



Eigen Aegis

Providing experts with an integrated view of safety data from all sources

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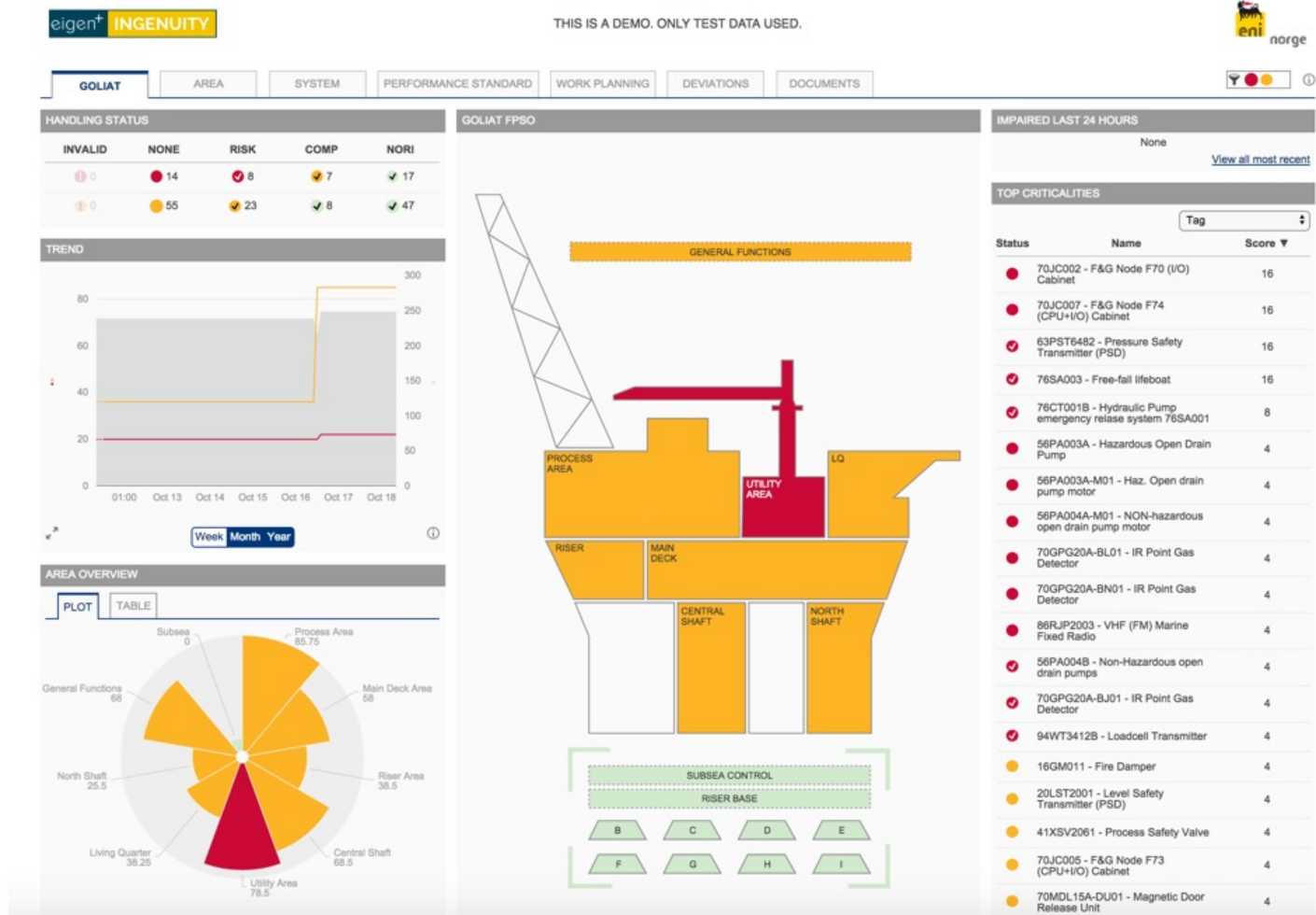
24th Jan 2019, The Geological Society



Eigen Aegis - Understand Cumulative Risk in Realtime

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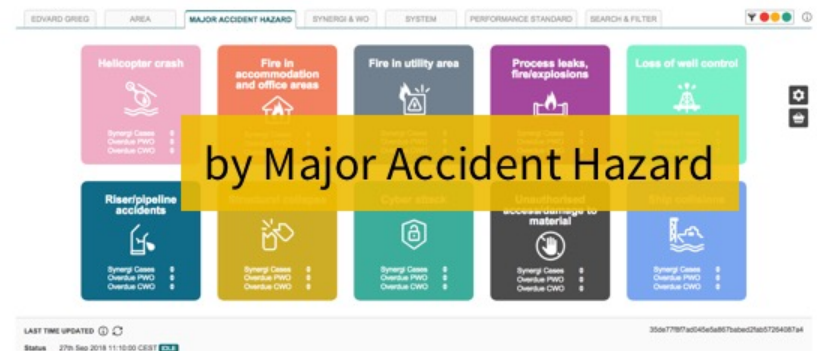
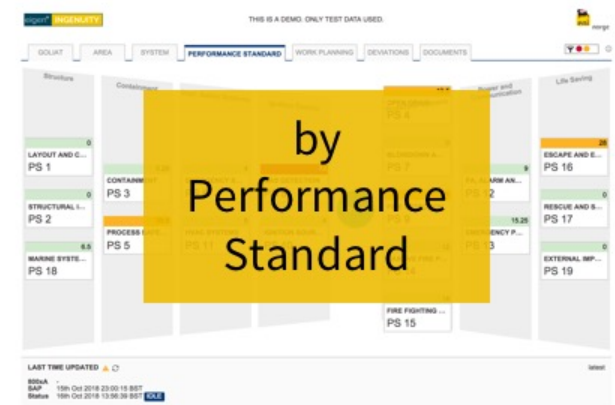
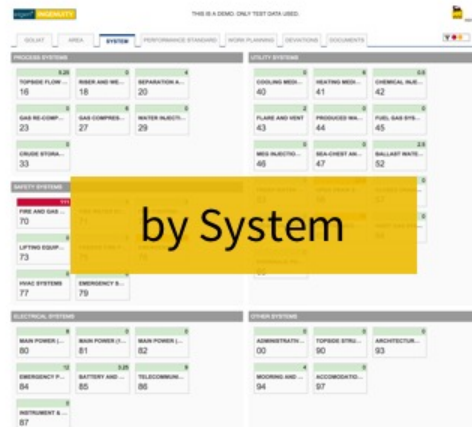
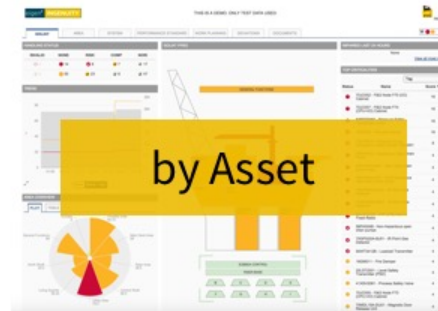
The Eigen Safety Barrier Health Monitoring application provides the monitoring requirements for Operational Risk Assessments and Safety Barrier Health required by the UK OGA and Norwegian PSA. It provides a visual way to easily understand cumulative risk and drill down into the details. It connects to existing systems and updates in real-time.



A Digital Twin allows different views of the data

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The application is built around a data model (or Digital Twin) of the barrier and other related information. The model can be viewed or “cut” in different ways to present relevant views for different people.



Understanding the status in 1-click

Clicking on any object brings up the Common Menu. This shows the reason for the status, other things affected by this object and provide a link to the source data if it came from another system. Other tabs in the Common Menu give access to related data in other systems (if they are connected) such as data historians, document stores, maintenance systems etc.

The screenshot displays the Eigen+ interface for a specific asset, 63PST6482. The top navigation bar includes tabs for Barrier, Properties, Measurements, Alerts, Documents, Related Assets, and SAP. The main content area shows the asset name and its status: "score: 16" and "barrier criticality: 5". Below this, it indicates the tag has been impaired since 2018-05-25 00:00:00 CEST. A green box highlights the Common Menu (CM) entry, which shows a red checkmark, the CM number 20002446, the status RISK, and a "No comments" button. The text below the CM entry reads: "P1 PM01 Work Order: 20002446 'PST FROZEN AND NOT MEASURING PROCESS' overdue 70 days (created 2018-05-25 with required end date 2018-07-18) | Handling status: RISK Link to SAP". Below the CM entry, there are two sections: "Affected Areas" and "Affected Barrier Functions". The "Affected Areas" section lists Process Area, Main Deck Area, and Riser Area. The "Affected Barrier Functions" section lists three instances of "02a - Limit Size of HC Leak" for the Process Area, Riser Area, and Main Deck Area. At the bottom, a "History" section shows a log entry for 2018-09-26 14:02:00 CEST, stating that the barrier status color changed to red due to a CM signal for WO 20002446 [P1] overdue 70 days.

63PST6482

Barrier Properties Measurements Alerts Documents Related Assets SAP

63PST6482 - Pressure Safety Transmitter (PSD) score: 16 barrier criticality: 5

Tag impaired since: 2018-05-25 00:00:00 CEST

✓ CM 20002446 RISK No comments

P1 PM01 Work Order: 20002446 "PST FROZEN AND NOT MEASURING PROCESS" overdue 70 days (created 2018-05-25 with required end date 2018-07-18) | Handling status: RISK Link to SAP

Affected Areas

- Process Area
- Main Deck Area
- Riser Area

Affected Barrier Functions

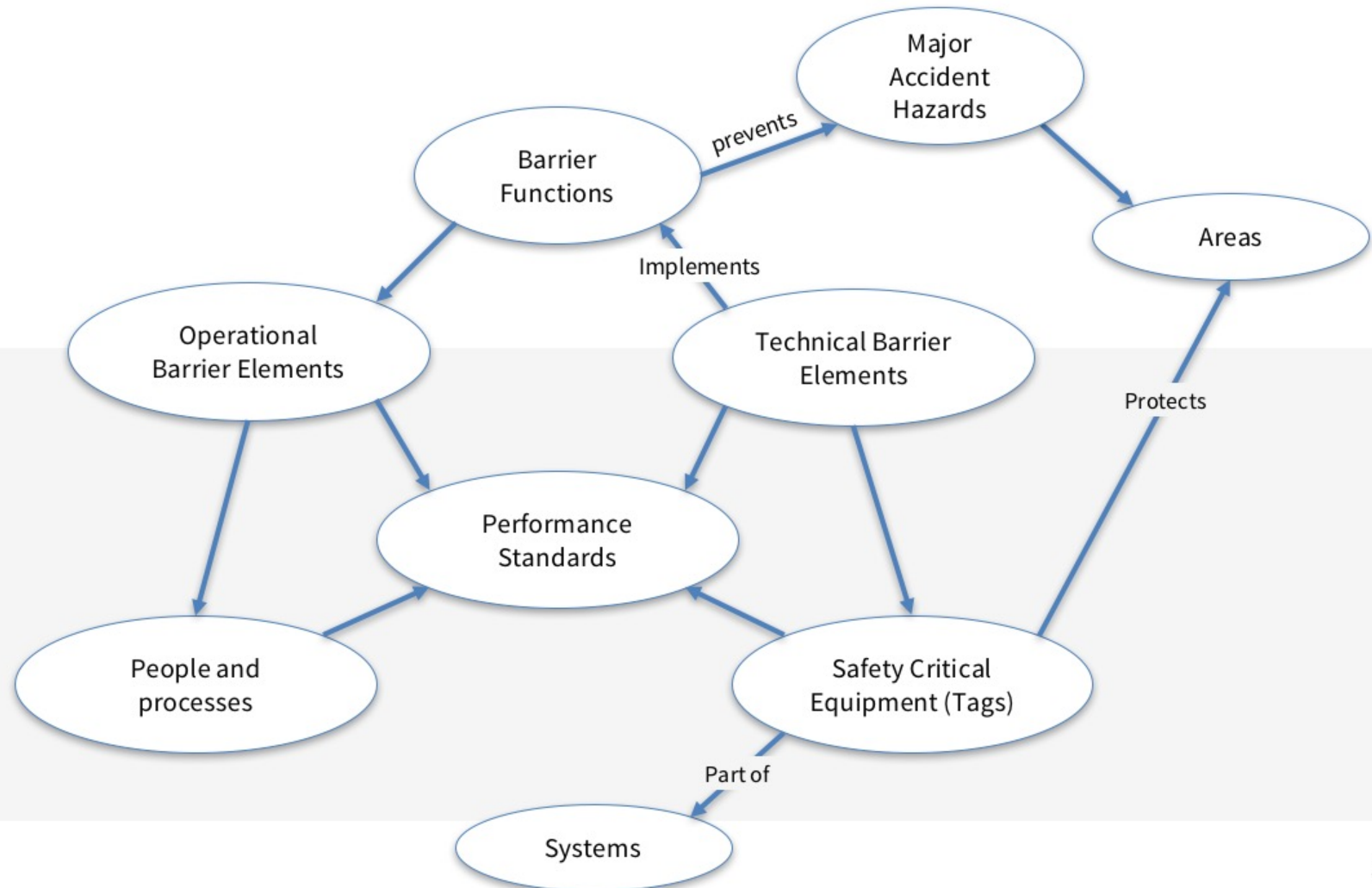
- 02a - Limit Size of HC Leak (Process Area)
- 02a - Limit Size of HC Leak (Riser Area)
- 02a - Limit Size of HC Leak (Main Deck Area)

History

! 2018-09-26 14:02:00 CEST - barrier/status - Tag 63PST6482 barrier status color changed to red (cause: CM signal for WO 20002446 [P1] overdue 70 days)

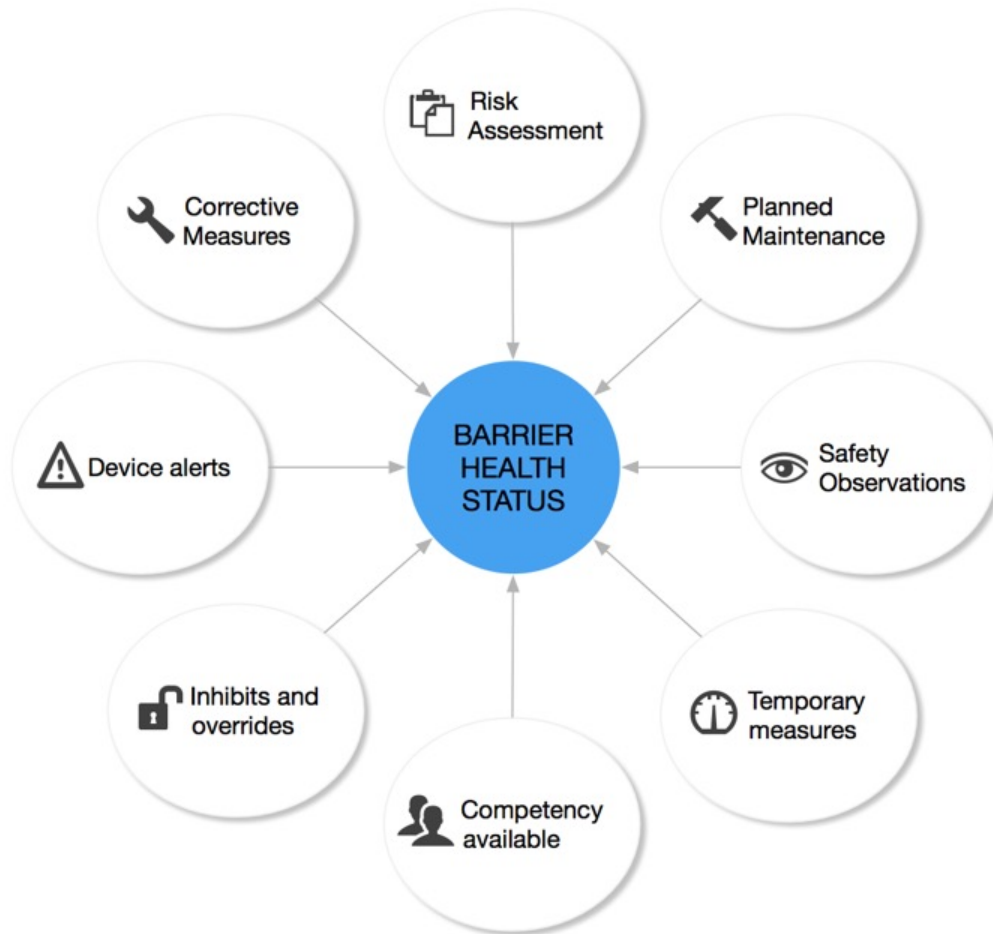
Digital Twin: A flexible data model that evolves

The Digital Twin is a data model (graph) that describes how everything is related. It is built as a one-off exercise from available information. It can be added to and expanded over time.



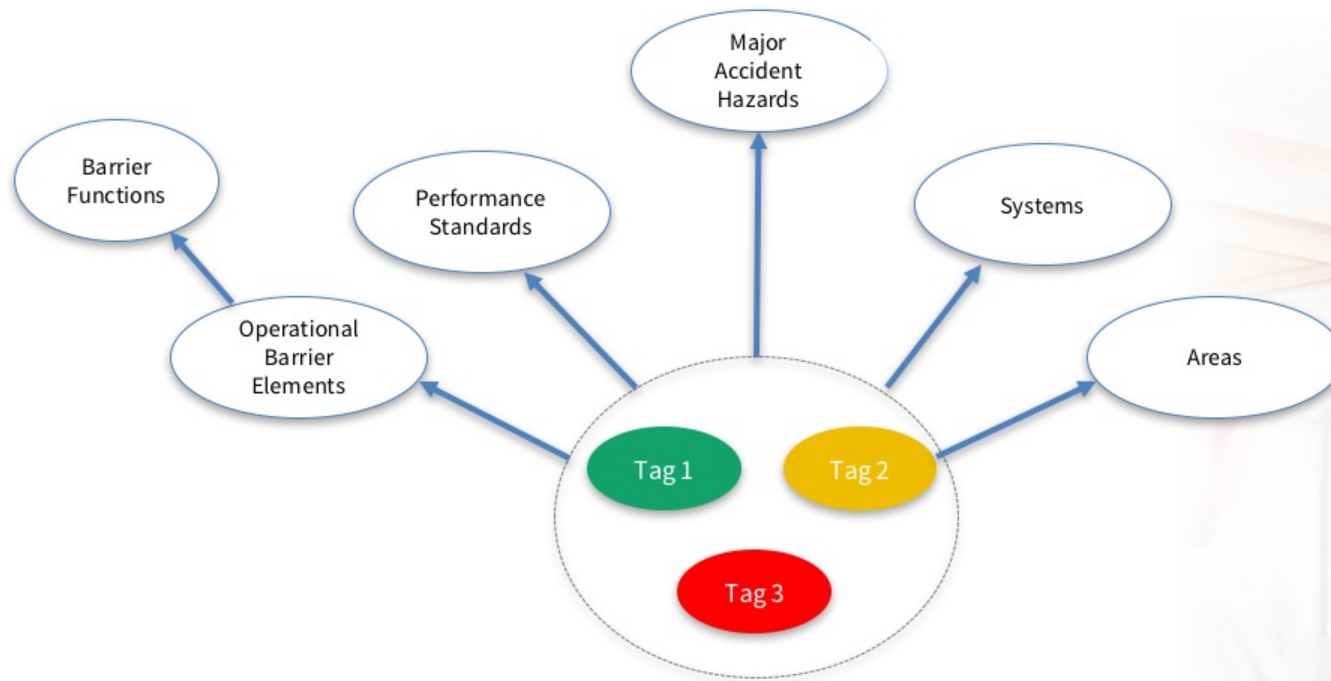
Connect live data from other systems

Safety Barrier Health status is derived from information across multiple different systems. These systems are connected to the Digital Twin and business rules calculate the status in real-time.



Calculate Cumulative Risk

Company-specific aggregation rules can be defined to calculate the cumulative risk against any object in the model.



Take credit for compensating measures

Risk Assessments and Compensating measures can be taken into account and the risk picture adjusted accordingly. These can be manually entered or extracted from another system. The list of possible states is configurable.

HANDLING STATUS				
INVALID	NONE	RISK	COMP	NORI
! 0	● 14	✓ 8	✓ 7	✓ 17
! 0	● 55	✓ 23	✓ 8	✓ 47



Case Study – Oil platform on the NCS

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The Digital Twin of the barriers was built from spreadsheets, documents and an in-house database. The business rules were connected to Aveva Workmate and DNV Synergi to give a real-time picture of the risk status. Minimising the need for manual input has freed up engineering time to focus on exceptions, leading to better confidence in reported status and better organisational awareness of risk. Better prioritisation of work leads to more effective maintenance, resulting in savings in efficiency and productivity of between \$220k and \$841k pa.



Estimated value from improved productivity alone:

Kr. 1.7M -> Kr. 6.6M pa
\$220k -> \$841k pa

Enabling next generation operations

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The Eigen Ingenuity platform is a new layer on top of existing systems providing data linking, context, search, mobility & support for new ways of working

