Chevron

human energy

an offshore digital journey

the good, the bad and the ugly

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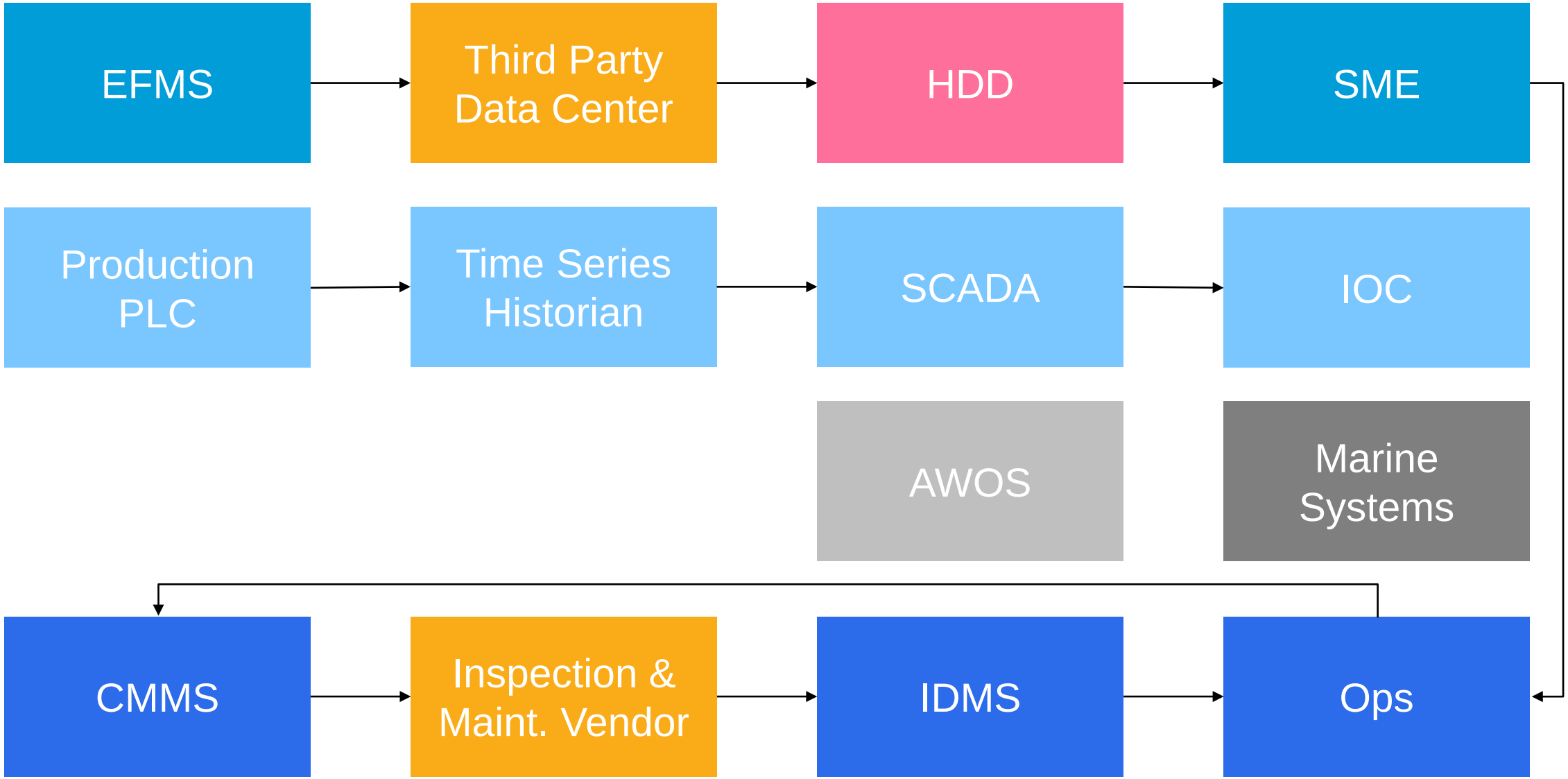
The Past – Independent Systems



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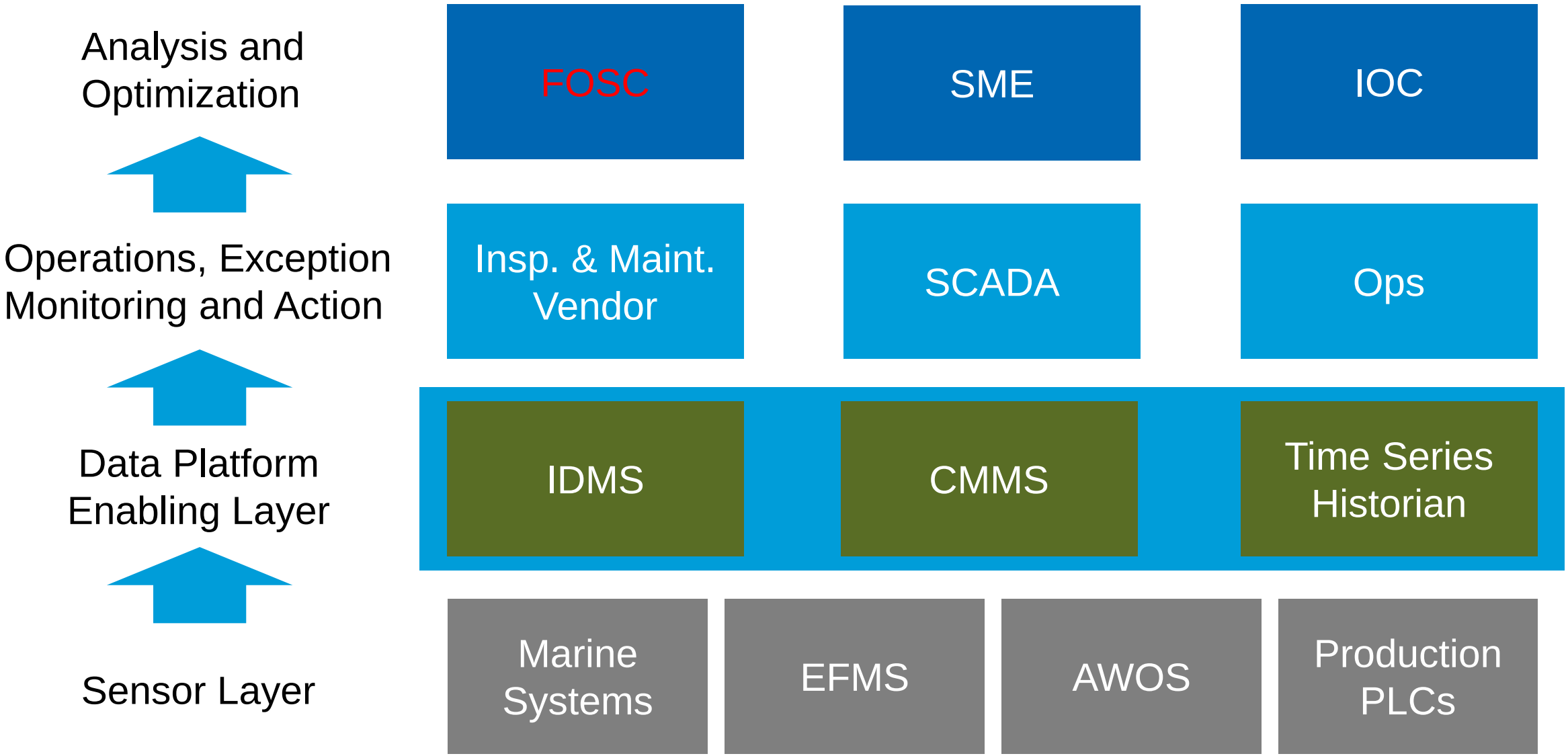
The Present



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Facilities and Operations Support Center (FOSC) Constituent Groups

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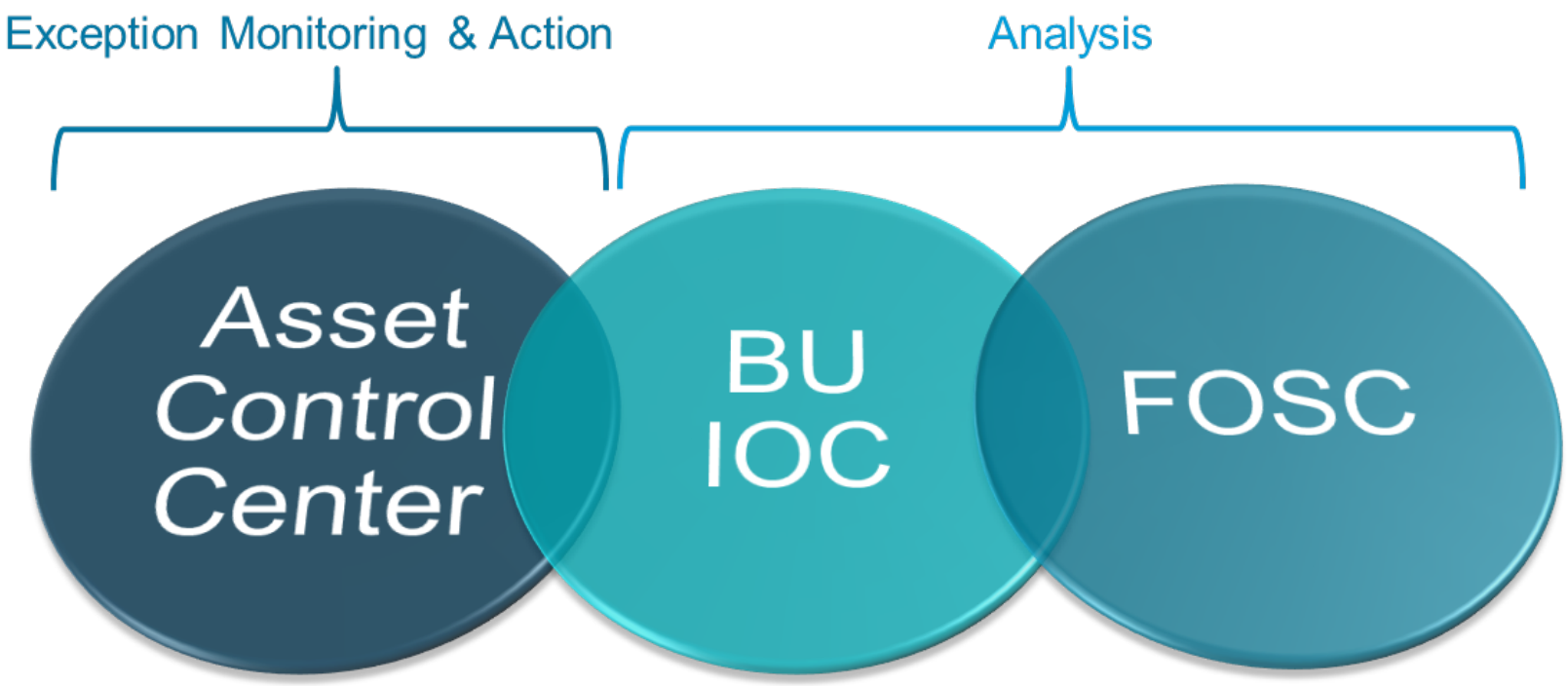
FOSC Interaction Model



Days → Minutes	Months → Days	Years → Months
Real-Time	**Tactical**	**Strategic**
• Operational control • Oversee daily activities	• Work prioritization & decision making • Run engineering tools	• Review long-term trends • Develop monitoring tools and workflows (Eng support)

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The Good

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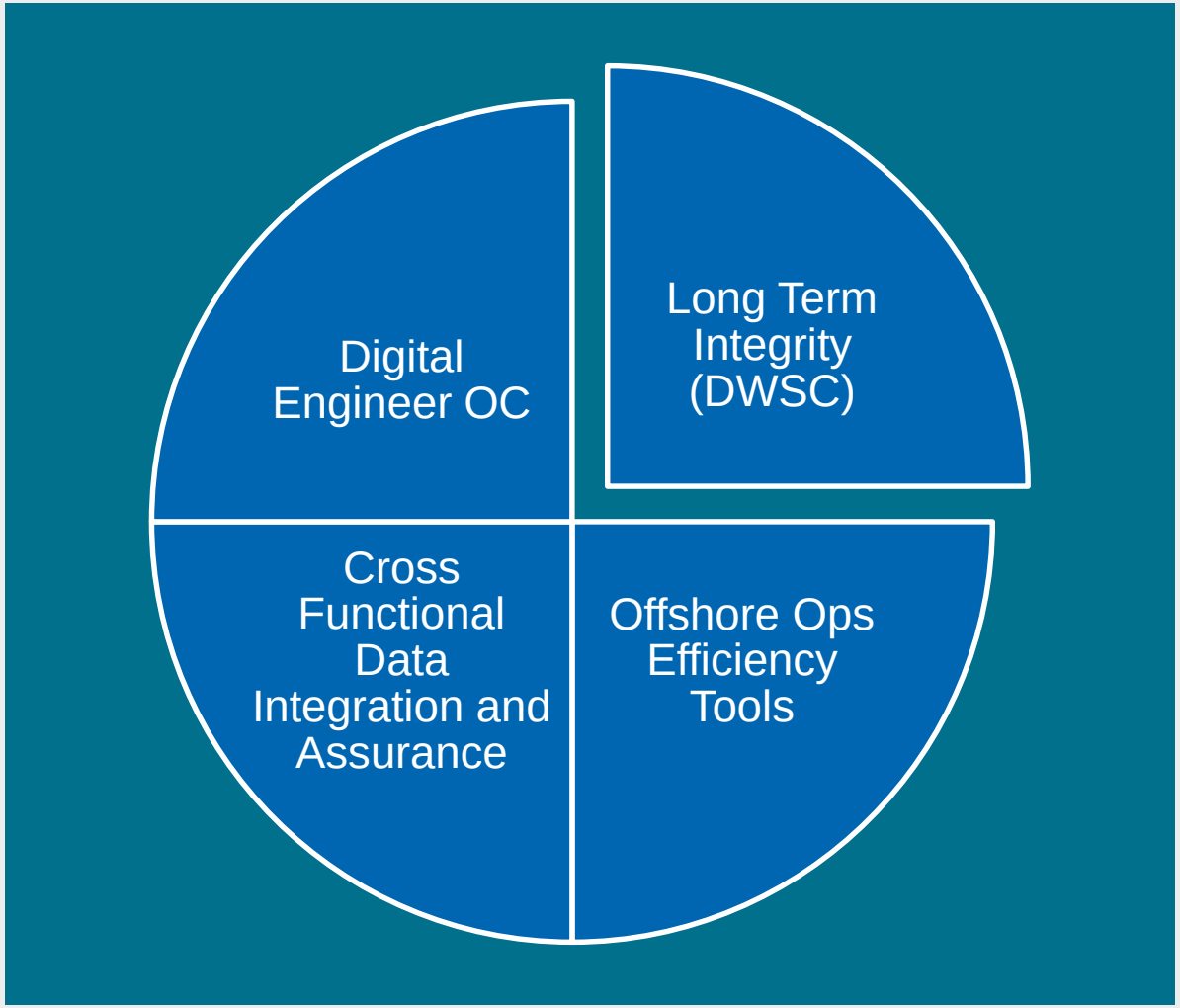
Integrated Asset Model for Deepwater (I AM DW)



4 Focus Areas:

- Deepwater Support Center
  Data and expert systems for long term integrity.
- Offshore Ops Tools
  Applications for increasing ops efficiency.
- Data Integration and Assurance
  Making all data available for analysis.
- Digital Engr OC
  Enabling BUs to use their data.

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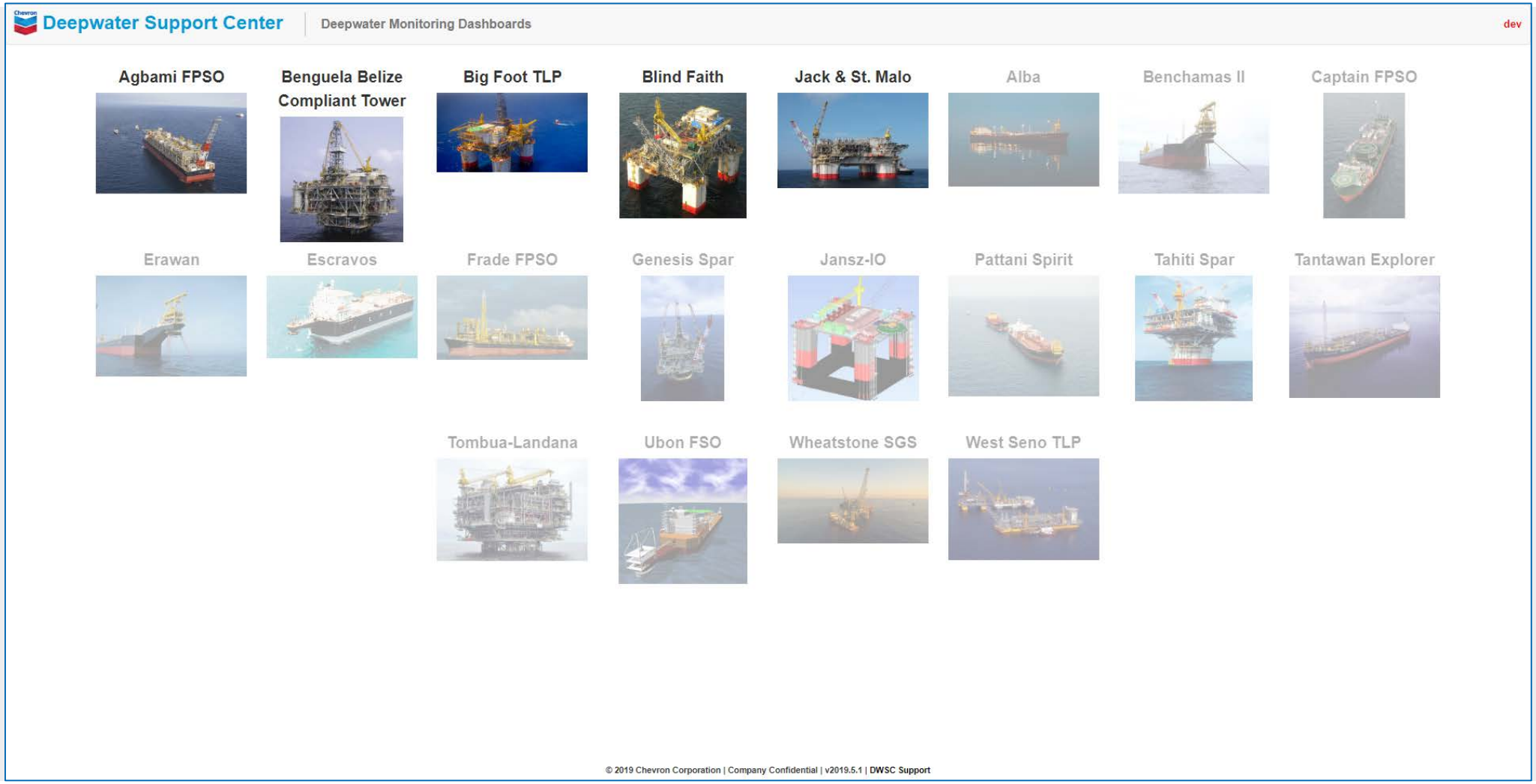
Deepwater Support Center (DWSC)



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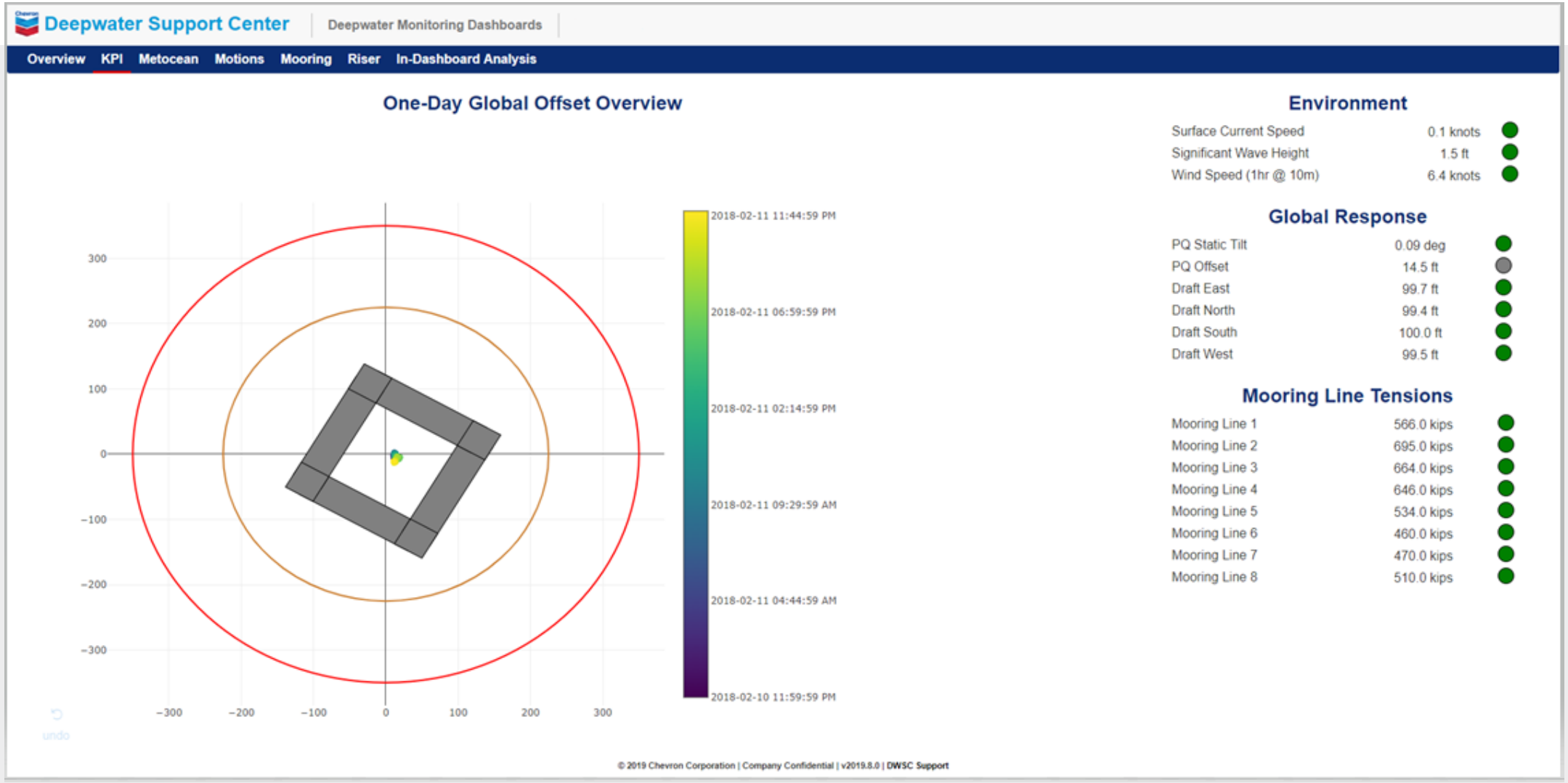
Monitoring KPIs of conditions offshore



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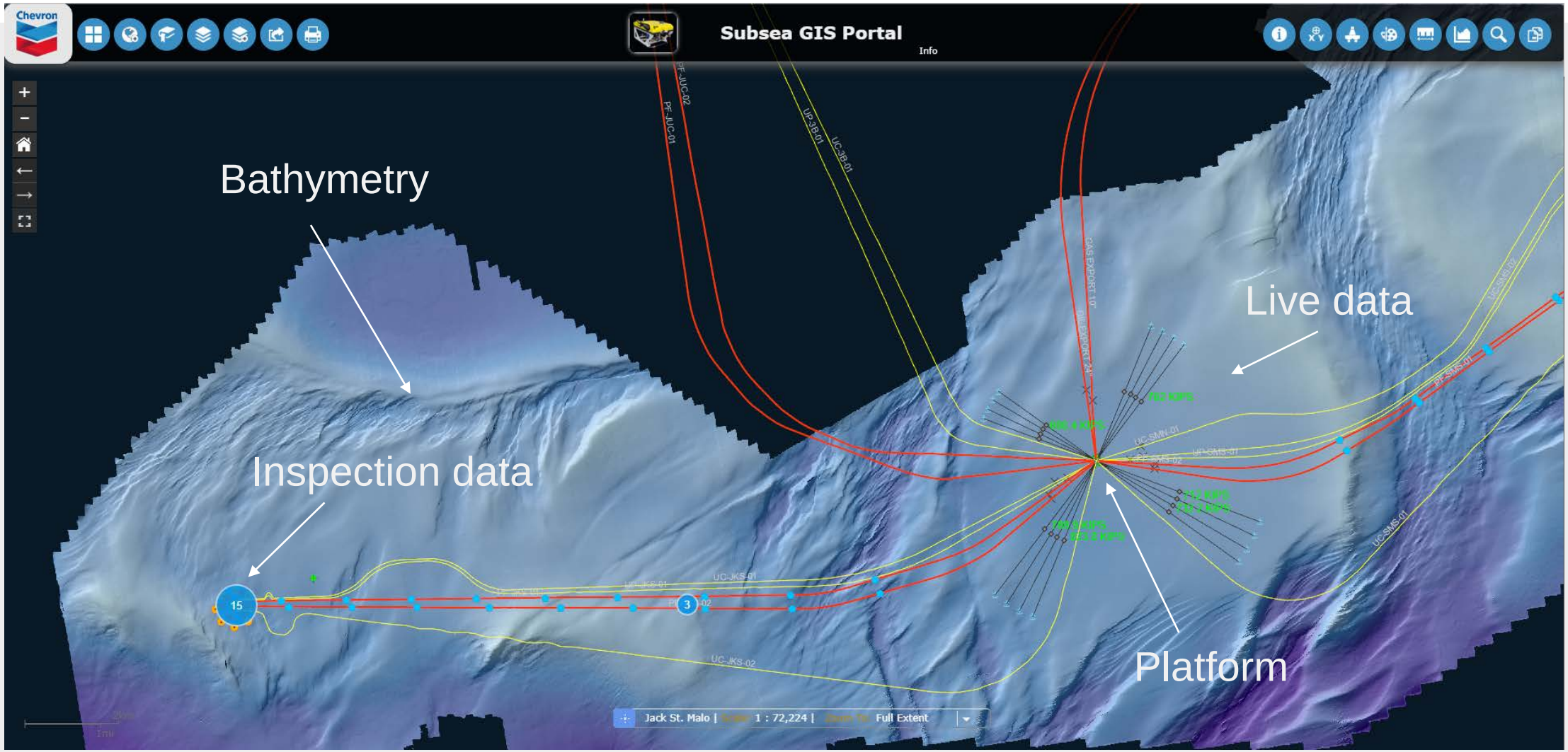
Data Integration – GIS, Pi Historian, IDMS



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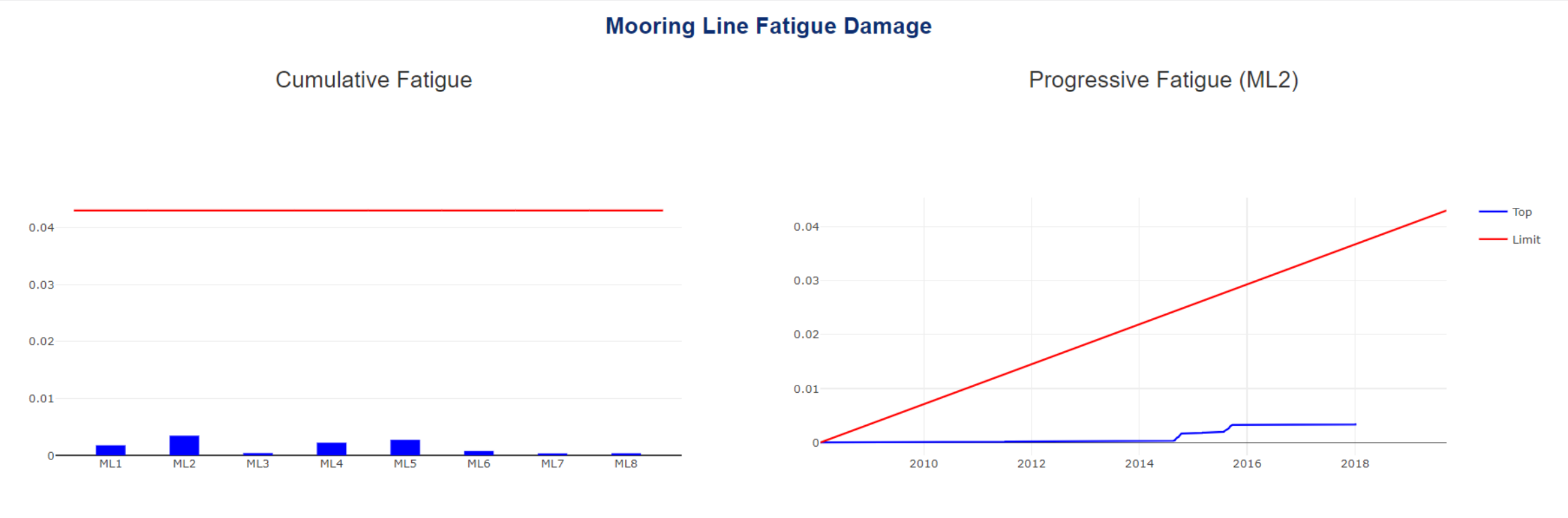
Estimating fatigue damage accumulated and remaining life to failure.



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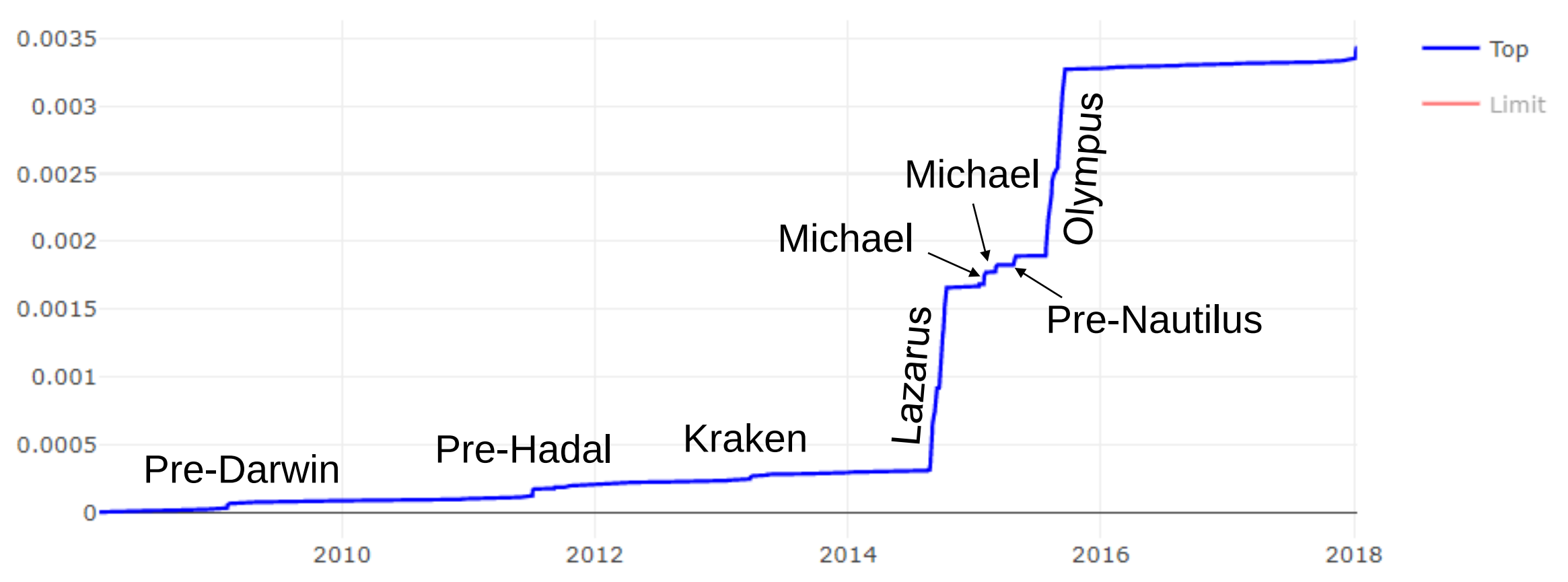
Mooring Line Fatigue Damage by Event



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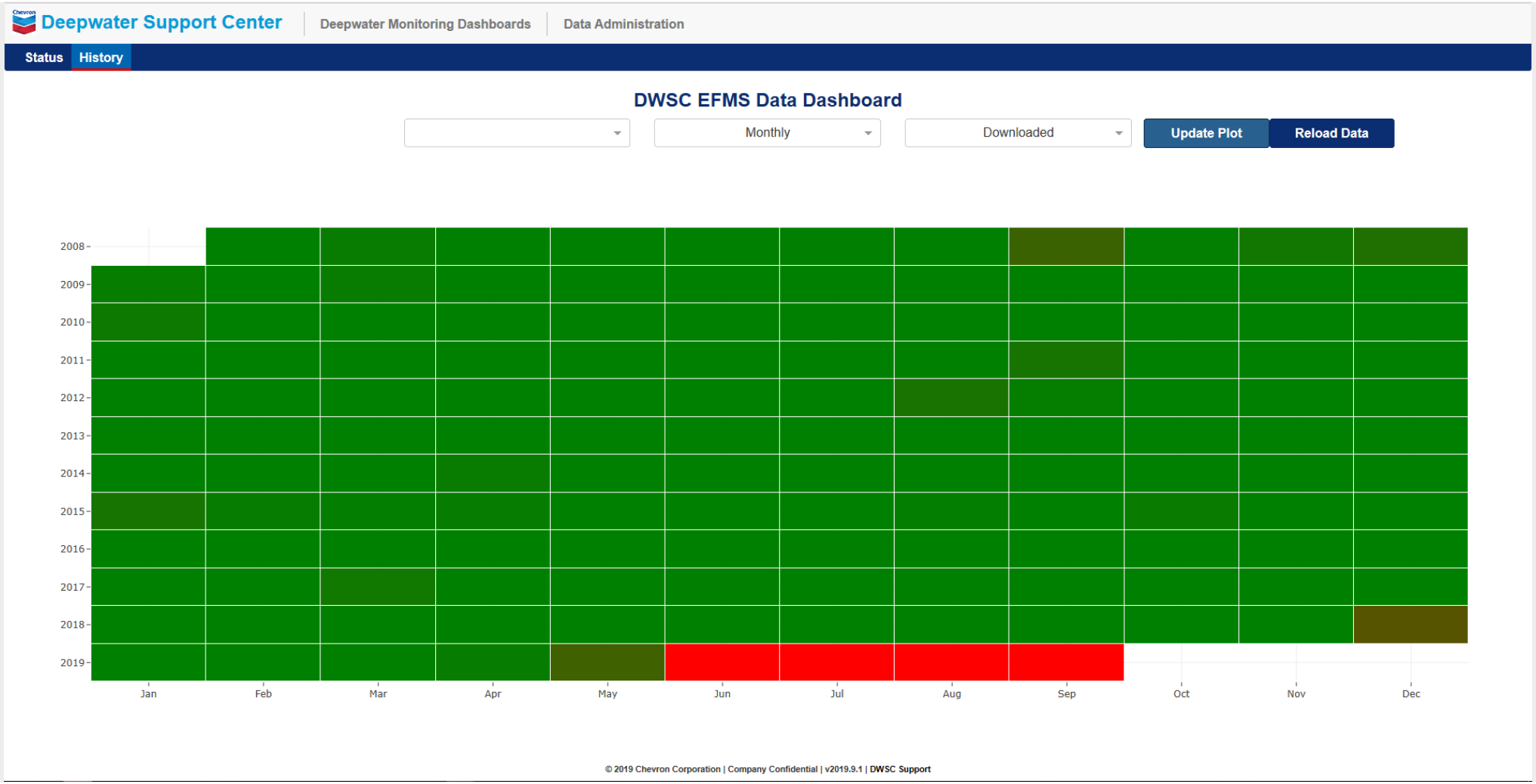
What Big Data?



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The Bad

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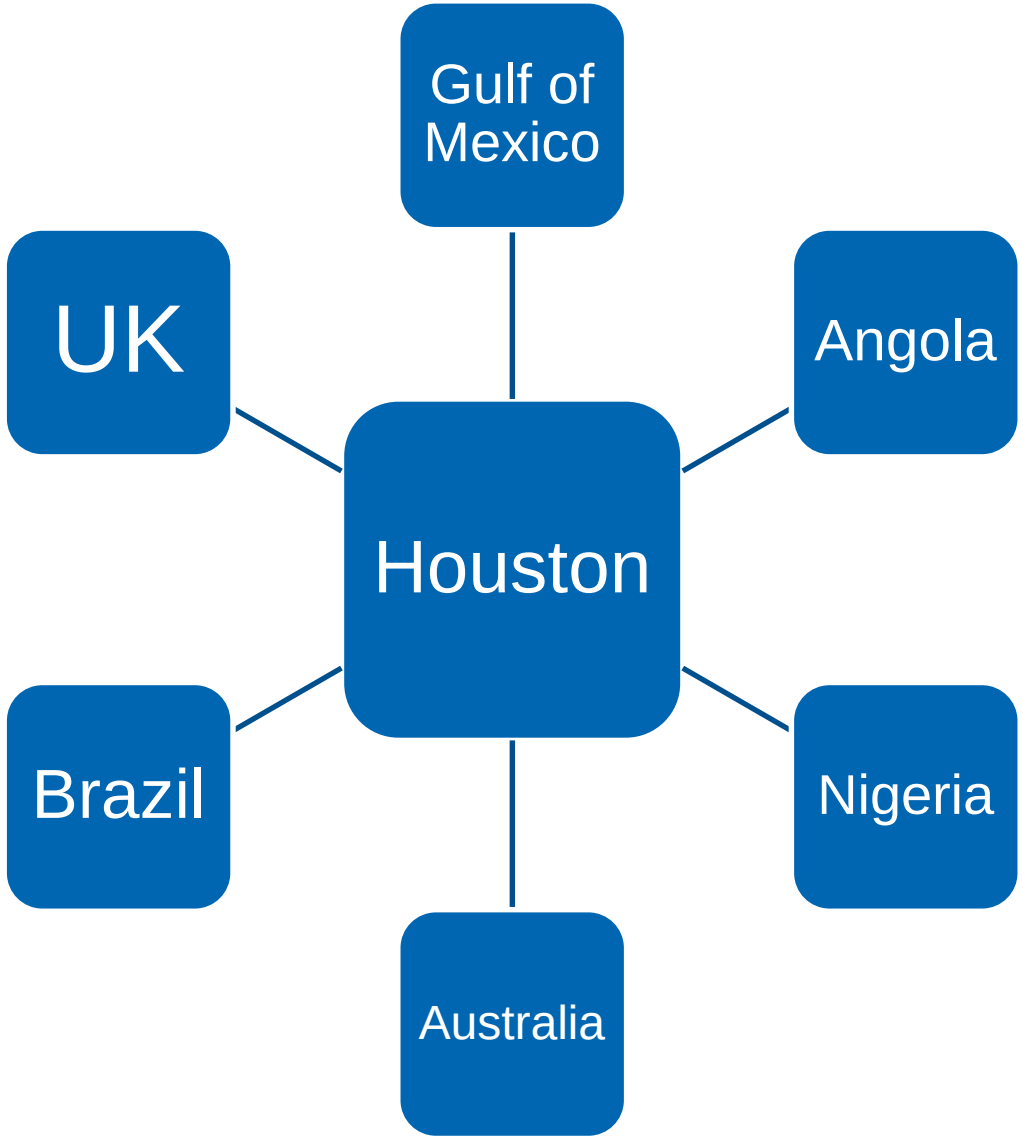
Access to data (Ideal)

- A standard set enterprise wide data platforms facilitates the deployment of advanced analytics. (Systems of Record)
- Data is accessible to the groups performing the analytics and groups using the information.
- APIs to a wide range of analytical software
- Lowest overall OPEX (license fees, OC etc).



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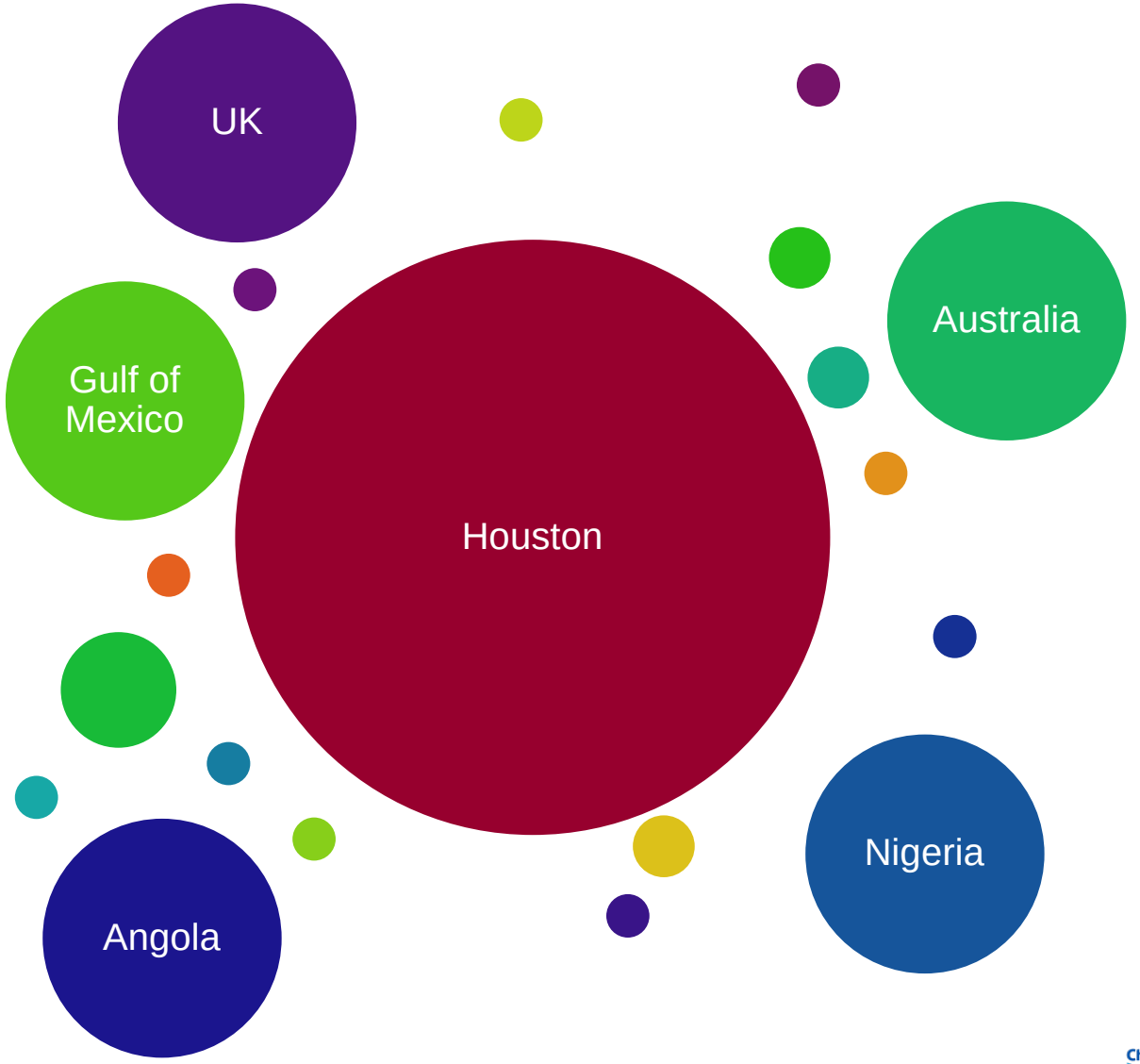
Access to data (Structural Barriers)



- Different System of Records
- Different Operating Partners
- Different Processes
- Data origin and archives not collocated with users. (High overhead)

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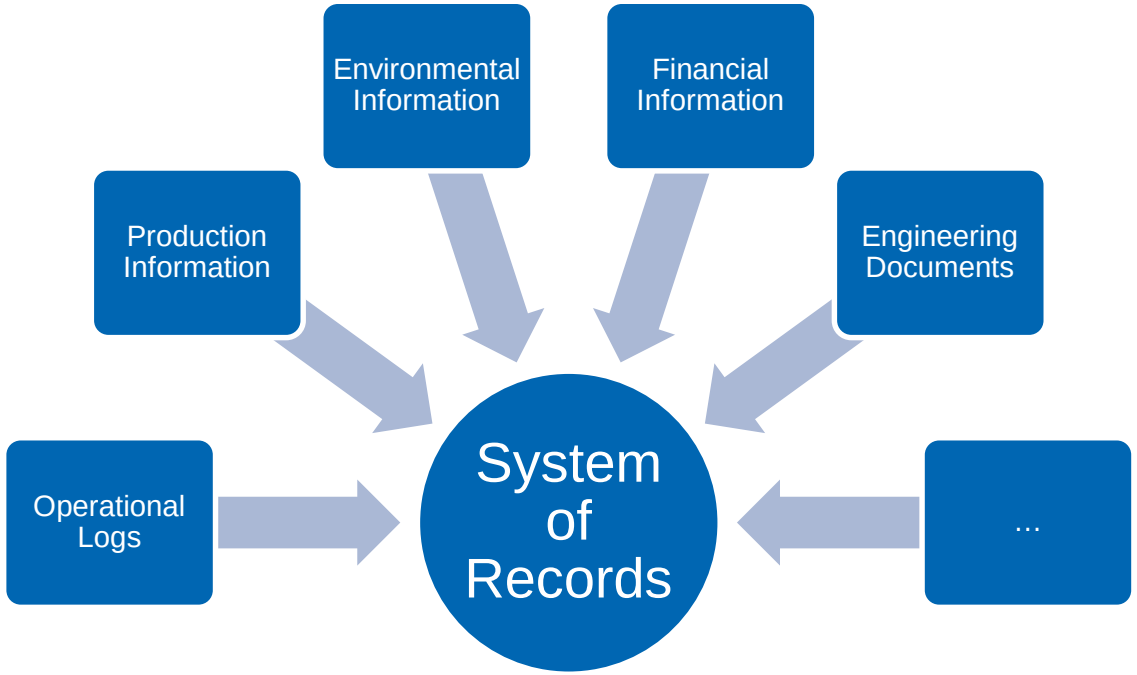
Access to data (Potholes)



- Resistance to sharing (turf wars)
- Cyber security
- Sensitive information (Financial and Production)
- Regulatory requirements
- Local Content
- Data Ownership

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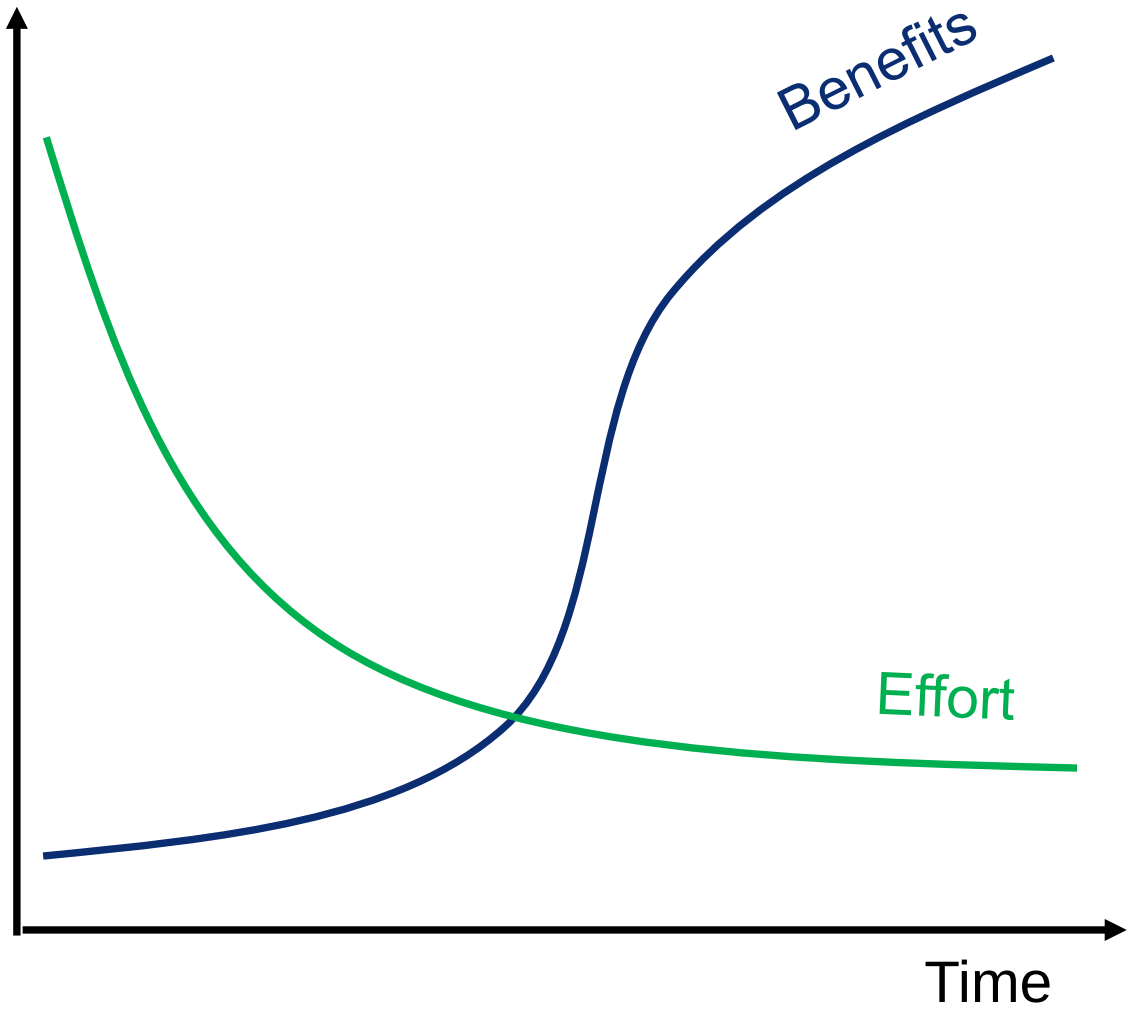
Cost vs Returns

- High initial effort and commitment in order to lay the groundwork for future gains.
- Initial effort deal mainly with data access, data cleansing and archiving.
- However, after this initial stage, the data is now readily available to the users who generate the value.
- Development of expert systems, analytical tools and dashboards do not typically take a huge amount of resources, especially if standard tools are used to develop the workflows and deploy across the enterprise.



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The Ugly

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The Data Swamp

Typical Scenario: “I have monitoring data and I need a dashboard to monitor XXXX”.

- **Poor/No Documentation**
  - System was installed by sub-sub-contractor during startup 5 years ago. (Check-a-box)
  - No operating manual, no drawings.
  - No list of channels being measured or native processing description.
  - Tags in data historian have been re-named.

- **Inaccessible Data**
  - Data is being displayed on a screen on the production deck.
  - Data is being sent to ICSS but no display in control room.
  - System is not linked to Pi Historian.
  - Data has to be downloaded manually (isolated systems).
  - Data in proprietary format.

- **Questionable Quality**
  - Sensors are inoperative, not replaced.
  - Sensors have not been calibrated or worse, miscalibrated (GPS indicates platform has been moving in circles but only from 8am to 5pm).
  - Monitoring system powered down during evacuation.
  - Flatlines and Spikes: Shut-ins, SIMOPs, Recalibration, Lightning strikes etc etc

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Summary

- ✓The industry has been working with Big Data and Advanced Analytics long before Digitization became fashionable.
- ✓The big change really has been in how we access our data.
- ✓In order to reap the benefits of advanced analytics, be prepared to commit large resources up front with slow initial gains.
- ✓Acceleration of insights and value generation will come at increasing rates after you have solved the data access issues.
- ✓Don’t repeat the mistakes of the past, think of how the data will be used and how it will be accessed during the design and installation phases. **It cost the least this way**.

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Questions?

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