Plant Process Computer Pervasiveness
"Try Walking In My Shoes"

Organizational demands on PPC

- Operations enhancements
- EP demands/drills
- Training dept demands
- Security/Cyber Controls – Stigs standards
- Simulator enhancements driving PPC demand
- Engineering is driving changes to usage and interfacing systems of PPC
- Software apps and hardware impacts

What is the Saturation point?

- Is more digital interconnectivity and PPC digitalization adding effectiveness? Enhancing processes?

- Does law of diminishing returns apply to PPC projects, resource management and over pervasive improvements?

Plus of pervasiveness

- Sharing of data
- Organizational efficiencies
- Less diversity of hardware and software
- Training savings on one platform
- Compatibility for obsolescence
- Fidelity
- Ease of interface

Minus of pervasiveness

- One PPC change impacts many displays
- One change impacts several organizational changes
- More resources needed for updates
- Documentation changes
- Cyber security impacts

Just asking the question

- I am not stating that we as PPC oversight are headed in the wrong direction
- Not suggesting there is a “Silver Bullet”
- Just asking for dialogue surrounding sustaining smart management of PPC’s at our nuclear sites.

Challenge to you!

- Willingness to have an open dialogue
- Open mind to challenge more digital PPC is better
- Find the right balance for the organizational information needs of the particular site.
- Balance the yes we can, with the no we cannot because of future challenges it might create.

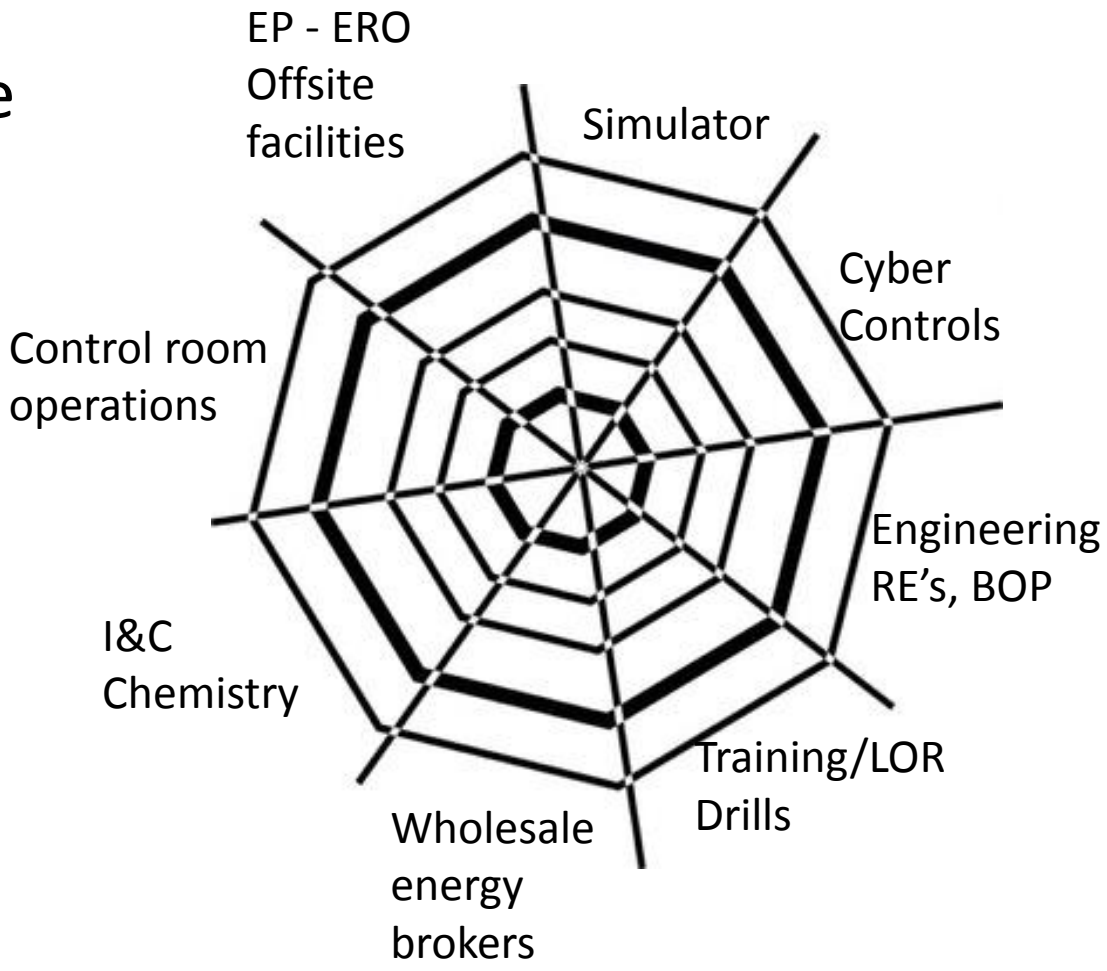
Pervasiveness of information Good or Bad? For Plant Process Computing?

- How many interconnecting applications and processes are too many

- When do we reach a balance of compatibility with hardware and apps in PPC support

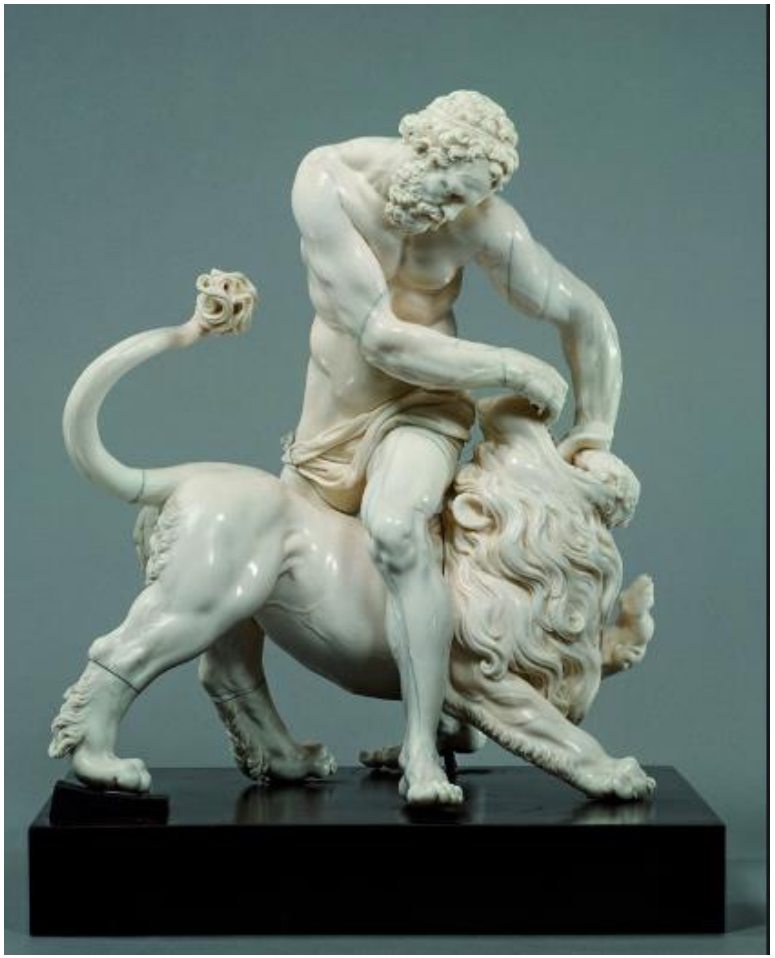
Catch 22 of the integrated spider Web
“The Domino effect”

Hardware



SOFTWARE
APPS

How many Lions can we handle?



The first step to fixing any future complex compatibility issue is “recognizing” you have an issue .

Sometimes with pervasiveness we don’t recognize the future issues which might come down the pipe.

Reliable operation sometimes propagates complacency and lack of strategic planning.

Life Cycle management
and
Obsolescence management

- Only part of the answer
- How do we focus on all the organizations impacted?
- How do we keep a balance of compatibility with technology and process impacts?

‘The Times They Are A Changin'

Driving forces

- Nuclear Promise
- Organizational effectiveness
- Interconnecting PPC organizational information
- Balancing Cyber Security of information and effective use across the organization
- Using information for work destruction and analytics

Asking many questions on PPC refresh strategies?

- Past refresh strategies (Complacency propagated from reliability) big mistake!
- Present refresh strategies - are they including all organization that have a touching square?
- Future strategies - are they including interconnectivity of organizational information?

“Now is no time to think of what you do not have. Think of what you can do with what there is."

MacGyver Knowledge Factor

A New type of Skill Set in the PPC support individual is born.

- Years later, people still refer to MacGyver when using chewing gum, a paper clip, duct tape, or whatever is simple and handy to solve a pressing problem

What does your refresh strategy feel like? What would you prefer?

- A Maze

- A Labyrinth

tarving the future to meet the present is a mistake

"Obsolescence and stagnation"

Plant Process Delivering the Nuclear Promise?

How do you move from Obsolescence to digitalization and predictive analysis?

Barriers in capital exist to move to next technology but operational risk from obsolescence drives strategy!

We want to encourage bold ideas, not just tweak current processes," Pacher said (Senior VP Ginna)

Obsolescence is becoming more complex Digital, Networked I&C components, Cyber

- A lot of NPPs are currently operating using Networked components, programmable electronic systems and equipment.

- Future NPP and retrofit projects will also use these types of devices, which are the state of the art solution for I&C. The lifecycle of such equipment has to be considered taking account of the specific characteristics of informatics technology (IT) and not be limited to the aspect of ageing of components (hardware). Some aspects of this are mentioned below.

Newest Complexity elements of Obsolescence

- Cyber security and CDA implications

- Rapid evolutions in the technology lead to a shortened life cycle for the commercial availability of processors, memories and peripheral devices.

Part Of The I/O PPC Problem

Operations - The I&C system isn't working…..again!"

Management - "Obsolescence management"
Or
"FIN TEAM fix"

Unless the malfunction results in LCO or prevents power ascension what is management's motivation for updating the Obsolete I&C systems?

The largest single contributor to the fragility of nuclear industry I&C systems today is the remarkable ability of plant staff to repeatedly find temporary solutions to the endemic issues they encounter in these aging systems. The ability of plant staff to remedy issues and the plants' ability to temporarily sustain operation are the main reasons that many I&C systems across the industry are so intermittently failing.

Ginna's Barriers to Predictive analysis and Digitalization

- No Data Historian
- Limited Archive space
- 1990s Unix PPC
- 1985 7400 RTP I/O
- End of life PDN Cisco switches
- End of life workstations
- 1990 SimPPC used for training and EP drills

USER CENTERED DESIGN

"Innovation"

"May be the next big answer to some of our obsolescence management strategies"

Innovation refers to the introduction of a new product or service – or "a new way of doing something." Innovation also includes improving an existing product or service to be faster, cheaper or easier to use".

User Centered Knowledge

Retaining expertise, and moreover creating a transmission of expertise, to counter the retirement of the original designers of the older I&C and IT will become more and more difficult in the future.

*Important theme - creating expertise to counter obsolescence related to obsolete Informatics and technology

“Bold Ideas in Overcoming the Software-Hardware Catch 22”

- SPING Project
- I/O Concentrator
- Cyber Controls project
- Open Phase project
- Beacon Core monitoring
- Glass top Simulator
- ZION PI project
- User Centered Design Pilot

Ginna's demand for PPC information

- EP Drills
- Layer 3 to Layer 4 PPC demand
- Obsolescence replacements for Radiation indication

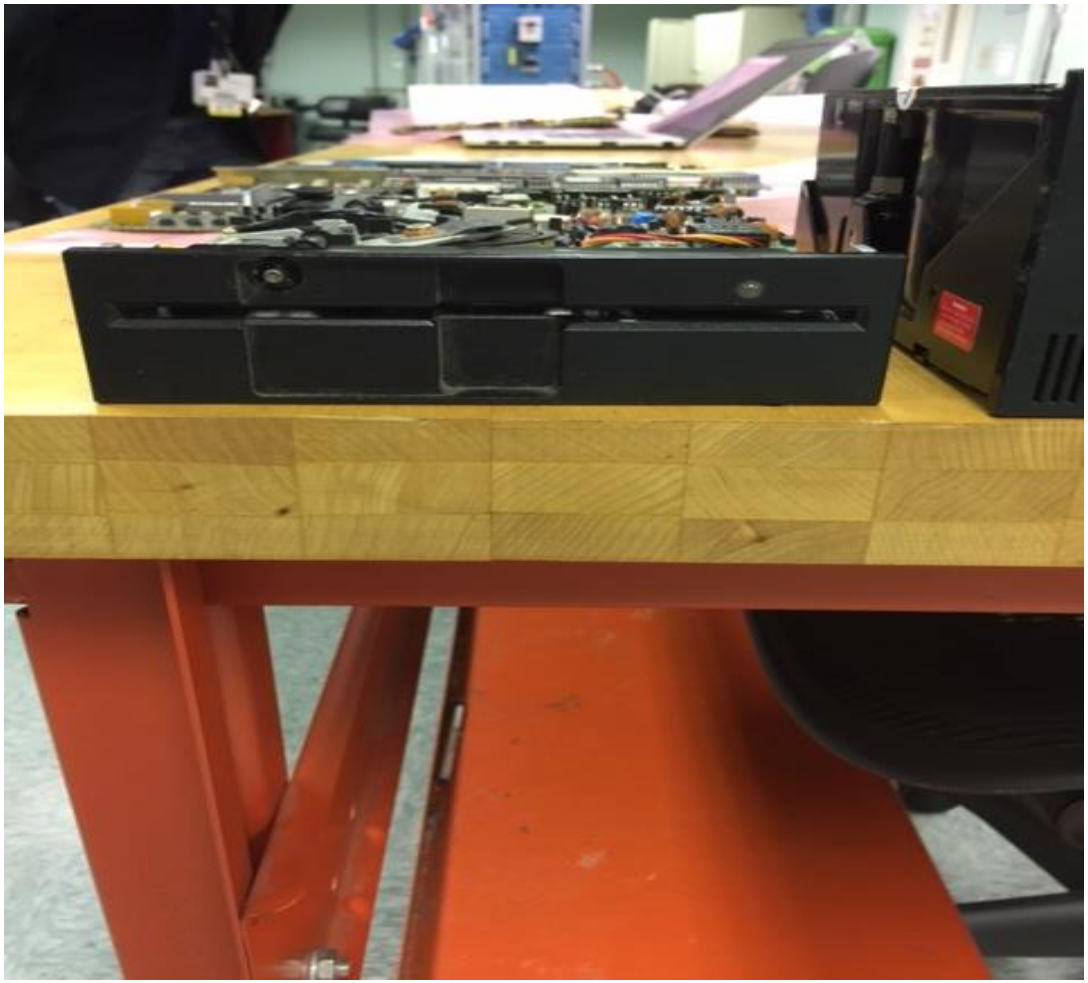
Glass Top Simulator

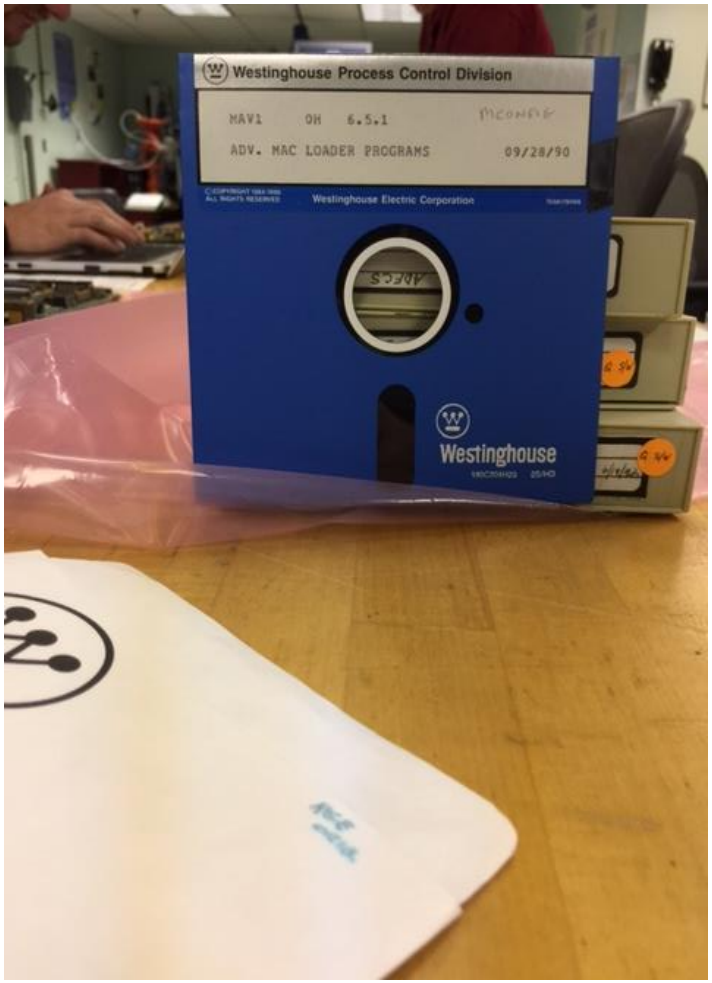
- Solve EP display issues
- Solve training scheduling issues with Licensing
- Predictive troubleshooting EP scenarios during drills

Ginna refresh of PPC I/O
RTP 7400 to RTP 3000

- Scientech Support Hardware
- Scientech Support on RTP point transition interface to hardware.
- Scientech RTP Feedwater I/O support

Feedwater system Ginna





Develop Predictive platform
User Centered Asset Framework Pilot

- Develop platform for predictive analysis with End users, System engineers, Reactor engineers.
- PI Asset Framework