone in Top Down View



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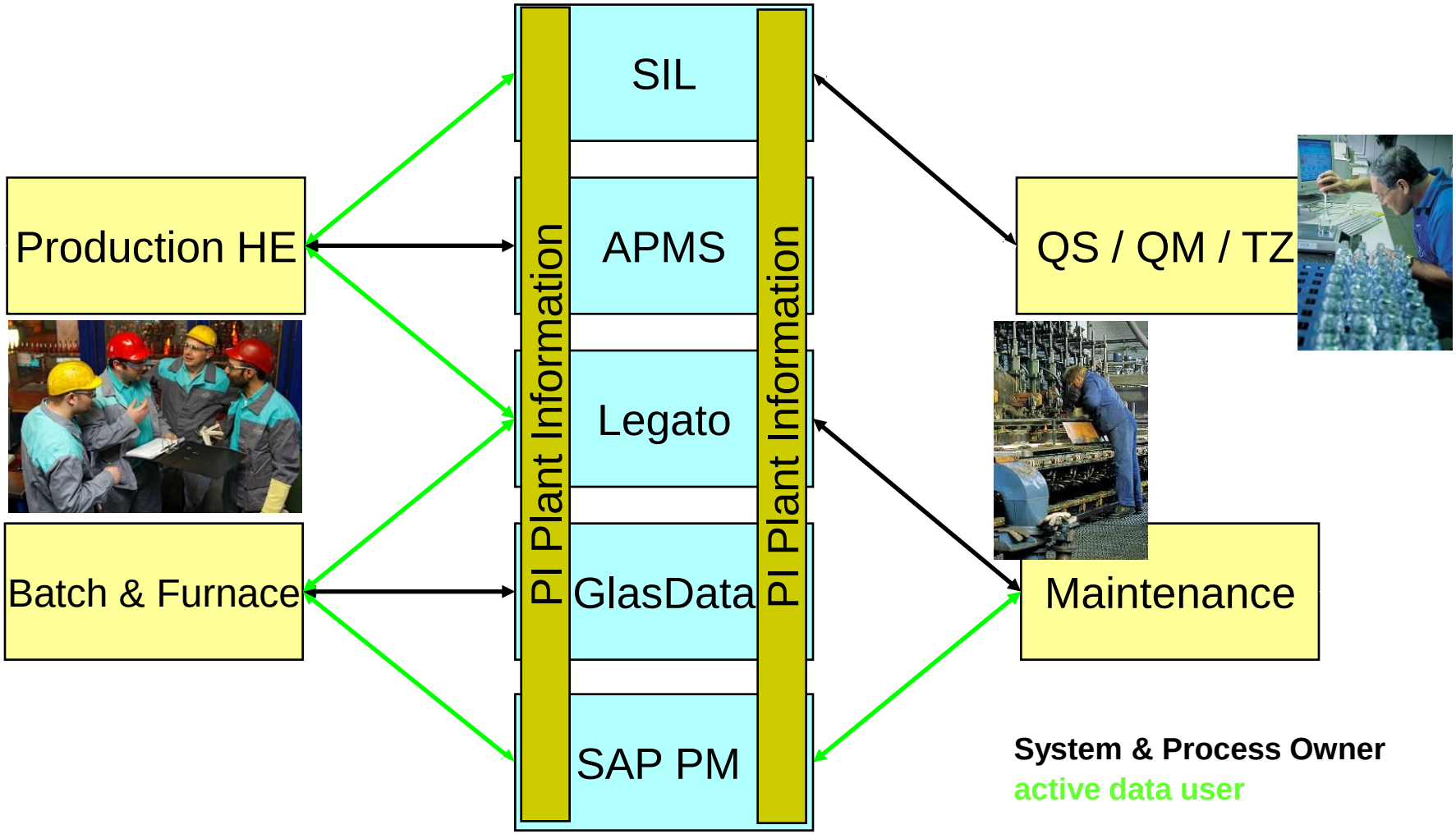
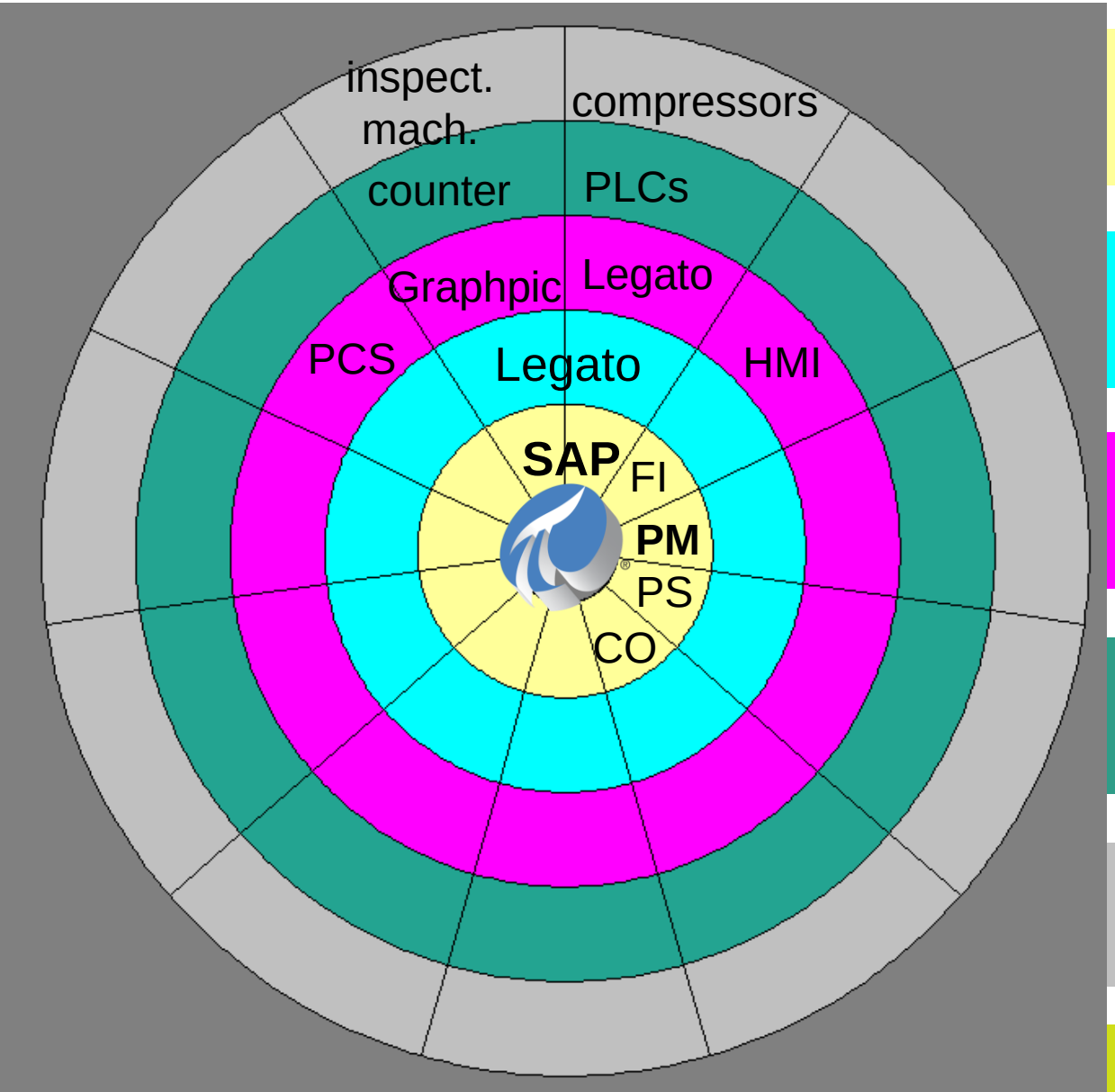
PIT: Who shall use what IIT systems?



PIT for Downtime Management



Level 4 – ERP

Downtime Controlling: analytic data vs. budget data // Documents

Level 3 – MES

Downtime Analysis: downtime paretos

Level 2 – SCADA

Downtime Control: PLC data collection

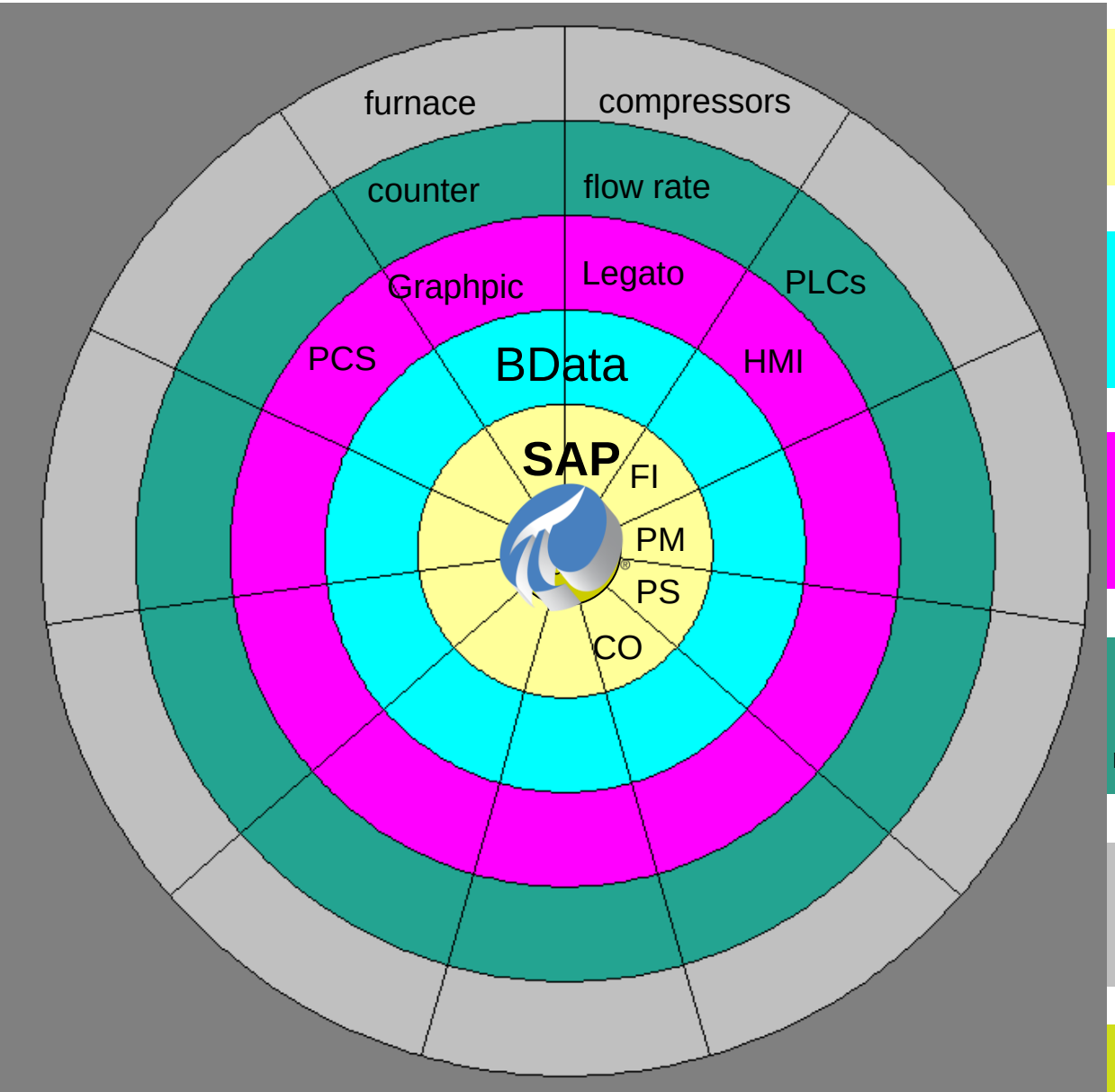
Level 1 – Field Level

Downtime Data Measurement: Sensors for temperature, power, pressure; Counter

Level 0 – Hardware (!) Level

Downtime Sources: Furnaces, Forehearths, Fans, Compressors etc.

PIT for Energy Management



Level 4 – ERP

Energy Controlling: analytic data vs. budget data // Documents

Level 3 – MES

Energy Monitoring & Analysis: consumption data vs. balance data

Level 2 – SCADA

Energy Control: on line measures & management e.g. max. power control ...

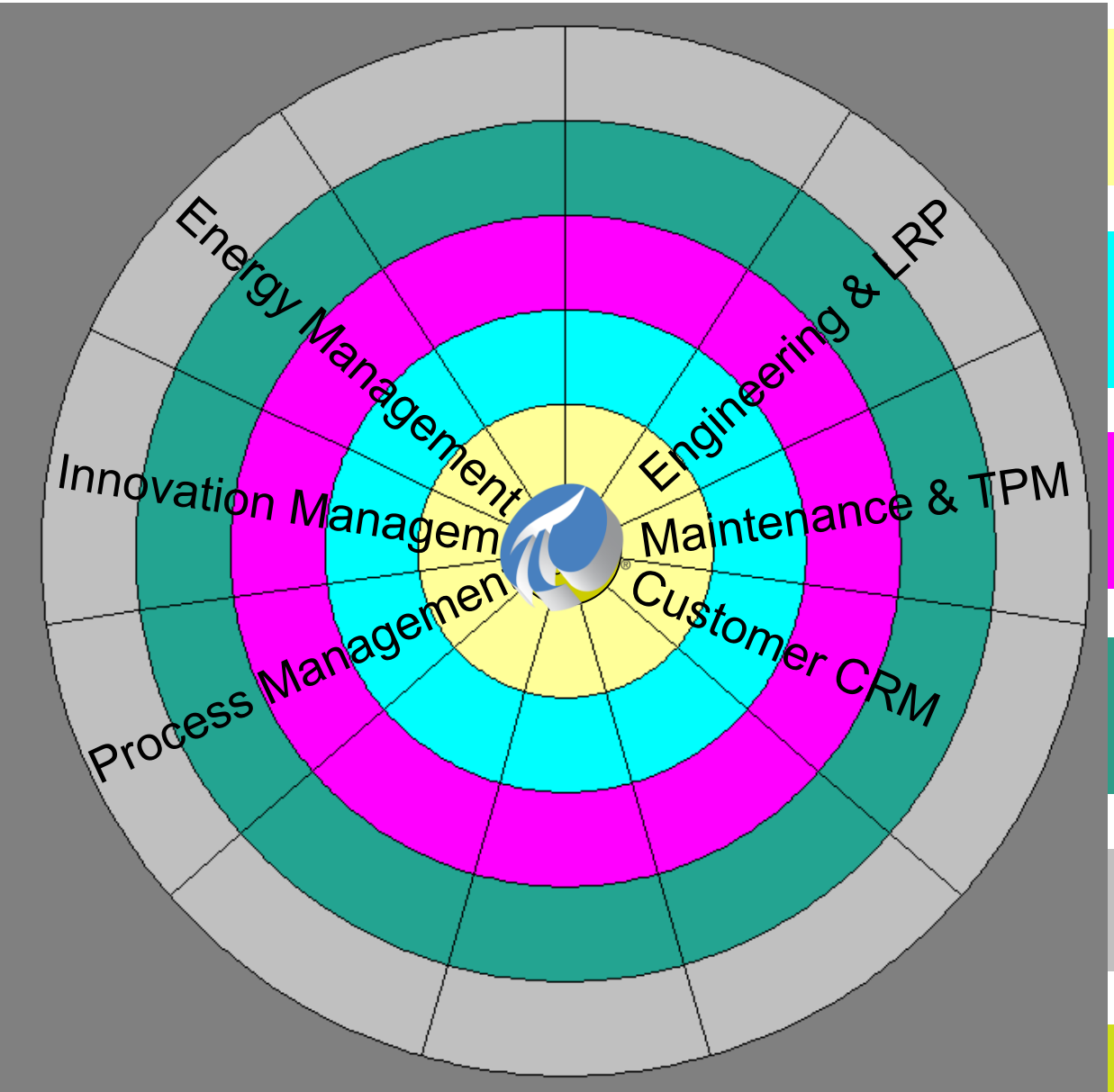
Level 1 – Field Level

Energy Data Measurement: Sensors for mass / gas flow, power, pressure; Counter ...

Level 0 – Process Level

Energy Consumers: Furnaces, Forehearths, Fans, Compressors etc.

PIT for Process Optimization



Level 4 – SAP – CAPEX, NPV
Master Data, Classes; Financial Data;
R&D Project Efforts; Documents ...

Level 3 – MES – NPD
New Product Development, Quality,
Energy Consumption, Yield ...

Level 2 – SCADA
Data Acquisition for Analysis
Process Stabilisation

Level 1 – Field Level
Measurements
Process Analysis

Level 0 – Process Level
Process Improvements / Optimisation

International Project PDH
Process Data History with PI

- Final decision for PI system in May 2012
- World wide central server in Paris with data core model
- German central server in plant Bad Wurzach with German plant core model, connected with Paris and all four German plants
- One virtual server per plant
- Pilot in Bad Wurzach asap. (July)
- Project preparation is ongoing

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THANK YOU

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