

AUREU\$

The Future of Financial Forecasting

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Why are projections important and how do they differ from budgets?

Budget = Plan
Projections = Reality

Projections allow us to make budget adjustments based on past spending, current personnel situations, and changes in the scope of work. We need to predict the financial future in order to prevent overruns or unspent funding and avoid audit pitfalls after the project is over. Projections allow us to determine when more funding is needed and when to increase or decrease staffing levels.

Current projection situation at MIT:

There are two options: you either design your own spreadsheet or use an existing, older spreadsheet. The success in designing your own will vary based on skill and understanding of MIT financials, but you can customize it to your needs. An older spreadsheet passed along to you might not be tailored to your skills or demands, and it might not provide the answers for which you're searching.

Either option generally means logging into SAP each month to manually copy data into your spreadsheet, which is time consuming, and vulnerable to typos and other mistakes. Adding and deleting personnel can be tedious and clunky, and determining indirect and allocation costs can be a bit of a maze. Errors can be difficult to find and sometimes result in hours of wasted time.

Once your data is entered, is it being aggregated or summarized in any way? Are you able to review all of your accounts at a glance, or do you have to move from tab to tab and scroll through rows of data to find the answers to your questions? Are you able to sum up different cost categories across accounts or are you simply viewing single cost objects at a time?

Are you preventing massive overruns and late salary changes? Are you minimizing auditing risks? Are you providing your PIs with useful information to make decisions?

What happens when a coworker leaves and you have to temporarily take over for them? Or when you have to train a new person? Is everyone in your DLC using the same template or do you have to figure out their spreadsheet first?

How do we fix this?

Emphasis on "we" because this can't be fixed by one person. We, as a community, need to collaborate in order to solve this problem.

What software to use to build this? Excel.

Why Excel?

1. Everyone has it, uses it, understands it
2. Sharing a spreadsheet is as easy as it gets
3. Writing formulas does not require experience or training as a developer

Limitations

There is a static quality to Excel, where a template needs to be a “one size fits all” solution. Example: All PIs have a varying number of accounts. The template needs to handle a PI with 50 cost objects as easily as a PI with 5 cost objects. What if a PI has 100 accounts? Where do you set the limit? Also, there is no easy solution to transfer data from an old spreadsheet to a new one (which has been updated with corrections) aside from copying and pasting.

How is Aureus used?

- One spreadsheet, per PI, per fiscal year. New fiscal year, new spreadsheet.
- Rate info is updated at the beginning of each fiscal year in the template file and then the template is distributed.
- It takes roughly an hour to set up one spreadsheet and then 15 minutes a month to update and maintain.
- All data is saved and stored. There is no need to re-enter your information.

What were the goals in creating Aureus?

Goal 1: Download existing data

- Cost object information: account number, title, sponsor, dates, amounts, indirect cost info
- Balance information: FYTD & cumulative spending, unexpended balances, commitments
- DTR: All line items, including item text, GLs, amounts
- Payroll: Names, IDs, amounts
- Budgets: Budget by GL, cumulative expenses

Achieving Goal 1:

Reports are quickly downloaded from Cognos and pasted into the appropriate tabs. Each month you simply download new info from Cognos for the previous month and add it to the existing information.

Goal 2: Design a user interface to easily project future expenses

Non-personnel: relatively easy

There are basic cost categories based on SAP Summary fields: Travel, M&S, Equipment, etc. We typically use rolling averages or manual estimates for each category where appropriate. Equipment is projected by specific cost and date.

Personnel: extremely complicated

There is not a huge variety of personnel types, but enough to be challenging. We have grad students, postdocs, research staff, administrative staff, and faculty. We then need to account for inflation, tuition, fellowship shortfalls, benefits, vacation, salary caps, and the list goes on.

Indirect costs: extremely complicated

Even though some costing sheets are commonly used, there are almost 30 different costing sheets at MIT, and each affects GLs in different ways. Overhead adjustments add to the challenge, as well as on and off campus rates, and MTDC or not-MTDC GLs.

Achieving Goal 2:

The user compiles a list of lab personnel, including names, IDs, dates, and salaries. Each lab member is assigned to a cost object for a period of time, similar to how appointments are set up in eSDS. Special circumstances can be addressed, such as fellowships, shortfalls, TAs, and many other scenarios. Costs for each person can be projected until they leave MIT, even if they are not assigned to an account.

Non-personnel costs are projected by choosing any account that has reoccurring monthly spending in categories like M&S. Rolling or manual averages are applied to each category as desired. Equipment can be projected by cost and date.

Goal 3: Provide an automated way to analyze and visualize the results

Analyzing:

How do we compile past and projected data to form meaningful financial conclusions? What questions are the PIs asking? What questions are we asking? How do we easily find the answers?

What analysis can we use to balance accounts and personnel?

We can calculate ideal rates of spending, based on both original funding and remaining funding. It's possible to determine which personnel are currently committed to projects vs. uncommitted. After personnel commitments are summarized, we can determine what remaining funding can go toward non-personnel expenses.

Visualizing:

Provide simple charts and graphs that are easy to read and disseminate.

Avoid the trap of charts that look nice but don't provide answers. Stick to visualizations that drive the conversation.

Achieving Goal 3:

A summary screen allows the user to easily switch between accounts to see both past and projected expenses in order to ensure that the data is feeding correctly and to also examine spending by month.

A big picture review screen shows a list of all accounts, along with dates that the current and anticipated funding will run out, and projected overruns or surpluses.

The graphs and charts display:

Total research funding over time as it approaches zero, comparisons between personnel and non-personnel expenses, uncommitted personnel, and detailed breakdowns of non-personnel spending.

An individual account review screen shows similar charts and graphs but the data is constrained to a single cost object.

The different review screens allow both the user and the PI to make informed decisions regarding future spending in the lab and how to address problems, without the need to spend hours making alterations to rows, columns and various formulas. Reviews can be saved as PDFs and emailed to the faculty as desired.

Instructions:

Aureus is designed to be user-friendly for even the most inexperienced of Excel users. Detailed, thorough instructions will be provided to walk you through every step of the process. Warnings and flags are built into the spreadsheet to alert you of user errors, such as entering 6/31/18 instead of 6/30/18, or accidentally appointing someone for 110% when they are split between multiple accounts.

Things to remember:

This is a prototype and is not yet meant to replace all of your existing projections. In order to make improvements, I need people to test it out in order to find errors and suggest enhancements. The long-term goal is that this could eventually be developed into an online platform, built and maintained by MIT.

If you are interested in participating, please send me an email, and I will share a Dropbox folder with you that contains the template and instructions files you need to get started. We need to take this opportunity to collaborate and understand the needs of all of MIT, in order to create software that will greater serve the demands of our financial staff and PIs.

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AUREUS\$ FAQ

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What does the name Aureus mean?

An aureus was a gold coin of ancient Rome, dating back to 1st century BC, which was standardized by Julius Caesar. Aurum is the Latin word for gold.

How does Aureus work?

One Excel spreadsheet is used to project the entire financial portfolio of a single PI. The spreadsheet starts at the beginning of the current fiscal year and projects out for the following five years (current plus four). Account details and past financial data are downloaded from Cognos and pasted into Excel. Personnel appointment information is entered manually. A new spreadsheet would be started at the beginning of every fiscal year.

How do the personnel projections work?

First, the user enters a list of all the personnel that work for the PI, including IDs, start and end dates, and salaries. Then the user appoints each individual to an account for a period of time, similar to the eSDS system. For example, one might appoint a graduate student to an account for the spring term, Jan. 16 to May 31, and then, if the RA is starting on a new project, on June 1, they would appoint them to a different account. If the user is unsure when the student will stop working on the project, the appointment end date can be left blank, and the spreadsheet will project their costs until they leave MIT. This method allows the user to see the total cost of supporting an individual while at MIT.

How do the non-personnel projections work?

For things like M&S, you can choose an account and apply either a rolling average (3, 6, or 12 months) or a manual average (ex. \$5,000 each month). For equipment, you can enter an estimated date of purchase and amount.

How do you update it?

New cost objects are added manually whenever they are set up, and old ones are deleted. At the beginning of each month, balance, DTR, and payroll data from the previous month should be downloaded from Cognos and pasted into Excel. New personnel are added manually, and old personnel can be deleted, similar to accounts. Appointment information is manually added and deleted as necessary.

How do you share the information with PIs?

PDF reports can be generated to show an overview of all accounts or more detailed views of each individual account.

What are the main advantages of Aureus over other methods? Will it save me time?

If you are currently doing projections by manually entering data from SAP into a spreadsheet, this will likely save you several hours each month, possibly days depending on how many projections you are doing. Aureus projects out for five years, which is longer than most other tools, and it provides answers to important questions that many other tools lack, such as: When will all my money run out? Should I hire someone? When should I apply for more money?

Does this work on Macs?

Aureus works equally well on any operating system that can run Excel.

Does my information stay in the spreadsheet? Do I have to re-enter anything?

After you enter your information, just hit save, and it will be there when you open it again.

Does it calculate F&A, EB, Reduced EB, etc.?

Yes! It even calculates allocation. It also calculates off-campus costing sheets, but there are further challenges to address regarding mixing off-campus GLs with on-campus costing sheets.

How does it perform the calculations?

It uses only formulas. There are no macros, special installations or connections.

Will this work if someone is partially supported by a fellowship?

Yes, you can enter shortfall information.

Can I appoint someone to an account that doesn't belong to my PI?

Yes. You can also appoint someone as a TA, or put them on Medical Leave, or whatever placement is applicable.

Does it calculate inflation on personnel salaries and tuition?

Yes, and the inflation percentages are adjustable by personnel type and date.

If I move someone from one account to another, and the change goes back several months, can I apply debits and credits to an account?

Yes.

Can I add personnel who are not yet at MIT?

Yes. For example, if your PI tells you that they are hiring a postdoc, you can enter "TBD Postdoc" along with the estimated start date and salary information. Once the person arrives, you can simply change "TBD Postdoc" to their name.

My PI has funding coming in but an account hasn't been set up yet. Can I add the funding?

Yes, you can add a non-existent account, assuming you have estimated start and end dates, along with funding amounts.

Why does it start at the beginning of the fiscal year?

It's a limitation of Excel. A starting point must be chosen, and the fiscal year made the most sense.

How does it know the day that the funding will run out?

The calculation is: unexpended funding, minus total personnel commitments per month, minus non-personnel averages per month. Using formulas, it is possible to project the amount spent per day.

Why don't you connect your spreadsheet directly to the Data Warehouse?

Although this is possible, it's a little clunky, particularly on Macs, and limits the functionality in other ways. I opted for the most functional, accurate, easy-to-use system available using only Excel.

Why don't you use Tableau?

Excel is superior to Tableau in terms of "number crunching." Tableau is primarily useful for data visualization rather than complex formulas and algorithms. It may be possible in the future to use Aureus to create a data extract to import into Tableau for analyzation purposes.

Does this include SAP budget information?

Yes.

Can I alter the formulas in the spreadsheet?

Aureus is designed with the intention that users should not write or modify any formulas.

Will this work with all accounts and scenarios at MIT?

This requires further testing across the Institute to determine the shortcomings. The goal is to meet the financial needs of at least 80% of the MIT community.

Should I replace what I'm currently doing with Aureus? If I start using this, can you help me when I have problems?

This is more or less a hobby for me, and I work on this during nights and weekends. I am interested in finding ways to improve this, but I cannot obligate my support. Please think of this as a team effort to improve financial processes at MIT.