Fermilab Facilities Infrastructure Database Overview

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Fermilab - FESS Site Services
About Me

Josh Juneau

• Employed at Fermilab since 1996
• Summer Employee, Desktop Support, Database Administrator/Application Developer
• Oracle Database Administrator
• Java & Java EE, Oracle PL/SQL
• Involved in Chicago Java Users Group
• Author, Speaker, Java Champion, Committer for EE4J and Apache NetBeans
About FESS

Fermilab’s Facilities Engineering Services Section builds and maintains mission-critical infrastructure and services from which high-energy physics research can be safely accomplished without interruption.

• FESS Departments
  – Engineering (Architecture, Construction, Engineering)
  – Facility Management (Building and Support Systems, Operations and Maintenance, Utilities and Engineering)
  – Site Services (Services Support, Data Services, Roads and Grounds, Ecology, Vehicle Maintenance, Real Property Data Management)
  – Logistics and Property Control (Inventory Control, Property Management, Transportation Services)
About Fermilab Real Property

- 6,800 acres of land (much of which is managed natural landscape)
- $1.9 billion total replacement plant value
- 366 buildings, 2.4 million gross square feet
- Each property is assigned a building manager - responsible for completing standard validation each year and performing general upkeep of facility
- Many building managers are assigned multiple properties
- Moving to an Area Facility Manager process in the future

- [https://fess.fnal.gov/fermilab-real-property-infrastructure/](https://fess.fnal.gov/fermilab-real-property-infrastructure/)
Facilities Infrastructure Database (FID) History

• The FID application was originally conceived in 2011, as Fermilab was making efforts to move from paper and spreadsheet-based FIMS validations to an electronic format.
• Originally a duplicate of the FIMS database structure, with the additional enhancement of validation data tables for logging purposes.
• Application front end built in-house by Fermilab reflecting interface geared towards Fermi usage for FIMS fields and validation screens.
• Added additional integration with our CMMS systems for viewing of Work Tickets, Equipment, etc. over the years
• Initially included a Condition Assessment interface which was used for a small number of years.
FID Today

- Provides a central portal to the FESS Infrastructure management data
- Supports FIMS and "Active Facilities Data Collection System" (AFDCS) Validations, Building Manager changes, Building Management Data, Equipment Additions, etc.
- Dashboard and reporting for quick reference on Facility data
- Integration with other systems such as CMMS and GIS
- CAIS is used directly for Condition Assessment reporting
FID Validations

- Multiple validation roles to support the validation of separate FIMS data
- Validation screens and logs updated each year, as needed
- All validation data collected to a central repository, and easily extracted

Thoughts for the future:

- Automated reminders for those who haven’t completed validations by a specified date
- Validation summary page for building managers…including separate tables for Building/Trailer and OSFs
- Custom API for quickly developing new validation screens, or perhaps a built-in tool
- Real Property Unique ID integration
FID Application Technical Details

- Application built using Java Enterprise Edition APIs
- Oracle Database
- Hosted on Fermilab Payara Server Infrastructure
- Integration with other databases and applications via RESTful Web Services and Oracle database links
Discussion and Demo - (Using Testing Data)
Additional Information

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