Job Tracking for ArcGIS (JTX) – A Workflow Solution
Agenda

• An Overview of Job Tracking (JTX)
• Business Problems Addressed by JTX
• JTX Framework
• Key Features of JTX
  – Job Management and Tracking
  – Documenting Workflows
  – Data Management
• Q & A
What is JTX?

- Workflow management system
- Job assignment and tracking
- Centralized job information
- Version management
- History and change detection
- Decision support
- Resource allocation

... a solution helping organizations carry out their day to day work more efficiently.
Business Problem

- GIS Project Management
  - Multiple Specialists
  - Concurrent Operations
  - Varying Skill Levels
  - Distributed Data
Emergency Operations Center

*Fire Incident Mapping Workflow*

- High demand
- Fast response time
- People across many organizations and departments
- Technicians need to quickly understand operation processes
Data Collection

Extraction from Multiple Data Sources and Imagery

• High standards for data quality

• Numerous data sources
  – Where is it?
  – What is it?

• Multiuser editing environment
Solution Requirements

- GIS business management solution needs to support:
  - Staff scheduling
  - Workflow modeling and documentation
  - Concurrent, asynchronous job tasks
  - Spatial data integration
  - History tracking
  - Reporting
  - Alerting
JTX Solution

- Define and document workflow processes
- Manage GIS data and simplify versioning workflows
- Assign work and track project progression
- Maintain history of completed tasks
Background on JTX

- Response to NIMA's disaster relief efforts
- Need for light-weight workflow management tool
- Tool to directly support GIS operations

  Tracking – who / where / what
  Productivity – data / maps updated FAST

- Now a complete enterprise workflow management system
- Can be leveraged in many business models
JTX System Framework

• Desktop
  – Job Management Application
  – Configuration Management Application
  – ArcMap and ArcCatalog Tools

• Server
  – ArcGIS Server component
  – Template Web Application
  – Web Services

• Developer Kit
Managing Tasks Through “Jobs”

- **Job =** Unit(s) of work performed by one or more people

- **Examples:**
  - Extract new features from aerial photography
  - Update hydrant at specified coordinates
  - Create a work plan for a subdivision
  - Create a 1:50,000 scale map
  - Loading and processing of data
  - Perform site analysis for store location
  - Track search and rescue operations
Anatomy of a Job

- Resource
- Descriptive Information
- Activity Log
- Workflow
- Geographical Area of Interest
- Geodatabase Version
Job Properties

- **Standard**
  - Name, due date, assignment, priority, etc.

- **Extended**
  - Custom, business specific
  - i.e. parcel number, department, permit id, market territory
Notes and Attachments

• Attachments - Supporting documents of the job
  – Stored in database
  -or-
  – Referenced by path/link

• Notes
  – Free text
  – Miscellaneous information
Area of Interest

- Defines where the work is located
- Spatial component of the job
- Guide for users
- Visualization and analysis tool for managers
Resource

• Which user or group is currently responsible for the job?

• Automatically reassign job at any point in workflow to either
  – User
  – Group

• Group also serves as link between application privileges and user

JTX User

Manages user access to JTX

JTX Group

Application Privilege

Grants user ability to perform actions in the system
Job History

• What’s happened over the course of the job?
• Automatically logs as user works on job
• Tagged with user name and date
• Supplemented with user input
Workflow Management - Key Benefits

- Streamlined workflows = Time savings
- Standardized workflows = Consistent user experience and controlled tracking
- User productivity improved by automated tasks
- Work progress and information easily retrieved
Workflow Management with JTX

- Operational aspect of the job
- Leverage best practices and procedures
- Consistent, traceable process for users to follow
Designing Workflows

• **Job Types are Job “Templates”**
  – Blueprint for setting up new jobs
  – Standardizes work processes
  – Predefine operational information

• **Drag-n-Drop Workflow Designer**
  – Step type utilization
  – Connected by paths
  – Rules for workflow integrity
Workflow Steps

Manual

- Non-automated task
- Indicates some manual action for the user
- Status and completion tracked

- Example manual steps
  - Collecting field data
  - Retrieving paper documents
  - Performing an action without need of a computer
Workflow Steps
Automated

- Launches an application, executable, script
- Calls to other components and services
- Extensible step framework
Step Descriptions

• Explicit documentation for each task
• Step-by-step integrated help
• HTML based
• Link to any URL or design your own

...build a knowledge base for your business processes and publish to your users.
Data Management with JTX

- JTX is database driven
- Configurable rule base
- Manage database access
- Access data from multiple geodatabases

- Repository for job information
- Feature level tracking
- Notifications when changes are made in the database

...access the right data at the right time.
Version Management

• Versioning should be managed with careful thought
• Can sometimes be intimidating for new users
  – Greater potential for errors
• Simplify user’s experience working with versions
• Associate a Geodatabase version to a job
Map Document Management

- **Step to start ArcMap**
  - “smart launch”

- **Toolbar for ArcMap**
  - Productivity tools
  - Job specific utilities

- **ArcMap document (.mxd)**
  - Portable working session
  - Saved in database with job
  - Persists for lifetime of job
  - Predefine contents and cartography
JTX Transactions

- Record of feature-level changes
- Persistent storage
- Non-spatial tables
- Stores record of edits made in job version

"Feature History not Geodatabase History"
- Not a simple time slice
- Not just a historical snapshot
- Ability to create graphical layer displaying progression of edits over time
Notifications

• Triggers
  – Any job action
  – Workflow step

• Spatial notifications
  – Create rules for changes to feature class, geographic area or specific feature

• Fully configurable!

Edits to data trigger notifications
Reporting

• Build simple reports
• Query and summarize key fields
• Stylized output
• Execute from desktop and server
Why Server for JTX?

- Exposes JTX capabilities to non-GIS users and systems
- Leverages the investment in JTX across the organization
- Integrates job management capabilities into a Service Oriented Architecture
Use Cases for JTX Server

- Manager/Supervisor
- Non-GIS user
- Integration with other business systems
  - Action in an external system initiates an action in JTX
## Desktop vs. Server JTX

<table>
<thead>
<tr>
<th>Feature</th>
<th>Desktop</th>
<th>Server</th>
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</thead>
<tbody>
<tr>
<td>Job management</td>
<td>★★★★★</td>
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<tr>
<td>Workflow execution</td>
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<td>Accessibility</td>
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<tr>
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Solution Summary

*JTX provides enterprise geospatial workflow capabilities...*

- Job Management
- Task/Workflow Management
- Centralized Job Information
- Version Management
- Decision Support
- Resource Allocation (people)
- Rich Documentation

- Intuitive Interface
- User Productivity
- Configurable
- Customizable
- Interoperable
- Supports Multiple Deployment Options

...To all areas of your organization.
JTX Software Requirements

- **JTX Desktop**
  - ArcGIS Desktop 9.3
  - ArcEditor or ArcInfo license level

- **JTX Server**
  - ArcGIS Server 9.3
  - Standard edition or higher

- **Job Management Repository**
  - Multiuser Geodatabase
Resources and Training

- **ArcGIS Desktop and Server Help** *(Check Online for Updates!)*

- **Live Training Seminars**
  - Introduction to Job Tracking for ArcGIS (JTX)
  - Introduction to the Production Line Tool Set (PLTS) for ArcGIS

- **Instructor-Led Training**
  - ArcGIS Desktop I: Getting Started with GIS
  - ArcGIS Desktop II: Tools and Functionality
  - ArcGIS Desktop III: GIS Workflows and Analysis
  - Data Management in the Multiuser Geodatabase
  - Introduction to ArcGIS Server
  - ArcGIS Server: Web Administration Using the Microsoft .NET Framework