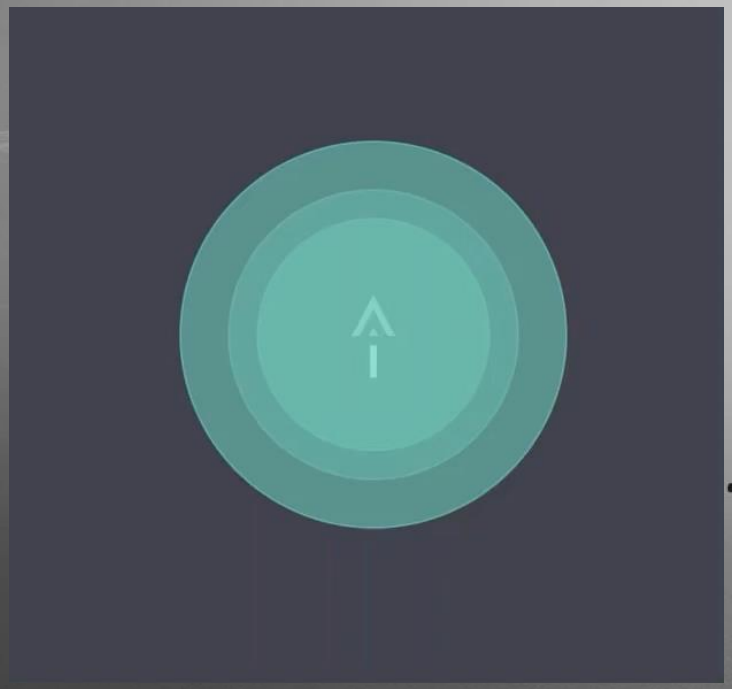


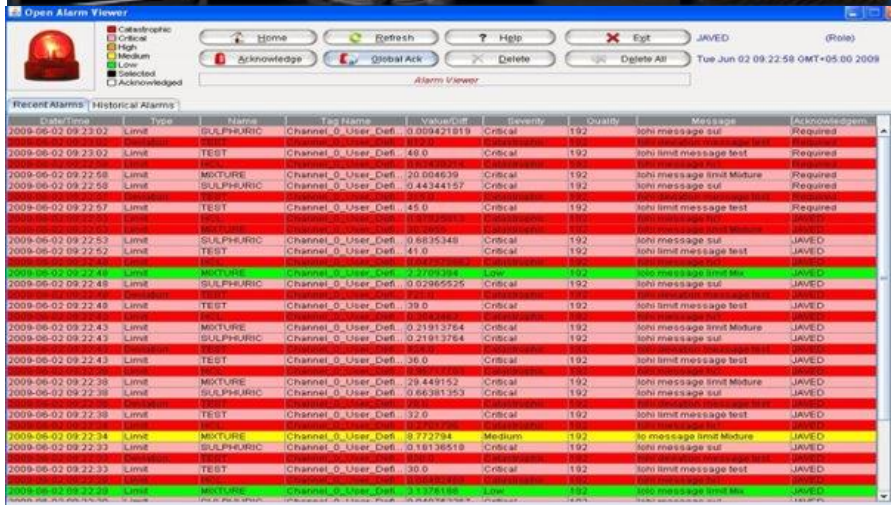
Digitalisation of Process Expertise

Bernt Eldor / Kairos Technology

Control room operator challenges

- **40 000+** configured alarms
- **500+** displays
- **More** information channels

- Number of control room operators



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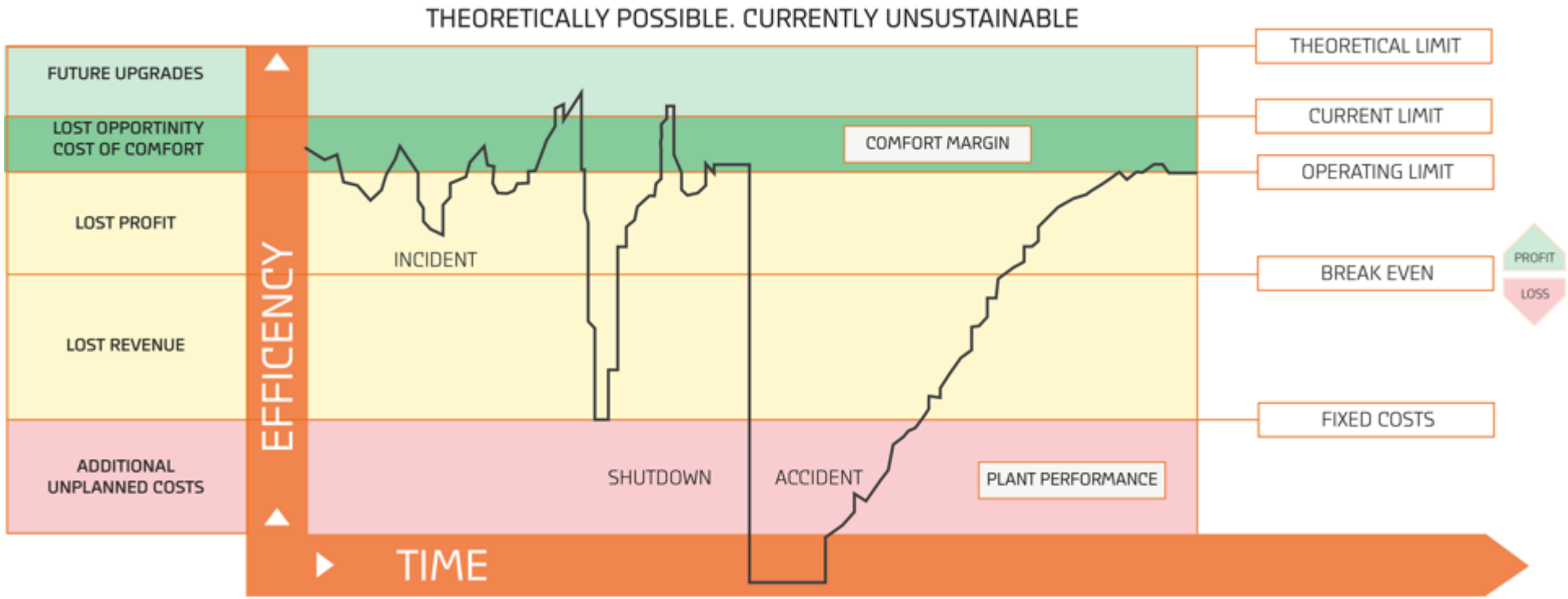
Challenge - Losses

Industrial plants loose 3-8 % production due to unplanned upsets



Source: Abnormal Situation Management Consortium with members from e.g. BP, Total, ConocoPhillips, ExxonMobil, Shell, Sasol and Honeywell

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Our approach

3 **Counteraction**

Fastest and safest return to normal situation

2 **Consequence**

Future propagation of the abnormal situation

1 **Cause**

Immediate detection of the root cause behind the abnormal situation

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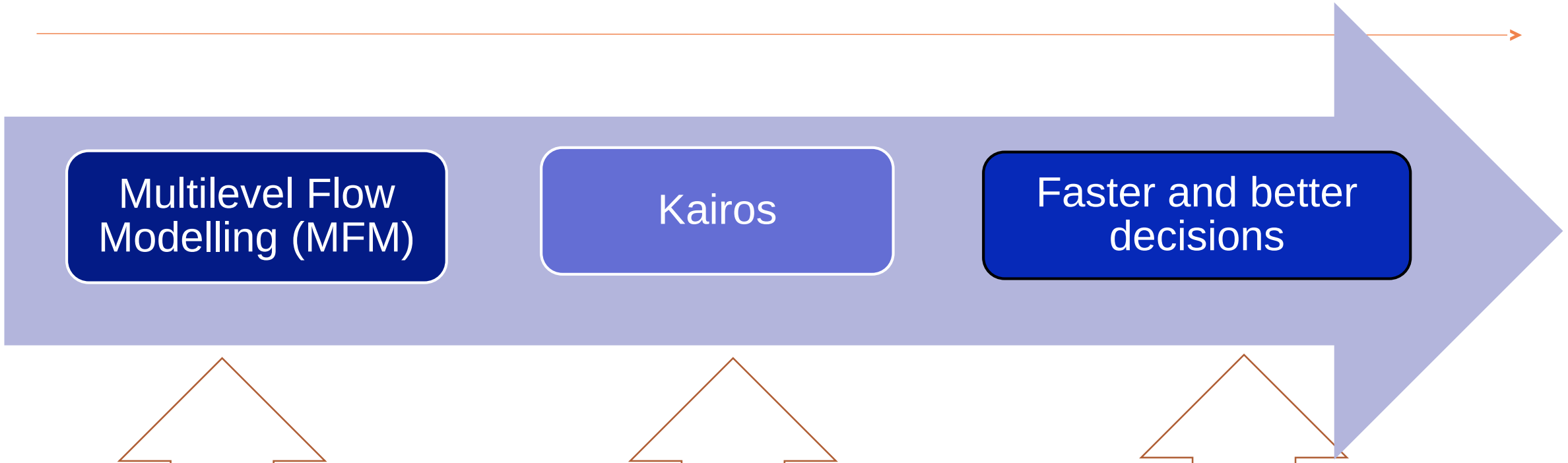
Our vision

Assist operators to perfection

The technology powering our control room assistant



Part of Artificial Intelligence called Qualitative physics

~~One Sensor = One Alarm/symptom~~
All Sensors = List and rank possible causes and consequences in **Real Time**.

Improved situational awareness

→ Increased safety, reduced downtime and reduced production loss

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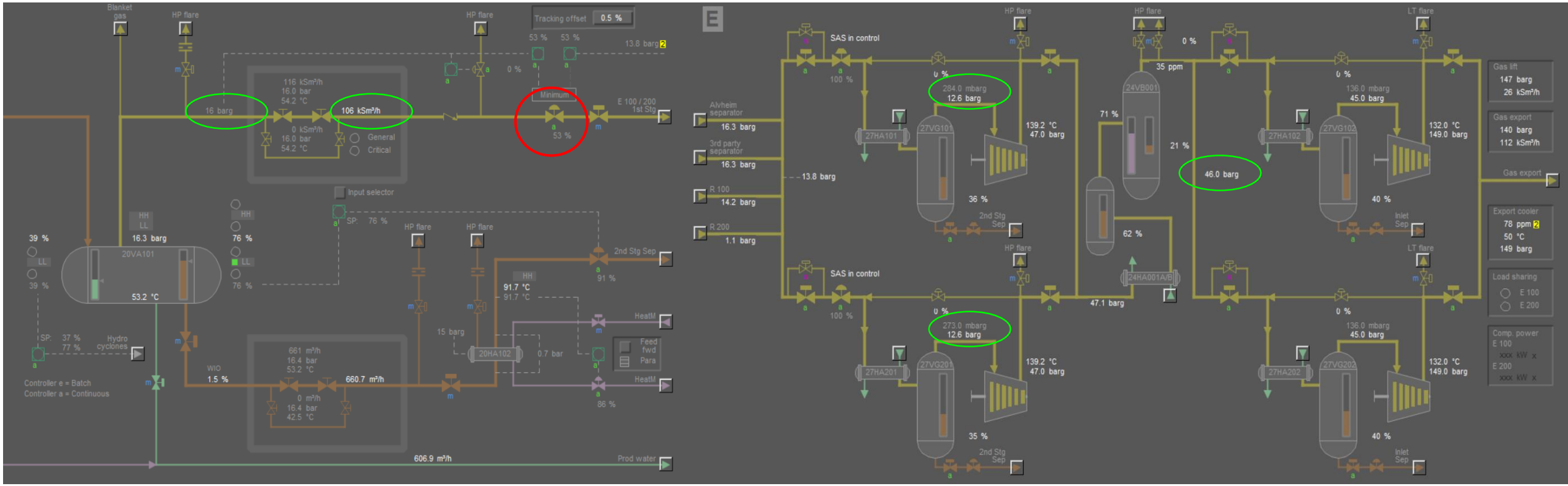
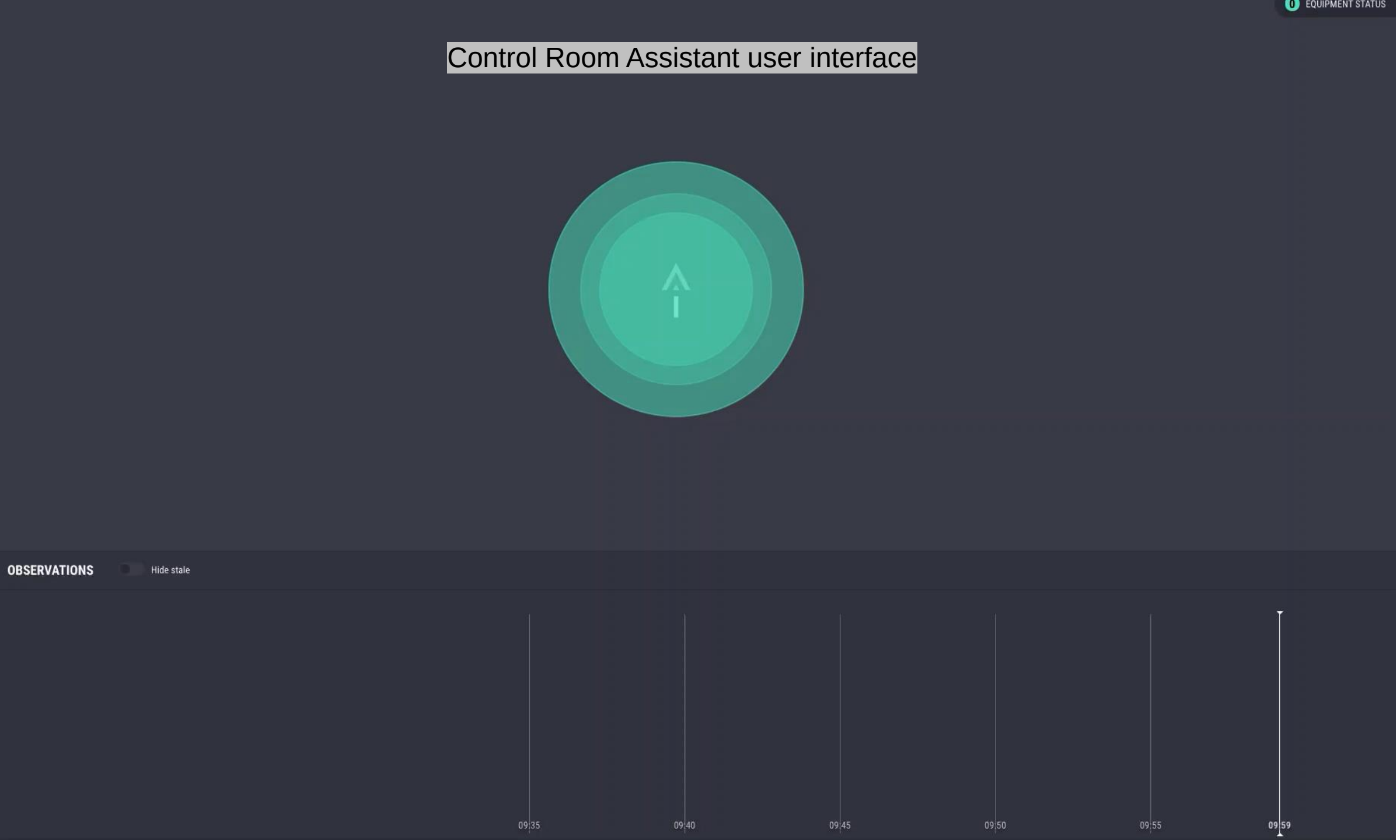
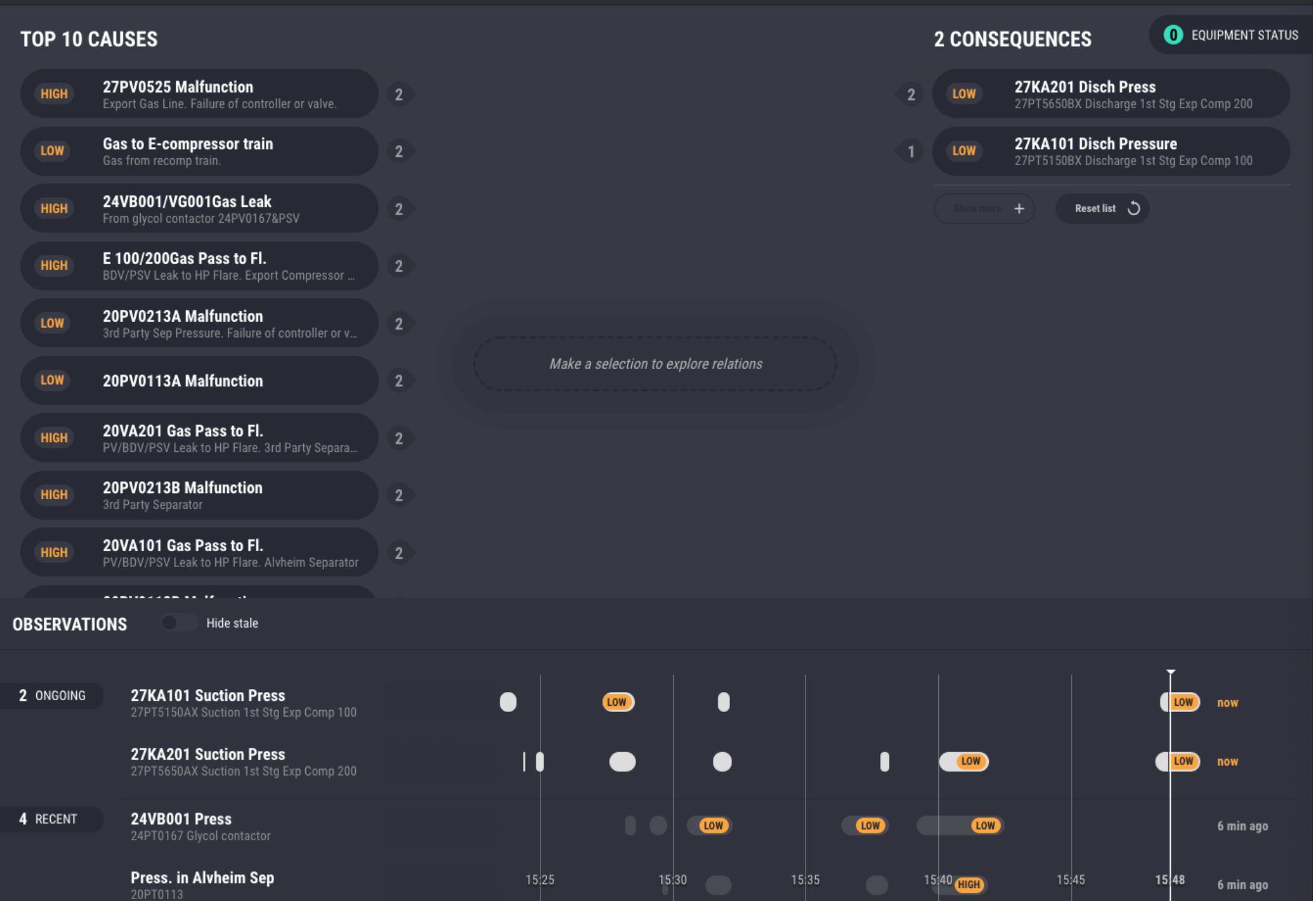
Scenario: Failure of gas outlet valve on separator



Control Room Assistant user interface





1st two sensors

Three more Sensors improved ranking

Highlights

- Reduce impact of upsets
- Share knowledge between operators
- Use learnings from incidents and investigations in real time
- Make the HAZOP available real time
- Combine explicit (from design) and implicit (from experience) knowledge.

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Thank you!

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