Supporting GIS

Best practices for Incident Management and Daily Operations

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Agenda

• Introduction & History of GIS at PG&E
• PG&E GIS Environment
• New Service Readiness Setup
• Current Support Structure & Process
• Support Documentation
• Reporting & Metrics
• Support Team
• Maintenance and Trouble-Shooting Suggestions
• Further Information
• Q&A
PG&E by the Numbers

5.3 million
Electric customer accounts

18,616
Circuit miles of electric transmission lines

141,215
Circuit miles of electric distribution lines

10
PG&E Employee Resource Groups (ERGs)

19
Division Leadership Teams

4.3 million
Natural gas customer accounts

42,141
Miles of natural gas distribution pipelines

6,438
Miles of gas transmission pipelines

1905
Year PG&E was formed

3 million
Customers who get clean energy from Diablo Canyon Power Plant

$1.1 billion
Total annual economic impact in California from Diablo Canyon

3,896
Total generating capacity of PG&E's hydroelectric system in megawatts

$302 million
Property taxes and franchise fees PG&E paid to 49 counties and 243 cities in April 2014

$22 billion
Economic activity contributed by PG&E in 2012

795
Teenagers who got workforce training thanks to PG&E Summer Jobs program

215
Teenagers who had paid summer jobs thanks to PG&E Summer Jobs program

23,000
Employees

$2.3 billion
PG&E spent on diverse suppliers in 2013, a new record

90
Years that PG&E’s Emeryville Repair Shop has been in operation
History/Overview of Electric GIS at PG&E

• **Scope:**
  - The Electric Distribution Asset Management /Geographic Information System (ED AM GIS) project will enhance and convert PG&E ED asset data into a centralized GIS that is integrated with SAP.
  - The future state is to have a single, integrated system that serves as PG&E’s master database of asset records.

• **Current Status:**
  - Deployed to two out of the four PG&E regions - replacing all existing electronic and paper maps.
  - Deployed web-based viewing application to support user groups in estimating, engineering, construction, and operations.
  - Deployed the interface to SAP to help maintain synchronized assets and asset data.

• **Next Steps:**
  - Deploy to final PG&E Regions
  - Retire Legacy Systems
Environment Review

- Solution
  - ArcMap/ArcFm for mapping
    - Access via Citrix
  - Web Portal for general viewing

- Many infrastructure environments
  - Production – nine different databases including
    - Publication, Maintenance, Batch, Schematics, etc.
  - Non-Production – over twelve separate setups
    - Dev, Test, Training, Sandbox, QA, Conversion, etc.

- Integration Points
  - Outage Management System, Distribution Management System
  - Linked to SAP for asset information

- Nightly batch jobs
  - Database Maintenance
  - Database Export/Import and GDB Replication
  - Map Production
  - Interface synch jobs to Non GIS Systems
New Service Readiness

• **Incident**
  • An unplanned interruption to an IT Service or a reduction in the Quality of an IT Service
    • For example a system or application down event.

• **Service Request/Work Order:**
  • A request from a user for information, or advice, or for a Standard Change or for Access to an IT Service.
    • For example to reset a password, or to provide standard IT Services for a new User.

• **Help Desk Support Objectives**
  • Provide a first line, single point of contact, for supporting and resolving service interruptions as quickly as possible
  • Ensure that issues raised by end users are resolved in a reasonable time set for criticality classifications based on SLAs
  • Provide issues tracking reports daily, weekly, and monthly to monitor progress of issues resolution
  • Help prevent recurrence of problems
Support Structure & Process

• Tiered support
  • Tier 1 - Help Desk
    • Take end user calls, identify issues, prioritize
    • Attempt First Call Resolution using FAQ and KDB (Knowledge Database) Tools
  • Tier 2 – GIS Support Team
    • Provide workaround or break/fix based on support documentation
  • Tier 3 – GIS Application and Database Technical Support Team
    • Bug fixes and new requirements
    • Root cause analysis of critical tickets
    • Prevent known problems in future releases
Incident Management Process Flow

Tiered Level Support View

Tier 0 (End-User)
- Start
- End User Seeks Help
- Access Needed or Issue?
  - No
  - User Accesses Online help
  - Issue Resolved?
    - Yes
    - End
    - Help Desk Ticket Created (Tier 1)
  - No
    - Service Desk Contacted

Tier 1 (Service Desk Call)
- Start
- Create Ticket
- Identify Priority and Application
- Provide Initial Support
- Issue Resolved Help Desk?
  - Yes
  - Ticket Status Changed to "Resolved"
  - If no further issues, ticket changed to "Closed" after 15 days
  - Ticket routed to Tier 2
  - End
  - No
- Tier 2 Receives Ticket from Service Desk or Web Form
- Determines Type of Ticket
- Issue, Training
- Enhancement
- Review with Business
- Approved?
  - Yes
  - Tier 2 Routed to Tier 3
  - End
  - No
- Tier 3 Receives Ticket and Contacts User
- Performs Analysis and Problem Resolution with User
- Issue Resolved by Tier 3?
  - Yes
  - Ticket Status Changed to "Resolved"
  - If no further issues, ticket changed to "Closed" after 15 days
  - Ticket closed
  - Vendor supported engaged
  - Vendor Solution Validated by Tier 3
- Issue Solved?
  - Yes
  - Create TFS for bug fix or enhancement
  - Ticket closed
  - No
  - Business or Vendor Issue?
    - Business
      - Business or Vendor Issue?
        - Vendor Issue
          - Vendor Support Engaged
          - Vendor Solution Validated by Tier 3
          - Issue Solved?
            - Yes
            - Create TFS for bug fix or enhancement
            - Ticket closed
            - No
            - Business Issue
              - Business engaged
              - Business response communicated
              - Issue solved?
                - Yes
                - Create TFS for bug fix or enhancement
                - Ticket closed
                - No
                - Vendor Issue
                  - Vendor Support Engaged
                  - Vendor Solution Validated by Tier 3
                  - Issue Solved?
                    - Yes
                    - Create TFS for bug fix or enhancement
                    - Ticket closed
                    - No
                    - Business Issue
                      - Business engaged
                      - Business response communicated
                      - Issue solved?
                        - Yes
                        - Create TFS for bug fix or enhancement
                        - Ticket closed
                        - No
Service Desk Documentation
(Maintained on SharePoint site)

- Run/Play Books
  - RunBook contains information about the environment in order to understand, monitor and fix the application as needed
  - PlayBook is a prescriptive guide documenting the tasks needed to trouble-shoot an issue
- FAQ (quick tips)
  - List of common issues
    - Reset Passwords, Unlocking Accounts, etc.
  - Quick reference links
    - Support URL’s, Active Directories, etc.
- SLA
  - Business criticality
  - Application availability
  - Response time
  - Recovery time
Reporting and Metrics

- **Sample Monitor Scripts**
  - **ArcGIS Server Excess Process Check**
    - Checks task list on servers for too many of same process.
  - **GDBM Health Check**
    - Checks GDBM logs for failure search terms "error, Error processing".
  - **Mxdperfstat Check / PerfQA Analyzer**
    - Performance check based on a default mdx file/ Store Display.

- **Help Desk Reporting**
  - Total number of tickets by type, status, category, assignment group, etc.
  - Ticket aging by week
  - Weekly delta report
  - SLA Report
GIS Support Team

- Support team provides end-to-end support for enterprise GIS applications.
  - Monitor batch jobs
  - Support end user queries and issues
- Serves as a link between Application Development, Maintenance, and Infrastructure.
- Handles end user Performance queries, does initial analysis of issues.
- Coordinates across various teams such as Database, Application, Network and Citrix.
- Proactively notify the business and application release team of any known issues and risks.
Support Team Structure
Initial Triaging Steps

- Contact User for more information (login to system if necessary)
- Determine Environment (Production/Non Production)
- Determine scope (one or more users or entire system)
- Replicate (Yes/No)
- Determine issue: Bug, configuration, access, data, etc.
- Determine solution: Workaround, FAQ, Training, etc.
  - Get customer confirmation to close ticket
  - OR Escalate to higher level of support
  - OR Route ticket to different workgroup
Enterprise Batch Job Scheduler - UC4

- UC4 Workload Automation Software Tool is an enterprise job scheduling platform that is used to manage, monitor, control and synchronize GIS applications with PGE IT.
- Enables one to create intelligent, automated end-to-end IT processes and spans over multiple GIS applications and operating systems.
- Improves GIS data processing, such as automating processes that were previously manual.
  - Data Reconciliation, Data Posting, Managing GDBM services, Web Services and GIS data Maintenance
- Ability to check, validate jobs and notify on failures to support team.
- Ability to schedule multiple jobs with flexibility and complexity.
UC4 Job Scheduling
Infrastructure Maintenance

- Update Operating System Patches, Firmware updates and Database patches
  - Start with Lower environments before applying in Production environment.
- Verify compatibility of OS Patches with GIS Product Vendor.
- Plan user load against infrastructure capacity.
- Tune Application - with help of Database Admins and Infrastructure Admins
  - Start with Lower environments first and then implement recommendations in Production.
- Documenting Change management properly in order to help in issue troubleshooting.
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Application & Network Maintenance

- Update Application Patches as required and test them in lower environments first
- Coordinate with Infrastructure and Operations Teams to improve performance and System Availability
- Validate Network Connectivity between Database Servers and Application Servers
Database Maintenance

- Implement DBA Recommendations as required
- Create and schedule jobs to Gathers statistics and Rebuild Indexes
- Reconcile GDB Versions
- Delete orphan Versions and Schedule Geodatabase Compress
- Run PerfQA Analyzeer, Mxdperfstat and establish benchmarks
- Monitor SDE state lineages
- Monitor Database for TOP activities
For Further Information

• ITIL (IT Infrastructure Library)
  - From website: “...a series of documents that are used to aid the implementation of a lifecycle framework for IT Service Management. “

• Mxdperfstat
  - http://www.arcgis.com/home/item.html?id=a269d03aa1c840638680e2902dadecac

• PerfQA Analyzer

• Email us at:
  - Shaun Collins (s4ct@pge.com)
  - Nittala, Venkateswarlu (VxNi@pge.com)
Q & A

• Thanks for your time - Any Questions?