



# Digital Oil/Gas Field

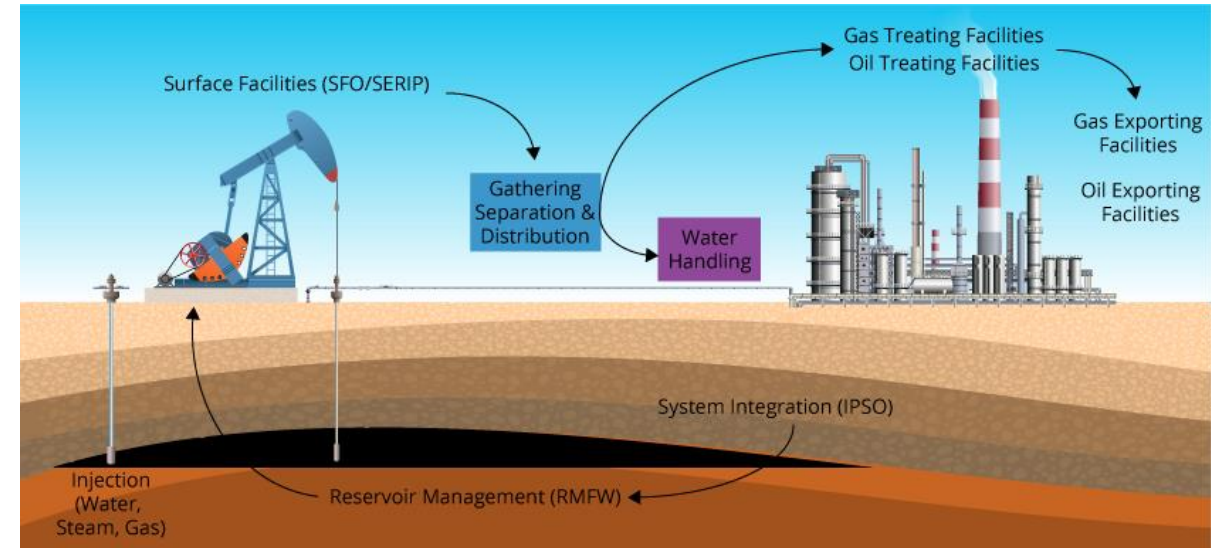
# DOF Philosophy

- Manage by exception (focus on highest value)
  - Improve collaboration across distance and function
  - Standardize and centralize analysis and decision-making
  - Use relevant time data in decision-making
  - Reduce exposure to safety and environmental risks
- **Build a Decision Support Center**
    - Efficiently use personnel experience
    - Centralize subject matter experts (SMEs) to monitor assets 24/7 in real time
    - Access to scarce SMEs
    - Reduce experience requirements in field
    - Use predictive analytics instead of time-based maintenance

# Production System Optimization

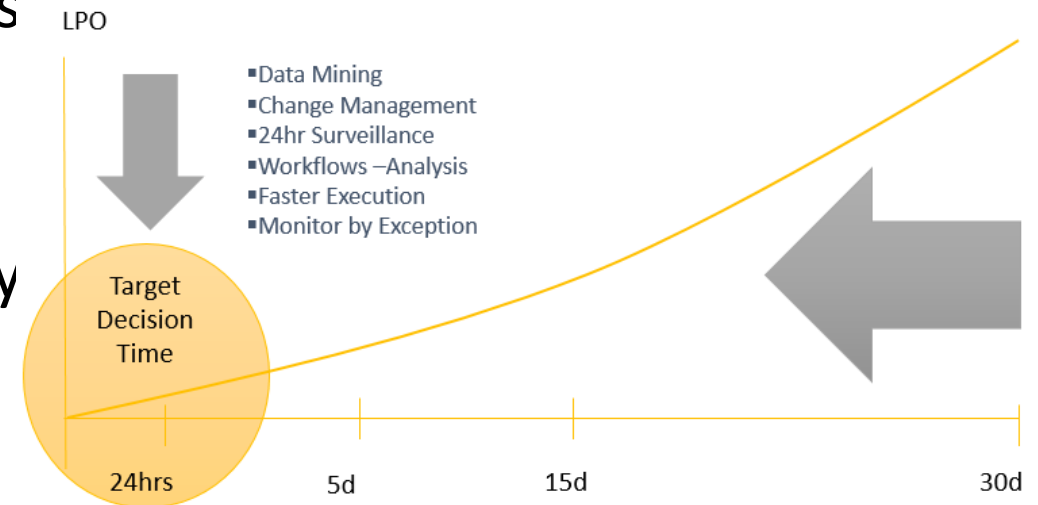
## Production Optimization purpose

- Optimize production from existing wells and facilities
- Ensure capacity available to meet business plans
- Advance the evaluation of future growth concepts to assist in the identification of opportunities to move resources to reserves



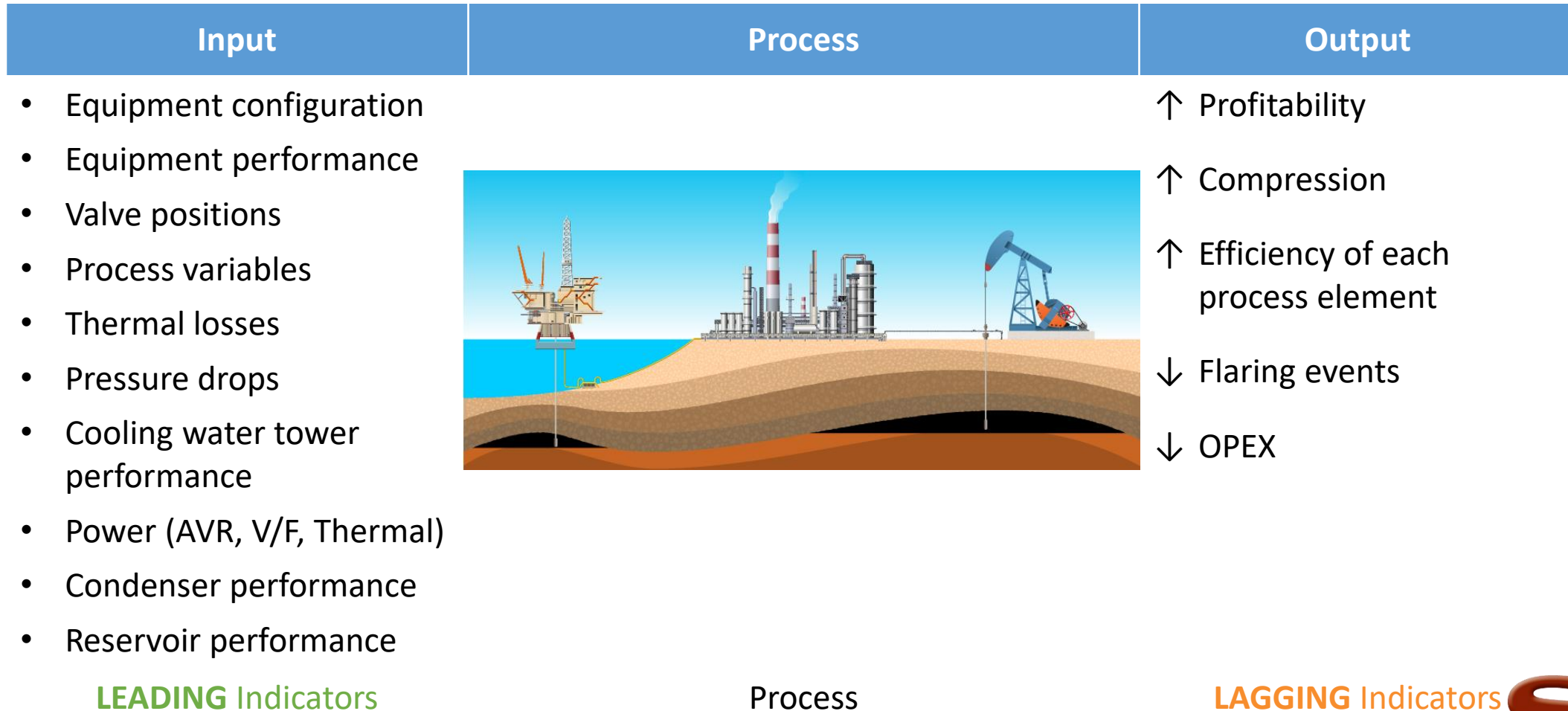
# Plan for Operational Intelligence (OI)

- OI objectives: achieve higher levels of production against assets, reduce production cost, improve bottom line
- OI platform aggregates, relates and presents operational and business data in real time
  - Intuitive and useful for all users
  - Applied at individual site to overall enterprise
- OI focuses on production process day-to-day activities
  - How am I doing against objectives?
  - How are we doing collectively?
  - What should we do in this situation, given these current conditions?



# Real Time Simulation Input-Process-Output (IPO) Model

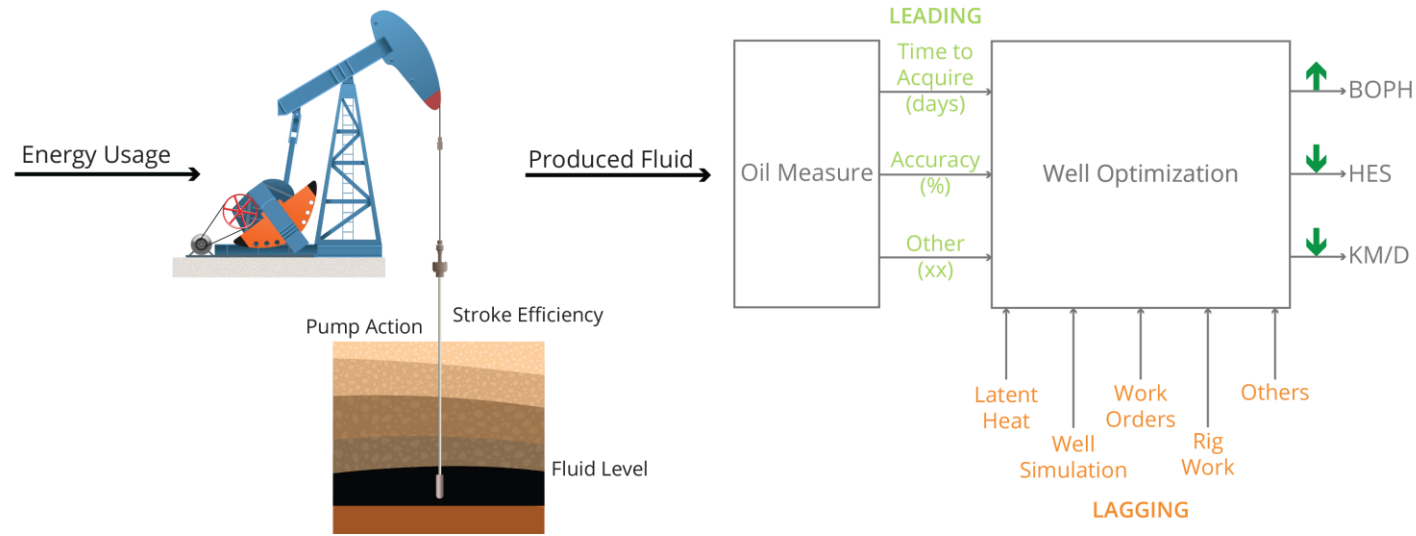
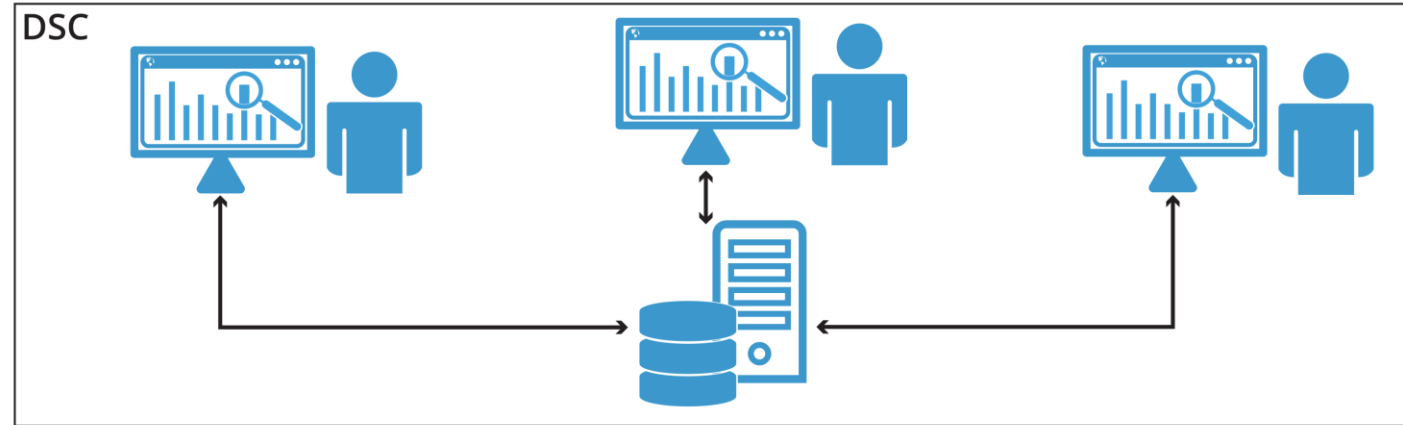
Optimization Solution Protects  
Entire Investment



# Prediction and Analysis

## DSC Real-Time Monitoring

- Monitor leading and lagging indicators for all operating assets (wells and areas) in real time
- Forecast future production using historical analysis combined with current trends



# Economic Optimization



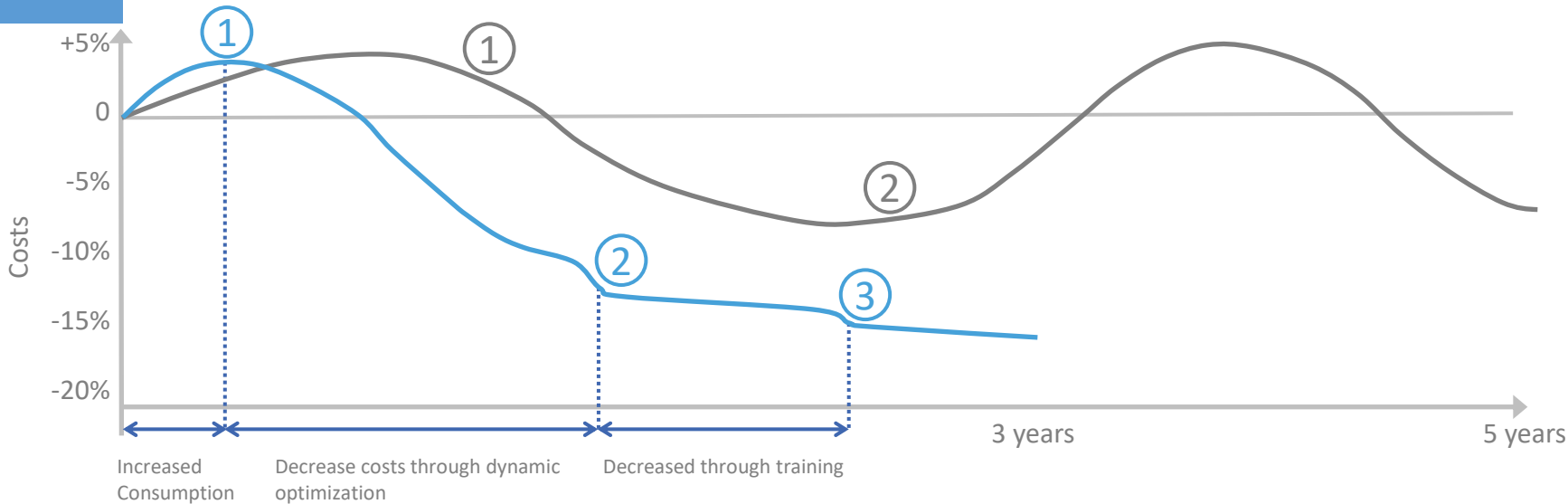
Reduce maintenance costs  
Save on spare parts and personnel



Reduce lost profit opportunity  
Predict imminent failure

- ❖ 3% to 5% savings based on current operating conditions
- ❖ Increase availability and reduce unscheduled downtime
- Challenges
  - Maintaining high equipment efficiency
  - Reducing operating costs for given conditions
  - Improving availability and reliability
- Goals
  - Run efficient equipment
  - Perform maintenance on “inefficient” equipment
- How
  - *OptiRamp* Software, including Storage and Machine Analytics

# System Optimization



1. Enhancement application
2. Lose consistency and tracking and improvement diluted

1. Optimization tool
2. Investment in equipment changes
3. Investment in equipment upgrades

## Non-Systematic Energy Management

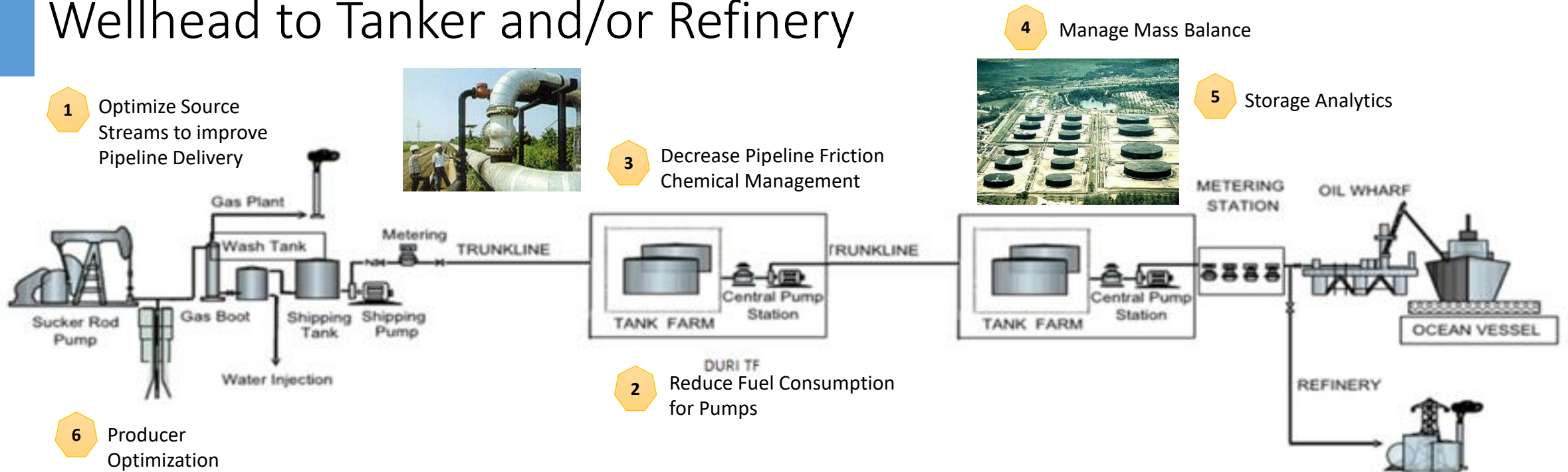
- Non-systematic improvements lose effectiveness over time
- No motivation for continuous improvements

## Systematic Energy Management

- Needs support tools and technologies
- Visualize losses
- Formalize processes
- Sustained savings over time



# Total Value Stream Wellhead to Tanker and/or Refinery



## MEASURING

- Crude Flow
- Allocation Factor
- Gas Flow
- Artificial Lift

## PIPELINE

- MAWP
- Pipeline Condition
- Behavior Modeling
- Pumping Strategy

## STORING

- Stock Calculation
- Align with shipping plan

## SHIPPING

- Schedule
- Permitting
- Documentation