PI Financial Report

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Biology
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Presented on October 3rd, 2018
About Liz

• At MIT since May 2016
• Previously worked at Constant Contact in a Finance and then Data Warehouse analytical roles
• Hired to inventory all financial reports/databases to create more efficient processes through automation
• First project was streamlining PI Financial reporting to include real-time reporting
• Current projects include transitioning local databases onto Salesforce platforms
Agenda

- What was the previous reporting?
- What business goals did we want to achieve?
- Why did the Media Lab settle on Tableau?
- What benefits were realized?
- What tools are needed to create the report?
- How can you adopt the tool in your DLC?
- Live Report Demo with Q&A
What was the previous reporting?

Pre - 2015

Pros:
• Provided easy to understand reporting
• Captured full financial picture at a glance
• Standardized for consistency

Cons:
• Not available in real-time
• Manual manipulation of data required, high risk for errors

2015 - 2016

Pros:
• Improved visualization
• Quickly identify annual trends
• Consolidated important metrics on one page

Cons:
• Not available in real-time
• Manual manipulation of data required, high risk for errors
What business goals did we want to achieve?

**Improved Functionality**
- Reporting available in real-time
- Easily accessible from laptop, tablet, mobile
- Data directly sourced from MIT data warehouse
- Reduce errors from manual manipulation
- Provide drill down functionality
- Offers multiple views on one page through drop down option

**Business Questions Easily Answered**
- How much money do I need to raise?
- How many RA's/Staff can I hire?
- When do I need to raise money?
- What is the remaining balance I can spend on each account?
- What accounts are new or about to expire?
- Are my students and staff allocated through the end of their appointment/graduation?
How did the Media Lab settle on Tableau as a solution?

### Benefits of Tableau

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Details</th>
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</table>
| **Visualization** | - Create various graphs to easily identify trends and answer key business questions  
                       - Ability to drill down into multiple layers |
| **Automation**      | - All reporting is done in real time  
                       - Data sources can be extracts, which update daily or live connections |
| **Integration**    | - Easily integrates with most databases and other software tools, including excel and google sheets |
| **Security**       | - Works with MIT roles database and gives flexibility to create department specific roles |
| **Price**          | - MIT has enterprise licenses for Tableau Desktop and Server |
What benefits were realized?

Faculty/Administrative Assistants

- Transparency with the reporting
- Increase frequency of the report (daily)
- Available 24/7 on mobile, tablet, laptop
- Drill down capability to line item detail
- Reduce the amount of time in SAP or KC
- Easier to answer faculty questions without relying on Financial Officers

Financial Officers

- Reduction in human errors – no more data manipulation, cut and pasting excel downloads
- Reduced time to create a static, monthly report
- Easy to identify errors in source systems
- Update forecast spreadsheet and immediately see the implications
- Flexible to adapt to financial officers requests and changes
What tools are needed to create the report?

**Step 1: Data Input**
- Contains:
  - Expense Projections
  - Revenue Projections
  - Note details
  - Annual % changes (EB, FA)
  - The staff assignment to PI profiles.

**Step 2: Data Integration**
- Google Sheets

**Step 3: Data Storage**
- PostgreSQL

**Step 4: Data Visualization**
- Tableau Dashboard
  - Tableau is our Data Visualization tool of choice:
    - Compatible with any platform with a web browser such as PC, Mac, Tablets or smart phone
    - Offers a better user experience and interactivity than Excel
    - Flexibility to contain multiple views depending on audience

- Store data in Local Media Lab Postgres Database or in a Cloud option, such as AWS

- Blends, merges and transforms the data from different data sources
How can you adopt the tool in your DLC?

1- Request access to MIT Data Warehouse
2- Create a google account and set up the google spreadsheets
3- Setup a local server or cloud server
4- Install the free Pentaho Community version on the server
5- Install a database management system such as PostgresSQL
6- Obtain a Tableau software license by contacting IS&T
Sharing Report with Biology
• At MIT since August 2006
• Worked in mixed HR/Finance roles at Harvard, in the VPR Office, Math, and now Biology
• Showed some aptitude and interest in programming and the Department shifted responsibilities temporarily to make time for implementing system
Reasons for PI Reporting Adoption

Faculty requesting better reporting

- More Intuitive
- Up-to-date financials
- Create what-if scenarios

Final user-facing criteria

- Web-based
- User-friendly
- Real-time
- Flexibility
Adoption Timeline

- Started project in October of 2017.
- First version up and running in January 2018.
- Established project team (3 most senior financial people, me, AO) and began meeting weekly. The Media Lab team was very generous with their time.
- Began debugging and “tweaking” right away, but more in earnest around March/April of this year.
  - Showed it to some faculty support admins in March: a lot of enthusiasm.
- Showed it to faculty in May.
- Hiatus over summer.
- Now running in parallel to our conventional forecasting.
- Have expanded team to additional 3 financial staff.
- Goal is for training and rollout in January 2019.
Lessons Learned (1)

Timeline
- Shortened now that we have implementation experience
- Suggest user group for other adopters
- Document annual updates for faster FY roll-overs

IT Infrastructure
- Hardware, IT Support
- Cloud Servers
- Find/hire staff eager to learn analyst skills

Time/Maintenance
- Inventory ongoing maintenance requirements
- Currently full time in HR: Need to shift responsibility to HR/Finance
- Interested staff in project should see new skills as investment in themselves
Lessons Learned (2)

Customization
- Finance/Faculty continual improvement requests
- Be prepared to prioritize, decide the best 'service level offering'
- Each group will have their own business logic they want implemented

Change Management
- Buy in was initially slow until key PI's saw value
- More upfront work to show efficiency value in long term
- Include key stakeholders in early conversations so they have a role in final product; advocate in adoption
- All faculty may not be early adopters; Admins key in change requests for better usability

Learning SQL
- Foundational skill (similar to other programming languages)
- Finance is moving towards a more technical framework
- Senior financial staff should know where most data lives (KC, SAP, B2P, eCat)
- SQL allows the leveraging of all data sources in one place and ability to join with proprietary data (Excel forecasts)
PI Financial Reporting Demo
Biology Specific Tweaks

- Account Tab was showing anticipated, wanted obligated
- Our PIs often serve as “supervisor” on several accounts (department GIB, training grants) that should not be included in their research portfolio
- NIH Carryforward graph (Example in upcoming slide)
- Wanted a “what if” scenario tab with somewhat different ”levers” that were originally included in Scenario Tab (Example in upcoming slide)
- Bypassed local infrastructure in favor of Amazon Web Services (primarily because of lack of IT support)
- Media Lab implemented salary escalation, wanted postdocs to escalate on different schedule
- A fair number of “policy and procedure” questions we’ve had to answer about how to enter the data and who will do it
- Our PIs want a comprehensive list of their lab members no matter their funding source; additional Google Sheet
- We have four PIs in our building who are paid by HHMI and have people funded from those accounts. No access to that data. For now we’re punting.
NIH Carryforward at-a-glance
Percent Current Funds Used

- **4.0% spent (4.1% projected)**
  - 6,403 out of 159,120
  - Ends: 5/31/2019
  - Dynamics Of Gene And Isoform Regulation--6938769

- **55.2% spent (68.6% projected)**
  - 362,610 out of 656,744
  - Ends: 7/31/2019
  - Function Of Sequence-Specific Rna Bindin--6936598

- **55.9% spent (63.9% projected)**
  - 820,007 out of 1,467,053
  - Ends: 5/31/2019
  - Regulation And Function Of Alternative M--6934085

Colors:
- Blue: Expenses
- Yellow: Total Commitments
- Light blue: Total Projected Balance
Pentaho/Postgres/AWS Sample Views
Pentaho Examples (1)
Pentaho Examples (2)
## Postgres Example

### SQL Query
```
SELECT * FROM public.travel_history_details
```

### Data Output

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## AWS Billing

### Bills
- **Date:** August 2018

### Total
- **Amazon Web Services, Inc. - Service Charges**
  - **Payment Summary**
  - **Payment Summary**

### Details

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*Usage and recurring charges for this statement period will be charged on your next billing date. Estimated charges shown on this page, or shown on any notifications that we send to you, may differ from your actual charges for this statement period. This is because estimated charges presented on this page do not include usage charges accrued during this statement period after the date you view this page. Similarly, information about estimated charges sent to you in a notification do not include usage charges accrued during this statement period after the date we send you the notification. One-time fees and subscription charges are assessed separately from usage and recurring charges, on the date that they occur.*
ANY
QUESTIONS?
What benefits were realized?
ToolTime
Tableau Training & Resources

October 3, 2018
Current Reporting Landscape

Reporting and Analytical Tools:
- Brio Software
- Cognos
- Tableau Software
- Excel
- Bring Your Own

Data Warehouse:
- Oracle

Data Sources:
- SAP HANA
- MITSIS
- Batch Feeds
- Other Databases (Coeus, Barton, etc.)
Tableau

- Tableau (https://tableau.mit.edu)
  - Specializes in creating interactive visual dashboards
  - You can bring data in from multiple sources (e.g. Data Warehouse, Excel, Dropbox)
  - Dashboards can be published to a central web-based server
  - Dashboards can be viewed on a mobile device

More information about Tableau is available at:

- IS&T Tableau Service - https://ist.mit.edu/tableau/service
- Tableau Knowledge Base - http://kb.mit.edu/confluence/x/DEJBCQ
Training Available via IS&T

- General Help – Send an email to reporting-help@mit.edu
- Weekly User Drop In Sessions
  - The reporting team is available every Thursday from 1:30pm to 3pm in NE49-3098 (Little Cayman) to answer any reporting or data warehouse question. We even help with reports you are developing.
- Third Thursday Training (every month) – Multiple Tableau Topics

http://ist.mit.edu/business/warehouse/usergroup

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