

# Why Is My Schedule Slipping and what can I do about it?

PGCS Project and Program Management Symposium 2023

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Independent Project Review Institute

# Acknowledgement of Country

I'd like to begin by acknowledging the Traditional Custodians of the land on which we meet today and to pay our respects to Elders past, present and future.



# Topics

Brief Introduction to the Schedule Confidence Risk Assessment Methodology (SCRAM)

Overview of the Root Cause Analysis of Schedule Slippage (RCASS)

Quantifying Schedule Slippage

# What does SCRAM mean?

- ▶ Go away!



- ▶ Safety Control Rods Activation Mechanism



- Shuts down nuclear power

- ▶ Secure Continuous Remote Alcohol Monitoring

- As modelled here by Lindsay Lohan



SplashNewsOnline.com/Hollywood.tv

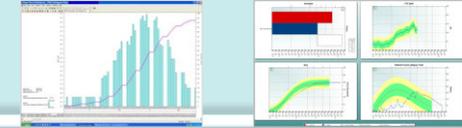
- ▶ Schedule Confidence Risk Assessment Methodology



# What is SCRAM?

An independent project review to identify issues and risks to schedule

- Quantifies the schedule impact of issues and risks using
  - Schedule Monte Carlo Simulation
  - Software Parametric Modelling



Embodies best practices

- Schedule development and project execution
- Systems and software engineering

Facilitates improved business practices

- Based on feedback and lessons learned from previous reviews
- Identification of common root causes / issues

SCRAM answers two basic questions

- What is the root cause of schedule slippage?
- When will the project deliver?



# Why SCRAM?

According to a  
Gartner Survey (2012)

- “The single most common reason that projects are considered a failure, is because they are substantially late”.

Schedule is almost always the  
primary concern of project  
stakeholders



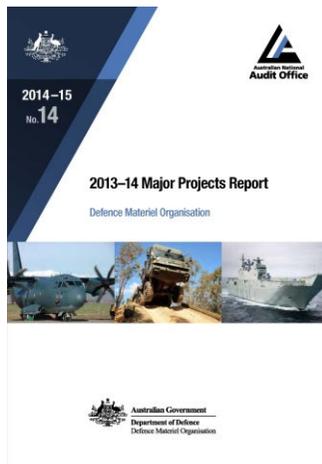
Schedule slippage is generally a  
symptom experienced late in  
the project

- To “fix” schedule slippage you need to identify the root cause

# SCRAM Usage

Sponsored by the  
Australian  
Department of  
Defence

- To improve Project Schedule Performance in response to Government concern as identified by the Australian National Audit Office (ANAO)
- Successfully applied to the F-35 Program in the USA and was used to monitor software development performance on the program (web search “F-35 Australian SCRAM”)



# Diversity of SCRAM Review



Aerospace



Satellite  
Ground Stations



Maritime



Enterprise Resource  
Planning



Telecommunications



Training Systems



eHealth



Forensic Labs



# Topics

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# Organising Project Information

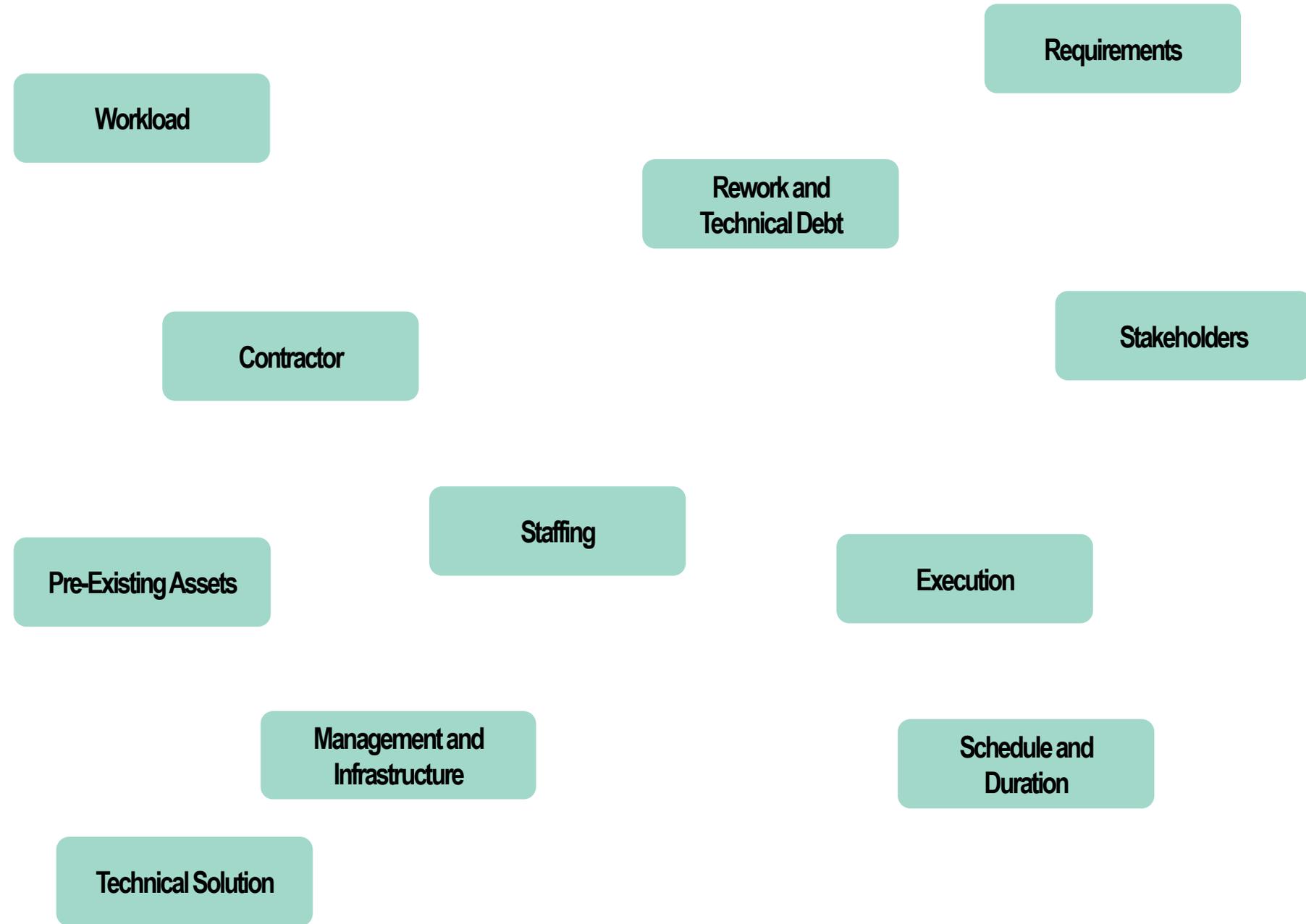


Projects / Programs are flooded with information, making it difficult to distinguish between symptoms and root causes of schedule slippage

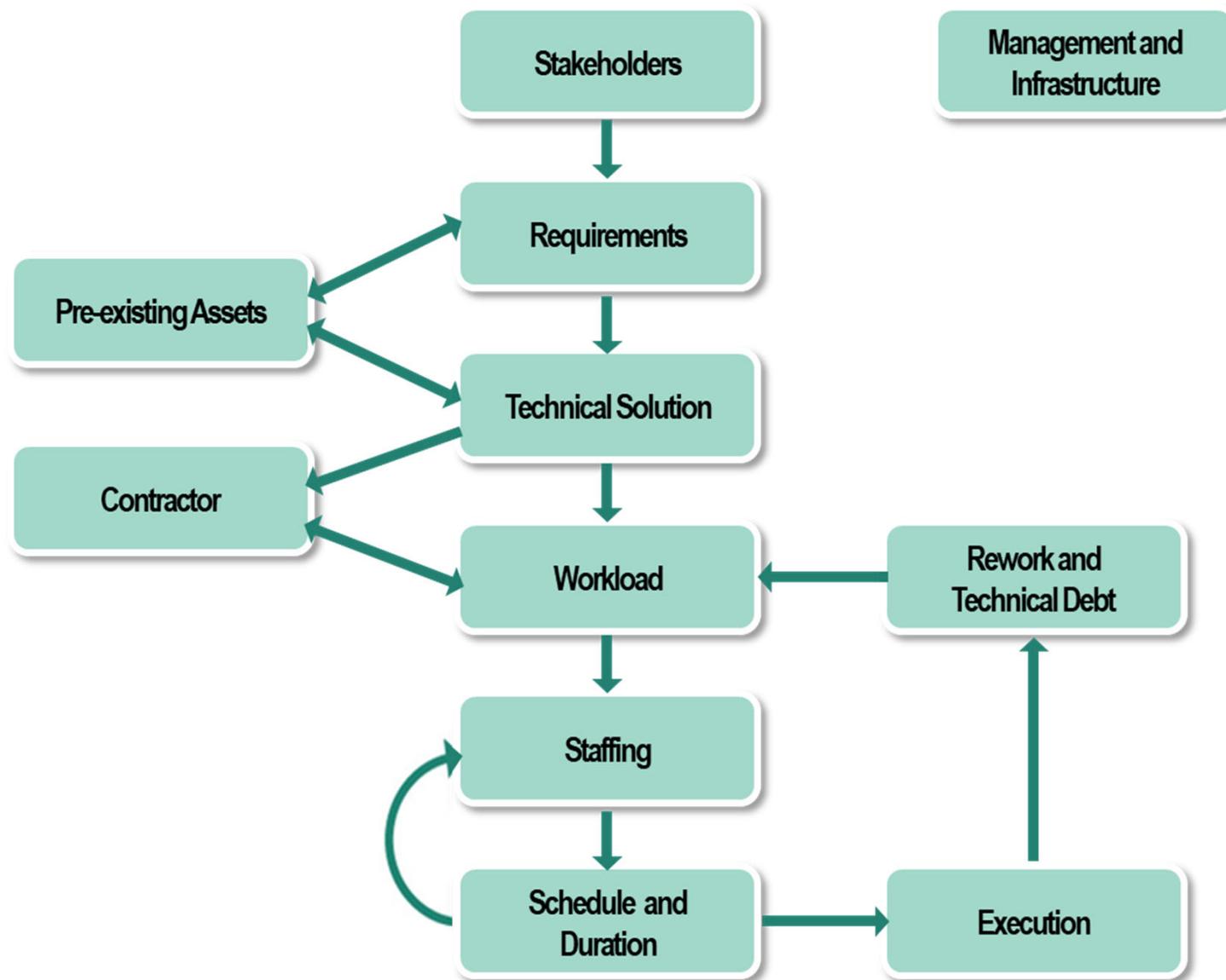
To de-clutter and organise the massive amounts of information, we utilise a thought model

**Root Cause Analysis of Schedule Slippage (RCASS)**

# Categories of Information



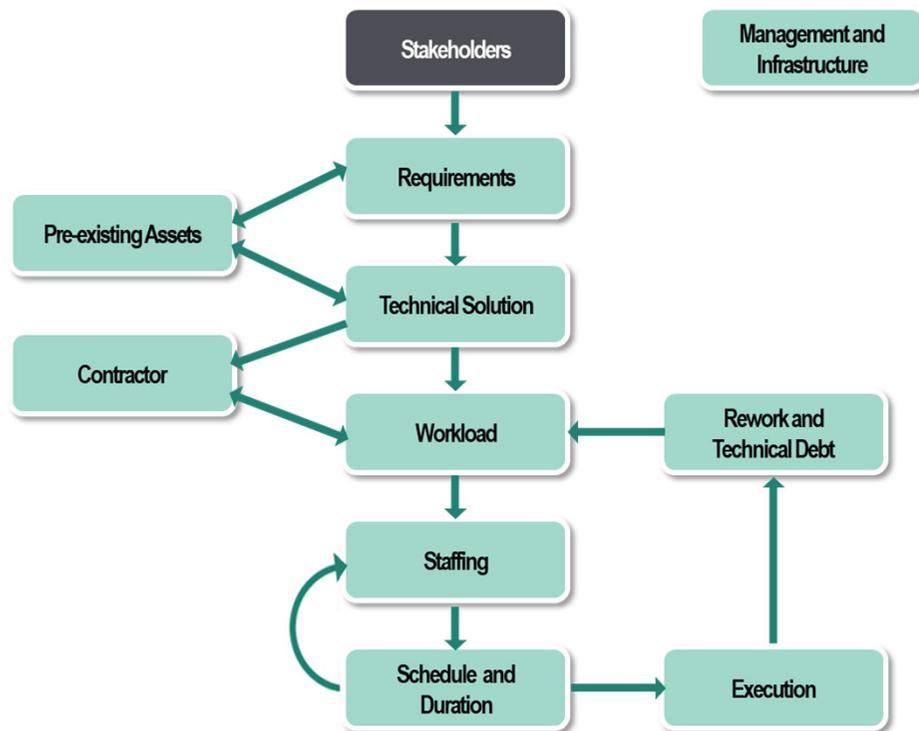
# Root Cause Analysis of Schedule Slippage (RCASS) Model



# Stakeholders

## Stakeholder identification, management and communication

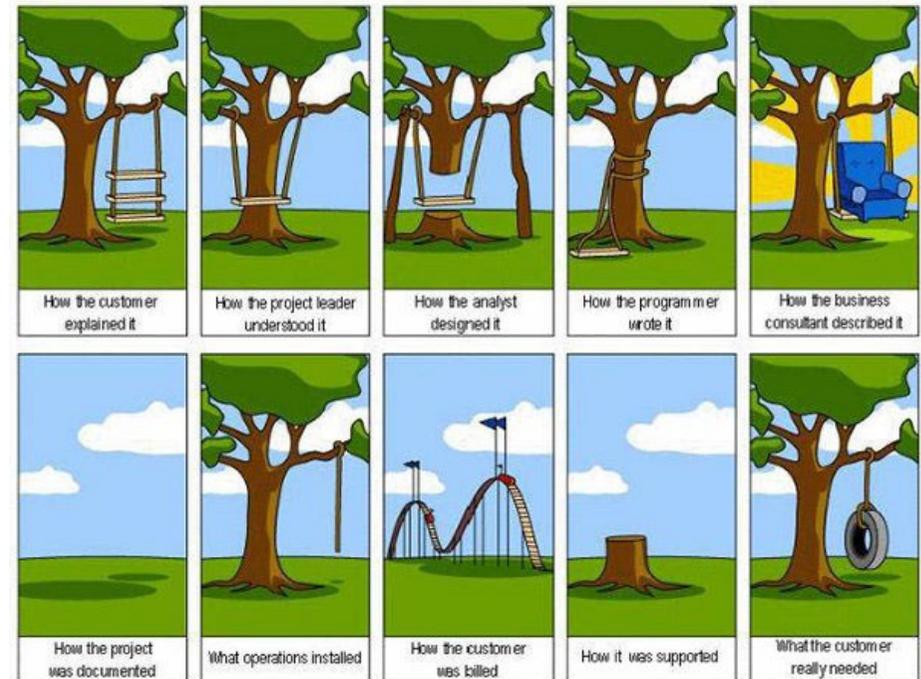
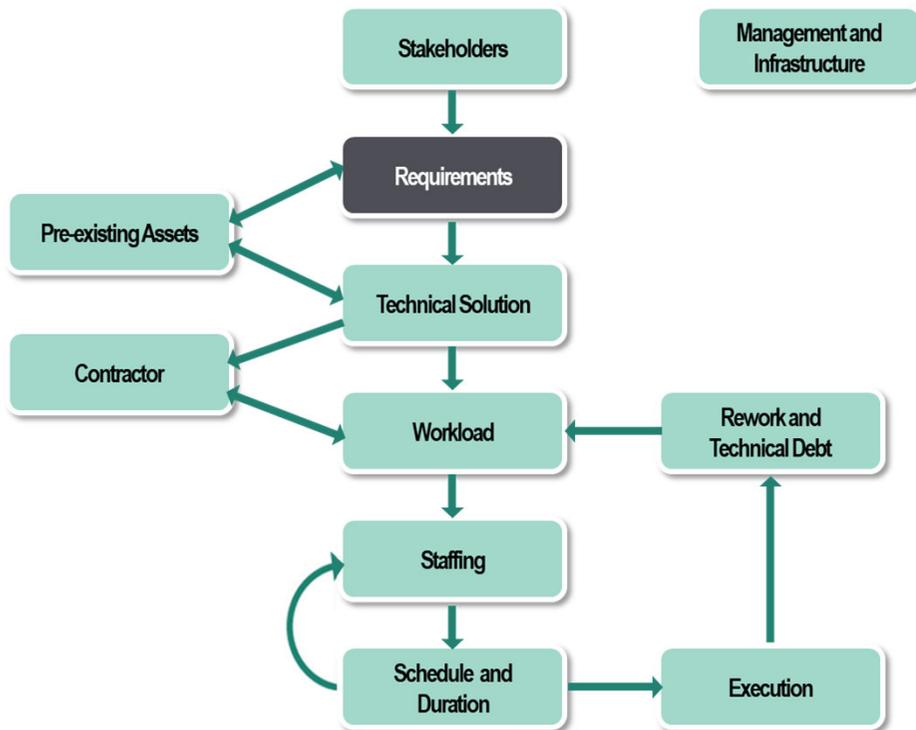
“Our stakeholders are like a 100-headed hydra – everyone can say ‘no’ and no one can say ‘yes’”



# Requirements

Focuses on the stability of the functional and performance requirements

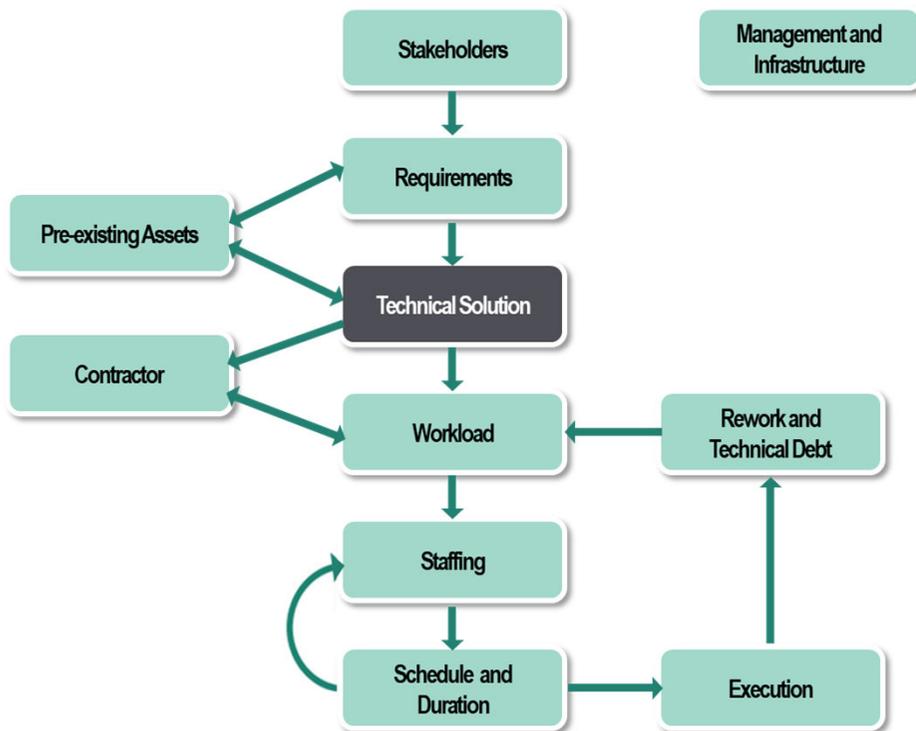
Going to tender without robust requirements drives schedule slippage and increases costs



# Technical Solution

The design considerations and approaches needed to ensure that the chosen solution is appropriate.

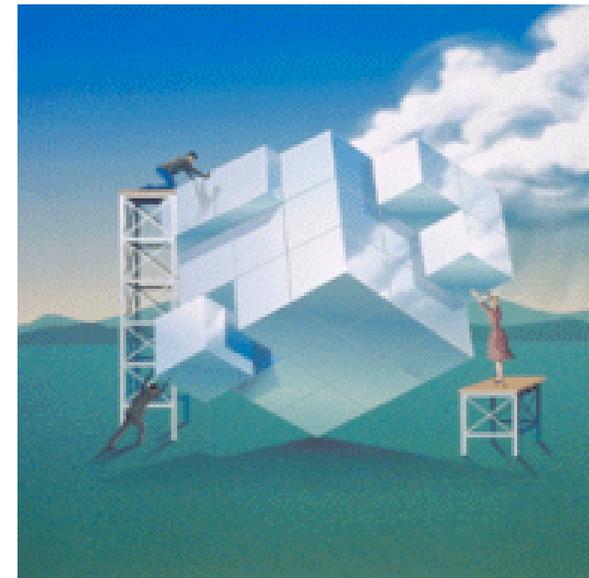
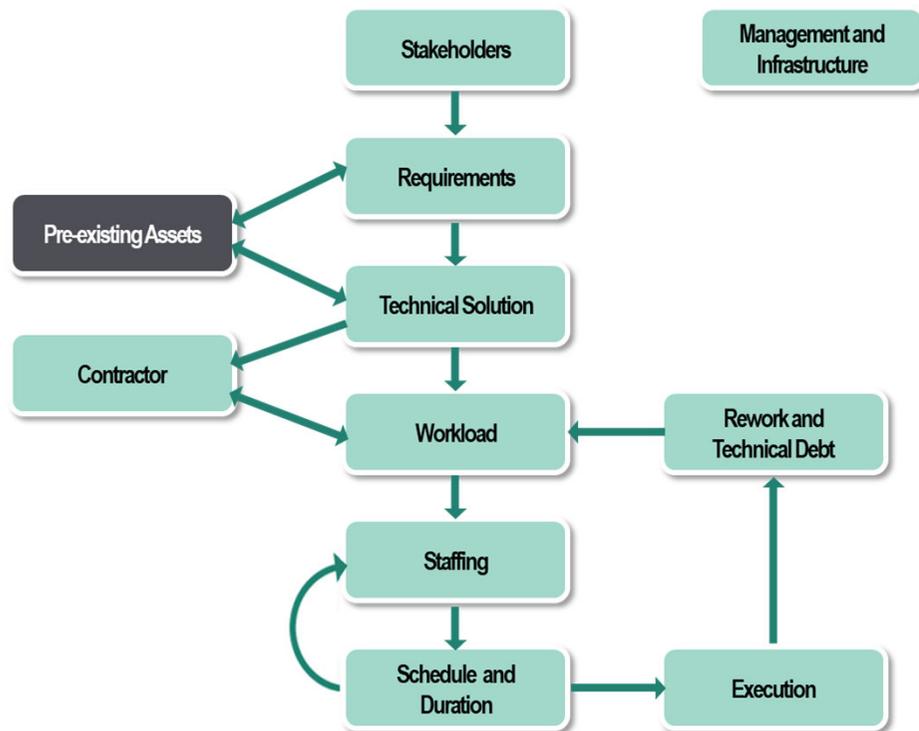
Can't deliver a project that has poor architecture and design



# Pre-existing Assets

Focuses on selection and management of independently developed components

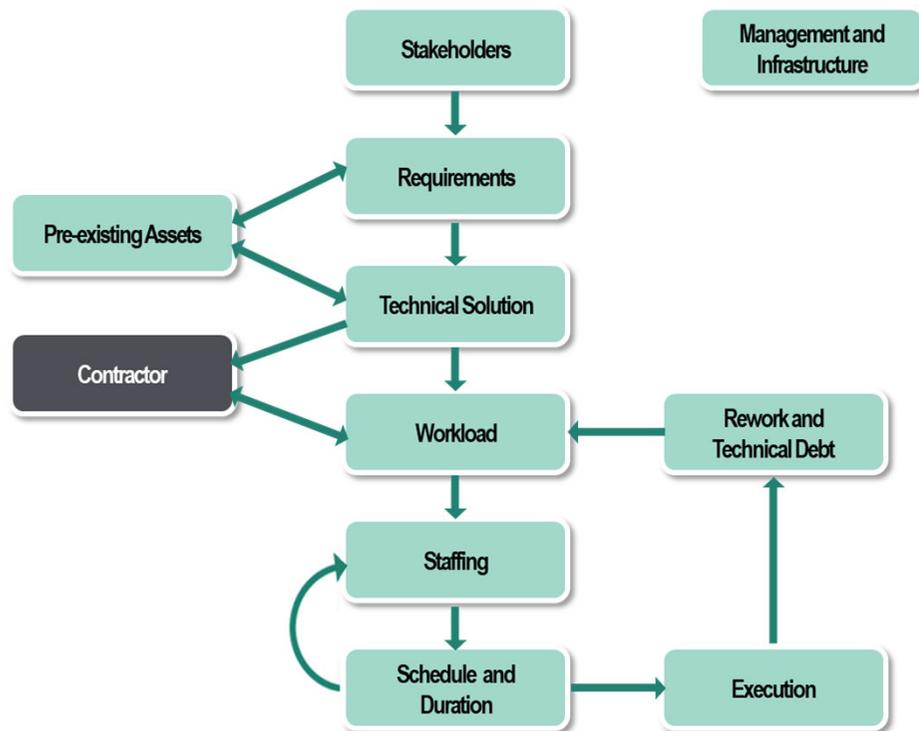
“It doesn’t do what we thought...”  
“There is a lot of functionality we don’t need.”



# Contractor

Focuses on contractor selection, management, incentives and product acceptance

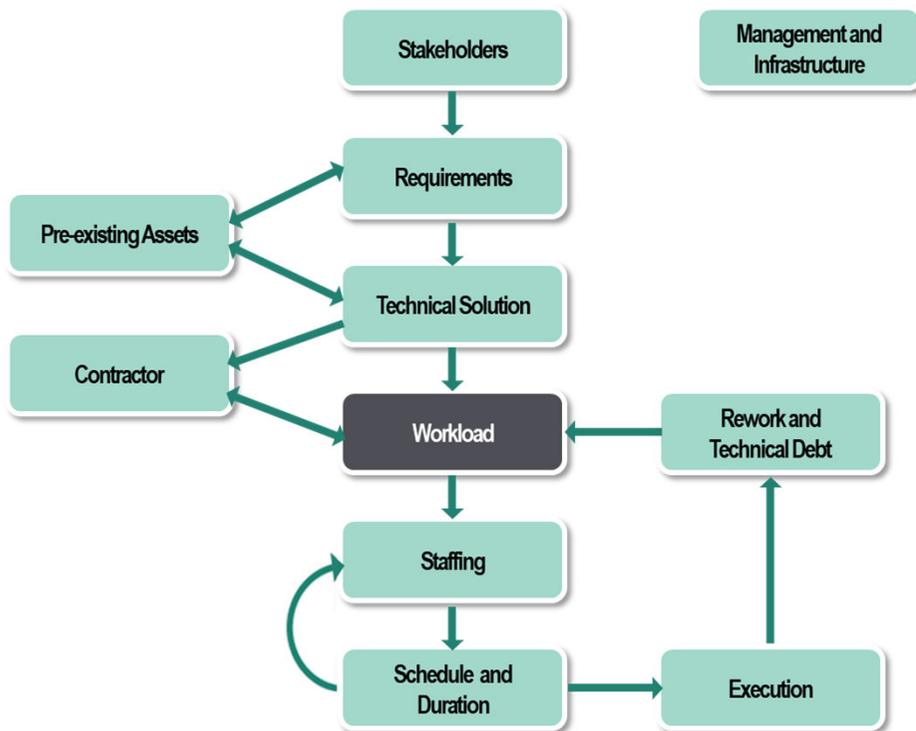
Includes subcontractors in addition to prime contractors



# Workload

Basis of estimates and workload management for determining staffing and duration

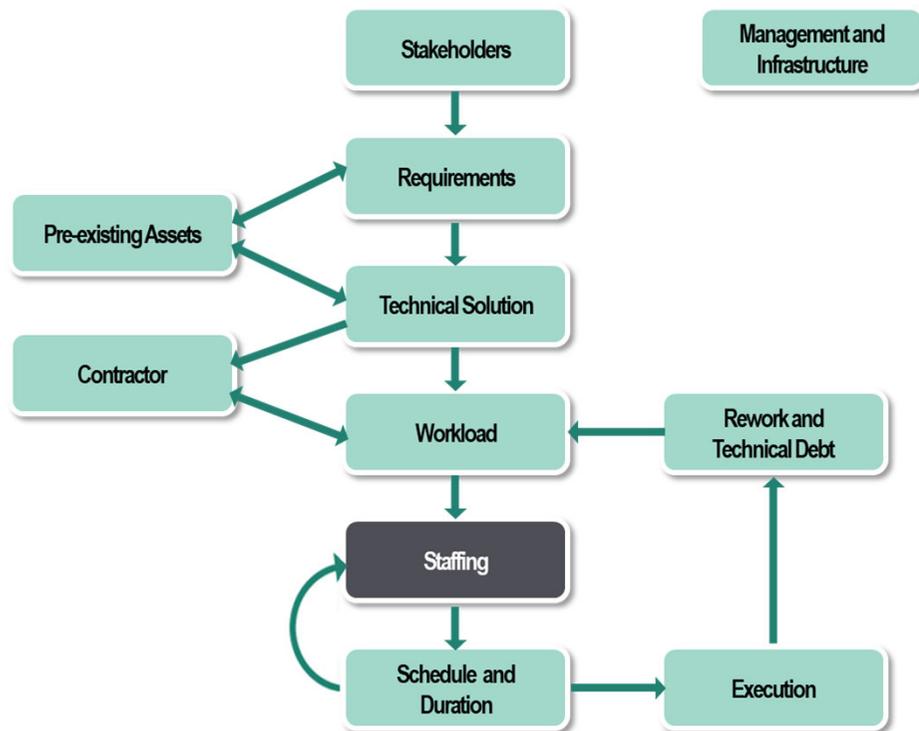
“Unrealistic expectations based on inaccurate estimates are the single largest cause of software failure.” Futrell, Schafer



# Staffing

Requirements for needed resources, skills and training including their management

Bringing on people to solve a slippage problem may make it worse (especially late in the project)

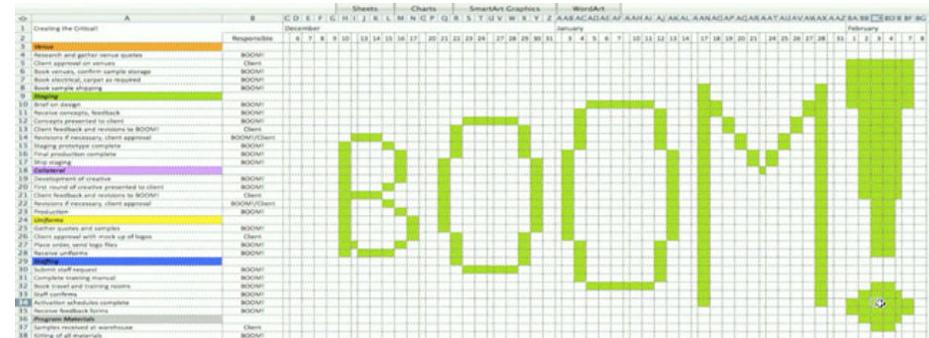
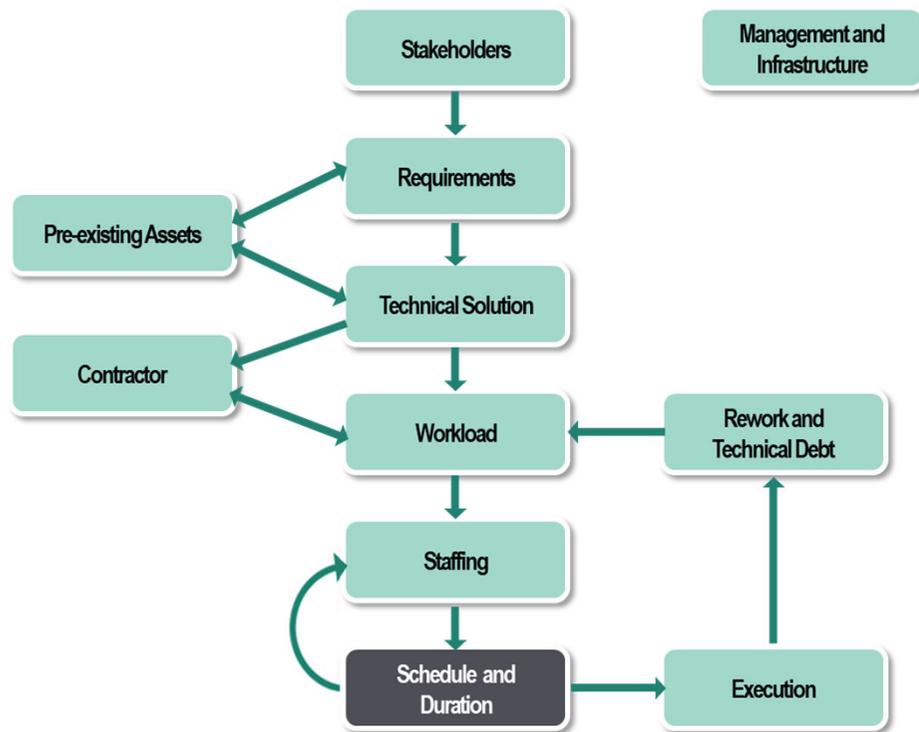


**Staff Leaving  
the Department**

# Schedule & Duration

The tasks, sequencing logic and calendar time needed to execute the workload

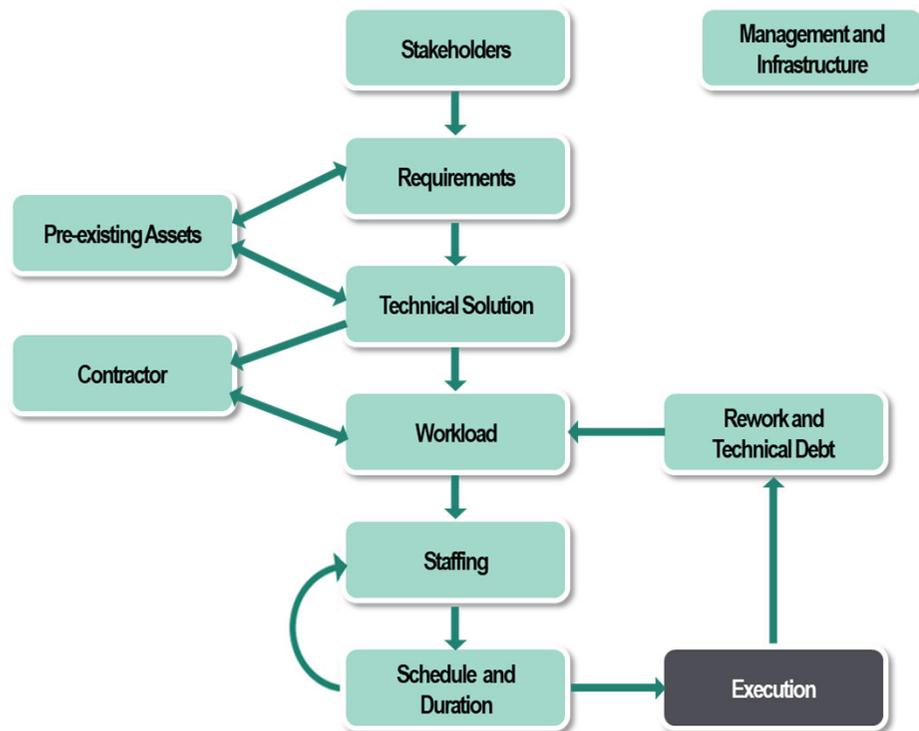
Area of primary interest. Without a well-constructed schedule, you can't control the project



# Execution

Monitoring and controlling the execution of the project in accordance with the schedule

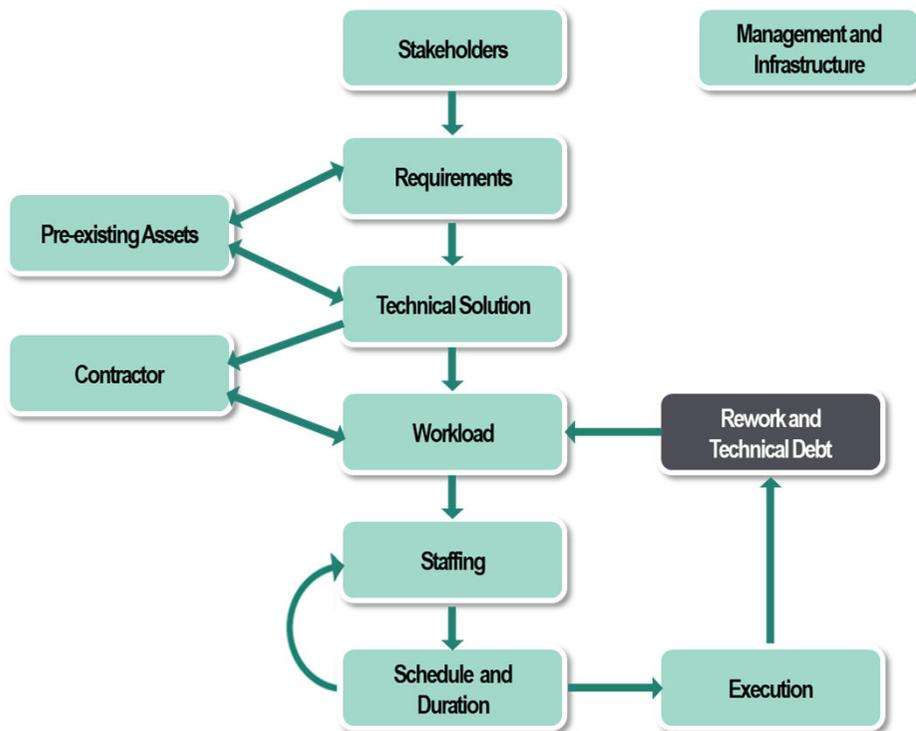
This is where things can start to go horribly wrong!



# Rework and Technical Debt

Additional work to correct defects and deferred work for short-term expediency (technical debt)

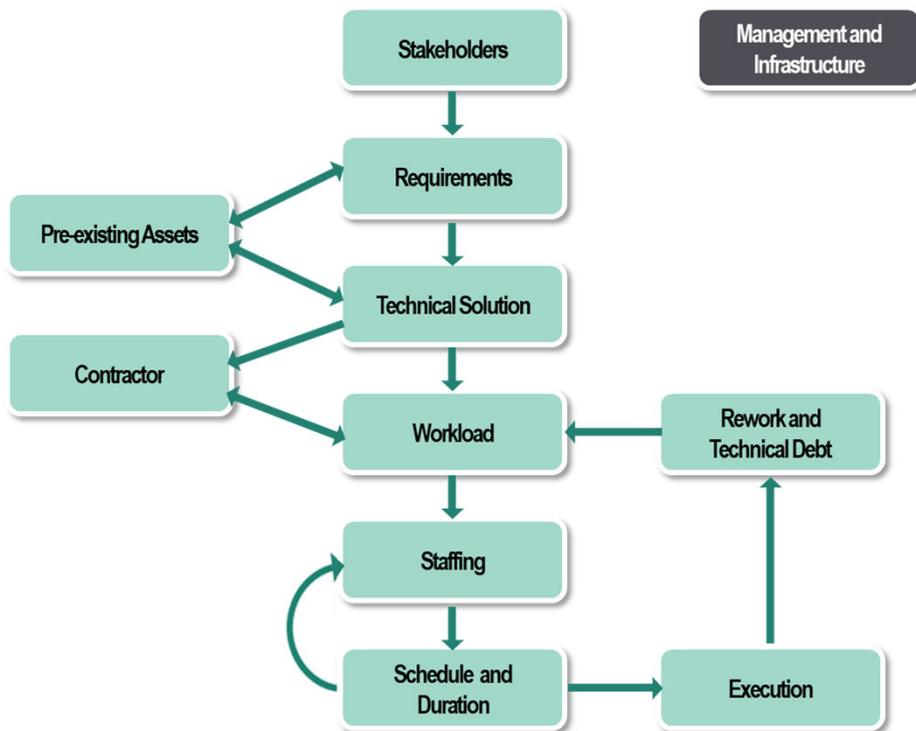
Rework is often underestimated or not planned for  
Technical Debt workload increases over time



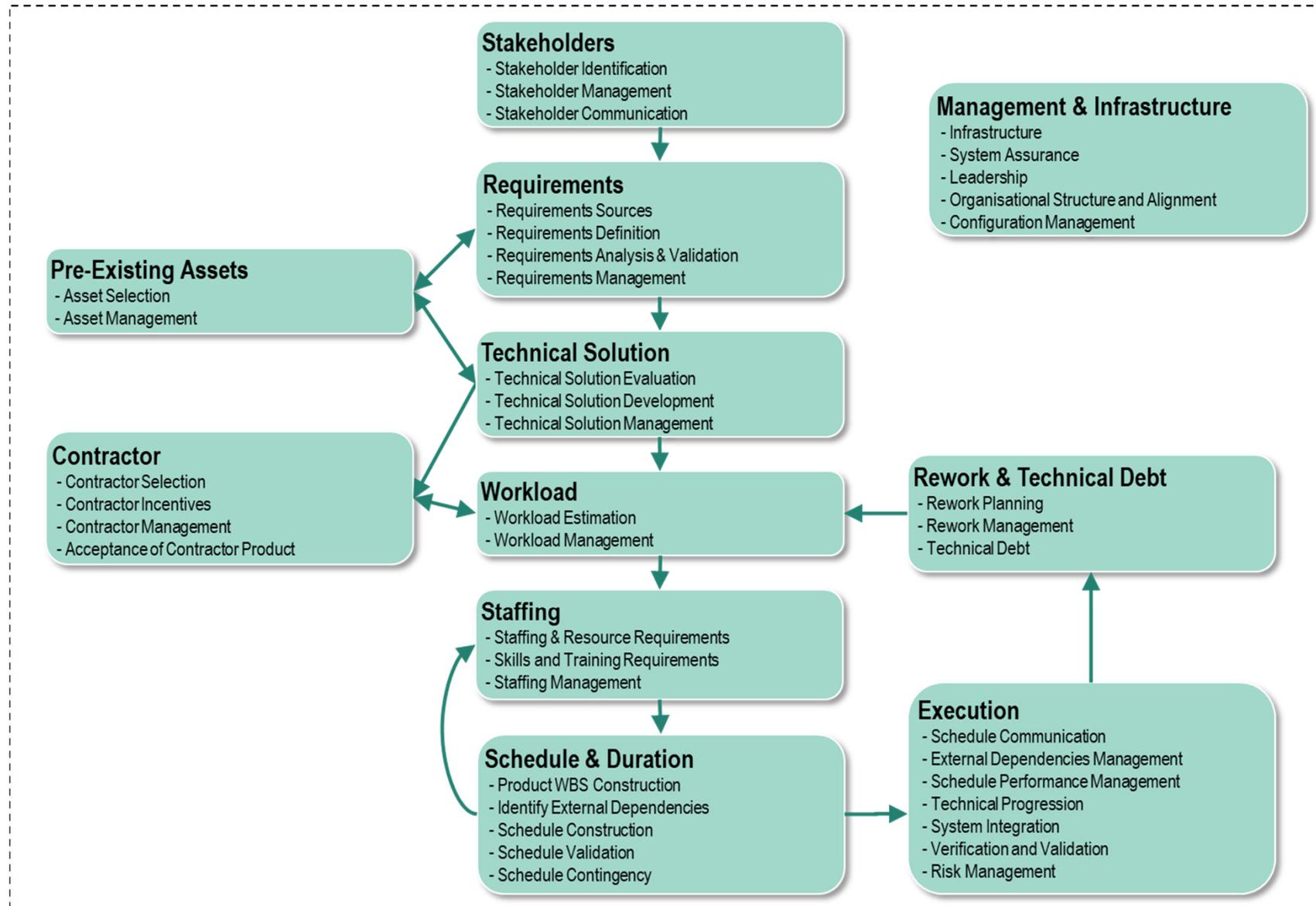
# Management & Infrastructure

The factors that impact the efficiency and effectiveness of getting work done

Includes leadership, clear organisational structures and infrastructure



# RCASS Sub-categories



# Topics

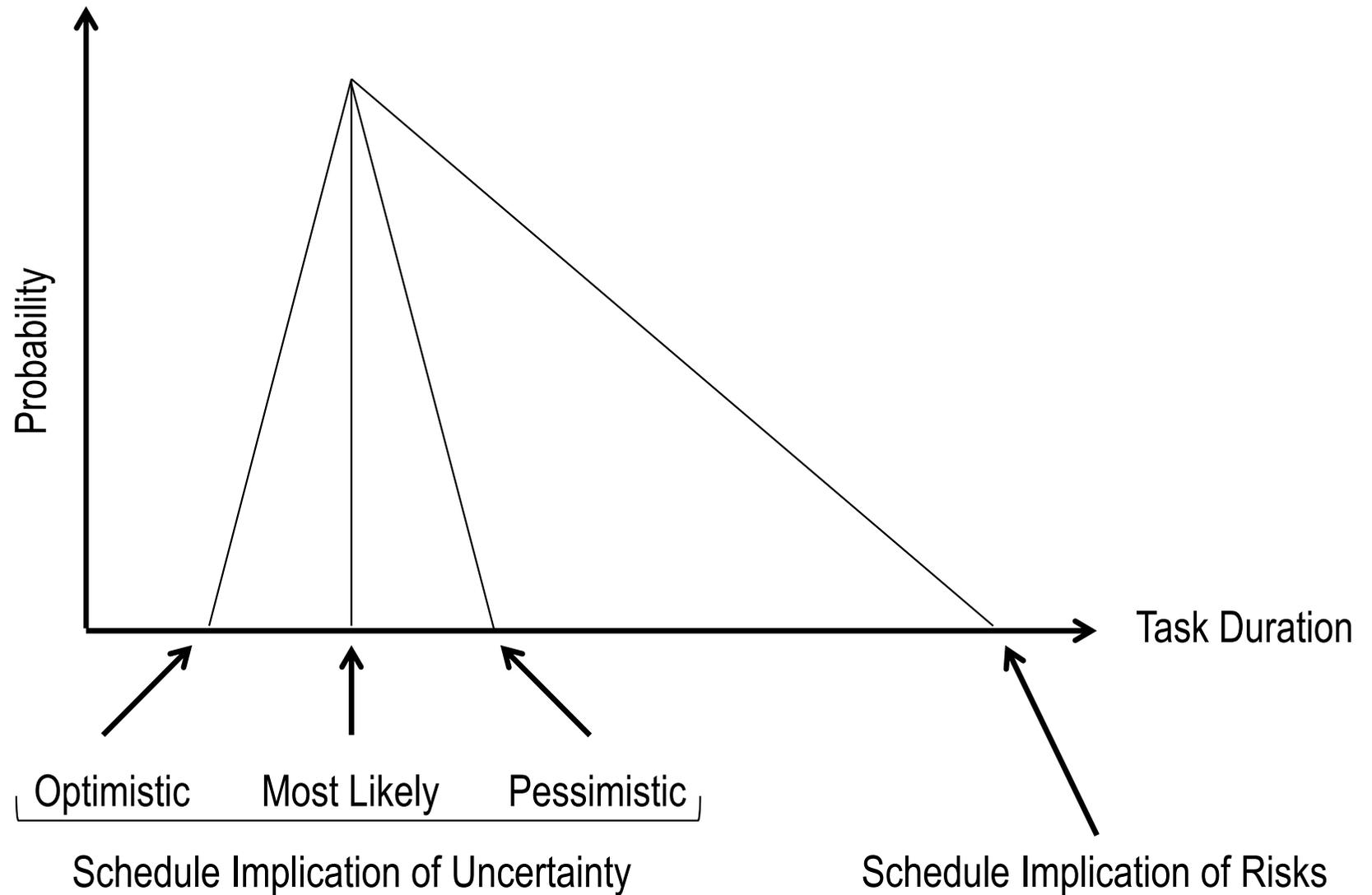
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# Distribution of Task Duration



# Schedule Risk Analysis/Monte Carlo

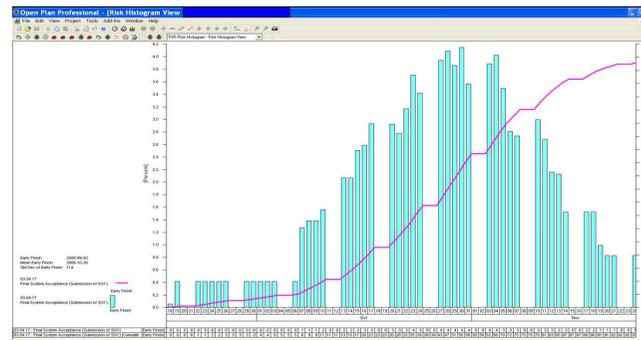
Three-point estimates assigned to task duration

Optimistic	Most Likely	Pessimistic
6	9	18

Monte Carlo Simulation

- Randomly selects a task duration for each task in the schedule
- Calculates the new critical path / project duration
- This is typically done thousands of times to derive a probability distribution

Results



# Uncertainty is not enough - identifying risk is key

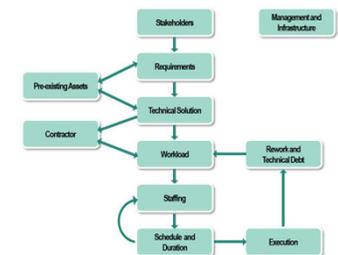
## Garbage In – Garbage Out

To have any confidence in the Monte Carlo results, the impact of risks need to be

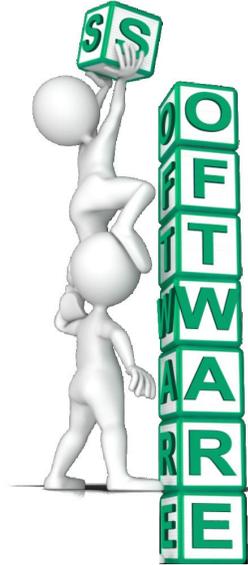
- Clearly identified and
- Incorporated into the three-point estimates

You can do that with

- Root Cause Analysis of Schedule Slippage (RCASS)



# Software-Intensive Projects



Software is often the  
“long pole in the tent”

SCRAM uses a  
commercial suite of  
models to predict  
when the software will  
be delivered

- From Quantitative Software Management (QSM), USA
  - SLIM Suite
- Provides cost and schedule estimates at the beginning of a project
  - Can compare those estimates to historical data (industry benchmarks) to assess their realism
- Also provides dynamic forecasts during project execution

# Estimation versus Forecasting

Estimation  
(cost and schedule)

- Occurs before a project begins and is based on characteristics of the software to be developed

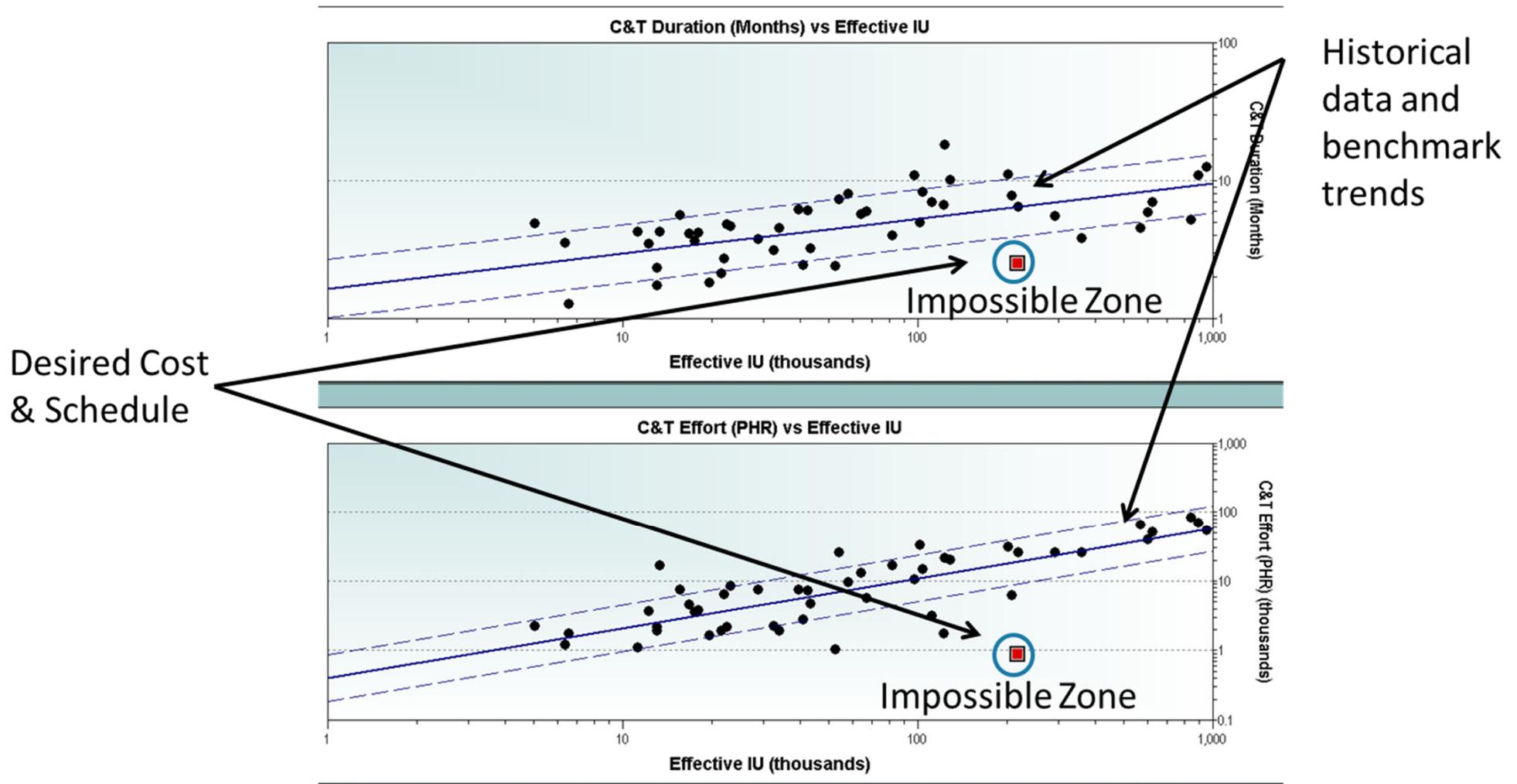
Forecasting  
(cost and schedule)

- Occurs during development and is based on objective measures of performance to date

Objective measures for  
forecasting

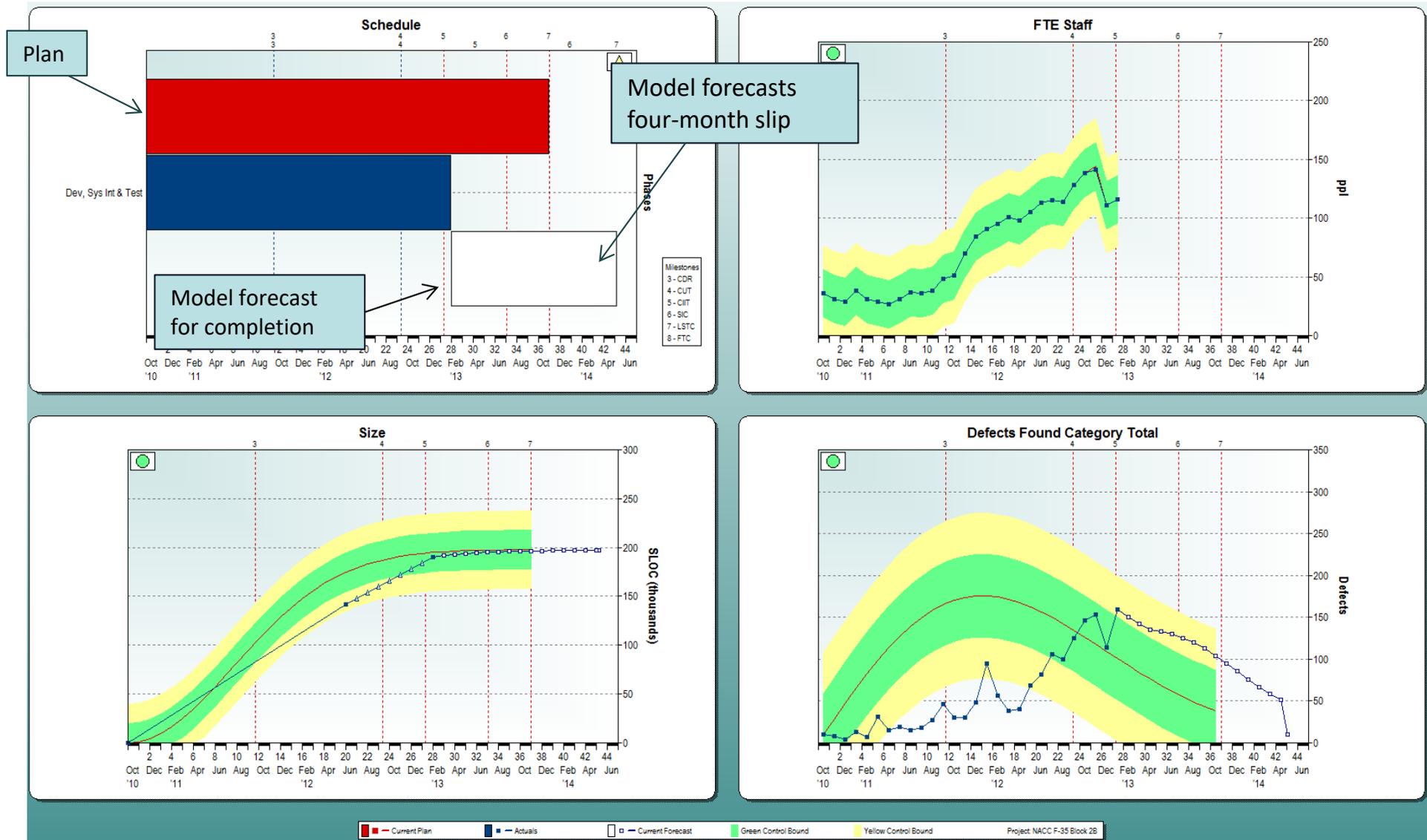
- Software size
- Staffing
- Defects
- Milestones

# Example of Estimates to Historical Performance

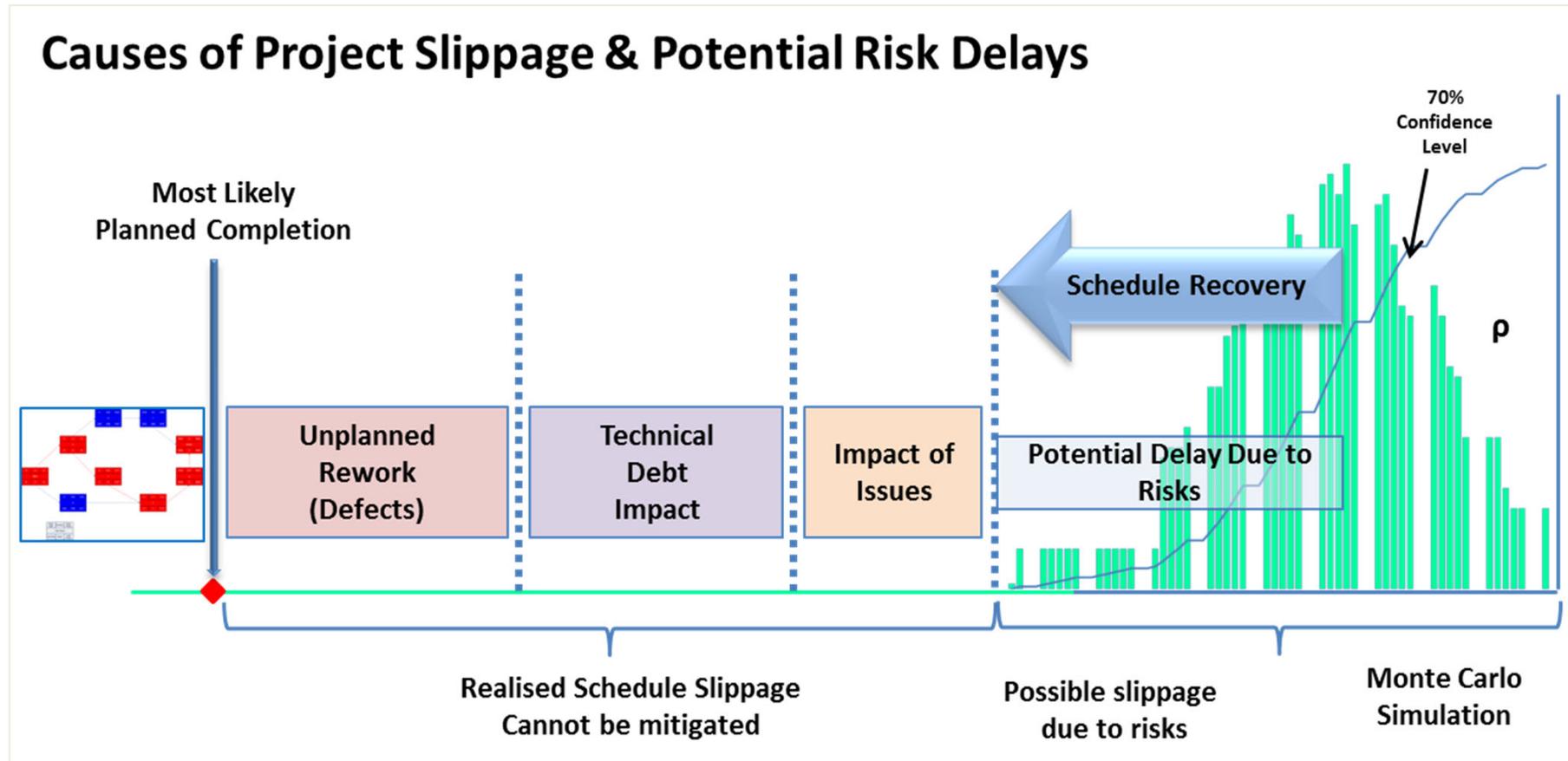


Source: QSM Estimation Center of Excellence Supplier Management Presentation, 2013

# Example Forecast Based on Objective Measures



# Putting It All Together



# Testimonial

- ▶ SCRAM has been applied successfully to the F-35 Joint Strike Fighter Program in the USA (web search “F-35 Australian SCRAM”)
  - Six SCRAM reviews were conducted from 2011 to 2015 (on-board and ground software)

“The SCRAM reviews on the F-35 Program were extremely helpful to us. SCRAM gave us new techniques that allowed us to better understand the complexities of our software development. Within two weeks of coming in, the SCRAM reviews were able to point out areas where we were going to have problems. SCRAM also gave us new techniques for measuring the progress of software development and for predicting how long the software development was going to take. In 2014, I briefed the SCRAM results to the Defense Acquisition Board. Of all the organizations that were making estimates, the SCRAM estimates, in hindsight, were the most accurate.”

Lt. Gen. Chris Bogdan, Program Executive Officer, F-35 Program (24 Mar 2017)



# More Information

- ▶ I will be at the speaker's corner during Afternoon Tea
  
- ▶ The Independent Project Review Institute delivers a Managing Schedule Risk course for
  - CASG Learning and Development and
  - Commercially
  
- ▶ If you're interested in learning more contact us
  - Angela Tuffley, Director
    - [angela@ipri.org.au](mailto:angela@ipri.org.au)



# Any questions?



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