



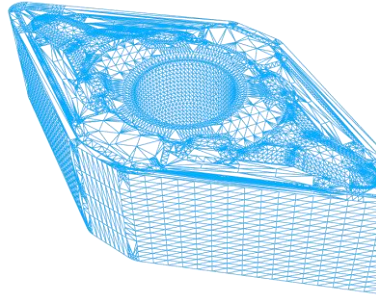
Using PI within Discrete Manufacturing to improve Asset Utilization and OEE

Björn Molin
Conny Söderlund

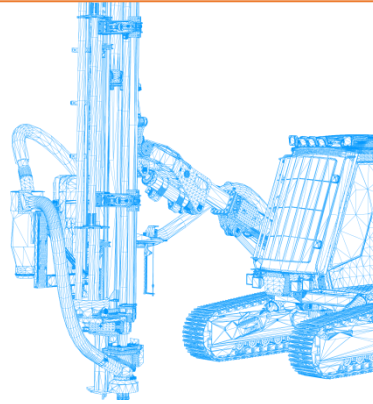
Who are we

- Björn Molin
- Manager Operational IT
- AB Sandvik Coromant
- Bjorn.Molin@Sandvik.com
- Conny Söderlund
- PI System expert
- AB Sandvik Coromant
- Conny.Soderlund@Sandvik.com

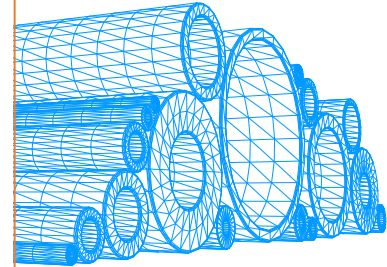
WORLD-LEADING POSITIONS IN THE FOLLOWING AREAS



METAL CUTTING



MINING AND ROCK
TECHNOLOGY



ADVANCED MATERIAL
KNOWLEDGE

43,000
EMPLOYEES

91 BILLION
SEK
INVOICED
SALES

50
R&D CENTERS
GLOBALLY

SALES IN OVER

150

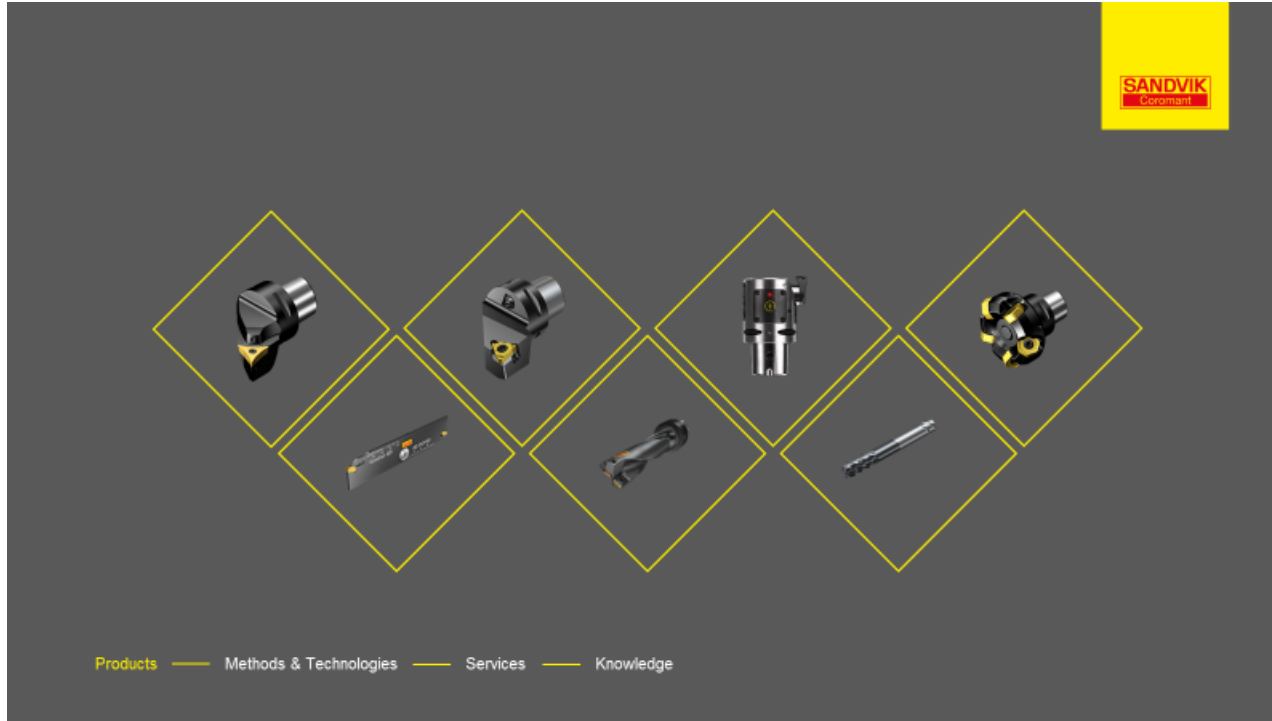
COUNTRIES
AROUND THE GLOBE

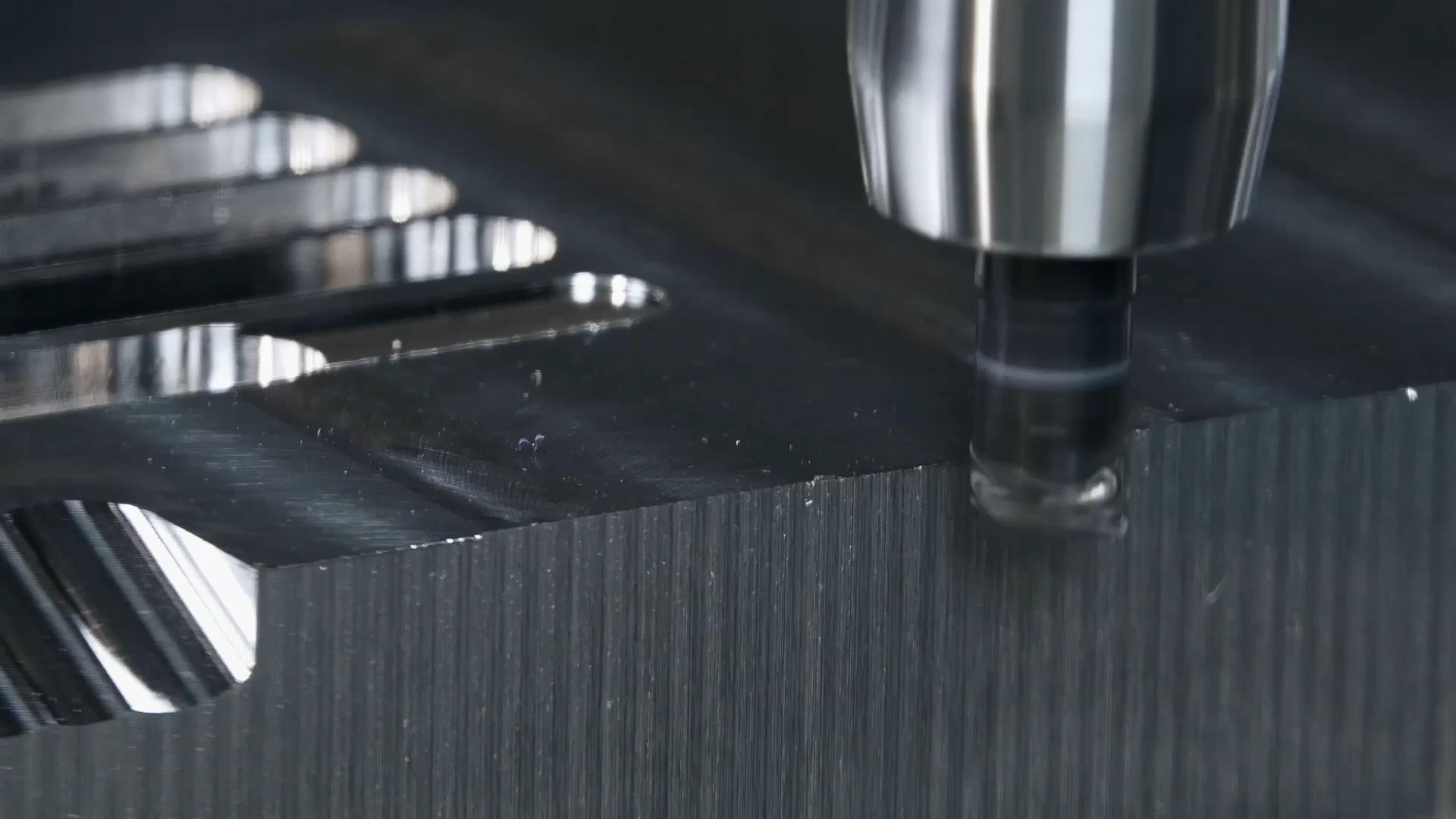
3.5 BILLION SEK
ANNUAL R&D
INVESTMENT

7,300
ACTIVE PATENTS AND
OTHER IP* RIGHTS

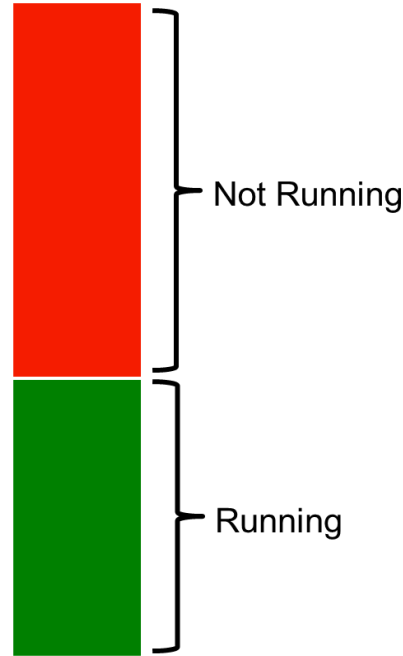
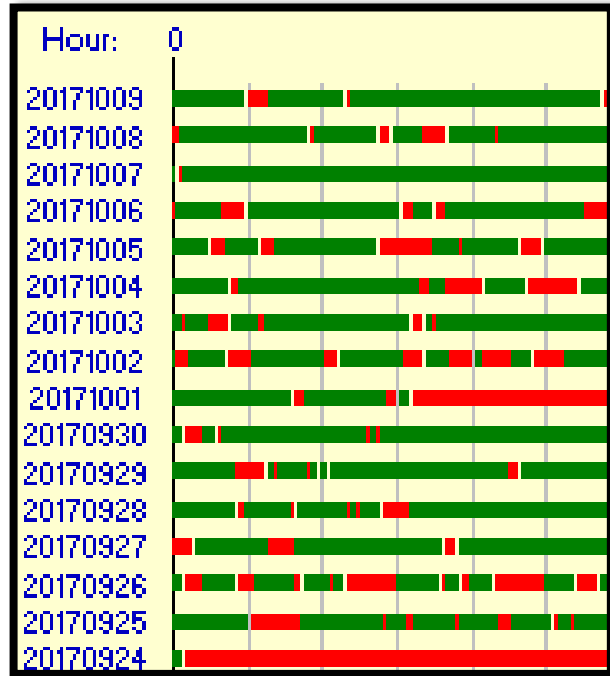


OUR PRODUCTS





Our Objective – Standardize OEE



VS



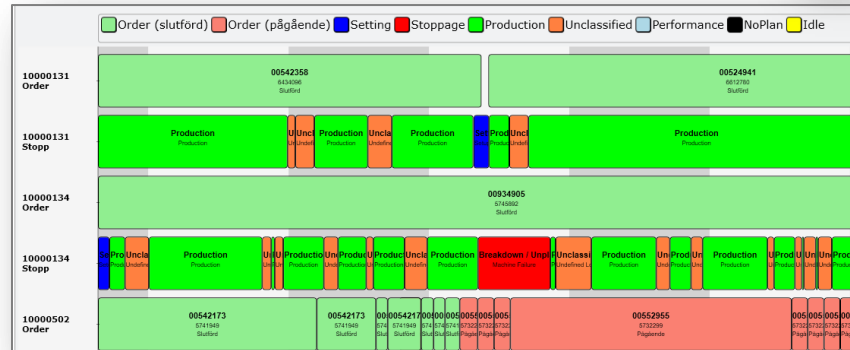
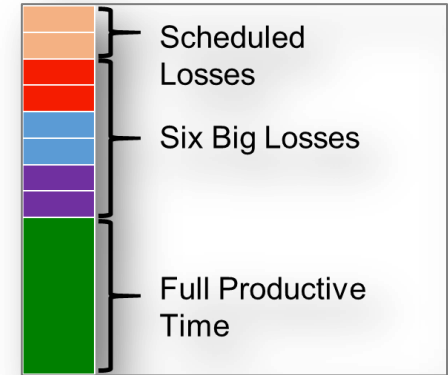
Business Benefits



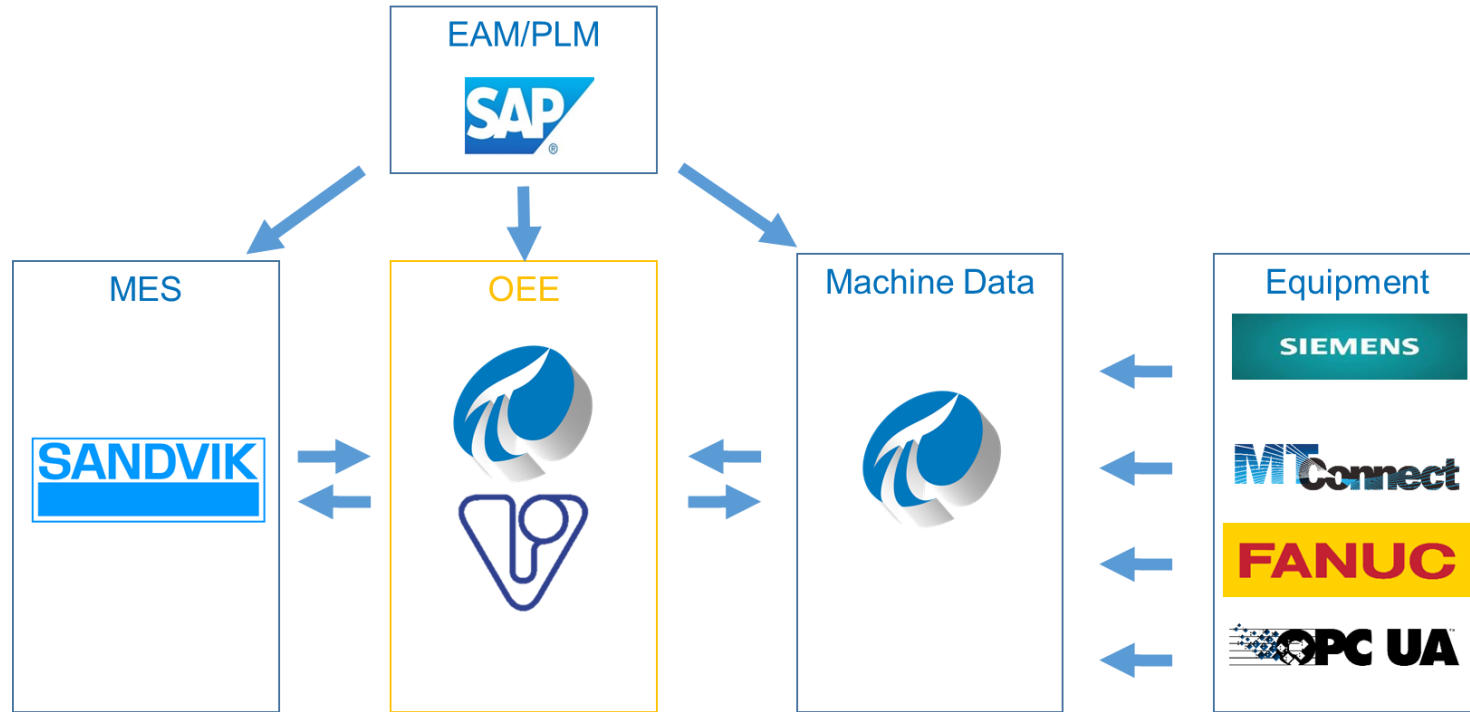
Improve Asset Utilization

Global and Local Improvements

Real-Time Feedback



Solution – Our System Architecture



ERP/MES Integration

- Machine information from SAP EAM
 - SAP MII sends information via UFL Connector REST
- Product/Order information from SAP PLM / MES
- Plantperformance read/writes information via PI AF SDK

AF Transformer / PI System Connector/ AF SDK

- PI system connector
 - Send aggregated local machine information to a global PI installation.
- AF Transformer
 - Used to transform AF structures to fit end-users and system(s)
- AF SDK
 - Send verified templates from the global PI installation to local PI

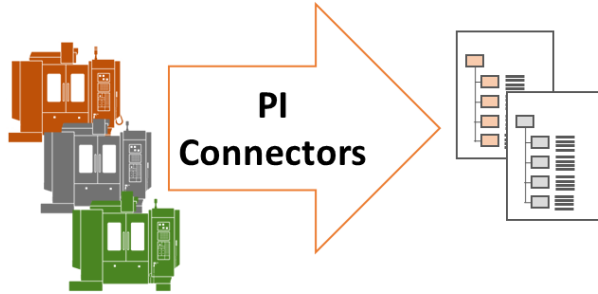
Development of new PI components

- Osisoft developed 3 new connectors
 - PI Connectors for Fanuc Focas, Mtconnect, RPC Sinumerik
- Coromant team also supported in beta test of:
 - PI Connector for OPC UA
 - AF Transformer
 - PI Connector Relay
 - PI Data Collection Manager
 - PI System Connector
 - PI UFL Connector

All of the products are critical for the projects

The Role of the PI System

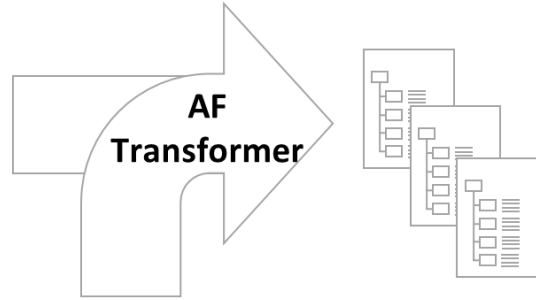
Connect



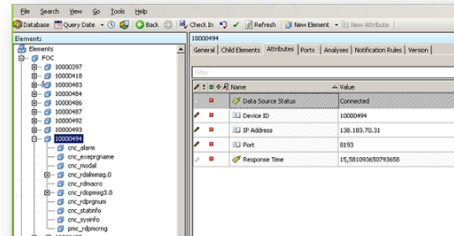
Data Collection Manager



Standardize



Standardized Templates



Deliver & Store



Standardized OEE Dashboard



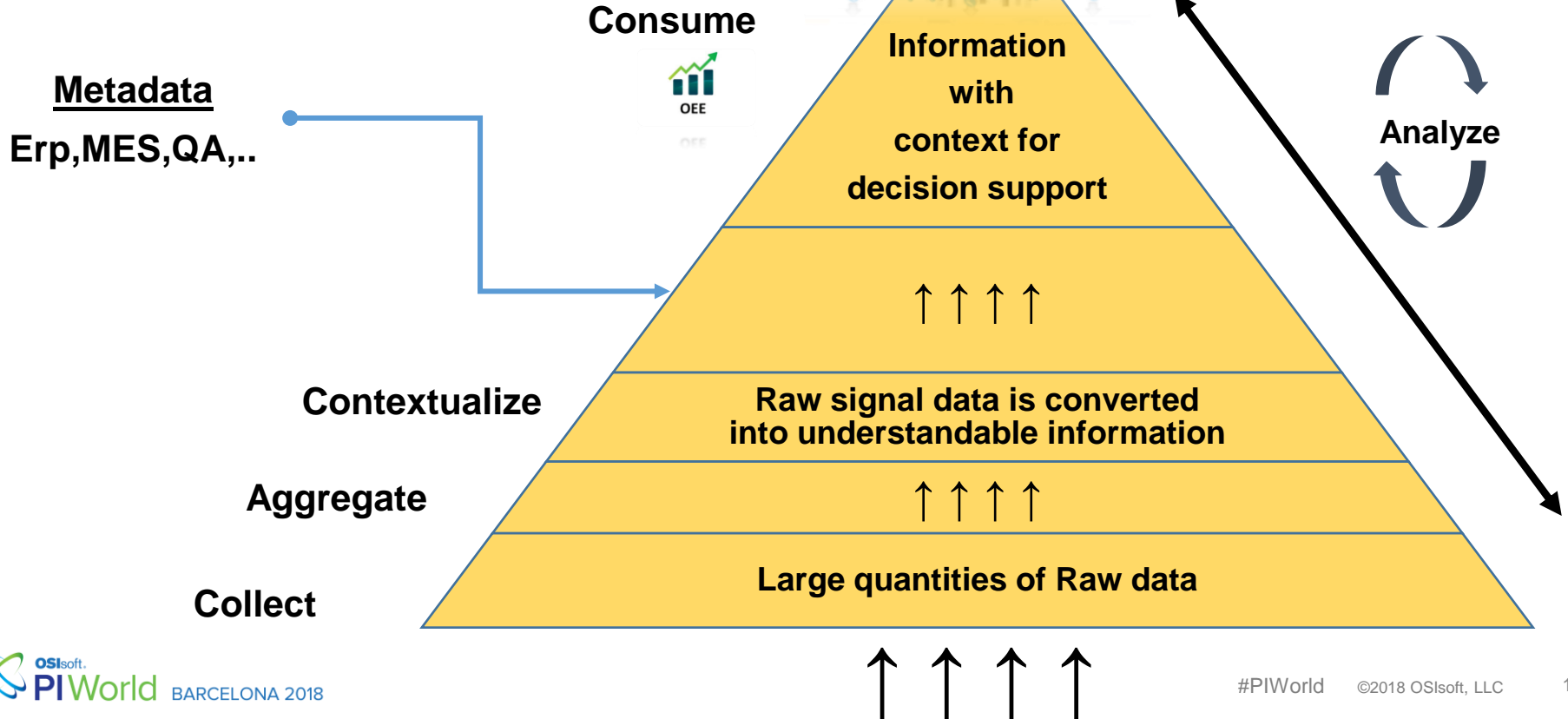
Beyond OEE – The digital journey

- We did not choose PI <only> to support OEE
 - Additional process data and peripheral data needed for broader insight
- Context and structure is crucial moving forward
 - Collecting data is not the hard part
- Trust the data, a base for decision and direction

Beyond OEE – The digital journey

- Plan for a horizontal strategy and what OI data is relevant for **YOUR** processes
- Conclusion so far; Information drives the need for more information, and **YES** it should all be connected

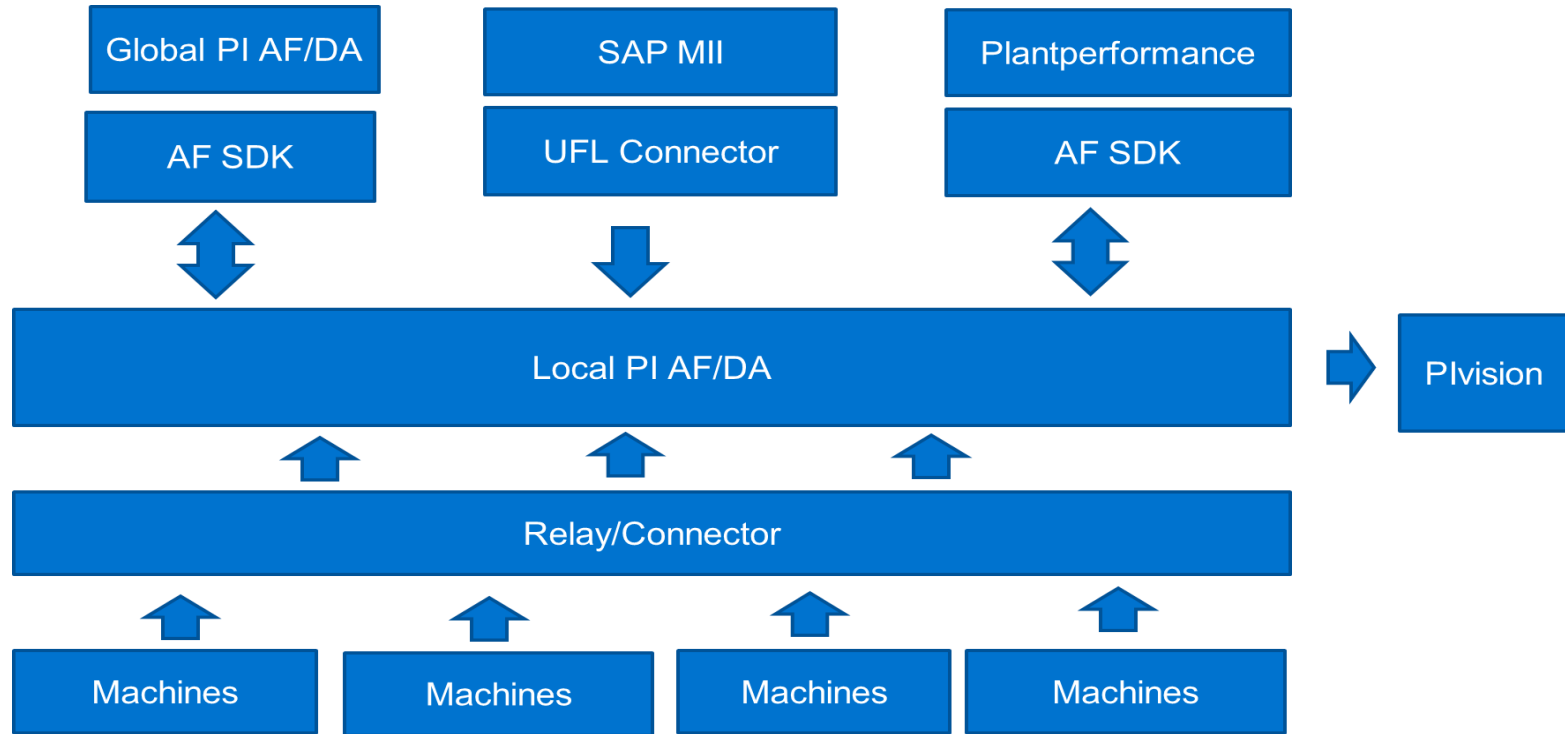
From Signal to insight



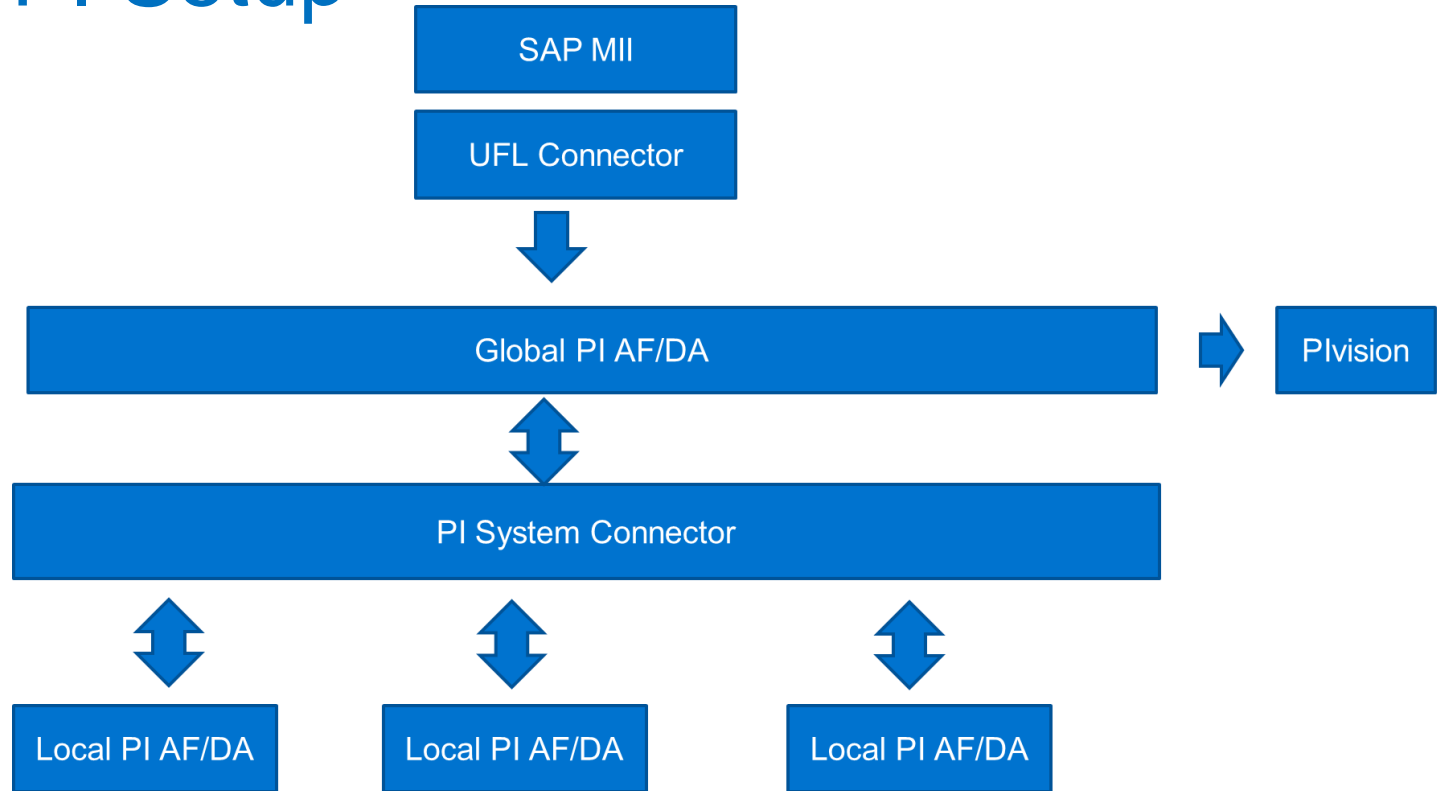
AF-Structure and templates

- Defined AF/DA structure that covers current and future known needs.
- Builds on template hierarchy for maximum control.
- The asset structure is the key fundament that the all information is connected to.
- Defined notation for all states and signals' presented to consumers
- Use System directory for keeping track of PI Environment

Local PI setup



Global PI Setup



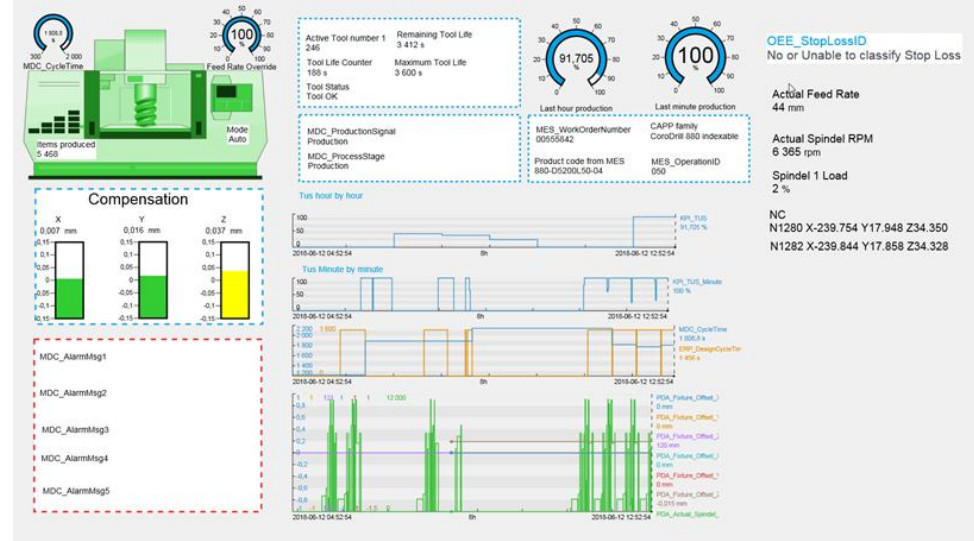
Visualization

PI Vision / Datalink

- Used by production to create their own graphs/analytics with PI Vision and data link.
- Simplified by using common notation for all machines and templates
- AF Transformer is used to make structure more usable when working with dashboards
- Not used only for OEE, much more detailed data available

PI Vision dashboards

Some examples



PowerBI reporting

- Building on the asset structure, common notation of calculated tags and Event Frames
 - We were able to create a POC in less then 2 weeks with actionable insight
 - Shows information on plant level not seen/known before
- When structure in order – time to market is amazingly fast.

PowerBI reports

- Overview from machine to PU to enterprise
 - Production availability
 - Process information
 - Order / Product view
 - Detailed alarm management
 - And much more

Challenges

- Security
- Resources
- Additional requirements
- Different machine types

Roadmap PI

- Rollout of Osisoft PI to more Production Units
 - Two in progress
 - Three in planning phase
 - Two up and running, connecting more machines
- Evaluation and testing OMF
- Integration with SAP
- More types of Connectors/Interfaces
 - Ethernet/IP
 - Modbus
 - BACnet
 - RDBMS
 - Sensors
 - ...
- Connect more production systems

Questions?

Please wait for
the **microphone**

State your
name & company



Please rate this session in the mobile app!



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 TAPADH LEIBH 고맙습니다
 БАЯРЛАЛАА MISAOTRA ANAO
 DZIĘKUJĘ CI NGIYABONGA TEŞEKKÜR EDERIM GRACIES
 OBRIGADO شڪرا SALAMAT
 DANKON TANK TAPADH LEAT
 DANKIE TERIMA KASIH
 KÖSZÖNÖM
 СПАСИБО
 PAKMET CIZGE
 GO RAIBH MAITH AGAT
 БЛАГОДАРЯ GRACIAS
 МАНАДСАНИД
 ТИ БЛАГОДАРАМ
 TAK DANKE
 RAHMAT
 HATUR NUHUN
 CẢM ƠN BẠN
 WAZVIITA
 FALEMINDERIT
 DANK JE ΕΥΧΑΡΙΣΤΩ GRATIAS TIBI
 AČIŮ SALAMAT MAHALO IĀ 'ŌE TAKK SKALDU HA
 GRAZZI PAKKA PĒR
 PAXMAT CAĞA
 SĪPAS JI WERE TERIMA KASIH
 UA TSAUG RAU KOJ
 ТИ БЛАГОДАРАМ
 СИПОС
 MULTUMESC
 HVALA
 FAAFETAI
 ESKERRIK ASKO
 HVALA ХВАЛА ВАМ
 TEŞEKKÜR EDERIM
 GRAZIE
 DI OU MÈSI
 ĎAKUJEM
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THANK YOU



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