

# **Freedom from Endless Spreadsheets**

## ***Application Portfolio Management Made Easy***

**Tim Hahn**  
**IBM**

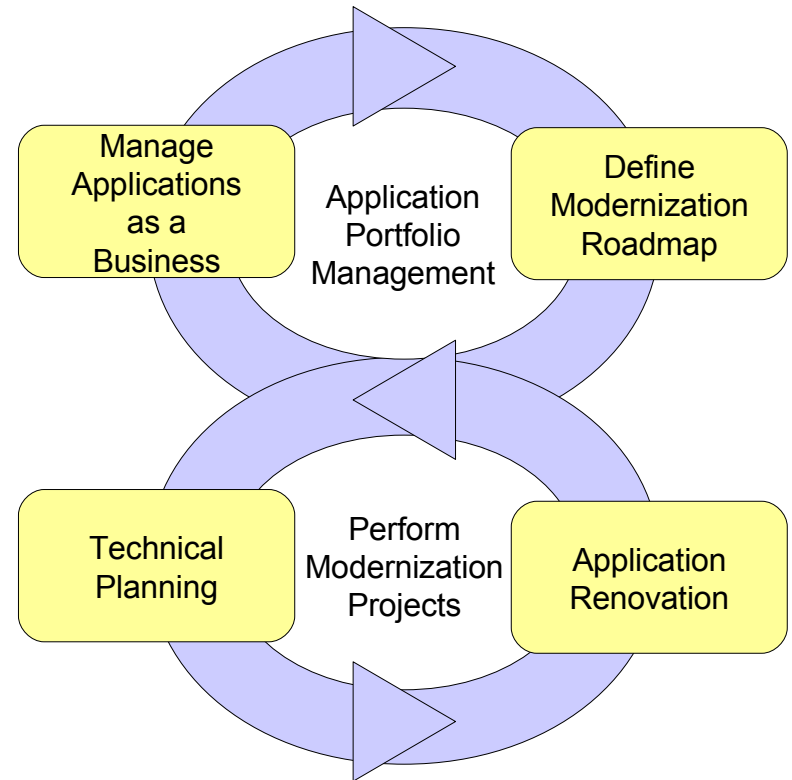
**9 August 2011**  
**Session 9775**

# Abstract

Any mature organization has more than a handful of applications to maintain, enhance, or even create. And every organization struggles to identify, prioritize, and align their application development projects with the needs of the business. In this session we'll provide a easy to follow process for managing your portfolio of applications, prioritize which applications need the most attention, identify the appropriate projects to undertake, and set up for repeated review and analysis of your application portfolio based on you business requirements. Both the process and tools to support the process will be discussed.

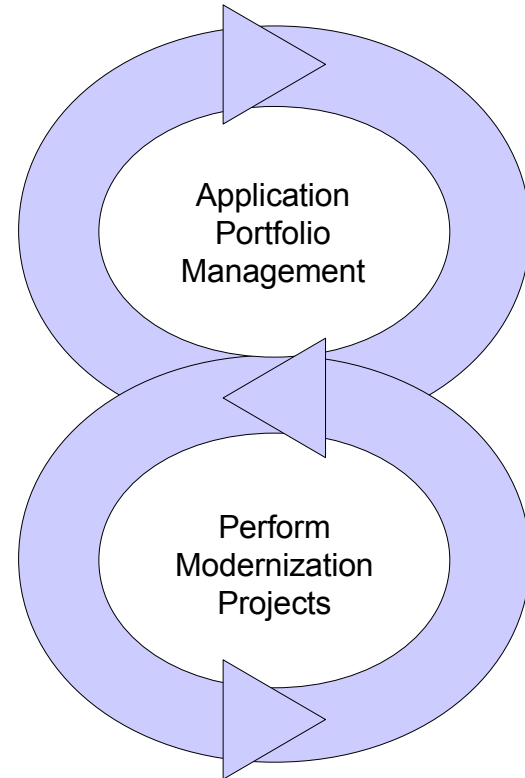
# Agenda

- Application Modernization – what is it?
- Manage Applications as a Business
- Define Modernization Roadmap
- Technical Planning
- Application Renovation
- Summary



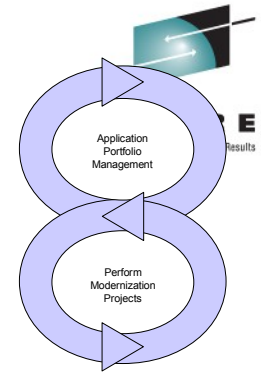
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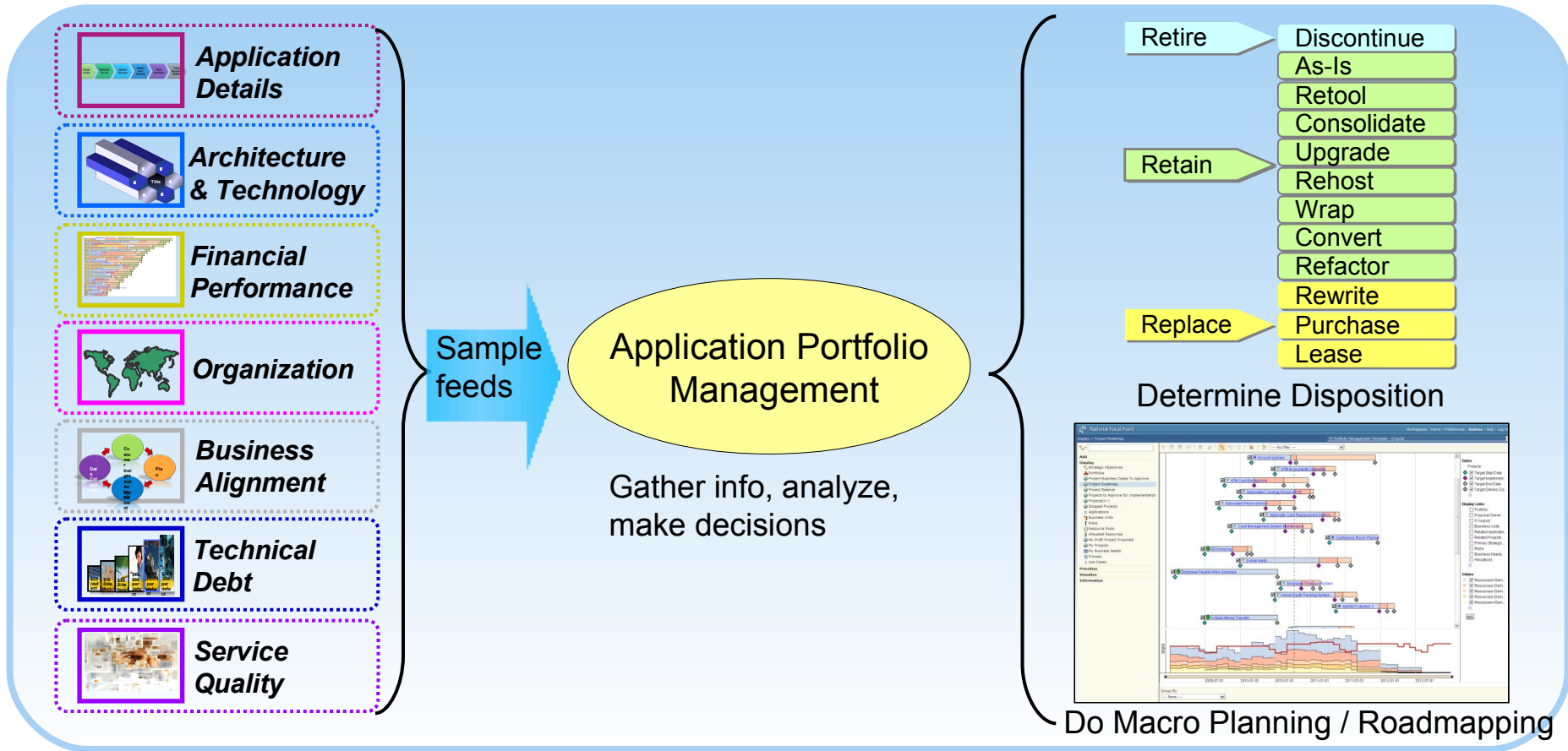
# Application Modernization

- Application Portfolio Management (APM)
  - Manage Applications as a Business
    - Understand your inventory (assets and liabilities)
      - *Software applications*
      - *Systems where that software runs*
      - *Dependencies between applications*
    - Relationship of software to your business
  - Define Modernization Roadmap
    - Determine which applications are most important to your business goals
    - Determine what direction to take for your applications
    - Estimate the costs of taking those directions
- Perform Modernization Projects
  - Technical Planning
    - Understand existing applications in deep detail
    - Locate relationships between source code and data
    - Identify specific tasks for teams to accomplish
  - Application renovation
    - Update, enhance, replace, retire, and so on



# A process with information feeds

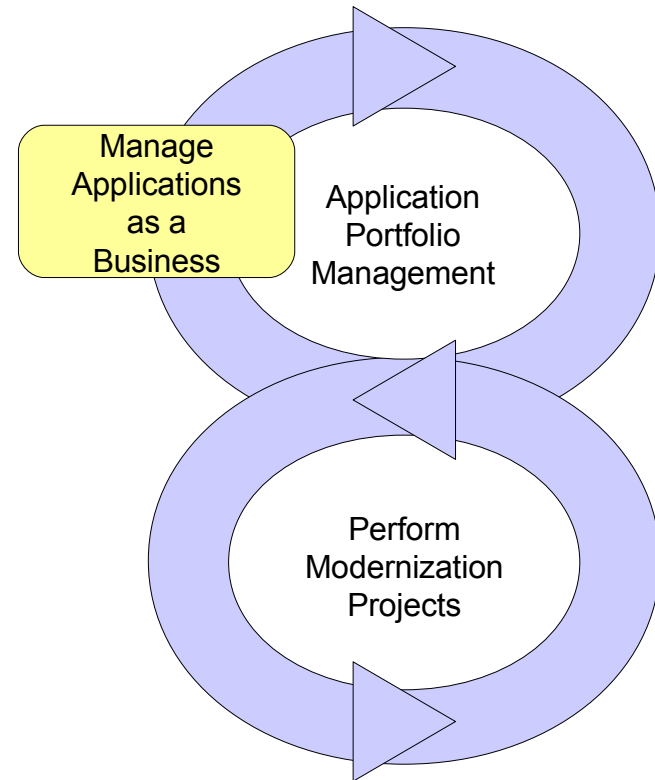
Effectively translate business needs to executable roadmaps



Enabled through maturing analytics:  
 Qualitative ⇨ Quantitative ⇨ Predictive

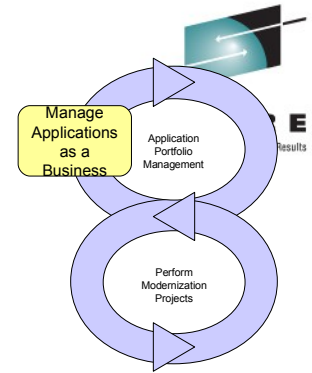
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# Manage Applications as a Business

- An Enterprise is built over time
  - Projects build upon one another
  - De-centralized teams and a plethora of technology options created many solutions
  - Subtle dependencies may exist between subsystems
  - Different initiatives result in different architectures existing across the IT environment
- Goals
  - Align application investments with current and future business goals
  - Don't over-invest in non-essential applications
  - Invest in important applications
- Tasks
  - Identify your business goals
  - Understand the inventory of applications in use
  - Understand the systems these applications depend upon
  - Understand the dependencies between applications
  - Evaluate the impact of these applications to your business goals
  - Determine which applications are of highest priority to act on (modernize, change investment level, retire, etc.)





# APM Dashboard – Application Performance

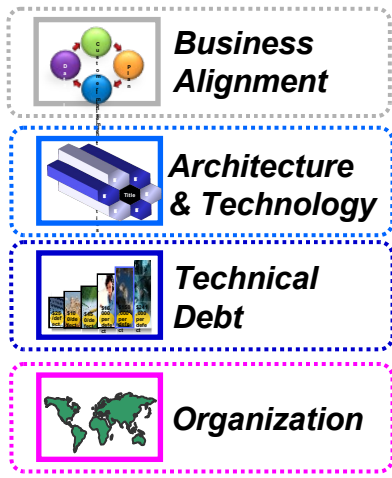


Name	Portfolio	Star Rating	Projected Annual Cost	Cost Variance
Active Risk Manager	Sales portfolio	◆ 4 stars	10,600	
AutoFit	Enterprise Application Portfolio	◆ 2 stars	86,700	
Billing	Finance Portfolio	◆ 1 star	608,000	
GOLedger	Finance Portfolio	◆ 4 stars	42,400	
Ledger	Finance Portfolio	◆ 5 stars	616,900	

- Lists all the applications in the organization's portfolio
- Rates the applications from one to five stars
  - five star application represents a high performer
  - one star application represents a poor performer
- Ratings are calculated from a number of analytics including financial performance, technical information, organization, etc.

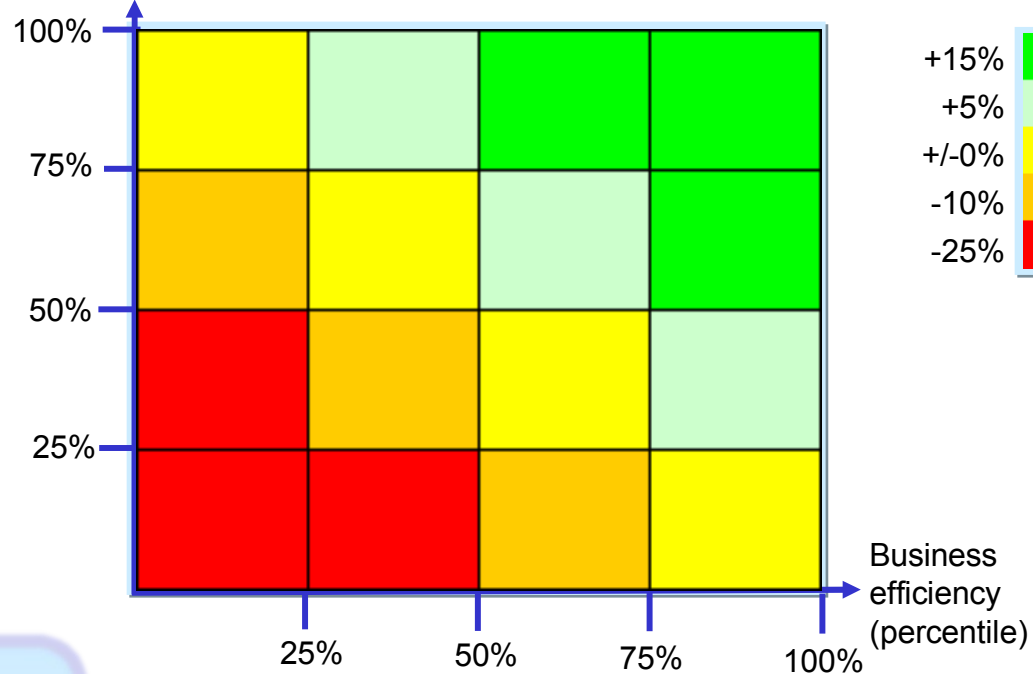
# Applying Analytics to Determine Funding Levels

*Propose investment levels based on alignment with strategic initiatives*



Score card

Ability to contribute to growth (percentile)



Business efficiency (percentile)

## Result:

- Increased transparency
- Objective decision making
- Scalable solution

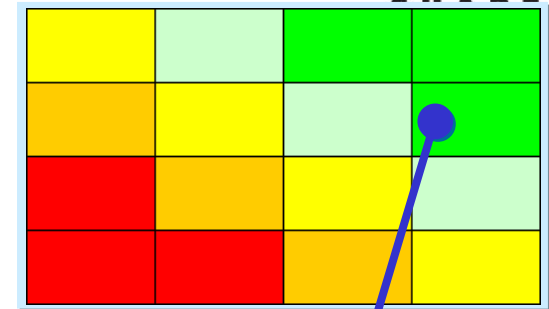
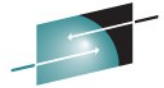


Score card

# Portfolio Management

## Example: Ledger Application

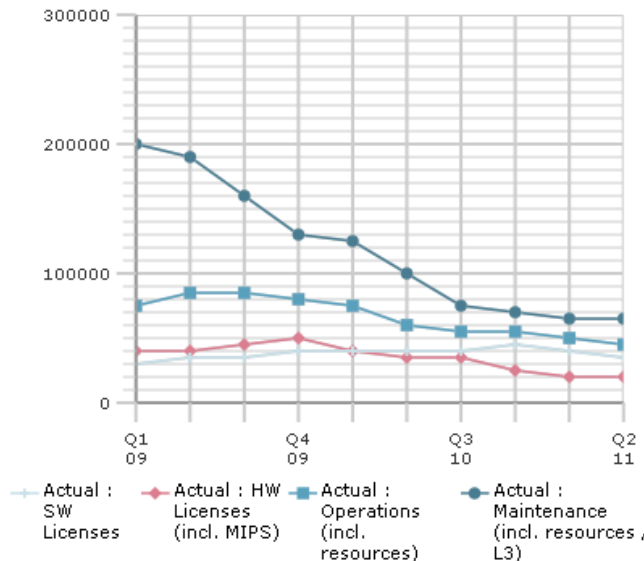
- Favorable business assessment
- Trend: Financials, operations headcount and development headcount have decreased.



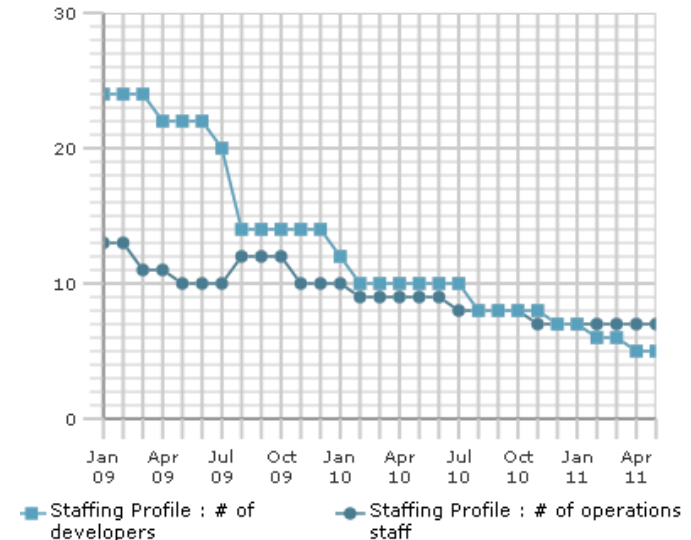
Ledger Application

Business Assessment	
Business Alignment	4 - High
Business Criticality	5 - Very High
User Base	4: 100-999
Availability	3 - 12x5
Impact on Outage	1 - Low
Revenue Generation	4 - High
Revenue Growth Potential	5 - Very High
Customer Facing	1 - No
Flexibility Importance	2 - Somewhat impor
Business Risk	1 - Very Low

Business Score



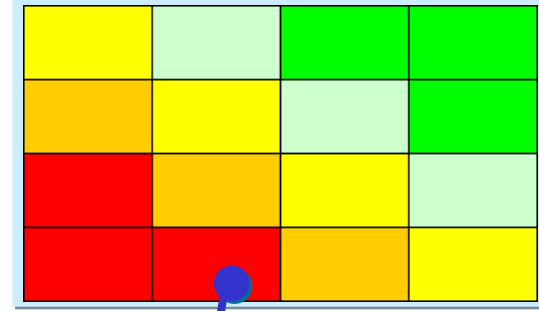
Financials



Staffing Profile

# Portfolio Management

## Example: Billing Application

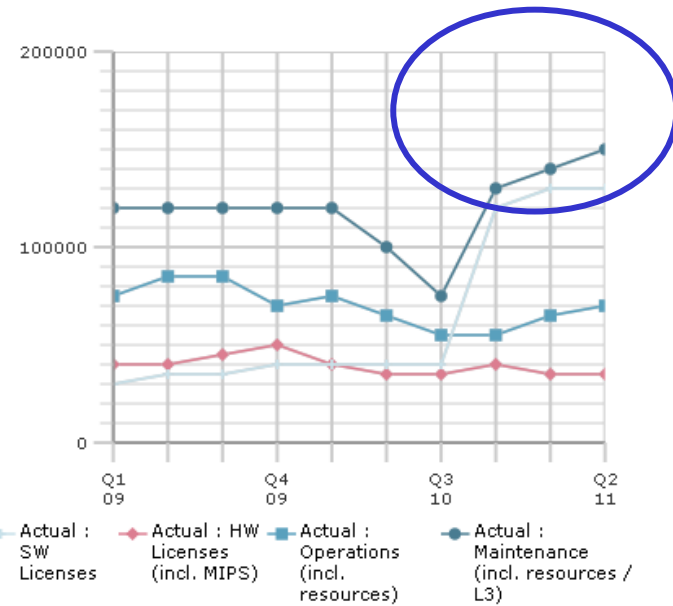


Billing Application

- Declining rating, low usage, poor business and IT alignment.
- Trend: Maintenance and SW licensing cost trending upwards.

Business Assessment	
Business Alignment	2 - Low
Business Criticality	4 - High
User Base	1: <10
Availability	3 - 12x5
Impact on Outage	1 - Low
Revenue Generation	4 - High
Revenue Growth Potential	2 - Low
Customer Facing	1 - No
Flexibility Importance	3 - Important
Business Risk	3 - Medium

Business Score



Financials

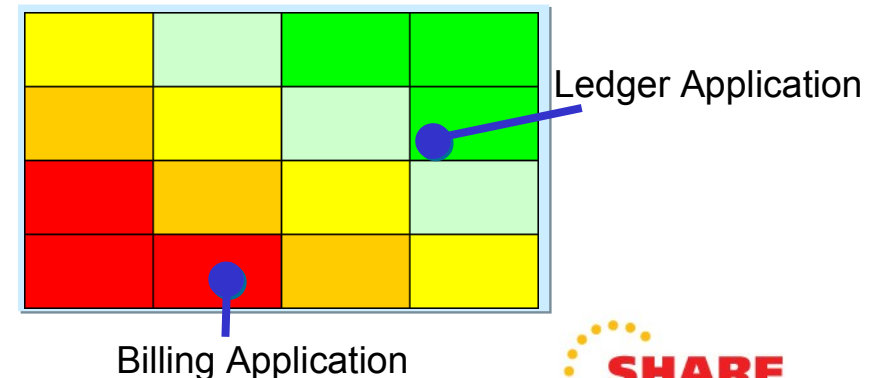
Technical Assessment	
IT Alignment	1 - Very Low
IT Risk	4 - High

Technical Assessment

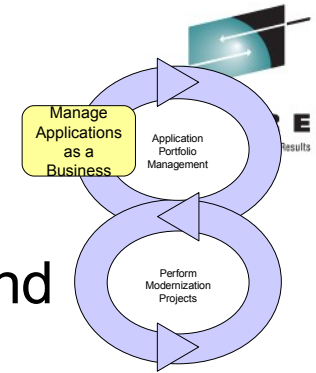


# Determine Investment Levels and Need for Additional Analysis

- Fund additional enhancements to the ledger application.
- Flag the billing application for additional analysis
- Understand business alignment scores and software costs for the billing application



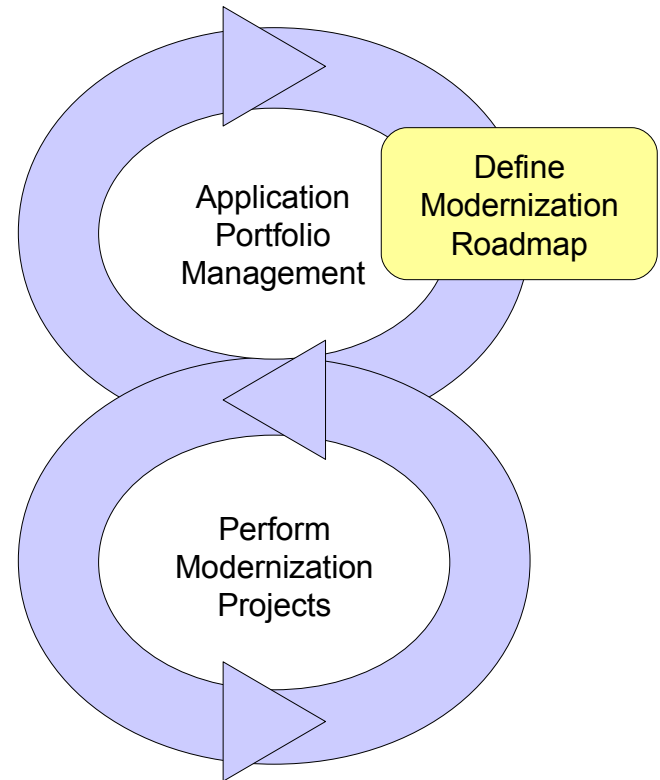
# Manage Applications as a Business



- Outcomes
  - An accurate inventory of applications, infrastructure, and dependencies
  - An understanding of the business goals of the organization and how they relate to the application inventory
  - A prioritized list of applications to further investigate, with a candidate type of high-level action (modernize, change investment level, retire, etc.)
- Next steps
  - Do deep dive analysis of prioritized applications to determine path to follow
    - Estimated costs of each approach
    - Estimated benefits of each approach
    - Dependencies for each approach
    - Which modernization strategy to implement

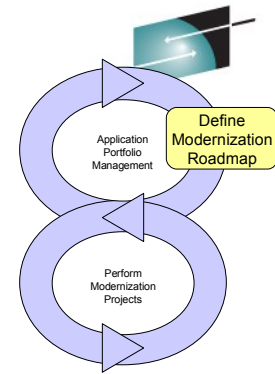
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# Define Modernization Roadmap

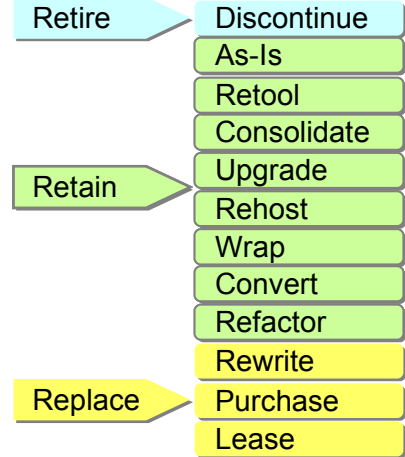
- Like any potential project, pros and cons must be considered
  - Is it worth working on the application?
  - What type of work should we do?
  - Will the work I perform pay off? When?
- Goals
  - Identify the relative importance of applications to business goals
  - Identify applications to renovate
  - Identify the appropriate approach to renovation (retain, retire, replace)
- Tasks
  - Perform static analysis of the applications to understand
    - Size
    - Complexity
    - Maintainability
    - Relationships
  - Outline modernization options with pros and cons
  - Compare the costs and expected benefits of different renovation methods
  - Determine the path to take for each renovation project





# Retire, Retain, Replace – What Are the Options

There are a spectrum of strategies



The business drivers are one of several reasons for selecting which modernization strategy is the most appropriate

Business Drivers	Modernization Strategy					
	Re-host	Wrap	Convert	Refactor	Re-tool	Rewrite
Operations Costs	Light Green	Yellow	Light Green	Light Green	White	Light Green
MIPS Cost	Light Green	Yellow	Light Green	Light Green	White	Light Green
Maintenance Cost	White	Yellow	Light Green	Light Green	Light Green	Light Green
License Costs	Light Green	White	White	White	Yellow	Yellow
Time to Market	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
Personnel Risk	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
Technology Risk	Light Green	White	Light Green	Light Green	White	Light Green
Implementation Cost	Yellow	Yellow	Yellow	Orange	Yellow	Red

**Remediation projects need to be assessed based on their contribution to business drivers vs. project cost and execution risk**

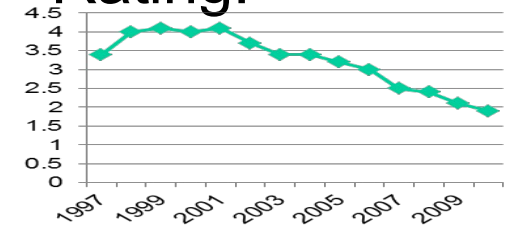
# Portfolio Management

## Example: Billing Application



- Vendor increased SW licensing cost by 120% in the last two years.
- Labor cost increases due to skills exposure.
- Low code quality, brittle architecture.

Rating: ★★

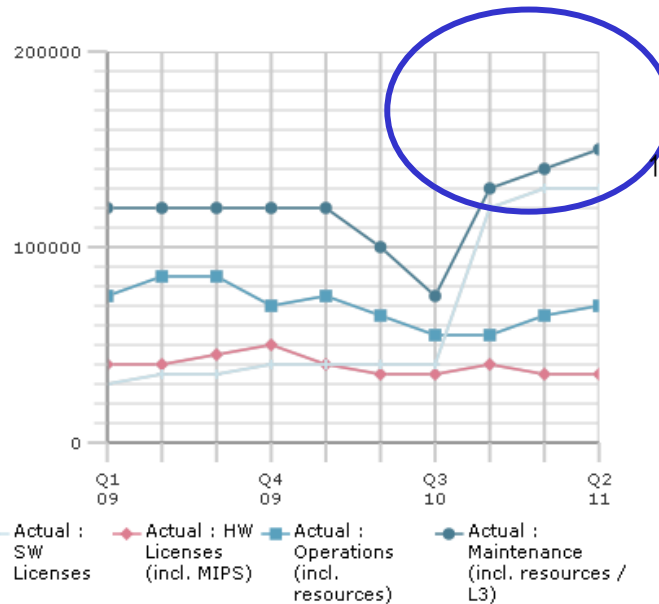


### Technical Assessment

IT Alignment	1 - Very Low
IT Risk	4 - High
Size	32,000
Defect Rate	188
Defect Density	5.875
Dependency Factor	2 - Low
Meet SLAs	1 - Yes
Skills Risk	5 - Very high
Code Complexity	1.9
Maintainability Score	1.8
Transferability Score	2.1
Changeability Score	2.4
Robustness Score	2.2

IT Score 18 (out of 100)

### Technical Assessment



### Financials

### Rating History

### Average Labor Cost



### Labor Cost

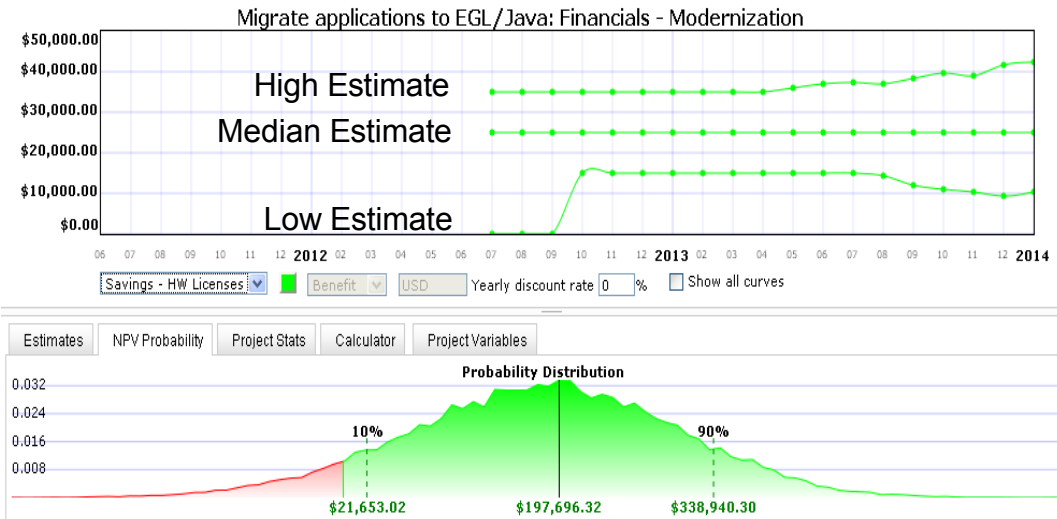


# Determining the potential benefit of an approach

*Applying analytics to understand benefits vs. cost and risk*



## Option analysis: Migrate from Natural / Adabas to EGL or replace with ERP?



- Model uncertainty (risk) of your benefit and cost stream
- Calculate Net Present Value (NPV) of doing a migration
- Assess which alternative provides the most favorable NPV

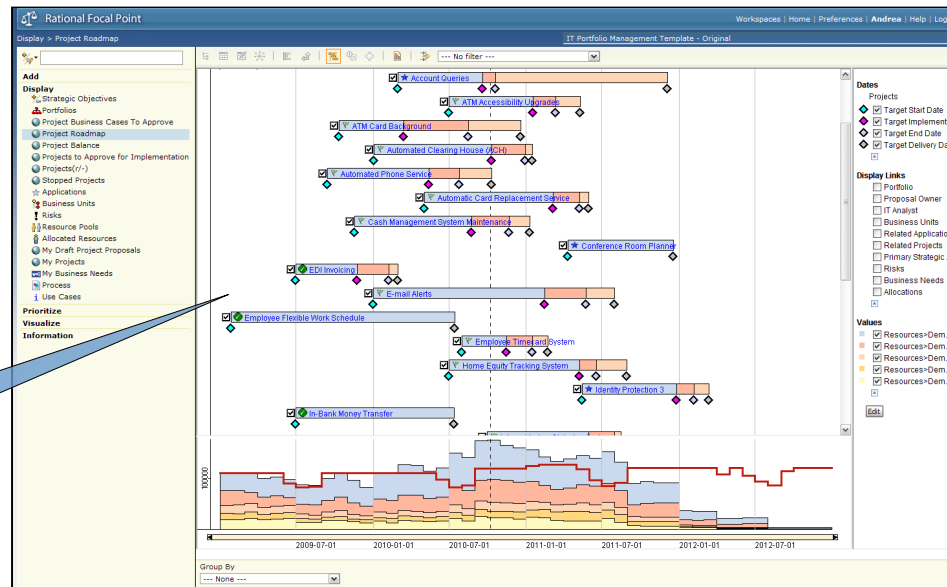
	Cost	Risk
Migrate to EGL	\$1.5 / loc	Inherited technical debt, less agile system
Replace with ERP module	\$3 / loc	Package will require large amounts of customization



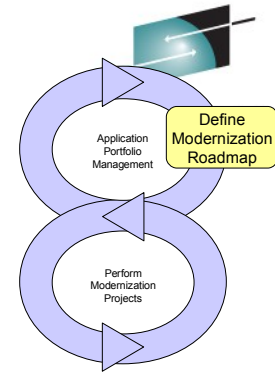
# Establish Execution Roadmap

- Using the tools, investigate several options
- Assess the potential costs and skills requirements
- Select a migration approach which works best for the organization

Build rough schedules to assess do-ability



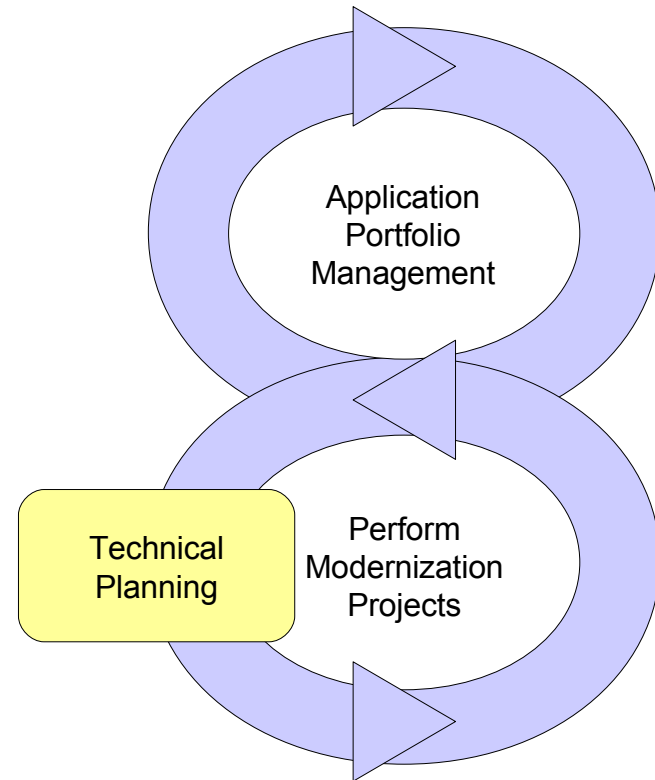
# Define Modernization Roadmap



- Outcomes
  - An ordered list of application renovation projects – and approaches to take
  - Projects ordered by relevance and alignment to business goals
  - An estimate of the time, resources, and return on investment for each project
  - Define roadmap of which projects to do when, with consideration for resource supply constraints
- Next Steps
  - Allocate teams to work on the renovation projects
  - Perform more detailed application analysis during the renovation
  - Dispatch application renovation work projects
  - And begin the Application Portfolio Management cycle again!

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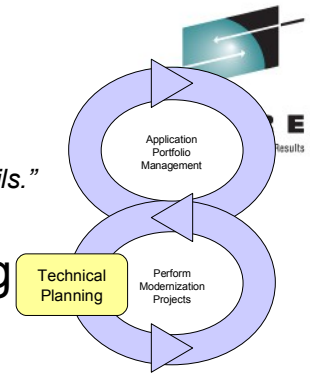


# Technical Planning

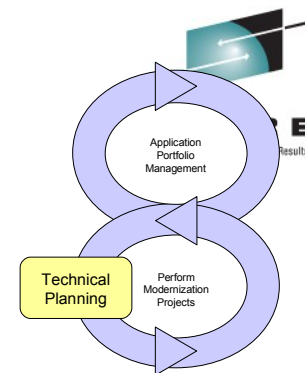
- This is where deep technical work starts
  - Any application renovation project requires program understanding
  - What modules do we need to update?
  - Which databases are affected, and how?
  - What impact will that have on the existing application source code?
- Goals
  - Understand the application's components and how they depend upon one another
  - Establish a detailed understanding of the application source code
  - Identify the specific areas of code and data that require modification
- Tasks
  - Ensure that the application source code is under change management
  - Analyze the application source code, database tables, and build environment
  - Analyze program flow and component diagrams to understand code structure
  - Plan the renovation project work tasks based on analyzing impact of required changes

*"Here be dragons."*

*"The devil is in the details."*



# Application Analysis – high level view of source code base



## Explore MVS assets

Actions  ▼

Search MVS asset names:    Type mixed case [Advanced search](#)

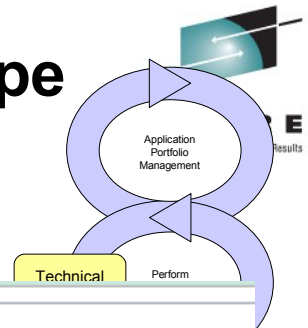
Run time	Total
Batch job	<a href="#">57</a>
CICS group	<a href="#">221</a>
CICS online region	<a href="#">2</a>
CICS transaction	<a href="#">938</a>
DB2 system	<a href="#">5</a>
IMS DBD	<a href="#">45</a>
IMS subsystem	<a href="#">2</a>
IMS transaction	<a href="#">50</a>
Run unit <span>?</span>	<a href="#">1317</a>

Program	Total
BMS map definition	<a href="#">115</a>
BMS map set definition	<a href="#">115</a>
Concatenation set	<a href="#">16</a>
DB2 stored procedure	<a href="#">215</a>
Entry point	<a href="#">447</a>
IMS PSB	<a href="#">104</a>
Literal	<a href="#">19984</a>
Program	<a href="#">456</a>

Data	Total
Data element <span>?</span>	<a href="#">158995</a>
Data set	<a href="#">445</a>
Data store	<a href="#">325</a>
DB2 column	<a href="#">4889</a>
DB2 table	<a href="#">541</a>
DD name	<a href="#">1361</a>
I/O record description	<a href="#">749</a>



# Inventory - lists – search-able summary for each type



## Program summary

Actions

Overview **Statistics** e-business information

Search Program names:    Type mi

Optionally, specify any additional search criteria from the following:

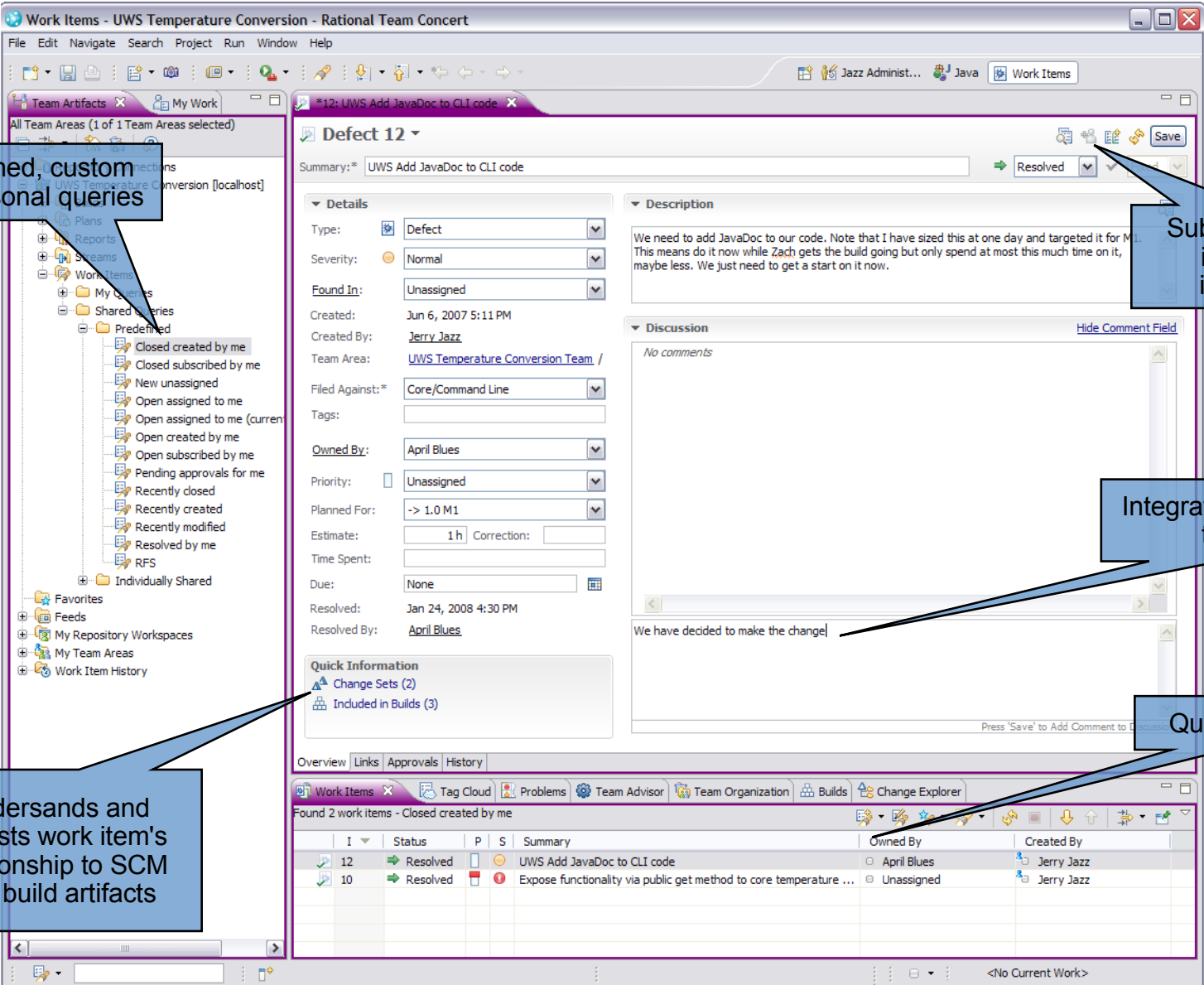
Site:  Application:  Annotations:  Language:  Analysis status:  Program type:

[Assign new language](#), [Configure scanning options](#), [Queue selected](#)

<input type="checkbox"/>	Program (12)	Language	Analysis status	Action	Number of lines in program	Source location
<input type="checkbox"/>	<a href="#">QAD01</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	522	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD02</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	491	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD02</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	491	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD02A</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	498	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD03</a>	PLI	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	741	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD04</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	482	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD05</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	609	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD06</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	164	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD06</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	164	<a href="#">C:/Documents and Settings/Administrator/IBM/ratiou RaaI-Demo/sourceWextensions/DMHSRC19.cb</a>
<input type="checkbox"/>	<a href="#">QAD07</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	337	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD08</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	179	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>
<input type="checkbox"/>	<a href="#">QAD09</a>	COB	Completed	<a href="#">delete</a> , <a href="#">annotate</a>	269	<a href="#">C:/Program Files/IBM/Rational Asset Analyzer/samp</a>

[Assign new language](#), [Configure scanning options](#), [Queue selected](#)

# Define work items and tasks



**Predefined, custom and personal queries**

**Subscribe to work items you're interested in**

**Integrated discussion threads**

**Query results**

**Understands and persists work item's relationship to SCM and build artifacts**

**Work Items - UWS Temperature Conversion - Rational Team Concert**

File Edit Navigate Search Project Run Window Help

Jazz Administr... Java Work Items

Team Artifacts My Work

All Team Areas (1 of 1 Team Areas selected)

UWS Temperature Conversion [localhost]

Plans Reports Streams Work Items My Queries Shared Queries

Predefined

- Closed created by me
- Closed subscribed by me
- New unassigned
- Open assigned to me
- Open assigned to me (current)
- Open created by me
- Open subscribed by me
- Pending approvals for me
- Recently closed
- Recently created
- Recently modified
- Resolved by me
- RFS

Individually Shared

Favorites Feeds My Repository Workspaces My Team Areas Work Item History

\*12: UWS Add JavaDoc to CLI code

Defect 12

Summary: UWS Add JavaDoc to CLI code Resolved

Details

Type: Defect

Severity: Normal

Found In: Unassigned

Created: Jun 6, 2007 5:11 PM

Created By: Jerry Jazz

Team Area: UWS Temperature Conversion Team /

Filed Against: Core/Command Line

Tags:

Owned By: April Blues

Priority: Unassigned

Planned For: -> 1.0 M1

Estimate: 1 h Correction:

Time Spent:

Due: None

Resolved: Jan 24, 2008 4:30 PM

Resolved By: April Blues

Quick Information

- Change Sets (2)
- Included in Builds (3)

Description

We need to add JavaDoc to our code. Note that I have sized this at one day and targeted it for M... This means do it now while Zach gets the build going but only spend at most this much time on it, maybe less. We just need to get a start on it now.

Discussion

No comments

Hide Comment Field

We have decided to make the change

Overview Links Approvals History

Work Items Tag Cloud Problems Team Advisor Team Organization Builds Change Explorer

Found 2 work items - Closed created by me

I	Status	P	S	Summary	Owned By	Created By
12	Resolved			UWS Add JavaDoc to CLI code	April Blues	Jerry Jazz
10	Resolved			Expose functionality via public get method to core temperature ...	Unassigned	Jerry Jazz

<No Current Work>

# Plan work across team members



Understand how well you are progressing against your targets in real-time

The screenshot displays a project management dashboard for 'UWS Temperature Conversion M1 Plan'. It features a list of team members and their assigned work items, each with a progress bar and estimated completion time. A right-hand sidebar contains filters for 'Group by' (Owner), 'Sort By' (Priority), and 'Bars' (Progress). A bottom navigation bar includes 'Overview', 'Planned Items', and 'Charts'.

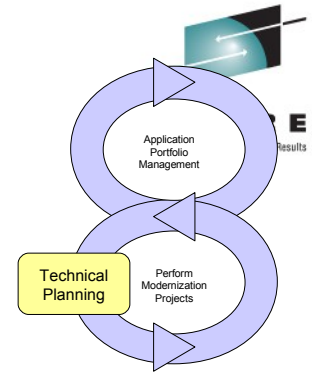
Team Member	Work Item	Progress	Estimated
April Blues	UWS Create the temperature conversion CLI package	1 / 17   -15 h	100%
Derek Holt	UWS Define permissions	0 / 8   -7 h	100%
Jerry Jazz	UWS Define team members	0 / 4   -3 h	100%
Zach Builder	UWS Create the core temperature conversion package	25 / 37   -10 h	100%
Zara Intern	UWS Add JavaDoc to core temperature conversion JUnit tests	0 / 17   -16 h	100%
Unassigned	Expose functionality via public get method to core temperature conversion code	8 / 9 h	

Drag-and-drop work items to change owners/create child parent relationships

Plan and execute iterations while managing team and individual load



# Technical Planning



- Outcomes

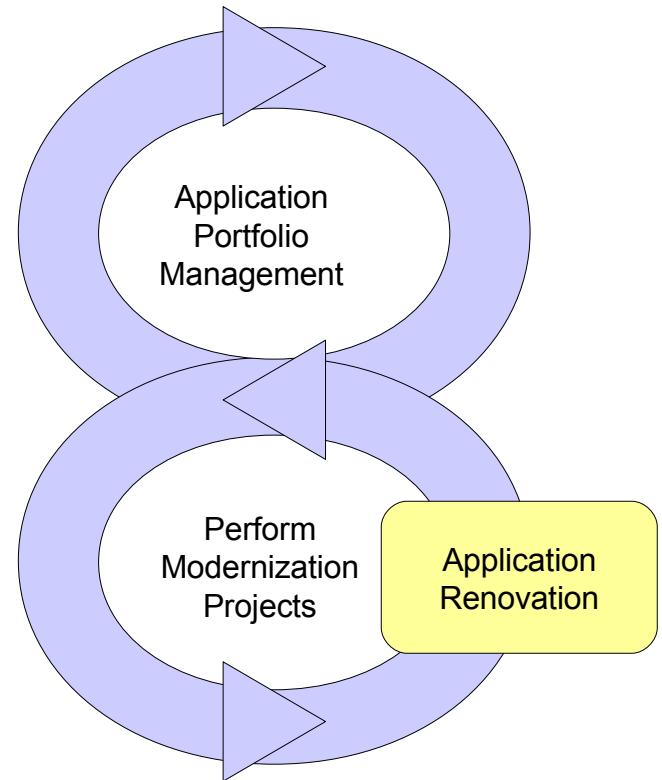
- A plan, including assigned work items, for the renovation work project
- A detailed understanding of the affected pieces of the application
- A referable information resource to help application development teams
- An automated, repeatable, build environment for building the application

- Next Steps

- Begin making changes to the application according to the work items and plan
- Unit, function, and system test the changes
- Reflect application information back into the application portfolio management system

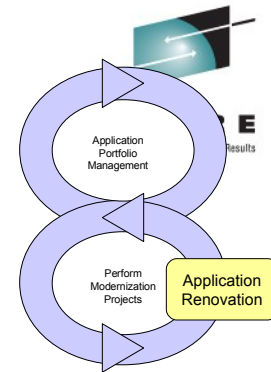
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- **Application Renovation**
- Summary



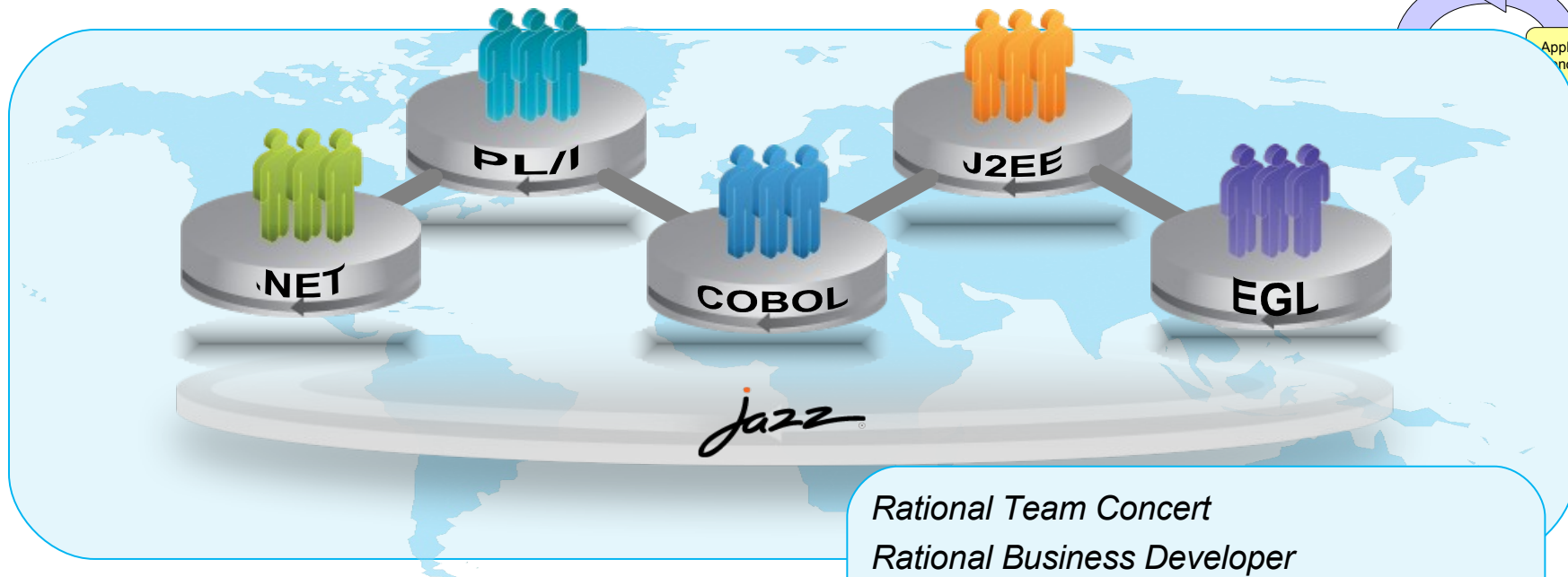
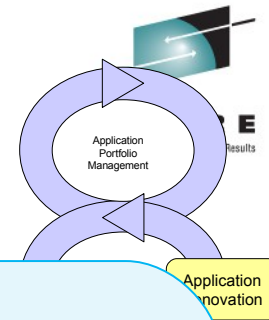
# Application Renovation

- Each renovation project will take on different characteristics
  - Source code change
  - Database changes
  - Deployment platform and build modifications
  - Coordinated testing of the modified application
  - Staged deployment into production environments
- Goals
  - Successfully complete the required changes to the application
  - Ensure a smooth and efficient quality assurance phase
  - Deploy the renovated application into the production environment
- Tasks
  - Make changes to application source code and data designs
  - Test these changes in a local development environment
  - Collect changes made by multiple team members for consolidated build
  - Test and QA the combined set of changes
  - Plan and implement a staged deployment of the renovated application



# Collaborative Lifecycle Management

*Deploy new, common team infrastructure to manage modernization projects*

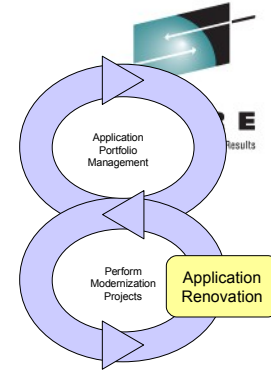


*Rational Team Concert  
Rational Business Developer  
Rational Developer for zEnterprise  
Rational Developer for System z / UT  
Rational Asset Analyzer*

## Benefits

- ✓ Improved communication, higher quality, informed decision making, and more automated, transparent, and predictable software development
- ✓ Support for re-platforming, UI modernization, conversion, refactoring, and rewriting

# Application Renovation

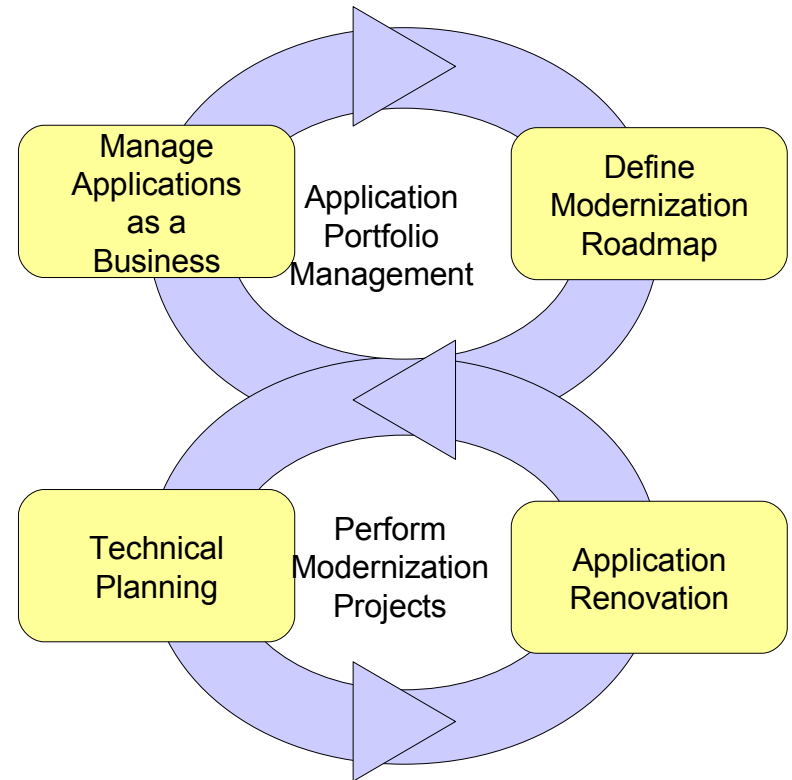


- Outcomes
  - Successful changes made to applications
  - Deployed into production environments
  - With measurable improvements to the business
- Next Steps
  - Reflect information learned back into Application Portfolio Management tools
  - Measure savings and benefits of the application renovation project
  - Compare measurements to forecasts for use in determining future estimates
  - And start the next renovation project suggested by the Application Modernization Roadmap!



# Agenda

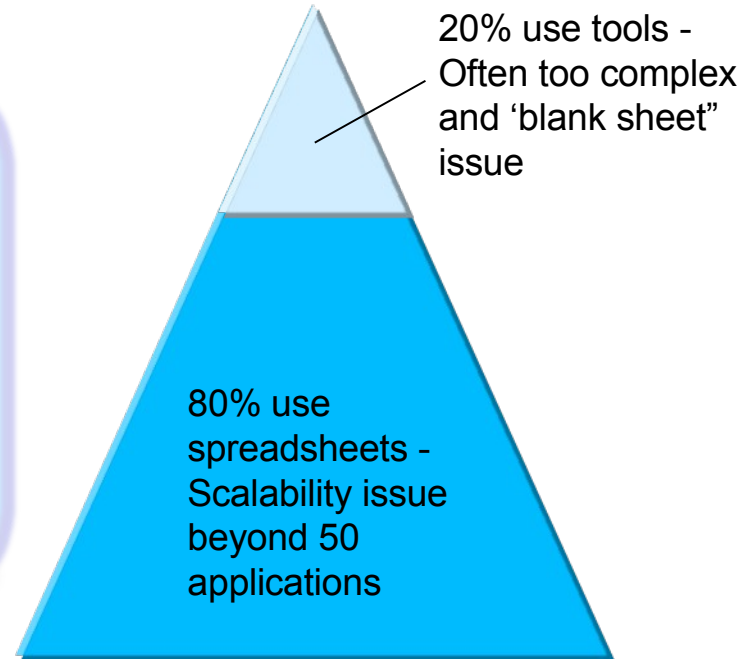
- Application Modernization – what is it?
- Manage Applications as a Business
- Define Modernization Roadmap
- Technical Planning
- Application Renovation
- **Summary**



# Adoption of APM: Industry Maturity

**“Business leaders demand that IT leaders “do more with less” to free resources for innovation and growth. Applications professionals are turning to application portfolio management (APM) to meet those challenges”**

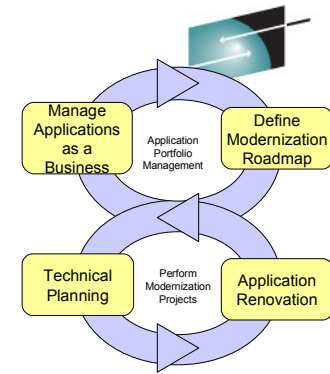
*-The Application Portfolio Management Landscape — Combine Process And Tools To Tame The Beast, Phil Murphy, Forrester Research, Inc. April 15, 2011*



The market situation opens an opportunity for leaders to differentiate themselves from laggards

# Summary

- Many companies spend more than 70% on keeping lights on, and that amount is increasing
- IT organizations have problems modifying applications at speed of business
- We provide a structured approach to incrementally modernize your portfolio based on business priorities
- Change without a plan is chaos
- A Plan without change is stagnation
- Business goals change
  - applications need to change to address them
- Continual renewal is required
  - tools help to guide, govern, drive, and accomplish this change



Thank  
you

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# Useful Links



- **Rational System Architect**
  - <http://www.ibm.com/software/awdtools/systemarchitect/>
- **Rational Focal Point**
  - <http://www.ibm.com/software/awdtools/focalpoint/>
- **Rational Insight**
  - <http://www.ibm.com/software/rational/products/insight/>
- **Rational Team Concert Information:**
  - <http://www.ibm.com/software/rational/products/rtc/>
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