Mastering SAP

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Chevron

Driving Success: Unlocking SAP's 9 Phase Model for Asset Management in a successful S/4HANA implementation

Presenter

Brad Martin

Product Owner for Maintenance Work Management

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Brad Martin
Digital Core Asset Management Program
Product Owner SAP S/4HANA EAM for Maintenance Work Management

16 yrs experience O&G + 10 yrs Maint.

Prev. roles: Maintenance Planner, Scheduler, CMMS Coordinator

Masters of Maintenance and Reliability Engineering

Wheatstone and Gorgon ERP projects, ERP Upgrade
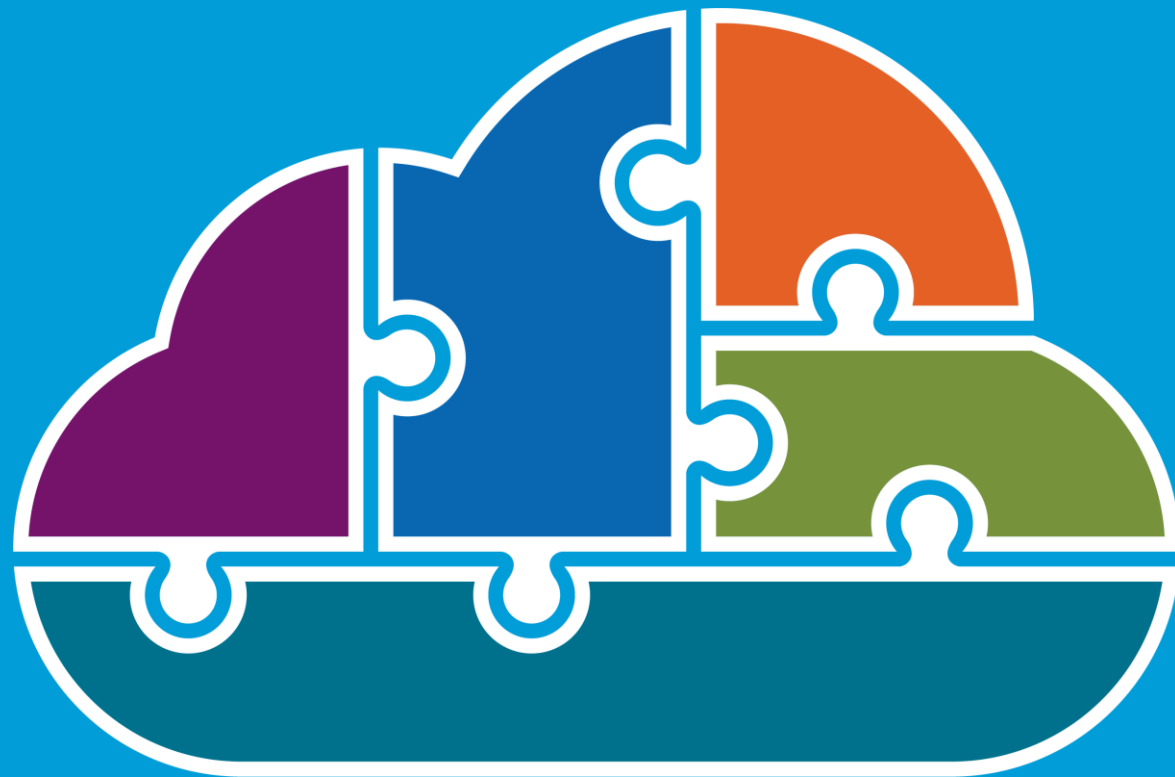
5 yrs Digital Transformation

Energy and Natural Resources Consortium

April '23 deployment of SAP S/4HANA 2021 FPS01 private cloud

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Agenda

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Agenda

1. Chevron and Digital Core Program

2. SAP Phase Process for Work Management

3. First Release of SAP 2021 FPS01

4. Q&A

The oil and gas industry is undergoing a digital transformation that involves the integration of advanced technologies to enhance operational efficiency, safety, and productivity. This digital transformation is driven by the need to reduce costs, optimize production, and mitigate risks.
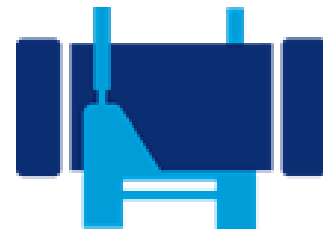
The World Economic Forum's White paper on "Digital Transformation Initiative Oil and Gas Industry" says that digitalization in the oil and gas sector holds the potential to unlock about $2.5 trillion of value for its customers and the industry as a whole.

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Digital Transformation Asset Management : Vision

TODAY

TOMORROW

Decentralized systems decisions

Intercept the future stand

HOW DO WE GET THERE

Digital Transformation

Design: Complex and highly customized – individual and instinct driven

Operate: Historical, Siloed and Operational based – lack of integration and visibility.

Cost: Multiple and proprietary solutions led to increase operating Cost (IT)

Adoption: Difficulties to enable cross discipline, solution and facilitates adoption

Speed: Challenges with process adoption and limitation of solution / technology Transformation

Sustainability: Lack standard, governance, process and data leads impact the system sustainability

Master Data and Information

Industry Standard Process

Governance

Interactive, intuitive technology

Leadership Commitment

Change Management

Org Capabilities & Culture

Partnership

Collaborative and Data driven: Accessibility to critical data across enterprise

Innovative: Connected system with new capabilities to improve effectiveness, efficiency, and integration

Greater **Safety, Operation, Reliability & Integrity** with Near real-time, forward-looking, embedded analytics
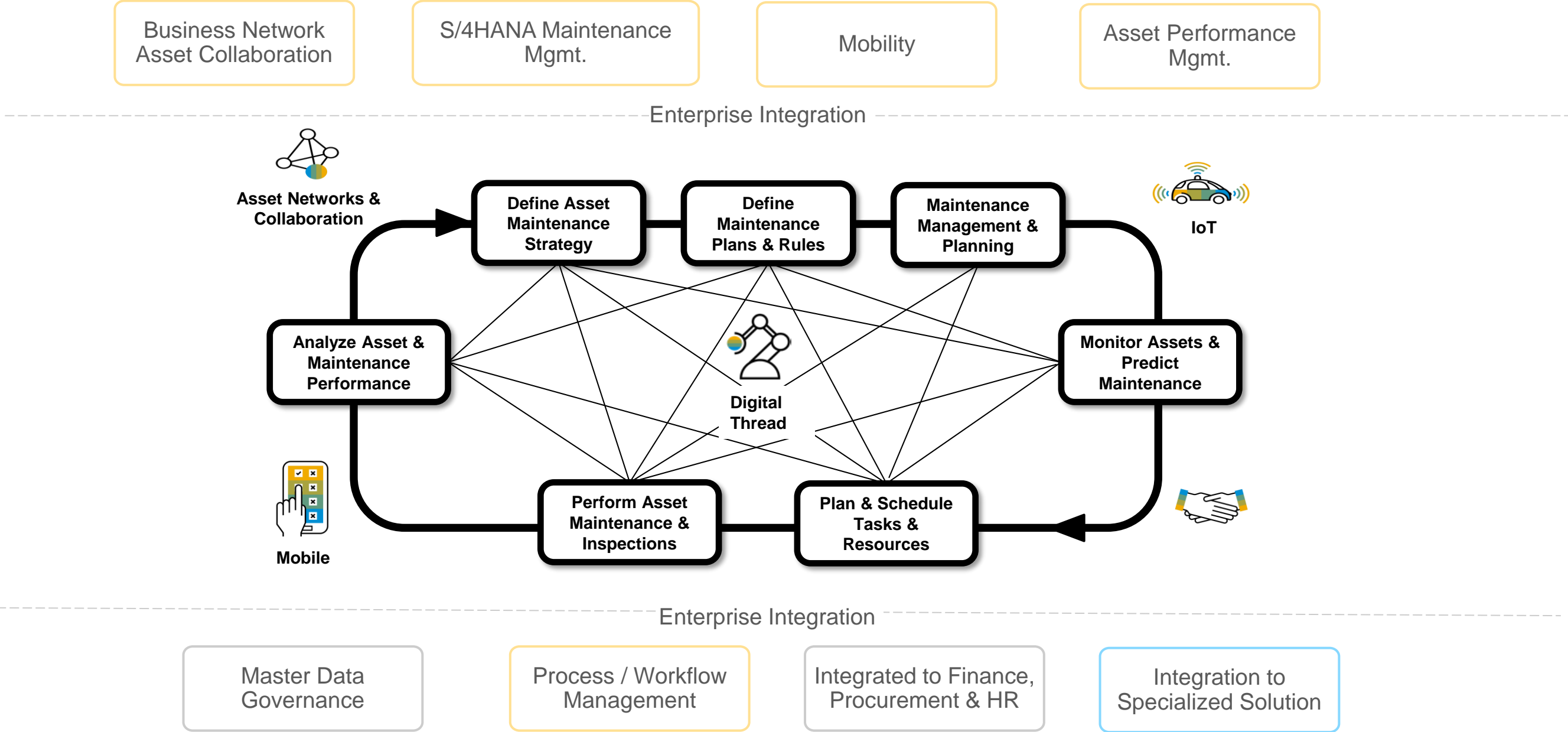
System simplicity speeds up **Decision-Making** and adapt to change quickly to deliver new business value

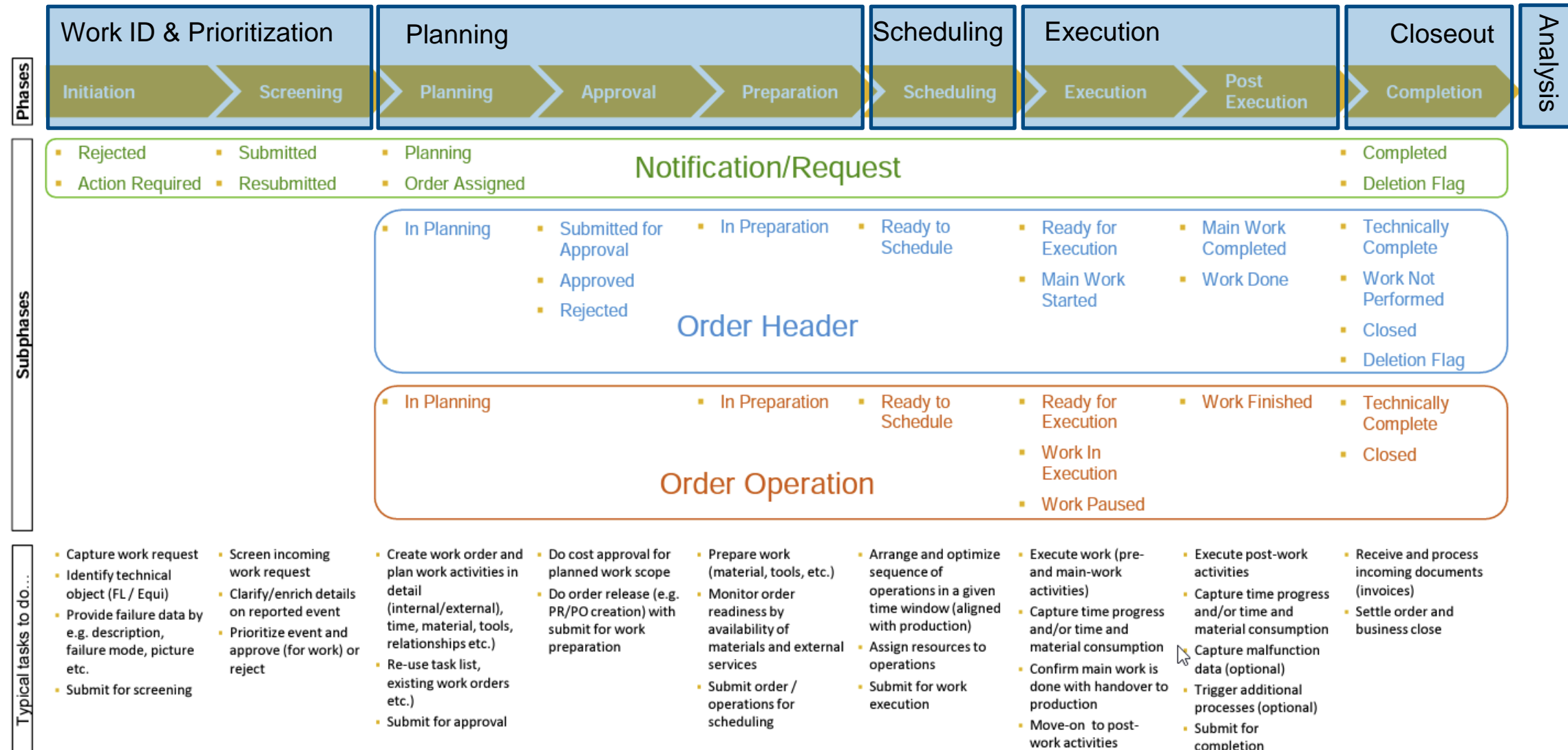Standardized processes streamline service and product delivery **– cloud enabled**

Enable system sustainability and business growth– with transition towards lower carbon energy source

Integrated Asset Management Program

Seamlessly extend Enterprise Maintenance Management with Asset Performance Management along end-to-end processes to close the loop between maintenance strategy and execution to define, implement, execute and monitor the optimal asset maintenance
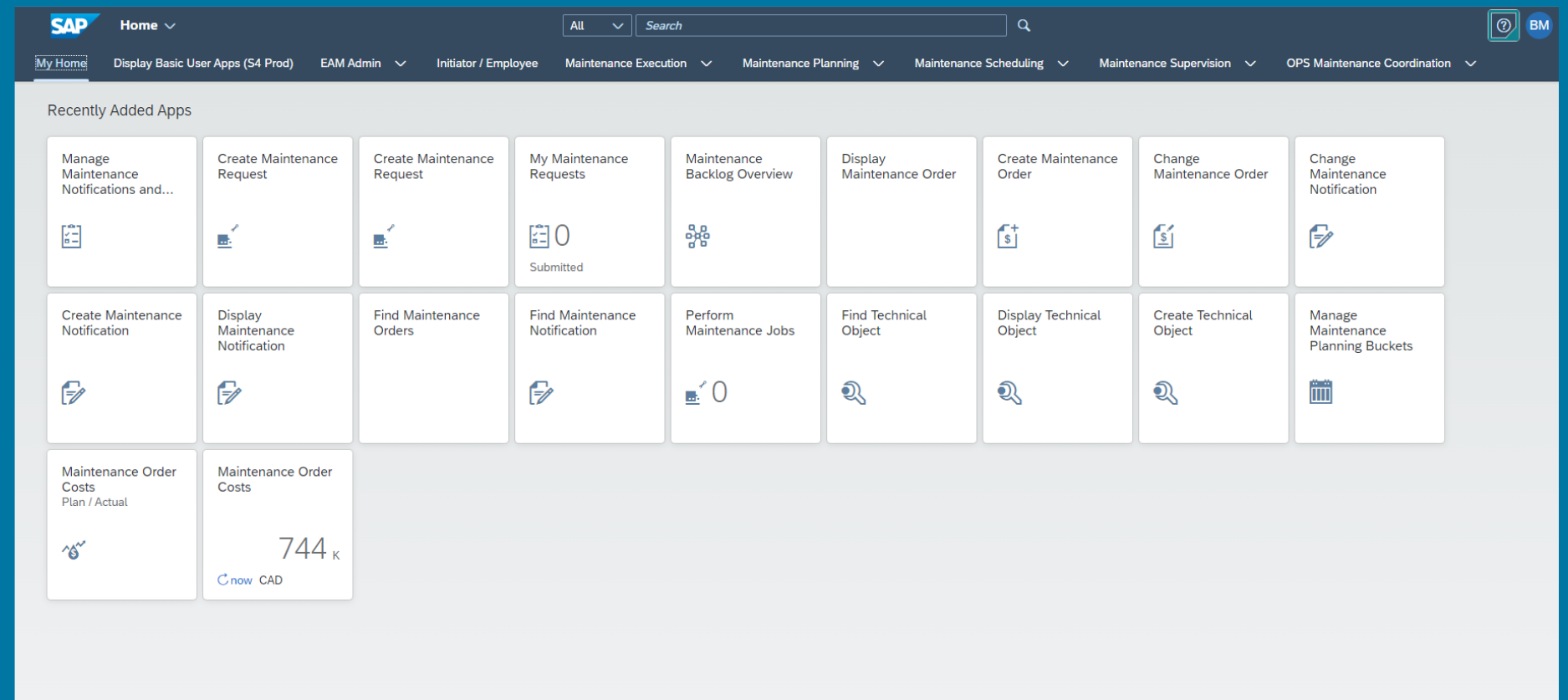
SAP Best Practice 4HI & 4HH for Proactive and Reactive Maintenance – 9 Phase Process

Phases							
Work ID & Prioritization		**Planning**			**Scheduling**	**Execution**	**Closeout**	**Analysis**
Initiation	Screening	Planning	Approval	Preparation	Scheduling	Execution	Post Execution	Completion

Subphases

Notification/Request
- Rejected
- Action Required
- Submitted
- Resubmitted
- Planning
- Order Assigned
- Completed
- Deletion Flag

Order Header
- In Planning
- Submitted for Approval
- Approved
- Rejected
- In Preparation
- Ready to Schedule
- Ready for Execution
- Main Work Started
- Main Work Completed
- Work Done
- Technically Complete
- Work Not Performed
- Closed
- Deletion Flag

Order Operation
- In Planning
- In Preparation
- Ready to Schedule
- Ready for Execution
- Work In Execution
- Work Paused
- Work Finished
- Technically Complete
- Closed

Typical tasks to do…

Initiation
- Capture work request
- Identify technical object (FL / Equi)
- Provide failure data by e.g. description, failure mode, picture etc.
- Submit for screening

Screening
- Screen incoming work request
- Clarify/enrich details on reported event
- Prioritize event and approve (for work) or reject

Planning
- Create work order and plan work activities in detail (internal/external), time, material, tools, relationships etc.)
- Re-use task list, existing work orders etc.)
- Submit for approval

Approval
- Do cost approval for planned work scope
- Do order release (e.g. PR/PO creation) with submit for work preparation

Preparation
- Prepare work (material, tools, etc.)
- Monitor order readiness by availability of materials and external services
- Submit order / operations for scheduling

Scheduling
- Arrange and optimize sequence of operations in a given time window (aligned with production)
- Assign resources to operations
- Submit for work execution

Execution
- Execute work (pre- and main-work activities)
- Capture time progress and/or time and material consumption
- Confirm main work is done with handover to production
- Move-on to post-work activities

Post Execution
- Execute post-work activities
- Capture time progress and/or time and material consumption
- Capture malfunction data (optional)
- Trigger additional processes (optional)
- Submit for completion

Completion
- Receive and process incoming documents (invoices)
- Settle order and business close

FIORI Landing Page

- Home Page
- Business roles
- Spaces and Pages
- Tiles
- Embedded Analytics

4HI Proactive Orders

- Process starts in APM
  - Define Asset Strategy
  - Implement to S/4HANA
  - Execution Planning
    - Labor
    - Materials
    - Support Documents
- Cost approval via MDG
- Orders created in Preparation Phase
  - Exceptions creating in Planning Phase

Initiation Phase
Create Maintenance Request FIORI App

- Quality Maintenance Request
- Assign correct equipment and check for duplicates
- Failure mode group and codes ISO14224
- Description field mandatory, Enable Now Help
- Key User Extensibility additional fields
- Long text template
- Assess Priority: Likelihood + Consequence matrix
- Starting to build failure profile
  - Understand what is required
  - When it should be done by
  - Failure data profile

New Maintenance Request

∨ Technical Data

ⓘ The technical object you selected is also associated with 2 maintenance requests.

Technical Object:	Valve,Control,Test Separator Water Dump (100008811)
Location:	13-02-062-19W5 (13026219)
Current Location:	Enter current location of technical object
Failure Mode Group:	Globe (VAGL)
Failure Mode:	Failure to Function on Demand (F017)
Detection Method:	Periodic Maintenance Scheduled Activities
Effect:	No effect (1)
Breakdown:	☐
Malfunction Start Date:	10/19/2023, 12:33:57

∨ General Data

Description: *	Enter a title for the maintenance request
Deviation No.:	
Estimated Daily Failure Impact:	
Template:	Maintenance Notif. Long Text template
Long Text:	Work Request Template DESCRIBE THE FAULT: WHY THE FAULT OCCURED (IF KNOWN): HOW COULD THE FAULT BE RECTIFIED (IF KNOWN):
Priority:	Select a priority Assess Priority

Screening Phase
Screen Maintenance Request FIORI App

- Prevent defects from entering the system to avoid bottlenecks

- Only accept Quality requests / send back for more information

- Reject duplicates

- Confirm assigned Priority

  - If everything is urgent then nothing is urgent

Planning Phase
Manage Orders and Notifications FIORI App

- Ensure all foreseeable delays to executing maintenance are addressed upfront to ensure efficient use of resources
- Create Order to go with Notificatio...
- Add operations to identify
  – What work center do we need
  – How many do we need
  – How long do we need them for
- Include support services such as scaffolding or cranes
- Materials
- Documents Infor Records DIRs

Approve Maintenance
My Inbox FIORI App

- Planned cost of Maintenance activity now available
- Tiered Approval structure
  - 1st Auto Approved
  - 2nd Supervisor
  - 3rd Manager
- Support Maintenance Budget Management
- Manage higher cost jobs by exception

Preparation Phase
Maintenance Backlog Overview FIORI App

- New feature Planning Buckets

  – Define bucket duration e.g., week

  – Group and manage work within the bucket

  – Graph shows bucket and phase

  – Click on phase to drill into app to action
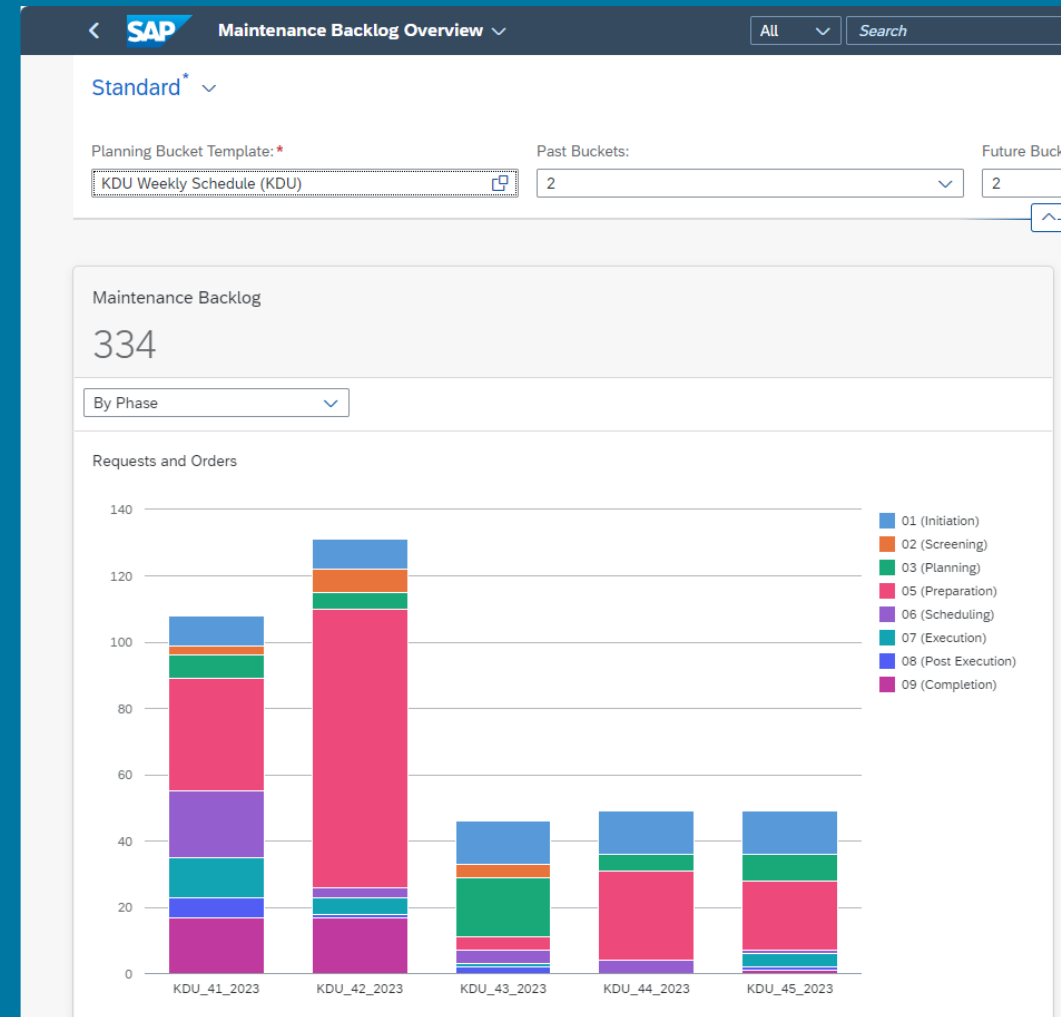
Preparation Phase
Manage Maintenance Backlog FIORI App

- Drill into weekly bucket of orders in preparation phase
- Manage by exception to progress to next phase
- Traffic lights to highlight potential issues
  - Schedule dates to Final Due Date FDD
  - Materials and services availability
  - Ready to schedule indicator
- Adjust dates or initiate expediting for exceptions

KDU_44_2023
KDU Weekly Schedule

Planning Plant: 1000   Start Date and Time: 10/29/2023, 01:00:00   Maintenance Plant: Kaybob Duvernay (1000)
End Date and Time: 11/05/2023, 01:00:00
Duration: 7 Days

Orders   Stock Components   Non-Stock Components   Services   Resources

Maintenance Orders (80) Standard ⌄   All Orders   Orders In Preparation

☐ Order	Order Type	Status
Liquid Meter: Smart Meter Verification (200003517)	Proactive Maintenance (YA02)	⚠ ○ ○
11-28 10AI1065 Description (200003650)	Reactive Maintenance (YA01)	✅ ○ ○
07-05 condy flow meter. (200003675)	Reactive Maintenance (YA01)	✅ ○ ○
10-33 Sep 5-10 unit heater repair (200003676)	Reactive Maintenance (YA01)	✅ ✅ ✅
04-19 Separator 110 Downsize Vcone (200003781)	Reactive Maintenance (YA01)	✅ ❌ ○
04-19 Separator 510 Downsize Vcone (200003782)	Reactive Maintenance (YA01)	✅ ❌ ○
04-19 Separator 310 Downsize Vcone (200003784)	Reactive Maintenance (YA01)	✅ ❌ ○
01-17 Downsize V-Cone 1057 (200003853)	Reactive Maintenance (YA01)	✅ ✅ ○
Liquid Meter: Smart Meter Verification (200005060)	Proactive Maintenance (YA02)	⚠ ○ ○

Scheduling Phase
Prometheus

- Ensure the most efficient use of resources is achieved for the schedule period

- Seamless certified integration

- Strong planning and scheduling leads to
  - More work completed from the same resources
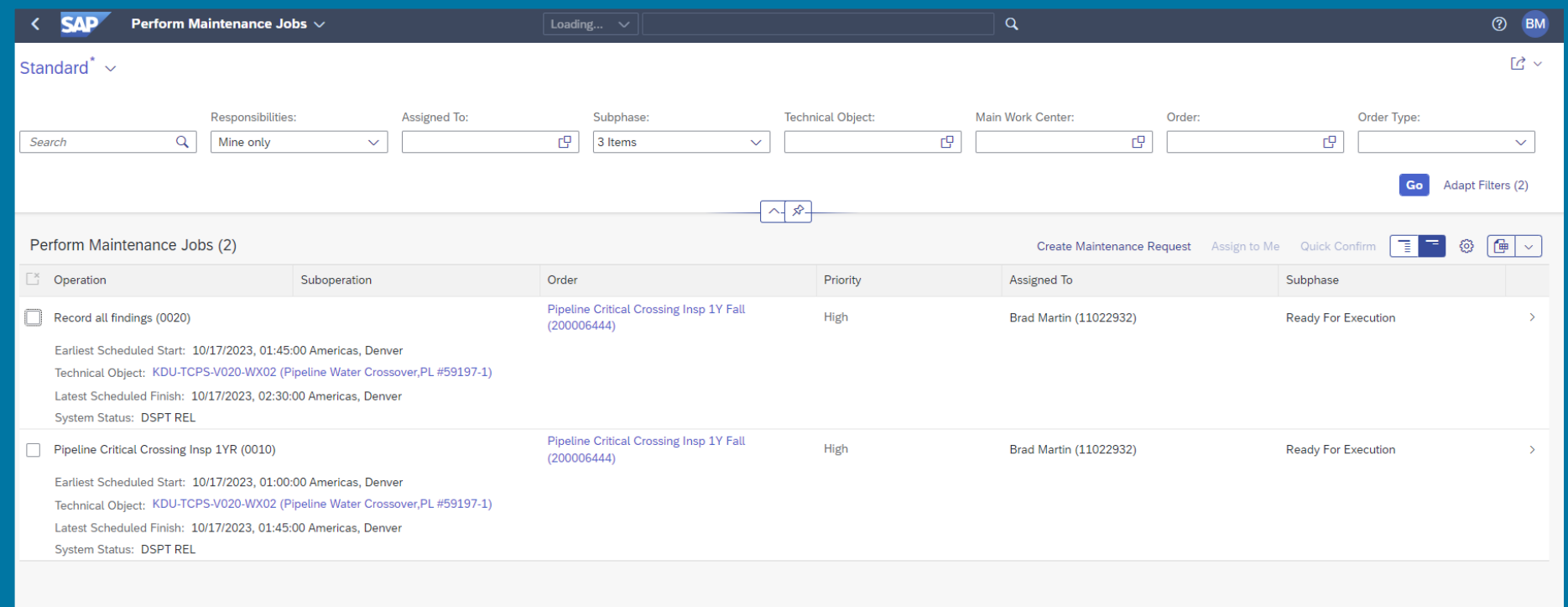 - Improves Reliability of the operation
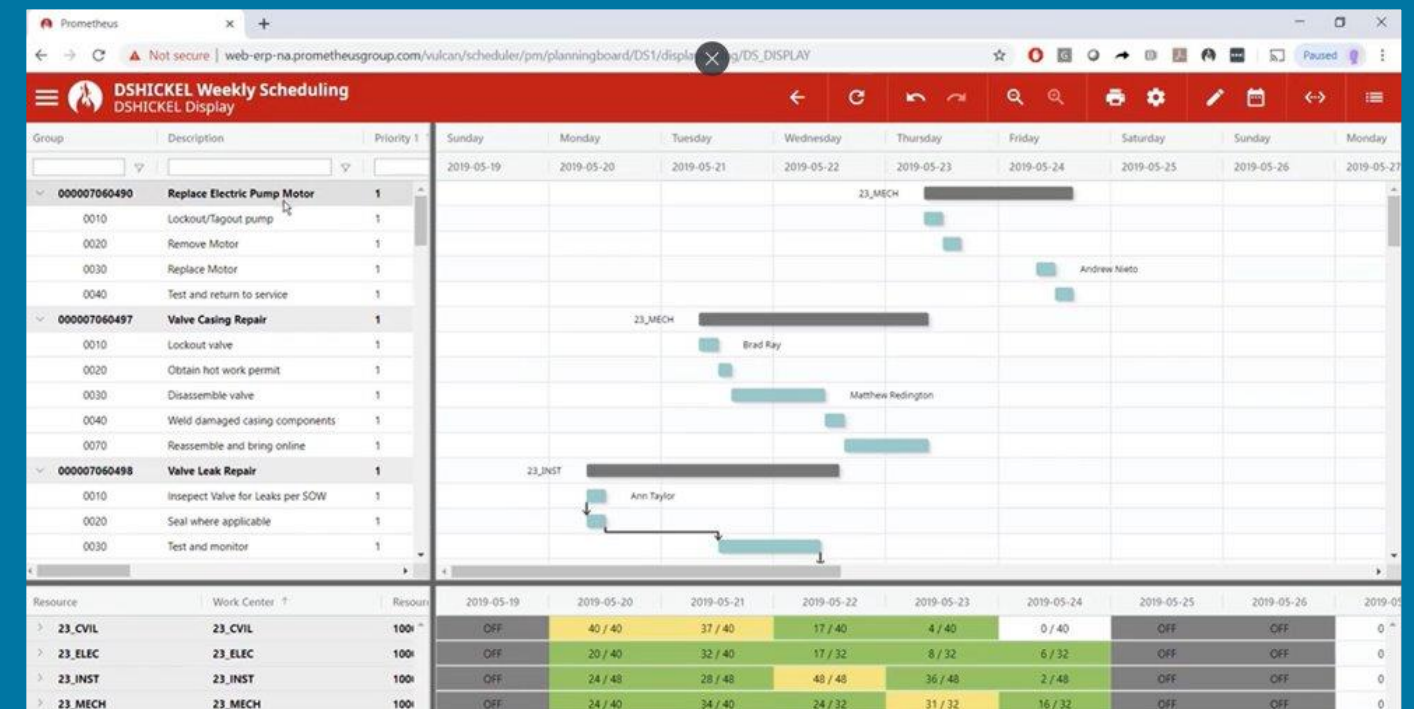
Execution Phase
Perform Maintenance Job FIORI App

- PMJ provides list of assigned work for crew and individual
- Start / Pause work as needed
- Add malfunction details to Notification for Reactive work
- Complete checklists for Proactive work
  - Qualitative / Quantitative data
  - Measurement points / readings
- Mark work done
- Add time confirmations

Post Execution Phase
Perform Maintenance Job FIORI App

- Operations stage
  - Pre-work activity
  - Main-work activity
  - Post-work activity
- Enable identify when "Main-work" is complete
- Identify remaining "Post-work" to be completed

| Order: 200007046 | Description: | TT1 | Order Type: | YA01, Reactive Maintenance | Technical Object: |

General Data   Location Data   Organizational Data   **Operation Data**   Object List   Costs   Doc

Operations

∨ | ☐ New | 🗑 | 🗐 | Assign Task List | Create Task List

☐	Work Ce...	Activity ...	Operat... ≡	Status	Stage		Description
☐	2005	LRMC01	0010	CRTD	PRE	∨	Install Scaffolding
☐	1002	LRMJ01	0020	CRTD	MAIN	∨	Carry out Repair
☑	2005	LRMC01	0030	CRTD	POST	∨	Remove Scaffolding
☐					MAIN	∨	
☐					MAIN	∨	

Completion Phase
Maintenance Backlog Overview FIORI App

- Final quality review
  - Ensure physical work is completed and equipment back online
  - Ensure "paperwork" completed
- TECO Order
- Set clock for business close batch job
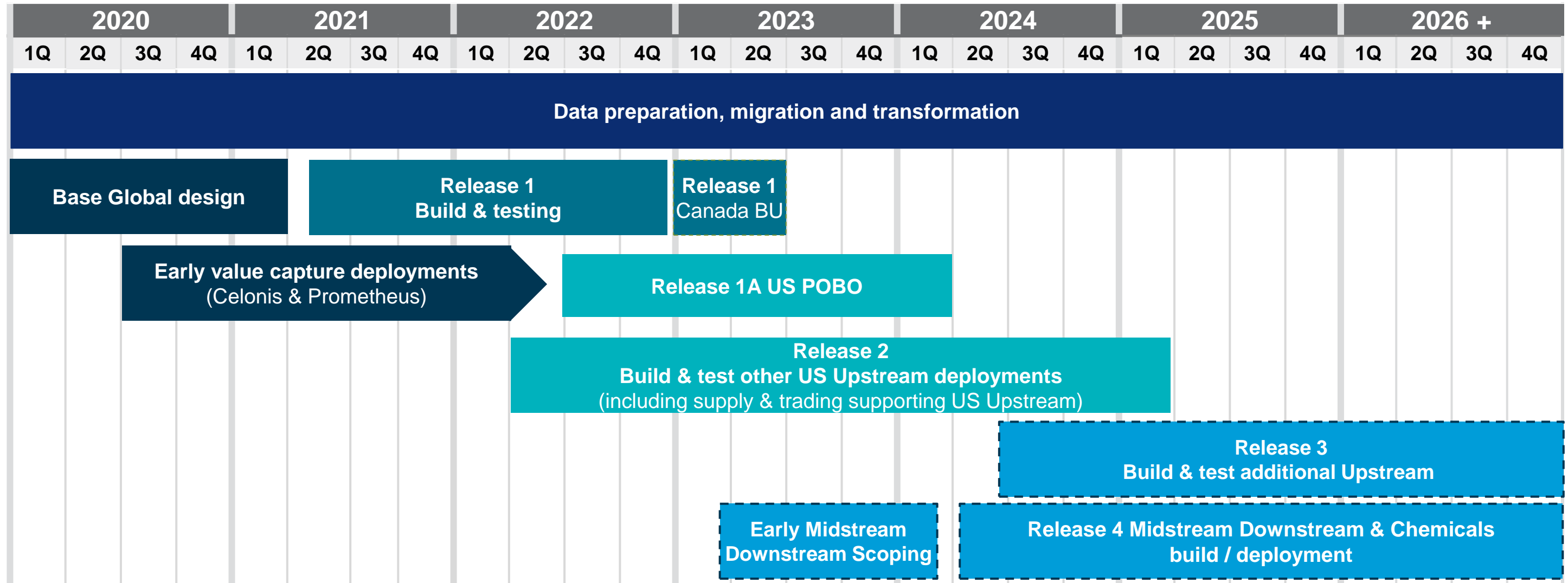
Canada Business Unit
Kaybob Duvernay

500 kms north of Calgary
Relatively small asset
Non-complex nature of operation
Smaller field staff
Close to Houston
Great MVP location

Digital Core program high-level timeline

2020				2021				2022				2023				2024				2025				2026 +			
1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q

Data preparation, migration and transformation

Base Global design

Release 1 Build & testing

Release 1 Canada BU

Early value capture deployments (Celonis & Prometheus)

Release 1A US POBO

Release 2 Build & test other US Upstream deployments (including supply & trading supporting US Upstream)

Release 3 Build & test additional Upstream

Early Midstream Downstream Scoping

Release 4 Midstream Downstream & Chemicals build / deployment

- Multi-year design and release program
- Functions deployed for Asset Management, Materials Management and Finance including MDG
- Clean core concept and go out of the box as much as possible – R1 **85% FIT to Standard**

Timing tentative

Digital Core Release 1 Lessons learned

what went well

One Team Behavior: strong collaboration between the project team, IT platforms, and business unit & shared services

Organization: functional leadership unified by release management

MVP Approach: deployed subset of core processes to a single Business Unit to validate solution design and deployment approach

what can be improved

End to End process design: Siloed design and build decisions led to sub optimal end to end processes

Scalability: Streamline ways of working across all program threads

Change Management: Stronger partnership with global process owners and business units

Q&A