Agenda

- Vision & Strategy
- What’s New In the Unified Platform
- Development Process Support
- Features
- Future Deliverables
- Questions
Agenda

- Vision & Strategy
- What’s New
- Development Process Support
- Features
- Future Deliverables
- Questions
Teamcenter Business Modeler IDE

Unification

- Best in class product tailoring environment
- BMIDE unifies all aspects of both codeless extensions and programming extensions in a coherent manner
- Business analyst friendly
  - UML based interface
  - Focus on usability
- Supports codeless and programming extensions in a single environment
  - Emphasis on codeless extension
  - Enforce best practices when programming extensions become essential

© UGS Corp. 2006. All rights reserved.
Driving Extension Configuration

Existing Development Paradigm

- Customer Solutions
  - Configuration
  - Codeful Behavior

- Industry Solutions
  - Configuration
  - Codeful Behavior

- Teamcenter Core
  - Applications
  - Methods
  - Object model
  - Behavior
  - Access Rules
  - Workflows

Evolving Configuration Paradigm

- Partner Extensions
  - Customer Extensions

- Industry Solutions
  - Extensions and Configurations

- Teamcenter Core
  - Applications
  - Configurable Behavior
  - Methods
  - Object model
  - Access Rules
  - Workflows

Driving codeful behavior into codeless BMIDE configuration
BMIDE Framework

- UGS is focusing on building products on open standards
- BMIDE is built on Eclipse Rich Client Platform
  - Plug-ins that extend framework
  - Eclipse RCP provides clear interface for building extensions
  - Plug-ins are upgradable and interoperable
- Leveraging integrated tool set
  - Source Control Management: ClearCase, Perforce, CVS, Subversion
  - C/C++ and Java Editors, Debuggers
- Open framework
  - Tools can be extended by customers to create additional tools
- BMIDE operations in both
  - RAC Applications
  - Standalone BMIDE Client
Agenda

- Vision & Strategy
- What’s New
- Development Process Support
- Features
- Future Deliverables
- Questions
What’s New In the Unified Platform

Unified Platform - Teamcenter 2007

- BMIDE
- RAC Application
- Standalone BMIDE
- Business Objects
- UML
- Rules Engine Framework
- Templates
- Concurrent Development
- File Repository
- CMM Repository
- Test and Deploy
- Deploy Dry Run
Agenda

- Vision & Strategy
- What’s New
- Development Process Support
- Features
- Future Deliverables
- Questions
Business Extension Development Cycle

- Analyze & Design
- Requirements
- Develop
- Integrate
- Deploy To Production Environment
- Test
Current Process

- Business analyst create “sb” scripts and plmxml files to transfer definitions to each site.
- Each site admin takes the “sb” script and runs the script to update the schema.
- “sb” utility and script file are crucial to synchronizing the schema for all sites.

© UGS Corp. 2006. All rights reserved.
Templates

- New for Teamcenter 2007
- Container of business extensions, best practices, schema, LOVs
- All Teamcenter COTS schema, types, LOVS, etc will be contained in a template
- Templates can be extended, example: Industry Solutions
- Customers can create their own templates that extend Teamcenter templates
- Template dependencies can be declared so that a template can not be installed unless dependent templates are present in the system.
The BMIDE manages all extensions through a template

Business Analysts create an Extension Environment Project in the BMIDE that manages a customer template

As Types, Classes, Attributes, LOVs, etc. are created in the BMIDE that are automatically placed into the template

Analyst can track COTS versus custom extensions

The template becomes the mechanism for deploying custom extensions to any Teamcenter environment

Customer extensions will be moved to template
Templates

- New Customers
  - Customers desiring to tailor Teamcenter business behavior can start with a new clean template

- Existing Customers
  - Must move custom extensions into a template
  - The BMIDE will provide tools to separate existing customer extensions from Teamcenter and move them into a template
In Teamcenter 2007, the customer template replaces all the individual scripts and XML files.
The template is deployed as a whole unit to any Teamcenter server.
Each Teamcenter server will synchronize itself with the contents of the template.
Customers can share their templates with partners or sites.

Partners can create their own templates with definitions that extend shared definitions.

Customer definitions are protected as COTS definitions to the partners.
Better Extension Management

- Teamcenter Engineering Business Modeler
  - Supports single Business Analyst
  - Sharing extensions is difficult
  - Difficult to track which analyst has the master copy

- Teamcenter 2007 - BMIDE
  - Manages the master definition of the data model and extensions in a Repository
  - Each Business Analyst connects to the Repository to share and synchronize definitions

  Two Options
  - File Repository
  - Teamcenter Repository
File Repository

BMIDE Workspace

Customer Project

/extensions

file1.xml

file2.xml

file3.xml

file4.xml

master.xml

Teamcenter Server

Deploy

Users
File Repository: Concurrent Development
File Repository vs. Teamcenter Repository

- **File Repository**
  - Extensions stored in XML Files
  - Version management at the file level
  - Integrate with SCM tool

- **Teamcenter Repository**
  - Extensions stored in Teamcenter
  - Version management at the object level
  - Teamcenter capabilities are leveraged for extension management
    - Version Management of objects
    - Workflow and Change Management Support
    - Baseline
Better Deployment Tools

BMIDE Workspace

Developer Testing

Teamcenter Server Development Sandbox Environment

User Testing

Teamcenter Server QA Environment

Trainees

Teamcenter Server Training Environment

Product Users

Teamcenter Server Production Environment

Deploy

Business Analyst

Business Modeler IDE Client

Customer Project
Deploy uses web services framework

Requires DBA access, user name and password

Dry run support

- Run the deploy in dry run mode to validate template against each installation
- Returns a report of elements that will synchronize successfully and unsuccessfully
- Can be used to validate how a template will deploy to various sites
Deploy to Production Server

Business Analyst
Generate template for Production Install

Business Modeler IDE

Client

Select the modules to install:
- Core
- ADS
- Customer Model

Teamcenter Install Wizard

Finish
Cancel

Teamcenter Server
QA Environment

Users
Agenda

- Vision & Strategy
- What’s New
- Development Processes Support
- Features
- Future Deliverables
- Questions
BMIDE Features

- Business Objects
  - Attribute Properties
  - Reference Properties
  - Runtime Properties
  - Compound Properties
  - Relation Properties
- Schema
  - Classes & Attributes
- UML
- Business Rules
  - Business Object Display Rules
  - Naming Rules
  - Extension Rules
  - Deep Copy Rules
  - GRM Rules
  - ID Context Rules
  - Property Rules
- Rule Engine Framework
  - Application Extension Points
  - Application Extension Rules
  - Business Context
- LOVs
  - Simple
  - Hierarchical
  - Interdependent
- Options
  - Change
  - Tool
  - Status
  - View Type
  - PS Occurrence Type
  - Validation Data
  - ID Context
Business Objects

- Primary Modeling Object of Teamcenter
- Captures business knowledge expressed by users
- Provides the ability to attach
  - Methods
  - Attributes
  - Business Rules
- Object oriented
- Supports inheritance
- Examples
  - Item, Documents, Forms,
  - Datasets, Folders
Business Objects

- New Business Objects can be created through Wizards
- Codeless configuration
- Properties can be added directly to the Business Object
  - Standard Data Types
  - References to other Business objects
  - Runtime Properties
  - Relation Properties
  - Compound Properties

BMIDE Feature: Business Object editor has quick links to related items
- Deep Copy Rules
- Display Rules
- Extension Rules
Business Objects

- BMIDE features a new Item wizard for quickly creating new Business Objects and custom data
- Wizard creates:
  - New Item
  - New Item Master Form and attributes
  - New Item Revision
  - New Item Revision Master Form and attributes

**BMIDE Feature:** Item wizard reduces the steps necessary to create new items and associated forms
Industry standard language

Expresses Teamcenter
- Objects
- Attributes
- Operations
- Inheritance

Supports Business Object Model and Logical Model
BMIDE Feature: Attribute groups make it easier for analyst to see all relevant information related to the Business Object in one view.

- UML figures for Items and Item Revision include attribute groups
- Attribute groups show associated Form properties
Schema

- Define new storage classes and attributes for persisting data
- Control
  - Flag for exporting class data to other sites
  - Data types and sizes
  - Initial values
  - Upper and lower bounds for attribute values
- Read/Write protection
Display Rules

- Business Behavior
  Configuration
- Restrict the visibility of Business Object in the creation dialog windows
- Configurable based on
  - Organization
  - Group
  - Role

**BMIDE Feature:** Used to hide Business Objects from specific types of users
List of Values

- Business Behavior
  Configuration
- Create your own lists of valid choices for properties
- Can be configured so that users are required to pick from the list, suggestive list, or range of values
- Lists can be populated with Teamcenter data
- Large lists can be organized into cascading groups

**BMIDE Feature:** LOV constrain properties so that users pick from a configurable list of choices
Naming Rules

- Specify valid naming convention and patterns for Items, Item Revisions, Datasets, and Forms

- Automatic name generation follows the pattern in sequence

- Examples:
  - Part-0001
  - Doc99-Kvr99

**BMIDE Feature:** Naming Rules constrain properties so that users enter information that conforms to a format.
Property Rules

- Control access to the properties on an object
- Constrain properties
  - Modifiable
  - Visible
  - Enabled
  - Required
  - Initial Value
- Complex property
  - Combination of properties and strings that assign a value to the property
Compound Properties

- Show properties from one object on another object
- Properties can be gathered from various related objects and shown on a central object
- Can be configured to get a property by traversing from one object to another by using Reference or Relation properties
- Any level of traversal
Deep Copy Rules

- Used in combination with creation of Item Revisions using the Save As and Revise menu commands

- During respective operations, deep copy rules can control which attached business objects are copied forward, referenced, or not copied
Deep Copy Rules

- During a Save As or Revise operation, the Deep Copy Rules can be visualized in the Client in a comparison view.

- The left view shows your current object and its associated objects.

- The right view shows which associated objects will be copied and which will not (strike through).
Define new relations between two objects

Constrain the usage of the relation between two objects

Relationships can be constrained in terms of:

- Cardinality (0, 1, 2…)
- Changeability
- Attachability
- Detachability
Extension Rules

- Extend OOTB behavior with additional business behaviors
- Pre-canned behaviors can be configured to execute at different hook points…
  - Pre-Condition, Pre-Action, Post-Action
- User Exits
- Behavior can be added to operations on the Business Object
  - Create, Save, Save As, Import, Export, etc
- Behavior can be added to properties of the Business Object
- New functions can be developed by the site using classic coding techniques using programming extension and connected to hook points
Rules Engine Framework

- Rules Engine used to evaluate complex business logic
- Extension Points are defined in the application code and exposed in the BMIDE for configuration
- Business Analyst can review the extension points in the BMIDE and configure each to suit the business objectives
- Behaviors can be varied based on Group and Role
- Rules Engine can evaluate
  - Primitives: String, Integer, Date, Char, Logical
  - Business objects
  - Expressions
    - Less than, greater than
    - Equal to, Not Equal to
    - Between x and y

Example Rules…
- If the status is released, then send to partners
- If the material is copper and the pressure is between 10 and 20, then display in red
- If the document type is Quality Assessment and the priority is critical, then submit the document for secondary review
Rules Engine Framework

- Application Developer Tasks
  - Extensions Points are defined in the application code by application developer
  - Developer determines the expected input and output
  - Exposes the extension point by creating an Application Extension Point in the BMIDE and constrains the input and output to the analyst
  - Adds Rule Engine Execute API to application Class API
  - Passes expected input as arguments
  - SOA enabled
  - Rules can be stored in Teamcenter and executed from 3rd party applications

![New Application Extension Point Window](https://yourimageurl.com)
Rules Engine Framework

- **Business Analyst Tasks**
  - Analyzes list of application extension points in the BMIDE
  - Creates an Application Extension Rule for the target extension point
  - Based on the constrained input and output, configures the rule to achieve the business objects
  - Can configure multiple Application Extension Rules for an extension point by
  - Can vary the behavior of the rule
  - Deploys the extension rules along with other elements in BMIDE template to a Teamcenter server

![Application Extension Rule](image)
Rules Engine Framework

- Advanced Rules
- Business Object can be passed as input arguments
- Application Extension Point
  - Specifies Business Object input and output
- Inputs columns are configured later by the Business Analyst on the Application Extension Rule
- Business analyst can pick any valid property on the Business Object for configuration
Agenda

- Vision & Strategy
- What’s New
- Development Processes Support
- Features
- Future Deliverables
- Questions
Future Deliverables

Unified Platform – beyond Teamcenter 2007

- Business Context
  - Extending to support Project and Program
- Support for programming Behavior Extensions
- Document Management Tailoring
- BMIDE Extension Reports
- Managing Display Names

- REF Enhancements
  - More COTS Extension Points
  - Decision Tree, Forward Chaining
- CMM – Packaged Workflows
- Role Based UI Tailoring
  - Property Style Sheets
  - Panel arrangement
Teamcenter Business Modeler IDE
Realized Benefits

- Reduces Project Risks
- Reduces Implementation Time and Costs
- Improves Productivity and Efficiencies
- Exercises and Guides Best Practices and Standards Compliance
- Consistent application customization
  - Published controls, verifications, and validations
- Promotes Application and Functional Synergy through Open IDE Architecture
- Provide Easy-to-Use Business Analyst Interface for Extending the System
- Wizards guide the Tailoring and System Configuration
- Provides Basis for Streamlined Release Upgrades
- Distribute Pre-defined and Tested System Configurations to Remote Sites
- Reduced Operation Disruption with System Runtime Extension Recognition
Summary

- Business Modeler IDE
  - Best in class and unified product tailoring environment
  - Reducing cost of ownership
  - Built on open standards and tools