Sustainability with SAP

Managing Compliance and Reducing your Environmental Impact with SAP EHS Environment Management

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Agenda

1 Recap: SAP Environment, Health, and Safety Management

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2 Environment Management – key processes & capabilities in detail

❖ Water and wastewater management

❖ Air (incl. GHG) emissions management
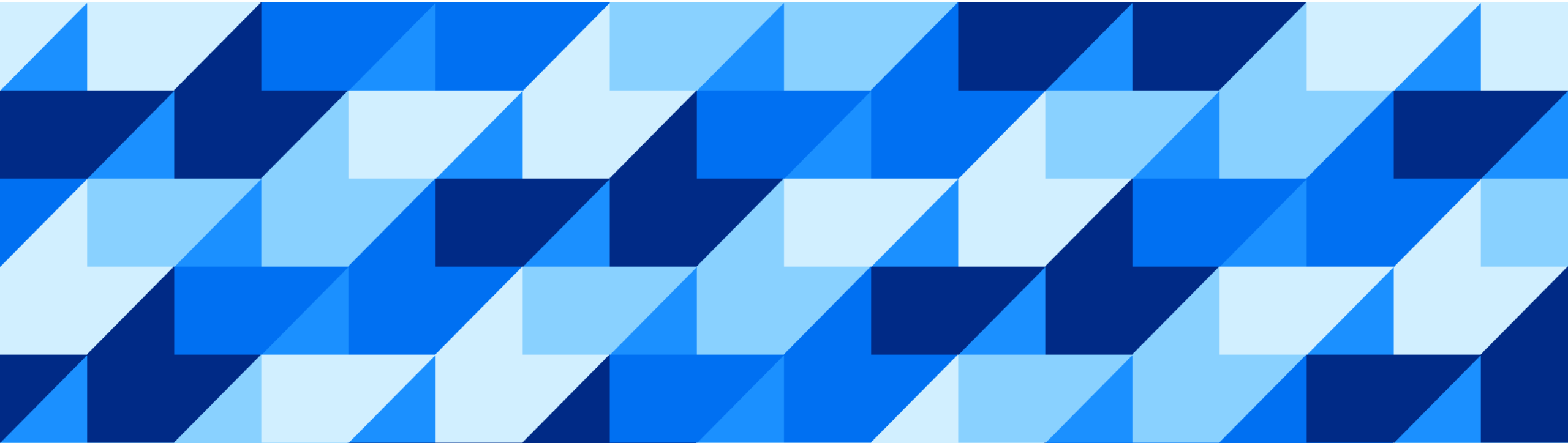
❖ Waste management

❖ Compliance management

....

3 Outlook: Audit & Inspection Management

Recap SAP Environment, Health, and Safety Management

Solution portfolio for EHS at SAP

SAP Sustainability Solutions

◆ **SAP Business AI**

Analytics and data products

Enterprise asset management

Environment Management

| Waste management | Air emissions management | GHG emissions management |

| Water and wastewater management |

Workplace Safety

| Incident management | Near misses | Safety observations |

| Chemical approval | Chemicals management | Operational risk assessment |

| Industrial hygiene and sampling | Occupational health* | Management of change |

HR and SAP SuccessFactors solutions

Audit and inspection management*

Regulatory and permit compliance management

Action and task management

SAP S/4HANA Enterprise Management
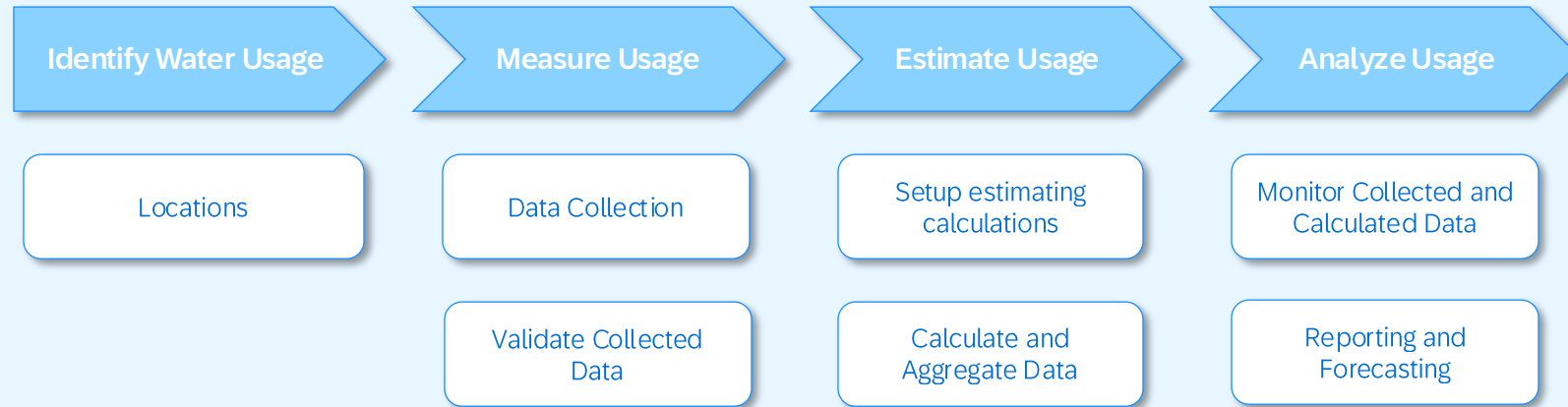
*Planned

Key Processes – Water Management

Water Management

```
Identify Water Usage  →  Measure Usage  →  Estimate Usage  →  Analyze Usage
```

Identify Water Usage	Measure Usage	Estimate Usage	Analyze Usage
Locations	Data Collection	Setup estimating calculations	Monitor Collected and Calculated Data
	Validate Collected Data	Calculate and Aggregate Data	Reporting and Forecasting

o Water conservation

o Manage compliance

o Cost reduction

Environmental Manager
(at facility level)

Ian

Process overview

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How SAP EHS can help:

Key capabilities:

- API for data collection (e.g., meter readings via data historians)
- Plausibility checks and limit thresholds
- Universal equation library
- Calculation & aggregation capabilities

Benefits

- Identify water loss
- Reduction in cost of procuring water and treatment
- Identify recycling opportunities
- Reduce stress on the environment

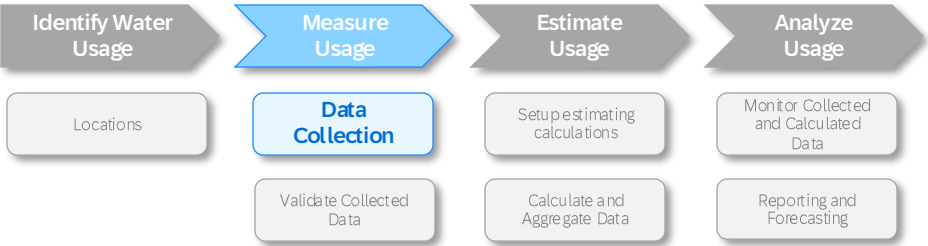Find out more information on water balance and usage report

Water Management – Data Collection

Utilizing the *My Data Collection* app on the desktop or mobile, an EHS operator can optimally and efficiently collect the water/wastewater data related to the compliance scenario.

The app also allows the operator to use spreadsheet based mass loading of water/wastewater data.
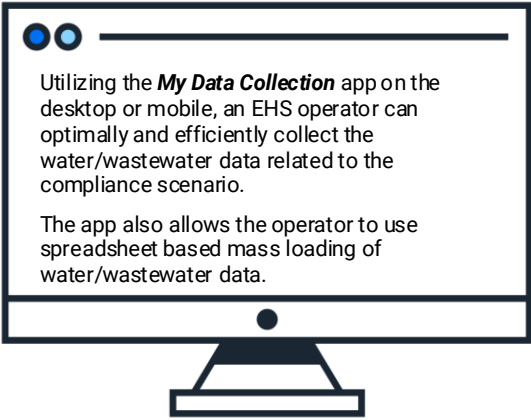
Water Management – Estimate Usage

Identify Water Usage	Measure Usage	Estimate Usage	Analyze Usage
Locations	Data Collection	Setup estimating calculations	Monitor Collected and Calculated Data
	Validate Collected Data	Calculate and Aggregate Data	Reporting and Forecasting
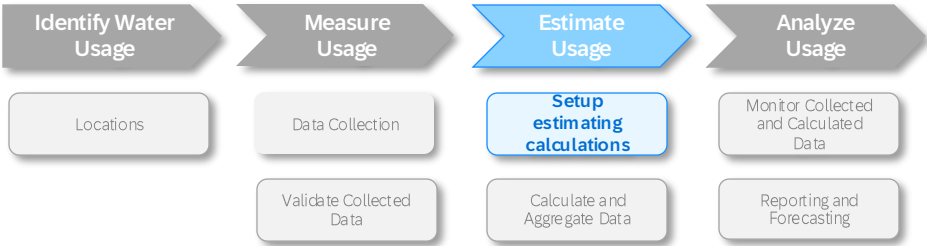
Policy: ABC Industries Water Policy ∨

Revision: Initial Creation   Revision Status: Released   Validity Period: 01.01.2024 - Indefinite

Set Status ∨   Revision ∨   Copy   Delete

∨ Compliance Requirement Details   **Contents**   Tasks   Documents

Standard ∨   Add   Create Task ∨   Collapse All   Expand All   Where Used

Name	ID	Type	Environmental ...	Regulatory Lists	Equations	Tasks
∨ ABC Industries Water Policy			0 (1)	0 (0)	0 (8)	0 (0)
∨ Section 1.0 Assessment of Water and Waste Sources/Discharges			0 (1)	0 (0)	0 (8)	0 (0)
Section 1.1 Maintain a Water Balance Study			1 (1)	0 (0)	8 (8)	0 (0)

Paragraph: Section 1.1 Maintain a Water Balance Study ∨

Total Wastewater Discharge	
Rainfall	
● Rainfall.	
Water Balance Value	
Margin of Error	
Percent Closure Result	

Translations

Result

Add

Resul...	R...	Title	* O...	Expression	A...
Final		Monthly ...	R...	((AVGRAINFALL)*25.4)*(TOTALAREA...	

Utilizing the *Manage Compliance Requirements* app an Environmental Manager can configure equations to estimate water usage where meter data is not available.
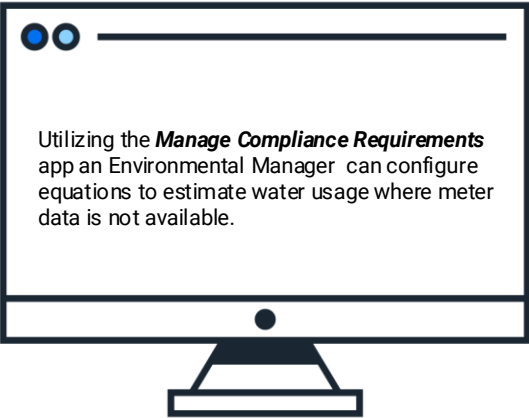
Water Management – Calculations

Identify Water Usage
Measure Usage
Estimate Usage
Analyze Usage

Locations
Data Collection
Setup estimating calculations
Monitor Collected and Calculated Data

Validate Collected Data
Calculate and Aggregate Data
Reporting and Forecasting
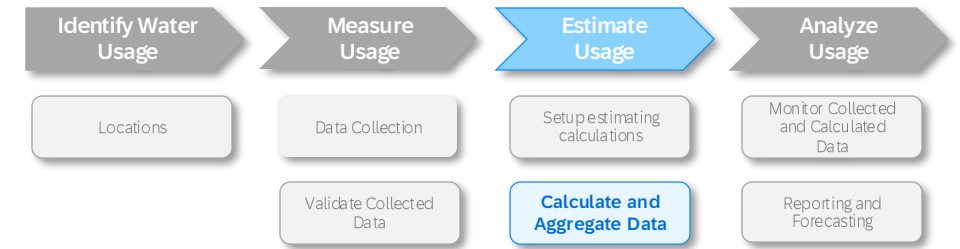
| ID: | 124 | Scenario Type: | Generic | Status: | Active | Revision: | Initial Creation | Validity Period: | 01.07.2024 - Indefinite |

Delete Scenario   **Copy Compliance Scenario**   **Set Status** ˅   **Revision** ˅   **You can also** ˅

- Purchased Water (m3)
- Well Water (m3)
- Wastewater to Surface Water (m3)
- Wastewater to offsite treatment facility (m3)
- Stormwater Runoff (m3)
- Evaporation (m3)
- Water to ground-Irrigation (m3)
- Water in Product (m3)
- Rainfall (Inch)
- ˅ Samplings (0)
- ˅ fx Calculations (7)
  - Data References (0)
  - **Rainfall / Rainfall.**
  - Total Water Withdrawn / Total Water Withdrawn
  - Water Balance Value / Water Balance Value
  - Margin of Error / Margin of Error
  - Percent Closure Result / Percent Closure Result
  - Total Wastewater Discharge / Total Wastewater D...
  - Total Water Loss / Total Water Loss

Equation Details

Equation Name: Rainfall.

Equation Description:

Calculation Results

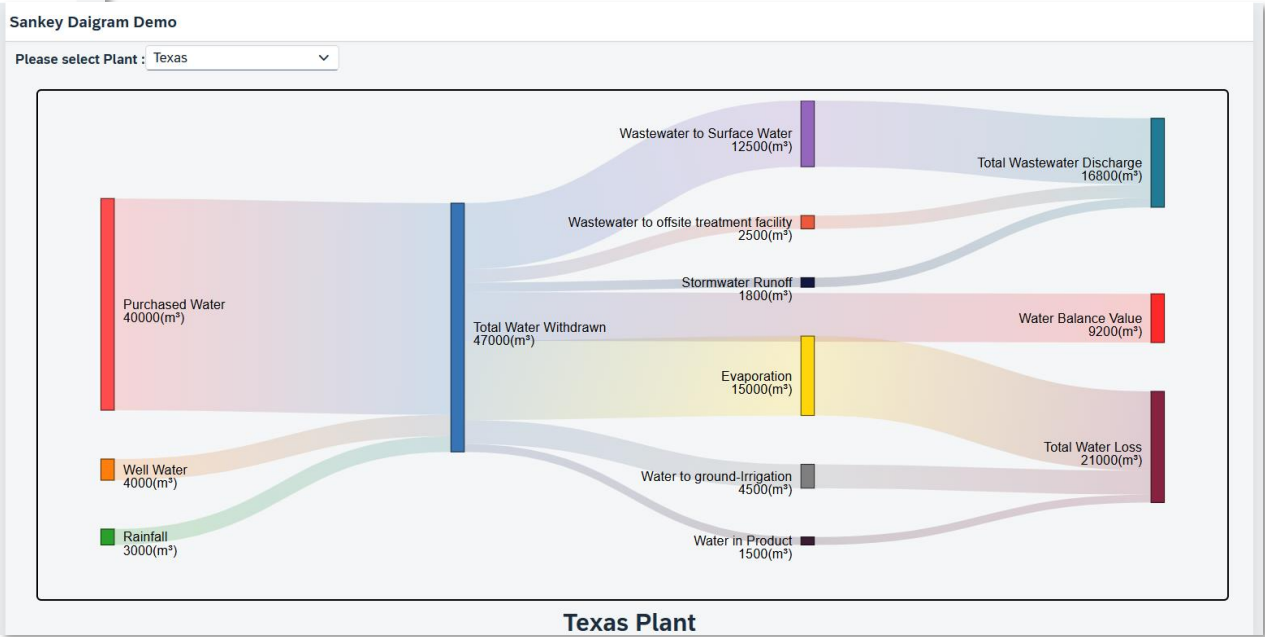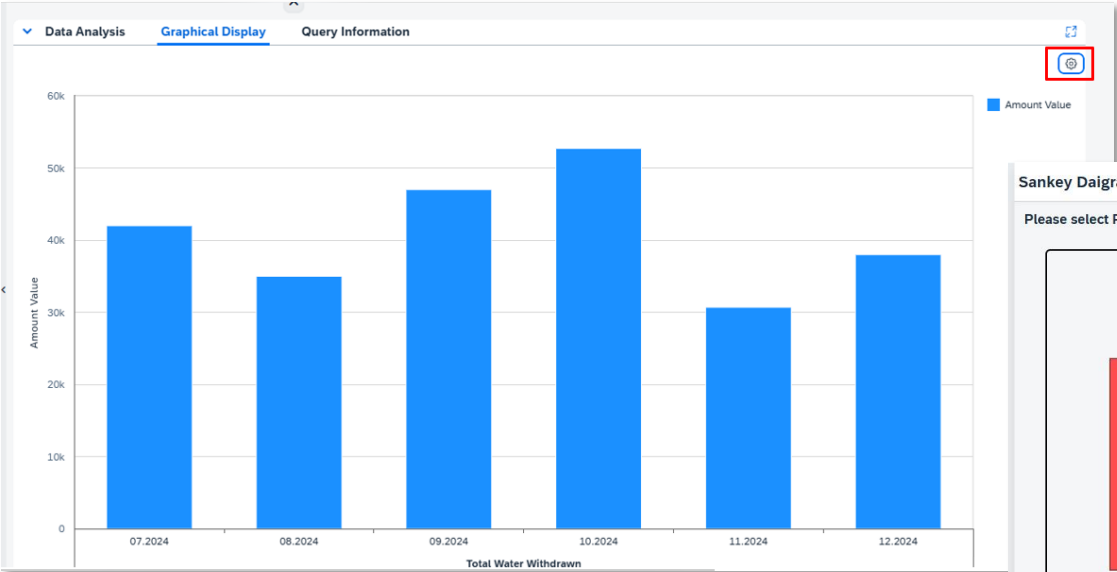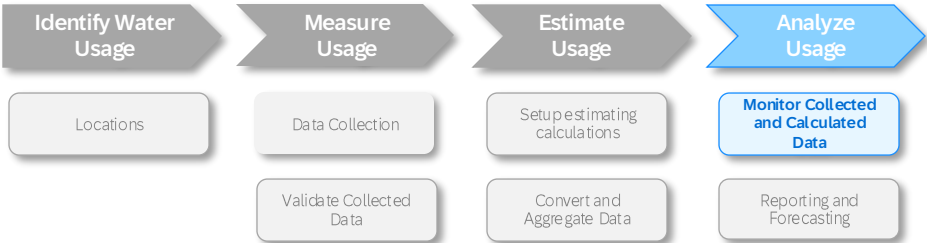**Manage Data Classifiers**   Assign Environmental Limits   **Monitor Calculated Data**

Title	Expression	Des...	Environmental...	Data Classifiers
Monthly Water, m3 / ID: ...	((AVGRAINFALL)*25.4)*(TOTALAREAOFFACILITY)/1000			Rainwater

Utilizing the *Manage Compliance Scenario* app an Environmental Manager can configure calculations for aggregation and estimation like the Total Water Loss, Water Balance Value or the Margin of error.
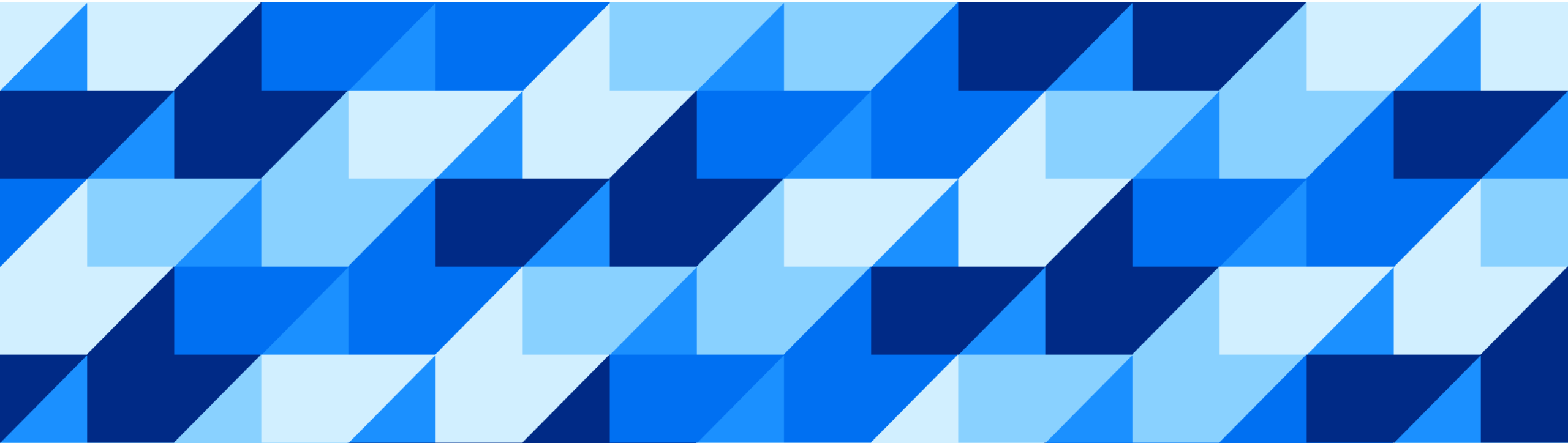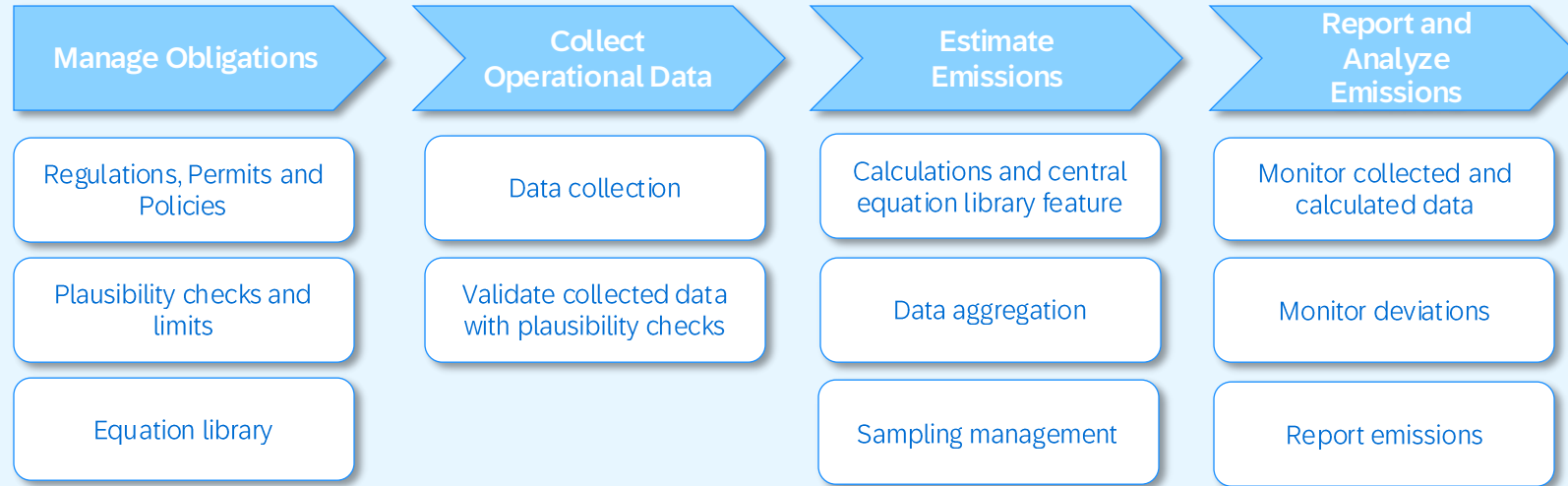
Water Management – Analyze Usage

Identify Water Usage → Measure Usage → Estimate Usage → Analyze Usage

Locations

Data Collection

Setup estimating calculations

Monitor Collected and Calculated Data

Validate Collected Data

Convert and Aggregate Data

Reporting and Forecasting

Utilizing the **Query Browser and BTP Platform** Water Balance results can be visualized.

Sankey Daigram Demo

Please select Plant : Texas

Purchased Water 40000(m³)
Well Water 4000(m³)
Rainfall 3000(m³)

Total Water Withdrawn 47000(m³)

Wastewater to Surface Water 12500(m³)
Wastewater to offsite treatment facility 2500(m³)
Stormwater Runoff 1800(m³)
Evaporation 15000(m³)
Water to ground-Irrigation 4500(m³)
Water in Product 1500(m³)

Total Wastewater Discharge 16800(m³)
Water Balance Value 9200(m³)
Total Water Loss 21000(m³)

Texas Plant

Example of implementation output leveraging BTP (project based)
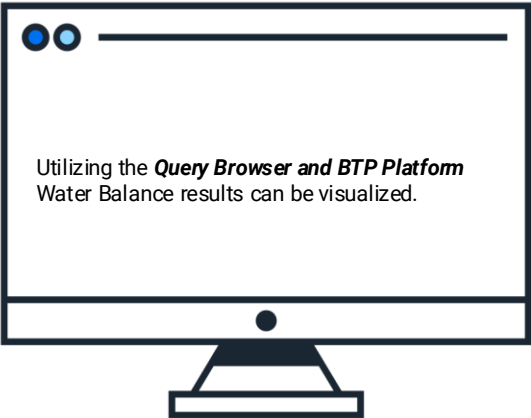
Key Processes – Air Emissions Management

Air Emissions Management

Manage Obligations	Collect Operational Data	Estimate Emissions	Report and Analyze Emissions
Regulations, Permits and Policies	Data collection	Calculations and central equation library feature	Monitor collected and calculated data
Plausibility checks and limits	Validate collected data with plausibility checks	Data aggregation	Monitor deviations
Equation library		Sampling management	Report emissions

Process overview

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How SAP EHS can help:

Key capabilities:

- Manage all types of emissions from operations: NOx, SOx, CO, PM, HAPs, GHGs

- API for data collection (e.g., operational datavia data historians)

- Plausibility checks and limit thresholds like rolling averages

- Universal equation library

- Calculation & aggregation capabilities

Benefits

- Ensure license to operate

- Reduce risk of environmental non-compliance and penalties
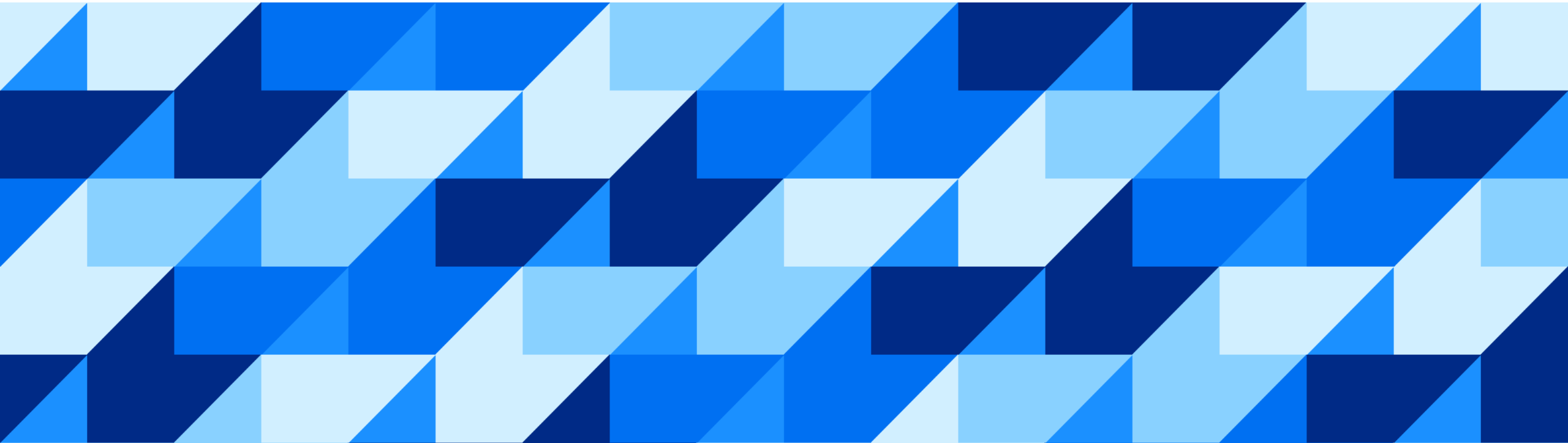
- Auditable and accurate emissions inventories

> o Manage Regulatory Compliance
>
> o Collect operational Data e.g. fuel use, control device readings
>
> o Validate, calculate and report emissions
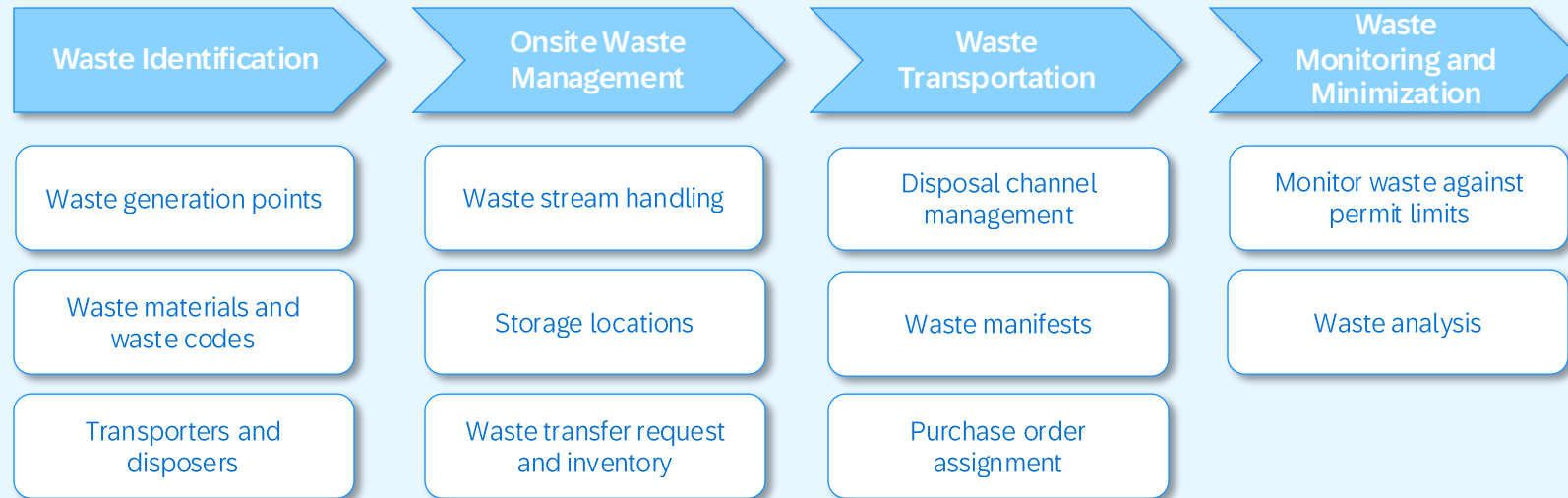
Environmental Manager
(at facility level)

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Key Processes – Waste Management

Waste Management

Waste Identification	Onsite Waste Management	Waste Transportation	Waste Monitoring and Minimization
Waste generation points	Waste stream handling	Disposal channel management	Monitor waste against permit limits
Waste materials and waste codes	Storage locations	Waste manifests	Waste analysis
Transporters and disposers	Waste transfer request and inventory	Purchase order assignment	

Process overview

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How SAP EHS can help:

Key capabilities:

- Waste identification and characterization
- Onsite waste generation management
- Waste permit management
- Waste transportation documents management

Benefits

- Transparent cradle to grave waste management
- Identify waste minimization and cost reduction opportunities
- Minimize risk of non-compliance with waste regulations and permits
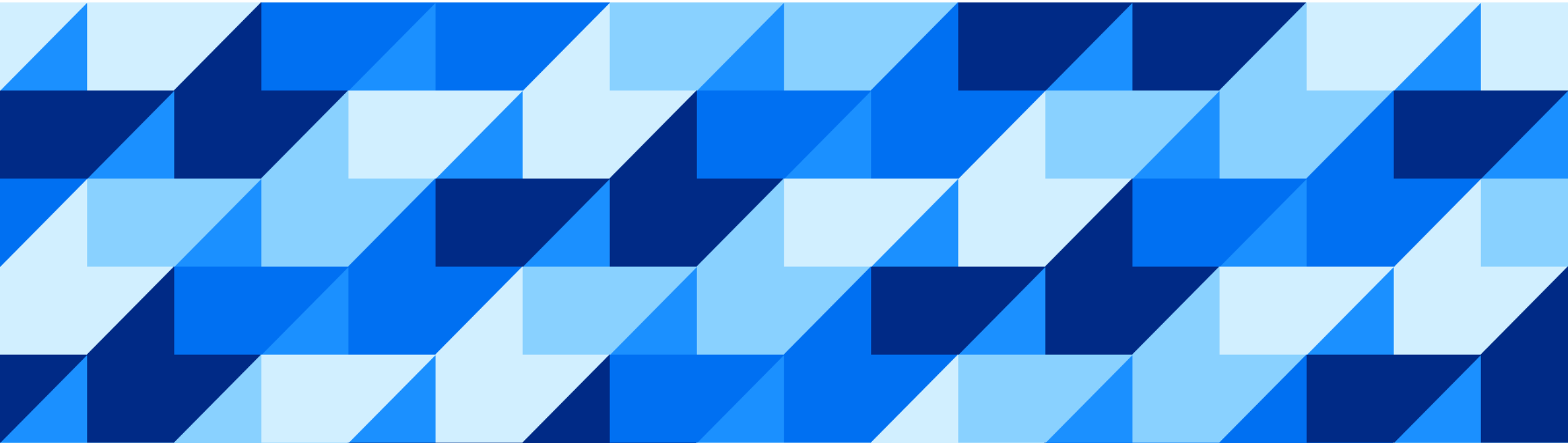
o Ensure compliance with waste regulations

o Minimize waste

o Reduce waste management cost
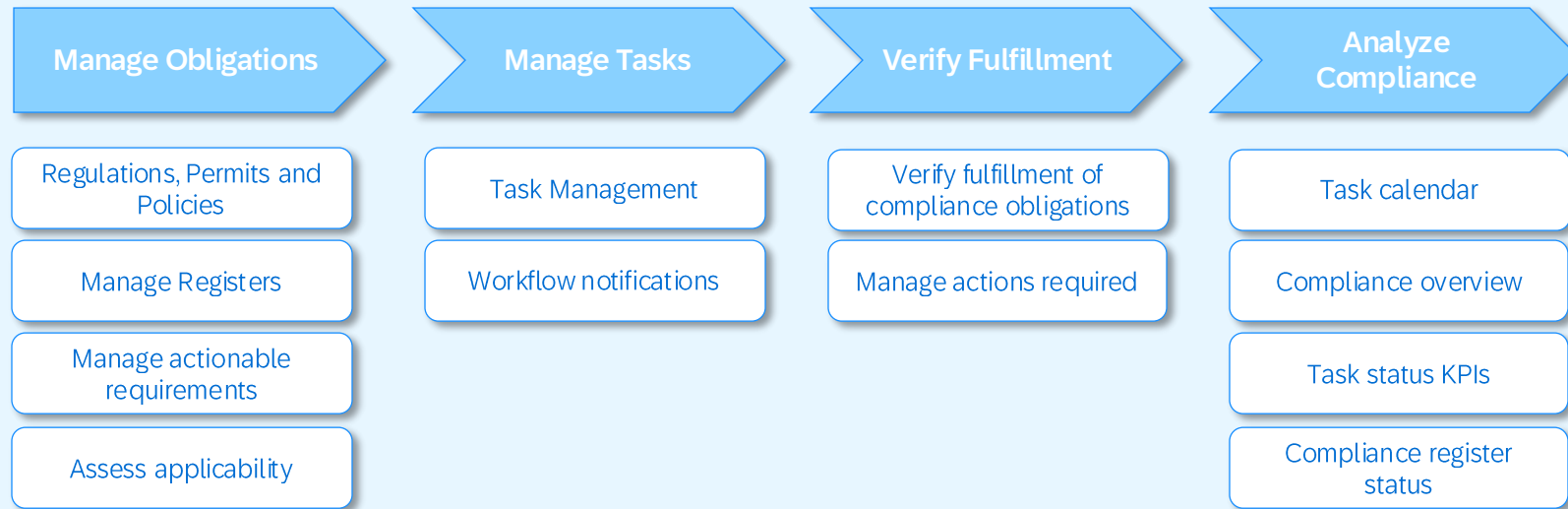
Environmental Manager (at facility level)

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Key Processes – Compliance Management

Compliance Obligation Management

Manage Obligations	Manage Tasks	Verify Fulfillment	Analyze Compliance

Manage Obligations
- Regulations, Permits and Policies
- Manage Registers
- Manage actionable requirements
- Assess applicability

Manage Tasks
- Task Management
- Workflow notifications

Verify Fulfillment
- Verify fulfillment of compliance obligations
- Manage actions required

Analyze Compliance
- Task calendar
- Compliance overview
- Task status KPIs
- Compliance register status

Process overview

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How SAP EHS can help:

Key capabilities:
- Regulatory content integration
- Compliance Register Management
- Compliance Overview apps
- Task Calendar
- Deviation Management

Benefits
- Improve compliance performance
- Ensure license to operate
- Reduce compliance risk and ensure auditability

o Manage Compliance Registers
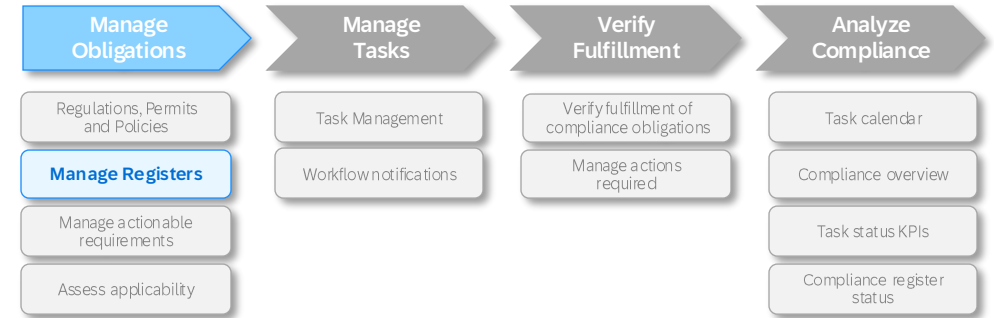o Ensure timely fulfilment
o Ensure operational continuity

EHS Manager
(at facility level)

Lisa

Compliance Obligation Management

SAP — Manage Compliance Register

Standard

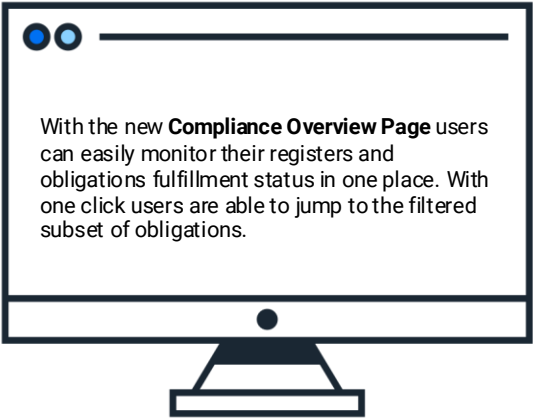| Search	Title: *Clean* ×	Citation:	Domain:	Source:
Status:	Action Required:			Go Adapt Filters (5)

Compliance Obligations (8)

Edit   Add   Remove   Import

Title	Citation	Type	Domain	Source	Location	Status	Action Required
Sofia (5)							
☑ General Stationary Fuel Combustion Sources	40 CFR 98.30	Regulation	Air	Local	Sofia	✔ Fulfilled	⚠
☐ Oil Pollution Prevention	40 CFR Part 112	Regulation	Land	Local	Sofia	✔ Fulfilled	-
☐ Medical services and first aid	29 CFR 1910.151	Regulation	Water	Local	Sofia	✖ Not Fulfilled	-
☐ Fire Protection	29 CFR Part 1910 Subpart L	Regulation	Waste	Provider	Sofia	⚠ Not Assessed	
☐ Air Emissions Permit	-	Permit	Air	Local	Sofia	⚠ Not Assessed	-
Warna (3)							
☑ General Stationary Fuel Combustion Sources	40 CFR 98.30	Regulation	Air	Local	Warna	✖ Not Fulfilled	-
☐ Safe Workplace Conduct	ABC 2.0	Policy	Land	Local	Warna	⚠ Not Assessed	-

Now with the **Manage Compliance Register** app, EHS users can easily manage all applicable obligations for a site in one place. They can track the applicability, actionable requirements and responsibility using tasks.

Compliance Obligation Management

With the new **Compliance Overview Page** users can easily monitor their registers and obligations fulfillment status in one place. With one click users are able to jump to the filtered subset of obligations.
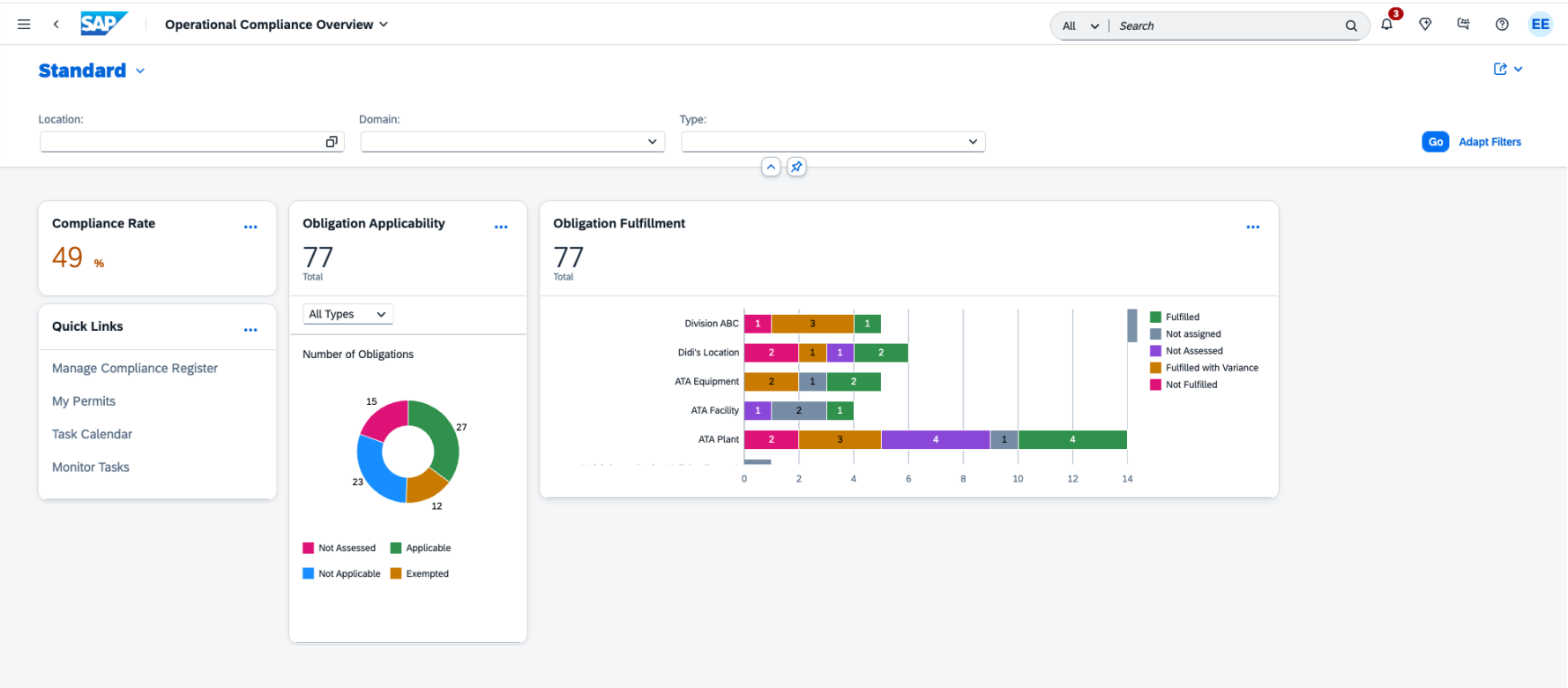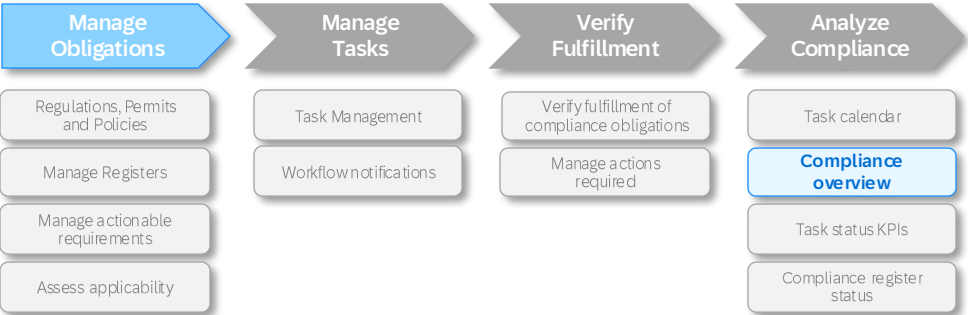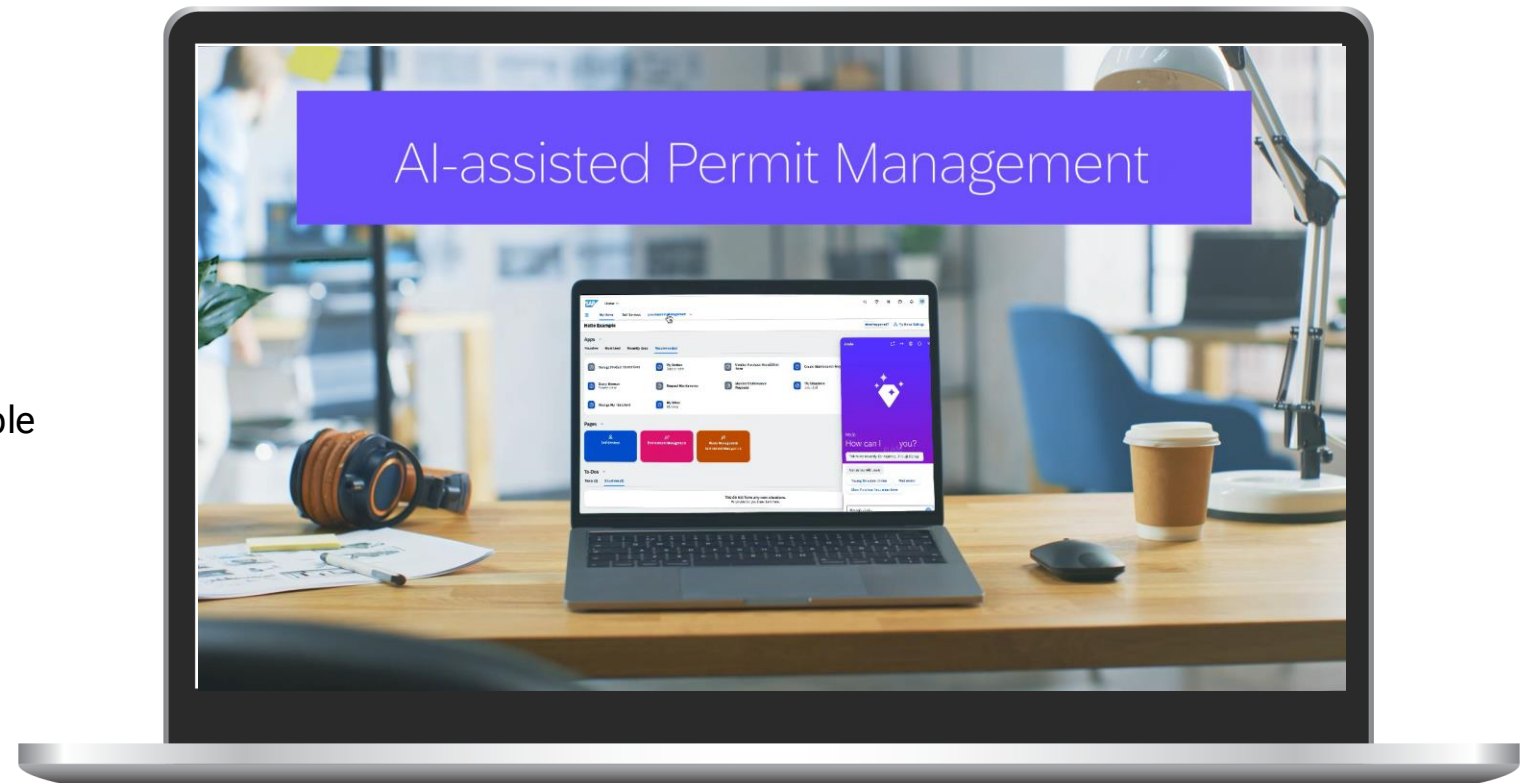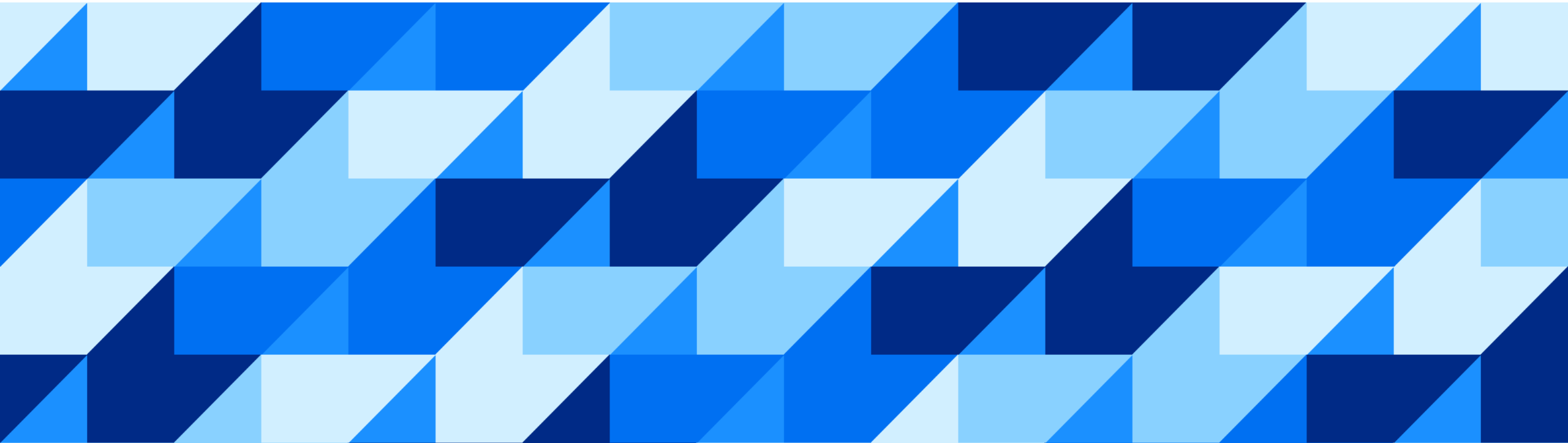
Compliance Obligation Management
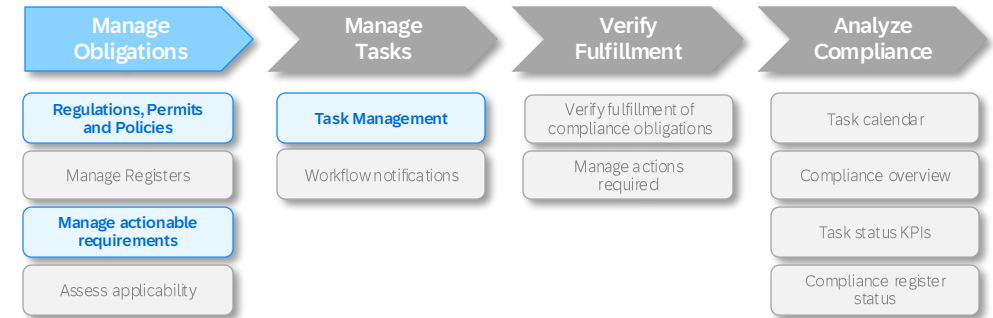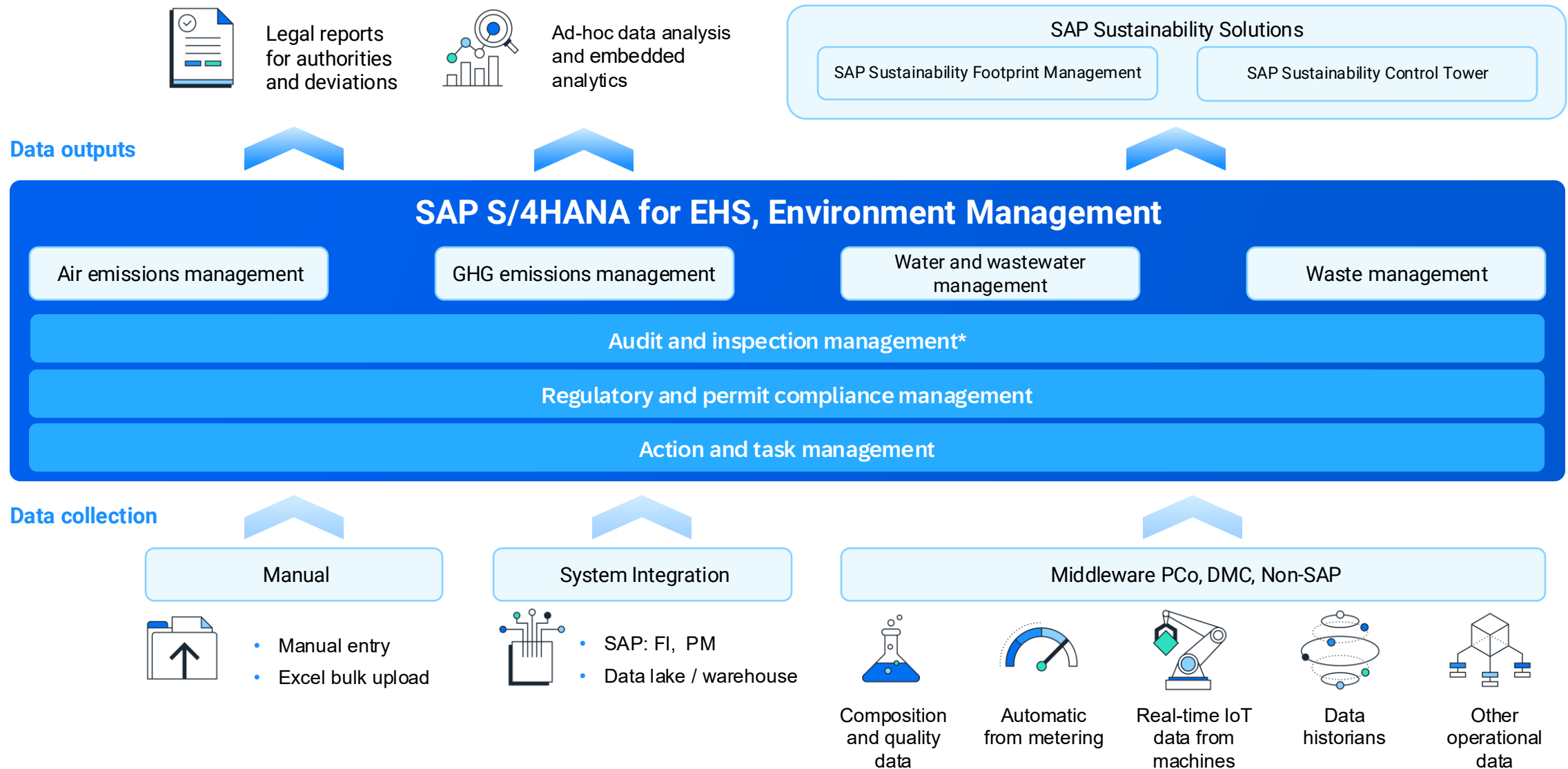
AI-assisted Permit Management

Extract compliance requirements from environmental permit documents (PDF) and automatically translate them into clear, actionable tasks including simple actions, maintenance notifications, and reporting tasks — eliminating manual work and errors, and reducing risk.
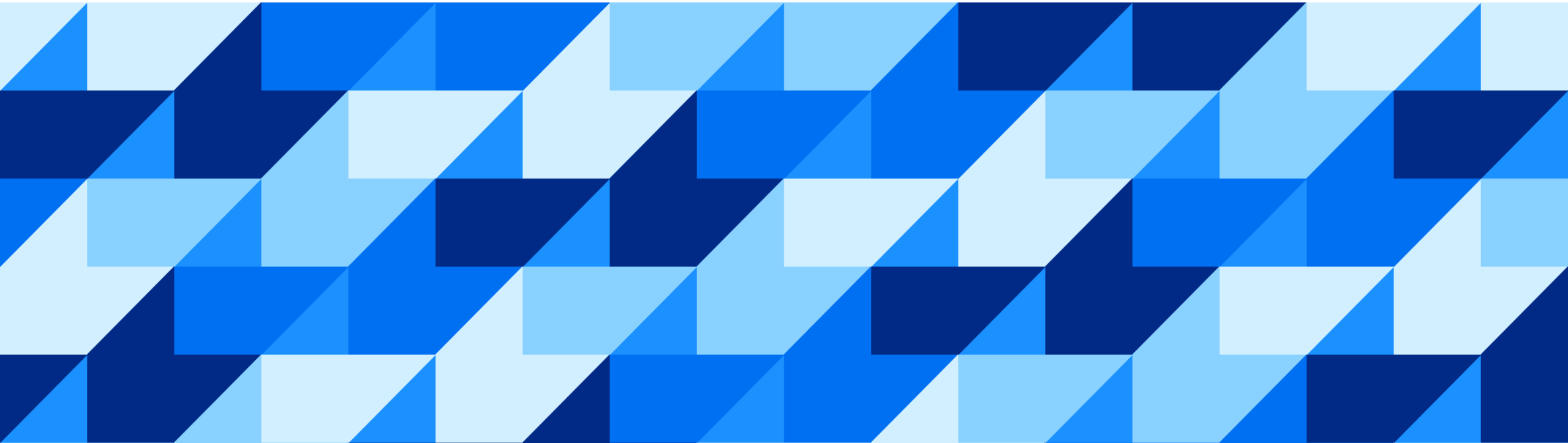

AI-assisted Permit Management
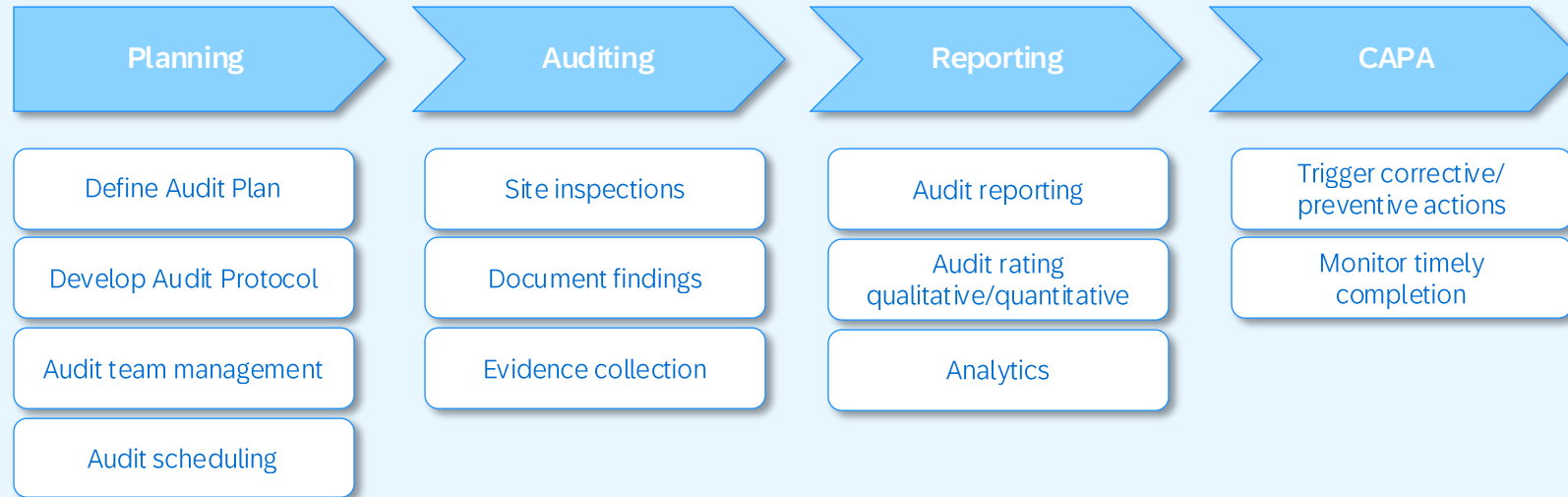
Integration Scenarios

SAP EHS Environment Management – Integration Overview

Legal reports for authorities and deviations

Ad-hoc data analysis and embedded analytics

SAP Sustainability Solutions

| SAP Sustainability Footprint Management | SAP Sustainability Control Tower |

Data outputs

SAP S/4HANA for EHS, Environment Management

| Air emissions management | GHG emissions management | Water and wastewater management | Waste management |

Audit and inspection management*

Regulatory and permit compliance management

Action and task management

Data collection

| Manual | System Integration | Middleware PCo, DMC, Non-SAP |

Manual
- Manual entry
- Excel bulk upload

System Integration
- SAP: FI, PM
- Data lake / warehouse

Middleware PCo, DMC, Non-SAP

- Composition and quality data
- Automatic from metering
- Real-time IoT data from machines
- Data historians
- Other operational data

Outlook – Audit & Inspection Management

Audit & Inspection Management

Planning	Auditing	Reporting	CAPA

Define Audit Plan	Site inspections	Audit reporting	Trigger corrective/ preventive actions
Develop Audit Protocol	Document findings	Audit rating qualitative/quantitative	Monitor timely completion
Audit team management	Evidence collection	Analytics	
Audit scheduling			

Process overview

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How SAP EHS can help:

Key capabilities:

- Questionnaire/checklist management
- Content integration
- Integrated CAPA with EHS
- EHS process integration e.g. Compliance Management

Benefits

- Prevent harm to employees and environment
- Compliance evaluation & assurance
- Reducing non-compliance risk
- Ensure operational continuity

o Compliance verification

o Management assurance and reporting

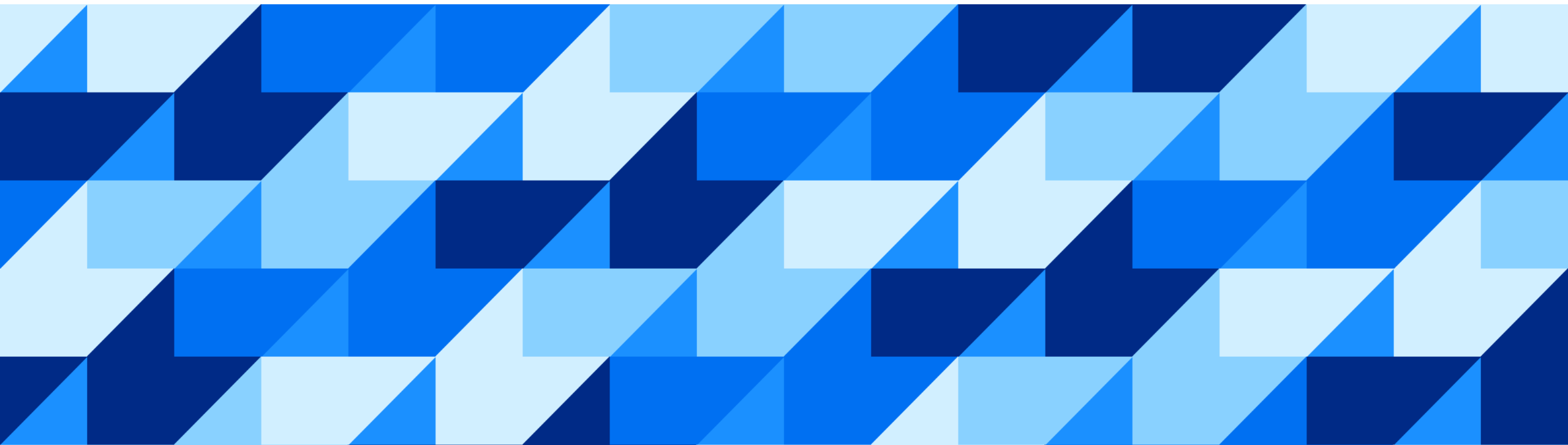o Assist in identifying compliance issues

Corporate EHS Audit Manager (at Corporate level)

Mary

Wrap-up & Further Resources

Further resources for SAP S/4HANA EHS environment management

Product Site

Main sap.com page with comprehensive product information
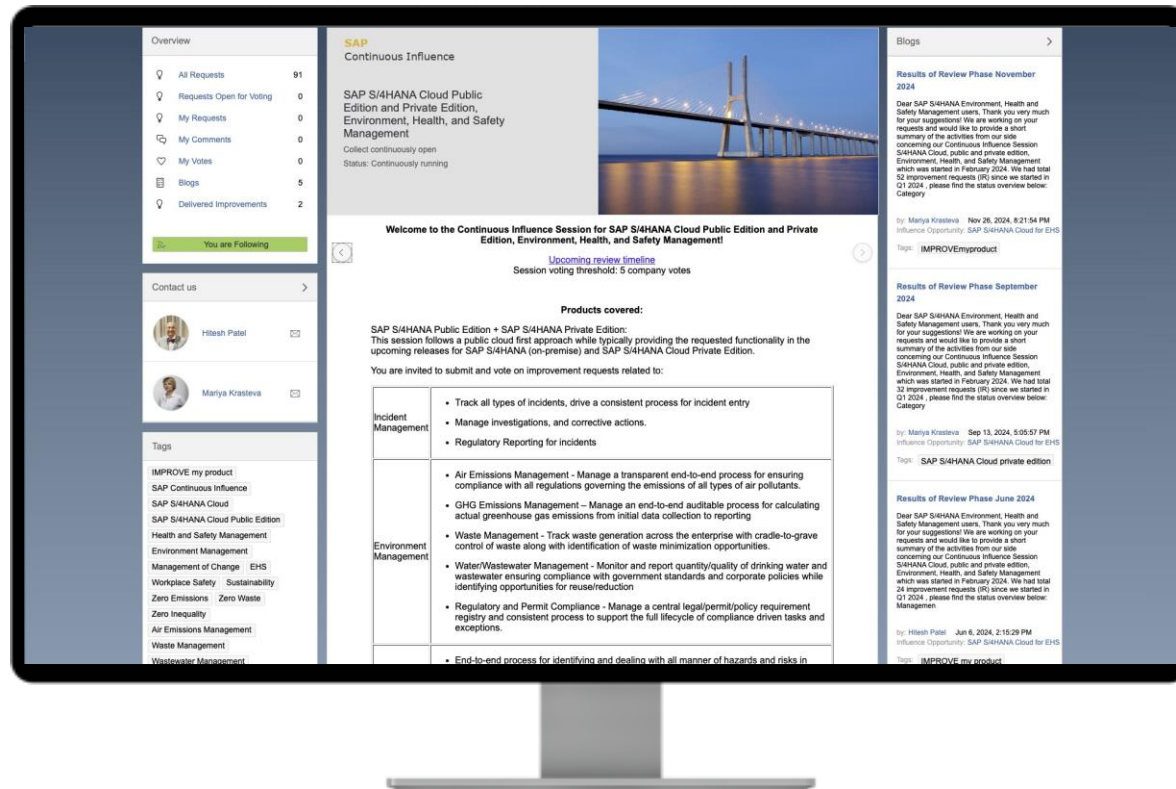
sap.com/ehs-em

SAP Community

Discover the latest release highlights, innovations and connect with other customers and partners on SAP Environment, Health, and Safety Management

Learn more

Shape the Future of SAP Environment, Health, and Safety Solution

In a nutshell

Participate in SAP's Continuous Influence Session (CIS), a

platform to directly shape the future of SAP Environment, Health, and Safety Management solution.

Log in, submit your requests or support existing improvement suggestions from other customers to make a significant impact on the future of SAP Sustainability solutions.

Follow the session for continuous updates and become a pivotal part of SAP's innovation ecosystem.

It's your opportunity to influence SAP's product roadmap and see your ideas in action!

Visit the Continuous Influence Session (CIS) for SAP S/4HANA Cloud Public Edition and Private Edition, Environment, Health, and Safety Management:
https://influence.sap.com/sap/ino/#/campaign/3615

Thank you.

Upcoming webinar

Protect Workers and Reduce Compliance Risk with AI-powered SAP EHS Workplace Safety

Date: **June 25th, 4 p.m. CEST**

SAP Bring out your best.