

Introducing a Reporting Infrastructure into the Coeus 4.3 Application

Romerl Elizes

University of Medicine and Dentistry
of New Jersey

April 1, 2008

Agenda

- Background
- UMDNJ Coeus Reporting Efforts
- Incorporation of Reporting Framework
- Future Endeavors
- Report Specifics
- Demo of Some of the Reports
- Questions and Answers Session

Background

- Target audiences for this presentation:
 - Users
 - Developers
 - Project Managers, Steering Committee members

Background

- In the Coeus User Conference 2007, UMDNJ presented a talk on how it incorporated a reporting framework into the UMDNJ Coeus 4.1.1 Implementation.
 - The reports and charts were based on open-source methodologies for easy incorporation into the Premium product.
 - These reports provide significant value to university administrators, research administrators, and other interested parties.
 - Demo of styled-PDF, Excel, HTML, and CSV reports.
 - Demo of limited graphing chart support in the implementation.

Background

- UMDNJ and Coeus Steering Committee agree for UMDNJ to submit the infrastructure into the Coeus 4.3 Premium framework
 - The reporting infrastructure will provide significant value to the research administration function within the context of Coeus.
 - There is a global need for reporting in the Coeus application
 - This knowledge can be extended by other Consortium Members

UMDNJ Coeus Reporting Efforts

- Life Cycle of UMDNJ Coeus Report Development:
 - Assessing the problem
 - Developing the sample reports
 - Determining the needs of the research administrators
 - Developing the reports in an iterative fashion
 - Expanding the reports functionality to other possible stakeholders

Life Cycle of UMDNJ Coeus Report Development

- **Assessing the Problem**

- There was no reporting infrastructure in place to develop reports from within Coeus
- There was no knowledge or expertise to develop reports
- Most of the reporting chores were done by the research administrators outside of the Coeus database
- There really were no reports that could be useful to research administrators

History of Grant Management at UMDNJ

- Legacy Grant Tracking Application in place from 1997 - 2005
- Dissatisfaction with ad hoc reporting tool
- Limited reporting options and sorting
- Basic report formatting no ability to customize headers footers
 - without exporting to MS apps.
- Decentralized report development lead to various interpretations of the data and no standard look and feel
- Overwhelming majority voted to re-evaluate the Grants Mgmt solutions as electronic submissions for Proposal Development was imminent.

Next Steps

- Formed System Selection Committee
- Developed Requirements
- Evaluated alternatives
- Chose solution from majority vote
- Gap analysis showed area of weakness was reporting*
- Need for standardized reports across all schools
- No enterprise report writer used internally for UMDNJ
- Determined the need for a Java Programmer

****NOTE: Most schools had a third party report writer such as a Cognos, Crystal Reports, or Business Objects to write their reports.***

Life Cycle of UMDNJ Coeus Report Development

- Developing the sample reports

- Romerl was hired to be the technical resource to gather requirements, design, and develop reports
- Therese McCarthy gathered reports of different flavors from various schools to have Romerl tackle on an experimental basis
- Romerl developed 13 reports and 4 graphs for the experiment
- **Romerl presented these tools at the Coeus User Conference 2007**
- UMDNJ Schools become interested in the development of customized reports to satisfy their needs

Life Cycle of UMDNJ Coeus Report Development

- **Determining the needs of the research administrators**
 - Establishment of a UMDNJ Coeus Reporting subcommittee to define needs of the individual schools
 - Tour of individual schools to get possible reporting ideas
 - Gathering of clearly-defined reports for the individual schools:
 - Annual Report
 - Quarterly Report
 - Report of Pending IRB/IACUC Proposals
 - Commitment to develop these additional reports within release cycles

Life Cycle of UMDNJ Coeus Report Development

- **Determining the needs of the research administrators (cont.)**
 - Procedure for developing reports:
 - Development of a data dictionary behind reporting requests
 - Develop web forms to expedite requests
 - Committee process to review, discuss, standardize, and approved reporting requests

Life Cycle of UMDNJ Coeus Report Development

- **Developing the reports in an iterative fashion**
 - Romerl developed the requested reports using various open-source technologies
 - Reports are presented to research administrators for review
 - Any corrections or modifications are negotiated in an iterative basis until the report mirrors the user's expectations
 - Any bugs or issues are also handled in this fashion
 - As an added benefit, the reports reveal some inconsistencies with the data
 - The final reports are delivered as part of a general release within the UMDNJ Coeus context.

Life Cycle of UMDNJ Coeus Report Development

- **Expanding the reports functionality to other possible stakeholders**
 - Showing the reports to finance, information technology, compliance, and ethics functions
 - The goal is to get the other functions to think how this content could be beneficial to them in the long-term basis
 - Introducing the idea to the Coeus Consortium Steering members for possible submission into the main Coeus application

Incorporation of Reporting Framework

- Life Cycle of the Reporting Framework Incorporation:
 - Needs expressed by Steering Committee
 - Development agreements between UMDNJ, JHU, and MIT
 - Development effort to make framework more standard over long-term
 - Development effort to incorporate framework into Coeus 4.3
 - Submission of framework to MIT Coeus development team

Life Cycle of the Reporting Framework Incorporation

- **Needs expressed by Steering Committee**
 - Mid-2007 - Romerl reached out to Sabari regarding a possible inclusion of the UMDNJ reporting framework
 - October 2007 - Tim Schleicher wanted to schedule a Webex regarding the reporting infrastructure.
 - November 2007 – Steering Committee approved of the project

Life Cycle of the Reporting Framework Incorporation

- **Development agreements between UMDNJ, JHU, and MIT**
 - UMDNJ code would be incorporated into the 4.3 version of Coeus Premium
 - UMDNJ code had to be ported to 4.2, because 4.3 code was unavailable
 - Proposed deadline for end-of-November 2007 for incorporation work from UMDNJ

Life Cycle of the Reporting Framework Incorporation

- Development agreements between UMDNJ, JHU, and MIT
 - Unit Hierarchy
 - UMDNJ based reports on schools as parent units
 - MIT wanted to use unit names derived from the unit hierarchies
 - FNA Distribution
 - UMDNJ used FNA to derive direct/indirect costs
 - Other schools may use award amount info or budget info to derive direct/indirect costs
 - MIT and JHU used FNA to derive direct/indirect costs

Life Cycle of the Reporting Framework Incorporation

- Development agreements between UMDNJ, JHU, and MIT
- Activities
 - UMDNJ submits code base to MIT at end of November 2007
 - MIT incorporates code into 4.3 track
 - MIT alerts UMDNJ of any modifications or issues
 - Steering Committee requests a document of all reports in this release
- Possible proposal mechanism for new reports

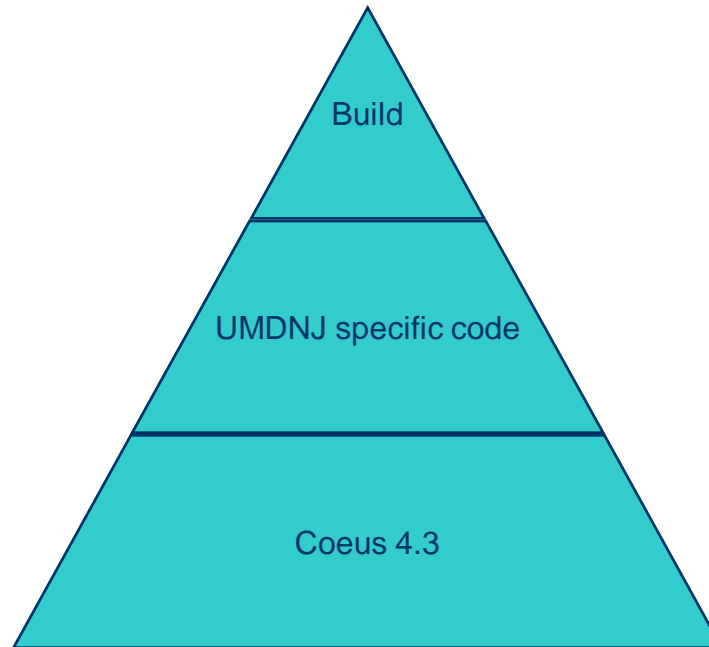
Life Cycle of the Reporting Framework Incorporation

- **Development effort to make framework more standard over long-term**
 - PDF output
 - UMDNJ uses iText and Java exclusively to develop styled reports
 - MIT Coeus prefers the FOP/XML format
 - Possible dilemma: 500+ page reports with graphical content
 - Design
 - Lots of repeated code throughout UMDNJ infrastructure
 - Make it more design pattern-based for ease of use
 - Follow MIT coding standards as much as possible

Life Cycle of the Reporting Framework Incorporation

- **Development effort to incorporate framework into Coeus 4.3**
 - At time of code submission, 4.3 was still in development and testing
 - Code was submitted as if it was going into 4.2 code
 - Romerl developed build script and instructions for easy incorporation of UMDNJ code into MIT infrastructure
 - Romerl modified code to address requirements asked by MIT and JHU
 - Romerl tested initial code for bugs and issues

Development effort to incorporate framework into Coeus 4.3



Life Cycle of the Reporting Framework Incorporation

- **Submission of framework to MIT Coeus development team**
 - Submission of framework to Sabari and MIT Coeus developers
 - Awaiting any issues with build, bugs, or extraneous modifications
 - Develop documentation as required by the Consortium

Future Endeavors

- **Reporting Possibilities**

- Display of reports can easily be extended to cover a wide range of organizational structures. Ex. Administration, school, department, division.
- Talk about a standardized reporting/graphing engine
- Graphing in current implementations expose only Bar, Line, and Pie charts. There is also support for Area, Histogram, Stock, Gantt, and Bubble charts.
- In UMDNJ, several organizations talked about the development of an adhoc reporting tool.
- UMDNJ, in the near future, is working on department-level access and reporting. Departments and individuals will have restricted access to higher level reports.

Future Endeavors

- Vision: Standardized Reporting contributions from individual schools for use with the Coeus Consortium
- Possibilities:
 - We will have this capability in the near future
 - The UMDNJ-Java code is simple enough to follow for easy creation of complex reports
 - Synergy: the sum of our combined efforts will outweigh our individual efforts
 - Invisible hand: an individual scholastic effort, in essence, benefits the group as a whole.

Future Endeavors

- **Kuali-Coeus Possibilities:**

- Extension of these reporting capabilities beyond the research function into other realms:
 - Accounting
 - Finance
 - Human Resources
- Development of a Managed Reporting environment
 - Similar to some of the major BI vendors
 - Kuali-Coeus specific

Future Endeavors

- **Realities:**

- One Java developer creating reports based on various user requests
 - Commitment to Coeus Consortium not at 100%
- Continuing development and resolution of divergent UMDNJ and MIT coding standards
- Establishment of a standard operating procedure and standard template from which other schools can follow when submitting reports
- Establishment of an adequate, standardized testing framework for these reporting capabilities
 - Each school has its own testing framework, if any.
 - Example: UMDNJ uses automated tools such as JUnit, Abbot, Cactus, and Vermont High Test
 - Reports can actually reveal bugs in the data
- Individual schools need to define reports that not only benefit them, but bring value to the Coeus Consortium

Report Specifics

- **Reports – 15 total**
 - Submitted Proposals By Unit
 - Pending Proposals By Unit
 - Proposals for Pending Special Reviews By Unit
 - Pending Status Report of Proposals By Unit
 - Active Grants By Unit
 - Closed Awards By Unit/Date
 - Active Grants By Sponsor Type
 - Active Grants By Activity Type
 - Active Grants By Award Type
 - Active Grants By Principal Investigator
 - Summary of Active Grants by Unit
 - Summary of Active Grants by Investigator
 - Current Active Grants by Unit
 - Current Active Grants by Special Review by Unit
 - **Annual Reports**

Report Specifics

- **Report Characteristics**

- GUI dialogs contain lists of Units derived from UNIT_HIERARCHY table.
- Provision for Fiscal Year limitation for data:
 - State Fiscal Year – 7/1/xxxx-1 to 6/30/xxxx
 - NIH Fiscal Year – 10/1/xxxx-1 to 9/30/xxxx
 - Calendar Fiscal Year – 1/1/xxxx – 12/31/xxxx
- Available formats for most reports: HTML, CSV, XLS, PDF!
- All PDF are styled!!!
- Some PDF reports have drill down capability.

Report Specifics

- **Graphs – 4 total**

- Active Grants by Sponsor Type
- Active Grants by Activity Type
- Active Grants by Award Type
- Active Grants by Primary Investigator

Report Specifics

- **Graph Characteristics**

- GUI dialogs contain lists of Units derived from UNIT_HIERARCHY table.
- Available formats for most reports: PNG, JPEG!
- All graphs have drill down capability. Drill down to detailed report within same context.
- All graphs support bar charts only, with the exception of Grants by Primary Investigator (bar/line dual axis chart).

Report Specifics

- **Annual Report**

- Shows financial activity for a given fiscal year
- Combined tabular/graph report
- Comparison charts showing financial activity compared to previous years
- Shows detail of PI's grant activity by department for current fiscal year
- Some of UMDNJ Annual Reports have up to 200 pages of data

What was demoed last year?

- **Sample reports**

- HTML output
- PDF output
- XLS output
- CSV output

- **Sample graphs**

- Bar
- Pie
- Line
- Area
- Drilldown capability
- Report – level of detail of styled PDF

- **Specific reports**

- Summary of Grants by School
 - Drill down capability
- Graph – Grants by PI

Demo of Some Reports

A decorative graphic on the left side of the slide consists of a light green square at the top left, a white rounded rectangle below it, and a dark blue horizontal bar extending across the width of the slide below the white rectangle.

Questions and Answers Session

