



SSHE & ET-PPS

PPS Roadmap 2025



3rd European Conference on
Plant & Process Safety in Maastricht
December 13-14, 2023

Dr. Thorsten Müh





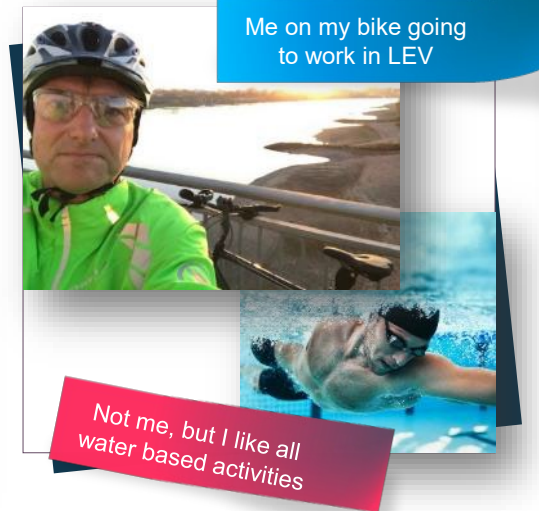
Thorsten Müh

Head of Process and Plant Safety @ Bayer



Professional Experience

- (Technical) Chemist
- With Bayer since 1998, before with F. Hoffmann-La Roche
- 3 years working on bioprocess engineering
- 15 years experience in chemical manufacturing
- 10 years leading in Sustainability, Safety, Health & Environment
- International Experience in US, Switzerland, China and Singapore



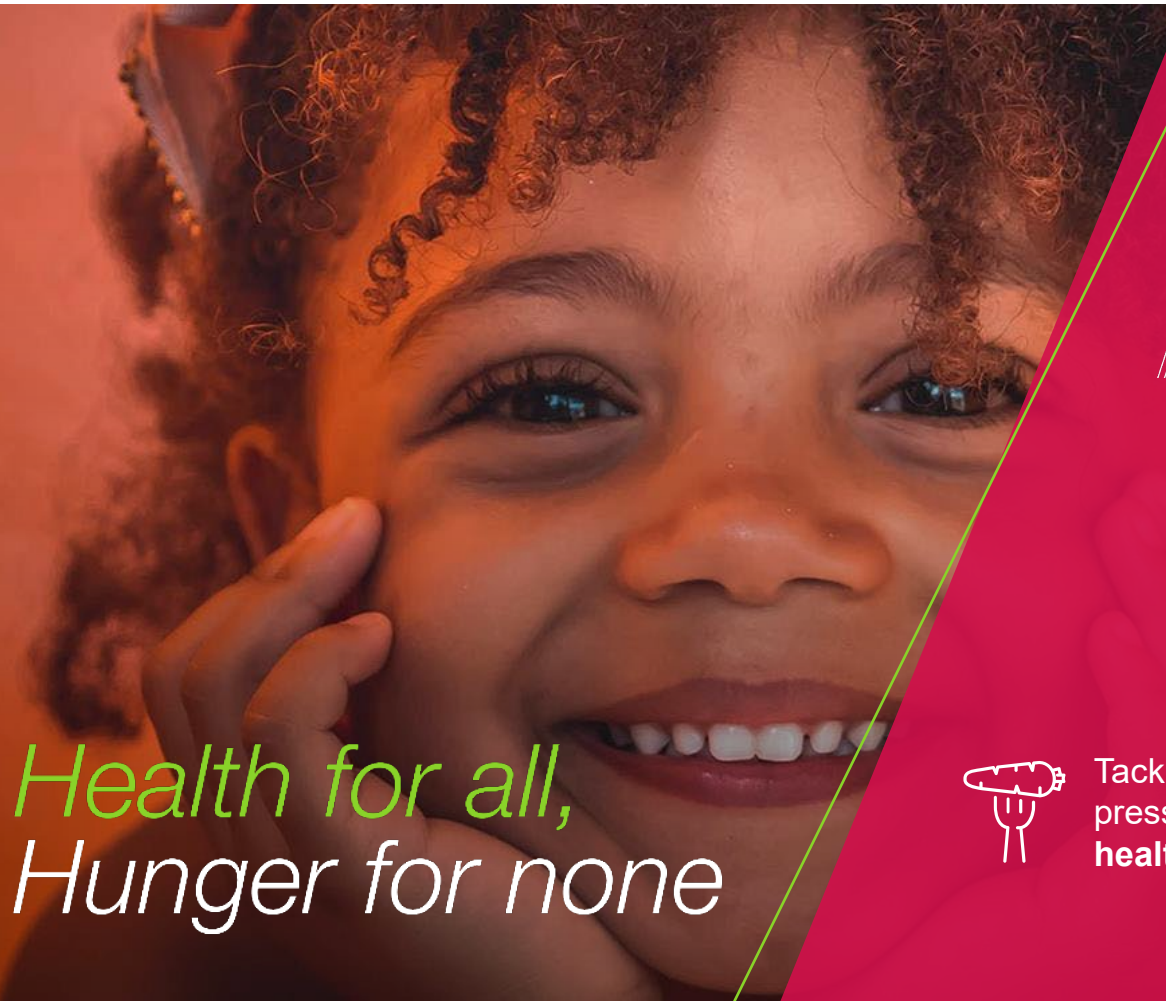
Me on my bike going to work in LEV





With almost 160 years of history, Bayer is today a leading LifeScience company

Group key data



*Health for all,
Hunger for none*

3 divisions

- // Crop Science
- // Pharmaceuticals
- // Consumer Health

Represented by
354 consolidated companies in

83
countries

101.4k

employees worldwide
in 2022*

€6.6bn

investment in R&D
in 2022

€50.7bn

sales
in FY2022



Tackling two of the most pressing challenges of our time:
health & nutrition



Diverse, international focus
with cross-border and cross-division
people development

* As of December 31, 2022; employees in full-time equivalents

Our major achievements in 2022

Progress towards 2030

SDGs on which we have the greatest impact through our businesses



Our vision: Health for all, hunger for none

People

19million people reached through Nutrient Gap Initiative

52million smallholder farmers reached in LMICs

70million people supported with self-care in underserved communities

Top Ten in the Access to Medicine Index

Included in Bloomberg Gender Equality Index

reached 44million women with modern contraception in LMICs

Women's empowerment

Access to health

Food security

Inclusive growth

ESG

Reduced ecological footprint

Acting responsibly along the entire value chain

Climate protection

Environmental impact reduction

Environmental protection



Overall GHG emissions (Scope 1, 2, 3) reduced by 1.1 million tons² while growing our business
own GHG emissions (Scope 1, 2) reduced by -19.5%²

CDP A List for the fifth time

33% renewable electricity
Reducing emissions in our value chain (Scope 3) remains an increasing challenge

Planet

Crop Protection Environmental Impact Reduction: reduced by -14%³

Learn more about our achievements in the sustainability highlight report:
<https://www.bayer.com/en/sustainability/sustainability-reports>

Human Rights Officer role established ✓
Supplier Code of Conduct updated ✓
MSCI ESG Research: red flag removed ✓

LMICs: low- and middle-income countries
ESG: Environmental, Social, Governance

² since 2019

³ performance tracking period 2017– 2021 against the 2014 – 2018 baseline

Process and Plant Safety is a pre-requisite for sustainable operation



Flexible toolbox for different operations.

Active (Pharmaceutical) Ingredient Sites

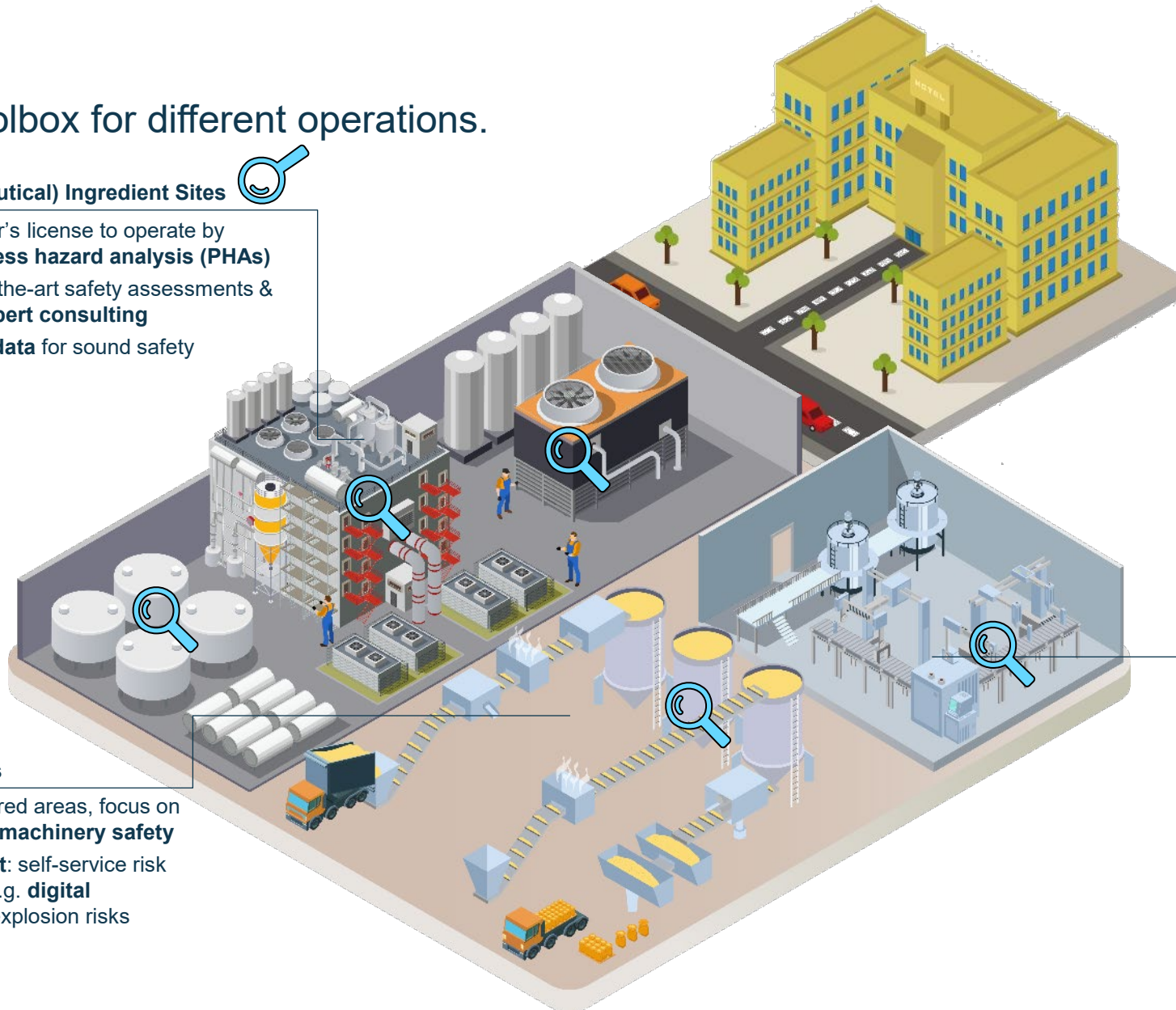
- // Safeguard Bayer's license to operate by facilitating **process hazard analysis (PHAs)**
- // Deliver state-of-the-art safety assessments & solutions via **expert consulting**
- // Provide **safety data** for sound safety concepts

Formulation, Filling & Packaging Sites

- // Includes CropScience, ConsumerHealth and Pharma supply centers
- // **Flexible Toolbox** provides fit-for-purpose safety assessments
- // Stronger focus on checklist approaches, e.g. for **machinery safety assessments**
- // PPS Practitioners support **classification** of risks, conduct **PHAs** where necessary

Seed Station Sites

- // Consult in required areas, focus on **explosion and machinery safety**
- // **In development:** self-service risk assessments, e.g. **digital checklists** for explosion risks





After many re-organizations, it was time to assess the status quo and define the way forward

10 years of transformation in PPS



Stakeholder survey and interviews were the start of the **PPS Roadmap 2025**.



“Our vision & strategy for PPS of the future”

2021

Where we started

Define PPS Roadmap 2025 jointly with Divisional Partners and SSHE.



2021

- Stakeholder interviews, online survey
- 5 framework topics
- joint workstreams & workshop to align and prioritize topics and goals
- considering high workload and other ongoing initiatives at divisions / Bayer



2025

Where we want to be

Data-driven and risk-based approach to PPS (one central PHA database, consistent PSI reporting, MoC's up-to-date, PSM site concept)



PPS mindset to be strengthened into direction of competitiveness and operability of DIVs



Focusing on and ensuring PPS expertise in areas critical for Bayer



Agile understanding and response on divisional business requirements



Collaborative relationship between PPS and Operations



PPS Roadmap 2025 defines aspirational targets for five framework topics

Overview of the PPS Roadmap 2025



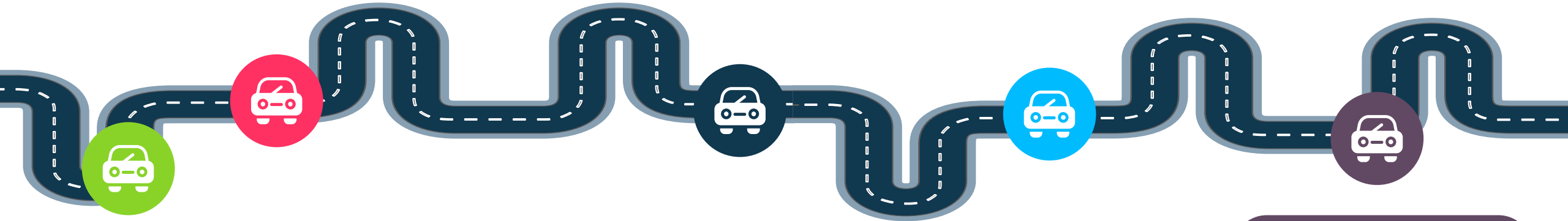
Performance

*"In 2025 Bayer is **recognized for its process and plant safety performance** contributing to the safest and healthiest place to work at."*



Business-driven innovation

*"In 2025 **agile PPS solutions reflect divisional business requirements** and are co-developed and implemented in strong collaboration of PPS experts and divisional operations."*



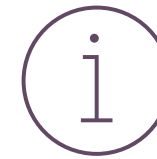
Risk-based approach

*"In 2025 all sites have **easy access to their relevant risk-based PPS requirements** and monitor progress with meaningful KPIs."*



Training

*"In 2025 PPS Training ensures **necessary PPS knowledge** on all levels of Product Supply and the PPS enabling functions."*

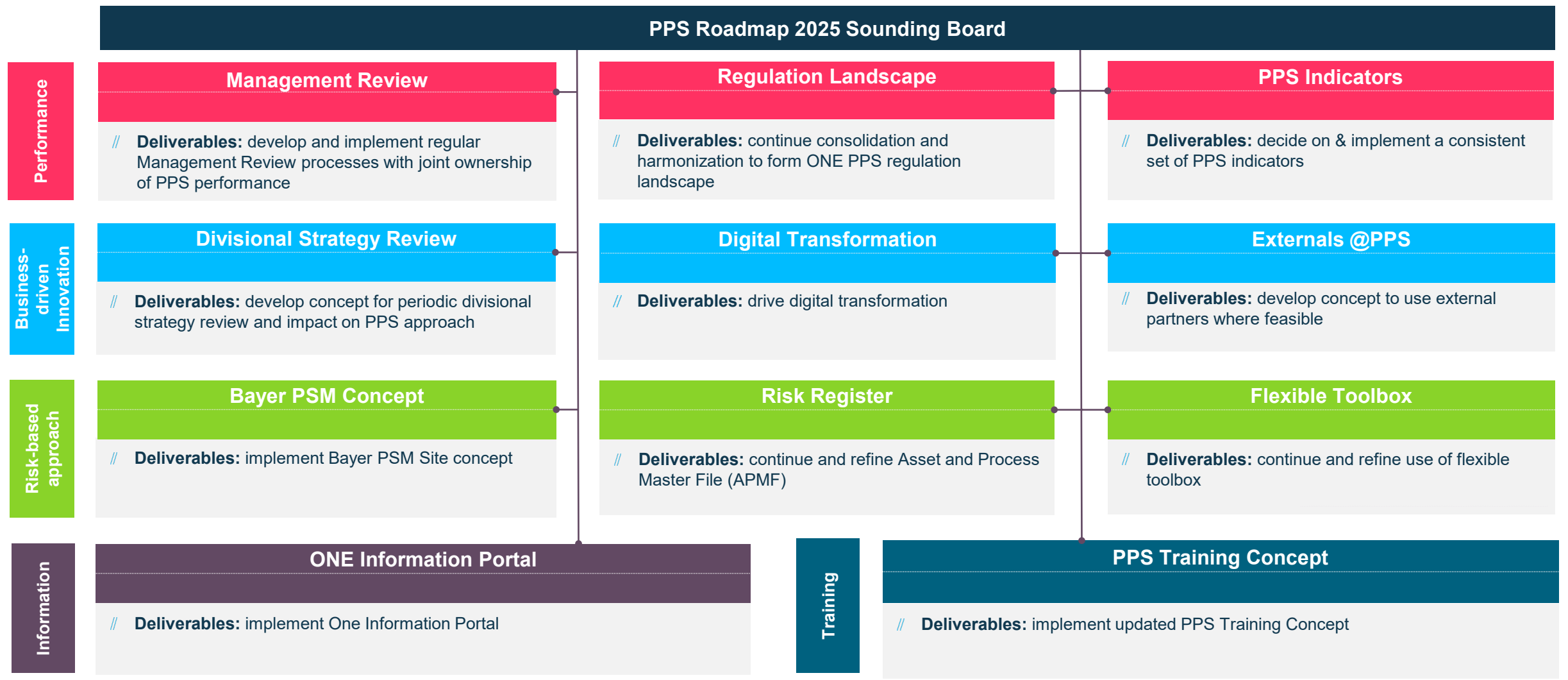


Information

*"In 2025 PPS is part of our every-day safety culture **enabled by relevant information** which is readily available and **reflects stakeholder needs.**"*

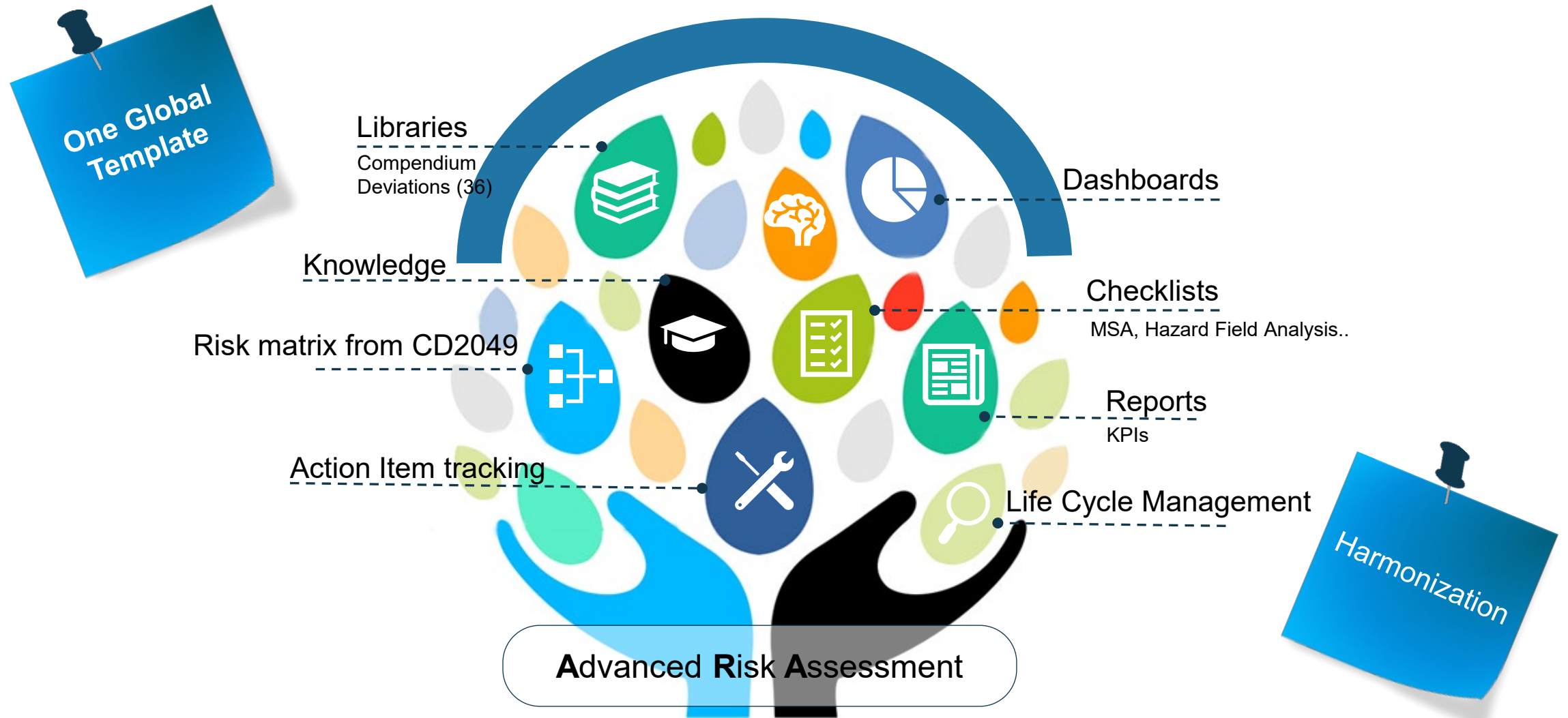


PPS Roadmap 2025 is organized in 11 workstreams with divisional participation, good progress has been made.





Workstream Digital Transformation: One Global Tool for PHA Documentation





Workstreams Digital Transformation & Flexible Toolbox App “SpeedExs”

Web-based tool for self-service explosion risk assessment

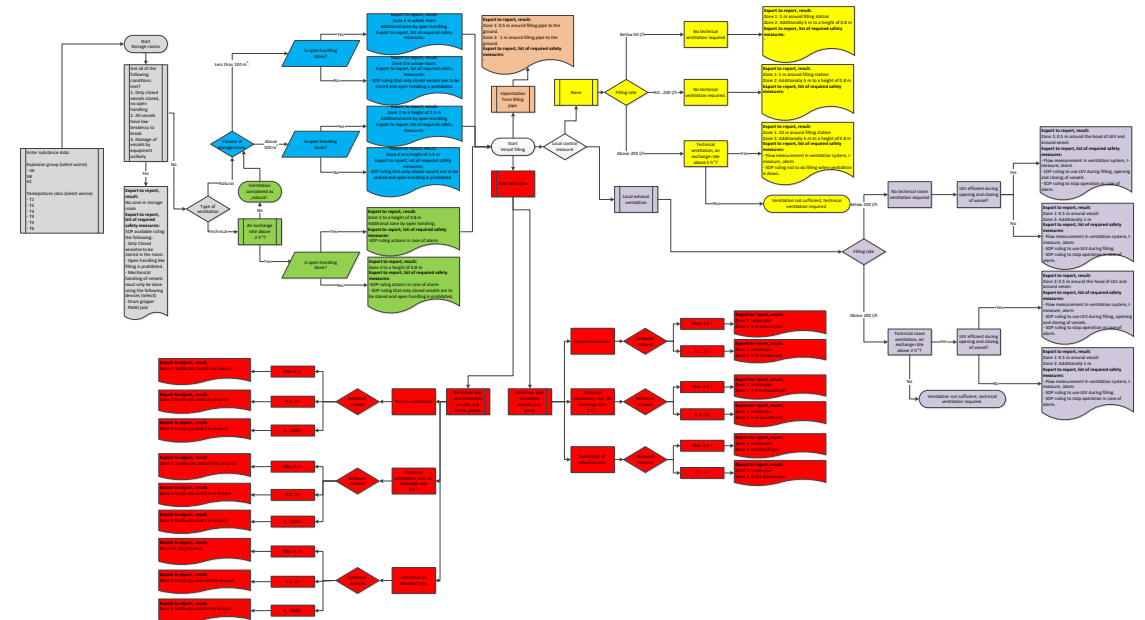
Standardized explosion risk assessments

- // Liquid Filling stations
- // Storage rooms
- // Battery charging stations
- // Dust collectors
- // Solid filling
- // Seeds cleaning
- // Simplified EPPD
- // Laboratories
- // Seed processing
- // Machines



Other potential applications

- // Lab Safety Assessment
- // Machinery Assessment
- // Inspections
- //





Workstreams Digital Transformation & Flexible Toolbox App “SpeedExs”

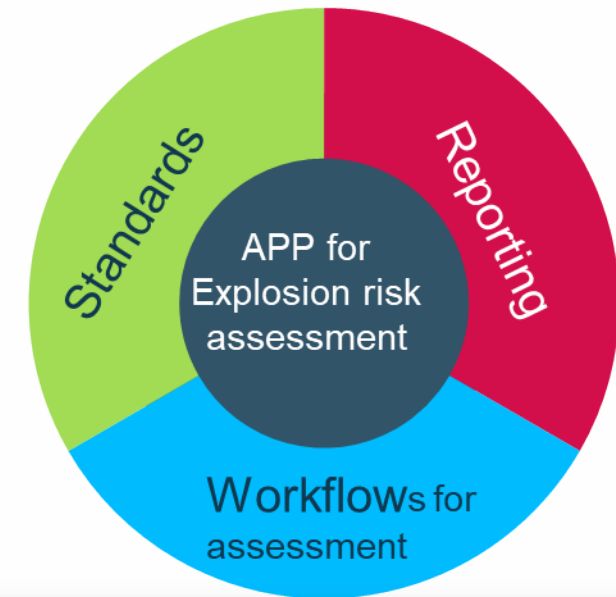
Web-based tool for self-service explosion risk assessment

// Trained people shall be able to facilitate a

standardized explosion safety
risk assessment

// for seed plants.

// Guided by an application (APP) on a mobile device with the outcome of an Explosion Prevention and Protection Document (EPPD)





go.cnb/PPS

Introduction to PPS @ Bayer



PPS News in- and external



Topic driven structure for easy knowledge and expert contact access

Introduction – Part 1
Why
do we need PPS@Bayer?

Introduction – Part 2
What
is PPS@Bayer?

PSM System
Operational Control, Management of Change, Planning for Emergencies, Procedures and Documentation
How
PPS@Bayer is implemented?

PPS@Bayer NEWS & UPDATES

- Go Live Explosion Safety@seed sites & SpeedExs WBT #News**
Dear colleagues, We're happy to announce, that our WB...
Dominik Kroener vor 5 Stunden
9 Ansichten
- ET PPS relevant internal regulations (Update 05/2022) #News**
monthly Update of ET PPS relevant internal regulations
Ralf Warnke 19. Mai
36 Ansichten
- PPS KPI Report Q1 2022 published #News**
The Bayer wide PPS Key Performance Indicators have...
Anna Buengener 28. April
62 Ansichten
- Global Newsletter**
Global SSHE Newsletter April 2022 #News
Please follow the link / click on ACCESS. Enjoy!
Astrid Sanders 14. April
25 Ansichten
- The DIN EN ISO/IEC 17025 audit of the Safety Laboratory was passed with flying colors! #News**
A short time ago, our ISO 17025-accredited Safety Lab...
Astrid Sanders 13. April
11 Ansichten
- The new S.A.F.E. Score: Strengthening our Proactive Safety Culture #News**
With the new S.A.F.E. score, there is now a powerful tool...
Anna Buengener 6. April
20 Ansichten

EXPERT CONSULTING

- Functional Safety
- Consequence Modeling
- Chemical Safety
- Explosion Safety
- Pressure Safety

ASSESSMENTS & REVIEWS

- PPS Inspections
- Safety Reviews
- Explosion Safety Risk Assessment EPPD
- Machinery Safety
- Laboratory Safety

SAFETY DATA

- Safety Data Sheets
- Safety Laboratory

LEARN & EXCHANGE

- PPS Quality
- Training
- Conferences
- Lessons-Learned

AUDIT & REPORTING

- Audits
- KPI Reporting

Unterhaltungen
Alle anzeigen

Teilen Sie Gedanken, Ideen oder Updates.

Ana Claudia A... Von 16 angezeigt
Gestern um 16:39

The KD PPS 0140_en mentions a T_01 (Calculation of gassing current ET_KD_PPS_0140_T_01_de.xlsx). The link is not available. Is it possible to add the KD 0140_T_01 in the KD list ??

Übersetzung anzeigen

2 vorherige Kommentare anzeigen

Dominik Kroener Vor 3 Std.
Hi Ana Claudia, you're right! Thanks for letting us know. We'll incorporate the English version shortly. As a workaround you can always use the IMS Interface. T... Mehr anzeigen
cc Ana Claudia Andrade

Upcoming PPS Events Alle anzeigen

- JUN 21-23** 2022 Americas PPS Colloquium
Di, 21. Juni, Ganztägig
- AUG 2-5** RP-FS-LATAM Face to face meeting
Di, 2. Aug., Ganztägig
- SEP 13-14** 6th PPS Symposium
Di, 13. Sept., Ganztägig

Interesting External Events Alle anzeigen

- JUN 5-8** Loss Prevention 2022 in Prague
So, 5. Juni, Ganztägig
- JUL 11-15** International Symposium on Hazards, Prevention, and Mitigation of Industrial Mo., 11. Juli, 8:00 AM
- AUG 22-26** ACHEMA
Mo., 22. Aug., Ganztägig
- SEP 13-14** EPSC Conference (EUROPEAN CONFERENCE ON PLANT & PROCESS
Di, 13. Sept., 8:00 AM

< Zurück Weiter >

Easy access to help and feedback ect.

PPS Events in- and external

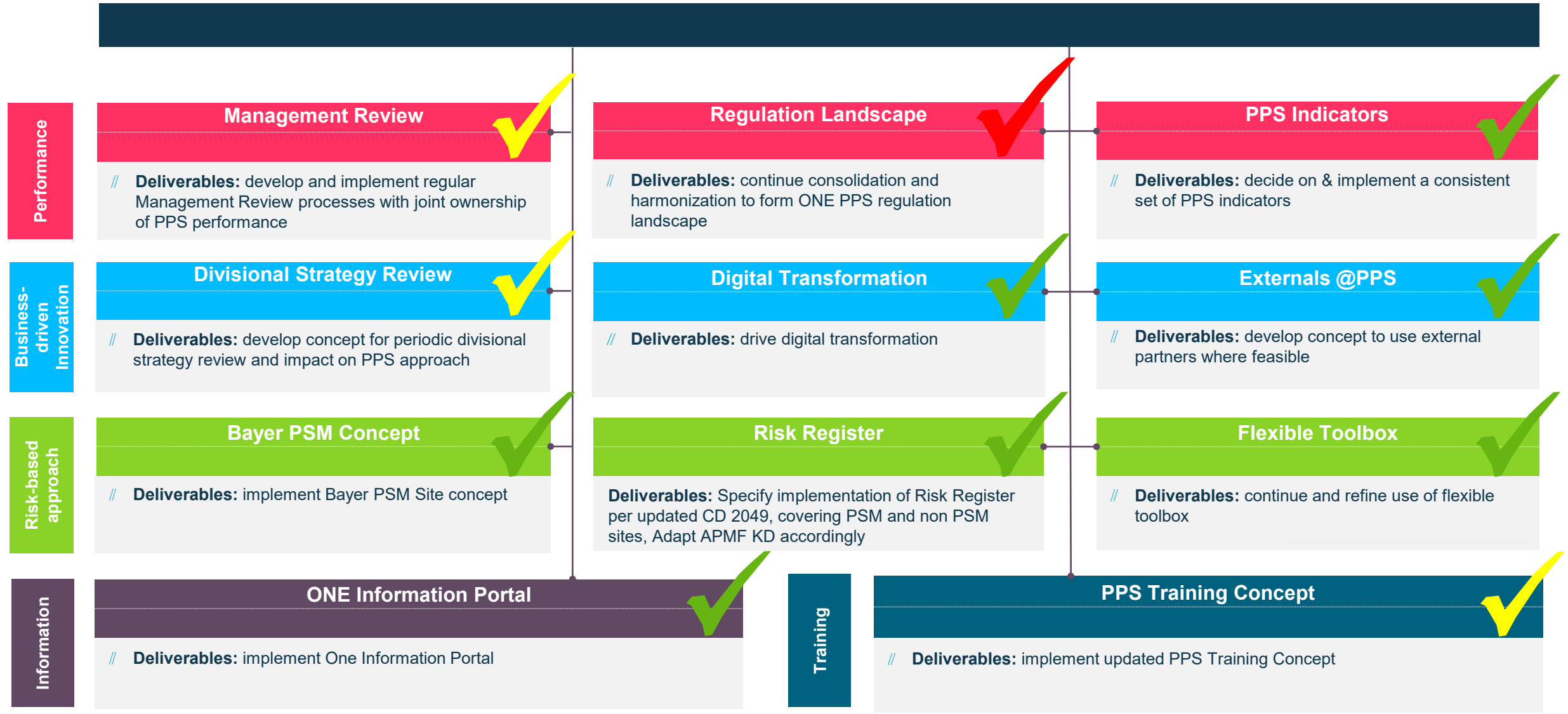


Overview of workstreams

(completed ✓)

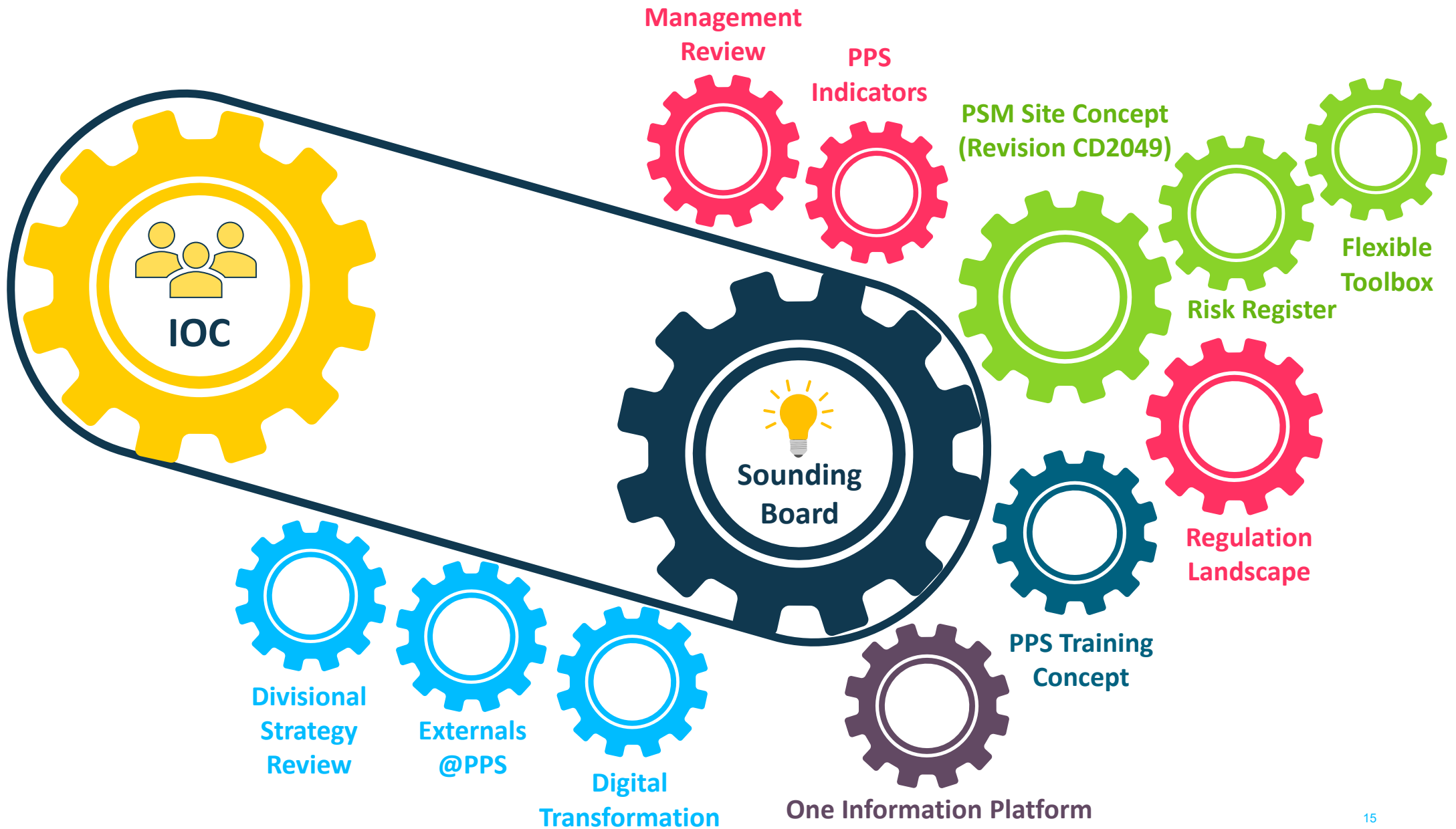
nearing completion ✓

MARGO freeze ✓



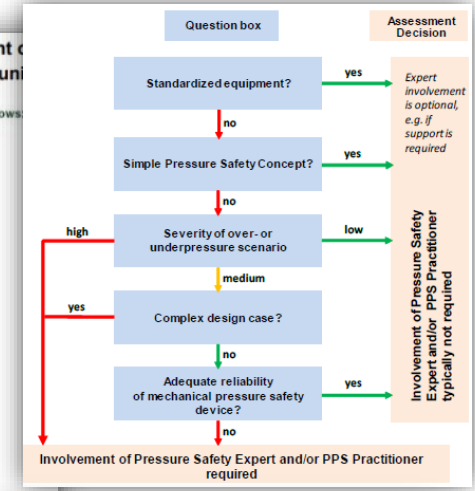
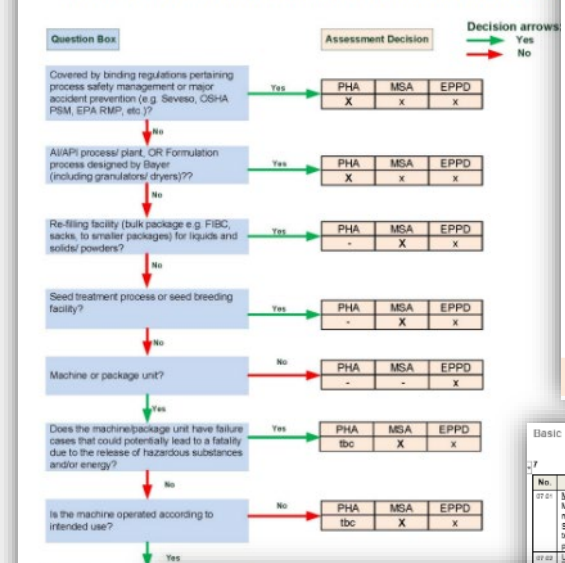


-  Risk-based approach
-  Performance
-  Business-driven innovation
-  Information
-  Training





6.6 Decision-Tree for choosing the appropriate assessment of hazards and risks of purchased machines or package units



Basic Safety Assessment for Machines and Package Units

Appendix - Safety-related design requirements when purchasing new machines

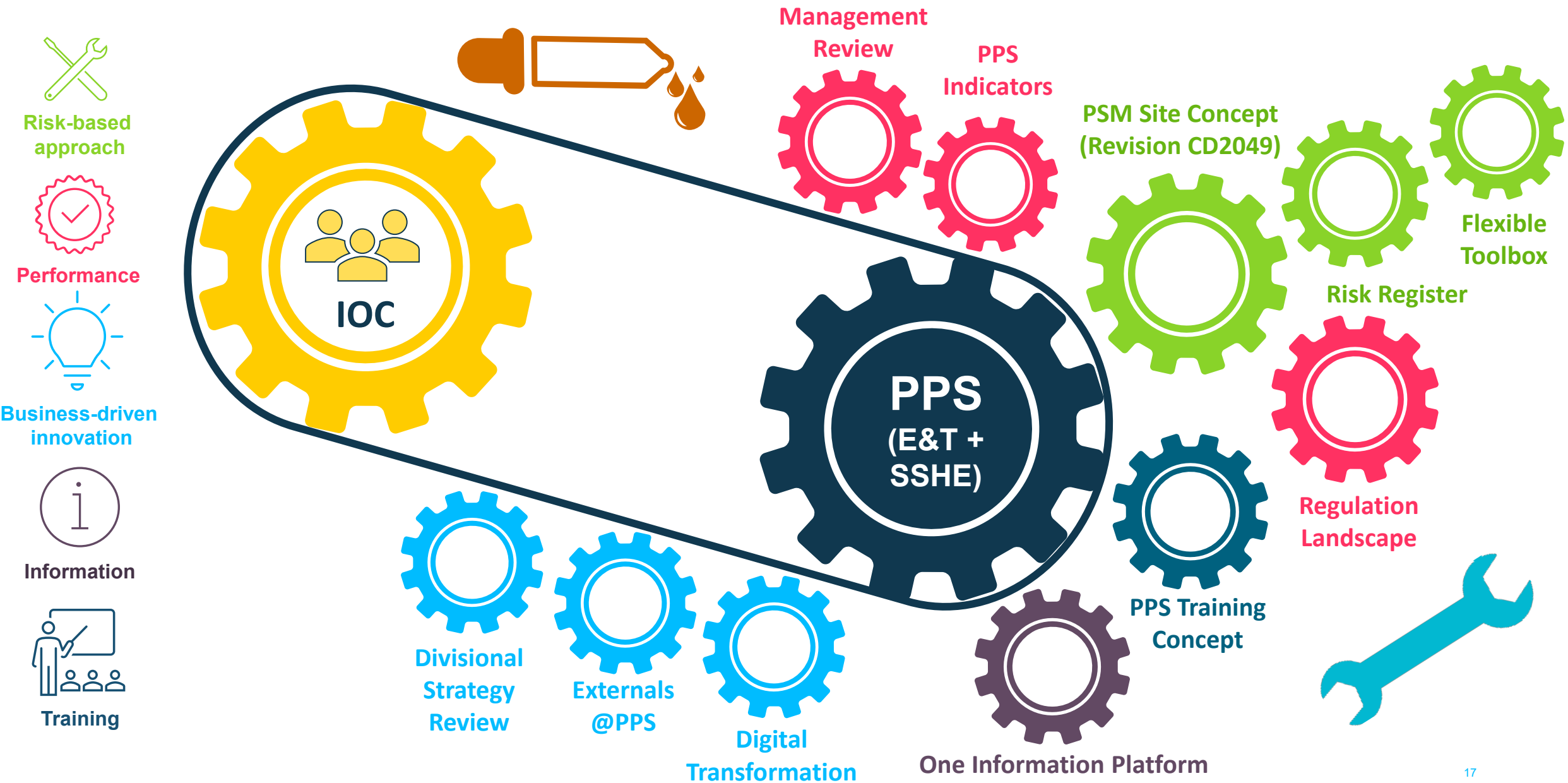
No.	Description of requirement	Note
07-01	Moving parts and blocked parts Measures must prevent hazards from moving parts and blocked parts leading to unexpected motion, also during maintenance. Suitable safeguards (e.g. fences, doors with safety sensors, light curtains) must prevent access to moving parts and ensure a proper safety distance. Warning signs are not sufficient. If moving parts can jam, the machine must allow an external without rendering safeguards ineffective.	
07-02	Unexpected moving of the machine and machine parts Measures or devices must prevent unexpected moving of the machine and machine parts, also if the re-activated.	
07-03	Supply failure or disconnection. Power and instrument air are available if the failure of the critical condition in the furnace, process areas or a part of the boiler unit.	
07-04	Supply in case of failure of combustion air, recirculation of air. Automatic or unintended start-up, also after activating an emergency stop.	
07-05	or in the machine or machine parts must be in place, to be opened from inside the hazardous area. Technical can free themselves from the machine. Operating conditions must be part of the safety and working operations.	
07-06	Insulation frame and non-combustible insulation, if other.	
07-07	Type of fuel being used	
07-08	Prevent scale and other debris from lodging in the seats of valves or boxes.	
07-09	Line must be limited to ensure that the maximum intended workplace. On-site noise hazards, as well as loud as far as reasonably practicable to avoid equipment.	

To do: put tools into action
Provide more example solutions to support practical execution.

Apply the right tools
for the right site/plant/operation/
project and make sure
this is understood and utilized.



Risk-based approach





Thank you!



Dr. Thorsten Müh

