Evolution of Process Control Networks within the Unified TPS/Experion Control Environment

Rich Clark and Marjorie Ochsner
Freedom to Upgrade

• Use Existing Assets as a Foundation for Innovation
• Improve Agility and Performance
• Opens the door to Experion Upgrades
• Enables Virtualization
Continuous Innovation

- Modernize
  - Optimize TCO
  - Higher Reliability and Integrity
  - Interoperable Operations and Engineering
  - Improve Performance and Business Results

- Protect
  - Existing Production
  - Intellectual Property
    - Applications
    - Graphics
    - System Namespace
    - Application Relationships

- Limit Risk & Maintain Safety
  - Stepwise
  - On Process
  - Retain Operator Experience, Procedures
  - Standard Operating Environment
  - Leverage Infrastructure

Focus on Improvements, Not Re-engineering
TDC/TPS Evolution to Experion

Experion Orion Console
Experion Station –TPS
GUS Application

Experion Server -TPS

ACE-T / E-APP

Application Module

Hiway Gateway

History Module

Network Interface Module

Local Control Network

Level 2 Switch

Fault Tolerant Ethernet

Universal Control Network

ENIM Network Interface Module

EHPM

EHMM

Logic Manager

Control Firewall

Basic Controller C300-UHIO

Basic Hiway

Hiway Gateway

Safety Manager

C300

C300

C300

Firewall

Firewall

Firewall
FTE Data Access Offloads the LCN

History Module

Local Control Network

Experion Orion Console
Experion Station –TPS
GUS Application

ACE-T / E-APP

Application Module

Experion Server -TPS

Peer-to-Peer
Below the Firewall

C300

C300-UHIO

Control Firewall

Safety Manager

ELMM

ENIM

EHPM

Fault Tolerant Ethernet

Level 2 Switch

Firewall
TPS Merges into Experion

Fault-tolerant Ethernet

Experion Station

EHPM

C300

ELMM

Safety Manager

Vision

TPS Components Gradually Melt into Experion
Incremental UCN Modernization
Incremental UCN Modernization

• Step-wise incremental UCN modernization
• Non-disruptive and On-process infrastructure setup – hybrid UCN
• On-process HPM to EHPM upgrades
• Peer-to-peer between coax and FTE based devices on the hybrid UCN

No Changes to Graphics or Applications
Step 1 – Setup of Hybrid UCN (NIM to ENB upgrade)

OPM & step-wise upgrades using ENB
End 2015 – ENB (Enhanced Network Bridge)
TPN686.1 ; EPKS R431.3

Reduced Downtime by On-Process NIM-ENB upgrades
Start with - Backup NIM to ENB upgrade

Set FTE device index

1. Set FTE device index
2. Set EUCN address
3. Install ENB in 3-slot card file
   - Top - EPNI2 board
   - Middle - EPNI board
   - Bottom - K4LCN board
4. Install boards at 3-slot - rear
   - Top - EPNI2 I/O (FTE)
   - Middle – NIM MODEM (coax)
   - Bottom – CLCN PWA (coax)
5. Connect cables

Check whether your NIM has K4LCN board installed
Primary NIM to ENB upgrade

**Front View**

- ENIM node 17 - EUCN 4
- ENB node 30 – (E)UCN 10

**Rear View**

- EUCN 10 FTE
- UCN 10 coax
Step 2 – On-process HPM to EHPM upgrades

Reduced Downtime by On-Process HPM-EHPM upgrades

© 2015 Honeywell International All Rights Reserved
Set FTE device index

1. Set FTE device index
2. Install EHPM Communication Control hardware
3. Install EHPM Ethernet INTF
4. Connect Ethernet cables
Step 3 – Upgrade FSC controllers to SM on EUCN

No application changes for FSC - SM on EUCN upgrades
Step 4 – Triconex-SMM to Triconex-TCMI on EUCN upgrade

No safety application changes
Step 5 – Transfer ENB to ENIM

ENB to ENIM transfer
Disconnect coax UCN cables

Step-wise control network upgrade completion

© 2015 Honeywell International All Rights Reserved
Summary - UCN Modernization

1. On Process – NIM to ENB upgrade
2. On Process – HPM to EHPM upgrade
3. Off Process – PM/APM to EHPM upgrade
4. Off Process – FSC to SM on EUCN upgrade
5. Off Process – Triconex SMM to Triconex TCMI
6. On Process – Transition from ENB to ENIM
Honeywell’s Commitment

• Continuous technology Innovation
• No need to “rip and replace”
• Support for legacy equipment
• Protect intellectual property
More Continuous Innovation!

- **Technology Sessions – Monday Afternoon**
  - Evolution of Process Control Networks Within the Unified TPS/Experion Control Environment
  - Enable Integration and Virtualization with Enhanced TPS Upgrade Solutions
  - Transform TDC 2000 Data Hiway to Experion PKS While Retaining Graphics, Applications and Wiring

- **Migration Roundtable Tuesday 1:50pm – 2:50pm**

- **Live Demo Sessions - Freesia Room**
  - Migrate from C200 to C300
    - Tuesday June 23 @ 9am; Wednesday June 24 @ 11:30am
  - Migrate from Hiway to C300 Hotcutover (Also features the ETN!)
    - Tuesday June 23 @ 11am; Wednesday June 24 @ 9:30am

- **Service Advisory Council – Tuesday 3:10pm Grand Oaks Ballroom**
  - Solution Enhancement & Support Program (SESP)
  - Leveraging Mobility Technologies to Improve System Performance

- **Migration Training – Thursday 1pm**
Honeywell

Come See More
Continuous Innovation
in the Demo Room!