



**Oronite**

# **Modernizing Process Control Systems With Focus on Digital Acceleration**

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**Oronite**

# Introducing Chevron Oronite

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- ❑ Chevron Oronite manufactures additives that improve the performance of lubricants and fuels
  - Wholly-owned subsidiary of Chevron Corporation
  - Driveline, hydraulic component and engine applications
- ❑ Operations include one world-class facility in each region as well as several smaller scale plants
  - One world-class facility per region – Americas, EAME, AP
  - Two Regional plants – Maua, Omaezaki
  - One Shareholder plant – Chennai, One upcoming facility in China



## DISCLAIMER

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You will see references to technology, vendors, solution provider in this presentation. This presentation or Chevron Oronite is not endorsing any solution, strategy or vendor. These references have been used here for illustration purposes only based on what has been adapted and deployed at Chevron Oronite, Oak Point plant, Belle Chasse, LA



# Digital Transformation / Acceleration – A journey

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## □ Some Quotes around the topic

- “Digital transformation is emerging as a driver of sweeping change in the world around us. Connectivity has shown the potential to empower millions of people, while providing businesses with unparalleled opportunities for value creation and capture”
- “Digital innovation is reshaping industries by disrupting existing business and operating models”
- “The skills required to do the work of today are going to be different from the skills needed yesterday”

## □ Innovate using Technology

- Bring together IT, the business, and the functions to pursue technologies that can drive value within our business workflows
- Build solid foundations that can expand quickly and are adaptable to emerging technologies
- Ensure technologies are accessible and seamlessly integrated with others across the enterprise

## □ Have an AGILE mindset

## □ Convert Data → Information → Insights → Decisions

## □ Disruptive Technology, Architecture, information, Information security, Analytics, IIOT, Cloud

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## ❑ Have an AGILE mindset

## ❑ Convert Data → Information → Insights → Decisions

## ❑ YES – THIS is Disruptive Technology, Architecture Transformation, Data to information, Information security, Analytics, IIOT, Cloud.....

- Do not panic, Pause, take a deep breath, plan and start somewhere, from where it matters most.....

## Benefits of Digital Acceleration

- ❑ When it comes to accelerating digital transformation, Chevron Oronite plans to better manage the lifecycle of its critical control system assets while providing leadership and decision makers more foresight and data driven decision making capabilities
  - Ensure operations are up to par with current technology
  - Improve operator effectiveness (e.g. abnormal management, integrated alarm management, procedures, etc.)
  - Expand interfaces to the business and third parties, streamline data flow from business to DCS, implement better analytics
- ❑ Manufacturers may not be able to maintain a strong competitive position if they are always in catch-up mode and not willing to adapt
- ❑ Digital platform for process control networks can directly improve workflow efficiencies and operator effectiveness



# Process Automation and Digital Transformation

- ❑ Change is not easy and especially in Process controls. Needs a strong vision, strategy, patience and support, most of all an Ambition
- ❑ This has to be driven from top down – Business leaders and bottom up – Operator and field mechanics
- ❑ The process control world is moving more towards IT / OT convergence
- ❑ To win in a fast changing world, faster decisions supported by digital technologies and a culture of innovation is going to be the need of the hour
- ❑ Upgrade traditional platforms and infrastructure, deploy scalable solutions
- ❑ Digital strategy is also about maximizing value from these upgrades, and volumes of data generated by these systems
- ❑ Digital Strategy can fit into the Process Automation and provide value proposition in every facet of our systems and tools. If fact PCN is where it all starts, I would say
- ❑ Technology obsolescence and the need for improved insightful batch automation, need for operator effectiveness, getting ready for the future generation of process automation, IT personnel and value creation is where the planning process and vision establishment started



# Outlook on Modernization

- ❑ Over the years, Chevron Oronite's control platform has included a combination of Honeywell's TotalPlant Solution (TPS) and Experion systems, PLCs, Wireless, integration to ERP systems, etc
- ❑ We established a strategic outlook on process automation based on a roadmap for meeting its modernization requirements around the world
  - Modernize in a low risk direction
  - Ensure the buy-in of all stakeholders
  - Reap early benefits from new technology
- ❑ Corporate management is committed to actively managing the lifecycle of automation assets
- ❑ New digital technologies combined with data-driven insights can transform operations, boosting agility and strategic decision making ability
- ❑ Current resources do not know your legacy DCS product and their learning methods are different
- ❑ We are well into the journey and are looking into a totally new Era of Process control and Automation





# The Journey Begins

- ❑ Planning for a multi-year control system modernization program started in 2013
  - First phase – Operator Station Upgrades, High performance HMI, Modern Control networks, Historian Upgrade etc. Started in 2014 and ended in 2017
  - Second phase – Domain Upgrade, Virtualization in PCN, Honeywell Technology Upgrades - ELCN, LCN Bridge, ENIM, EHPM to Experion Integration, ProcOps, Advance solutions including Alarm management, Starlims to Historian interface, Operations Monitoring etc. started in 2017 is currently nearing completion(end of the year completion target)
  - Third phase - Batch migration using Virtual controllers, ENIMs, advanced Batch Visualization, in batch reporting, etc., design in progress
- ❑ All migration, modernization, upgrade work across multiple global sites is expected to be completed by 2021
- ❑ Will be ahead of the curve, at par with industry trend in digital space, adapting AGILE methodology by refocusing priorities etc. drawing synergies with what we saw earlier as the emerging and future trends



# How We've Evolved

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- Process control system evolution

Pneumatics and Hydraulics

Single and Multi Loop Electronics

PLCs

Proprietary DCS to Open systems

Multi level integration between systems and business layers, IIoT, Cybersecurity, etc

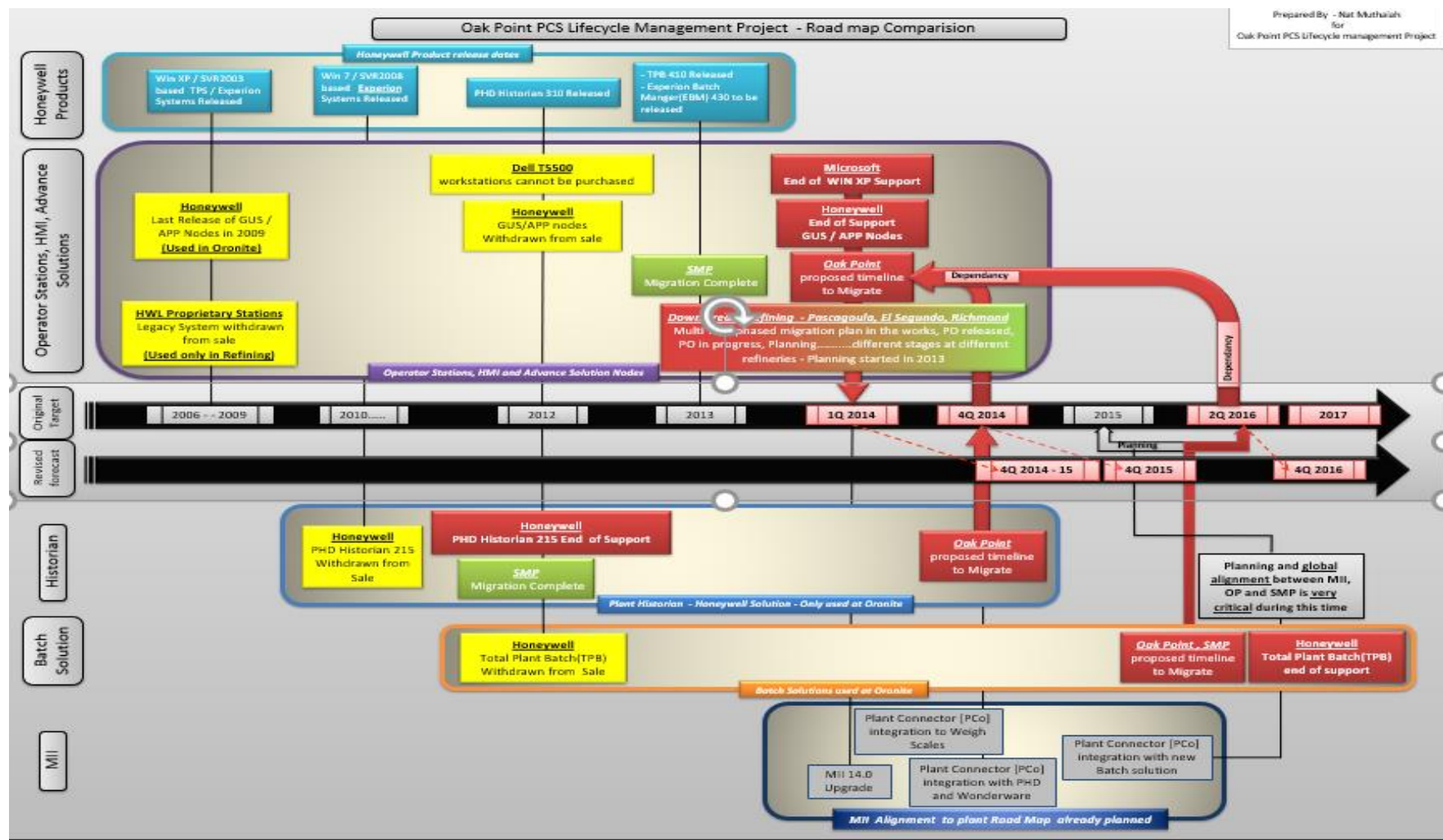
# Evolution – A different Perspective

## THE EVOLUTION OF THE EMPLOYEE

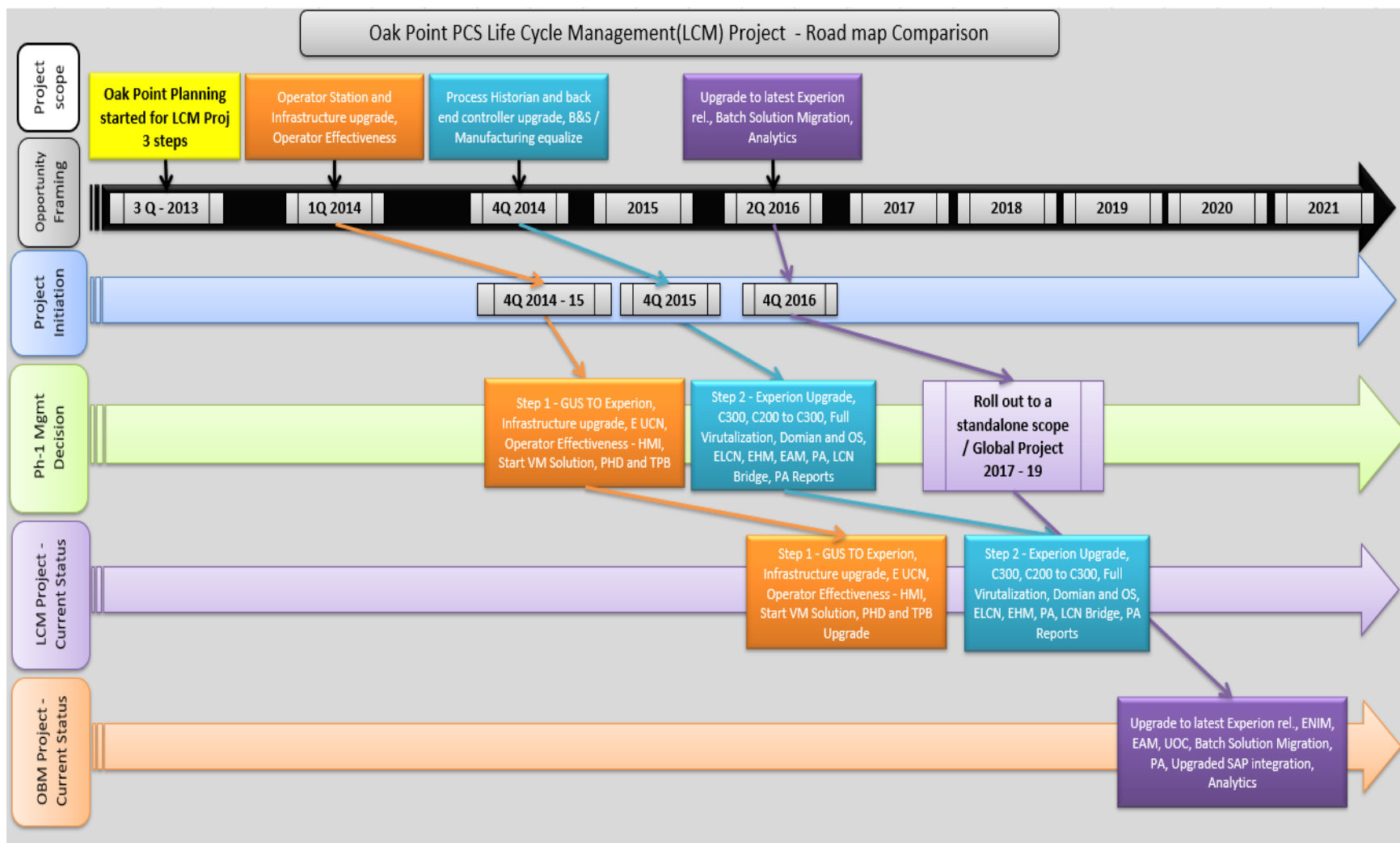


Making the things that go, **go better.**

# Shaping Plan



# Evolution of the Program





## Achieving Our Digitization Vision

- Chevron Oronite is translating its modernization strategy to a digital vision by breaking down efforts into step-by-step deployments with clear value propositions
  - Extend the Experion control environment
  - Improve configuration and change management
  - Optimize alarm and operations management
  - Get Starlims data into PHD for single source of information for Process data analysis, quick visibility for operators etc,
- Key to this effort is ensuring different generations of control systems can run in the same environment with a common, seamless interface for plant operators
- Preserving the intellectual property is a very important aspect of this vision



## Key Elements of Technology Upgrades

- ❑ Digital platforms empower the industry to easily and rapidly harness the benefits of technologies at scale. They are comprised of layers that can be holistically managed to deliver products faster, with increased scalability, reduced support coordination and greater data transparency.
- ❑ An agile mindset enables teams to iteratively solve complex problems, prioritizing functionality and breaking deliverables into manageable increments for focused effort. It allows us to learn, adjust, and deliver results faster to keep pace with business and technological advancements
  - Encourage iterative methodology where applicable and promote progress along with perfection
  - Learn fast, fail fast, improve fast and create value
  - Gain user feedback quickly, and regularly reprioritize your backlog



# Strategic Migration Approach

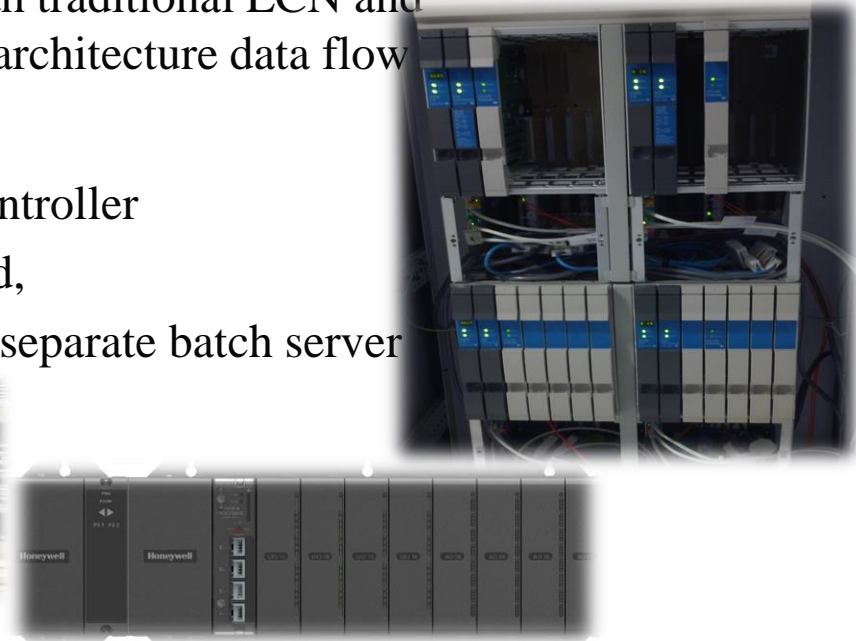
- ❑ Chevron Oronite undertook one of the first major FTE (Fault Tolerant Ethernet) Based controller implementations in North America based on Honeywell Technology
- Move **intellectual assets** from legacy platform to Experion PKS environment
  - Deploy EHPMs as **peer-to-peer nodes** with existing HPM controllers
  - Utilize Fault Tolerant Ethernet (FTE) technology to retain existing functionality and embedded applications
  - Integrate **legacy TPS controllers** within Experion infrastructure
  - Easy integration/expansion within Experion while **maintaining intellectual property**
  - Modernization to FTE retains HPM functionality and embedded applications





# Address Obsolescence and Prepare for future

- ❑ Chevron Oronite first upgraded existing **legacy** HPM(Coax Based) to EHPM(Ethernet Based), C200 controllers to current, modern C300 technology in order to enhance process control performance and address obsolescence
  - Protect valuable intellectual property
  - Retain control strategies, operator displays, and history/trend information
  - Minimize disruption to plant operation
- ❑ Modernization simultaneously addressed both traditional LCN and modern Experion FTE, C300 and HPM and architecture data flow challenges
- ❑ Honeywell ControlEdge Unit Operations Controller (UOC) will provide a standalone, class-based, virtualized batch system without requiring a separate batch server



# Deploy Virtualization Solutions

- ❑ Virtualization solutions offered a way to preserve and extend investments in decades-old DCS technology
  - Utilize ELCN to modernize LCN assets
  - Choose physical or virtual solutions
  - Reduce overall system “footprint” and much more.....
- ❑ Virtualization improves availability vs. a physical platform and help simplify the control system architecture
- ❑ Controllers in virtual environment is the next big leap



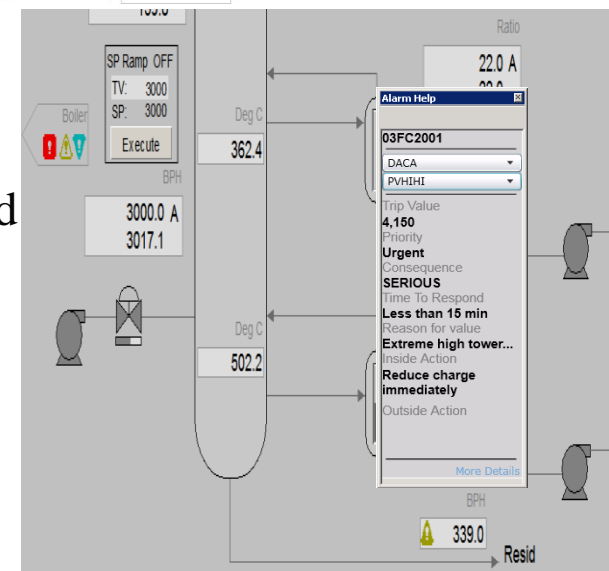
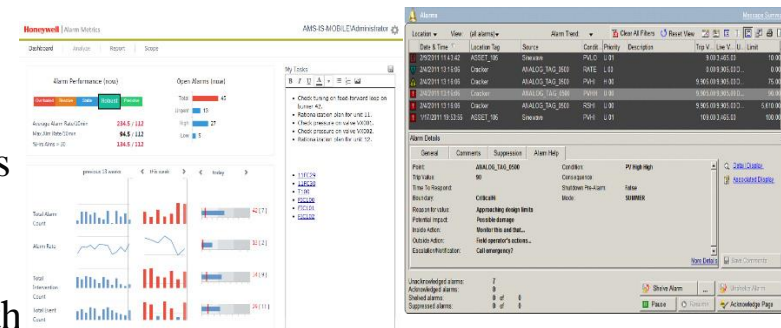
# Alarm and Operations Management

- ❑ Chevron Oronite upgraded their current solution to detect and avert abnormal situations, and implement effective alarm management aligned with industry standards, using Honeywell Dynamo Solutions

- Address alarm configuration problems
- Eliminate alarm floods that overwhelm operators
- Establish alarm philosophy for the plant and redundant alarms
- Enable operator to have more real time view of the actions needed during an event

- ❑ Honeywell DynAMo software will help to seamlessly integrate with the Experion control system and give more Realtime information to operators, with a simplified architecture

- ❑ Chevron Oronite is also embracing the boundary management application from the dynamo suite to alert operators of an abnormal situation before an alarm event occurs



# Focus on Operator Effectiveness and Value Creation

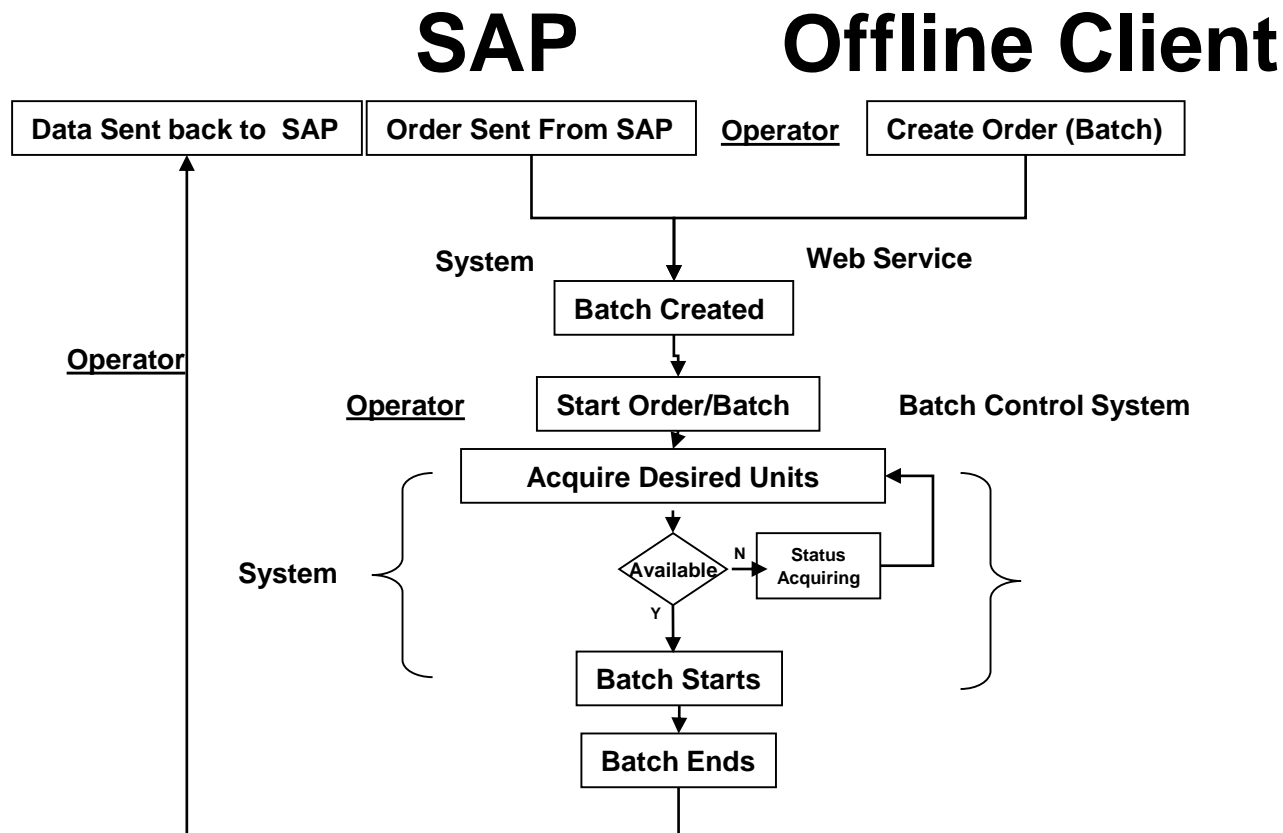
- ❑ High Performance HMI with advance functions
- ❑ Honeywell DynAMo software based Alarm and Boundary Management
- ❑ Procedural Operations
- ❑ Integrating Starlims data into Plant Historian
- ❑ Uniformance Insight including historian HMI for
- ❑ Integrated documentation solutions
- ❑ Batch operation performance reports
- ❑ Futuristic Batch solutions including new visualization
- ❑ Golden / Reference batch
- ❑ Standardized solutions



business users



# System, People, Technology, Data, Integration



## Optimize Management of Change (MOC)

- ❑ Chevron Oronite sought to meet a simple solution to handle critical control system change management challenges within its process control environment
  - Determine interactions with the control system
  - Identify when configuration changes were made
  - Collect and report on system information, configuration history and performance conditions
- ❑ Honeywell Trace data collection software helps Chevron Oronite expand the visibility of configurations while automating the documentation of actions taken by plant workers





# Advantages of Early Adoption

- ❑ By being an early adapter, Chevron Oronite has achieved a flexible and adaptable solution for control technology upgrades
  - Support IT/OT convergence to eliminate boundaries between information and operational technologies
  - Simplify integration/expansion within Experion while maintaining intellectual property
  - Utilize a single, common HMI and unified physical control network
- ❑ Early adoption of new technologies comes with risk, but it can offer significant rewards
- ❑ Plant operators now have a future-ready platform allowing them to stay ahead of the technology curve
- ❑ This paves the way for continuous evolution and next step in this amazing migration journey – Batch upgrade and data driven visualization with new visualization tools providing operator first hand information of what is yet to happen in his process



# Important Lessons Learned

- ❑ Flexibility is essential to executing a modernization program on time and within budget
  - Always base your project planning on known deliverable timelines
  - Don't be overconfident (you will be faced with many unexpected complications)
  - Understand the limitations of your resources (don't become overloaded with too many tasks)
- ❑ Be prepared to modify your strategy as circumstances change, since certain issues will be outside of your control
- ❑ Being an early adapter, sometimes the technology has to be jointly learned by the technology provider and end user (in this case Honeywell and Chevron Oronite)
- ❑ Org Capability
- ❑ Continuous Patches, Hotfixes and Updates
- ❑ Trusted partner and valued relationship comes in very handy





## Conclusion

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- ❑ Chevron Oronite is fostering a culture where automation, operations - OT and IT work together as a collaborative team to significantly improve business results
  - Upgrade technology while harmonizing new and existing assets
  - Increase the life expectancy of installed hardware and software
  - Reduce total cost of ownership with less risk and greater efficiency
- ❑ Experience has shown that lifecycle management is key to a sustainable future



## Conclusion – Key Elements to Success (IMO)

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- ☐ Waiting until product support ends makes migration more challenging
- ☐ Recognizing that workforce entering the market today has a totally different outlook
- ☐ Ensure Lifecycle Solution is in forefront of the planning
- ☐ Solid vision and Planning. Flexibility to recalibrate the plan as needed
- ☐ Resource Availability
- ☐ Funding
- ☐ Buy-in
- ☐ Objectivity
- ☐ Leveraging the Legacy
- ☐ System Integration
- ☐ Risk Mitigation
- ☐ Need-based Solution
- ☐ Always think of Cyber Security and Safety



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## Question & Answer



