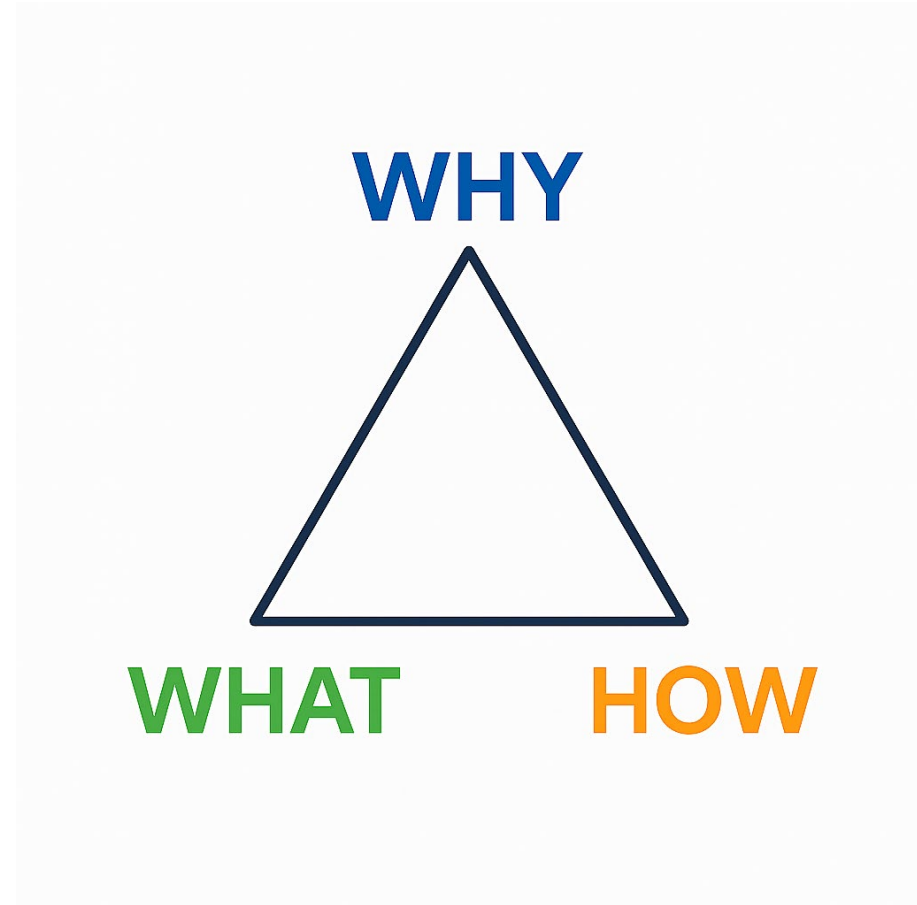
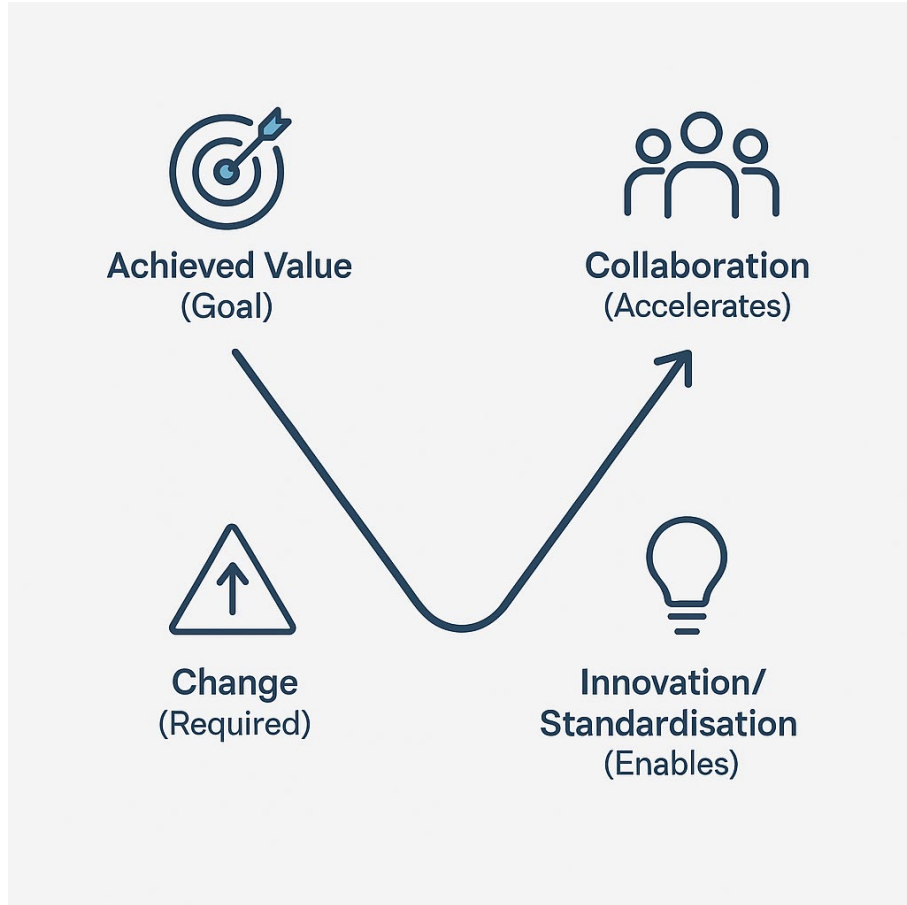




Use Cases 2025: Business value on the table

Charles Halaas
IT Manager - Aibel







BUSINESS CASE



Oil & Gas projects are based on fragmented, static data
– contributing to a **20-40% increase in budget and schedule**.¹ – also valid for similar non-O&G projects

By making concept select and decisions in projects **data-driven and standards-based**, early uncertainty is replaced with reliable data-backed decisions.

Shared data models and industry-managed standards create a **common digital language**
– enabling reuse of verified information across the entire asset lifecycle and value chain.

The result:

- **50% shorter lead time**² from project start to start of construction giving **faster ROI**
- **>30% lower CAPEX**² by connecting information across the value chain
- **Reduced OPEX**³ by connecting updated design and operational data to reduce operational disturbances

In short - **verified, interoperable data enables lifecycle efficiency.**

“He who has a WHY to live can bear almost any HOW” — Friedrich Nietzsche

References

1. Caplial Projects 5.0 (McKinsey, 2021)
2. ADA 2.0 business case calculations
3. O/O Operations Strategy
4. Konkurransekraft – norsk sokkel i endring, Konkraft 2018

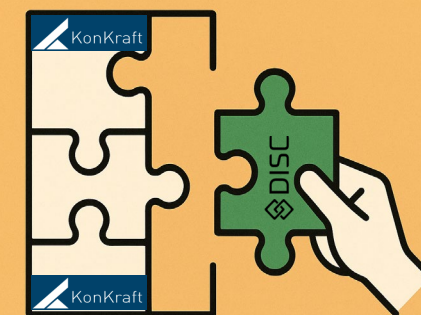
DISC – AN INDUSTRY RESPONSE

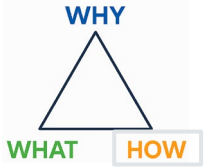
Recommendations from the Konkraft Report 2018 – “*Initiative for Digital Collaboration*”

1. A joint, industry-led initiative should be established to work on measures that involve **new ways of digital collaboration** between actors in the oil and gas sector.
2. The work should **establish common standards and protocols** for storing, exchanging, and using data.
3. The project should start in areas where offshore actors see **few conflicts in sharing data**.
4. The initiative should ensure that such digital collaboration **solutions can be used across the value chain**, in line with recommendations for well deliveries, fields, operations, and exploration.
5. The initiative should be **launched by a core group of actors** who have the need, interest, and prerequisites to quickly start such a process, and **other actors should be invited** to participate in developing the solutions.

ANBEFALING:

- Det bør etableres et samlet og bransjeledet initiativ for arbeid med tiltak som innebærer nye måter for digitalisert samhandling mellom aktørene i olje- og gassnæringen.
- Arbeidet bør etablere felles standarder og protokoller for lagring, utveksling og bruk av data.
- Prosjektet settes i gang på områder der sokkelens aktører ser få konflikter ved deling av data. HMS-data og miljødata er slike velegnede startområder og har potensial for effektivisering. Gjennom dette arbeidet bygger man erfaringer om løsninger og arbeidsmetodikk, og disse brukes deretter på andre områder/datasett i næringen.
- Initiativet bør sikre at slike digitale samhandlingsløsninger kan brukes i verdikjeden, jf. anbefalingene innen brønnleveranser, felt, drift og leting.
- Initiativet bør settes i gang av en kjernegruppe av aktører som har behov, interesse og forutsetninger for raskt å få en slik prosess i gang, og at andre aktører inviteres med i arbeidet med løsningene.
- Dette arbeidet stiller spesifikke og til dels nye krav til arbeidet med å realisere potensial.
- Utvalget anbefaler derfor at det for temaer av typen digitalisert samhandling benyttes et egnet og felles rammeverk, og at arbeidet organiseres fra en nøytral arena og er partssammensatt. Utvalget anbefaler å legge til grunn rammeverket som den norske banknæringen benyttet i sin endringsprosess (se vedlegg 1 for nærmere beskrivelse). Selv om bransjene er svært forskjellige, er måten dette arbeidet ble satt i gang, organisert, styrt og målt på svært relevant også for den digitaliseringstransformasjonen olje- og gassindustrien er på vei inn i.
- Det er i dag ulike oppfatninger mellom aktørene rundt styringsstruktur, eierskap til data og om forretningsmessige konsekvenser deling av data.



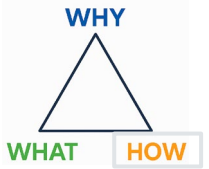


 DISC is a **collaborative** initiative founded on mutual trust between Aker BP, Equinor, Aker Solutions and Aibel.

Its objective is to establish a **unified digital foundation** that will serve as the basis for seamless exchange of structured, validated, and machine-understandable data among stakeholders across the value chain.



DISC MISSION STATEMENT



WHY

Our industry is built on co-dependency — yet we still work in silos!
To drive efficiency, sustainability, and innovation, we must act as **one interoperable ecosystem**.

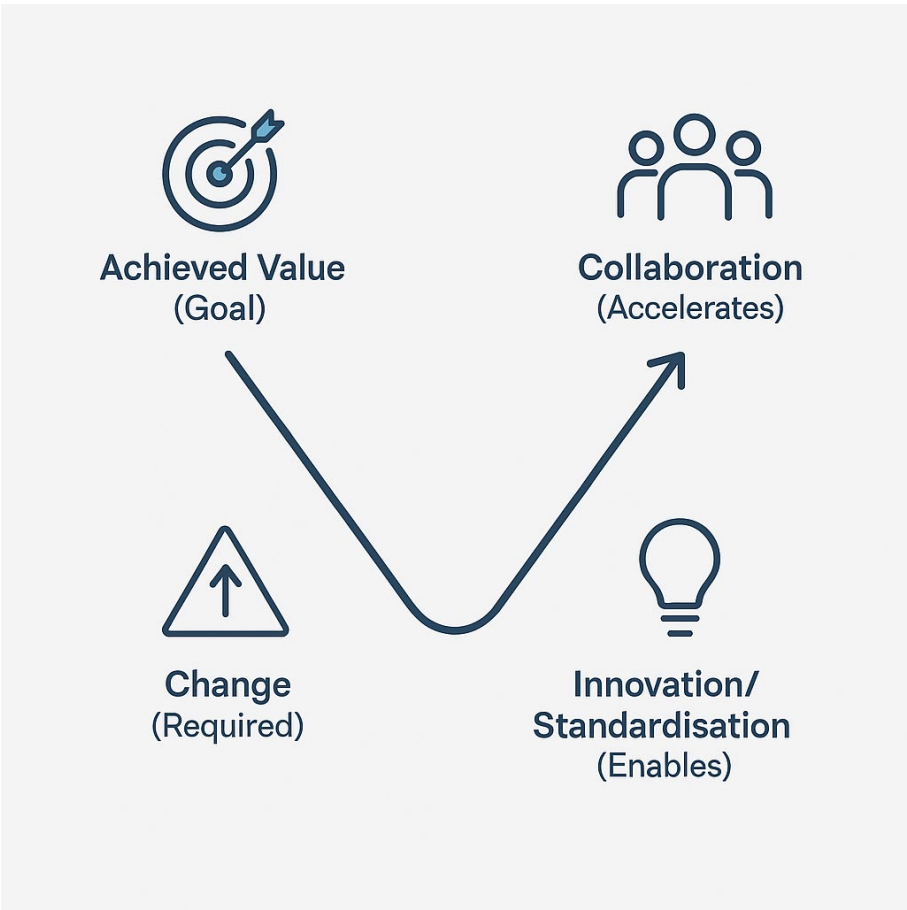
HOW

Through the DISC collaboration, we unite operators, suppliers, and partners to **co-create the digital foundation** and demonstrate it for the entire value chain — using shared standards and data, for shared success.

WHAT

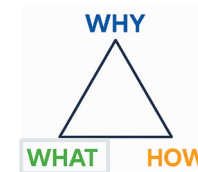
Together we enable **faster projects, sustainable operations, and better decision-making** — powered by trusted data and co-operation across the entire asset lifecycle.

DISC turns co-dependency into collective advantage





USE CASES



The following use cases were given to the “DISC Show & Tell” presenters:

Use Case #1 – IMF - Information Modelling Framework - Driven Process Design - From Heat & Mass Balance to PFDs and AI-driven P&IDs

Automate generation of Master Equipment List (MEL) and process flow design with intelligent templates for IMF types. Deliver faster and more accurate maturation of engineering data: reduce errors and save time.

Use Case #2 – IMF Types & Instances for Legacy Documents

Focus on a digital and interactive collaboration between multiple parties as an alternative to classic PDF-based P&ID exchange

Use Case #3 – P&ID As A Live Data Source For Field Developments

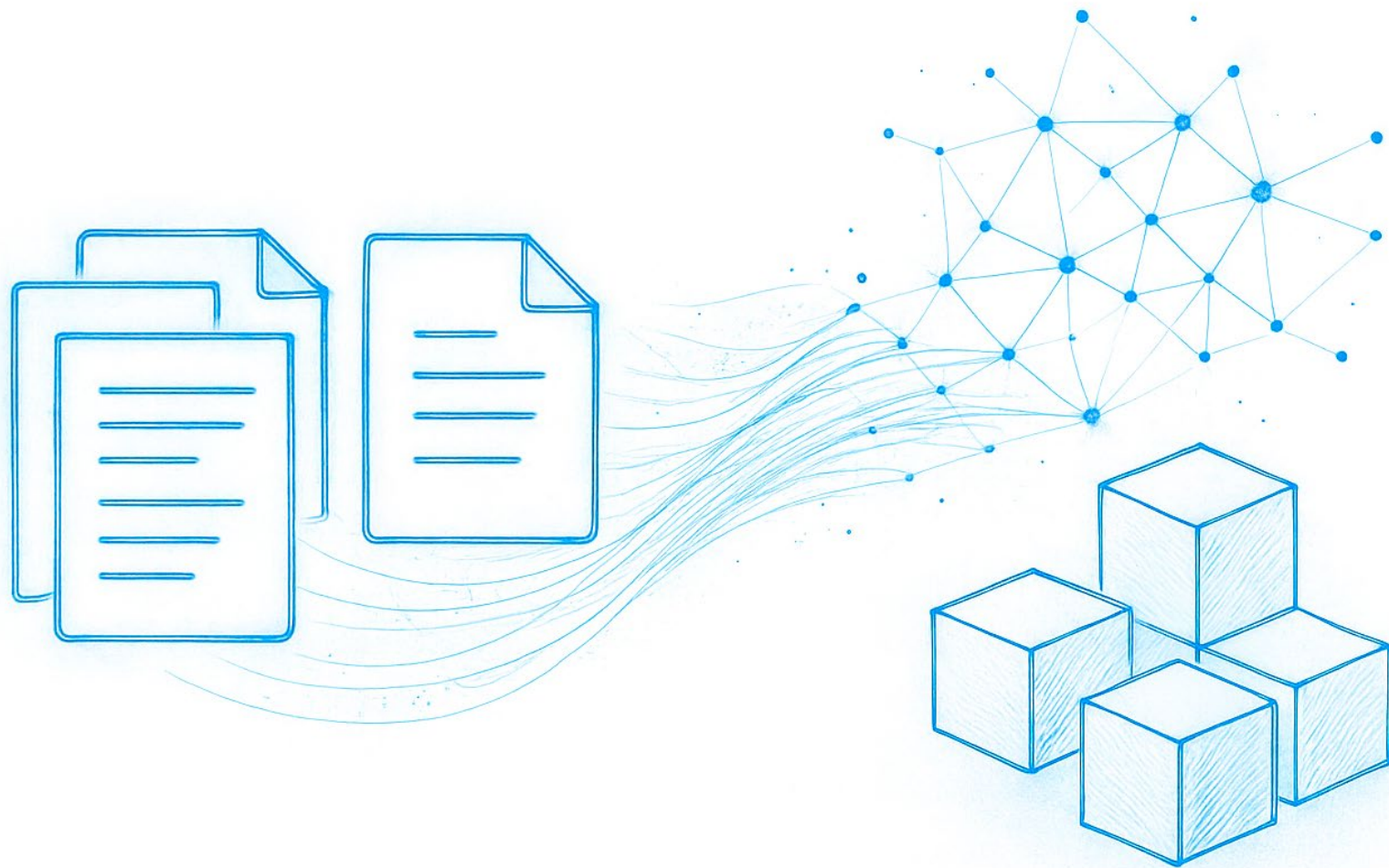
Make P&IDs dynamic information sources that evolve with field needs over time. Increases predictive ability, reduces redesign costs, and improves decision-making foundation.

Use Case #4 – DEXPI Plant To IMF Converter

Transform engineering data into a structured, digital format to create a strong foundation for digital twins. Automate IMF type population and P&ID generation, improving efficiency, change management, and asset lifecycle control.



Use Case #1 – Model-Driven Process Design – from Heat & Mass Balance to PFDs and AI-driven P&IDs



User story case 1

As EPC's and Owner Operators there is a need to do Heat and Mass Balance (H&MB) calculations in all stages of plants (newbuild, modifications, maintenance etc.) lifecycle of different sizes and complexities

With provided H&MB data demonstrate the ability to use or generate IMF types (requirements) and generate the first embryo of the MEL

Generate Process Flow Diagram using IMF types produced in previous step. With AI and/or ML algorithms produce the DEXPI process model

Using the DEXPI Process Model and your developed rules in using AI/ML to produce the P&ID following the DEXPI Plant standard



Use Case #2 and #3 - Legacy Document Conversion and Live P&IDs as a Digital Source

User story case 2

As an EPC we need to regenerate models from legacy data stored in document-based PDF's (e.g. document with P&ID, General Arrangements (GA), Ducting & Instrument Diagram (D&ID), Master Equipment Lists (MEL) etc.), Indexes (.PDF, .excel/.csv etc.). All documents with challenging quality

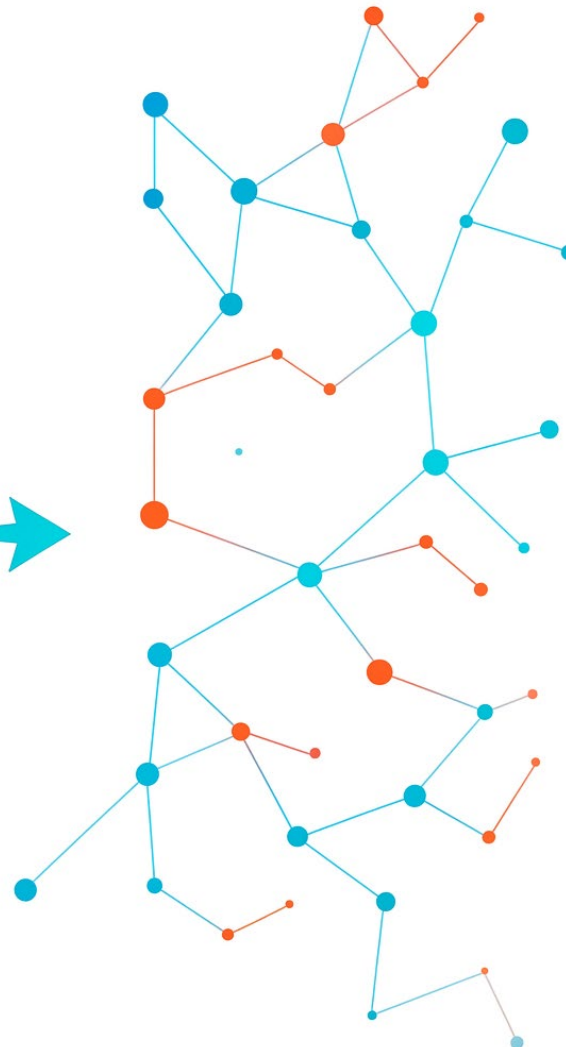
Demonstrate how to generate a database of IMF types using IMF types if exists or generate new ones in the Posc Caesar Association (PCA) library if it does not exist. Use OCR, AI and other digital methods as applicable

Combine data from different sources to propagate the same IMF object with more data in the Plant Aspect

Resonate over these data and search EqHub for matching products according to specifications (IMF product aspect)

All PDF diagrams shall be regenerated as DEXPI files

Show the database and relevant documents as linked data/Graph database (use RDF)



User story case 3

As an EPC and Owner Operator a digital and interactive alternative to the classic PDF based P&ID is needed. Demonstrate a subsea systems design with a tie-back (using DEXPI and defined IMF types) to an existing process facility. Demonstrate a live DEXPI P&ID update with IMF types representing details on objects in the P&ID

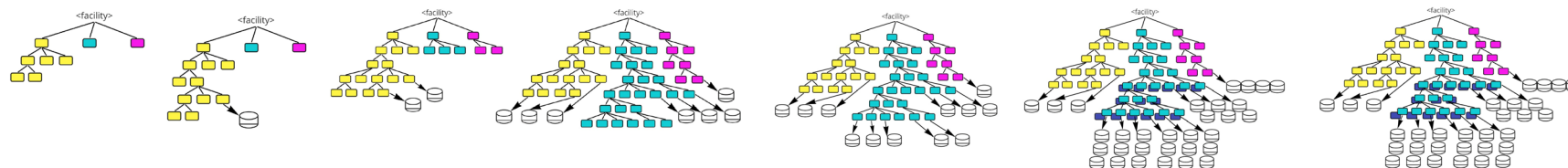
Demonstrate how two (2) or more parties can collaborate on the same data set (revision)

Demonstrate IMF requirements and product aspects to some of the objects. Connect time series to the equipment and position it in 3D model and associated documents

Demonstrate use cases as e.g. Barrier Management, Work Order, Completion, Commissioning overlay



Use Case #4 – Fully Automated and Connected Data Transformation Pipelines – from DEXPI to IMF, powering lifecycle-efficiency



User story Case 4

Transform engineering data into a structured, digital format to create a strong foundation for digital twins. Automate IMF type population and P&ID generation, improving efficiency, change management, and asset lifecycle control.

As an EPC/OO we need to connect the DEXPI, Automation ML (SCD), Engineering Index's (MEL, Linelist, etc.) plant objects to IMF types:

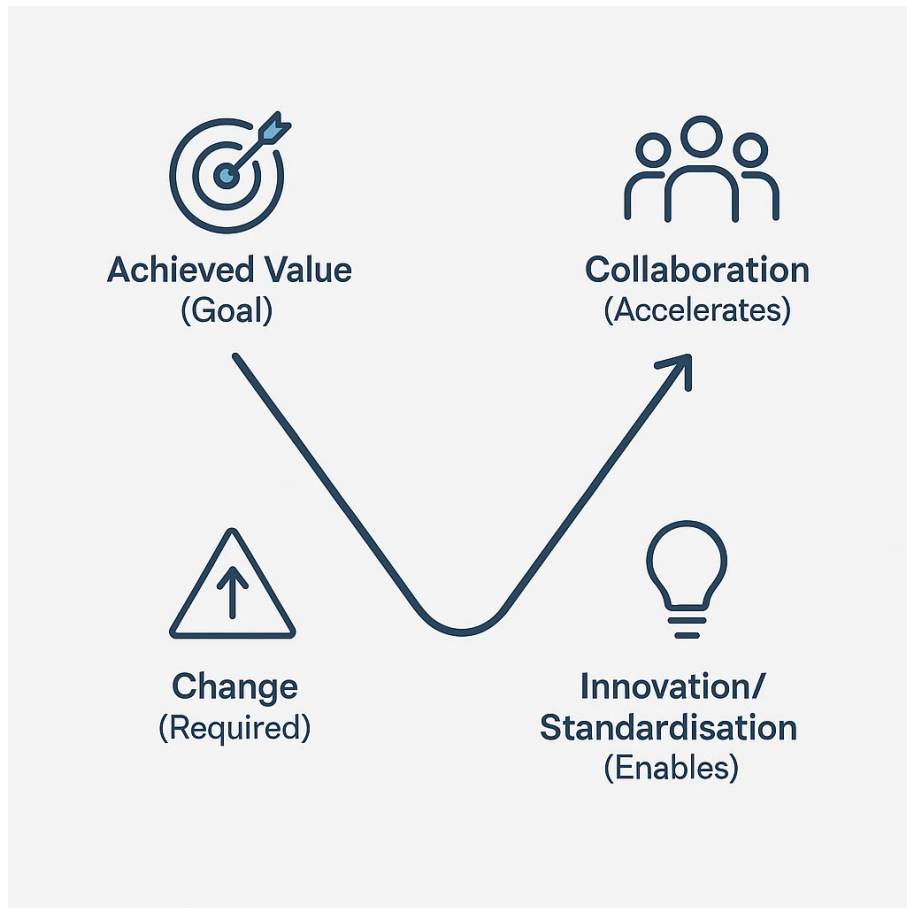
Demonstrate the generation of a DEXPI model from legacy PDF documents using semantic technology combined with AI/ML as you see fit

Demonstrate the generation of IMF instances (Plant Aspect) from the P&ID's and engineering indices

Demonstrate the connection of IMF instances (Plant Aspect) to the DEXPI model generated in second bullet

Demonstrate the connection of IMF product (Product Aspect) instances linked to EqHub library components

Demonstrate generation of Automation ML System Control Diagrams (stretched goal)



99% perspiration reduction aided by AI



***“Genius is one percent inspiration
and ninety-nine percent perspiration.” — Thomas Edison***



DISC

SUMMARY “DISC – Business Value on the Table” by C Halaas, IT Mgr, Aibel at DISC SHOW & TELL 2025

1. Purpose & Context

- **DISC** (Digitalisation – Industrialisation – Standardisation – Collaboration) is a collaborative initiative between Aker BP, Equinor, Aker Solutions, and Aibel.
- The initiative aims to break down industry silos and create a unified digital foundation for seamless, structured, and validated data exchange across the value chain.

2. Why DISC Exists

- Oil & Gas projects (and similar industries) suffer from fragmented, static data, leading to 20–40% increases in budget and schedule overruns.
- By making project decisions data-driven and standards-based, early uncertainty is replaced with reliable, data-backed decisions.
- Shared data models and industry standards enable a common digital language, supporting reuse of information across the asset lifecycle.
- The business case: up to 50% shorter lead times, >30% lower CAPEX, and reduced OPEX through lifecycle efficiency.

SUMMARY “DISC – Business Value on the Table” by C Halaas, IT Mgr, Aibel at DISC SHOW & TELL 2025

3. Strategic Foundation

- The approach is inspired by recommendations from the 2018 Konkraft report, calling for joint, industry-led digital collaboration, common standards, and protocols.
- DISC is built on trust-based, open collaboration, with much of the work done in-kind by the founding companies.

4. Mission and Value Proposition

- **Mission:** Unite operators, suppliers, and partners to co-create a digital foundation using shared standards and data for the entire value chain.
- **Value:** Faster projects, sustainable operations, and better decision-making powered by trusted data and cooperation. DISC turns industry co-dependency into collective advantage.

SUMMARY “DISC – Business Value on the Table” by C Halaas, IT Mgr, Aibel at DISC SHOW & TELL 2025

5. How DISC Works

- Focuses on enabling concepts, standards, common recipes, and guidelines, including the potential for testing across the full lifecycle.
- DISC itself does not implement solutions directly; instead, it accelerates practical implementations within the collaborating parties.

6. Importance of Facts and Data

- Facts and real-life examples are crucial for driving change and justifying business cases.
- The value of use cases is greatly enhanced by access to relevant, specific data, with thanks given to Aker BP and Equinor for sharing data.

SUMMARY “DISC – Business Value on the Table” by C Halaas, IT Mgr, Aibel at DISC SHOW & TELL 2025

7. 2025 Presented Use Cases

- **Use Case #1 – IMF Driven Process Design - From Heat & Mass Balance to PFDs and AI-driven P&IDs**
Automate generation of Master Equipment List (MEL) and process flow design with intelligent templates for IMF types. Deliver faster and more accurate maturation of engineering data, reduces errors, and saves time.
- **Use Case #2 – IMF Types & Instances for Legacy Documents**
Focus on a digital and interactive collaboration between multiple parties as an alternative to classic PDF-based P&ID exchange
- **Use Case #3 – P&ID As A Live Data Source For Field Developments**
Make P&IDs dynamic information sources that evolve with field needs over time. Increases predictive ability, reduces redesign costs, and improves decision-making foundation.
- **Use Case #4 – DEXPI Plant To IMF Converter**
Transform engineering data into a structured, digital format to create a strong foundation for digital twins. Automate IMF type population and P&ID generation, improving efficiency, change management, and asset lifecycle control.

SUMMARY “DISC – Business Value on the Table” by C Halaas, IT Mgr, Aibel at DISC SHOW & TELL 2025

Key Takeaways

- The real value of DISC will be realized in actual projects, through collaboration and shared learning.
- The journey requires both inspiration and hard work—ideally, with AI reducing the “perspiration” required.
- The presentation closed with encouragement for ongoing demos and collaboration.

In Summary

- DISC is a pioneering, trust-based industry collaboration focused on digital transformation through standardization and data sharing.
- Its business case is strong, with significant potential for cost, time, and efficiency gains.
- The 2025 use cases demonstrate practical steps toward realizing these benefits, emphasizing the importance of structured data, interoperability, and collective action.