

Evergreen Process Hazard Assessment (PHA)

Stature® - Global IT-Tool

EPSC Forum September 1, 2020



Agenda

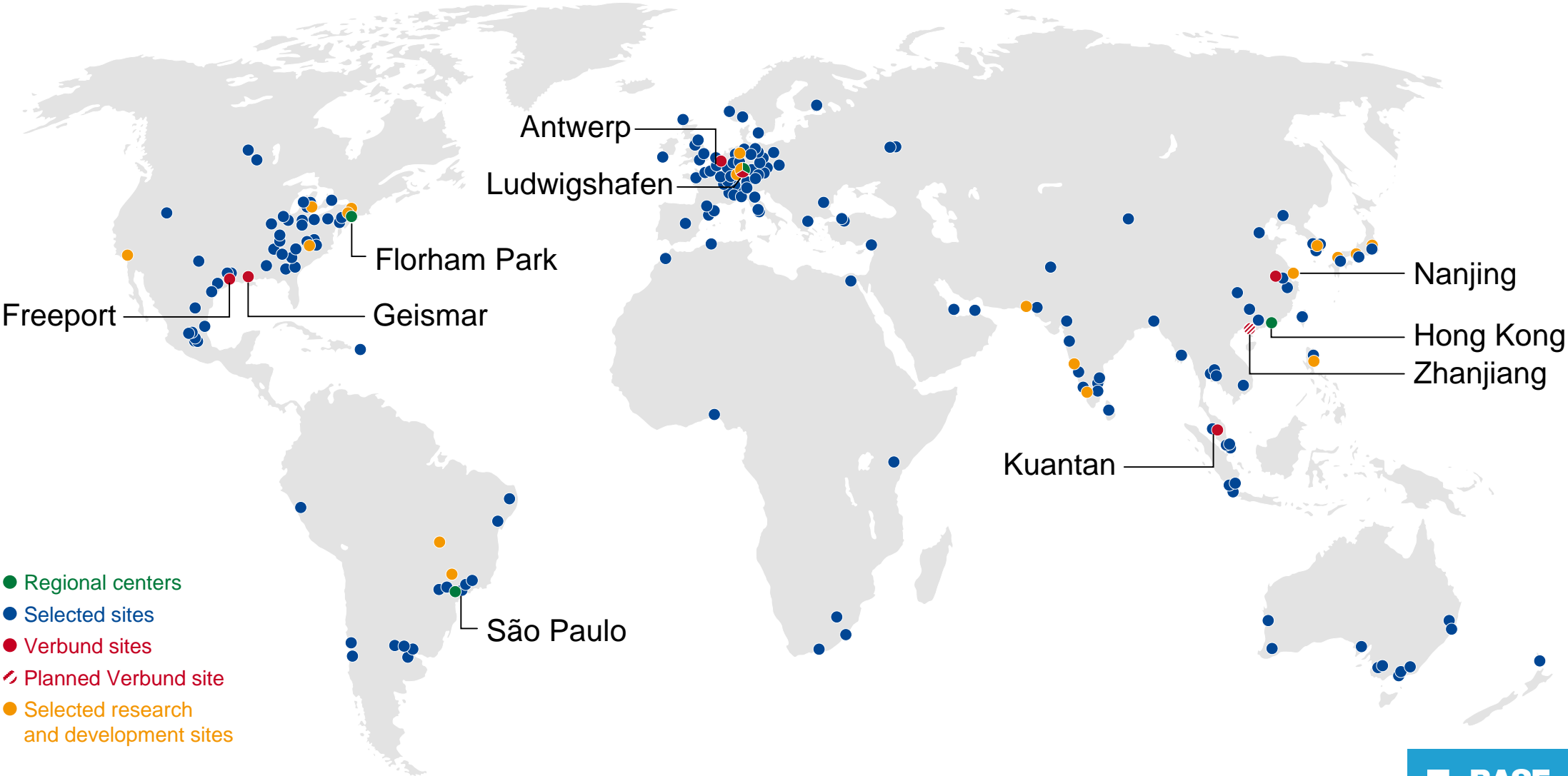
- 1.** BASF – At a Glance
- 2.** Process Hazard Assessment – Why and how?
- 3.** Stature® – our global IT Tool, Training and Resources
- 4.** Results and Experience after 5 Years

 **BASF**
We create chemistry

BASF – At a Glance 2019



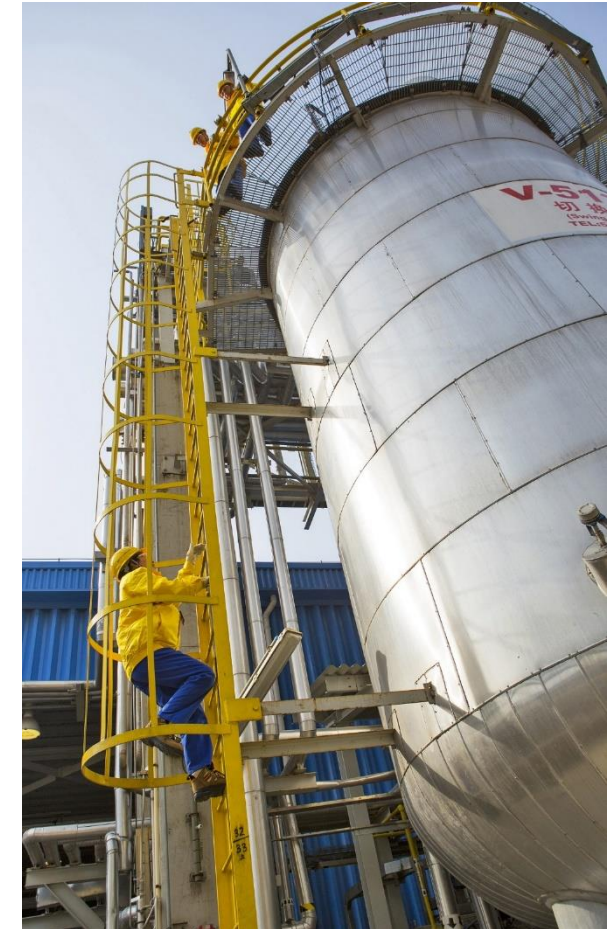
BASF worldwide: sites



- Regional centers
- Selected sites
- Verbund sites
- ▣ Planned Verbund site
- Selected research and development sites

Organization of the BASF Group

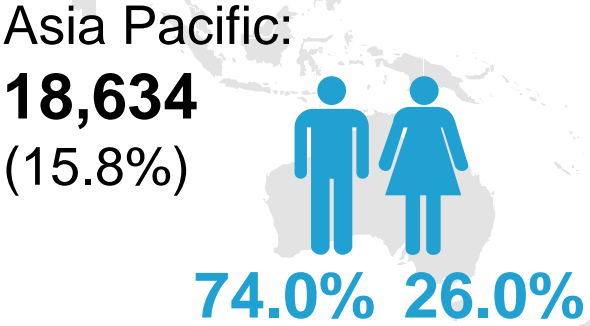
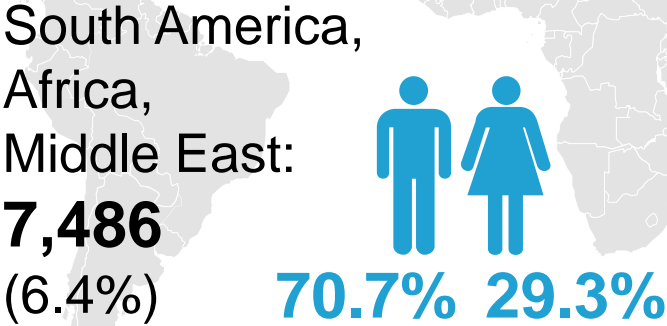
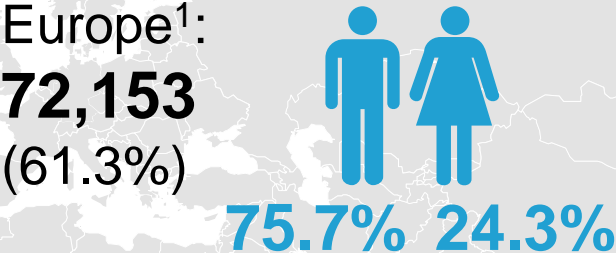
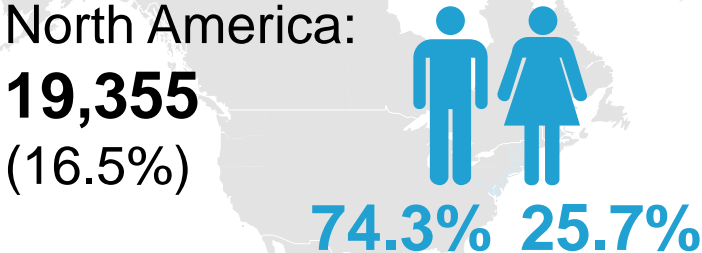
- Combined into six **segments**, 11 **divisions** bear operational responsibility
- The **regional and country divisions** contribute to the local development of BASF's business and help to leverage market potential
- Together with our divisions, three global **research divisions** safeguard our innovative capacity and competitiveness.
- The **Corporate Center** units support the Board of Executive Directors in steering the company as a whole.
- Four **global service units** offer services for individual sites, globally for the divisions or other units of the BASF Group.



Employees

BASF Group employees by region

(Total: 117,628, thereof 25.1% women, as of December 31, 2019)



¹ Germany: 54,028 (45.9 %),
thereof women: 23.7%
BASF SE: 34,896 (29.7%),
thereof women: 21.5%

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Safety, Health & Environmental Hazards

By three methods we may learn wisdom:

First, by **reflection**, which is noblest;

Second, by **imitation**, which is easiest;

and third by **experience**, which is the bitterest.

Confucius

Fundamentals for Safe Operations

Layers within the framework of Process Safety



Global Process Safety Concept

- For core technologies
- Summary of related hazards, corresponding risk evaluation and recommended countermeasures

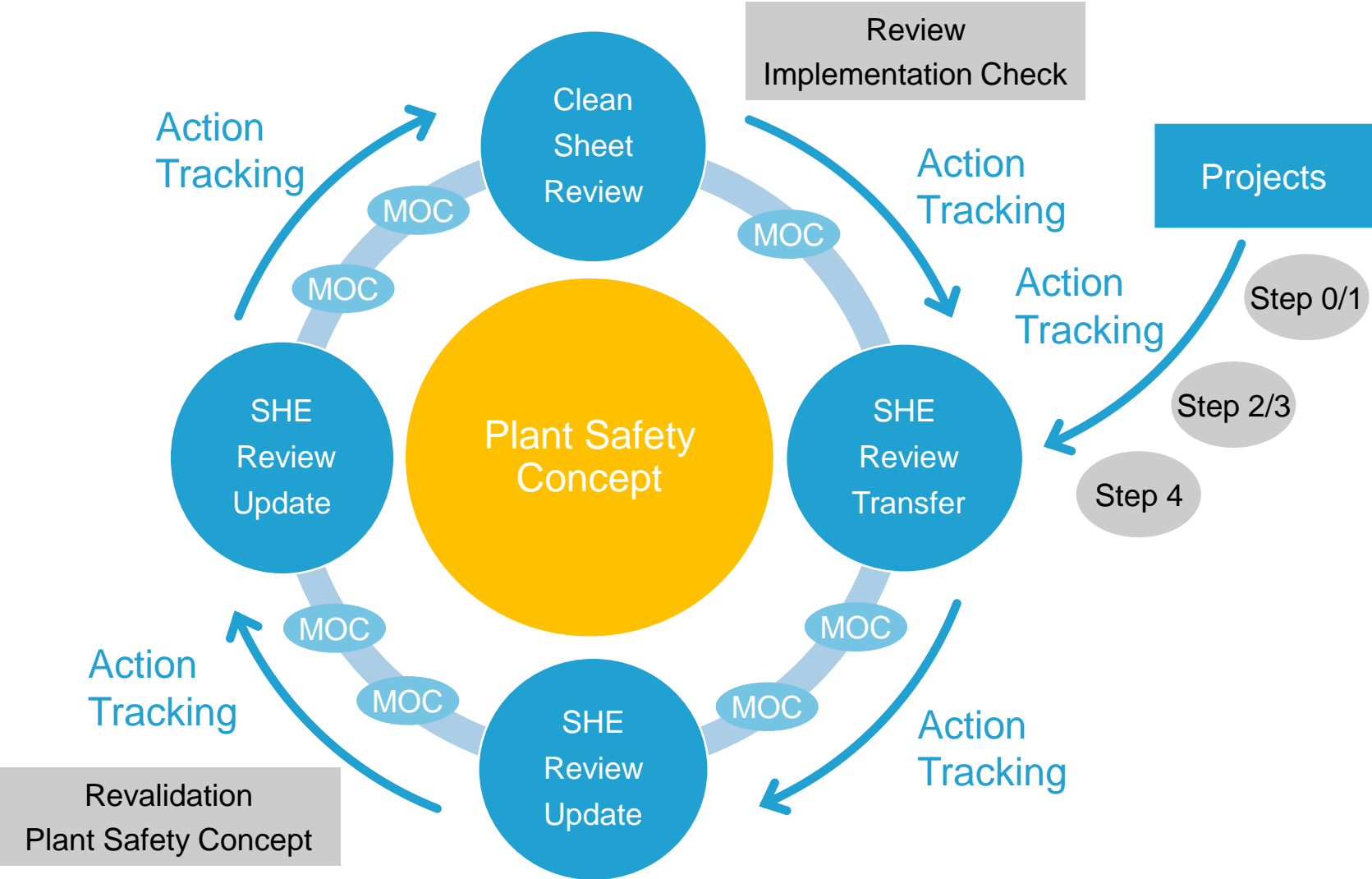
Plant Safety Concept

- For each plant on a conceptual level
- SHE Review Process with all process-related hazards, risks and appropriate safeguards

Implementation Check (Clean Sheet Review):

- For all plants on a detailed level
- Identify based on P & IDs (Piping and Instrumentation Diagrams) appropriate risk mitigation measures and their effectiveness
- Method depends on hazard potential and local regulatory status

Hazard Review Lifecycle



Vision: Making a study a living document in Stature®

Stature® for

- Projects (Step 0 - 4)
- Existing Plants, MOC, revalidation und “clean sheets”
- Existing Plants → initial load of documents

MOC: Management of Change



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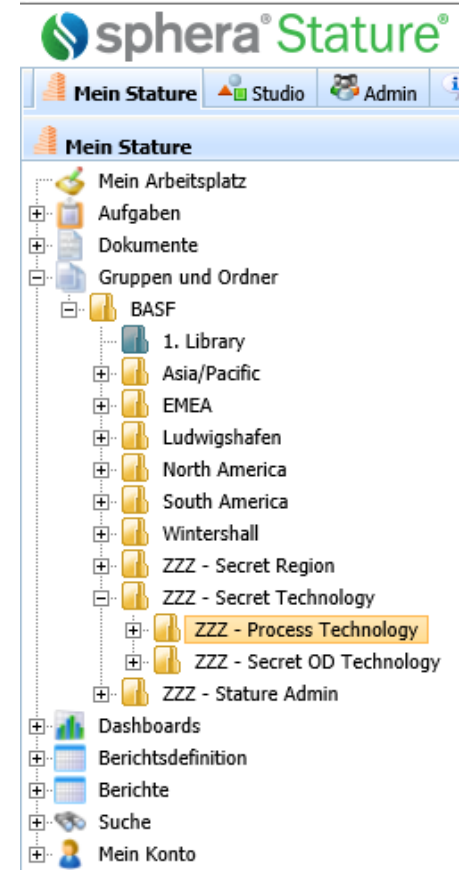
Stature® in BASF

What is it about?

- Stature® is a global web-based platform for documenting Hazard Assessments for new projects and existing plants
- Stature® is a mandatory tool since 2015
- Stature® facilitates tracking and management of Action Items

Who are the user groups?

- Plant Management / Operations
- Process Safety and Global Auditors
- Engineering
- Global Technology Teams
- More than 8 000 users globally



Business value of a Centralized Risk Management Solution

Expected benefits at launch in 2015



Employees

- One system
- Clear processes and responsibilities




Plants

- Transparency
- Status studies
- Status open points
- Compare similar plants



IT-Tool

- Resource planning
- Prioritization
- Analysis above the plant level



Documentation

- Less time for SHE review
- Documentation available global

Stature® Training & Resources

Online



Classroom



In Stature®

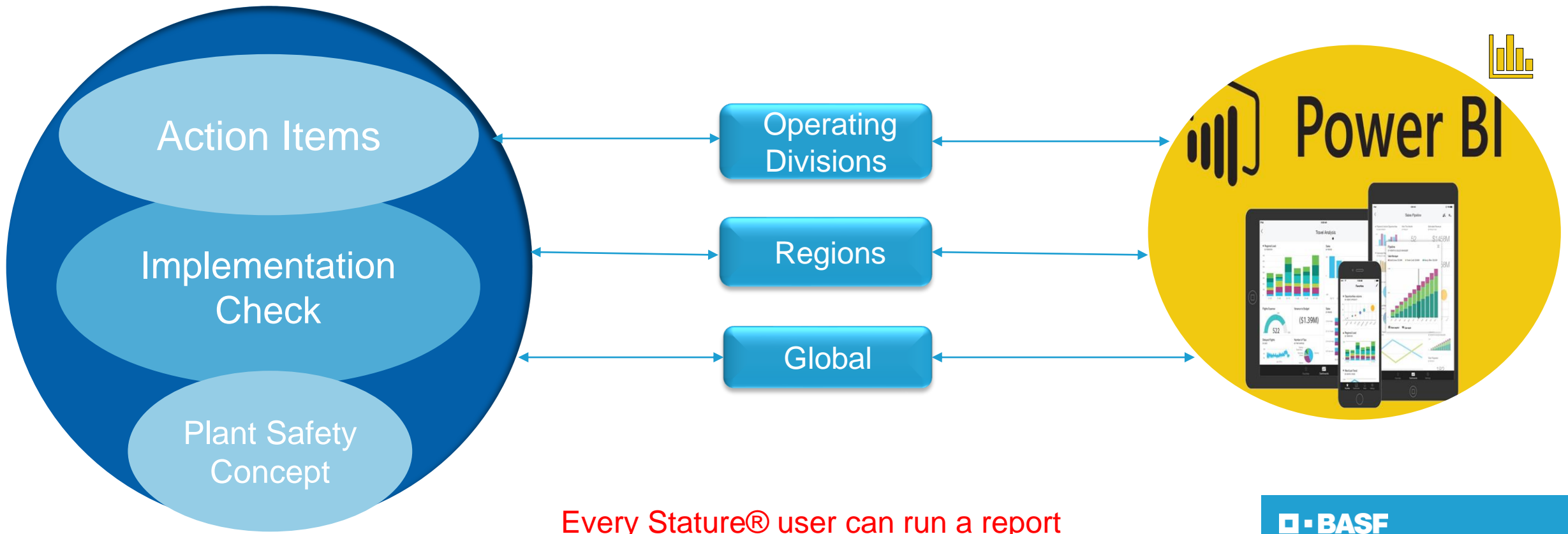


E-learning modules are accessible via BASF intranet to all employees

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Data Visualization - From Stature® to Power BI for Analytics



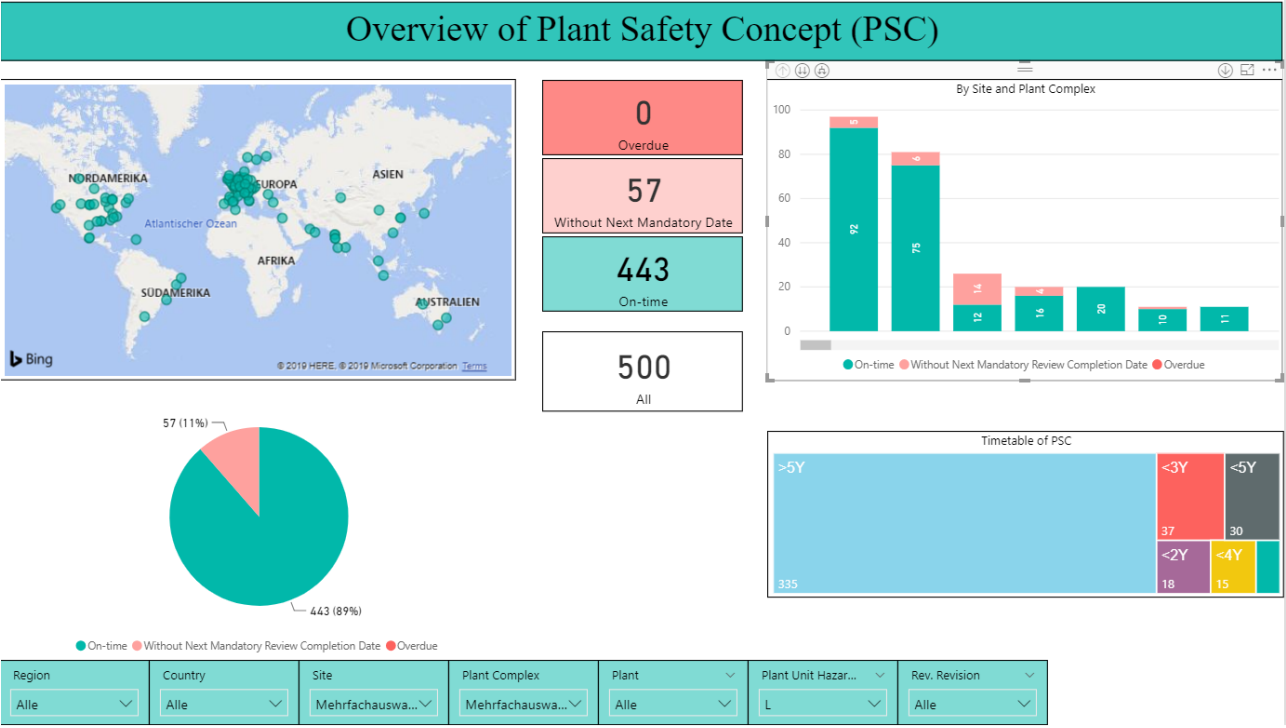
Every Stature® user can run a report

Usability – Enhance user experience with new user group

- Providing visualization of data analyses with Power BI
 - ▶ Folder structure and completeness
 - ▶ Adapt reports to needs
 - ▶ Improve transparency on completion of PSC or Implementation Check (CSR)

- Purpose: Allow monitoring of data quality

- Leading indicator for reporting



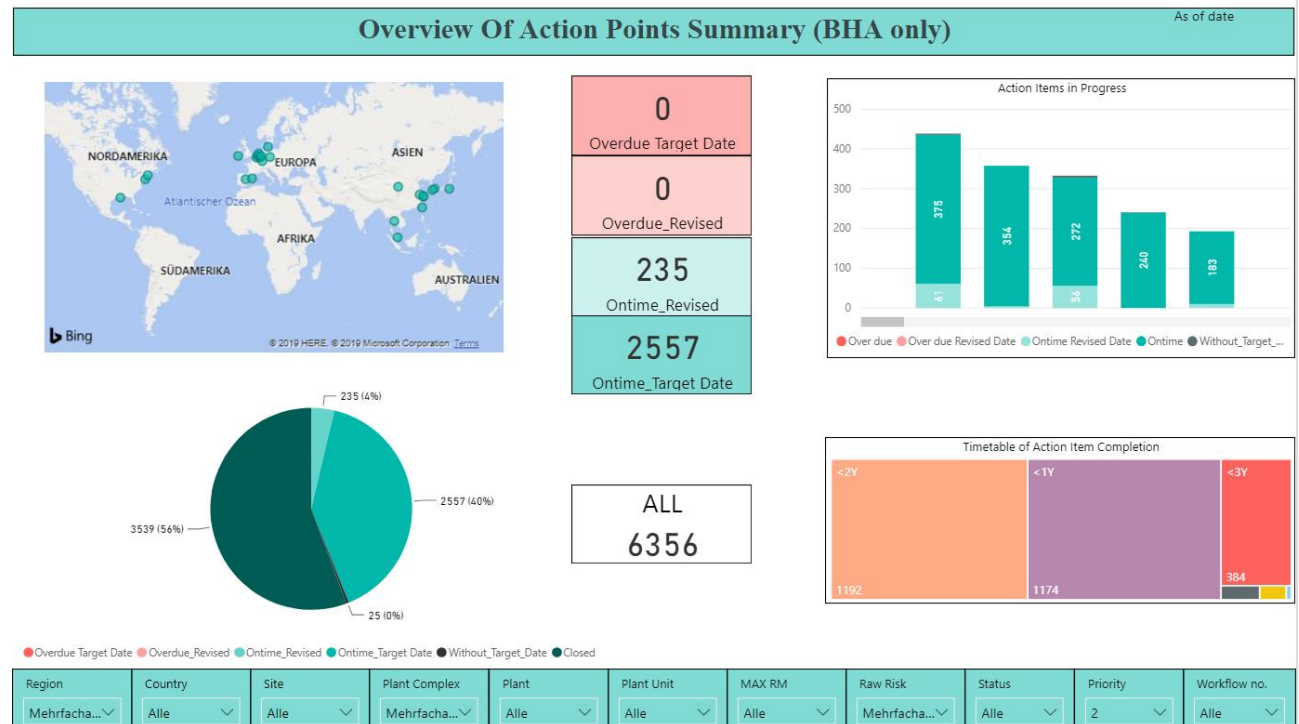
Big Data – Unleash the full power of Stature®

Facilitate data mining

- ▶ Include Status of Action Items from safety reviews and transfer existing AI outside of Stature
- ▶ Interpret the Stature® data, prioritize and devise improvement plan
- ▶ Increase data quality

Purpose: Allow data mining to identify development focus

Leading indicator for reporting



Business value of a Centralized Risk Management Solution

Experience after 5 years



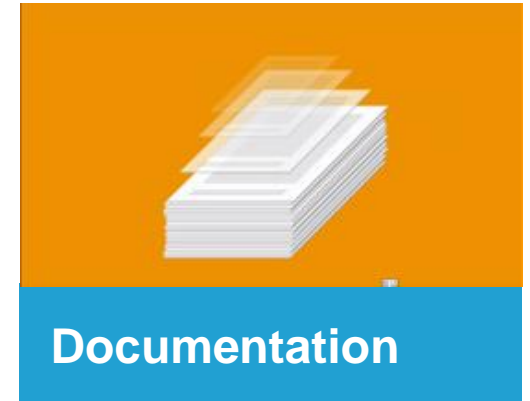
- Training of IT and methodology
- Differences in processing (consistency)



- Transparency
- Status studies
- Status open points and prioritization
- Critical risks visible
- Compare similar plants



- Resource planning
- Information for management
- Visualization of reports, leading indicator
- Automatized reporting



- Less time for SHE review
- Documentation available global
- Global PSC as blueprint for new plants

Stature® Roadmap 2020

SWOT Analysis

S Strengths

- One global system for Process Safety
- Full transparency of Plant Safety Concepts and Implementation Checks
- Action Tracker with implementation of old relevant Action Items
- > 8000 User

O Opportunities

- One global reporting system for OD*
- Global prioritization of Action Items
- Improve data quality with ODs.
- Enhancement: Implementation of SIF-specification and clear MSD* description

*OD: Operating division, MSD: Mechanical safety device

W Weaknesses

- Training for end-user needed
- Train the trainer concept needs support of EHS Experts
- Users do not follow the rules
- Users behavior affect data quality → follow up ground rules, e. g. use of modifier

T Threats

- Release 4.8 and template change done
- Roll out of E+I project



We create chemistry