

Portfolio Management

Enterprise Business Information Services Division
Business Operations Directorate
Jet Propulsion Laboratory, California Institute of Technology

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Enterprise Business Information Services Division (EBIS)

- EBIS supports the Laboratory and its functions through the implementation and support of business information systems on behalf of its business community.
- EBIS Five Strategic Focus Areas
 - Improve project estimating, planning and delivery capability
 - **Improve maintainability and sustainability of EBIS Application Portfolio**
 - Leap forward in IT Leadership
 - Comprehensive Talent Management
 - Continuous IT Security Program

Acknowledgements

- The proposal contained within this model are the initial steps in managing the challenge of application growth. EBIS gratefully acknowledges the feedback received from JPL's OCIO and the Burton Group in the development of this approach.

Agenda

NOTE:

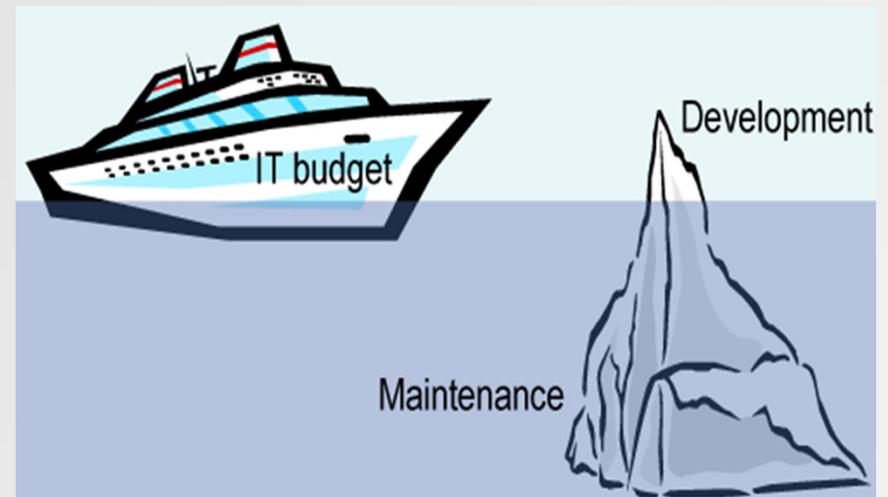
This methodology has not yet been rolled out. It is still in the review stage

- A Symptom/The Problem
- The Solution: Portfolio Management
 - Challenges/Benefits of the Process
 - Steps to complete the Portfolio Management cycle
- The Evaluation Process
 - Determining Value
 - Establishing the Evaluation Framework
 - Conducting the Evaluation
- Analyzing the Results
- The Discussions

A Symptom

Demand for EBIS support exceeds its capacity

- *Maintenance of existing applications consumes a sizable portion of the budget (EBIS maintenance* has averaged ~50% for the last 3 years)*
- *The most visible cost of an application is only a fraction of its total cost*
- *Continuing to support redundant and/or outdated technologies is not cost effective*
- *A reduction in maintenance costs would increase EBIS capacity for new work*



** The stricter definition of 'maintenance' averages about 50% for the last 3 years - a less strict definition may encompass about 75%.*

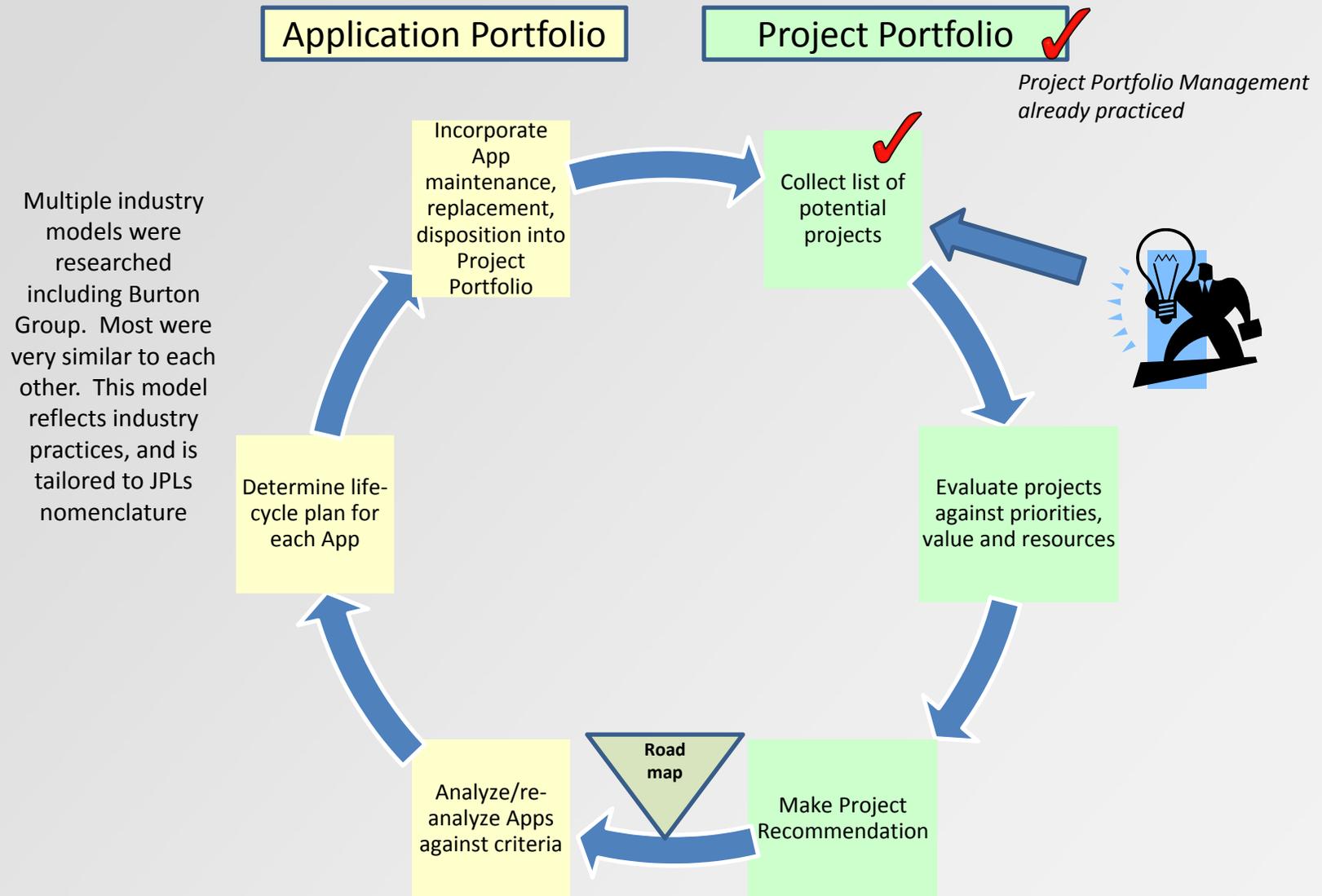
The Solution: Portfolio Management

- **Portfolio Management is a strategy in which software applications are managed as assets**
- **Strategy is similar to financial portfolio management**
 - Investment officers continually seek to optimize their portfolios by assessing holdings and selling off assets that no longer are performing.
 - The same approach can be used by businesses: evaluate business applications and decide which ones to continue funding, which to replace and which to sunset.
- **Applications should be viewed as an asset only if its overall “value” (business and cost) is positive to the lab**

The Solution (Continued)

- **At its most mature, IT Portfolio Management is accomplished through the creation and management of two portfolios**
 - **Application Portfolio** - Compares spending on individual applications to their relative value to the organization. This comparison includes hard dollars as well as non-tangible factors such as the benefit to the organization, external forces such as emergence of new technologies and obsolescence of old ones. By evaluating applications against pre-defined criteria, managers can create a lifecycle plan for each application, and determine which applications to leverage, rationalize, modernize or dispose.
 - **Project Portfolio** - Determines the optimal mix and sequencing of proposed projects to best achieve the organization's overall goals. Typically this is expressed in terms of hard economic measures (ROI), business strategy goals, or technical strategy goals - while honoring constraints imposed by management or external real-world factors. Typical attributes of projects being analyzed in a PPM process include each project's total expected cost, consumption of resources expected timeline, investment requests, magnitude and timing of benefits to be realized, and relationship or inter-dependencies with other projects in the portfolio.

Picture View: Portfolio Management



The Solution: Portfolio Management

Specifically Not intended

Stop support of applications needed by the customers, but rather to build a partnership between IT and Stakeholders concerning the “Value” of applications in the IT portfolio

The Goal

Strengthen the application portfolio over time by consolidating, replacing, and improving the applications so that all of the applications in the portfolio eventually become high-value, low-cost applications (recognizing not all applications may fall into this category...)

Provides a Methodology for Continuous Improvement

When applications are routinely evaluated according to their “relative value”, costs CONTINUE to go down over time. Impact of this process truly gets better with age

Challenges/Benefits of the Process

- **Challenges:**

- **Creating a mature Application Portfolio takes time**

- Increased benefits will be realized with each iteration
- First time through the process is the most difficult

- **Software assets are not easy to divest**

- Think of it as fixing the car while driving it
- Replacing or retiring an application requires time, money, and resources

- **Benefits:**

- **Discussion among stakeholders regarding “value” are inherently healthy conversations**

- Strengthens trust, communications, and joint decision making between IT and customers
- Yields actionable results that strengthens the application portfolio to meet business needs

Provides a single process that both leads to decision making AND measures the results of those decisions over time

Benefits of the Process (Continued)

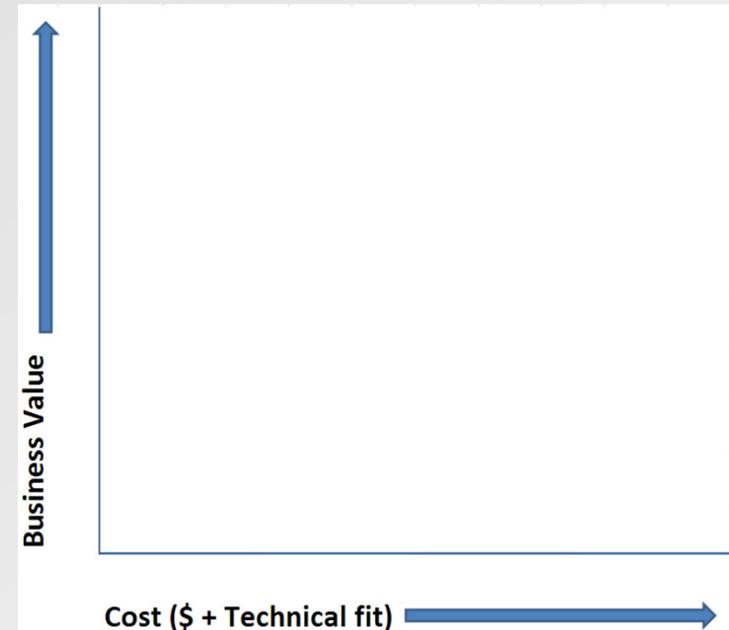
- **An industry standard methodology exists that provides:**
 - The uniformity & structure necessary to make good long term business decisions
 - A recognizable and transparent framework for stakeholders to make informed decisions
 - Neutrality – eliminates “application popularity”: When discussions remain focused on the criterion that determine value an important change occurs in an organizations culture

The Evaluation Process

- **Evaluation of IT applications similar to many other formal evaluations**
 - Build the Team (need stakeholders to identify organizational participants)
 - Establish the evaluation criteria (draft created)
 - Perform the evaluation against the pre-defined criteria
 - Score the results

What does it look like?

- **Each application in the portfolio must be evaluated to determine its value and its cost**
 - “Value” refers to the worth or usefulness of the application to the business
 - “Cost” refers to the real dollar costs of the software AND how well the application fits within the IT technical architecture



- **Weighted Criterion and factors are used to assess value and cost**
- **To ensure appropriate perspective:**
 - Business stakeholders determine the business value criteria & evaluate against those criteria
 - IT personnel determine the technical fit criteria & evaluate against those criteria
 - Cost data is gathered raw

Determining Value

- **Determining the Business Value**

- It is not cost effective to attempt to derive value by ascribing dollars to individual transactions
- However, business value can be derived by using criteria such how well the application serves its function, how widely the application is used, how strategic the application is to the institution's decision making, etc.

- **Determining Cost – Raw dollar cost and technical fit are often captured on one axis**

- Determining the Technical Fit

- Technical fit is determined by how well the application fits the enterprise's desired architecture/roadmap and its maintainability

- Determining the Cost

- Includes hard-dollar costs such as licensing and upgrade fees
- Includes labor time for support and operations personnel
- Per Burton Group, it is generally not productive to try to determine the fractional costs for server hardware and network bandwidth consumed by an application. Those costs tend to be difficult to quantify and are often not significant in the final analysis.
- If distinct visibility to these costs become available in the future, they may be added to the cost formula

Establishing Evaluation Framework

- **Establishing solid evaluation criteria is the foundation to a sound evaluation**
 - Evaluation criteria
 - Should be that which is most important in defining value across all the applications
 - Should be discriminators that allow one to determine one application's value over another
 - Criteria are weighted in order of importance
 - Factors
 - Are included in the criteria description
 - Are instructions to the evaluators on what is important to consider when scoring each application
 - Scoring
 - Is given in adjectives which correlates a numerical ratings. Scoring provides a degree of subjective judgment within the parameters of the pre-defined criteria and factors.

Draft Business Criteria

Business Value	Criteria	Weight
Functionality	The degree to which this application performs its function. Factors to consider when scoring this criteria include: How well does the application enables people to do their job, does this application performs its function well, is this application still used/used sparingly, or do people avoid its use, how much side processing and/or manual work around are required to make this application work, how user friendly is the application, how configurable this application is with regards to changing processes, are there a lot of enhancement or bug SRs in the system for this application, etc.	%
	Score	
	1 Unsatisfactory: The application does not performs it's business function	
	2 Marginal: The application minimally performs it's business function	
	3 Acceptable: The application adequately performs it's business function	
	4 Good: The application performs it's business function well	
	5 Outstanding: The application performs it's business function in an exceptional manner	
Criticality	The degree to which this application is critical to the labs business operations: Factors to consider when scoring this criteria include: the extent of the application is used throughout the lab (group, across divisions, lab-wide, etc.), if this application provides regulatory compliance or support, the importance of the business processes this application directly supports, the importance of the data this application produces to other applications or processes.	%
	Score	
	1 Unsatisfactory: This application is not critical to the labs Business Operations	
	2 Marginal: This application has minimal importance to the labs Business Operations	
	3 Acceptable: This application is moderately important though not critical to the labs Business Operations	
	4 Good: This application is very important though not critical to the labs Business Operations	
	5 Outstanding: This application is critical to the Labs business operations	
Strategic	The degree to which this application provided strategic value to the lab. factors to consider when scoring include: if the applications considered strategic by business executives, and if the application directly supports important lab-wide or business initiatives.	%
	Score	
	1 Unsatisfactory: This application does not provide strategic value to the lab	
	2 Marginal: This application provides minimal strategic value to the lab	
	3 Acceptable: This application provides some strategic value to the lab	
	4 Good: This application provides a moderate amount of strategic value to the lab	
	5 Outstanding: This application provides exceptional strategic value to the lab	

Draft Cost & Technical Fit Criteria

Technical Fit	Criteria	Weight	
Maintainability	The degree to which this application can be easily maintained. Factors to consider when scoring this criteria include: Availability of internal and external resources, how accessible this application is to the DCO team, and the stability and reliability of the product's vendor if this is a 3rd party application.	%	
	Score		
	1	Unsatisfactory: This application is either currently not maintainable, or will not be maintainable in the near future	
	2	Marginal: This application is difficult to maintain	
	3	Acceptable: Ability to maintain this application is adequate	
	4	Good: This application is relatively easy to maintain	
Technical Direction	The degree to which this application aligns with the current and or planned technology direction. Factors to consider in scoring this criteria include: The direction outlined in the Technology Roadmap, the application's fit with the lab/EBIS security and other standards, and the OCIO Reference Architecture.	%	
	Score		
	1	Unsatisfactory: This application does not align with either the current or future planned technology direction	
	2	Marginal: This application minimally aligns with the current technology direction, but not the future direction	
	3	Acceptable: This application adequately aligns with the current technology direction, but not the future direction	
	4	Good: This application aligns with the current technology direction, and the near term future direction	
Cost			
	Raw Dollars	The annual dollar costs for license and support, average Analyst, Developer and Shared Services hours multiplied by an applicable rate.	%

Conducting the Evaluation

- **After criterion and weights are finalized**
- **Applications are evaluated**
- **Evaluation Teams use a scorecard to submit results**

Conducting the Evaluations: Draft Application Scorecard

Application Scorecard

Sample

Business Value	Criteria Description	Weight	Score	Weighted score
Functionality	The degree to which this application performs its function. Factors to consider when scoring this criteria include: How well does the application enables people to do their job, does this application performs its function well, is this application still used, is it used only sparingly because it does not serve the required functions, do people avoid its use, how much side processing and/or manual work around are required to make this application work, how configurable this application is with regards to changing processes, are there a lot of enhancement or bug SRs in the system for this application.	50	4	200
Criticality/Usage	The degree to which this application is critical to the labs business operations: Factors to consider when scoring this criteria include: the extent of the application is used throughout the lab (group, across divisions, lab-wide, etc.), if this application provides regulatory compliance or support, the importance of the business processes this application directly supports, the importance of the data this application produces to other applications or processes.	25	5	125
Strategic	The degree to which this application provided strategic value to the lab. factors to consider when scoring include: if the applications considered strategic by business executives, and if the application directly supports important lab-wide or business initiatives.	25	3	75
		100%		400/500
Technical Fit	Criteria Description			
Maintainability	The degree to which this application can be easily maintained. Factors to consider when scoring this criteria include: Availability of internal and external resources, how accessible this application is to the DCO team, and the stability and reliability of the product's vendor if this is a 3rd party application.	25	4	100
Technical Direction	The degree to which this application aligns with the current and or planned technology direction. Factors to consider in scoring this criteria include: The direction outlined in the Technology Roadmap, the application's fit with the lab/EBIS security and other standards, and the OCIO Reference Architecture.	25	2	50
				150/250
Cost	Criteria Description			
Cost	The average annual cost to JPL to support this application derived from licens and support fees, ESA and developer hours multiplied by a rate.	50	\$100K	N/A
		100%		

For Each **Criterion**

A **weighting** is determined by appropriate stakeholders (100% for each axis)

Evaluation teams then **score** each application

Weighted score multiplies raw score x weight

Analyzing the Results

- It is not uncommon to conduct application lifecycle discussions at this point

– Data:

Application	Business Value	Technical Fit	Annual Cost
A	450/500	150/250	\$100K
B	200/500	100/250	\$241K
C	375/500	250/250	\$25K
D	100/500	75/250	\$50K

- Plotting the results on a Star Chart can be more revealing

Draft Application Scorecard

Business Value	Criteria Description	Weight	Score	Weighted score	Ordinal Score
Functionality	The degree to which this application performs its function. Factors to consider when scoring this criteria include: How well does the application enables people to do their job, does this application performs its function well, is this application still used, is it used only sparingly because it does not serve the required functions, do people avoid its use, how much side processing and/or manual work around are required to make this application work, how configurable this application is with regards to changing processes, are there a lot of enhancement or bug SRs in the system for this application.	50	4	200	
Criticality/Usage	The degree to which this application is critical to the labs business operations: Factors to consider when scoring this criteria include: the extent of the application is used throughout the lab (group, across divisions, lab-wide, etc.), if this application provides regulatory compliance or support, the importance of the business processes this application directly supports, the importance of the data this application produces to other applications or processes.	25	5	125	
Strategic	The degree to which this application provided strategic value to the lab. factors to consider when scoring include: if the applications considered strategic by business executives, and if the application directly supports important lab-wide or business initiatives.	25	3	75	
		100%		400/500	8
Technical Fit	Criteria Description				
Maintainability	The degree to which this application can be easily maintained. Factors to consider when scoring this criteria include: Availability of internal and external resources, how accessible this application is to the DCO team, and the stability and reliability of the product's vendor if this is a 3rd party application.	25	4	100	
Technical Direction	The degree to which this application aligns with the current and or planned technology direction. Factors to consider in scoring this criteria include: The direction outlined in the Technology Roadmap, the application's fit with the lab/EBIS security and other standards, and the OCIO Reference Architecture.	25	2	50	
				150/250	6
Cost	Criteria Description				
Cost	The average annual cost to JPL to support this application derived from liscens and support fees, ESA and developer hours multiplied by a rate.	50	\$100K	N/A	3
		100%			

Sample

For Each **Criterion**

A **weighting** is determined by appropriate stakeholders (100% for each axis)

Evaluation teams then **score** each application

Weighted score multiplies raw score x weight

Ordinal Scoring establishes relative ranking and allows combining of cost data with value data

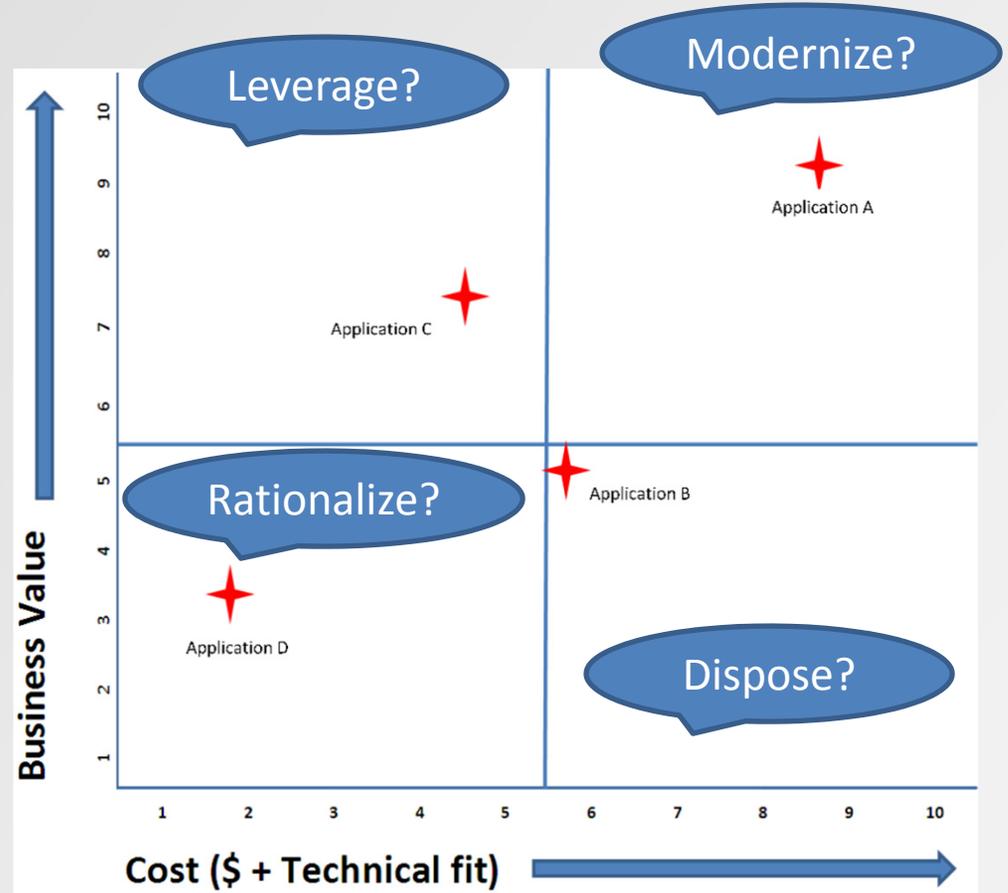
Understanding Ordinal Scoring

- **Ordinal scoring is a method used to normalize scoring in order to chart it**
 - First an ordinal score 1 – 10 is given for each score.....
 - For example, a score of “335” might translate to an ordinal value of 7
 - Similarly, an application with hard-dollar costs of \$0 to \$999 might have an ordinal cost value of 1, and so on.
 - Applications should be scored relative to each other, i.e. if all the application scores end up between 2 and 7, change the scale so that its range is from 2 to 7
 - This will help prevent all applications from being clustered together into one corner of the Star Chart
 - When working with ordinal values, only the order is significant/not the interval between units. i.e. an ordinal value of 4 is not necessarily twice as good as an ordinal value of 2. This is because an ordinal score is assigned to a range of raw scores.
 - You cannot multiply or divide ordinal values, but you can add them to get a sum total, making it possible to combined the raw cost score and the technical fit score on one axis.

Graphing the Results: The Star Chart

“Star Chart” provides a visual display in which to **START** discussions; it is **NOT** a decision grid

Application	Business value score	Cost score
A	9	9
B	5	6
C	7	5
D	3	2



The Discussions

- **Discussions should be focused on determining a lifecycle plan for each application**
- **Discussion Examples:**
 - Application A provided high business value but was also high in cost
 - What are its cost drivers? If technical, should this application be upgraded to a new technology?
 - Application D has both a low cost and a low business value
 - Is this application necessary?
 - Can its functionality be combined into an existing application?
- **The results of the discussions should be documented in the applications lifecycle plan**
- **As appropriate, tasks should be added to the Project Portfolio for prioritization**
- **Thus the Portfolio Management cycle continues**

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