System Upgrade or Replacement: How to make the Right Decision

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Agenda

- Prerequisite – Perform Assessment
- Reasons to Upgrade
- Reasons to Replace
- Case Study: Company X
- Case Study: Company Y
• Prerequisite – Perform Assessment
  • Reasons to Upgrade
  • Reasons to Replace
  • Case Study: Company X
  • Case Study: Company Y
1. Status quo may be an acceptable option
   – No action required
2. Determined that a change is needed
   a. Minor -> Upgrade is most likely a choice
   b. Major -> Consider upgrade or replacement
**System Assessment: Something’s wrong?**

- The current system no longer meets business “needs”
  - Performance no longer adequate – as the business grows, point counts, number of users, and increased application demands take their toll on system performance
  - New and/or changing market and regulatory requirements
  - New “methods” or “processes” required for doing business mandating additional and/or more sophisticated applications
- The current system no longer meets IT “needs”
- Hardware limitations
  - System architecture – distributed vs. centralized, lack of adequate QA/Test or Backup systems
  - Equipment age and vendor support – as hardware ages, its reliability declines and maintenance costs increase
  - Expansion capabilities – cpu, disk and/or memory limitations can restrict further growth
- SCADA vendor software maintenance an support – No longer have access to adequate resources trained on this technology
- New “security” requirements
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Upgrade vs. Replacement

- Why?
- Upgrade
  - Satisfied with Vendor
  - Allows Enhancements
  - Allows upgrade to performance/capacity
  - Platform allows for add-ons
  - Avoid disruption of replacement
  - Time of replacement is higher
  - Cost
  - Hardware
  - Software
  - Database
  - Training

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• Preferred option is usually an upgrade in order to maintain investments in:
  – Database and displays
  – Training
  – Equipment
  – Business processes
  – Customizations
  – Vendor Relationships

• Lowers total cost of ownership (TOC)
Upgrade vs. Replacement – Cost Factor

• The cost of the upgrade versus replacement should be considered:
  – For example: upgrade cost does not exceed 50% of a replacement... <procurement process involved in this criteria>
  – The upgrade cost may require “mandatory” replacement of some of the parts of the system (hybrid approach)

• Annual cost to “run/maintain” the system after “upgrade” or “replacement” should also be considered. This includes:
  – Warranty/Maintenance contracts
  – License fees
  – In-house staffing required
  – Training costs
Upgrade vs. Replacement – External Factors

• SCADA/EMS Vendors
  – Some Vendors actively factor their customers needs in their product “road-maps”. This may include a “replacement” or “upgrade” plan that could be helpful in the decision process
  – SCADA/EMS vendors replacement/upgrade experience is unmatched in comparison with a client experience performing same task
  – Vendors, however, may not fully understand the clients internal business and procurement processes to make proper advise
  – Best vendors technology and roadmap (best match against requirements) is desired

• Politics
  – Current vendor relationship will be likely be a factor in the decision process to replace or upgrade the system
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Why?

Replace

Vendor Dissatisfaction

New Functionality Required

Performance Capacity Needs

Cost Less

Not Supported by Vendor

Licenses

Hardware

Telecom

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Upgrade vs. Replacement

• What are some of the more typical reasons to replace?
  – Vendor viability/risk
  – Vendor relationship
  – Vendor technology/product roadmap
  – Vendor maintenance and support program
  – Vendor is unable to meet client needs without excessive customization or new development
  – Cost of an upgrade is the same as, or similar to, a full replacement
• Vendor viability
  – Vendor has small and/or decreasing share of market
  – Vendor or parent experiencing financial difficulties
  – Vendor has announced plans to sell product or business unit
    – Vendor has announced plans to acquire competitor/competing product

• Vendor relationship
  – Vendor personnel turnover
  – Vendor conflicts
  – Poor history of support
Upgrade vs. Replacement

• Vendor Technology/Product Roadmap
  – No roadmap available
  – Frequent/major roadmap changes
  – Roadmap inconsistent with industry
  – Roadmap inconsistent with corporate

• Vendor Support and Maintenance Programs
  – Lack of choices
  – Cannot be customized
  – Does not address all needs
  – Excessive cost

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Upgrade vs. Replacement

• Product issues
  – Poor quality, unstable, buggy
  – Missing functionality
  – Difficult to maintain
  – Difficult to upgrade
  – Non-standard components
• The Big Picture
• Prerequisite – Perform Assessment
• Reasons to Upgrade
• Reasons to Replace
• Case Study: Company X
• Case Study: Company Y
Case Study: Company X

• Company X
  – Legacy SCADA/EMS system
    • Aging, obsolete hardware and OS
    • Capacity, performance, reliability issues

• Preferred path is to upgrade in order to maintain investments in:
  – Database and displays
    • Large database with large number of displays
  – Trained resources
    • Operations and Support Personnel
  – Applications
    • Working Network Analysis and DTS
  – Equipment
    • Plan to re-use consoles, front ends, etc
Case Study: Company X

• Preferred path is to upgrade in order to maintain investments in:
  – Business processes
    • Used for Transmission and Distribution Operations
  – Customizations
    • Many customs now part of baseline product
  – Vendor relationships
    • Good working relationship

• Lower TOC
  • Initial cost significantly lower; long term cost also lower
Case Study: Company X

• What are the Possible Reasons to Replace?
  – Vendor viability
    • Company X vendor is a large vendor with significant presence in the market
  – Vendor relationship
    • Good working relationship
  – Vendor technology/product roadmap
    • Vendor did make a major product roadmap change several years ago
    • Legacy SCADA/EMS product is end of life and a path to new Release needs to be identified
Case Study: Company X

• What Are Possible Reasons to Replace?
  – Vendor maintenance and support program
    • Support program is acceptable
  – Product issues
    • Product quality is acceptable
    • Product functionality is acceptable

• Other
  – Lower TCO – not the case; replacement costs will be higher than upgrade
Company X has chosen **UPGRADE**
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Case Study: Company Y

- Existing system installed in early 1990s, now facing many challenges:
  1. Company Y at risk due to obsolescence and lack of support
     - Hardware is no longer manufactured, replacement parts hard to find
     - Hardware vendor has discontinued support for operating system
     - SCADA/EMS vendor no longer has qualified individuals on staff to support Legacy product
  2. Company Y is not fully NERC CIP Compliant; exceptions have been filed.
  3. Business is constrained in implementing more efficient/secure technologies or advanced applications
• Considered 3 possible alternatives:
  – Do Nothing – Defer decision for some time to budget appropriate funding
  – Upgrade – Migrate Legacy system to new servers
  – Replace – Fork-lift replace existing system with a best-of-breed SCADA/EMS vendor

• Develop business case for each of the options above to determine recommended path
Option 1: Defer?

• Pros
  – Current system is stable, generally reliable
  – Training needs are minimal, if any
  – Financial impact is low

• Cons
  – No vendor support for product
  – HW is no longer manufactured. Parts are failing with increasing frequency. Lack of vendor support could result in catastrophic failure, hurt Company Y's reputation
  – Outdated technology. Company Y has very qualified staff now but finding additional individuals to support the current system and tools is difficult
  – NERC CIP Requirements may not be met, resulting in exposure to penalties
  – No improvements in communications, security or advanced applications
  – Unlikely to improve system availability
Case Study: Company Y

Option 2: Upgrade?

• Pros
  – Supportable platform (hardware, OS)
  – Training needs less than that of a new system
  – Financial impact is possibly less than new system

• Cons
  – No vendor support for product
  – Would likely only extend the life of the system for no more than another 2-3 years
  – Lack of vendor support could result in catastrophic failure, hurt Company Y's reputation. Vendor has no responsibility to support applications running on unsupported versions of hardware and operating systems
  – NERC CIP Requirements may not be met, resulting in exposure to penalties
  – No improvements in communications, security or advanced applications
  – System availability would still remain an issue
Option 3: Replace?

• Pros
  – Fully supported platform
  – Able to provide new and/or improved advanced applications, higher communications speeds, higher level of security
  – Better able to implement NERC CIP requirements
  – Improved system availability inherent in current system architectures as well as the ability to introduce database changes online
  – Able to adhere to current industry “best practices” for maintenance and support of SCADA systems

• Cons
  – High financial commitment
  – High training, learning curve
Company Y has chosen Replace
Questions?