Developing a Portfolio Management System: Values and Tradeoffs

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Background

- Like most life sciences organizations, Baxter BioScience performs an annual R&D portfolio review in which projects are prioritized and their budgets determined
- Historically, this process was supported by ad-hoc tools
    - An Excel NPV model for each project
    - A portfolio spreadsheet where everything was "rolled up"
- During the 2005 portfolio management season, Baxter BioScience identified the need for a portfolio system to improve:
    - Project analytics
        - Handling of uncertainty
        - Strategic alternatives
    - Data management
        - Data flow (other than emailing spreadsheets, copy/paste, etc.)
        - Data archiving
    - Portfolio analytics and reporting/visualization

What characteristics would we like in a portfolio management system?

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It should be:

- **Simple**, so that the system is easily understood and the flow of information from inputs to outputs is obvious.
- **Comprehensive**, so that all of the documentation supporting the assumptions is in the system, archived, and ready for inspection.
- **Flexible**, so that even complex, one-of-a-kind projects can be appropriately modeled.
- **Standardized**, so that all projects are evaluated using consistent assumptions and comparisons are "apples to apples".
- **Valuation-focused**, so we have a thorough understanding of the relative worth of the projects.
- **Creative**: portfolio management is about creating value in the projects, not just measuring it!
- **Spreadsheet-based**, so that users can enter data and see calculations in an open, familiar environment.
- **Bulletproof**, so that users can't get into trouble.
- **Cheap** and **quick** to implement.

But wait a minute, there may be some conflicting objectives here

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Simplicity vs. Comprehensiveness

- We want a system that's simple, but not so simple that key assumptions are obscured by aggregation

Flexibility vs. Standardization

- We want the ability to make the model fit the project, but not a free-for-all in which wildly different models make comparisons impossible

Valuation-focused vs. Creative

- How much effort should go into the decision alternatives *within* each project, vs. just understanding value/risk in the base case plan and the portfolio level decisions *among* the projects

Spreadsheet-based vs. Bulletproof

- Excel-based systems are familiar and transparent, but not as robust as systems based on a more locked-down platform

A tradeoff game: predict Baxter's choices

- We'll explore each of these tradeoffs as follows:
  - We'll lay out the pros and cons
  - You'll provide feedback based on your experiences/opinions
  - You'll write what you think Baxter did on your scorecard
  - We'll tell you what we did and why

- If you get all four tradeoffs "right", your card will be entered into a drawing for a real ($) prize
- Please observe these ground rules
  - Write your name on the back of your card
  - One card per person
  - You must mark your card before we reveal what Baxter did
  - Persons with special knowledge of Baxter's portfolio system should recluse themselves

Simplicity vs. Comprehensiveness

Simplicity is key

- In a strategic planning model, deterministic detail just gets in the way
- Detail makes it harder to test assumptions and perform sensitivity analyses
- Understanding revisions is easier when you can put the old and new numbers side by side
- Piddly details always seem to be supporting the factors at the bottom of the tornado anyway

That's all well and good, but ...

- Simple for whom? Project teams have to build bottom-up cost forecasts, in our system or elsewhere
- Comprehensiveness is necessary for consistency
- Simplicity is at odds with transparency if decision makers can't drill down to see the assumptions behind the summary numbers
- We could just ask the project manager for an NPV, that would be simple!

Simplicity vs. Comprehensiveness

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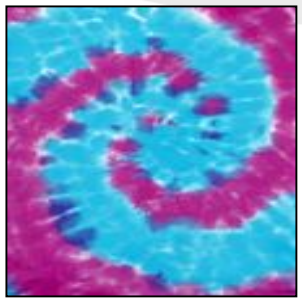
What do you think? Should the planning system include:

- FTE rates and time costs for various departments?
- COGS for different production levels?
- Market shares and competitive assumptions by region? (By country?)

We came down on the side of **comprehensiveness**:

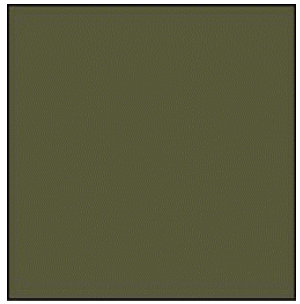
- Key stakeholders in project management wanted the system to help them track R&D cost data
- Decision-makers had a history of demanding detailed information in real time (during review meetings)
- Consistency was an issue: in the past, different groups took different approaches to supporting calculations

Flexibility vs. Standardization



One size does not fit all

- We want to solve the right problem, not just fill in the blanks
- Often the insight is in the peculiarities of each project
- In a generic model, you can't have everything:
  - Dynamics of multiple indications
  - Staged regional launches
  - Manufacturing risk issues
  - Competitive sequencing effects
  - ...



"Always remember you're special, just like everyone else ... "

- Portfolio analysis is not blue-sky strategic decision analysis
- Subtly different frames can introduce artificial value differences between projects
- Standardization makes project histories meaningful
- R&D projects follow a regulatory process, so the decision trees look about the same anyway
- We don't have time for dozens of full DA analyses!

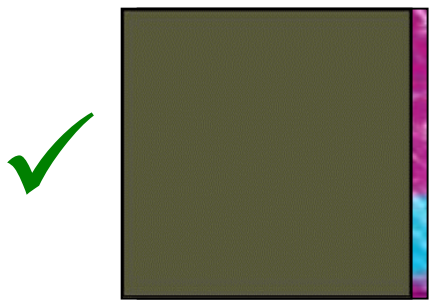
Flexibility vs. Standardization

What do you think? Should we have:

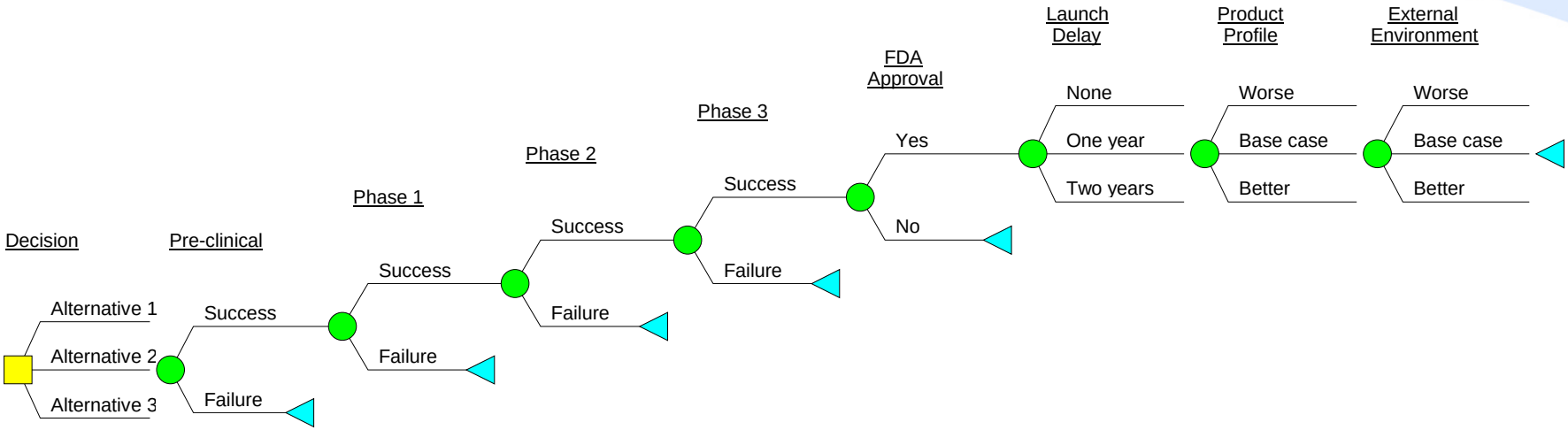
- One standard model, or else
- Several models for different project types or maturities
- A gold-standard, fully-framed DA model for every project

We elected to **standardize**, with an opt-out:

- Portfolio team resources (for facilitations) were limited
- A simple DA model was already a step up from the status quo
- Elaborate DA models would have required elaborate explanations
- The system allows a fully custom model for high-stakes projects (<10% of total)

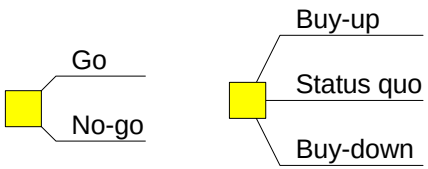


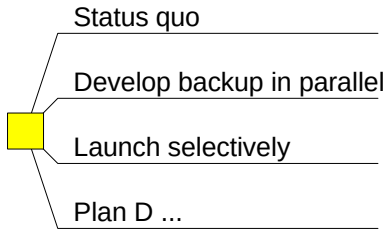
The standard decision tree



- Product profile and external environment scenarios can be used to handle many different project-specific uncertainties
- External environment scenarios optional for small projects
- More about the decision later ...
- Slight variation for device vs. drug
- Can be used as a jumping off point for a custom analysis

Valuation-focused vs. Creative





The decisions of interest are at the portfolio level

- The project ranking/prioritization is the main goal
- A lot of thought has gone into the base case clinical plan -- that's what we should be focusing on
- We don't have time to re-do all our forecasts!
- Decision makers can give "haircuts" where appropriate (e.g., cut the customary 10%)

Portfolio management is about creating value

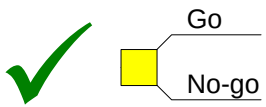
- Does the base case clinical plan maximize value? Has management had a chance to challenge it? (If not here, where?)
- This is supposed to be portfolio *management* not portfolio *contemplation*

Valuation-focused vs. Creative

What do you think? Should we:

- Seriously challenge and think about development plans as part of the portfolio management process?
- Allow limited, simple funding decisions that affect project timelines, probabilities of different product profiles, etc?
- Ignore intra-project decisions entirely?

We decided to stay **valuation-focused**:

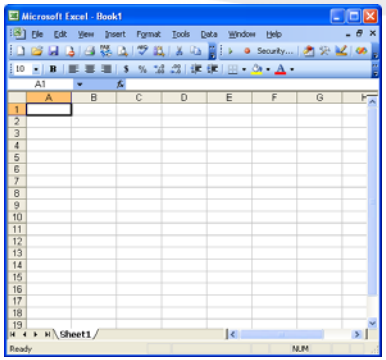


- Majority of projects Go/No-go
- Selected projects (~10%) to have two or more clinical plans

The reasoning being

- We really don't have time to do several alternatives for all the projects
- Decision makers saw little value in putting analytics around minor adjustments in funding levels
- The portfolio management process is an important opportunity to get the project teams focused on value

Spreadsheet-based vs. Bulletproof



Excel is the analytical vernacular

- Excel is a comfortable, familiar environment
- Supporting data is usually already in Excel
- No need for user training
- Users have immediate feedback about their inputs (NPV's, etc)
- Updates don't require programming

This is an operational system for a critical business function

- Thin-client, server-based systems are extremely reliable
- The variety of client desktop configurations makes complete testing of Excel-based systems impractical
- If the system isn't locked down, users may shoot themselves in the foot
- Even if the system itself is perfect, Excel may crash

Spreadsheet-based vs. Bulletproof

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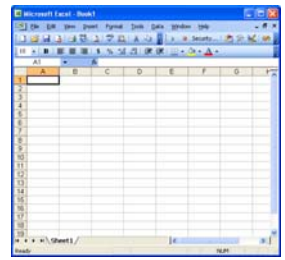
What do you think?

- Can an Excel-based system be reliable enough for portfolio management?
- Are the analytics in flux or can they be "frozen" so a functional spec can be given to a programming team?

We took the **spreadsheet-based** path:



- Users check-out Excel spreadsheets populated with data stored in a central database
- Macros and protection minimize, but don't entirely eliminate, opportunities for users to shoot themselves in the foot
- The use of a database for data storage makes it practical to archive old versions
- Models from the system can serve as a starting point for more analysis

Conclusions

Baxter's 2006 R&D prioritization process is under way right now

- Response from the teams is positive so far
- Data from last year's less structured process has been migrated to the new standard model, and it fits
- BioScience process and tools seen as a model for other divisions within Baxter