



# Implementing GE APM Integrity: A journey towards digital transformation (Suncor 4.0)

## Project Team

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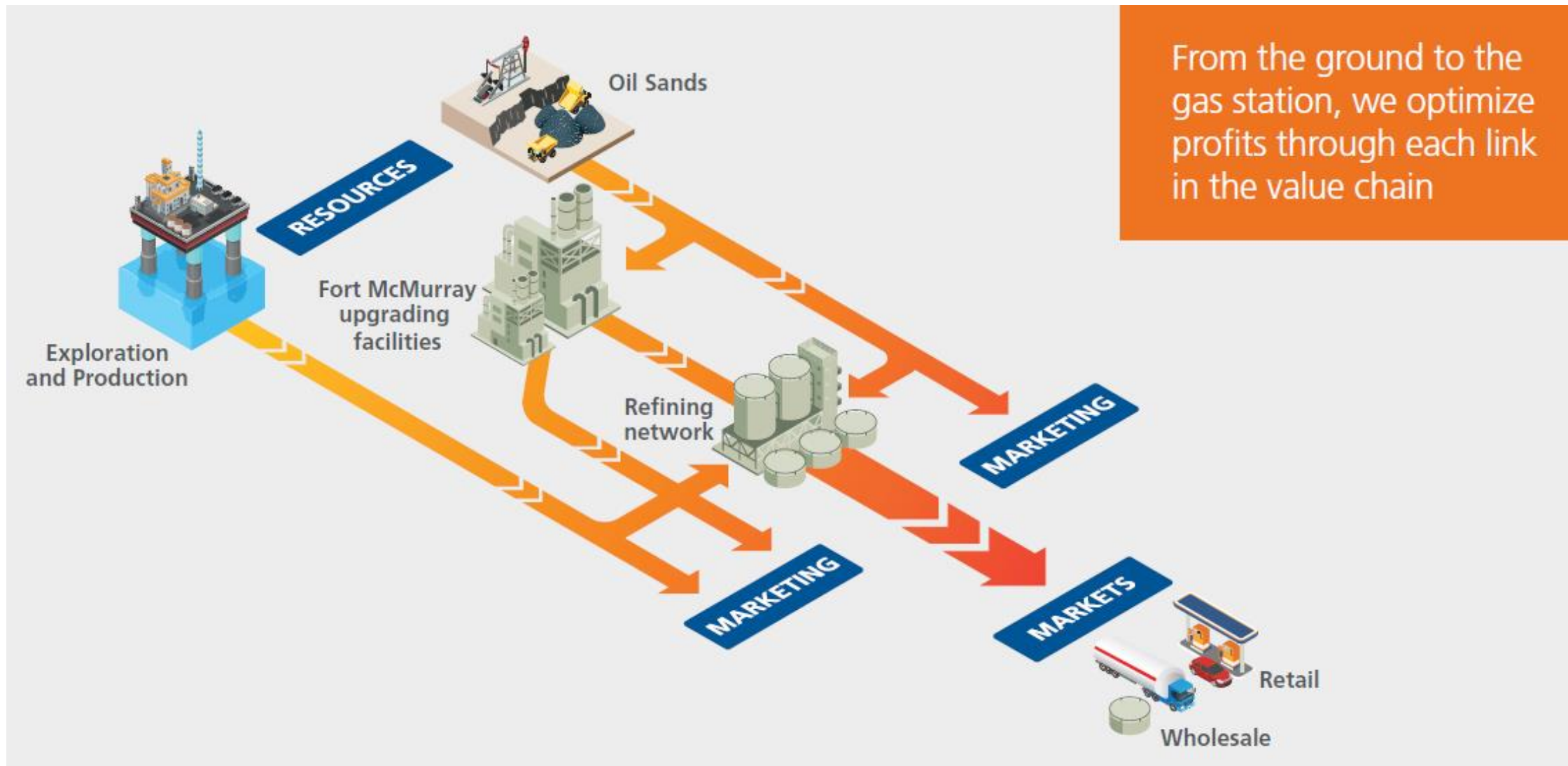


# What we will cover

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- MI current status
- Opportunities
- Project deliverables
- Project status
- Project uniqueness
- Key points to take home
- Questions

# Suncor's Integrated Model



# Oil Sands Process



## from oil sands ore to consumer energy

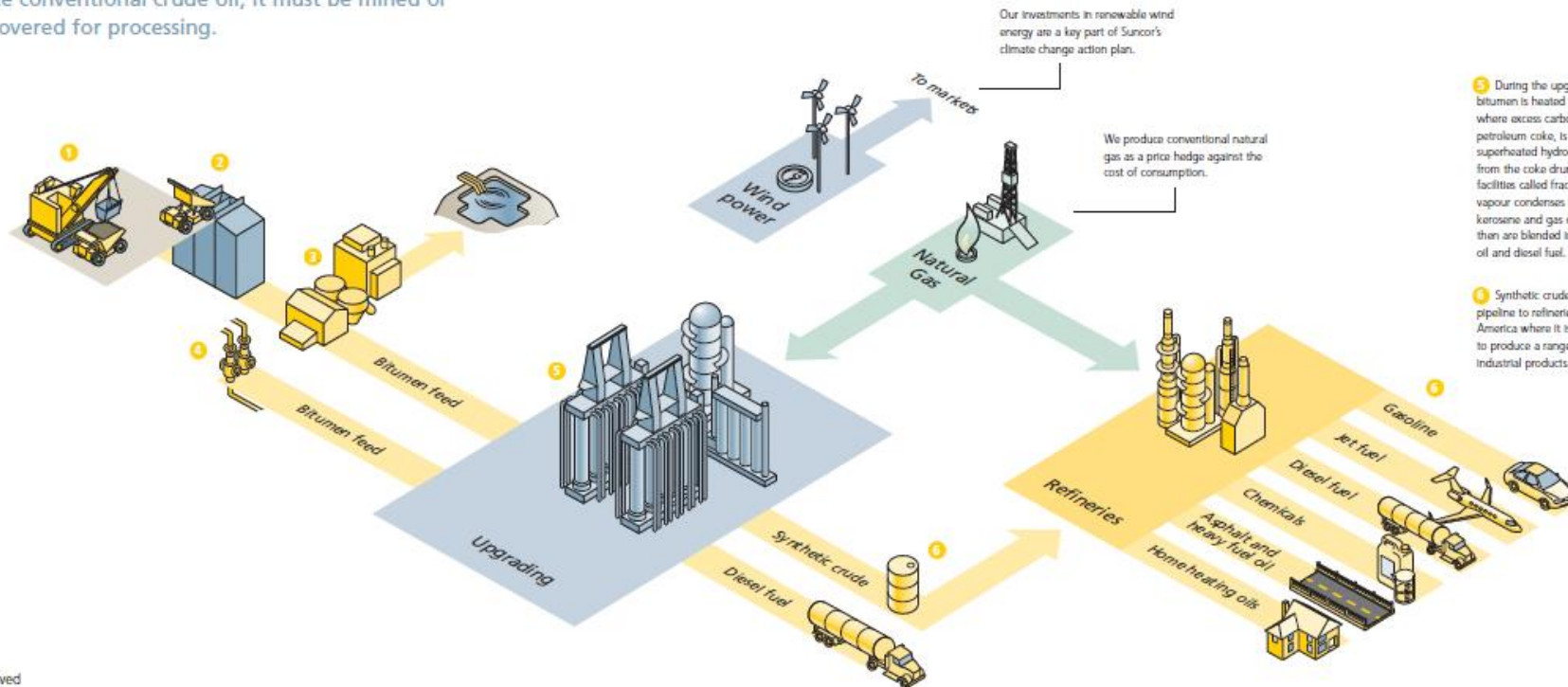
Oil sands is a mixture of bitumen (a tar-like, heavy oil), sand, water and clay. Because it does not flow like conventional crude oil, it must be mined or heated before it can be recovered for processing.

1 In the mining process, every day about 500,000 tonnes of oil sands are mined using shovels with buckets that hold 100 tonnes. The ore is transported for processing in some of the world's largest trucks, carrying close to 400 tonnes per load. The remaining material (topsoil, muskog, sand, clay and gravel – also called overburden) is stockpiled and used in reclamation of the mined land.

2 Crushers and screens break up the ore for delivery to the extraction plant.

3 At the extraction plant, the raw bitumen is separated from the sand, water and clay to prepare for upgrading. The tailings (water, clay, sand and residual bitumen) are pumped to holding ponds where they are treated and prepared for reclamation.

4 The in-situ process uses steam assisted gravity drainage technology to inject steam into the oil sands deposit and collect the bitumen released by the heat. The recovered bitumen is sent by pipeline to the upgrading facility. This process does not require extraction as separation happens in the ground.



# Suncor 4.0 - Aligned to Industry 4.0

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## Applying digital technologies to accelerate operational excellence to:

- Achieve world-class performance
- Generate value
- Drive and enhance our competitive advantage
- Create the workplace of the future

## By being:

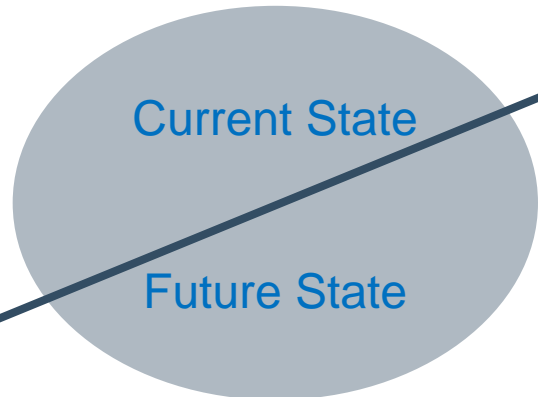
- Purpose driven
- People focused
- Data informed
- Technology enabled

# Reliability Approach: Problem – Opportunity

## CURRENT STATUS

Suncor has some variation across business areas in how we mitigate risk associated with the integrity and inspection of assets.

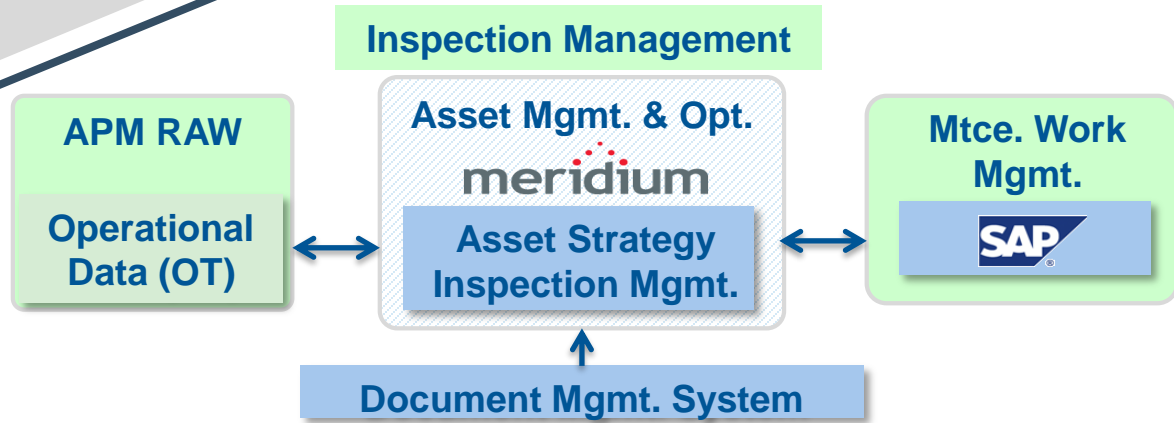
- Non-standardized processes
- 6 applications (No shared reliability management technology)
- 2 major applications reaching end of life introducing risk
- Unique challenges managing slurry process piping
- All are happy with status-quo and showed less interest to change.



- Align with digital transformation Suncor 4.0
- Drive effectiveness & efficiency in APM
- Single inspection platform
- Integrate inspection with others applications
- Automated interface with SAP
- Optimize inspections
- Optimize work management (preventive mtce. prog. & insp. prog.)
- Mobile inspection enablement



## OPPORTUNITY



# Deliverables

## Technology

- Configure (develop / architect, validate) GE APM / Meridium 4X Inspection module
- Establish bi-directional interface with SAP
- Establish APM connect and APM foundation
- No customization
- Enable mobile inspection

## Business Process

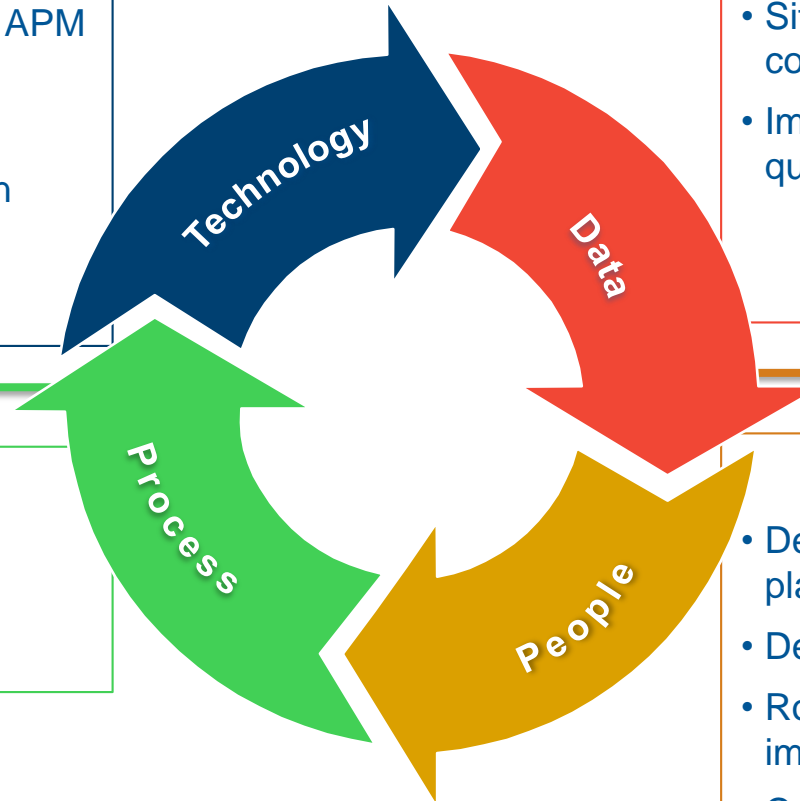
- Develop standardized one-way inspection business process
- Eliminate IR process

## Data

- Site assessment, mapping, migrate data consistently
- Improve visualization through dashboard, queries and data driven decision making

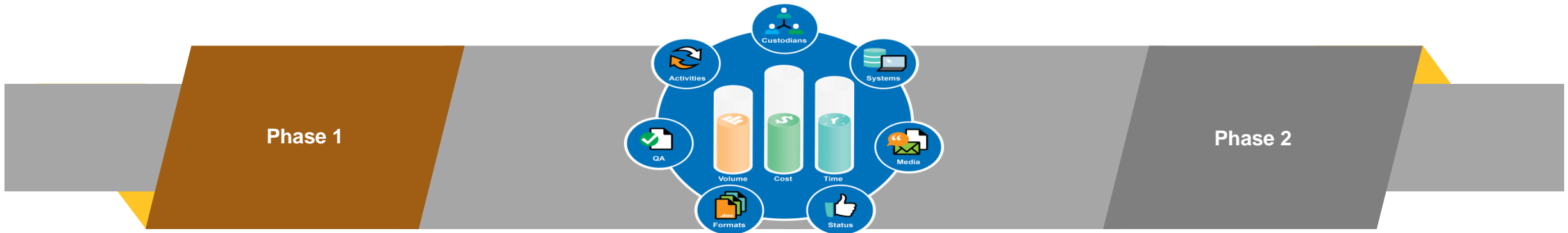
## People

- Develop change management / people readiness plan
- Develop engagement/ communication plan
- Rollout training to address change, tool to improve efficiency and effectiveness
- Coaching, CoP (Community of Practice), knowledge hub, QRGs for sustainment



# Project status – phase 1

- Pilot completed in 2018
- Design (Gate 3) approved in Q1, 2019
- Proceeding with build, validate and rollout by phases



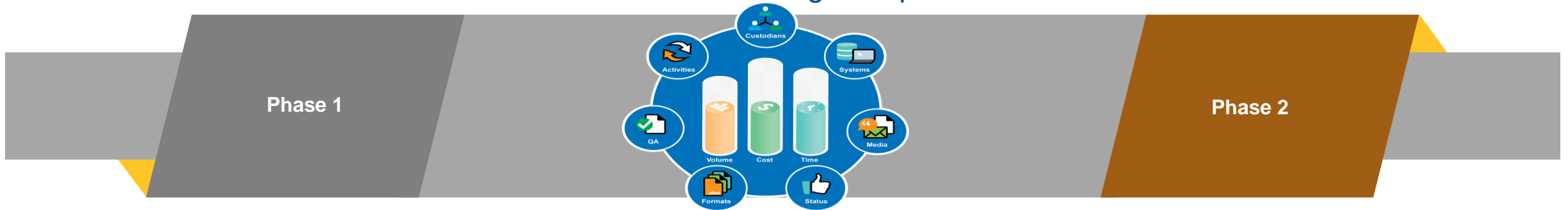
## Milestones achieved in Phase 1 towards Go Live date Sept 20, 2019

- Phase 1 sites identified, one plant within each of: UPG, Extraction, and Energy & Utilities)
- Functionality testing completed for FAT (Factory Acceptance Test) and DEV (Development) environment
- Full integration testing (QUT ITC )
- UAT (User Acceptance Test) participated by upstream & downstream
- After senior leadership support, strong pull from users to accelerate rollout
- Well structured governance and engagement



# Project status – phase 2

- Phase 2 consists of all upstream, downstream and midstream sites (Q4 2019 to Q4 2021)
- Phase 1 validation and lessons learned will be leveraged in phase 2



- Working on detailed site assessments and Go Live schedule for Phase 2 sites
- Sequence for all sites agreed on
- Full rollout completion by Q4, 2021

# Ongoing phase 1 steps

## Towards Go Live (Phase 1)

Training developed for Phase 1 users (WBT & Instructor-led)

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Ongoing engagement / communication

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Quick Reference Guides created

## Post Go Live

Phase 1 Go Live review / lessons learned

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Incorporate feedback

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Phase 2 plan approval

## Sustainment

Coaching at sites

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CoP & STEN

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Knowledge Hub / QRGs

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Ongoing training

# Project uniqueness

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- No customization of APM Integrity
- APM Integrity is on V4.X and all other modules are currently on V3.X
  - Dual – Pack solution
    - Moves others modules on V4.x
- Pipeline rotation feature for slurry piping

# Project uniqueness: piping rotation for slurry piping

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## Why we are adding the feature?

- Very unique nature to run the business: Mining vs traditional oil well operation.
- The pipe rotation module is intended to track pipe rotation history and thickness monitoring history. It uses this data to predict and track thicknesses over time. This helps extend the life of this type of piping.
- The requirements are based on current functionality but also include improvements to address current pain points.

# Project uniqueness: piping rotation

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UX prototype on the proposed solution (GE)

# Lessons Learned – moving from a push to a pull

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- **Effective team:**
  - Strong Suncor business SME's the represent the overall business needs
  - Industry expert, **Trinity Bridge**, played a key role in defining the actual requirement needs
  - GE participation – bringing the right people to the team
  - Established a strong and influential steering team early in the project
  - Effective project and scope management is necessary to stay on track
- **Well structured and comprehensive requirements, that were validated with Trinity Bridge**
  - A clear understanding of actual requirements, versus 'nice to have', helped shape the adoption of this initiative

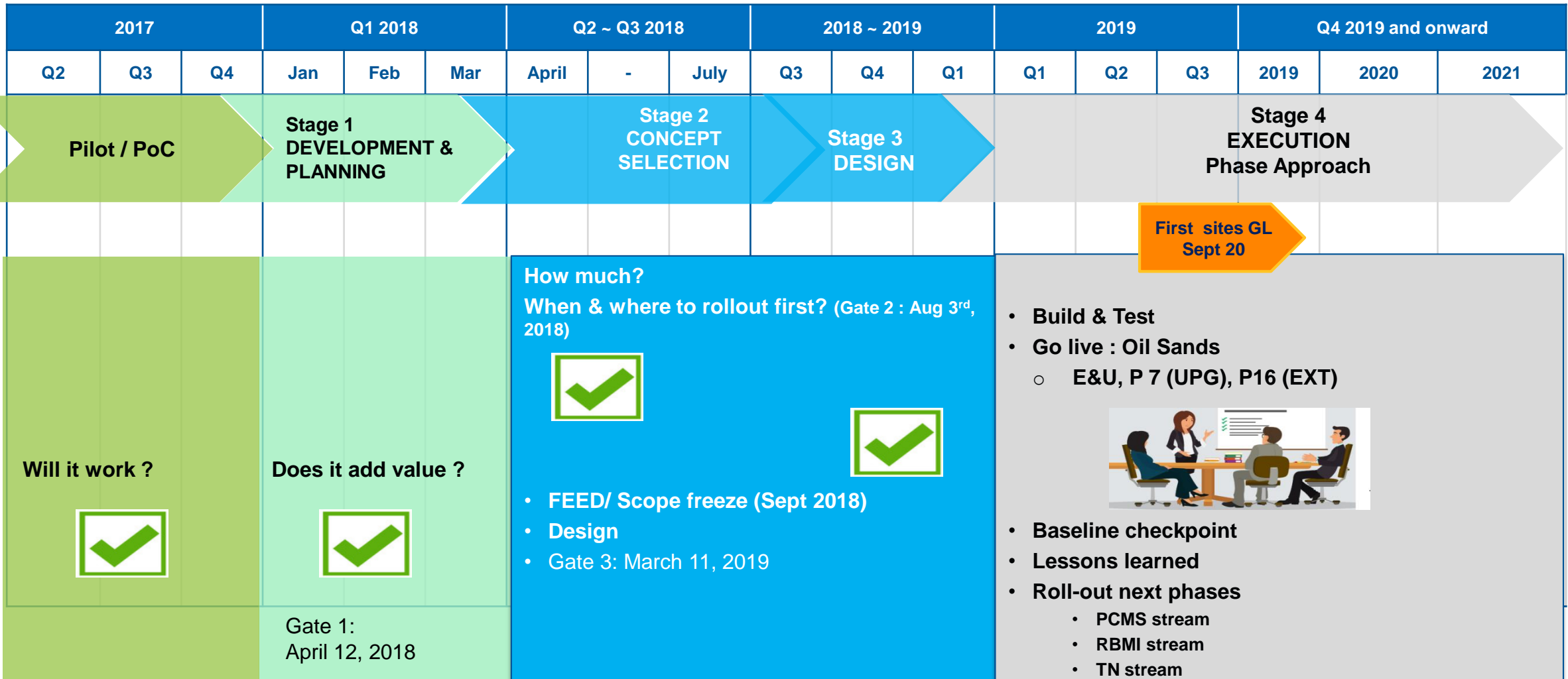
# Lessons Learned – moving from a push to a pull

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## Clear work plan was developed, that addressed adoption concerns and ambiguity

- The pilot proved that the business requirements were met
- Out of box Meridium MI was capable to meet:
  - Time based
  - Risk based – Semi-quantitative API 580 and quantitative API 581, 3<sup>rd</sup> Edition
  - Two way communication between SAP and Meridium
  - Clearly show that the business roles/responsibilities work effectively with the Meridium tool
  - The qualitative value was proven to the business areas with the pilot
  - When project economics were evaluated against cost, it was very favourable and brought senior management on board

# Lessons learned Cont'd – integrated project plan





# Key points to take home

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- Align with company vision and get senior managements' commitment
- Engage end users upfront, get buy-in & support
- Make it simple
- Zero customization is possible
- Execute project with a view of sustainment in mind
- Get commercial agreements clear up-front
- Ensure that key resources, internal and external, are clearly vetted and they stay committed