Deployment of a Closed-Loop Gas Lift Optimization Workflow from a Permian Basin Operator

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- The Challenge
- The Potential
- Chevron Digital Oilfield Landscape
- Technology
- Permian Digital Oilfield (DOF)
- Closed-loop Optimization Approach & Impact
- Lessons Learned & Future Work

The Challenge

Thousands of wells over an area ranks 18th biggest state just after Washington State (77,116 mi^2), expecting a sustained 1MMBOED in 2Q 2025
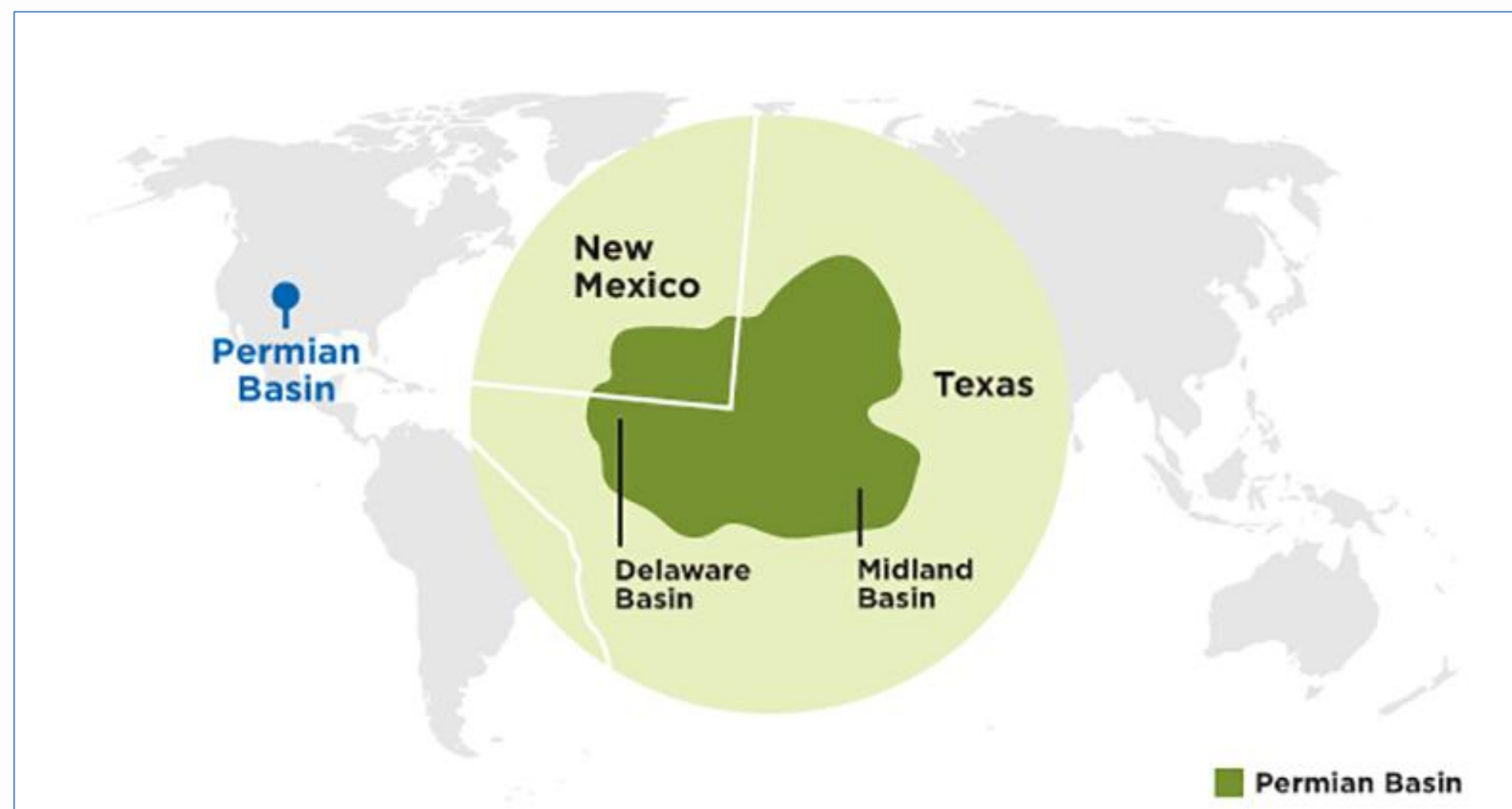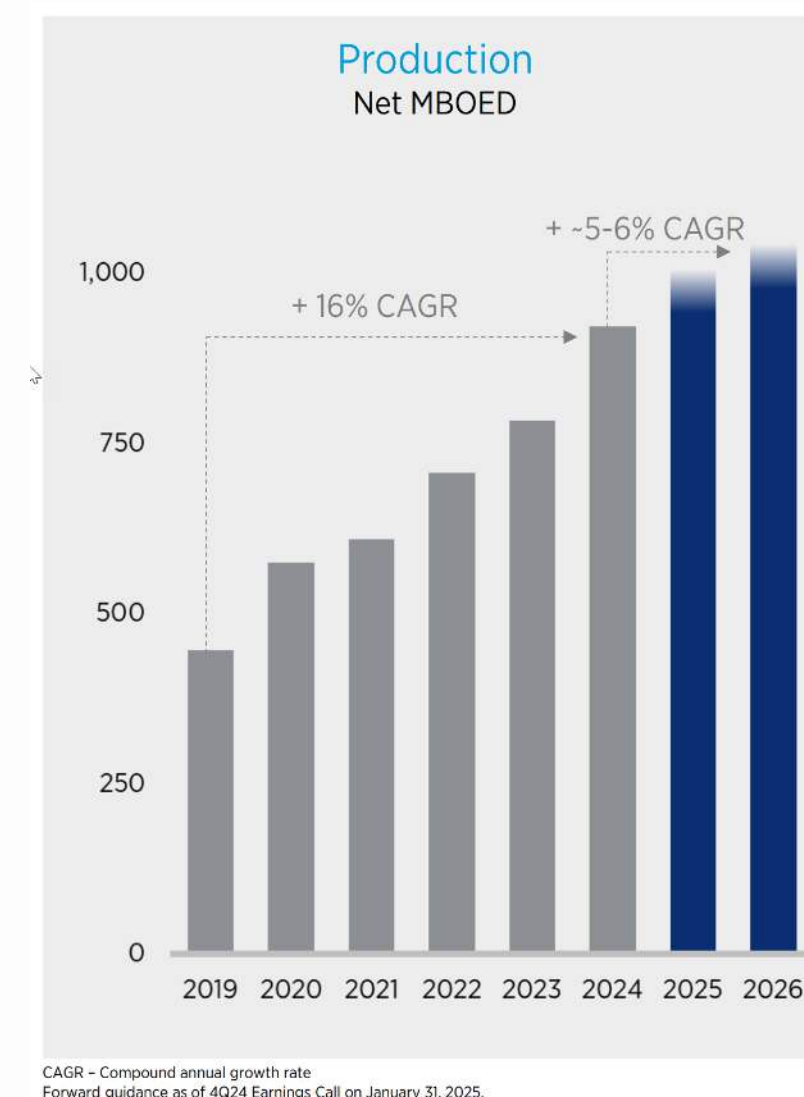
Figure 1. Permian Basin cartoon 75,000 mi^2

Figure 2. May '25 investor presentation Permian production plot

The Potential

Asset class excellence	Renewable fuels
Enhance reservoir recoveries	**Convert** challenged feedstocks

Facilities of the future	CCUS & H_2
Automate facilities and operations	**Reduce** costs across the value chain

Digital Oilfield (DOF) is a key enabler

The Solution

North America

Eurasia-Pacific

Middle East, Africa, South America

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Enabling cross-discipline collaboration and value chain optimization

one solution with all the data, models and tools
needed to collaborate across disciplines to:

support real-time, **full-field and autonomous optimization**
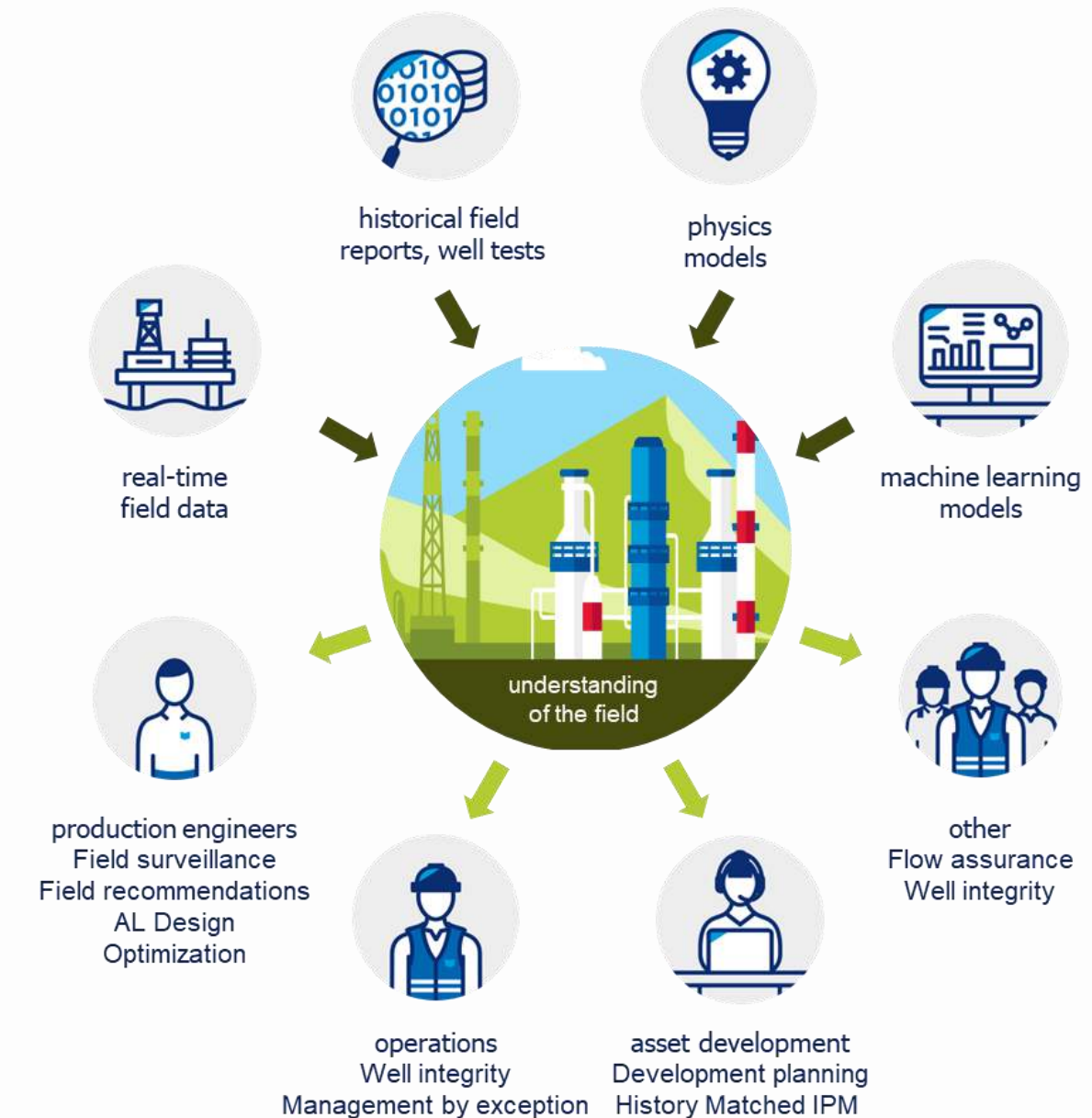
enable rapid and confident identification of
well and facility performance changes

serve as the **single version of the truth** for field understanding

combine data from different disciplines, physics-based
model insights and machine learning guidance

scale across operations,
facilities, flow assurance

provide insight to **operators, engineers and managers**

historical field
reports, well tests

physics
models

real-time
field data

machine learning
models

understanding
of the field

production engineers
Field surveillance
Field recommendations
AL Design
Optimization

other
Flow assurance
Well integrity

operations
Well integrity
Management by exception

asset development
Development planning
History Matched IPM

Permian Digital Oilfield
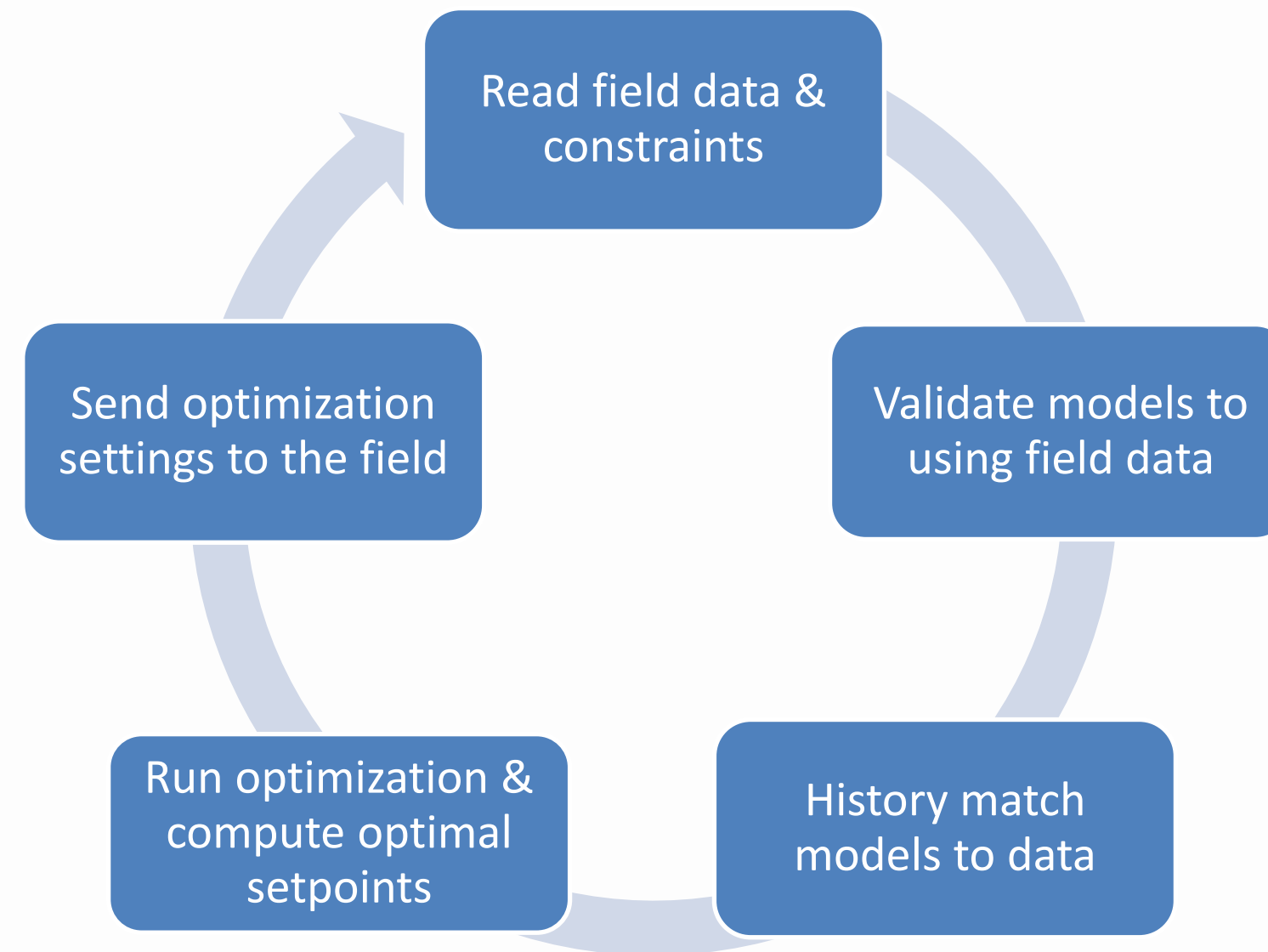

① Surveillance: are my field data good?

② Analysis: are my models, calibrated with automated workflows, good?

③ Models ✓ ≈ Field ✓ ➡ Optimization!

Closed-Loop Optimization Approach

- Read field data & constraints
- Validate models to using field data
- History match models to data
- Run optimization & compute optimal setpoints
- Send optimization settings to the field

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Automated Closed-Loop Gas Lift Optimization Deep Dive
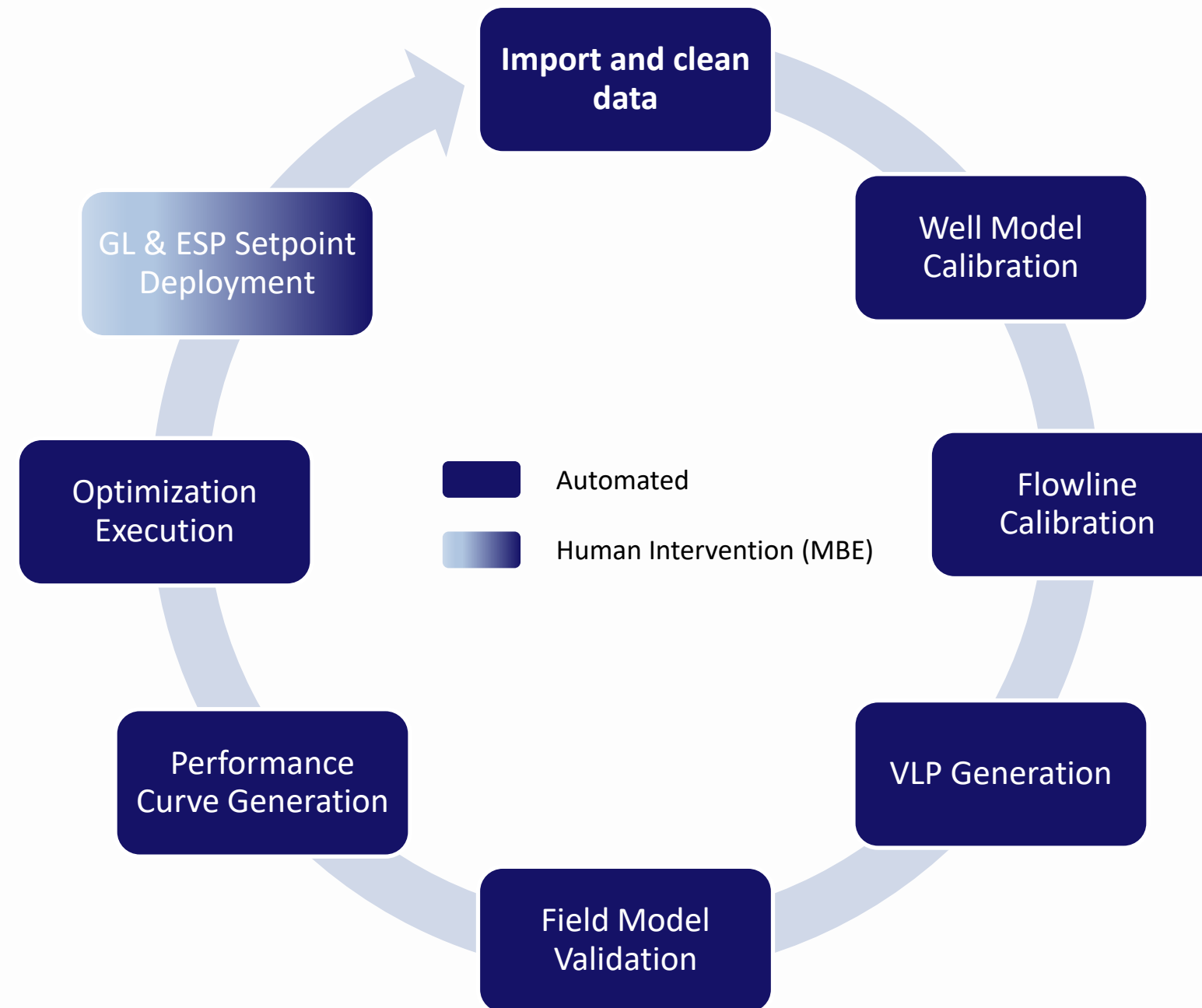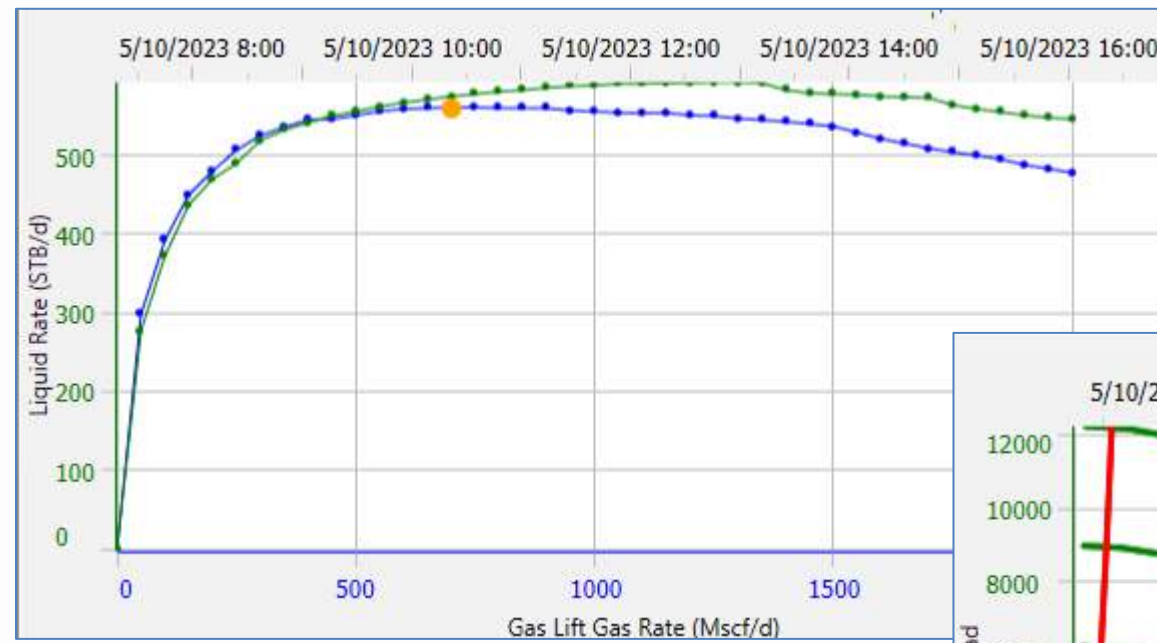
Expanding DOF Scope

Figure 1. gas lift performance curve

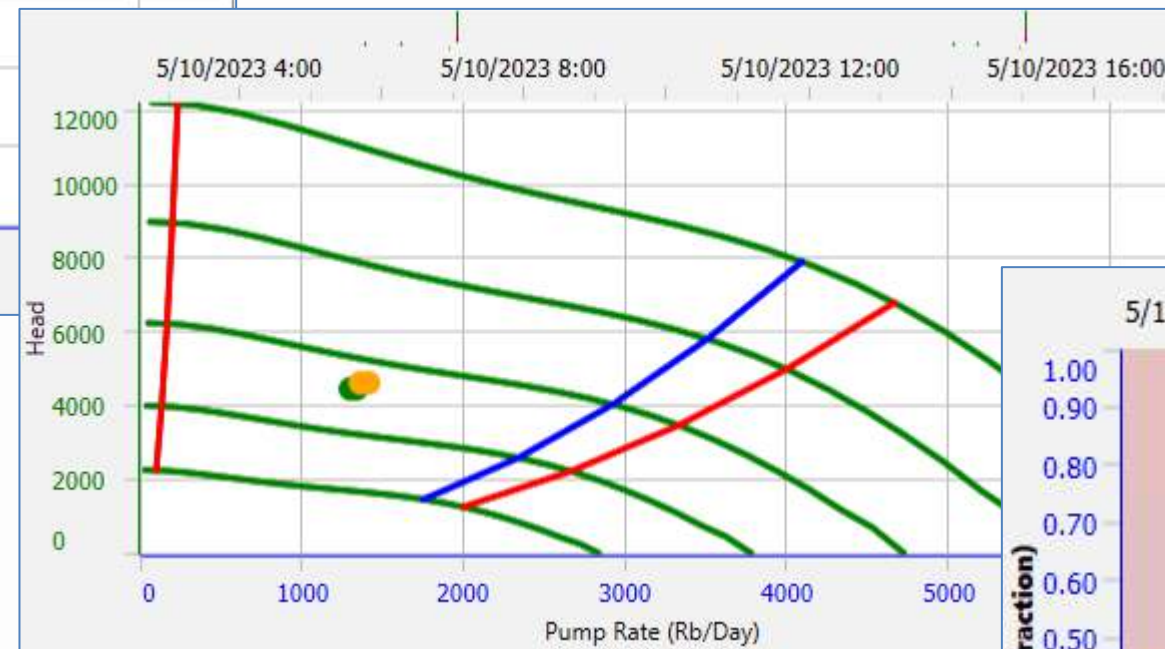Automated update of Gas Lift Valve Details
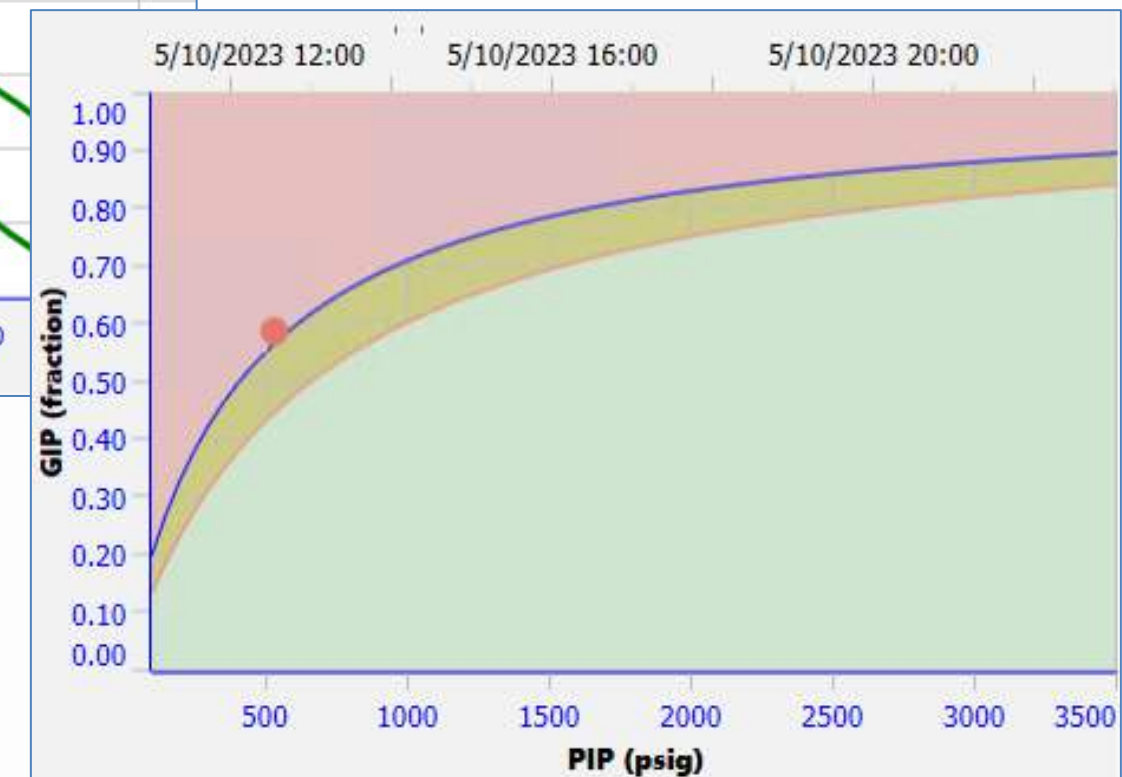
PROSPER Gas Lift Auto Update

Figure 2. ESP performance curve

Figure 3. Gas in pump curve

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Key for Success: Cross-discipline partnership

Partnership
- Business Unit
- Chevron Technical Center
- PE and Developers
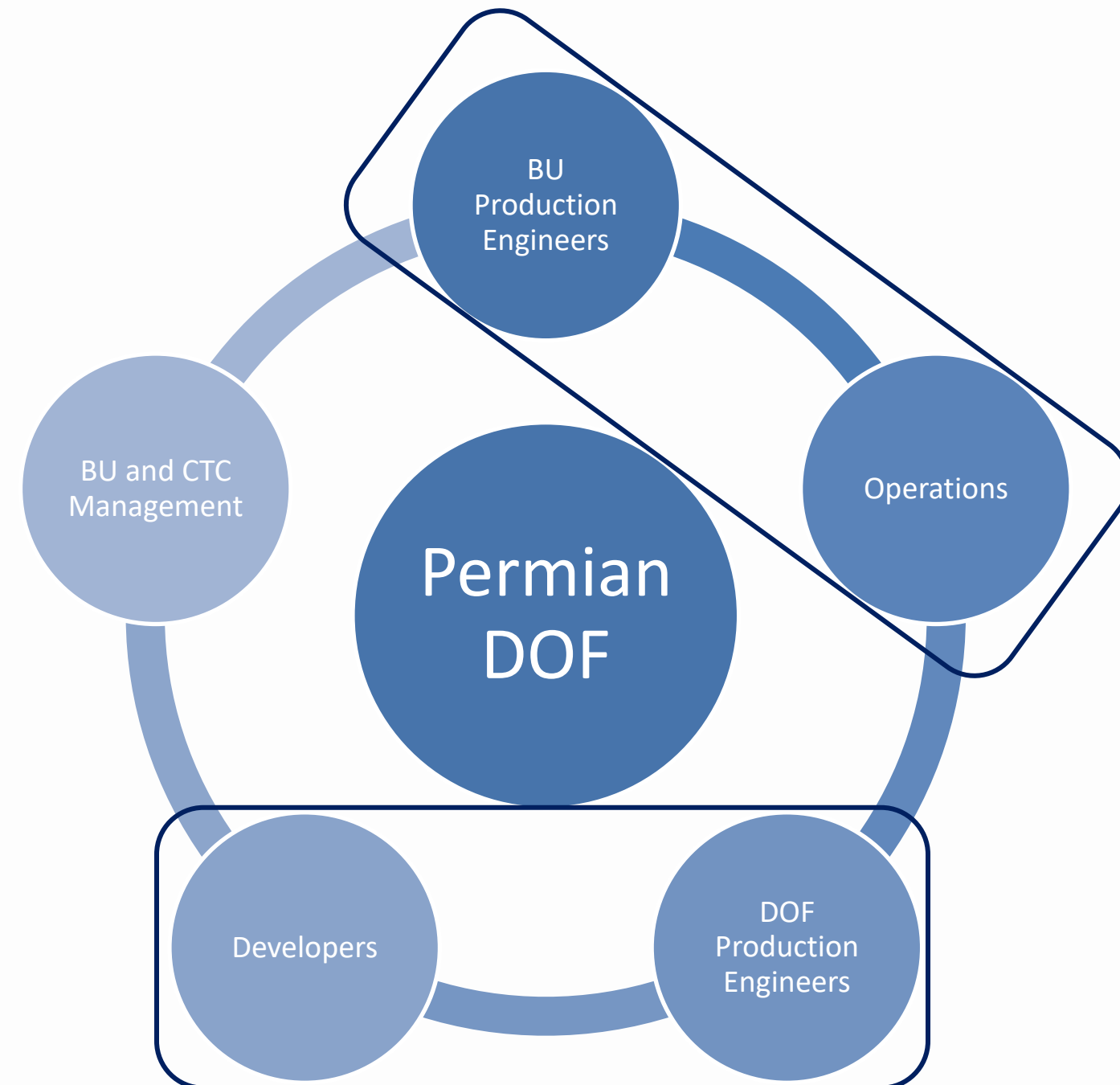
Alignment
- Management
- Individual Contributors
- Goals and timeline

Agile
- Sprints
- Continuous feedback
- Enhancements

Lessons Learned & Future Work

- Automation of model building, history matching & optimization DOES NOT replace the need for PEs to use management by exception to review/understand the models & optimization results

- Deploy the workflows & solution and iterate based on feedback from engineers.

- Continue refinement of the existing tools & workflows.

- Promote the adoption and utilization by building technical efficiency of the users through training, office hour, and working sessions.

- Implement the latest technology breakthroughs (e.g. Gen AI) to further enhance tool capabilities.

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Question Time

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