Welcome to the

FEBRUARY 6TH, 2019 | San Antonio

REMOTE ATTENDEES
WEB ACCESS: https://goo.gl/RR4irr
ACCESS CODE: 297 683 391
AUDIO CONNECTION: (510) 338-9438
Send discussion question to info@digonsystems.com
Welcome

Presented by Matthew Walters & Kurt Sorensen
Introductions

• DIGON Team
  • Kurt Sorensen, President
  • Paul Schowalter, VP Operations
  • Melissa Nagel, Product Manager

• CERL Team
  • Matthew Walters
  • USACE ERDC-CERL Research Engineer
  • Sustainment Management Systems (SMS) Project Manager
  • OSD SMS CSP BUILDER Working Committee Chair
Other CERL Team Members

- Clint Wilson – SMS Program Manager
- Buddy Bartels – Research Engineer
- Melinda Buckrop – Research Engineer
- Joe Karbarz – Computer Scientist
- Juan Davila-Perez – Research Engineer
- Brenda Mehnert – Research Engineer
- Matt Werth – Research Engineer
Agenda

• AM Schedule
  8:00 – 8:30: Welcome
  8:30 – 9:00: CERL Team Update
  9:00 – 10:00: Next Release Cycle
  • Break
  10:15 – 10:45: Enterprise SMS
  10:45 – 11:45: Reporting Update

• PM Schedule
  1:15 – 1:45: Catalog Update
  1:45 – 2:45: System Integrations
  • Break
  3:00 – 3:30: Functionality
  3:30 – 4:00: BIM Migration
  4:00 – 4:45: Mission Effectiveness
Bi-Annual Format

- Late Summer (August) Summit in Washington, DC
  - 2-day format with breakout sessions and group discussions
  - Collaboration teams established to work through shared challenges/issues
- Winter Summit (February) Summit in San Antonio, TX
  - 1-day format – mid point check up on items discussed at Summer Summit
  - Collaboration teams provide progress update working through their project
BUILDER in Five Minutes

Inventory ➔ Assess ➔ Predict ➔ Work Planning ➔ Forecast
CERL Update Outline

• BUILDER Development
  • Federal Team & Recruiting
  • Release Management and Planning
  • Internal Development Tasks
  • Contract Management
  • Testing
  • Demonstrations

• Enterprise SMS Development
  • Background
  • Software Development
  • Engineering Data
  • Demonstration
Federal Software Team Resources

October 2018:
2 Full-Time
1 Part-Time (planning)
2 Undergraduate Interns

Today:
4 Full-Time
2 Part-Time
3 Undergraduate Interns

Challenges as Currently Staffed
• Still under-staffed to meet current needs despite growth
• Difficulties in responsiveness to defects
• Tasking resources between BUILDER and ESMS development

Addressing Current Challenges
• Approval granted to increase staff significantly
• Active recruiting to increasing Federal CS Staff
• Establishing intern recruiting program (2 new interns started Jan. ‘19!)
• Intern pipeline to full-time employment (recent success in CS area!)
Other SMS Status

- Pavements (PAVER) chaired by: James Allen
- Rail (RAILER) chaired by: James Allen
- Fuels (FUELER) chaired by: Joe Karbarz
- Utilities (Utilities SMS) chaired by: Clint Wilson
3.4 Wrap-up

• 3.4.1 Current version for CERL hosted BUILDER
  • Addresses the BRED export / import fix

• 3.4.3 Bug fix update
  • Users with permissions less than Master Planner were not able to view inspections outside of the inspection window.
  • BRED Image Packages not exporting correctly
3.4 Building Options

New Building Data Fields

- The following additions have been made at the General Info. tab on the Building inventory screen:
  - Building "Current Status" now has a sub-status
  - Building Not Inspectable
  - Excluded Systems
  - Building Renovation Year
  - All informational only fields… for now.

Building Alt Facility ID

- The RPUID is now editable in BUILDER Web!
3.4 PM Inspections

New Section Inspection Type

Similar to Distress Survey, in that ratings are done against the subcomponents to determine a subcomponent condition index (SCCI), which is then aggregated to the section level using subcomponent weight factors to determine the section (CSCI).

However, SCCI is determined based on the direct rating given to each subcomponent.

Subcomponent weights are not exposed through the user interface or a library for modification.

Text is also available to provide guidance on the expectations of subcomponent ratings.
3.4 Distress Survey Update

Direct Rating of Subcomponents

If you do a distress survey, but choose to provide both a direct rating and record distresses, the direct rating is what’s used to calculate the CI.
3.4 Section Status

Sections Can Now Have Status

Not tied to any functionality
CI roll-up weight, total replacement cost, work items

Have requested to add this status to the policy attributes so that “replaced” sections do not generate work items.
3.4 Work Item Generation

All Work Items Have Priority

Previous versions of BUILDER would generate items with only a Policy Sequence.

We discovered that one cannot generate work items without a prioritization scheme now.

Can Generate Work Items at the Organization level
3.4 Sample Work Items

Generate work items based on sample

Great for not localized issues rather than sectioning by condition
3.4 Other Notes

BRED 3.4

BRED 3.4 still “in testing”

Old BRED still works fine but does not have any of the new fields.

CII Library

The Component Importance Index is used to establish a section importance.

Helpful for work prioritization
BUILDHER Release Contents & Schedule

- **BUILDHER 3.4.1** – January, 2019 (supporting network enforced security change)
- **BUILDHER 3.4.2** – (NNSA Cost Modifier Work)
- **BUILDHER 3.4.3** – February, 2019 (12 bug fixes)
- **BUILDHER 3.5** – April, 2019 (5 new feature sets, 44 bug fixes, Scenario Silverlight removal)
  - Cost Modifier, Inventory Improvement, POM Scenario, Work Item Previous Year Status, Auditing Improvements

1/2019
- **BUILDHER 3.4.1**

2/2019
- **BUILDHER 3.4.3**

4/2019
- **BUILDHER 3.5**
3.4.3 Bug Fixes

- BUG 2139: Scroll bar moves both date and window position simultaneously
- BUG 2213: Crash when opening Efficiency Wizard at Functional Area Level
- BUG 2373: Functionality - Checklist data type does not show up
- USER STORY 2827: Save without closing functionality assessment in BRED
- USER STORY 2831: Finger scroll on functionality assessment and inventory tree in BRED
- USER STORY 2833: “Take Picture” option for Question Image in BRED
- BUG 3000: Save after changes to comments in BRED
- BUG 3021: assessment window does not expand with the application screen (drag corners)
- BUG 3022: no comment buttons on functionality assessments
- BUG 3024: put the percent complete for each assessment in the assessment summary window (it’s there once you open it)
- BUG 3025: Add new building error on the inventory side (cannot edit year built due to string to integer issue)
- BUG 3026: widen the scrollbars on inventory tree if possible
- BUG 3027: assessment saving is pretty slow
- Functionality assessments are now properly displaying the percent completion field for assessments where applicable.
- The “Historic” checkbox on the building inventory screen is now functioning as expected.
- Changes to a Component Section that would affect the Component Section Condition Index was not being reflected in a Facility’s rollup.

- In Cost Books, the general multiplier text box for the Building level costs now saves correctly.
- An update to Internet Explorer caused BRED Exports and Rollups to appear as if they froze mid-process. A fix has been applied to BUILDER to accommodate IE’s new behavior.
- Component Section’s with long descriptions were previously wrapping incorrectly in the Inventory tree, causing the description to start on a new line. This has been corrected to display more naturally.
- Inspection work items were incorrectly creating new inspections when their status was set to “Completed”.
- An update to BUILDER required by a recent security protocol scan added requirements for checking for user inactivity that would enact user locks if outside the acceptable time window. BUILDER 3.4 required an upgraded version of SQL Server and a database configuration was not properly migrated. This combination put users outside of the acceptable time window in a limbo state of not being able to log in, but not actually being locked out.
- An upgrade to the inventory tree caused the new page element to think there was a cross site scripting issue with data with which BUILDER was populating the inventory tree. A correction was made to allow BUILDER to display the required data while still protecting against cross site scripting vulnerabilities.
- BUILDER Component Subtype descriptions corrected.
- Users can now save changes to the Site pages.
- Users utilizing the BUILDER API Webservice can now save Section Alternate ID information.
3.5 Bug Fixes

- Distress survey density should be computed, not selected
- BRED imports should not start automatically
- Navigation Search not respecting user permissions
- Building Status Year is Not Enforced
- Dialog box missing when you create Site or Complex already in Organization
- Policy Not Saving Correctly
- Work Generation failing for Facilities with Projects
- Standards not populating
- Warranty in Effect Indicator
- BUILDER Distress Survey Help Link not Linked
- Construction type shows as "Leased" when DB value is NULL
- Completing Inspection Work Item Creates Bogus Inspection With No Rating
- Cannot delete facility if efficiency assessment exists
- Unable to delete building with subissues
- BUILDER not creating performance record table for new component sections
- KBI functions in BUILDER API Broken
- Seismic Zone is spelled wrongly
- Green Item - Site Level Master Planners should not be allowed to create organizations
- DLA/DeCA Whole Building "Replace"
- Remove defunct seismic tables from BRED files
- Work Plan Prioritization
- "Copy WorkItems" context item does not immediately enable when a new scenario completes
- Site PRV Calculations Wrong
- PRV does not match the sum totals of items in a complex/site/org
- Click Jack security vulnerability
- Install leaves all foreign keys untrusted
- Paint Work Items
- Organization Work Items
- Work item changes not recognized by API
- Missing point of contact fields in the API data contract
- Changes made to Funding Restrictions to Work Configuration not saving
- DHA Scenarios Analysis graph is not correct
- Component Section Cost Book Edits.
- Export Scenario Analysis Grid to Excel:
- Scenario Error Reporting
- BRED - unable to export images
- BRED Images with Blank Titles
- Functionality Work Items not being generated
- Fiscal year needs to be adjusted in CostRecordDisplay_* views
- PDF Attachments for Functionality Questions - This was named already, however it sounds like there is reasonable additional work required to make this work correctly with BRED. This would be to ensure that Functionality Questions/Answers can have PDF attachments for both BRED and BUILDER.
- Calculate RPL for Paint
- API Rollup Permissions
- Nightly Rollup not updating FCI
- Functionality Attachments File Types
3.5 Features

**BUILDER Feature Contract** – Extended from Dec. ‘18 to end of Feb. ’19

- Inventory Improvement Package
- Catalog Interaction Improvements (API)
- Update Scenarios to Support POM
- Scenarios Trust Previous Fiscal Years
- Custom Report User Interface (PowerBI) Design – not a completed solution, but a design spec. and prototype provided
- Additional BUILDER Auditing Groups (track changes to Work Items, Work Configuration Settings, Cost/Service Life Books)
3.5 Performance Improvement Target

**BUILDER Database SQL Server Optimization** – Contract concluded at end of CY18

- Contract to remediate BUILDER Database performance issues exposed by increased data volume
- Heavy documentation required to provide lessons learned guide for application within ESMS
- Result: further optimized database for better application responsiveness; faster BUILDER!
- *Contract results and recommendations targeted for BUILDER 3.5*
Montana State University TechLink T-SEAL
- Automated user interface test buildout for regression stability
- Manual brute force testing
- Current Process:
  - Send updated software to T-SEAL team for review; wait for results
  - Address any issues identified
- Future Process:
  - Integrate automated testing into build process to provide instant feedback
  - Address any issues identified
  - Build and deploy a fully tested application in a single step
- CERL DevOps lead working to integrate tests into automated builds now
- Test suite still developing with T-SEAL team

CRADA Partner Early Release
BUILDER 3.5 Preview Demos

- BUILDER 3.5 Demo
Cost Modifier Enhancement

- **BUILDER 3.5**
  [https://costmod.buildersoftware.net](https://costmod.buildersoftware.net)

Adobe Acrobat Document

Adobe Acrobat Document
Next Round of BUILDER Development

Review of 2018 Requested Changes (Top 5)
- Catalog Editor Request
- Custom Report User Interface
- Additional BUILDER Auditing Groups – Added to current development contract!
- Access Control Overhaul Feature
- Functionality Accessible Through BUILDER API

Additional BUILDER Work in 2018-2019
- Microsoft Silverlight replacement (Functionality and recent Scenarios additions)
- Prioritizing BUILDER Bug Backlog to address in highest priority order
Enterprise SMS Progress
ESMS Development

Background
- Initiated by Fuels and Utility domains
- Single, flexible, modern platform for all SMS Domains
- Current applications showing age both aesthetically and technologically
- Provides a new framework for advanced data analytics, prediction, and optimization

Design Philosophy
- Common software architecture to accommodate all current SMS domains (buildings, rail, pavements, utilities, fuels)
- Abstract design to allow for rapid expansion to account for new domains
- All work completed on shared platform usable by every ESMS Domain
Software Development

Completed Milestones
• Optimized ESMS Desktop App
• Initial Long-Range Work Planning
• PowerBI Integration with ESMS Web

Short-Term Milestones
• BUILDER API Integration
• API Services for integration with other systems
• Workflow – work item lifecycle
• Long-Range Work Planning Funding
• User Interface Design Review

Long-Term Milestones
• BUILDER Feature Parity
• Advanced Analytics
• Work Planning Optimization
Engineering Data

Completed Milestones
• Fuels Engineering Criteria via Functional Assessments
• Pilot Assessments at Offutt Air Force Base

Nearing Milestones
• Engineering IDIQ MATOC award

Short-Term Milestones
• SMS engineering data peer-review/validation
• SMS engineering data gap analysis

Long-Term Milestones
• Lifecycle characteristics and modeling for remaining FACs
Enterprise SMS Demonstration

Link was removed as this is a dynamic testing environment.
• Work Analysis in Enterprise SMS – Staging Site
• BUILDER Data Import – Test Site
• PowerBI Demonstration – Staging Site
Reporting

Presented by Kurt Sorensen
CERL Custom Report Library

- A custom reports guide was constructed on behalf of the USAF BUILDER team to detail the custom reports loaded for the USAF BUILDER site.
- This version of Custom Reports was recently reviewed and updated by USAF/CERL and may differ from reports of the same name on other BUILDER Sites.
- These reports can be moved to any other BUILDER site if desired by a customer.
DIGON Custom Report Library

- Catalog
  - Number of uses for each item
  - Printable and full details
- Audit
  - Insights into records by person within a date range
- QA Review
  - Also QA Review Details

- Scenario Summary
  - Visual trends
- Site
  - Multiple versions
  - Work configuration
  - Inspection photos
Data Quality Console - DHA

- Creating tools to help identify data anomalies
Lunch – 1:15 PM
Cost Catalog Update Strategies

- Federal (DoD) Cost Source
- Commercial Cost Source
- Integration Methods
Federal (DoD) Cost Source Status

• Leverages Tri-Service Automated Cost Estimating System (TRACES)
• Uses TRACES DoD Costbook currently under development
• Replacement Assemblies for select BUILDER component catalog items have been built based on TRACES DoD costbook task items. These task item unit costs are being completed as part of larger USACE Huntsville contract - will feed into the assembly level unit costs.

Status: In development – initial rollout targeted for June 2019 (USACE Huntsville to USACE CERL)

Examples of assemblies that have been built on next slide.
### Fed Cost Source Assembly Examples

**B203001 Exterior 3' x 7' Exterior Personnel Solid Steel Personnel Door Replacement, EA, CMC 21401**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Vendor</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>08131333XXXX</td>
<td>Door exterior residential full panel, 3'0&quot; x 7'0&quot; (900mm x 2100mm) prehung, insulated</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Replacement of existing solid steel door &amp; frame, include repairs to all surrounding finishes</td>
</tr>
<tr>
<td>08121313XXXX</td>
<td>Knock Down Hollow Metal Single Door Frame, 16 gauge, 3'0&quot; x 7'0&quot; (900mm x 2100mm), 5-3/4&quot; throat (144mm)</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Replacement of existing solid steel door &amp; frame, include repairs to all surrounding finishes</td>
</tr>
<tr>
<td>08714113XXXX</td>
<td>Door Hardware, School door package for exterior, hinges, cylinder, closer, lever pull, door stop &amp; panic device</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Replacement of existing solid steel door &amp; frame, include repairs to all surrounding finishes</td>
</tr>
<tr>
<td>08714151XXXX</td>
<td>Threshold, Flat saddle, 3'0&quot; long, aluminum</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Replacement of existing solid steel door &amp; frame, include repairs to all surrounding finishes</td>
</tr>
<tr>
<td>08050511XXXX</td>
<td>Demolition, metal door frame</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Removal of existing solid steel door</td>
</tr>
<tr>
<td>08050511XXXX</td>
<td>Exterior single door demolition, 3'0 x 7'0 x 1-3/4&quot; [914m x 2134mm x 44mm]</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Removal of existing solid steel door</td>
</tr>
<tr>
<td>ACARCARP1</td>
<td>Laborer (Semi-skilled)</td>
<td>0.5</td>
<td>HR</td>
<td>Yes</td>
<td>Removal of existing solid steel door</td>
</tr>
</tbody>
</table>

**D504050 Replace Emergency Light Fixture, EA, CMC 21610**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Vendor</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>26050513XXXX</td>
<td>Remove interior fluorescent lights, 2 lamps, 2' x 4' (600mm x 1200mm), recessed drop-in, 15'(4.6m) high, incl supports &amp; whips</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Removal of existing fluorescent light fixture</td>
</tr>
<tr>
<td>26511613XXXX</td>
<td>Interior fluorescent lights, acrylic lens, grid recessed ceiling mount, 2-40 W, 2' W x 4' L, incl lamps, mounting hardware and connections</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Replacement fluorescent light fixture</td>
</tr>
<tr>
<td>26515323XXXX</td>
<td>Fixture whips, 3/8&quot; greenfield, 2 connectors, TFFN, (3) #16, 6' L</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Replacement Fixture Whip</td>
</tr>
<tr>
<td>26516163XXXX</td>
<td>Emergency back up battery &amp; lamp, for fluorescent lighting fixture, 32 W, (Type XF1)</td>
<td>1</td>
<td>EA</td>
<td>Yes</td>
<td>Replaces battery backup for fluorescent light fixture</td>
</tr>
<tr>
<td>B-ELECTRN</td>
<td>Electricians</td>
<td>2</td>
<td>HR</td>
<td>Yes</td>
<td>Additional labor for unknown conditions</td>
</tr>
<tr>
<td>B-CARPENTER</td>
<td>Carpenters</td>
<td>2</td>
<td>HR</td>
<td>Yes</td>
<td>Additional labor for unknown conditions</td>
</tr>
</tbody>
</table>
RSMeans Cost Source Status

- Leverages RSMeans Assemblies and Line Item data
- NNSA has implemented RSMeans costs into BUILDER
- Update to all BUILDER cost entries 1500+ additional catalog items added

Status: Available for now through Gordian RSMeans
System Integration
Examples
Defense Health Agency

- API based integration with the in-house CMMS, DMLLS-FM.
- Batch communications with full support of all sections within the CMMS.
- Transferring Inventory, Condition Assessments, and Work Items

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Christopher J. Blum
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Interface Application facilitates data exchange
  • Connects to BUILDER and pushes/pulls info via BUILDER API
  • Exchanges info with MAXIMO via data tables
Data Elements from MAXIMO
  • Facilities (MAXIMO Locations) – Updates BUILDER when facilities records are added/updated
  • Component-Sections (MAXIMO Assets) – Updates BUILDER when asset records are added/updated/deactivated
Data Elements to MAXIMO
  • Condition Index – Sends the current projected CI for an asset to MAXIMO after a new inspection or change to the asset record
  • Work Items – Sends the work requirements generated by BUILDER scenario to MAXIMO for tracking and execution

Jonathan E. Crittenden
  • CBM Program Manager
  • NAVFAC HQ - PWBL
  • jonathan.e.crittende@navy.mil
Air Guard

• API based integration with the in-house CMMS, iEMS.

• Implementation in two phases with batch files SPIRE. After information assurance approval, a direct and automated API will sync data between the two systems.

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Kurt Sorensen
• Contracted Support
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• kurt@digonsystems.com
National Nuclear Security Administration

• API based integration with multiple CMMS applications

• SPIRE is leveraging the BUILDER Application Programming Interface (API) to facilitate data communications. The SPIRE platform has a web portal that allows users to process batch Excel files. If a more real-time capability exists within the CMMS, SPIRE also provides a RESTful API that simplifies communications.

Incheol Pang
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• (202) 586-9257
• Incheol.pang@nnsa.doe.gov

Kurt Sorensen
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• kurt@digonsystems.com
Relates the suitability to perform the functions for which it is required (built-in capability of the asset)

May experience loss due to changes in:
- Occupant requirements
- Materials or technology
- Codes/Regulations

The Functionality State is improved through Facility Modernization Investments
FY19 Functionality Improvements

- Silverlight Conversion → Angular
  - Microsoft Silverlight deprecated in 2012
  - Conversion for Scenarios, Functionality, Backend Tools
- Database View Optimization for Functionality Custom Reports
  - Enhance ability to create new custom reports
- Update “Out of the Box” Functionality Assessments
  - Current Functionality assessments are out of date
  - New Functionality set will be based on WBDG design objectives
FY19 Functionality Improvements

- Whole Building Design Guide (WBDG) – Design Objectives

[Participating Agencies Diagram]

[Design Objectives]

- Accessible
- Aesthetics
- Cost-Effective
- Functional / Operational
- Historic Preservation
- Productive
- Secure / Safe
- Sustainable
Custom Functionality Users

- USDA – Agricultural Research Service (ARS)
  - Sandra Sadler - Sandra.Sadler@ARS.USDA.GOV
- Defense Commissary Agency (DeCA)
  - John Dulin - John.Dulin@deca.mil
- National Nuclear Security Administration (NNSA)
  - Incheol Pang - Incheol.Pang@NNSA.DOE.Gov
- Defense Health Agency (DHA)
  - Roy Hirchak - roy.d.hirchak.civ@mail.mil
BIM Data Migration

Presented by Matthew Walters
Objectives
• Investigate USAF requirements for construction information data exchange to BUILDER
• Demonstrate BIM to BUILDER prototype data exchange process

Major Tasks
• Investigate current Air Force BIM requirements
• Map BIM data requirements to BUILDER SMS data elements via COBie
• Review alignment with current SMS BUILDER data collection practices and identify gaps
• Develop product classification mapping to BUILDER SMS component inventory schema
• Test BIM to BUILDER process with USAF provided BIM model
• Document results and recommendations
## Tasks Progress

<table>
<thead>
<tr>
<th>Task</th>
<th>Status</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigate current Air Force BIM requirements</td>
<td>Completed</td>
<td>Air Force requires use of USACE ECB 2018-7 ADVANCED MODELING REQUIREMENTS in their projects (<a href="http://www.wbdg.org/ffc/af-afcec/bim">http://www.wbdg.org/ffc/af-afcec/bim</a>)</td>
</tr>
<tr>
<td>Map BIM data requirements to BUILDER SMS data elements via COBie</td>
<td>Completed</td>
<td>Facility-&gt;Building Info; Floor-&gt; Comp-Section Name; Space-&gt;Section Detail Location; Zone-&gt;Functional Area; Component-&gt;Component-Section Detail</td>
</tr>
<tr>
<td>Review alignment with current SMS BUILDER data collection practices and identify gaps</td>
<td>In Progress</td>
<td>Rules for section aggregation, section naming conventions, section details, and catalog coverage</td>
</tr>
<tr>
<td>Develop product classification mapping to BUILDER SMS component inventory schema</td>
<td>In Progress</td>
<td>Map OmniClass Table 23 products to BUILDER Catalog Items (CMCs)</td>
</tr>
<tr>
<td>Test BIM to BUILDER process with USAF provided BIM model</td>
<td>In Progress</td>
<td>Developing a sample COBie file containing data exported from example BIM.</td>
</tr>
<tr>
<td>Document results and recommendations</td>
<td>Started</td>
<td>Continuously recording results</td>
</tr>
</tbody>
</table>
Data obtained from AFCEC provided BIM

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Project</th>
<th>Name</th>
<th>Category</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST FLOOR</td>
<td></td>
<td></td>
<td>TO BLAST HALL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **FIRST FLOOR**: To Blast Hall
- **Category**: Custom
- **Project**: Autodesk Revit 2016
- **Date**: 6/8/2016, 3:45 PM
Follow-up

Mariangelica Carrasquillo-Mangual
mariangelica.carrasquillo@usace.army.mil
Installation Mission Effectiveness

Virtual Testbed for Installation Mission Effectiveness

Presented by Buddy Bartels
Establish an **Installation Common Operating Picture** to automatically identify **integrated optimization choices** using **Big Data**, **Predictive Analytics**, and **Artificial Intelligence**.

**OUTCOMES**
- Enhanced Power Projection Capability
- Resilient Communities, Facilities, and Resources
- Resource Sharing with Local and Regional Stakeholders
- Local and Enterprise level Monitoring and Control
- Increased Land Utilization and Optimization

**INSTALLATION FOCUS AREAS**
- Mission
- Buildings
- Natural Resources
- Ranges and Lands
- Services: Operations, Safety
- Transportation Infrastructure
- Utilities: Energy, Water, Wastewater

**Big Data, Analytics, Visualization, KPIs**
Decision Architecture

The current situation: Individual stovepipes isolate information, require manual efforts to synthesize, and generally make holistic decision making impossible. Decision-makers need to understand the greatest threats to resiliency, best return on investment, potential future issues with infrastructure, and current and future resource demands that effect levels of service.

Example Sources
- Facility Condition
- Existing Work Orders
- Security Threats
- Energy and Water Consumptions
- Emergency Services
- Training Operations
- Transportation
- Base Services
- Equipment Sensor Data
- Key Words
- News & Weather
- Web Feeds

The objective: Develop an integrated model of installation resources, assets, and services, along with processes to transfer and ingest data from existing sources. Leverage machine learning to develop insights of behaviour and impacts across business lines to provide installation personnel with knowledge and insights about how to optimize operations.

The cloud provides the tools and elasticity to meet Army-scale problems.
BUILDER Data Integration Proof of Concept

Live Demonstration
Ft. Hood Scenario Analysis

Live Demonstration
Quick Question

What is the interest level in a 1 day training course next year?
Thank You

Next Summit Summer @ Keck Center in DC
August 20-21, 2019

Please send feedback and future discussions to:
info@digonsystems.com