Kent Morrisey, Business Development Manager – Bailey Systems
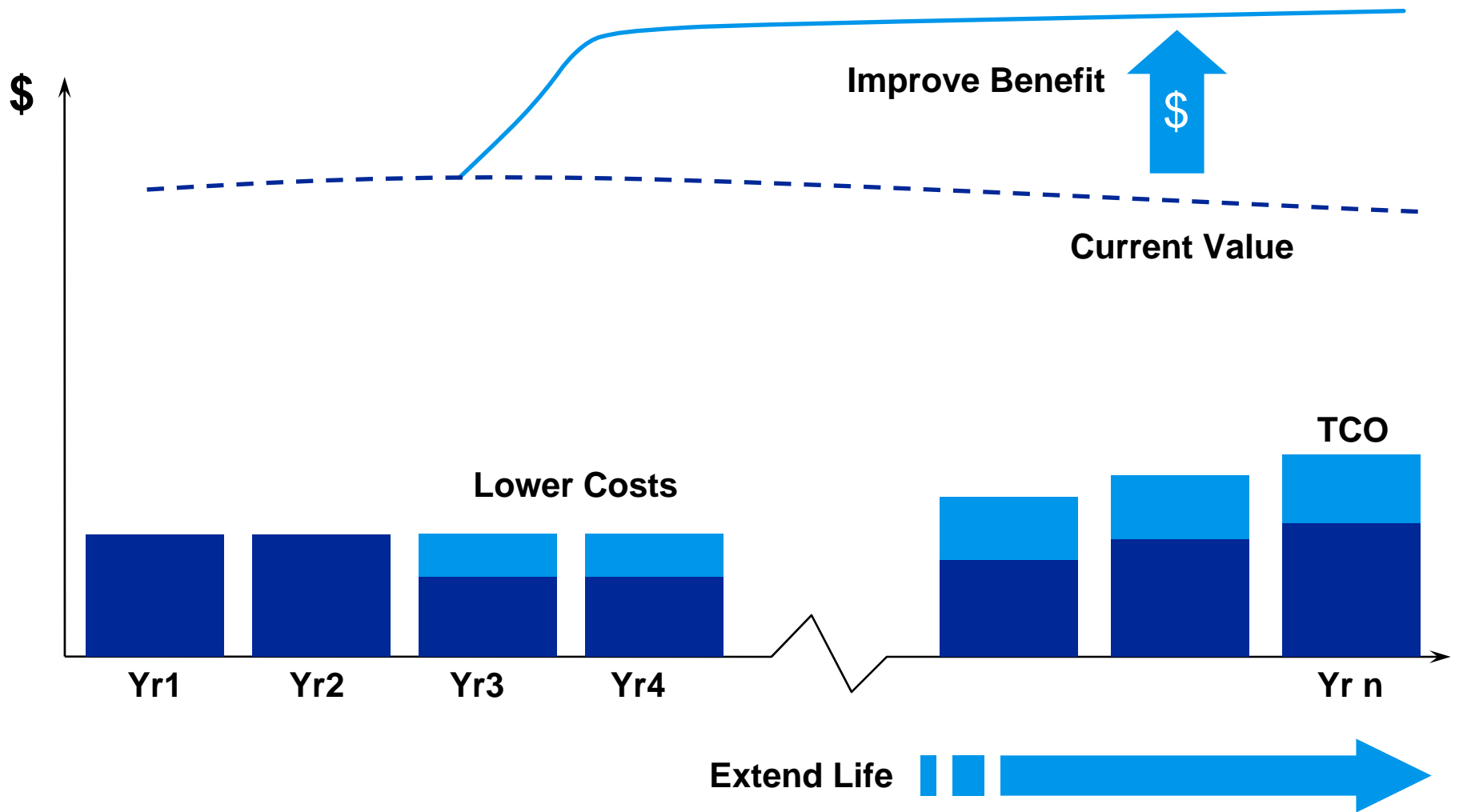
Evolution Planning Considerations

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Region
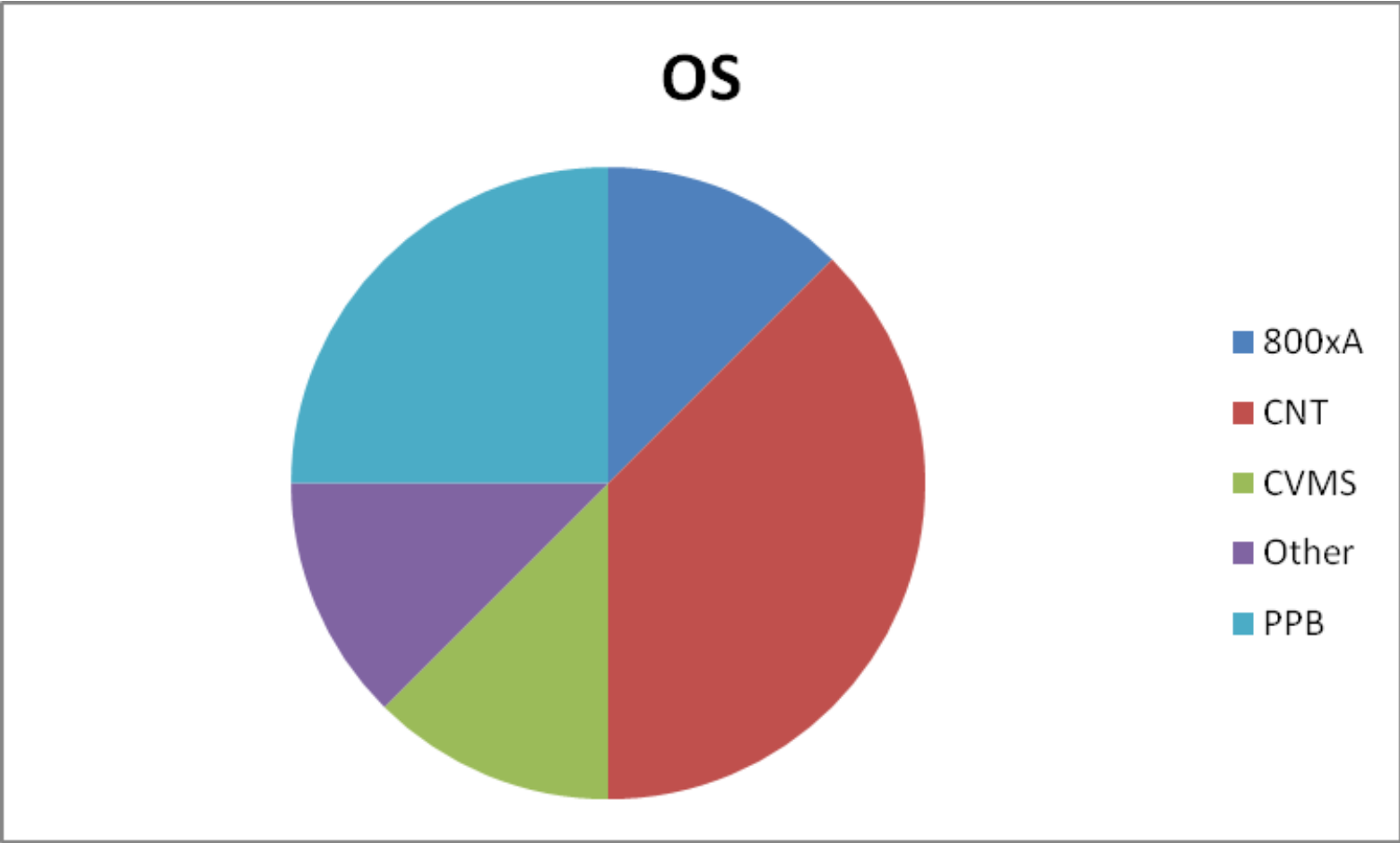
How to Maintain an aging automation system…..
Objectives

$

Improve Benefit

$

Current Value

TCO

Lower Costs

Yr1   Yr2   Yr3   Yr4   Yr n

Extend Life

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Strategy
Evolution Without Obsolescence

✓ Maximum Value

✓ Minimum Risk

✓ Flawless Execution
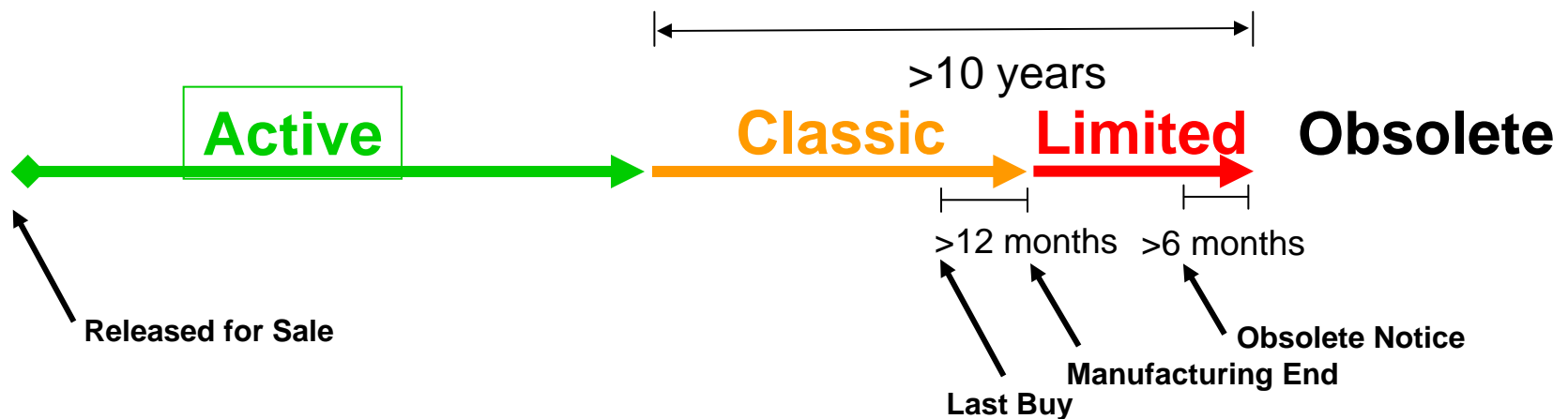

- Automation solutions that <u>sustain</u> and <u>extend</u> your control system to meet today's business challenges

    - Investment Protection

        - Intellectual Property

        - Capital Equipment

    - Incremental, stepwise execution

    - Realized in ABB's policies, programs, processes and tools

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Evolution without Obsolescence
Life Cycle Management Overview

- Underlying products are sustained by defined life cycle phases
  - Active until functional equivalent
  - Defines minimum 10 years of support after removal from "Active" sales
  - Life cycle changes documented 12 - 18 months in advance
- Active – actively sold
- Classic – manufactured and maintained
- Limited – serviced
- Obsolete – normal support not available

>10 years

Active   **Classic**   **Limited**   **Obsolete**

>12 months   >6 months

Released for Sale

Last Buy

Manufacturing End

Obsolete Notice

Automation Sentinel
Delivering on the Lifecycle Policy

Software support to match customers' system lifecycle needs

- System Software Support
  - Software license updates for new releases
  - Access to System 800xA and S+ Operations Software
  - Software performance improvements and anomaly fixes on current releases
- On-line access (24x365)
  - Software downloads
  - User documentation
  - Release notes and workarounds
  - Status of MS security patch validation
  - Validated PC hardware for 800xA software versions
- Technical phone support
- Auto-notifications
  - Subscription renewal notices
  - Software Version release notices

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Automation Sentinel
Evolution Enabler

- Provides the evolution path to System 800xA or Symphony Plus software

- Delivers functional equivalent at 100% license discount

- Significant Savings (> 50%) vs Purchase of New Software

- Includes Controller Software Licenses

  - All ABB systems, all generations

    - Consoles

    - Historians

    - Batch

    - Engineering

    - Control

System 800xA

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Evolution Planning from ABB
On-going collaborative process

Evolution planning requires continuous re-evaluation of business needs and solutions

ABC, Inc. Harmony System Overview

Installed system description:		Lifecycle Status	Support Status	Comments
Controller type:	INFI 90 Controllers (MFP)	Limited	OK	MFP02 & 03 controller pairs can be readily replaced with BRC300 or BRC400 pairs.
I/O type:	Rack I/O	Active	OK	While some installed INFI90 Rack I/O modules are in Limited phase, Active-phase direct-replacement modules are available.
	Network 90 I/O	Limited	OK	Active-phase direct-replacement modules are available.
System Communications:	INFINET	Active	OK	Active-phase replacements are available for all installed comm. equipment - slight difference in architecture (i.e.: MPI no longer required.).
Cabinet Power Supplies:	INFI 90 Power System (MPS1)	Limited	Evolution Recommended	Most MPS1 components are no longer manufactured. Upgrades to MPSIII are strongly recommended.
Engineering Tools:	WinTools	Limited	Evolution Recommended	Support for WinTools software effectively ended in 2006. Users are strongly encouraged to move all WinTools-based configurations to Composer.
Operator Workstations:	OIS 20 Series	Limited	Evolution Recommended	OIS 20 was removed from sale in 1999. Recommend evolution to 800xA Process Portal.
	LAN 90 PCView	Classic	Evolution Recommended	Software will be in classic phase through 2010. Recommend maintaining software at latest revision, stocking sufficient hardware spares and planning for evolution to 800xA Process Portal.

- An ongoing, collaborative process between ABB and our system owners
  - Identifies customer's business needs, goals, and priorities
  - Results in short and long term roadmap for system enhancement and maintenance
  - Continuous re-evaluation: business needs and solutions
- Customer Benefits:
  - Insight into process/system risk areas
  - Identification of new system functionality and solutions to extend the value of the system to meet customer's business goals
  - Known timing for evolution action (2-5 years); assist budgeting process

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System Support Considerations
Typical

- Operator Software

- Engineering Software

- Controllers

- Power Supplies

- System Communication

- I/O

- Spare Parts

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System Support Considerations
Priorities are Dependent

- Are Parts available only on a Repair basis?

- Are Spare parts needs met?

- Are >10 year old Power supplies in Service?

  - Especially Net 90 Supplies

- Is the Operator Station OS still supported by Mfc?

- Is the Operator Station HW still current?

- Are Communications Infinet? Controlway?

  - Not Plant Loop nor Super Loop

- Is Controller Utilization >80%?

- Is Software at latest version?

- Do IO modules draw high current?

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System Support Considerations
Best Practices

- Assess

- Evaluate

- Plan

- Justify

- Execute

- Periodically Monitor / Update / Revise

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Evolution Case Study

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Evolution Case Study
Agenda

- System Lifecycle Status - 2008

- Recommendations

- Actions to Date

- Future Plans

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Harmony System Overview

Installed system description:		Lifecycle Status	Support Status	Comments
Operator Workstations:	Conductor NT	Active	OK	Recommend maintaining software at latest revision or evolution to 800xA Process Portal for additional functionality.
Cabinet Power Supplies:	INFI 90 Power System (MPS1)	Limited	Evolution Recommended	Most MPS1 components are no longer manufactured. Upgrades to MPSIII are strongly recommended.
Cabinet Power Supplies:	Symphony Modular Power System (MPSIII)	Active	OK	Recommend continuing evolution of MPSI to MPSIII
System Communications:	INFINET	Active	OK	Active-phase replacements are available for all installed comm. equipment - slight difference in architecture (i.e.: MPI no longer req'd.).
Controllers:	Network 90 Controllers	Limited	Evolution Recommended	MFC controller pairs can be readily replaced with BRC300 or BRC400 pairs.

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Controllers:	INFI 90 Controllers (MFP)	Limited	Evolution Recommended	MFP controller pairs can be readily replaced with BRC300 or BRC400 pairs.
Controllers:	Bridge Controllers (BRC)	Active	OK	The BRC family of controllers will be active until at least the year 2015.
I/O:	INFI90/ Symphony Rack I/O	Active	OK	While some installed INFI90 Rack I/O modules are in Limited phase, Active-phase direct-replacement modules are available.
I/O:	Infi90 Termination Units	Active	OK	
Engineering Tools:	Composer	Active	OK	Composer will be active until at least 2015.

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DCS Component	Qty.	Existing	Support Status	Evolution Path	Comments
Power	9	IEPAS01	Evolution Recommended	MPSIII	All MPSI components are in Limited status. Recommend upgrades to MPSIII. Note: IEPAS02 is currently available.
Power	23	IEPAS02	Evolution Recommended	MPSIII	
Power	2	MPSIII	OK	N/A	
Human System Interface	3/6	Conductor NT	OK	System 800xA	
Engineering Tools	1	Composer	OK	N/A	
Controllers	8	BRC100	OK	BRC300	BRC100 is in limited status due to component availability. Recommend planned evolution to BRC300 (in pairs).
Controllers	10	IMMFP01/11	Evolution Recommended	BRC300/400	Replace (in pairs) with BRC300 or 400 as failures occur.
Controllers	1	IMMFC02	Evolution Recommended	BRC300/400	Evolve to BRC300/400. MFC's are in supported on a repair only basis. Multiple MFC's may be consolidated into one BRC.
Controllers	5	IMMFC05			

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DCS Component	Qty.	Existing	Support Status	Evolution Path	Comments
Control Network	13	INNIS01/11	OK	INNIS21	Replace as Failures occur
Control Network	9	INNPM01/11	OK	INNPM12	Replace as Failures occur
Control Network	4	INICT03A	OK	INICT13A	INICT13 does not require MPI but INNIS21 is required in ICT13-based ICI03
Control Network	4	IMMPI01	OK	INICT13A	INICT13 does not require MPI
Control Network	1	NSPM01	Evolution Recommended	INCPM02	Evolution recommended only if this functionality is still required.
Rack I/O	3	IMASI02	OK	IMFEC12	FEC12 is a functional replacement for the ASI02
Rack I/O	15	IMASI03/13	OK	IMASI23	ASI23 is a functional replacement for the ASI03 (assuming ASI03 is used for thermocouple or RTD inputs - if not, the ASI can be replaced with the FEC12)
Rack I/O	24	IMASI23	OK	N/A	
Rack I/O	69	IMCIS02	OK	IMCIS22	CIS22 is a functional replacement for the CSI02
Rack I/O	77	IMCIS22	OK	N/A	
Rack I/O	1	IMDSM04	OK	N/A	
Rack I/O	31	IEMMU21	OK	N/A	

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Evolution Plan
Recommendations

- **Immediate**

  - Assure Conductor NT software is covered by the ABB Automation Sentinel software maintenance and evolution program.

  - Begin a managed, pair-by-pair evolution program for the MFC controllers to BRC300/400 controllers.

- **1-3 Years**

  - Plan to evolve MPS1 Power Systems to MPS3.

  - Begin a managed, pair-by-pair evolution program for the MFP controllers to BRC300/400 controllers.

- **3-5 Years**

  - Begin or continue planning the evolution of Conductor NT software to System 800xA Process Portal or S+ Operations

- **5-10 Years**

  - Continue yearly evolution planning paying particular attention to new technologies and features as they are introduced in the ABB Symphony/Harmony and System 800xA product lines.

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Evolution Plan
Actions to Date

- **Immediate**
  - Assure Conductor NT software is covered by the ABB Automation Sentinel software maintenance and evolution program. Subscribed to Sentinel and upgraded CNT to latest version
  - Begin a managed, pair-by-pair evolution program for the MFC controllers to BRC300/400 controllers. Budgeted for 2010 turnaround.

- **1-3 Years**
  - Plan to evolve MPS1 Power Systems to MPS3. All (8) Cabinets upgraded to MPS 3 in 2010.
  - Begin a managed, pair-by-pair evolution program for the MFP controllers to BRC300/400 controllers. 9 BRC pairs installed in 2010.

- **3-5 Years**
  - Begin or continue planning the evolution of Conductor NT software to System 800xA Process Portal. Proposed upgrade to 800xA.

- **5-10 Years**
  - Continue yearly evolution planning paying particular attention to new technologies and features as they are introduced in the ABB Symphony/Harmony and System 800xA product lines.

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Evolution Plan
Actions to Date (cont.)

- Safety System Application Purchased in 2009

- SIL Rated AC800M Controllers

- S800 I/O

- System 800xA HMI

- Potential Future interface into Plant wide System 800xA Operator Station

- Implemented HPG Connection between AC800M and Harmony 2009

- Implemented HPG to Compressor PLC

- Upgraded NPM firmware under Sentinel

- Added Rack PCU Cabinet and PC Cabinet

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Evolution Plan
Future Plans

- Upgrade CNT to System 800xA HMI

- Continue with Sentinel

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Value Proposition

Controllers -> BRC	
1	Faster, more powerful controller processor will lower utilization and allow for logic expansion.
2	Faster, more powerful processor provides faster control execution rate that can result in increased process production depending on the application.
3	Ability to utilize low cost, flexible S800 I/O for expansions.
4	Like in kind replacement with little or no Re-engineering required. (Intellectual investment is maintained 100%)
5	Ability to consolidate logic from Multiple Processors into new BRC reduces upgrade cost and maintenance.
6	BRC 400 offers 30000 function block capacity; 3 times the capacity for 15% greater price.

MPS I -> MPS III Power Supplies	
1	Extends power supply life another 7-10 years
2	Reduced footprint may provide additional cabinet space
3	Increases system reliability
4	Cost effective solution vs investment in existing supplies

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Value Proposition

Sentinel Program	
1	Can be applied to the existing system to provide software upgrades to System 800xA
2	Ongoing software updates including the 800xA Process Portal and Composer software
3	Firmware updates and chips
4	Supportline for assistance in loading software
5	Solutionsbank subscription for access to patches and online documentation

Operator Console -> 800xA Process Portal	
1	Opportunity to review current graphics utilization and presentation and reduce/consolidate. Leads to reduced cost/effort to maintain and improved operations.
2	Personalized workplaces to meet the needs of Operations, Engineering, Maintenance and Management.
3	PC based hardware and software continues effective use of maintenance investment
4	Graphics conversion maintains years of prior intellectual investment.
5	Utilize Asset Optimization reduces annual maintenance costs. (Predictive/preventive .v. reactive maintenance)
6	Capability to interface to Business systems can dramatically improve enterprise automation
7	Provides Standardization to one common Workplace over all ABB plant control systems.
8	With PLC Connect can provide one common Workplace over all plant control systems.

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