

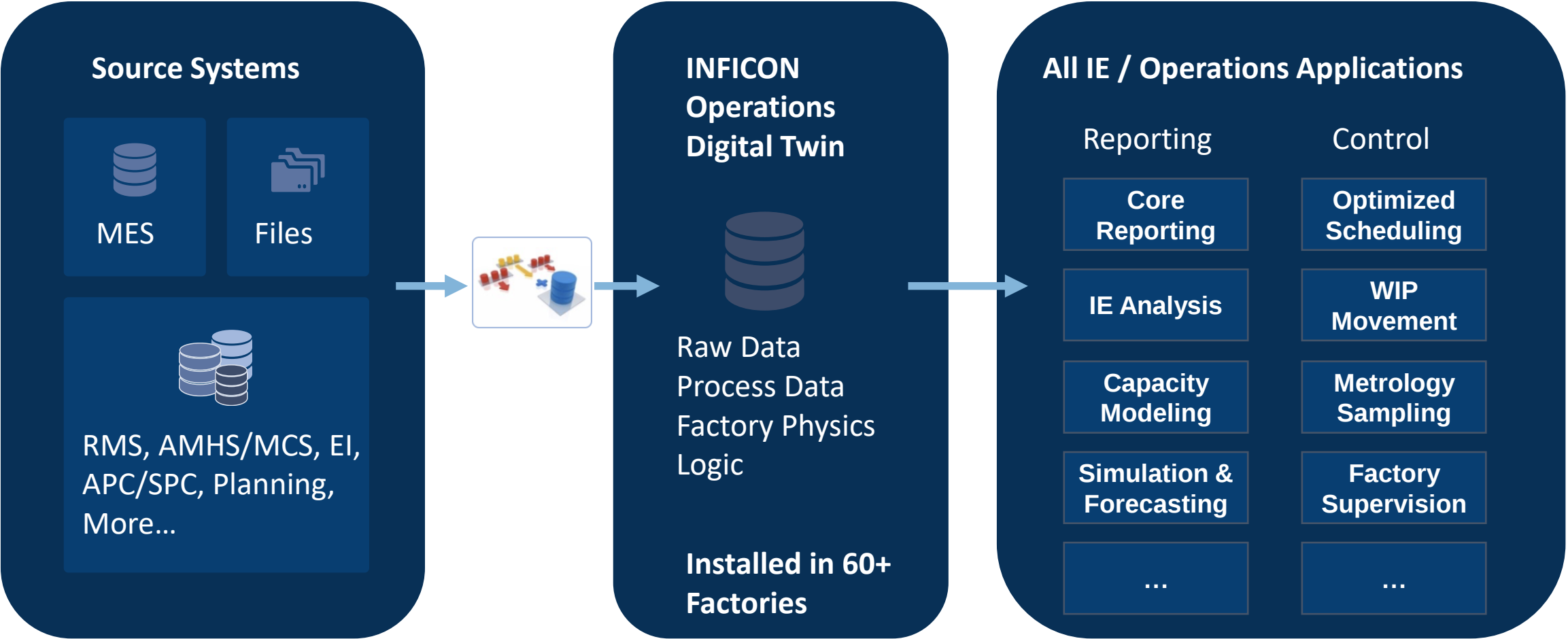


From Insight to Action: Elevating Employee Efficiency with Smart Detection and Targeted Data Delivery

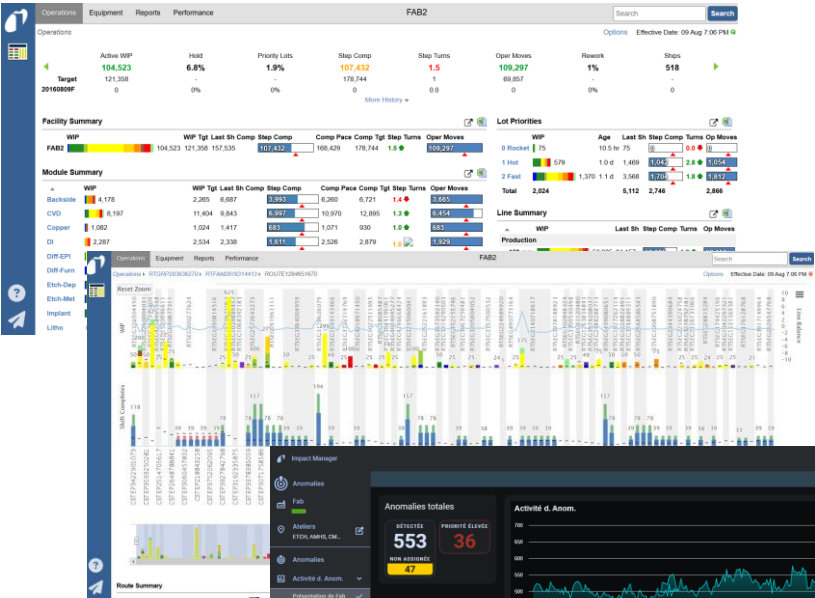
Dr. Holland M. Smith III
Director of Data Science, INFICON

Thomas Gimmig
Director, Industry 4.0, ST Microelectronics

Industry's Most Widely Used Factory-Level Digital Twin



The Reporting Challenge: Make Data Actionable



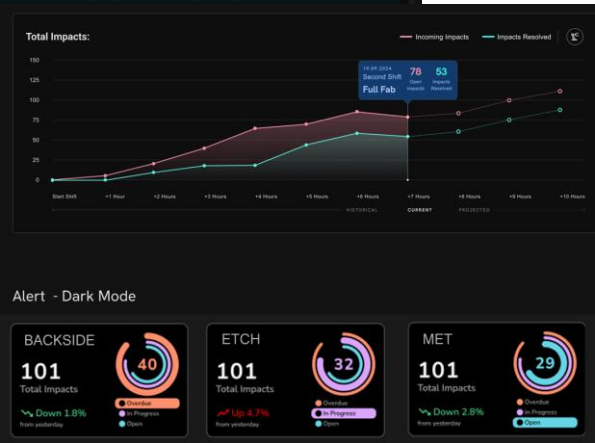
Standard reports: Required but not enough



Traditional design philosophy:
Show an expert everything needed to make a decision



New Goal:
Automate analysis and show only
what you need to do job



SMART Approach: Joint Success with Strategic Partners

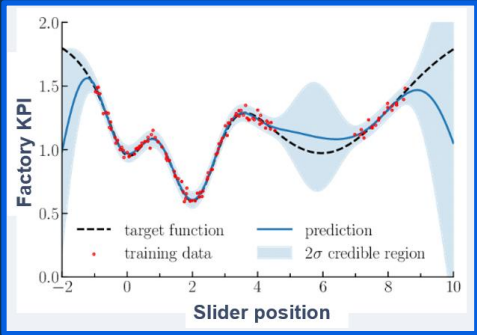
Metrology Sampling Optimization (2019)



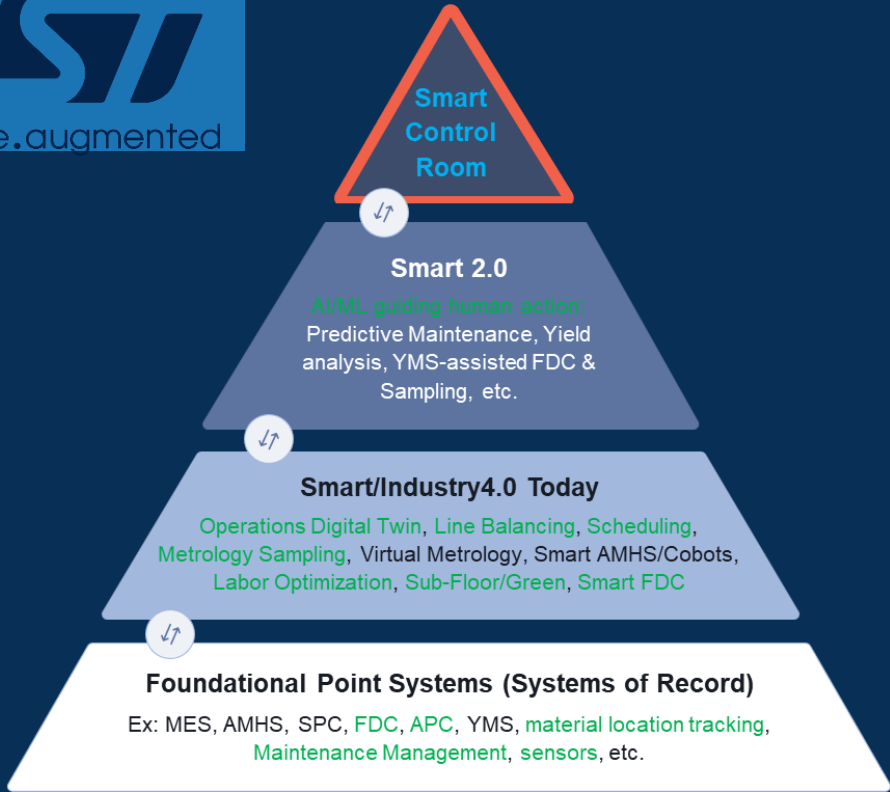
SchedExplorer: Multi-Objective Opt. Tuning (2023)



+ Large 200 mm Foundry



Fab Supervision (2024)





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STMicroelectronics Company presentation

October 2025

We are creators and makers of technology



One of the world's largest semiconductor companies



50,000 employees
of which **9,000+** in R&D



\$13.3 billion revenues
in 2024



Over **80** sales & marketing
offices serving over **200,000**
customers across the globe



14 main manufacturing
sites



Signatory of the United Nations Global Compact (UNGC)
Member of the Responsible Business Alliance (RBA)

Where you find us



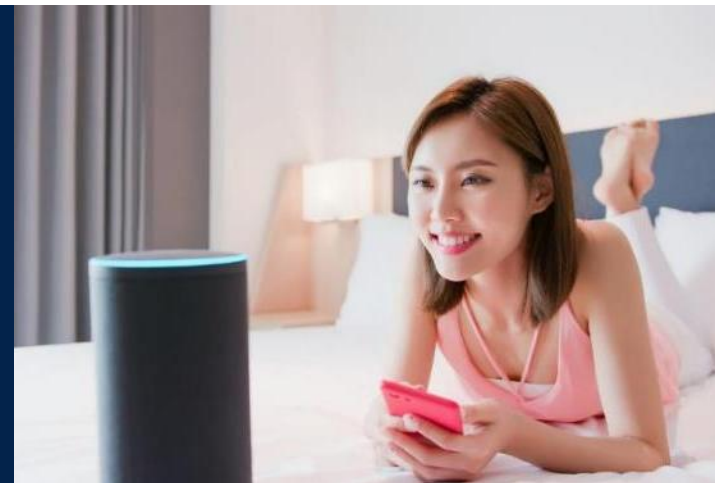
Making **driving** safer, greener, and more connected

Enabling the evolution of **industry** towards smarter, safer, and more efficient factories & workplaces



Making **homes & cities** smarter, for better living, higher security, and to get more from available resources

Making everyday **things** smarter, connected, and more aware of their surroundings



We offer quality, flexibility, and supply security



Sweden
Norrköping

France
Crolles
Rousset
Tours
Rennes

Italy
Agrate
Catania
Marcianise

Morocco
Bouskoura

Malta
Kirkop

China
Shenzhen

Philippines
Calamba

Malaysia
Muar

Singapore

● Front-End (Wafer fabrication)
● Back-End (Assembly & Test)



QMT Finance and Business Operations

Industry 4.0

MISSION

VISION

VALUES



We are preparing our Manufacturing future by driving the QMT I4.0 transformation roadmap towards Lights Off model, leveraging on domain expert partnerships, synergized solutions and breakthrough innovations.

To accelerate the I4.0 revolution from vision to reality

Collaborating
Making decision
Developing expertise
Delivering on promises

Thomas GIMMIG
Industry 4.0

Business Case Analysis

Factory Robotics Automation

Factory Digitalization

Business partnering DTIT



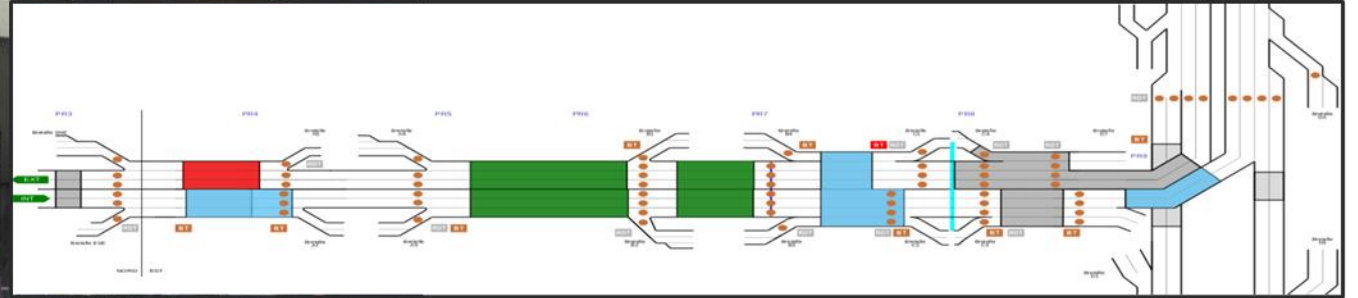
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Control Rooms



Highway control center

Critical mission, supported by smart information system



Main figures:

- 220km of road & saturated city tunnel
- 400 cameras + traffic sensors
- 160,000 vehicles per days
- Avg 1 alert every 3min
- Min. 1 operator 24/7



Critical needs:

- Anomalies detection & classification
- Fast impact assessment
- Support for action plan
- Execution follow up



Control room in ST

A unique place to operate Fab activities

MISSIONS:

- 24/7 problem solving
- Anomalies real time detection
- Fast decision-making

EXPECTATIONS:

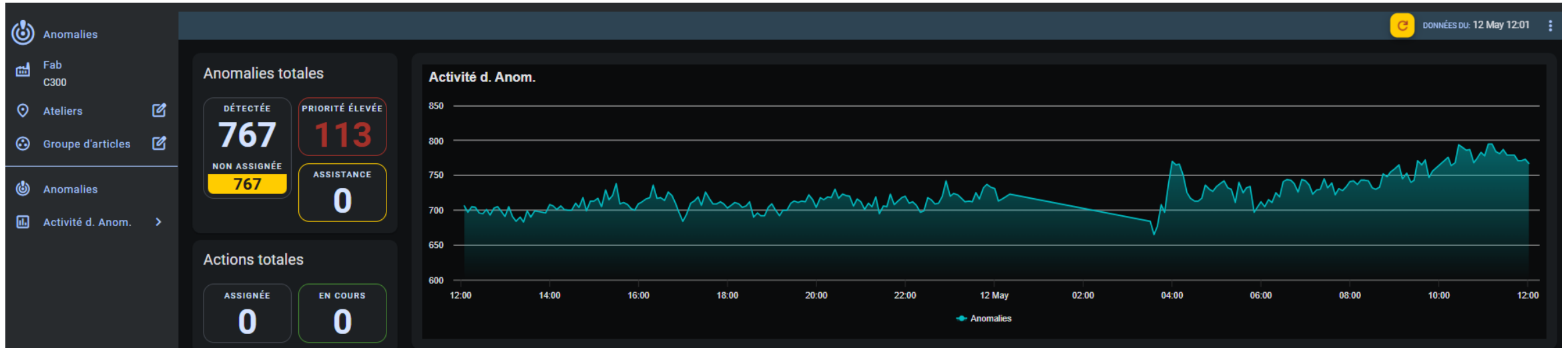
- Fab cleanroom densification
- Fab size and HC decoupling
- Equipment and people productivity

UNCAPPED HORIZONS:

- Robotized process autom. (RPA)
- AI-assisted Fab management
- Lights Off model



Fab performance monitoring & tasks prioritization



ST and INFICON joint development of Control Room smart information system



DETECTION

Leverage the Data Warehouse to model and detect issues



PRIORITIZATION

Classify and prioritize issues to present working groups with ranked lists



WORKFLOW

Support definition & assignment of tasks to responsible groups and individuals



EXECUTION

Facilitate tasks, communication, tracking and timely completion of work

ImpactManager development

INFICON selection

Selection criteria	Supplier 1	INFICON	Supplier 3	Supplier 4
UIX design				
Digital Twin				
KPI dashboard				
Automatic KPI deviation classification				
Supervision of anomalies dashboard				
Automatic anomalies ranking				
Integration in ST manufacturing system				
Semiconductor experience				
Program structure (ST effort)				
Risk level				
Cost				

Impact Manager: Current Status

Development

- Development begun in 2024, first area release in 3/2025
- In production in ROCC as primary real-time support engine factory-wide since 8/2025
- Plan to proliferate to more sites in 2026
- Improved interface over other support systems
- Issues assigned and prioritized automatically, factory checked every 5 minutes
- Role-specific view customization

The screenshot displays the Impact Manager web application. On the left is a sidebar with navigation links: Impacts, Facility FAB2, Reporting Group, Item Group, and Impacts Activity. The main area features a table of impact events with columns for Priority, Date, Reporting Group, Group, and Details. Above the table are filters for Status, Group, Impact Type, Priority, and Lot Group. To the right of the table are buttons for 'Clear Filters' and a search icon. Each row in the table includes a status indicator (e.g., Assistance, Unassigned, Assigned, False, Resolved, Deprioritized) and a set of action icons (message, share, etc.).

Priority	Date	Reporting Group	Group	Details	Status	Actions
🔴	22 Oct 14:05	Backside	TPM	DEP-T110 Line Down due to Inhibit: I/Inhibited by USER3010990117: COMM59195523	Assistance	📧 🔄 ⋮
🟡	7 Aug 11:03	Bonding		FURN-T084 Line Down due to Un-Scheduled Down: COMM2458032112	Unassigned	📧 🔄 ⋮
🟡	7 Aug 11:03	Copper	KLIF	DEP-T105 Line Down due to Inhibit: I/Inhibited by USER286136028: COMM1555229173	Assigned	📧 🔄 ⋮
🟡	7 Aug 11:03	Copper	IPL	WET-T011 Line Down due to Inhibit: I/Inhibited by USER3010990117: COMM3519384650	Assigned	📧 🔄 ⋮
🟡	7 Aug 11:03	Backside		BACK-T032 Line Down due to Scheduled Down:	False	📧 🔄 ⋮
🟡	7 Aug 11:03	Diff-Furn		FURN-T086 Line Down due to Scheduled Down:	Assigned	📧 🔄 ⋮
🟡	7 Aug 11:03	Diff-Furn	KLIF	FURN-T085 Line Down due to Scheduled Down:	Assigned	📧 🔄 ⋮
🟡	22 Oct 14:05	Etch-Dep	KLIF	FURN-T084 Key Equipment Un-Scheduled Down: COMM2458032112	Resolved	📧 🔄 ⋮
🟡	22 Oct 14:05	Backside		BACK-T032 Line Down due to Inhibit: I/Inhibited by USER286136028: COMM669016387	Deprioritized	📧 🔄 ⋮
🟡	22 Oct 14:05	Backside	KLIF	BACK-T036 Line Down due to Inhibit: I/Inhibited by USER286136028: COMM669016387	Assistance	📧 🔄 ⋮
🟡	22 Oct 14:05	DI	PROCCE...	FURN-T140 Line Down due to Inhibit: I/Inhibited by USER286136028: COMM1030439418	Unassigned	📧 🔄 ⋮

Application Screenshots (removed for distribution)

Current and Future Anomalies



Current Anomalies

Known to be a problem right now.

Example: Down tool

Action Plan:

- Often well-known
- Possible to be defined in advance

Primary *novel* system benefits:

- Centralized supervision
- Workflow tracking

Yesterday's Focus



Future Anomalies

Will be a problem in the future if you don't make a change now.

Example: Line balance

Action Plan:

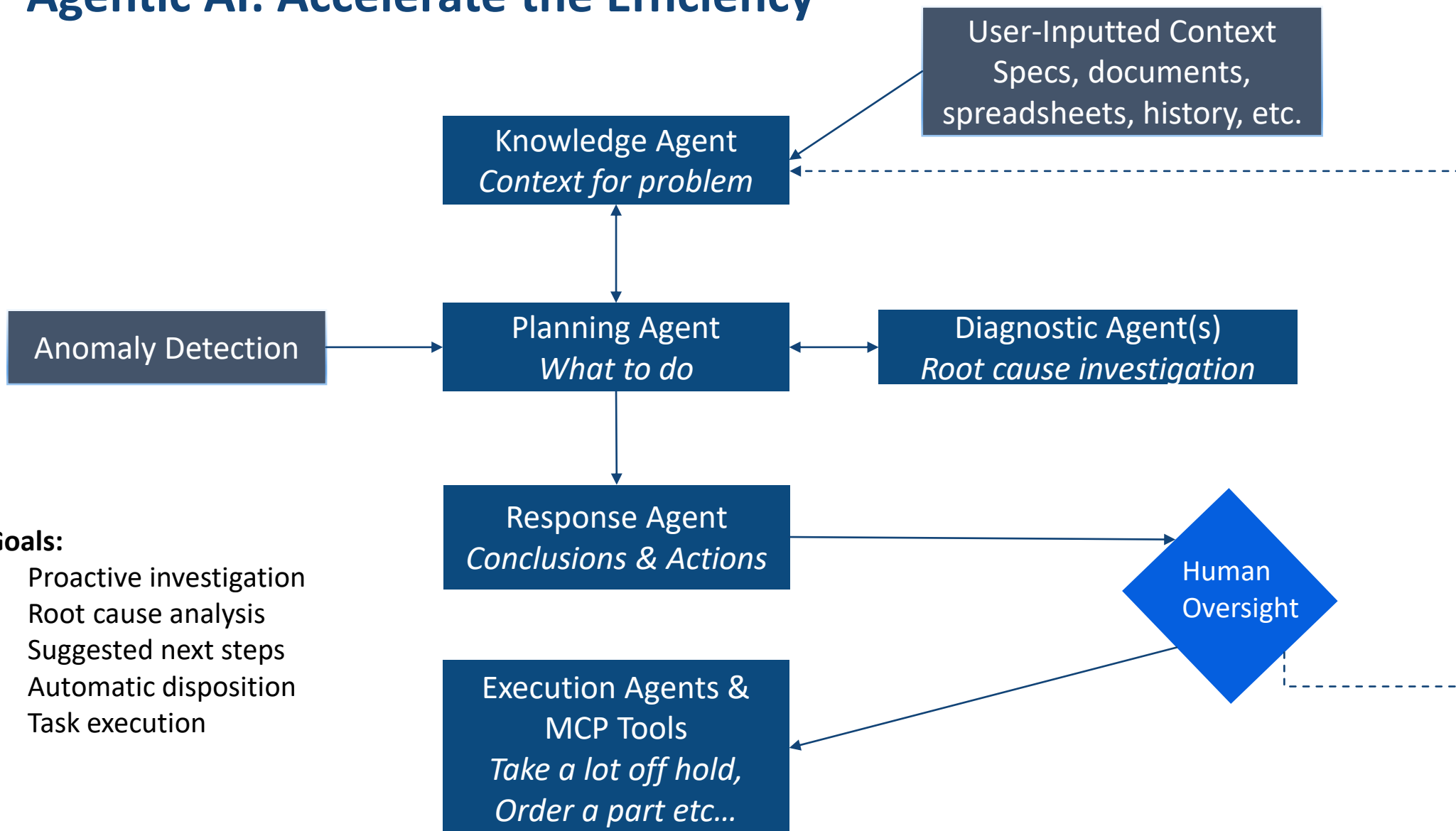
- Not necessarily known in advance
- Ideally can be suggested...
- And improved with time!

Primary *novel* system benefits:

- Automatic detection
- Impact assessment
- Proactive suggestion
- Expert knowledge capture

Today's Focus

Agentic AI: Accelerate the Efficiency



Goals:

- Proactive investigation
- Root cause analysis
- Suggested next steps
- Automatic disposition
- Task execution

Evolution of Agentic AI Capability

Functionality Hierarchy

Level 1: In-application Contextual Help

- Any language (AskINFICON)

Level 2: In-application AI Assistant

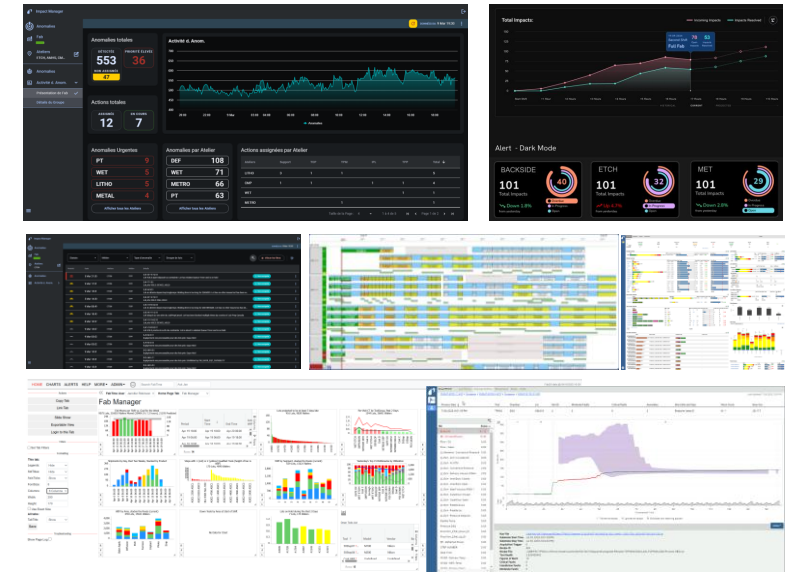
- Take actions in the program based on plain language

Level 3: Agentic Data Analysis

- Able to analyze information and data shown in the program (and out)

Level 4: User- and Factory-Aware Personal AI Assistant

- All of the capabilities of level 3, plus:
- Knowledge of user – previous questions, job role, etc.
- Memory of previous interaction
- Knowledge / memory of other user interactions



Agentic Data Analysis

Video showing Agentic AI
Data Analysis

INFICON: Conclusions and Lessons Learned So Far



Work closely with end users

They know what they need and how the business processes work



Learn from previous applications

How do existing systems handle pieces of the envisioned functionality?



Balance aspirational vision with practical focus

What can be used immediately in a first version?



Universality and flexibility of design

What is general to all fabs versus specific to one?



Agentic AI holds **tremendous promise to accelerate the vision**

Analyze proactively, determine root cause, suggest next steps, take actions, capture knowledge

We are encouraged and excited for efficiency gains judging by early results!



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www.inficon.com