

# Methods and Madness to Strategic Planning

**Aligning priorities and personalities to create a valuable annual plan**

**How NASA JPL and other top Federally Funded Research and  
Development Centers prioritize and manage their portfolios.**

Darryl Hahn & Michael Stefanini

Jet Propulsion Laboratory, California Institute of Technology.

- We are developing the Mars Science Laboratory rover by Caltech
- We are developing the Mars Reconnaissance Orbiter
- We have developed the Mars rover fleet
  - 19 Sojourner
  - 10 InSight
- We manage the Mars Data Network
- We “data mine” the Mars Data Network



# Dare Mighty Things



# PMO at JPL

- IT at JPL has over 580 people
- We manage an average of 100 concurrent projects
- PMO is part of the IT Engineering Office within the OCIO
- We are Separate from the IT Portfolio team
- We coordinate the FFRDC PPMO Working group
- Main Goal: Provides decisional and actionable metrics to IT Leadership

Our PMO is the Air Traffic Controller for the CIO's Office

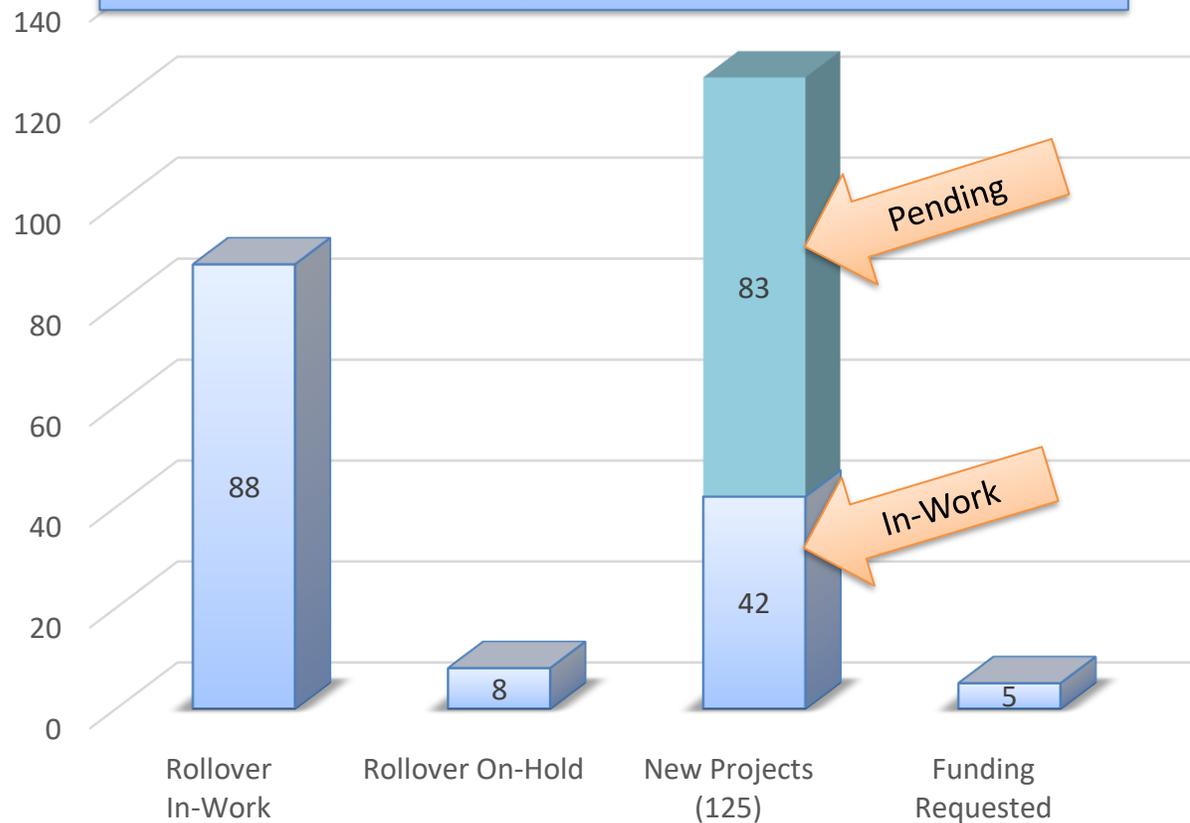
# Summary of other PMOs

- JPL, National Academy of Science, APL, Lincoln Laboratory, RAND, and Aerospace
- Diversity of Business Models and Products
- Conformity in IT size and strategy
- PMO Maturity levels vary across the group

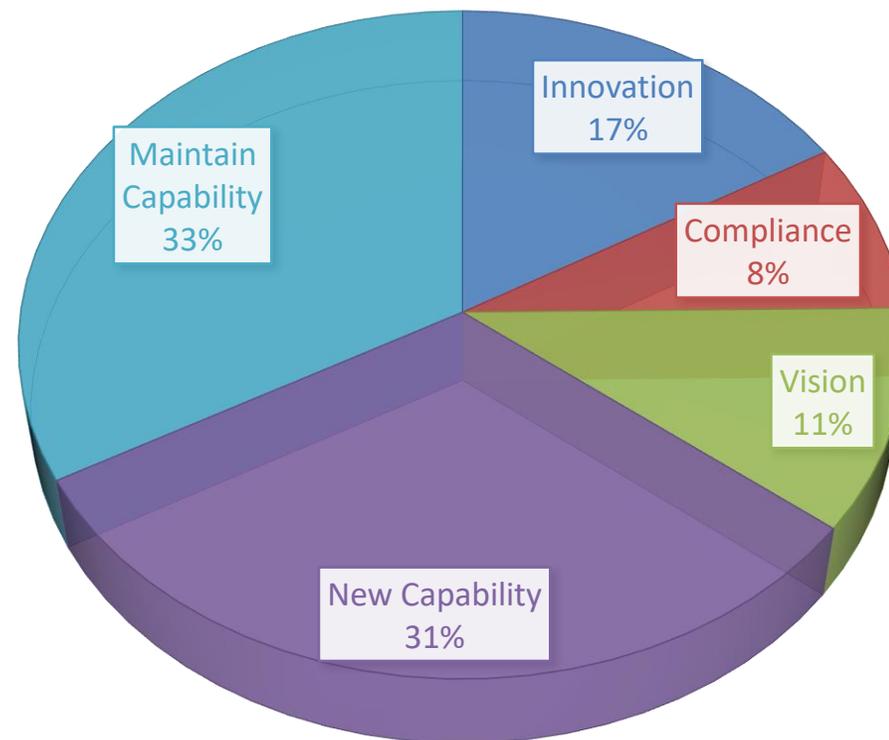


# Project Numbers – Sample Detail

- 221 Project on FY17 IT Annual Plan
- 125 New Project Submitted in FY17
- 88 Projects Rolling Over from FY16 into FY17



## Project Portfolio - Categories



# How integrated are you with strategic planning and portfolio?



The Portfolio and Planning Office is inside our development organization and separate from the PMO. Communication exists, but most decisions and planning activities are not deeply integrated.



The IT PMO at APL drives this effort. The PMO Director is a member of the Central IT Leadership team that sets the strategy for each fiscal year.



A small Operational Integration office is looking at high-level portfolio management in certain critical domains, but overall, coordination between O&I and PM is nascent. The distributed nature of the PMO means that the group as a whole has relatively strong understanding of projects across the enterprise.



IT Portfolio and strategic planning activities are managed by the same office. The CIO and PMO meet regularly to review IT strategic plans and projects.

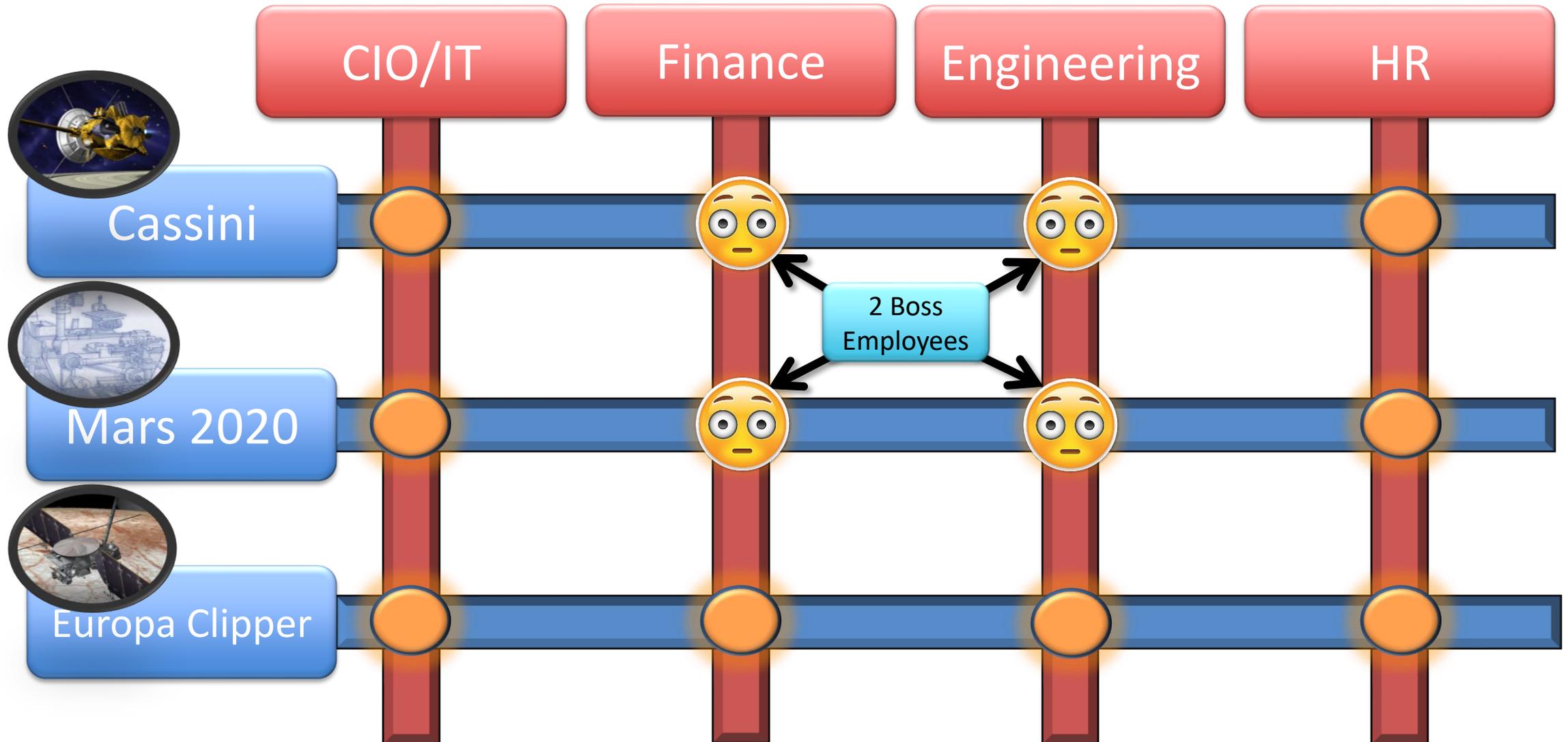


The Portfolio and Planning for ISD is managed by the ISD leadership team, Asst. Dept. Head and Dept. Head. PMO is part of ISD Dept. Office and hence is closely integrated with overall Portfolio management process.



PMO maintains the portfolio, and shepherds the building of it during annual budget period. PMO reports on it to the CIO weekly, and to the department's leadership team monthly. The strategic planning of projects is created by the directors of the interest areas – Applications, Infrastructure Operations, Information Security, and Customer Experience.

# The Matrix Organization



# What is on the Annual Plan?

- Project Work
  - Has a definite beginning and end
  - Has a defined set of deliverables
  - Is roughly two FTEs for one month (or greater), or has one of the following characteristics:
    - Requires coordination across groups
    - Requires a communication plan
    - Is a major service change
    - Management wants to make it visible (e.g., due to risk, costs)
  - All projects are tracked by the PMO
    - Standard methodologies

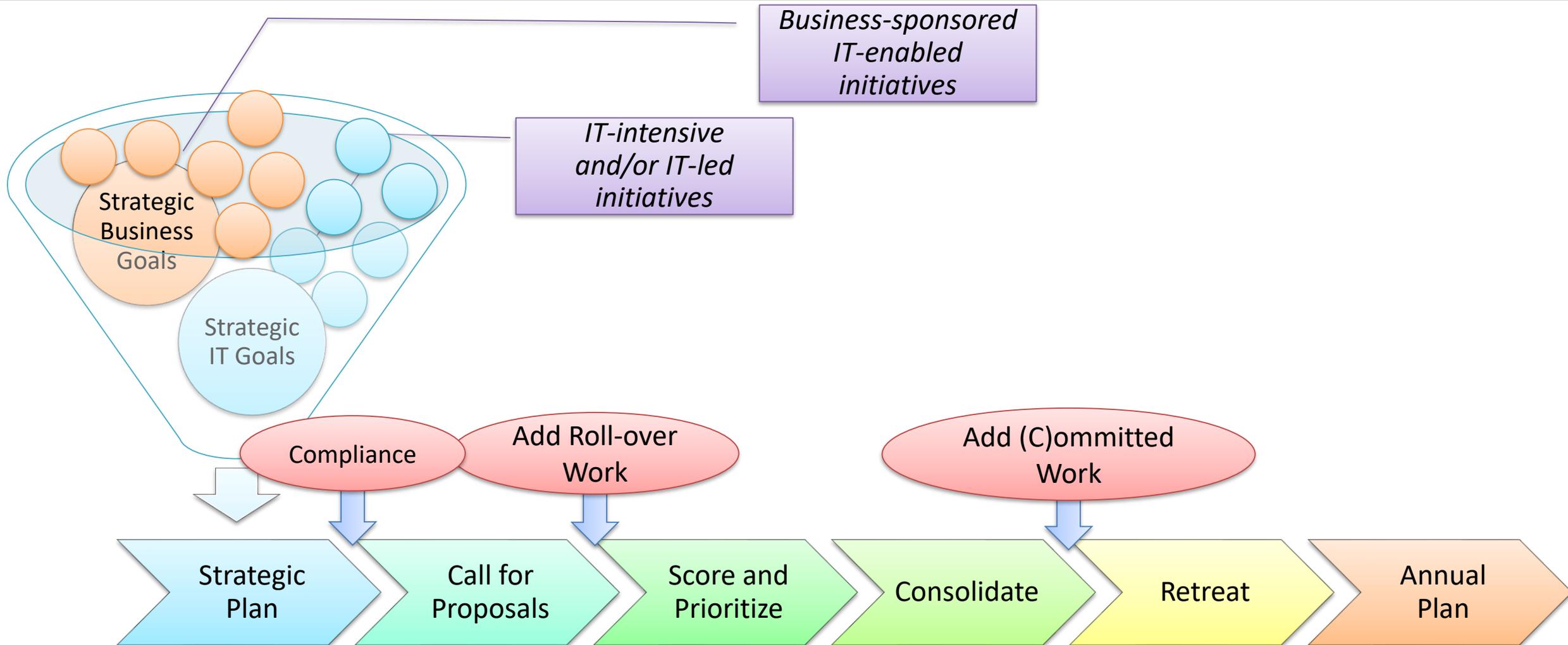


# What *ELSE* is on the Plan?

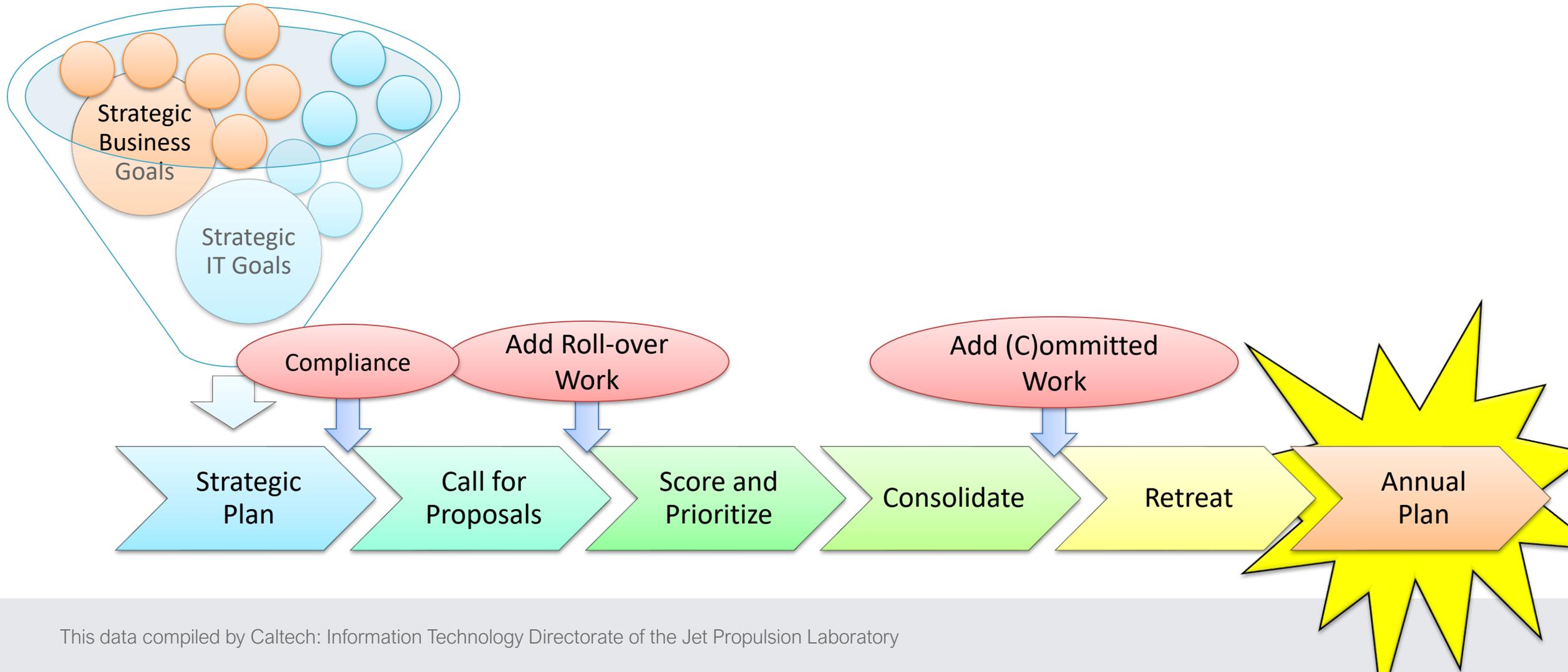
- Non-Project Work
  - Capital Investments
  - Strategic Efforts
  - Other umbrella activities
  - Evaluations, Experiments, Prototypes, etc.

Needed to understand the true level of Available Capacity that can work implement projects on the annual plan

# The Whole Process



# The Whole Process





# Strategic Plan

# 5 Components of a Strategic Plan

1. Understand the Intent of the Plan
2. Understand Key Business Drivers
3. Understand Key IT Drivers
4. Create Strategic IT Goals
  1. Accomplish Business Drivers and
  2. Align with IT Drivers
5. Document Expected Metrics



# Sample IT Strategy

**Our intent** is to make a significant, measurable contribution to mission success by: Serving the diverse needs of the varied JPL communities; Infusing the right technologies at the right time; Offering compelling service alternatives.

## Business Drivers for IT

- Capture new business
- Work better with partners
- Improve visibility into costs, schedule, technical
- Reduce costs
- Attract and retain staff
- Stay compliant

## Top 7 IT Initiatives

- 1. Optimize Workplaces:** Provide a curated set of stable applications and innovative solutions in a paperless environment to support a mobile workforce across diverse domains
- 2. Facilitate Secure Collaboration:** Securely manage and exchange diverse content in heterogeneous workplaces
- 3. Leverage the Value of our Data:** Work with organizations, who own the data, to maximize the use of data via a community driven approach across administrative, mission, engineering, and science domains
- 4. Enable Process Improvements:** Deploy integrated solutions to support process improvements
- 5. Continuously Evolve IT:** Reduce risk and cost to missions. Anticipate and support mission needs for storage, computation and transport of data, up to many terabytes per day
- 6. Prepare for Workforce 2025:** Evolve our skillsets and design patterns
- 7. Ensure Cyber Security:** Provide an integrated defensive security posture capable of enabling the operators, users, and maintainers of JPL IT assets to freely move and maneuver in support of Flight Project and institutional objectives

## State of IT in 20XX

### Top 5-7 Metrics Describing the End State

- Increased customer satisfaction with key applications/services: 20%
- Increased accuracy of predicted schedules for design-build: 10%
- Increased ability to exchange technical information: 20%
- Reduced duplication of staff and facilities for IT support functions: 10%
- Reduced risk of compromised information: 15%



# Call for Proposals

# Gathering Proposals

- IT and Customers review what IT is planning to provide
  - Familiarize yourself with the Strategic IT Goals
  - Familiarize yourself with the Strategic Business Goals
- Proposals can meet the needs identified in the Strategic Plan
  - Or Not!
- We don't include On-Going work in order to facilitate creativity and expose communication gaps with existing projects





# Score & Prioritize

# Who is involved?

## Project Representatives

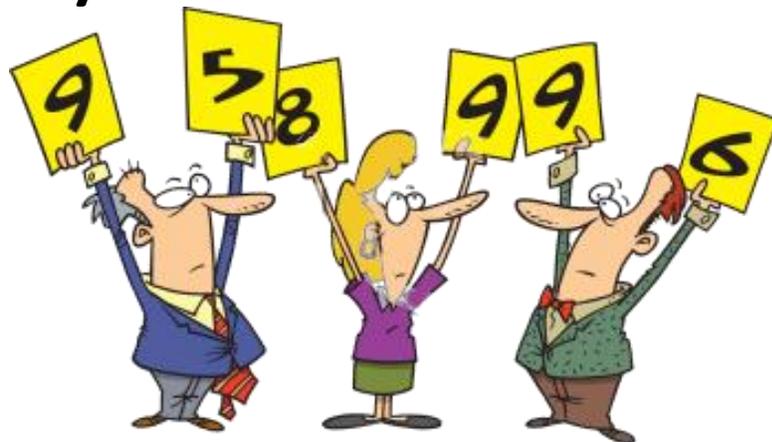
- Traditional Goals
  - Specialized
  - Innovation
  - What we are Able to Do
- Fight for
  - We can go Fast Alone

## Line Representatives

- Traditional Goals
  - Reusability
  - Enhancement
  - How we Work
- Fight for
  - We can go Far Together

# Examples of Investments Scoring

- Strategic Vision 2025
- Strategic Reward
- Success Certainty
- Market Familiarity
- Technology/Product Familiarity
- Financial Benefits (\$K)
- Timing of Benefits





# What are the Prioritization Drivers?

Sample weighting

Category (Low=1- High=5)	<b>C</b> ompliance	<b>V</b> ision	<b>I</b> nnovation	<b>N</b> ew Capability	<b>M</b> aintain Capability
<b>Strategic Alignment</b>	10%	40%	20%	20%	10%
<b>Business Value</b>	15%	20%	40%	40%	15%
<b>Financial</b>	15%	10%	15%	10%	20%
<b>Technical Alignment</b>	20%	15%	15%	15%	15%
<b>Confidence (1/Risk)</b>	40%	15%	10%	15%	40%
	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



# Example Project Weighting

Project X = ~~Maintain~~ **Maintain** Capability

Category (Low=1- High=5)		Compliance	Vision	Innovation	New Capability	Maintain Capability
Strategic Alignment	2	10%	40%	0.4	20%	0.2
Business Value	1	15%	20%	0.4	40%	0.15
Financial	4	15%	10%	0.6	10%	0.8
Technical Alignment	2	20%	15%	0.3	15%	0.3
Confidence (1/Risk)	4	40%	15%	0.5	15%	2.0
		100%		<b>Total Score</b>		<b>Total Score</b>
				<b>2.2</b>		<b>3.45</b>



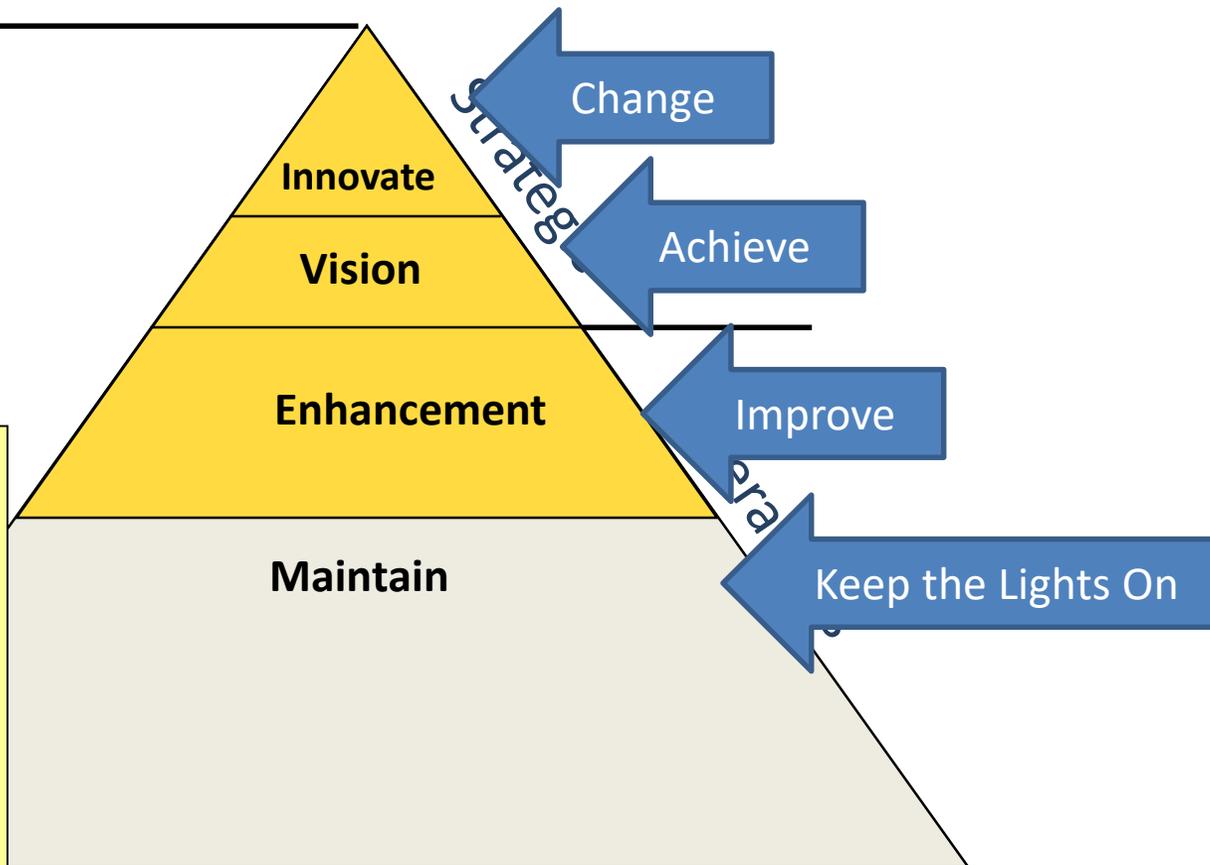
# Consolidate

# Mature Portfolio Management: Getting the mix right

By definition, **Compliance** work may vary from year to year and its portion of your portfolio may not be consistent

## Portfolio Questions:

- Do we have Duplicate Projects?
- Do we have projects with similar goals or implementations?
- Are the operational elements aligned with each other and with corporate goals?
- Ensure consistent prioritization relative to baseline





# Retreat

# Retreat

- With Who:
  - CIO Customer Advisory Board/Customer Community
  - Department Reps
  - Executive Board
- Do What:
  - Discuss Changes to Priorities
  - Change Scores as Needed
  - Discuss Mandated Projects
  - \* Identify High Priority Projects with Low Priority Dependencies \*
  - Produce a Draft Annual Plan





# Draft Annual Plan (Sample)

Project	Initiative	Service Area	Project Type (I, E, M)	Strategic Alignment	Business Value	Financial	Technical Alignment	Risk	Total Weight	Priority Rank (1 is highest, 3 is lowest)
2-factor authentication for Webmail	Modernize IT	Infrastructure	M	4	3	2	2	4	2.9	1
AFS Server Virtualization	Modernize IT	Infrastructure	E	2	2	5	1	2	2.4	3
Airmail Migration	Tactical	IT Provider	E	5	1	2	4	4	3.2	2
APRG Phase II	Tactical	IT Provider	E	4	2	1	5	1	2.6	3
As-Built Bill of Materials	Extract Data Value	Engineering Workflow	M	4	3	4	2	5	3.75	1
B230 Basement Critical Operations Equipment Relocation Project (BCERP)	One Logical Data Center	Infrastructure	M	2	1	3	1	3	1.8	3
BAT - Procedures (PBAT) (PLM)	Tactical	IT Provider	M	3	2	2	4	2	2.5	1
BrowserRAS/VPN/MSZ Upgrade	Tactical	IT Provider	E	5	4	1	5	1	3.2	2
BusITAuthentication	Digital Workplace	Institutional Support	M	2	3	4	2	4	3.2	1
CHPS Partnerspace 2007 Migration and Decommission	Tactical	IT Provider	M	4	4	5	3	5	4.3	1
CHPS SharePoint PowerPivot Installation	Extract Data Value	End User	M	1	2	5	2	3	2.9	2
CHPS Sitespace Update and Migration	Tactical	IT Provider	I	3	5	1	4	1	3.2	2
Conference Forecasting Travel Tool (CFT)	Digital Workplace	End User	I	5	2	4	1	4	3.4	1
Confluence 5 Wiki	Tactical	IT Provider	M	3	4	5	2	5	4	2
COPA	Extract Data Value	Institutional Support	E	4	3	2	5	2	3.2	1

Sample Data



# Annual Plan

# Apply Laws of Physics

- Allocate Budgets and Resources to Mandated Projects
- Allocate Budgets and Resources to Rollover Projects
- Allocate Remainder to the next Top Priority Project
  - Repeat
- Options:
  - Reserve 20% or more of Resources for “Walk-In Work”
  - Schedule only first Quarter or First Resource Allocation
  - Resource Driven vs Priority Driven Queue Management

# Final Annual Plan (Sample)

Project	Initiative	Service Area	Project Type (I, E, M)	Strategic Alignment	Business Value	Financial	Technical Alignment	Risk	Total Weight	Priority Rank (1 is highest, 3 is lowest)	FY'15 Project Selected (Y/N)
2-factor authentication for Webmail	Modernize IT	Infrastructure	M	4	3	2	2	4	2.9	1	Y
AFS Server Virtualization	Modernize IT	Infrastructure	E	2	2	5	1	2	2.4	3	N
Airmail Migration	Tactical	IT Provider	E	5	1	2	4	4	3.2	2	Y
APRG Phase II	Tactical	IT Provider	E	4	1	1	5	1	2.6	3	N
As-Built Bill of Materials	Extract Data Value	Engineering Workflow	M	4	4	4	2	5	3.75	1	Y
B230 Basement Critical Operations Equipment Relocation Project (BCERP)	One Logical Data Center	Infrastructure	I	2	1	3	1	3	1.8	3	N
BAT - Procedures (PBAT) (PLM)	Tactical	IT Provider	M	3	2	2	4	2	2.5	1	Y
BrowserRAS/VPN/MSZ Upgrade	Tactical	IT Provider	E	5	4	1	5	1	3.2	2	Y
BusITAuthentication	Digital Workplace	Institutional Support	M	2	3	4	2	4	3.2	1	Y
CHPS Partnerspace 2007 Migration and Decommission	Tactical	IT Provider	M	4	4	5	3	5	4.3	1	Y
CHPS SharePoint PowerPivot Installation	Extract Data Value	End User	M	1	2	5	2	3	2.9	2	Y
CHPS Sitespace Update and Migration	Tactical	IT Provider	I	3	5	1	4	1	3.2	2	Y
Conference Forecasting Travel Tool (CFT)	Digital Workplace	End User	I	5	2	4	1	4	3.4	1	Y
Confluence 5 Wiki	Tactical	IT Provider	M	3	4	5	2	5	4	2	Y
COPA	Extract Data Value	Institutional Support	E	4	3	2	5	2	3.2	1	Y

Sample Data

# Burger World Example

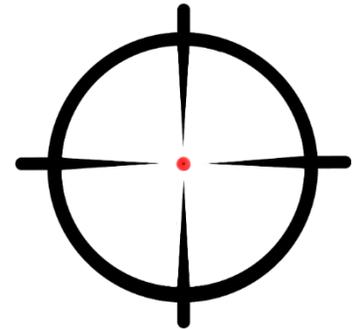
- Goals starting off the Strategic Plan:
  - Best Burger in the Business (Business)
  - Easy to Order, Easy to Pay (IT)
- Compliance
  - ADA mandated wheelchair accessibility
  - Rodent Traps (Department of Health finding)
- Rollover Work
  - Finish repaving the Parking Lot
- Call for Proposals
  - Drive-through Speaker upgrade and new Ordering Screen
  - Add Credit Card SmartChip POS systems
  - New Salad Offering on the menu
  - Mondo-Burger special sauce change
- (C)ommitted Work
  - New Golden Arches - Manager has a site visit from corporate in 2 months and wants to replace the sign front since it's looking a little worn

# Project Planning

1. Birth Certificate – requirements for birth?
2. What do you track?
3. Dependency based order of execution?
4. Resource based order of execution?
5. Priority based order of execution?

# Walk-In Work

- Plan under fire!
- Plan is to have resource set aside for walk-in work
- Usually comes with funding or steals funding from weaker items



# Monitoring progress to Plan

- Baseline Metrics vs Zero Base Metrics (chaos-based metrics)
- Dependency evaluations
- Rate of completion - velocity
- Evaluate overall annual planned budget and resources
- Common project evaluation criteria
  - 5 KPI
    - Scope, technical, resource
    - Budget, schedule (objective)



# Why Plan At All?

- What is the Value???
- How does this plan Guide your Future Behavior

# Thank You

- Presentation by:
  - Michael Stefanini, JPL
    - Deputy Manager IT Engineering & PMO
  - Darryl Hahn, JPL
    - Manager, IT Project Management Office
- Additional material provided by
  - David O. Harper, APL
    - Program Manager and ITSD IPO Group Supervisor

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