The Orion Series and What is Next

Jack Gregg
Director Experion Product Marketing
• What is Experion PKS Orion?
  – Review the Orion objectives
    ♦ The Orion Vision

• Experion PKS Orion - Highlights
  – Engineering
  – Operations
  – SCADA and RTU2020
  – Continuous Evolution

• What is in the final release of Orion?
  – A sneak peek of the next release
What is Orion?

• A Series of Experion PKS releases
  – Each executing on a larger vision
  – Clear objectives for
    • Operations
    • Projects
    • SCADA / RTU
    • Continuous Evolution

• A step change in capabilities!

Orion

Experion Orion Console
The Experion Orion Vision

• An Operator Environment for the 21st Century
  – Context based visualization technology
    ♦ Improved Situational Awareness
  – Integrated Alarm Management
    ♦ Faster Operator Response
  – Integrated Procedures
    ♦ Run the process closer to the limits
  – New Operator Console Furniture with “sit/stand”

Operator Transformation

Last Generation

Contextual Information, Orient & Guide

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The Experion Orion Vision - continued

• Engineering environment for projects in the 21st Century
  – Hardware and software design independence
  – Remote project engineering
  – Simplified and automated IO commissioning
  – Simplified and automated 3rd party package integration
  – Manage risk of modular construction projects
The Experion Orion Vision - continued

• Design a RTU for the digital oil field
  ‒ Extreme environmental specifications
  ‒ Low power requirements
  ‒ Scalable and flexible
  ‒ Flow Calculation Suite and certifications

• Design a SCADA system for the digital oil field
  ‒ Engineering effectiveness for repeated equipment
  ‒ Simple navigation and management of dispersed assets
  ‒ Suite of applications for SCADA markets we serve
  ‒ Simplified integration to 3rd party packages
The Experion Orion Vision - continued

• An integrated Collaborative Environment
  – Consolidated Operations
  – Remote Operations
  – Mobile Operations
  – Collaborative Operations

• Universal Channel Technology
  – Software customization of IO
  – Standardize Cabinets
  – Simplicity in design
  – Remote mountable

• Hardware Independence
  – Standardize cabinets
  – Simplicity in design
  – Remote access with cloud technology
The Experion Orion Vision - continued

- A Continuous Evolutionary approach to migrating legacy systems
  - Protect customers intellectual investments in legacy systems
  - Preserve database and displays while introducing the latest technologies
  - Deliver a modern platform for legacy controllers
  - Integrate HPM as an Experion controller
  - Simplify On Process Migrations
The Experion Orion Series – Highlights

Orion R1
R410
June 2012

Universal IO
Collaboration Station
Experion Batch Manager
Alarm Management Features
SCADA Enhancements
EHPM and ENIM

Orion R2
R430
March 2014

Experion Orion Console
Profibus Enhancements
Ethernet IP Support
SCADA Enhancements
RTU2020
Experion Hiway Bridge

Orion R2+
R431
April 2015

LEAP Late Binding
Universal Remote Modular Cabinet - HazLoc
Experion Orion Console touch panel
Profibus Enhancements
SCADA Enhancements
RTU2020 Expansion IO
Enhanced T-Node
Enhanced Network Bridge

Orion R3

LEAP Automated Device Commissioning
Universal Remote Modular Cabinet – Marine
Advanced HMI Environment
Alarm Management Enhancements
Profit Suite in C300
Ethernet Interface Module
SCADA Enhancements
RTU2020 Redundancy
New Microsoft OS
Enhanced T-Node Phase 2

Operations

Projects
SCADA & RTU
Continuous Evolution
What is Next?
The final release of the Orion Series

2015 Honeywell Users Group Americas
Forty Years of Innovation.
Projects - LEAP
Project Automation Based on Lean Execution
LEAP

Here more about LEAP at 3:00 PM With Paul Hodge and Joe Bastone

- Cloud Engineering enabled by Controller and IO Simulators in Virtual Machines
  - Bring the project to the engineer
  - Configuration Acceptance Test (CAT) can be done in a Cloud, VEP
  - Order production hardware late in the project and eliminate a hardware refresh
- Universal Channel Technology removes the requirement for marshalling
  - Standard cabinets, with Hazardous Location and Marine Certifications, can go in the field
  - Customization is software configurable and hardware independent
  - Automatic Device Commissioning simplifies and self documents late changes
Auto Device Commissioning

Central Control Room

No physical channel assignments required

Detect
Interrogate
Configure
Enable
Document

Virtual Engineering Platform

Control Configuration
Configuration FAT
Alarm Configuration
HMI Configuration

SIMC300
Tagname 1
Tagname 2
Tagname 3
Tagname 4
Tagname n

FI101

32 character tagname for HART 6/7

Universal Cabinet

Control System

FI101

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With traditional marshalling, each loop can have 15+ terminations

Complex marshalling dictates complex documentation

Universal Channel Technology is soft configurable for IO type

Remove “marshalling” and simplify. You can’t make a mistake!

From the factory with Hazardous Location and Marine Certifications!
Universal Remote Modular Cabinet

- Fiber Optic Media Convertors
- Fiber Optic Termination
- Redundant Power Supply
- 2 Redundant Universal I/O Modules – 64 Channels of IO
- Direct Connect to UIO IOTA
- Field Power and Terminations
THE BARRIER Cabinet

• Introducing P&F’s THE BARRIER
  – Compliments Universal Channel Technology
    ◆ Works for both process and safety IO
  – THE BARRIER with “Adaptive Signal Technology”
    ◆ Capable to have 24VDC AI, AO, DI and DO connected IO
    ◆ No dip switches, no configuration
  – Universal Isolator Cabinets
    ◆ 16 barriers with 16 pair prefabricated cable
    ◆ 32 barriers with two 16 prefabricated system cables.
    ◆ 64 barriers with four 16 pair prefabricated cable
  – Environmental Specifications
    ◆ -40C to +70C, same as Universal IO
    ◆ Marine and HazLoc, same as Universal IO

Available Now!
Productivity Enhancements Operations
Operator Touch Panel

• Multi-touch enabled screen with innovative Honeywell software
• More intuitive, direct and faster than existing interface devices such as a mouse and keyboard

• Primary interface for the operator to navigate and make process changes alternative to OEP/IKB
Safety Critical Alarms

- A new category of alarm that provides additional capability
- Safety critical alarm from shutdown system
  - triggers fire fighting, mustering of personal with human life implications
- Experion R440
  - New additional safety critical alarm priority
  - Separate Audible Annunciation
  - Different Color and Icon in Alarm Summary and on HMIWeb Graphics
  - Critical Alarm Color in Station Alarm Indicator

Critical alarms are differentiated with a new icon and color.
What is Profit Controller?
- Model Based Predictive Control & Optimization
  - Patented Range Control Algorithm (RCA)
  - With “Funnel Technology”

What is CEE?
- Control Execution Environment that runs in the C300 and ACE

Why Profit Controller in CEE?
- Optimized Process Performance
- Increase Production
- Increase Stability
- Decrease Costs

Key Honeywell Products
- Profit® Controller
- Profit® Stepper
- Profit® Suite Engineering Studio
- Profit® Suite Operator Station

Capacity & Performance

<table>
<thead>
<tr>
<th></th>
<th>C300</th>
<th>ACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max # MPC per controller</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Max MPC size (CV x MV)</td>
<td>10 x 5</td>
<td>40 x 20</td>
</tr>
<tr>
<td>Execution rates</td>
<td>1 sec to 1 minute</td>
<td>5 sec to 1 minute</td>
</tr>
</tbody>
</table>
Industry Standards and Interoperability
New Interface Module
New Standards and Updates
1. PGM can scan and cache the following HART data:
   - Tag, ID, message, descriptor, range
   - Device & Dynamic variables,
   - Standard and Device-specific diagnostics

2. Users can read and write selected DPV1 data resident in DP slaves.

DP network Time-Synchronization, DPV1 alarms & diagnostics

FDM with a “Native” PGM Interface.
   - HART – Over PROFIBUS Profile
   - Auto Discovery of PROFIBUS Devices
   - Auto Update of Devices
   - Native Health Status Support

Other Third party comp.
Ethernet Interface Module (EIM)

- A new Series C Hardware Platform
- Based on Common Platform
- Full redundancy
  - Module
  - Network
- Embedded Control Firewall functionality
- Support for Level -0 isolated I/O Networks
- Extended temperature range: (-40C to 70C)
- Mountable inside and outside of Series C cabinets

Support for multiple C300s per Ethernet Interface Module = 5
Support for multiple Ethernet Interface Modules per C300 = 5
Flexibility to allow one C300 to connect to multiple EIP networks and specified EIP nodes
Flexibility to allow multiple C300s to connect to a single EIP network and specified EIP nodes

One Hardware Module • Multiple Personalities
IEC61850 Power Management with EIM

- **IEC 61850 for Power Management**
  - IEC61850 MMS support carried forward
  - GOOSE Support with 100 ms loop latency
    - 100 ms = EIM input to C300 to EIM output
  - GOOSE Support for C300
  - Full IED SOE support 10ms with Event Recovery
  - Supports PRP Network without REDBOX
  - Support EIM Redundancy with Private Path

- **Experion with direct access to IED data**
  - Current & voltage measurements, status, interlocking information etc.
  - Intelligent Electronic Device (IED) representation
  - Transmitting / receiving of IEDs open and close commands
  - Experion system features - graphics, faceplates, alarms and event lists, including time-stamped, alarms / events (SOE) and historian
**Ethernet IP (EIP) with EIM**

- **Ethernet IP**
  - Supports Level 0 IO Networks
  - Support EIM Redundancy with Private Path
  - Capacity and performance improvements
  - C300 to ControlLogix…support for Scalar Tags
  - Easily add new EIP devices with EDS files

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<table>
<thead>
<tr>
<th>Description</th>
<th>R430</th>
<th>R440</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum FTE IP addresses per Server Cluster</td>
<td>200</td>
<td>Release max</td>
</tr>
<tr>
<td>Maximum Ethernet/IP IP addresses per Server Cluster</td>
<td>200</td>
<td>Aggregate max</td>
</tr>
<tr>
<td>Maximum Ethernet/IP IP addresses per C300 ….. EIP nodes (motors, drives, I/O, etc.) + UDT points in ControlLogix processors</td>
<td>70</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
2015 Honeywell Users Group Americas
Forty Years of Innovation.

SCADA and RTU2020
Display Builder Management of Change

• **For custom displays**
  – HMI Web Display Builder
  – New display repository
    - Version control

• **Key benefit:** Provides better management of change (MOC)

• **Supports API 1168:**
  Recommended Practice for Pipeline Control Room Management
Experion - RTU2020 Efficiencies

- Enhanced RTU2020 configuration
  - Integrated SCADA point building
  - Connections between RTU Builder & Quick Builder

- Operation and maintenance efficiencies
  - RTU2020 standard system displays and in System Status Display
Honeywell RTU2020: Perfect Vision

- Flexible Communications
- Flow Calculations
- Harsh Environment
- Modern Processor
- 70°
- 75°
- HART Enabled Onboard I/O
- Efficient Wiring
- Lowest Power Consumption

Perfect, 20/20 Vision with RTU2020
Continuous Evolution
Experion and TDC / TPS Unification
Enhanced Network Bridge

ENB Key Functions:
- Hybrid (E)UCN – coax/FTE
- Enhanced Network Bridge (ENB)
- On-process HPM-EHPM upgrades
- Stepwise UCN nodes upgrades
- Peer-to-peer capabilities

Release requirements:
- TPN > R686.1
- Experion >R431.3 / Q4 2015

Incremental & On-Process Migration with ENB
Updating the Platform and Protecting the IP Investment

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Controller</td>
<td>C300 w/ UHIO</td>
</tr>
<tr>
<td>HPM</td>
<td>EHPM</td>
</tr>
<tr>
<td>LM</td>
<td>ELMM</td>
</tr>
<tr>
<td>FSC</td>
<td>SM</td>
</tr>
<tr>
<td>Triconex</td>
<td>TCMI (Q1 2017)</td>
</tr>
</tbody>
</table>

Triconex connection on EUCN
1Q2017 –TCMI (Triconex Comm. Module Interface) – TPN 686.7
Apply Virtualization Technology Across Experion TPS Nodes
Experion PKS Infrastructure
New Microsoft Operating System
• New Microsoft Operating System for Experion PKS

“Honeywell intends to adopt new Windows client and server operating systems for Experion that give the customer the longest lifecycle, while giving reasonable time to plan and execute migrations of existing installations.

While detailed evaluations of pre-release Microsoft OS software are ongoing and proceeding well, final products will not be available in time to complete comprehensive testing with the initial R440 release.

Current plans are focused on an update to R440 that supports the new client and server operating systems