CorpsLON Implementation

US Army Corps of Engineers

IMCOM BAS Workshop, Chicago IL
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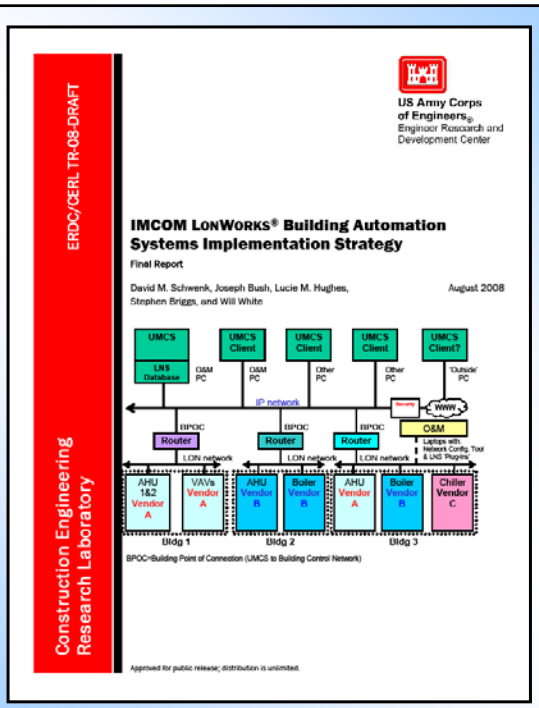

Implementation Tasks

1. Assemble a workgroup
2. Identify issues, goals, and obstacles
3. Identify approach to address obstacles
4. Develop SOW(s) to obtain external technical assistance
5. Coordinate w/ Directorate of Information Management (DOIM)
6. Define/develop building acceptance methodology and checklists
7. Define training requirements
8. Develop IDG requirements and in-house LonWorks® specs
9. Identify building integration approach
10. Develop system integrator and system integration SOW(s)
11. Document implementation plan
12. Execute UMCS procurement

Task 1 – Assemble Workgroup

- Energy Manager
- Chief of DPW O&M
- DPW shop and/or Work Leader
- DPW mechanics
- Plans and Programs (in-house designers)
- DOIM
- Corps Area Office and/or Resident Engineer

also…

- Corps District designer
- "External" consultant – CERL, HNC, SAS, contractor…

1 – Workgroup Lessons

- Difficult to get people to commit their time
- A dedicated workgroup is critical to long-term success
- Need to find a way to make this a priority
- Wide range of involvement levels:
  - Fort Bragg has highly involved installation personnel and regular meetings (inc. video conf. with CERL)
  - Fort Bliss does not have the personnel to support the process; much of the support is via a contractor or USACE. Not ideal but this seems to be working.
  - One installation has lack of support from key players which grinds the process to a halt

2 – Identify Goals, Issues & Obstacles

- **Identify Issues** - Multiple systems, vendor lock-in, too few/many features, etc…
- **Identify Goals** - System capabilities, Openness, training goals, etc…
- **Rank Goals** - Establish relative importance; may be important later if need to "give and take"
- **Identify Obstacles** – Lack of: Resources, management commitment, inter-department cooperation, etc…

2 – Common Issues

- Multiple BASs - Many different front-ends
- Many O&M laptops w/many software packages
  - Impractical to learn more than a few software tools
  - Makes laptop management difficult
- Too many/few BAS features
  - Doesn't meet basic needs
  - Too complicated to maintain
- Poor commissioning - systems delivered non-functioning
- DPW not part of the process
- Front-ends aren't used

2 – Goals Considerations

- System Capabilities
  - how are you going to use the system?
  - what capabilities do you ***really*** need?
- Training and support
  - Both are critical aspects and where BAS use often fails
  - Identify level of training/support you need
- Rank goals according to how important they are to long-term success

2 – Common Obstacles

- DOIM / IA Requirements (more on this later)
- Resources – usually money and people (dough, no. and know)
  - Dough ➔ Most installation funded at ~ 30% of their needs
  - No. ➔ Similar restrictions on personnel (1 person per 200+ buildings!)
  - Know ➔ Do personnel know how to use the system?
- Management buy-in and support
- User buy-in and support
- Cost – cheaper is not always better but try convincing "***them***" of that

3 – ID Approach to Address Obstacles

- **F*ixable*** - Workgroup can eliminate
  - policies the Workgroup can change/get changed
  - management buy-in Workgroup can obtain
- **A*ddressable*** - Workgroup cannot change, but can work around
  - obtaining exceptions from policy
  - including specific requirements for system.
- **U*navoidable*** - Workgroup cannot change or work around
  - policies that do not offer exceptions or
  - hard limits on funding are two examples

3 – Obstacles Revisited

U
- DOIM/IA Requirements (more on this later)
- Resources – usually money and people (dough, no. and know)

U/A – Dough ➔ Most installation funded at ~ 30% of their needs

U – No. ➔ Similar restrictions on personnel (1 person per 200+ buildings!)

F – Know ➔ Do personnel know how to use the system?

F/A • Management buy-in and support

F/A • User buy-in and support

A/U • Cost – cheaper is not always better but try convincing "***them***" of that

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4 – Obtain External Assistance

- Site Survey
  - Do any buildings have LonWorks? CorpsLON?
  - Are buildings capable of being integrated to UMCS?
- Help identify building integration priorities and approach
  - Is it worth trying to integrate legacy buildings?
  - If funds are available which buildings should be renovated first?

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4 – Obtain External Assistance

- Technical consulting can assist with:
  - Identifying goals etc.
  - Implementation Plan development
  - Funding request/justification preparation
  - Technical reviews
  - etc.
- Tips:
  - Don't let "the fox into the henhouse"
  - Huntsville has IDIQ with good/qualified contractors
  - CERL/Huntsville can provide technical support directly

5 – Coordinate with DOIM

- Get DOIM involved early so there are no surprises
- Approach DOIM as partners not as servants
- Have an idea of what you need and what they will ask so you can be prepared
  - FAQs in Tech Report
  - Certificates of Networthiness
  - UMCS will likely fall under DOIM DIACAP (as addendum) and will use a VLAN enclave
- More on this later

6 – Develop/Define Acceptance Methodology and Checklist

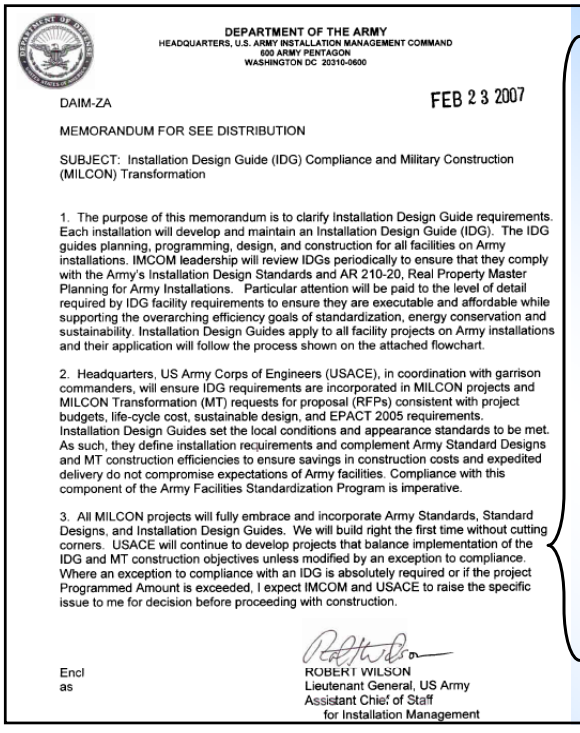
- How should QV and O&M staff evaluate the UMCS?
- How should QV and O&M staff evaluate the building control system?
  - UFGS 23 09 23 and 25 10 10 QC checklists
  - UFGS 25 08 10 (not yet released)
  - 'Compliance Assessment Checklist' tool
  - Acceptable Products List (more on this later)

7 – Define Training Requirements

- Training opportunities
  - Guide Spec/MILCON requires some "training"
  - PROSPECT courses
  - Vendor training
  - Workshops (like this one)
- Identify training expectations/needs for O&M staff
- Get buy-in to training from management

8 – Develop IDG Requirements

- The installation's chance to say what they want
- Consistent requirements for different contracting vehicles (JOC, Plans and Projects etc)
- MILCON RFP is required to use IDG!



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FEB 2 3 2007

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Installation Design Guide (IDG) Compliance and Military Construction (MILCON) Transformation

1. The purpose of this memorandum is to clarify Installation Design Guide requirements. Each installation will develop and maintain an Installation Design Guide (IDG). The IDG guides planning, programming, design, and construction for all facilities on Army installations. IMCOM leadership will review IDGs periodically to ensure that they comply with the Army's Installation Design Standards and AR 210-20, Real Property Master Planning for Army Installations. Particular attention will be paid to the level of detail required by IDG facility requirements to ensure they are executable and affordable while supporting the overarching efficiency goals of standardization, energy conservation and sustainability. Installation Design Guides apply to all facility projects on Army installations and their application will follow the process shown on the attached flowchart.

2. Headquarters, US Army Corps of Engineers (USACE), in coordination with garrison commanders, will ensure IDG requirements are incorporated in MILCON projects and MILCON Transformation (MT) requests for proposal (RFPs) consistent with project budgets, life-cycle cost, sustainable design, and EPACT 2005 requirements. Installation Design Guides set the local conditions and appearance standards to be met. As such, they define installation requirements and complement Army Standard Designs and MT construction efficiencies to ensure savings in construction costs and expedited delivery do not compromise expectations of Army facilities. Compliance with this component of the Army Facilities Standardization Program is imperative.

3. All MILCON projects will fully embrace and incorporate Army Standards, Standard Designs, and Installation Design Guides. We will build right the first time without cutting corners. USACE will continue to develop projects that balance implementation of the IDG and MT construction objectives unless modified by an exception to compliance. Where an exception to compliance with an IDG is absolutely required or if the project Programmed Amount is exceeded, I expect IMCOM and USACE to raise the specific issue to me for decision before proceeding with construction.

Encl
as

ROBERT WILSON
Lieutenant General, US Army
Assistant Chief of Staff
for Installation Management

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9 – Identify Building Systems Integration Approach

- The approach should be identified as early in the process as possible – ideally before UMCS procurement
- Although the UMCS may be procured separately from building integration services, the approach used to obtain building integration may greatly impact the procurement of the UMCS. This is particularly true if some type of long-term contracting mechanism will be used for both the initial UMCS procurement and subsequent system integration services.

9 – Identify Building Systems Integration Approach

- Regardless of the approach, a final goal is to have a UMCS and system integration approach and (contract or contracting mechanism) in-place so that as new building-level DDC systems are competitively procured they can be integrated with the basewide UMCS

9 – Identify Building Systems Integration Approach

- "In-House" System Integrator (SI) – SI services at fixed cost:
  - Hiring or training a Government employee
  - Hiring a contractor through an existing services contract
  - Establishing a service contract
  - Obtain SI through another mechanism – such as ESPC
- Long Term Contract – Cost by task
  - ID/IQ one option
  - Require MIPR of funds for task order
- Case-by-Case Integration (Using separate dedicated contract)
- Case-by-Case (Using combined building contract and integration services). This approach is **strongly discouraged**.

A Note on System Integrators…

- Consider the needs of the installation when evaluating potential system integration approaches and a System Integrator (SI)
- For example, the installation may be comfortable performing maintenance on the UMCS system and may only need the SI to perform actual integration or they may want the SI to perform maintenance as well
- Exact requirements placed on the SI will vary from place to place but in general some things to consider are…

A Note on System Integrators - what to look for and expect -

- *Training*. SI should have formal training on the software.
- *Experience with* LonWorks. Experience with UFGS 23 09 23 and UFGS 25 10 10. Notably includes use of a LonWorks Network Services (LNS) Network Configuration Tool and LNS plug-ins.
- *Experience with other proprietary protocols and legacy systems* if/in the event these will be integrated into the UMCS
- *Familiarity with DOIM and network security requirements*. Prior experience is beneficial but few integrators have this experience.
- *Knowledge of the building-level (UFGS 23 09 23) requirements* that will impact integration such as:
  - *Scheduling* – detailed familiarity with these requirements
  - *Alarm handling* – detailed familiarity with these requirements
  - *Point Schedules* – how to use them

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Possible Contracting Mechanisms by Integration Approach

		System Integration Approach			
		In House	Long-Term Contract	Case-by-Case Separate Contractor	Case-by-Case, Building Contractor
Contracting Mechanism	Local office	Yes	Unlikely[1]	Yes	Unlikely[2]
	ESPC	Yes	No	No	No
	District Contract	No	Yes	Yes	No
	Center Contract	No	Yes	Yes[3]	No
	District MILCON	No	No[4]	No[4]	Yes

1 Most installation contracting offices are resistant to this type of contract
2 The building contract is usually awarded by a Corps district, not the local contracting office
3 Via MIPR of funds from the district to Huntsville to award
4 Not as part of the district awarded MILCON job but the district can MIPR funds to be used by one of the other methods.

Contracting Mechanisms

- As part of evaluating integration approaches, consider the available contracting options:
  - Local Contracting Office
  - Energy Saving Performance Contracting (ESPC)
  - Corps District Contract (usually ID/IQ)
  - Centers of Expertise Contracts (usually ID/IQ)

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UMCS DDC Integration - Integration via MIPR -

- Process through which DDC systems are integrated into UMCS via MIPR funding mechanism
- Basic approach: Corps District issues MIPR (using construction project funds) to Installation or to HNC who in turn awards a contract (or IDIQ task) for system integration
- Appendix G in Tech Report is sample from Fort Bragg defining roles and responsibilities of Fort Bragg, Savannah District and Huntsville Support Center (HNC)
- Appendix G describes what must be done, but not all details on how each organization accomplishes tasks

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UMCS DDC Integration
- Integration via MIPR -

Step 1: In the planning stage

- District confirms/assures that there are funds programmed for UMCS integration
- District sets aside 0.5% of the facility cost to pay for system integration
- More definitive/accurate pricing may be identified after the first several projects have been completed

UMCS DDC Integration
- Integration via MIPR -

Step 2: In the planning stage (where HNC procures SI services)

- District sends email alert to HNC and to installation that a UMCS DDC integration project is being planned
  - Notify HNC that a request for UMCS DDC integration services is forthcoming and to provide an estimated date when the integration services SOW will be sent to HNC
  - Advance notice to installation DOIM that an IP drop/address will be needed and officially requested later (step #7)

UMCS DDC Integration
- Integration via MIPR -

Step 3: Once the design has progressed to the appropriate point:

- District sends 'UMCS DDC Integration SOW' to HNC so HNC can obtain pricing for the integration
  - District indicates (in the 'UMCS DDC Integration SOW' or body of the email) the planned/desired location of the IP drop
  - Note: District is the owner of the 'UMCS DDC Integration SOW' to maintain/update it as needed

UMCS DDC Integration
- Integration via MIPR -

Step 4: HNC obtains pricing for integration based on the SOW provided by District in step 3

Step 5: HNC provides cost/pricing to District including: Cost for Integration, HNC admin/contracting fees, contract management, and any technical assistance/reviews necessary

Step 6: District MIPRs funds to HNC

Step 7: Installation requests IP drop and IP address

UMCS DDC Integration
- Integration via MIPR -

Step 8: The Corps turns building over to installation after applicable testing/commissioning and after verifying that LonWorks requirements have been met -- may be accomplished using the LonWorks Compliance Tool

Step 9: Using submittals such as the LNS Database and Points Schedules from the building controls Contractor, the System Integrator begins integration – installation of new servers, graphic creation, etc.

Step 10: DOIM installs IP drop

Step 11: System Integration Contractor installs BPOC and completes integration of DDC to UMCS

DISCUSSION

System Integration

10 – Develop SOWs
- Overview -

- **SOW 1:** UMCS system administrator, technical support representative, and system integrator
  - UMCS System Administrator
  - Technical Service Representative
  - UMCS System Integrator (by including SOW 2)
  - Appendix E of Tech Report
- **SOW 2:** UMCS DDC integration SOW
  - Integration of systems/buildings
  - Appendix F of Tech Report
- It's best to get System Admin and Integrator together

SOW 1
-UMCS System Administrator-

- Develop and document a System Integration Methodology
  - LNS Database management
  - Integration checklists
- Develop and document a System Operation Methodology
  - DPW access
  - Use of M&C Software functions (alarms, demand limiting etc)
- Manage and operate the UMCS according to the Operation Methodology
  - Maintain System Integration Log
  - Maintain documentation
  - UMCS Maintenance and Repair

SOW 1
-Technical Service Representative-

- Controls technician embedded in DPW shop
- Assists maintenance personnel with controls problems
- Provides training to maintenance personnel
- Helps with “in-house” renovations

SOW 1
-UMCS System Integrator-

- Integrates building control systems into UMCS
- Requires inclusion of SOW 2 and editing to establish number of buildings, systems, points and/or hours
- May be same person as the System Administrator

SOW 2
-UMCS DDC System Integration-

- Includes list of specific buildings/systems to be integrated
- Scope/requirements to integrate LNS-based DDC buildings/systems into UMCs"
  - "System integration should be done in accordance with the System Integration Methodology (SIM) ***if*** the installation has one" ***therefore…***
  - SOW 2 is best used with/following SOW 1 (which requires/defines the SIM)
- Can be used with "Integration via MIPR" process

11 – Document Implementation Plan

- Write it all down
- Plan should be a living document – revisit and update periodically

12 – Execute UMCS Procurement

- Get a UMCS as identified in the Plan
- Then you can expand UMCS through building integration (i.e. System Integration Methodology) as identified in the Plan

Overview of "Trial" Installations

- Fort Bliss
  - Initial UMCS installation through MILCON RFP
  - SI services through service contract??
- Fort Bragg
  - 2 UMCSs in place – Johnson Controls (JCI) & Honeywell
  - Looking at case-by-case integration and SI via MIPR
- Fort Hood
  - Used ESPC to get UMCS and SI Service from JCI
  - First (and so far best) implementation of specs
- Fort Lee
  - Using ECIP for UMCS installation
  - SI services TBD – may be case-by-case integration

Overview of "Trial" Installations

- Fort Sill
  - TAC UMCS via UFGS
  - Having DOIM/DIACAP/DPW issues
- Fort Jackson
  - Honeywell UMCS in progress
  - Evolving away from basewide proprietary approach
- Fort Huachuca
  - UMCS plan evolving
  - Looking at Niagara Tridium AX LNS-based system(!?!)

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QUESTIONS