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U.S. Army Engineering and Support Center, Huntsville

Electronic Technology Systems Center

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Electronic Technology Systems Center reorganizes

By Darrel Anerton

The Electronic Technology Systems Center (ETSC) is the organizational business unit that has existed at the U.S. Army Engineering and Support Center, Huntsville, since 1985. Over its 24 years of existence, the ETSC has been the home of both the Utility Monitoring and Controls Systems Mandatory Center of Expertise (UMCS-MCX) which was established in 1979 and chartered in 1981, and the Electronic Security Systems Mandatory Center of Expertise (ESS-MCX) which was established in 1983 and chartered in 1984.

Our dedication and efforts in providing a full spectrum of UMCS and ESS technical consulting and system installation delivery solutions have been numerous and highly successful. Our technical organization was part of a triad which also included Project Management and Contracting and as a collective Product Delivery Team (PDT). We have excelled in business growth and customer satisfaction. In Fiscal Year (FY) 2008, the ETSC lead the effort and provided primary support in executing $200 million in UMCS business, $62 million in ESS business, $20.4 million in Army Metering business,

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Procurement methodologies for electronic security systems

By Leigh Young

"I need an Electronic Security System (ESS) – so what do I do?" You are not alone; budgeting, procurement and implementation can be very confusing. All projects — no matter what type of funds or contract vehicle is used — generally follow the following process:

The need for an ESS is generally driven by regulation or risk management (i.e., emerging threat compensatory measures, smart practices, cost effective measures, etc.) Make sure you understand what is driving your requirements and be ready to defend your requirements in the budgeting process. Next, conduct a site survey to determine exactly what the

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A chicken in every pot, UMCS for every Garrison

By Will White

If Installation Management Command (IMCOM) approves the plan and provides the funding, every Garrison in the continental U.S. (CONUS) will have an established, fully functioning and maintainable Utility Monitoring Control System (UMCS) also known as a Building Automation System (BAS). This is great news! In the deluge of all the new laws, executive orders, directives, and mandates to save energy, resources, labor, dollars, and not to mention the planet Earth, this is an essential tool to the energy manager and the facility engineer.

Let's define the three terms underlined from above:

An established BAS consists of a UMCS with sufficient Building Control Systems (BCS) connected to it to provide a significant O&M (operations and maintenance) and energy management benefit. Note that this also means the system has all the necessary certifications (networthiness and DIACAP) required to operate.

Fully Functioning means the system is set up and working correctly — alarms are appropriately set, trends and schedules are established, demand limiting is configured, etc. The system is accessible and useful to the O&M staff and energy manager.

Maintainable means the system is designed, installed and staffed such that it can be maintained long-term. This includes: (1) adequate staffing for integration, maintenance and the use of the system; (2) the use of standard specifications for the procurement of new BCS coordinated with in-house and Corps designers; and (3) competitive procurement and integration of new BCS into the UMCS.

A few more useful definitions used for the purposes of this plan are:

1. Building Control System (BCS): the networked Direct Digital Control system that controls (or monitors) building systems such as HVAC and lighting. This system has no user interface or a very limited user interface intended for simple operation and maintenance tasks. Note that Single Loop Digital Controls (SLDC) and Pneumatics are not considered building control systems in this plan.

1. Utility Monitoring and Control System (UMCS): The supervisory system consisting primarily of computers running software to provide a full-featured user interface. In addition to providing a full user interface, this system performs supervisory functions such as alarming, scheduling, data logging, electrical demand limiting and report generation. In general, this system does not directly control building systems.

2. Building Automation System (BAS): The system consisting of one or more BCS connected to a UMCS which provides for control of the building systems as well as a user interface and supervisory capability.

3. CorpsLON: The flat, open, LNS-based LonWorks system defined by UFGS 23 09 23 and UFGS 25 10 10 to include all LonWorks requirements of these specifications. CorpsLON requirements are also defined in the MILCON Transformation Model RFP. In short, CorpsLON is the U.S. Army Corps' open implementation of LonWorks.

Most of us are familiar with the acronym UMCS or EMCS to mean the entire control system for the installation to include the head-end package with all the graphics and user interface down to the controls in the buildings. In many cases BAS and UMCS are synonymous. The effort to separate and redefine the terms for this plan is to better align the descriptions with the new specifications noted above.

The plan is the IMCOM-wide Building Automation System Implementation Plan which is still in development and not yet approved. Paul Volkman of IMCOM had the foresight to fund this effort to help determine feasibility and plan for the ubiquitous "path forward." He funded CERL, Huntsville Center, and SAS for the effort. Between the three Corps agencies and some thoughtful help from Fort Hood and Fort Bragg, we hammered out an approach which included a phone/e-mail survey of all 43 Garrisons. The survey was just recently completed by an engineering support contractor; the results reveal an interesting conglomeration of existing networked controls and protocols. In addition to the hard data collected, there are survey questions like: "How would you rate the organizational interest in procuring and utilizing a post-wide UMCS?" and "How often is the system used by the O&M staff?" The responses are varied and likely reflect the local support and presence of a champion for the UMCS. It appears we have too few champions.

Now, I wrote earlier that "every Garrison will have…" Most likely that will not happen. Only 35 of the 43 Garrisons responded and, of those, some indicated a lack of interest or perhaps a general apathy for UMCS. On the other hand, others are fully engaged with excellent command level support. In order to maintain the system the installation needs an appropriate level of energetic staffing with a focus to grow the system through building by building integration. This staffing must become a command priority and be consistently funded. It's still unclear if IMCOM

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ASK MCX!

Q: Can you tell me which UFC, UFGS, or Army Regulation specifies IDS be monitored by a UL 827 and UL 2050 compliant station?

A: The following Army regulations have no requirement that IDS alarms be monitored by a UL-listed central station:

AR 190-13
AR 190-11
AR 190-51
AR 190-59

If you are dealing with a SCIF, UL 2050 is discussed in Annex B of DCID 6/9. However, Annex B is focused on the installation of a "certificated alarm system" by a "listed alarm service company," not necessarily monitoring by a "listed central station." For clarification of these terms, check out the UL Web site at http://www.ul.com/global/eng/pages/offerings/industries/lifesafetyandsecurity/alarmsystems/.

If you are preparing a contract for IDS monitoring services, you may find the following UFGS helpful:

UFGS-28 20 02, Central Monitoring Services for Electronic Security Systems http://www.wbdg.org/ccb/DOD/UFGS/UFGS%2028%2020%2002.pdf.

Reorganization

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and $69.8 million in Access Control Point business. Cumulatively, the total business being executed by the ETSC was $353 million; this amount constitutes approximately 24 percent of the Huntsville Center business for FY08. At the same time that this significant fiscal growth was being managed, the ETSC was able to maintain a high overall customer satisfaction rating.

This growth and success level is the by-product of a 68-person team of individuals who have a passion for delivery of products and services that are high quality, cost effective and timely in delivery. This team of individuals is customer focused and driven to achieving great customer satisfaction. The people working collectively as a team have made this business fun, rewarding and a source of great personal satisfaction. We are a family, and we appreciate the personal talents and capabilities of every team member. Our staff of technical and administrative employees who provide the technical support associated with UMCS and ESS products has just grown recently to 38 individuals and with this growth comes the need for organization change to facilitate future business growth, as well as, leadership and management.

To support this direction, in October 2009, the ETSC technical organization will multiply into two separate technical organizations. The Electronic Technology Branch will become the UMCS Branch and the ESS Branch. Both of these organizations will still reside in the Engineering Directorate, Electrical – Mechanical Division. The ESS Branch, with its 26 employees, will have responsibility for delivery of ESS products and solutions including Closed Circuit Television, Electronic Entry Control Systems, Interior Intrusion Sensors, Exterior Intrusion Sensors, Security Alarm Annunciation Systems and associated Data Transmission Systems. The UMCS Branch, with its 14 employees, will have responsibility for delivery of UMCS products and solutions including Supervisory Control and Data Acquisition, Fire Alarm Systems, Building Automation Systems, Utility Alarm Annunciation Systems and associated Data Transmission Systems.

These organizational changes are intended to allow a better focus of UMCS and ESS into two separate and distinct business development areas. As always, it is our desire at Huntsville Center to remain the service provider of choice for both UMCS and ESS products and solutions to the U.S. Army, other federal agencies and to our Nation. This publication will be our last joint publication which addresses both issues relevant to UMCS and ESS; stay tuned to a new specialized focus as the bulletin is published and distributed in the future.

Procurement

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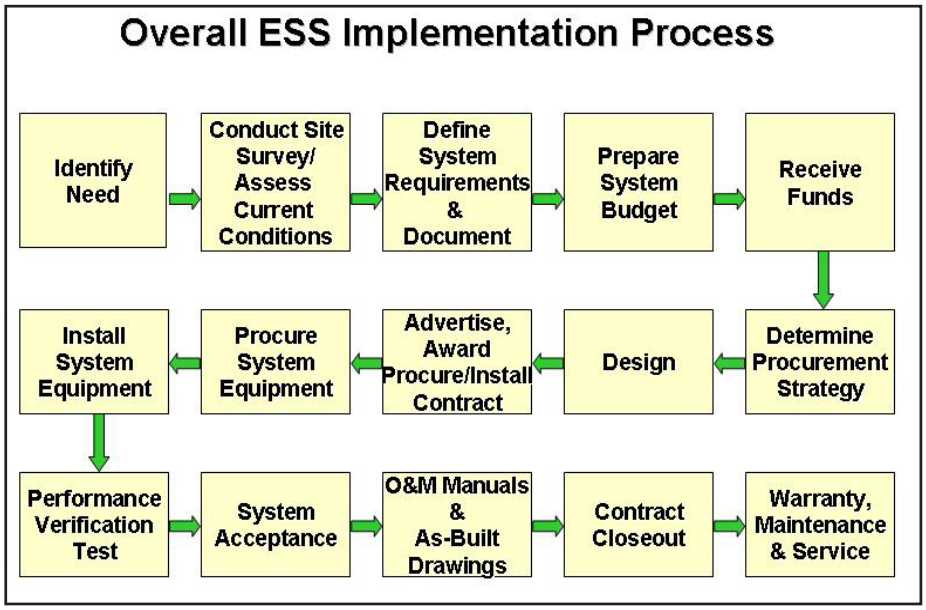
current conditions are. Note any alternatives, all existing equipment details and any special requirements that may affect your implementation. Make sure that the site survey assesses the situation at the required threat level and not the perceived level of accepted budget; too often we constrain our requirements based on budget and circumvent the proper planning process. All surveys should include knowledgeable professionals with persons experienced in electronic security, physical security, anti-terrorism, law enforcement, electrical engineering, mechanical engineering, information management, infrastructure, civil/site engineering, structural engineering, architecture, planning and cost engineering.

Once you know what your needs and existing conditions are, you can move on to the system requirements definition documents. How much information is enough when it comes to system requirements? If you are planning a major upgrade or large-scale implementation, it may be worth your while to get a full Architect-Engineering (AE) design at this stage to help with large scale budgeting and phasing. However, usually a good Performance Work Statement (PWS) that provides for a site survey report and concept design will give you enough information to go forward with your budget requirements.

Remember your funding basics when considering your budget:

✓ Construction over $750,000 requires Military Construction (MILCON) funds



Typical ESS implementation process

✓ Operations and Maintenance, Army (OMA) funds may be used for construction up to $750,000 and may even be used up to $1.5 million (10 USC 2805(c)(1)(A))

✓ Construction funds may be used to procure and install cables and cable paths and to actually install ESS equipment

✓ *Other Procurement Army (OPA) funds are required for the purchase of the ESS equipment itself on construction projects and is the required funding type for equipment procurement over the investment threshold ($250, 000)*

✓ Base Realignment and Closure (BRAC) funds act as MILCON funds

The DD Form 1391 should reference both the MILCON and OPA requirements for the ESS. The OPA is found in tab E typically. You should be cautioned to check and make sure this system is included in the programming effort — a SCIF cannot be certified and used without ESS, and it is commonly overlooked because it is a relatively small, specialized system. Always estimate on the conservative side. Provide reasonable contingency factors. Don't forget your system training, testing and maintenance costs. Consider project phasing if you anticipate funding shortfalls.

At this point, you need to determine exactly what procurement strategy you will take. In a MILCON or BRAC, you will be under a construction contract, but you may contract your ESS separately. For smaller dollar value projects and upgrades, you may choose to:

➢ Contract the effort with your local contracting office

➢ Purchase off the General Services Administration (GSA) schedule. Beware — GSA schedules typically do not include every service and equipment or material type required to do a complete turn-key for an ESS; we've had customers in the past who

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used the GSA schedule for purchases and not all the labor categories required to complete the job were available on the schedule. Separate actions had to be used to procure those services.

➢ Utilize our Indefinite Delivery/Indefinite Quantity (ID/IQ) contracts from the ESC. We currently have six — three large business and three small business contractors.

Equipment may be Government-Furnished Equipment (GFE) or Commercial-Off-The-Shelf (COTS). Beware of equipment age — GFE may have been delivered well before the project is ready for it, resulting in additional warranty issues and some equipment replacement. COTS should be chosen carefully to ensure that the government is getting the best value and it meets any local and Major Command (MACOM) requirements for standard vendors.

Re-evaluate your level of design needs. Keep in mind that more known conditions entering into a contract result in less risk for the contractor and translates into fewer change orders and additional costs to the government.

More complicated systems and larger facilities will benefit from more detailed design drawings and specifications. Equipment layout plans typically show a general equipment location and leave the conduit and cable up to field routing (reflected on the As-Built drawings). These are usually accompanied by catalog cut sheets.

When are Equipment Layout Plans appropriate? Utilizing equipment layout plans is a good way to handle small and low budget projects, as well as on time-sensitive installations. However, personnel oversight will be required to ensure that the project is installed correctly and efficiently. For example, field routing of wiring and conduits can be a temptation for change proposals; good "eyes-on-the-ground" can help alleviate surprises and will lead to easier consensus on required project changes. The success of the project execution depends largely on how experienced your installation contractor is; it is usually safer to use an existing ID/IQ contract with established selection criteria. We have existing ID/IQ contracts that are in their fourth generation and utilize lessons learned in the selection of the appropriate integrator. We also have an experienced staff that manages multiple task orders with the various contractors and can offer our expertise in the nuances of installations with lower levels of detail on designs and specifications. No matter what type of vehicle is used, the more detailed work done ahead of the actual procurement and installation will result in fewer changes.

When your procurement contract is awarded, beware when working with an ESS sub to a sub to a sub, etc. Be cautious about affecting the costs of the subcontracts. Costs will be passed to the government with multiple markups and may be alleviated with good teaming practices. Don't forget to budget for the testing and training — these are often overlooked but ALWAYS required. Government personnel should be experienced to witness testing or need to be trained for that purpose. Be prepared not to have gaps in your maintenance and service protection for your system and be aware there may be regulatory requirements for preventative maintenance visits. Keep good records. Notify the user to input costs for operation, maintenance and service into their budgets.

The ESC is available for limited consulting free-of-charge; in-depth review, survey, contract oversight, testing and training is on a reimbursable basis. Please contact the ESS MCX with any specific questions or for more information.

Courtesy photo

Change orders often result in additional costs to the government.

Chicken

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will address this issue specifically through funded positions. Currently, most of these required positions are funded locally by the Garrisons.

Those that are judged less interested from the survey results, will likely fall to the bottom of the priority list for funding. In a line of encouragement, it only takes a small adjustment in the priorities of someone in a critical leadership position to affect a positive change and create an entirely new supportive environment for the UMCS. Additionally in their defense, the response to the survey may not be an accurate representation of all the elements that create a poor environment for UMCS. It could be the installation has suffered with a dog of a system that never worked right and just created headaches for the staff.

We have identified what we think are essential positions necessary for a successful UMCS. They are:

• ***BAS Manager:*** This role is responsible for managing all aspects of the BAS and is the individual at the Garrison with the responsibility and authority to make decisions concerning the BAS, including planning, project prioritization and system operation. Key responsibilities include:

o Developing, documenting and maintaining UMCS and BAS policies and procedures
o Planning and programming (in the business sense) for the BAS
o Championing the BAS to Garrison leadership to secure funding and support
o Managing the other BAS roles

• ***UMCS Administrator:*** This role provides the necessary IT (information technology) expertise to the Directorate of Public Works in support of the UMCS, performs IT management for the UMCS, and coordinates UMCS IT issues with the Directorate of Information Management (DOIM).

• ***Technical Expert:*** This role provides expertise on the BAS technology (LonWorks for example) and the implementation of this technology at the Garrison (CorpsLON, for example). The key responsibilities for this role are the review of project submittals (designs, as-built drawings, etc.) and participation in control system acceptance.

• ***System Integrator:*** This role performs the actual integration of BCSs into the UMCS in order to expand the BAS. This service will generally be obtained as part of the BCS project. So, this role does not correspond to a position that must be filled at the Garrison.

• ***Controls Technician:*** A common cause of failure for the BAS in the Army is the lack of controls expertise among O&M staff. This creates a situation where the BCSs function inadequately and thus the BAS, which relies on functioning BCSs, performs inadequately as well. This role provides controls expertise and on-the-job training to the Garrison in the form of dedicated controls technicians. Initially, this role will be filled via contract personnel who already have controls expertise, but this should transition to O&M staff once they have been trained.

• ***UMCS Operator:*** An unused UMCS provides little benefit to the Garrison, thus UMCS operators are needed. The UMCS operator's responsibility is to monitor the UMCS for alarm conditions and provide remote troubleshooting and diagnostics. The operator will also adjust schedules, set up trending and configure demand limiting to support the changing needs of the Garrison.

In some cases, one individual can fulfill more than one role. For example, the UMCS administrator and technical expert may be the same individual.

With the exception of the BAS Manager, these roles can be filled with contracted personnel. The BAS Manager must be able to represent and commit the government, and as such, must be a federal employee.

We have identified five phases to this plan:

Phase 1 — IMCOM-Level Planning: This phase includes pre-assessment of the state of BASs at IMCOM Garrisons and the development of an IMCOM-level implementation plan.

Phase 2 — Garrison Assessment and Prioritization: This phase includes assessment of each Garrison via a detailed on-site survey to determine the specific condition of and need for a UMCS at the Garrison. Garrison capabilities and local support available will also be assessed.

Phase 3 — Garrison Level Planning and UMCS Procurement: This phase includes the development of a Garrison UMCS/BAS Implementation plan and the preparation and award of contracts to procure and install a UMCS to serve as the front-end for the BAS. While several BCSs may be procured with the UMCS to provide a foundation for the BAS, it is assumed that BCSs will primarily be procured using other means. During this phase, the Garrison should begin to hire staff to support the BAS.

Phase 4 — Transition to Garrison Sustainment of BAS: During this phase, the Garrison adds to the UMCS to grow a BAS, learns to operate the BAS and addresses any initial issues with the BAS. The Garrison requires

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Third generation of utility monitoring and control systems contracts awarded

By Chuck Holland

A third generation of UMCS indefinite delivery/indefinite quantity multiple award task order contracts have been awarded by Huntsville Center Contracting office. These replacement contracts are for procurement and installation of UMCS, heating, ventilating and air conditioning equipment, ESS, fire and life safety systems, supervisory control and data acquisition systems, and other control and/or monitoring systems. Also in the contracts' scope is maintenance and service of the above listed equipment and systems.

The awardees are Ameresco, Honeywell, Johnson Controls, Siemens, Teng and Associates, Trane and Williams Electric. MATOC awards to several small business firms for the same services are expected within the immediate future.

The MATOC awards are five-year contracts with a ceiling of $900 million. For customers' projects, individual task order contracts will be awarded through open competition among awardees or in some cases through sole source procurement.

The MATOCs are available to procure and install equipment and systems at any government facility worldwide utilizing the engineering and contracting services of the UMCS product delivery team (PDT).

For additional information, contact the UMCS office at 256-895-1749.

ETSC Bulletin needs you for our new section

The ETSC Bulletin has a new section to promote more community-wide idea sharing. We're calling the new section the "View From The Field" and are soliciting ideas, abstracts, and even articles from our eyes-on-the-ground — YOU! If there are problems with the ESS or UMCS at your site or if you've found a neat solution to that frustrating issue, chances are there are others just like you who have the same issues. We want to help spread the word on current events happening from YOUR point of view. Please submit your ideas, abstracts and articles to us via e-mail at Contact-ESC@usace.army.mil. Do not send any site specific ESS "problems" that may be considered a vulnerability to this e-mail address. We look forward to hearing from you and thank you for your help!

Chicken

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progressively less support from IMCOM BAS Implementation Management as they progress through this phase and transition to support from support centers and user groups.

Phase 5 — BAS Sustainment by Garrison: Once the Garrison has a functioning and staffed BAS and no longer requires constant/direct support from the IMCOM BAS Implementation Management team, it enters this phase and continues to maintain, support and grow the BAS with some assistance as needed from the Support Center and BAS User Group.

We are currently just finishing up phase one and have started the process for the detailed site survey in phase two. If this plan is completely executed to include the staffing recommendations, it will create for the Garrisons potentially one of the most important tools in the energy manager's bag to meet the ever rising bar of conservation goals. You who choose to lead must follow. Either become a champion yourself or work to encourage, support and empower the champions to make this happen. I'm hopeful ... good things are coming.

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Useful Acronyms:

ACP: Access Control Point

ESC: Electronic Security Center

ESS: Electronic Security Systems

ETSC: Electronic Technology Systems Center

MCX: Mandatory Center of Expertise

UMCS: Utility Monitoring and Controls Systems

You can learn more about Huntsville Center and its many programs by accessing online fact sheets.

Find fact sheets on:

Access Control Points

Electronic Security Systems

Utility Monitoring and Control Systems

... and many more!

Check them out at www.hnd.usace.army.mil/pao/factshts.aspx

Who We Are

The Electronic Technology Systems Center (ETSC) is a team within the U.S. Army Corps of Engineers that provides unmatched experience and technical expertise in the specialized fields of Utility Monitoring and Control Systems and Electronic Security Systems.

Located in Huntsville, Ala., the ETSC supports the Corps of Engineers, the Army, other services and various defense and federal agencies. ETSC has hundreds of active projects around the world.

In its technical consulting role, the ETSC performs engineering surveys, develops criteria, reviews designs and conducts special studies and training for a wide variety of customers. For those customers needing "turn-key" project execution, the ETSC provides indefinite delivery, indefinite quantity (ID/IQ) contracts for system engineering, procurement and installation through a seamless, expedited task order process.

Each year the ETSC participates in numerous conferences, symposia, working groups and trade shows to build relationships and influence future development and application of UMCS and ESS technology.

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