



RTConfidence

# How Should We Determine Project Best Practices?

**Determining Project “Best Practices”**

PMI-OC PDD 2024 EVENT

# Michael M. Bissonette

## Sampling of Products from Decades of Experience



Featured in recent Top Gun Maverick movie



Early Javelin Missile R&D project



Early Hypersonic Missile R&D project



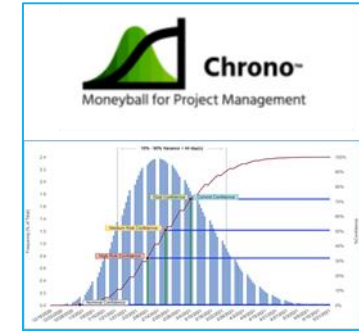
HDDs



Portable Storage



PMI® Best Seller in 1st Year of Publication



High Altitude UAV

SSDs



Electric Vehicle and Home Chargers for Launch of Nissan Leaf



# Determining Project Best Practices”

## *Agenda*

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- ❑ Key Fundamentals that Influence Our Choices in PM Tools & Techniques to Use
- ❑ Determining the “Right” PM Best Practices to Use
- ❑ The “Right” PDP (Product Development Process) Makes a Difference
- ❑ The “Right” Project Management Tools & Techniques
- ❑ Continuous Improvement via Project Postmortems/Retrospectives/Lessons Learned

# Key Fundamentals

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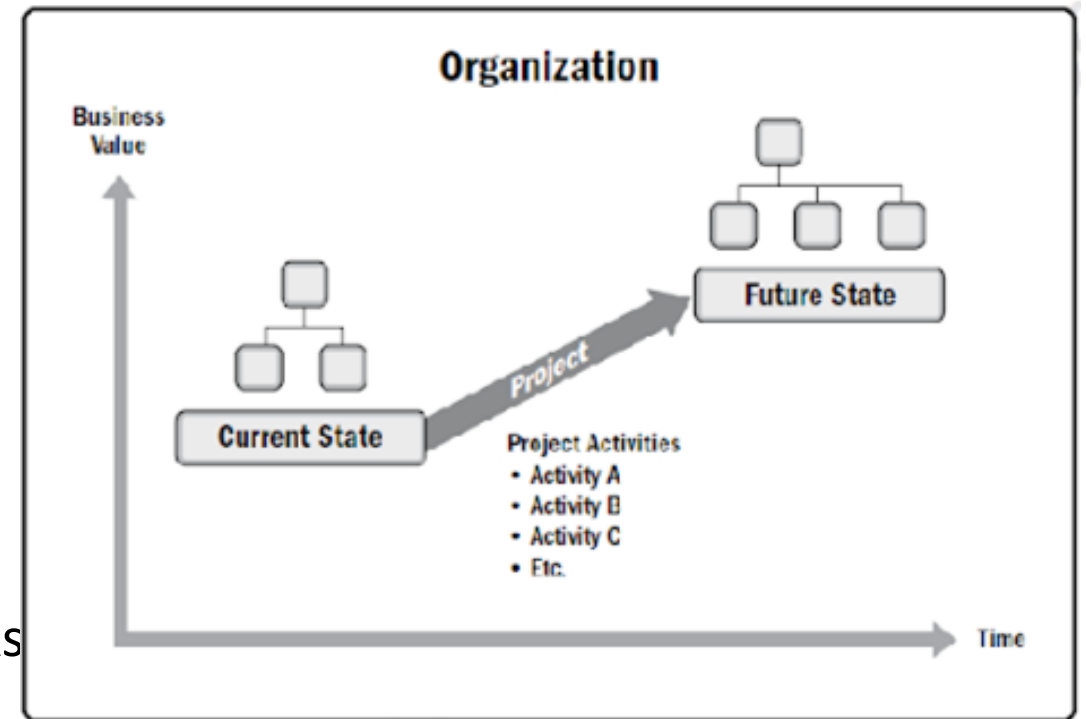
## **DETERMINING PROJECT “BEST PRACTICES”**

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# The Challenge

## *How to Successfully Do More with Less?*

- ❑ **Organizational Goals**
  - Do More with Less on a Continuous Basis
  - Improve Competitive Position
  - Improve Financial Performance
  
- ❑ **Project Managers and Performing Functional Managers Concerns**
  - Do Not want to Fail
  - Right Tools and Capabilities
  - Organizational Recognition of Project Risks
  - Organizational Support
  - Stakeholder Buy-in on Critical Decisions



PMBOK® Guide 6<sup>th</sup> Edition, Figure 1-1, pg. 6

# Project Management vs. Project/Process Collaboration

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- ❑ **Project Management**: *The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.*

[A Guide to the Project Management Body of Knowledge (PMBOK® Guide), PMI® (7<sup>th</sup> Edition)]

- A temporary endeavor undertaken to create a unique product, service, or result.

- ❑ **Project/Process Collaboration**: *Under the wider umbrella of project management, project collaboration might simply mean teamwork, or effective communication, or the use of consistent processes.*

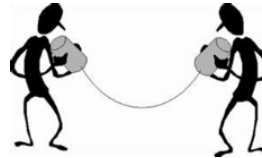
[www.Atlassian.com, ©2024]

- How people work together to get work done.

# Causes of Unsuccessful Project Execution *General Areas of Concern*

☐ Those which are Heavily Influenced by **PM and Team**:

- Project **Plans**
- Project **Management Controls**
- **Communications**
- **Leadership**



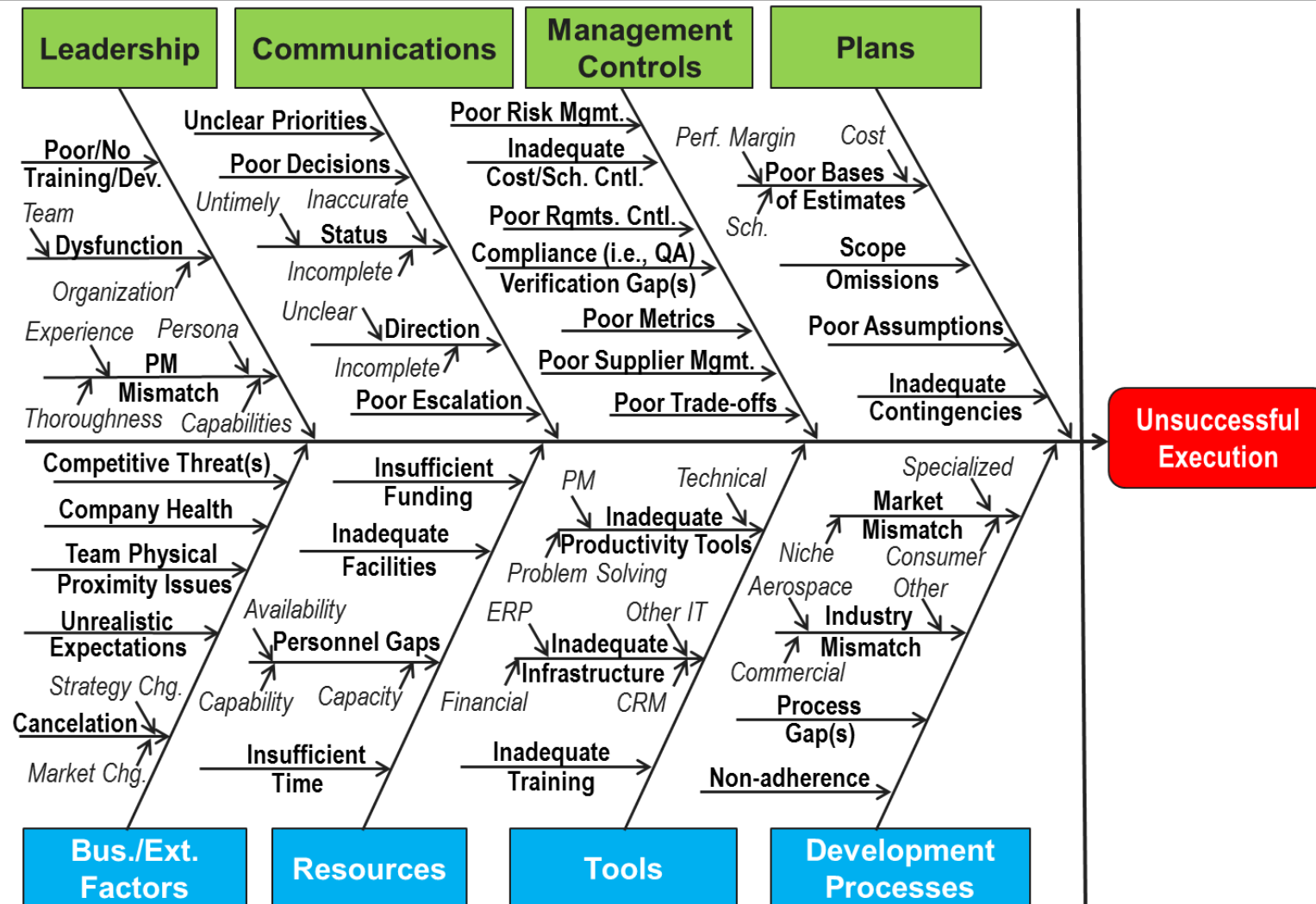
☐ Those Typically More Heavily Influenced by **Organization and External Factors**:

- Product **Development Processes**
- **Productivity and Infrastructure Tools**
- **Resources**
- **Business/External Factors**





# Causes of Unsuccessful Project Execution





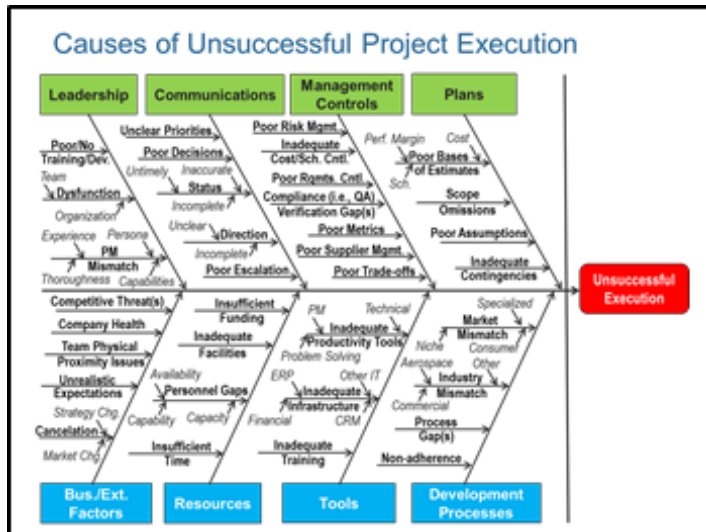
# The Right Best Practices

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## **DETERMINING PROJECT “BEST PRACTICES”**

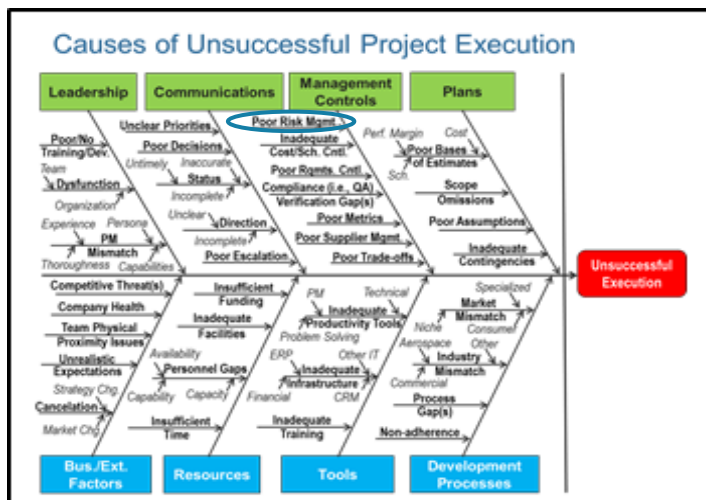
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# “Best Practices” are Derived Over Time



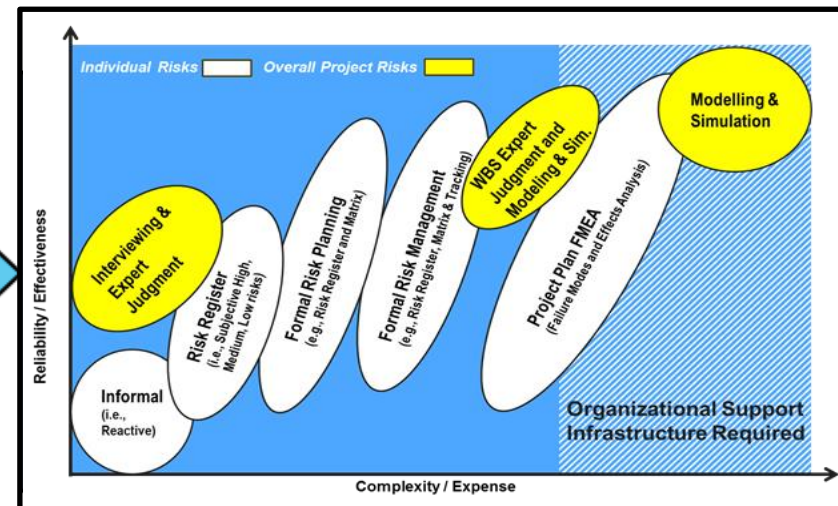
Mitigated by

**Options**  
**Tools, Techniques & PM Competencies**  
 (Established over Time)



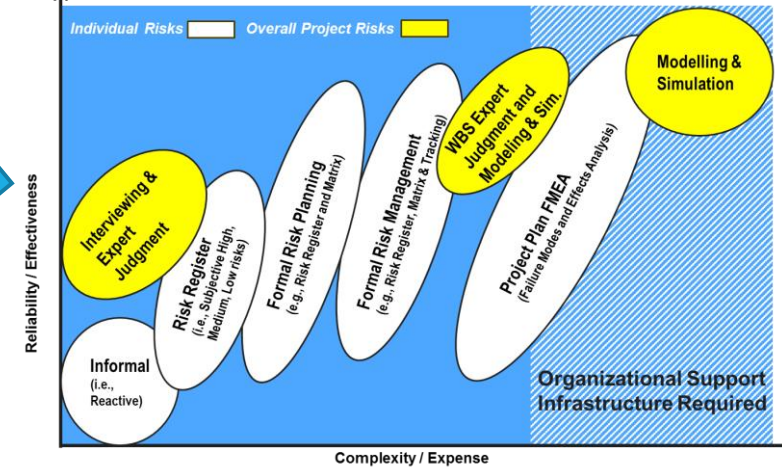
Mitigated by

*Example*



# PM Tools & Techniques Categories

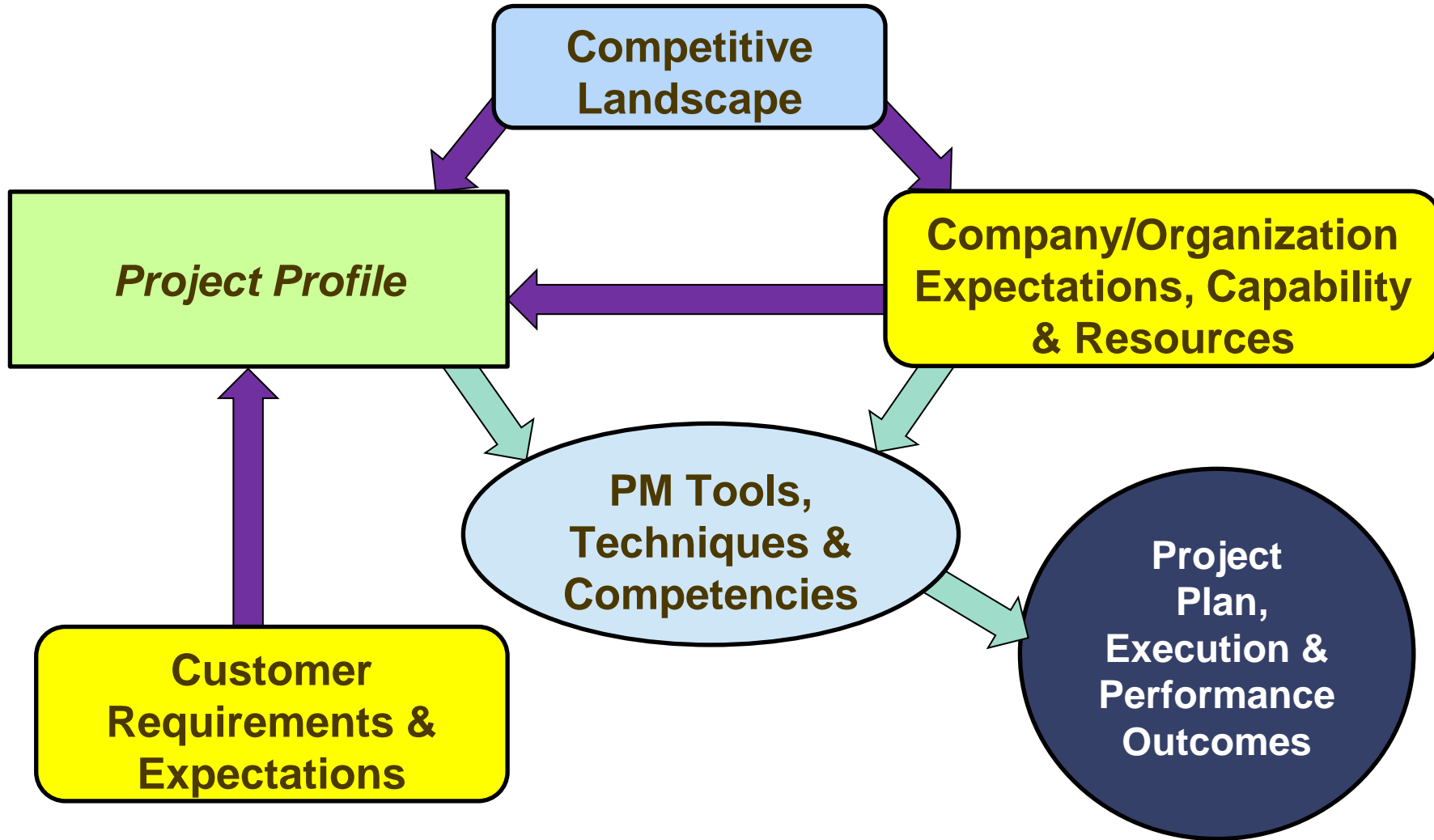
Project Management Tools and Techniques	
1	Risk Management
2	Cost, Schedule, Performance Estimating
3	Scheduling
4	Cost and Schedule Management
5	Quality Assurance
6	Requirements Management
7	Communications Management
8	Human Resource Management
9	Supplier Management



PM Tools and Techniques  
Options  
(Risk Management Example)

# The Strategy

## Selecting Project Management Tools & Techniques



# Project Profile Information

## *Strategic / Business Related*

### **Customer Expectations (all that apply):**

- High-Quality end Product
- Low-Cost end Product
- On-Time Product Launch
- Within Budget (if paid by Customer)
- None of the Above

### **Market Type (all that apply):**

- Specialized (e.g., DoD, Commercial)
- Original Equipment Manufacture (OEM)
- Niche
- Consumer
- Commodity

### **Market Span (pick 1):**

- Localized
- Different and Diverse Locales
- World-Wide

### **Project Initiation (pick 1):**

- RFI/RFQ Proposal
- Mktg Strategy/Roadmap
- Functional Organization (e.g., Engineering)
- Project Manager

### **Business Case Justification (pick 1):**

- Customer Derived
- Internal Market Evaluation
- Both

### **Number of Customers (pick 1):**

- One
- Few
- Numerous
- Indeterminate

### **Sales Channels (all that apply):**

- Direct
- Thru Middleman or Middlemen

### **Sales Contract Type (pick 1):**

- Contract – Firm Fixed Price (FFP)
- Contract – Cost Type / Time and Material
- Commitment or Internal Contract
- Purchase Order (PO)

### **Competitive Landscape (pick 1):**

- Sole Source
- Preferred or Directed
- Few Known Competitors
- Many Competitors
- Open Competition

### **Priorities (all that apply):**

- Technical Performance
- Project Cost
- Product Cost
- Schedule
- None of the Above

### **Primary Company Point of Contact (POC) (pick 1):**

- Project Manager, per Customer
- Project Manager, per Internal Process
- Product Line Manager
- Business Development Manager
- Marketing and/or Sales Representative

# Project Profile Information

## *Tactical / Project Plan Specific*

**Scope (pick 1):**

- Firm-cannot change
- Firm-can Trade-off
- Interim-with TBDs
- Best Efforts

**Size–Project Cost (pick 1):**

- Very Large (>US\$20M)
- Large (>US\$5M)
- Medium (>US\$1M)
- Small (>US\$100K)
- Very Small (<US\$100K)

**Project Cost Flexibility (pick 1):**

- Firm-cannot change
- Firm-can Trade-off
- Interim with Bogies
- Best Efforts

**Product Cost (pick 1):**

- Firm Limit
- Limit with tolerance band
- non-committed but studied
- non-committed Estimate

**Schedule (Project Duration) (pick 1):**

- Negotiated with Reserve
- Negotiated Aggressive
- Fixed Required Date-Aggressive
- Fixed Required Date-Comfortable
- Best Efforts

**Type–Complexity and Risk (pick 1):**

- Highly Complex and Risky
- Derivative or Some Risk
- Production or Low Risk
- Level of Effort (LOE)-No Risk

**Quality (all that apply):**

- Per Contract
- Best-in-Class
- Per Industry Requirements
- Per Internal Requirements

**Product Requirements Source (all that apply):**

- Customer Provided
- Negotiated with Customer
- Internal Market Evaluation

**Documentation (all that apply):**

- Contractual Data
- Tech Data Package (Design)
- Validation Test and Failure Reports
- Manufacturing Instructions
- Collateral (e.g., Manuals, Specs, etc.)

**Reliability (all that apply):**

- Per Contract
- Best-in-Class
- Per Industry Requirements
- Per Internal Requirements

**Requirements Stability (pick 1):**

- Firm-cannot change
- Firm-can Trade-off
- Somewhat Open-Ended (i.e., some TBDs)
- Loose (i.e., Best Efforts)

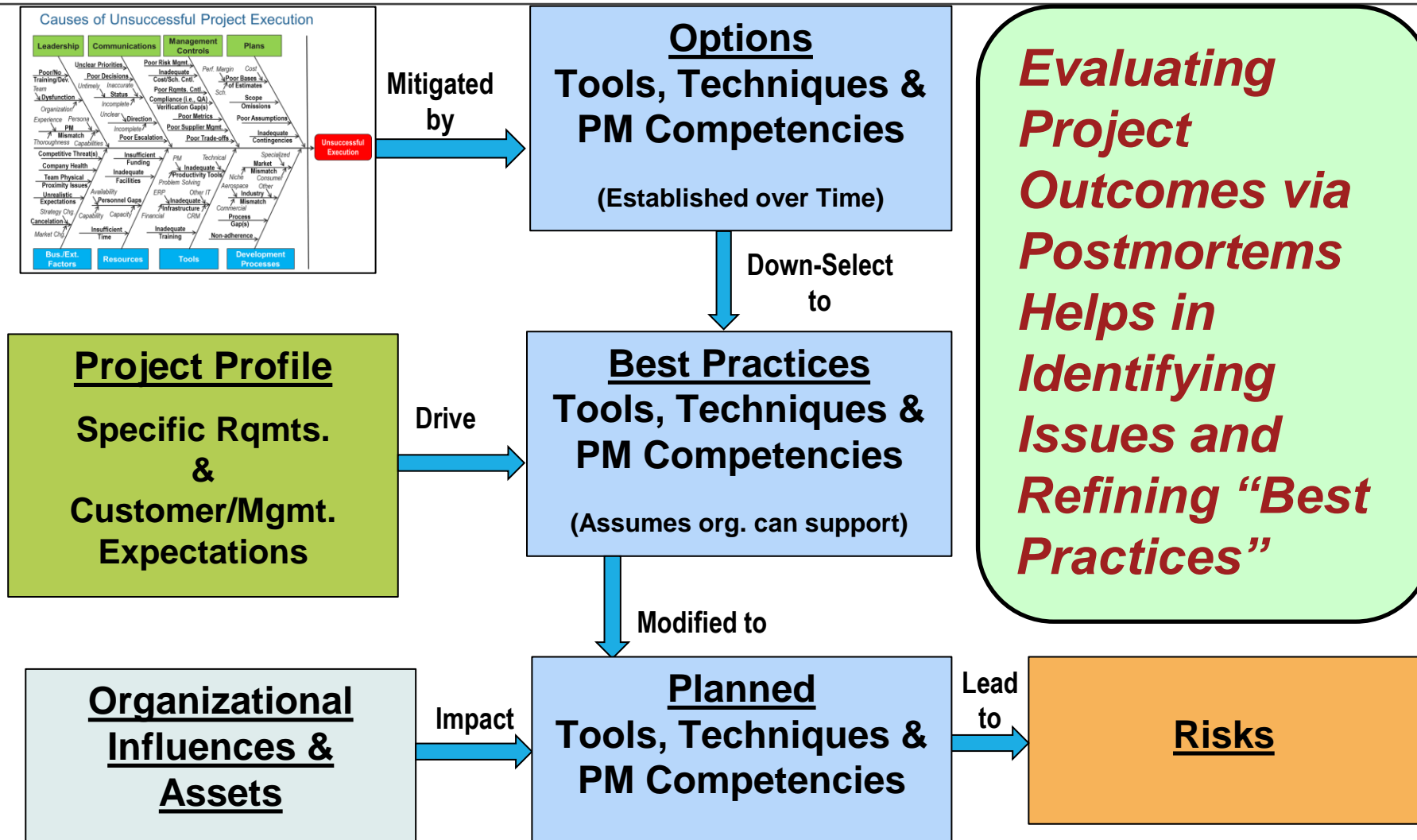
**Other Design Considerations (pick 1):**

- Yes (e.g., maintainability, accessories, etc.)
- None or TBD

**Safety (all that apply):**

- Per Contract
- Best-in-Class
- Per Industry Requirements
- Per Internal Requirements

# Selecting Project Tools & Techniques





# Which PM Tools & Techniques?

## Best Practices:

“Methods or techniques that have consistently shown results superior to those achieved with other means and are used as benchmarks.”

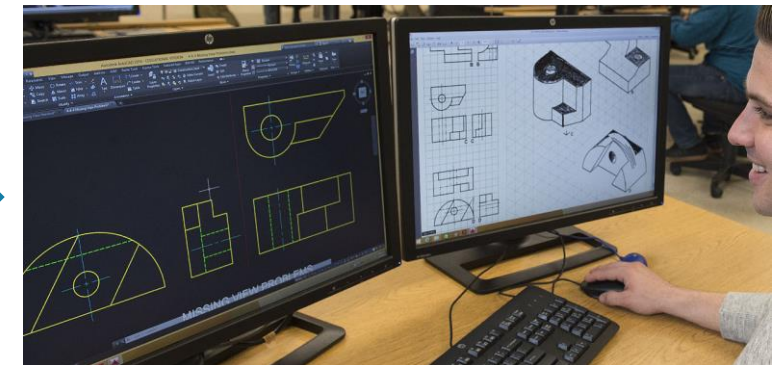
*(Wikipedia, the free encyclopedia. Retrieved from [https://en.Wikipedia.org/wiki/Best\\_practice](https://en.Wikipedia.org/wiki/Best_practice))*

- Different “Tools & Techniques” Apply to Different Project Types
- Derived from Experience
- Refined Over Time

Drafting Table



CAD (Computer Aided Design)



# Which PM Tools & Techniques?

## *The Alternatives to Best Practices*

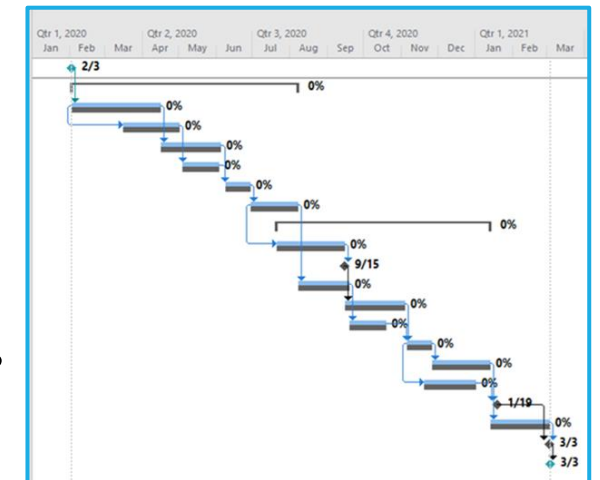
### □ “Less than” Best Practices:

- *Add Risk* to Project Execution
- *Can be Overcome* by PM’s Capabilities/Competencies
- Typically *Correlate to Causes of Unsuccessful Execution*

No.	Milestone Description	Dates of Completion			Comments/Status
		Original	Revised	Completion	
1	Project Kick-off	1-Jan		1-Jan	Completed
2	Prototype Design Completion	1-Mar	5-Mar	6-Mar	Completed
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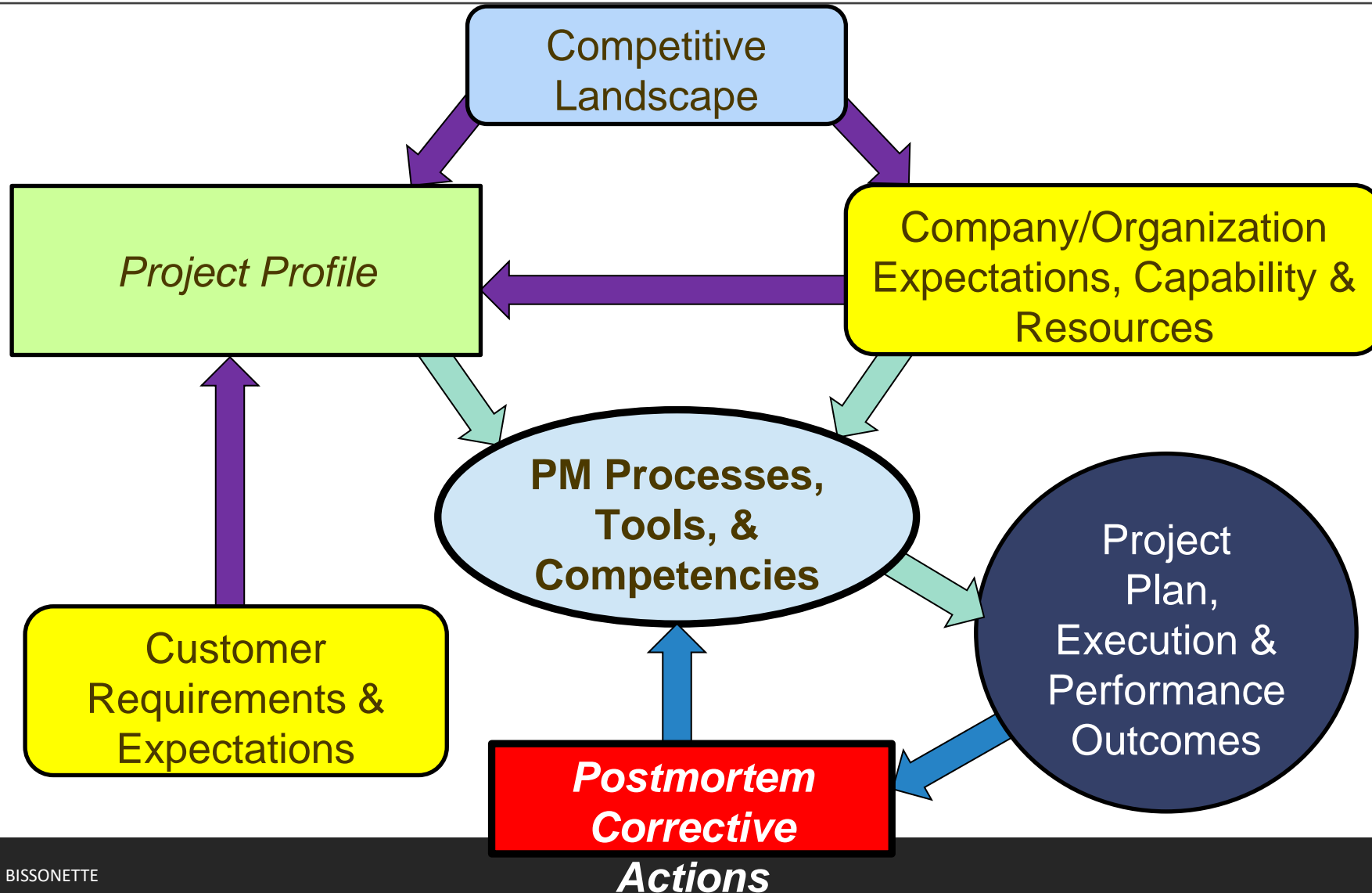
### □ “Better than” Best Practices:

- Can *Improve Probability of Successful Execution*
- Typically, *More Complex/Expensive* - Require More Capability
- Requires *Organizational Sponsorship, Support and Infrastructure*



# Project Management Postmortems

## Feedback for Project Management Improvements



# The Right PDP (Product Development Processes)

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# Product Development Processes



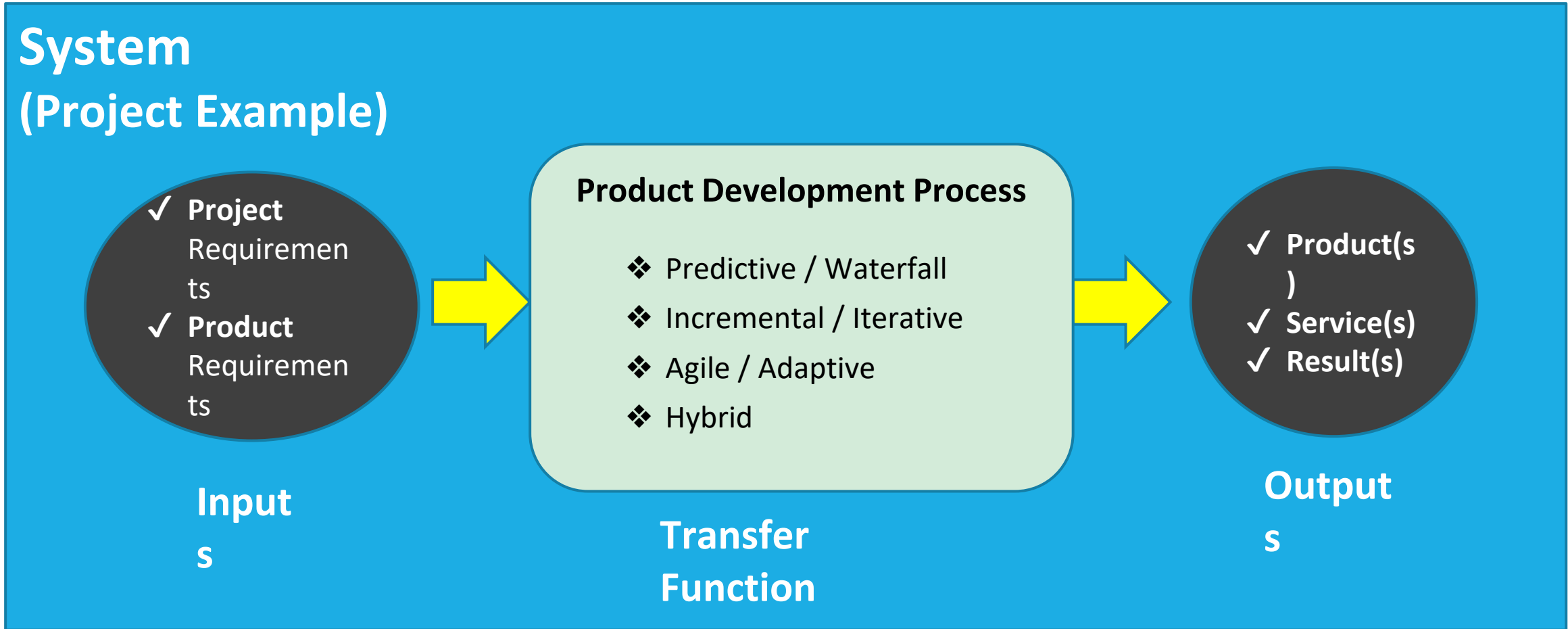
## *Definitions*

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- ❑ **Project**: *A temporary endeavor undertaken to create a unique product, service, or result.* [Project Management Institute. A Guide to the Project management Body of Knowledge (PMBOK® Guide) - Seventh Edition – Glossary.]
  
- ❑ **PLC (Project Life Cycle)**: *The series of phases that a project passes through from its start to its completion.* [Project Management Institute. A Guide to the Project management Body of Knowledge (PMBOK® Guide) - Seventh Edition – Glossary.]
  
- ❑ **PDP (Product Development Process)**: *The process by which Products (including Services) are developed and brought to market, in concert with the other over-arching Project Constraints – it basically defines the Project Scope of Work.*
  - PDPs are also referred to as **Development Life Cycles** and **Product-Oriented Processes**.

# Projects are Like “Systems”

*The System and its Processes should Follow “Best Practices”*



# Product Development Processes

## *Types of PDPs are Driven by Project Priorities*

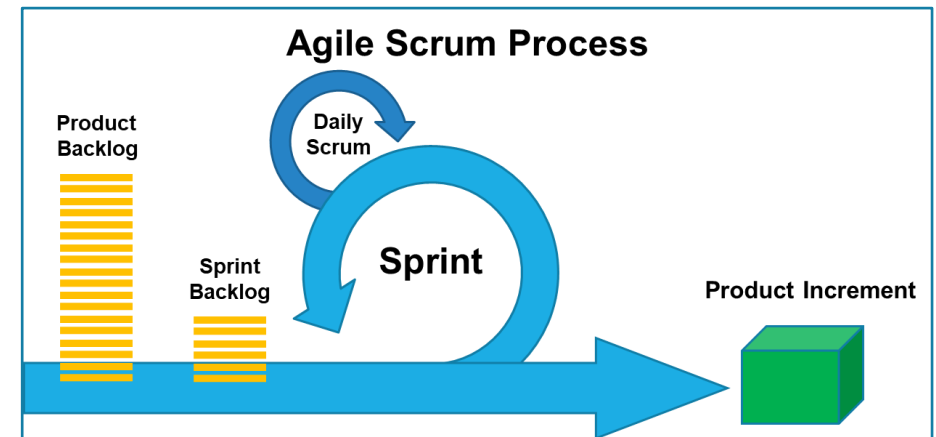
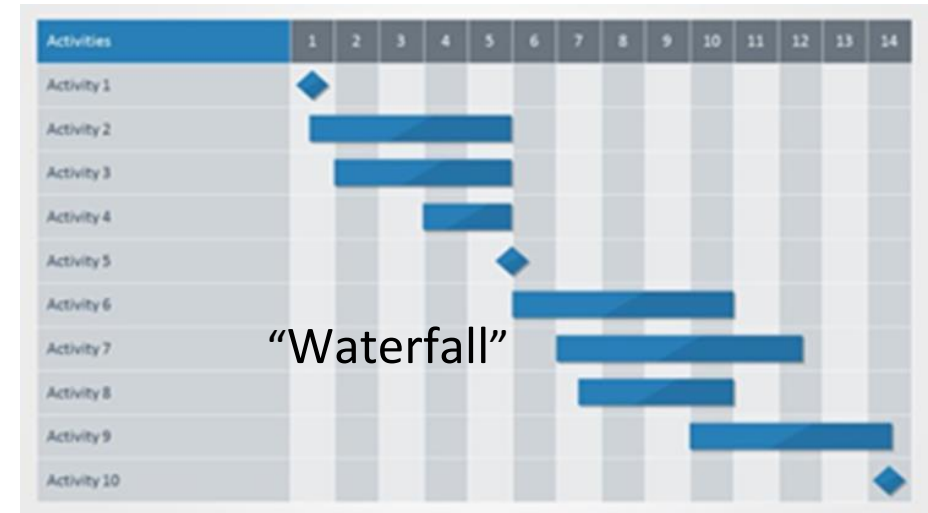


- ❑ Predictive / Deterministic (e.g., Aerospace Equipment)

  - ▶ Hybrid (e.g., Commercial Electronics Systems)

- ❑ Incremental / Iterative (e.g., Consumer Products)

- ❑ Adaptive (e.g., Information Technology, Software)





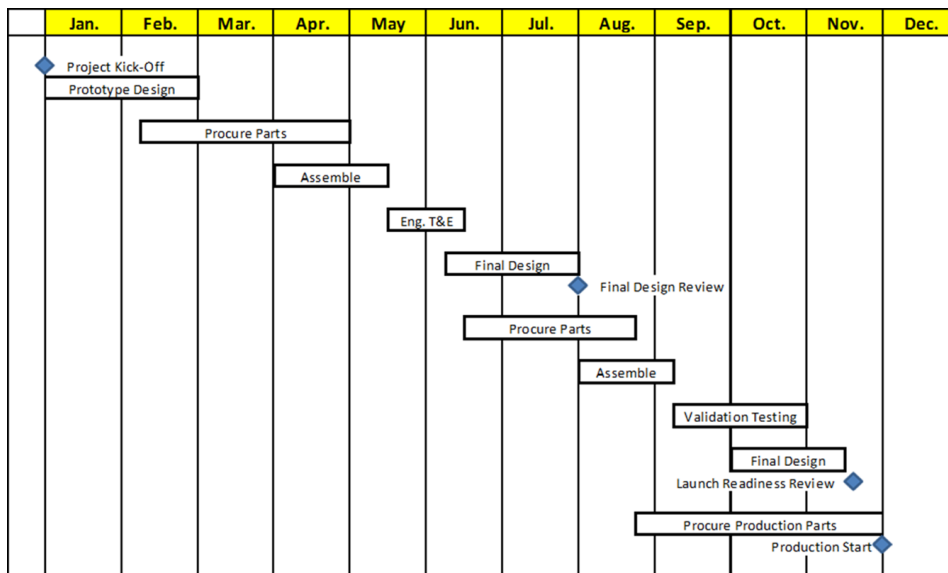
# Product Development Processes

## Characteristics of the Common Types (1 of 2)



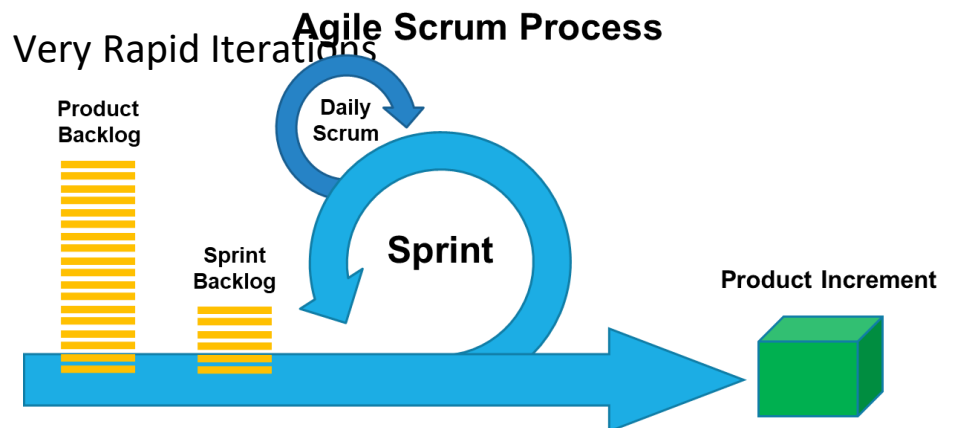
### □ Predictive / Deterministic (e.g., Aerospace)

- Fully Plan Driven – also called “Waterfall”
- Requirements all Well Understood
- Known Sequential Activity (Slightly Overlapping)
- Mature/Understood Product Development Process
- May Use Progressive Elaboration or “Rolling Wave Planning”



### □ Adaptive (e.g., Information Technology)

- AKA: Change-Driven or “Agile” Methods
- All Requirements & Scope are Difficult to Define Up Front
- On-going Stakeholder Involvement
- Accommodates High Level of Change
- Decomposed into a sequence of Phases called Iterations
- Very Rapid Iterations



# Product Development Processes

## Characteristics of the Common Types (2 of 2)



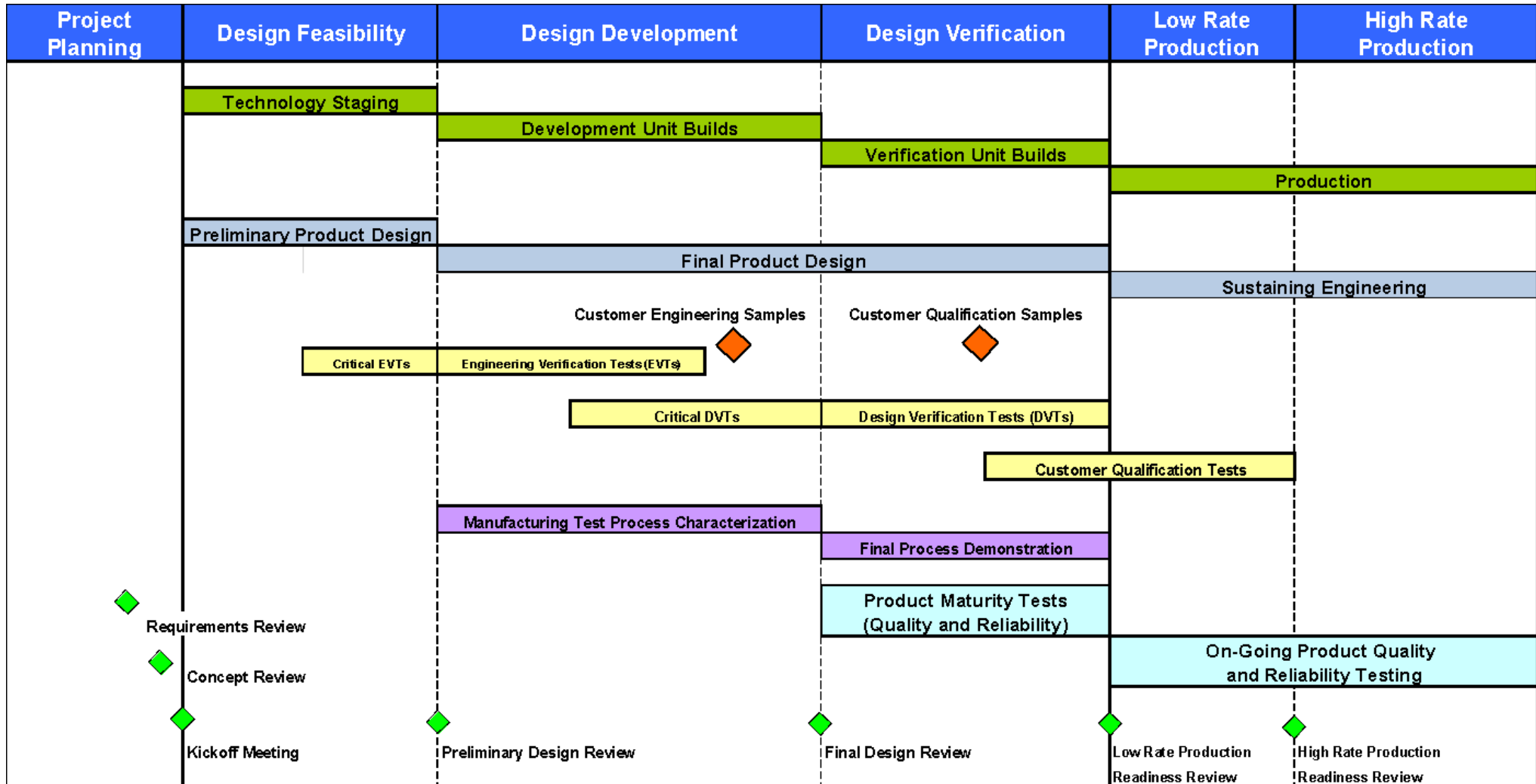
**Incremental / Iterative (e.g., Consumer Electronics)**
 **Hybrid (e.g., All Industries)**

- Product Development through Series of Repeated Cycles
  - Progressively (via Phases) Add to Product Functionality
  - Enables Team to Incorporate Feedback
  - Driven through Achievement of Phase Entry and/or Exit Criteria
  - Accommodates Select Changes to Project Scope
- Two or more of other Three
  - Optimal for Very Complex Products
  - Bests Practices per Activity

Project Planning	Design Feasibility	Design Development	Design Verification	Low Rate Production	High Rate Production
	Technology Staging				
		Development Unit Builds			
			Verification Unit Builds		
				Production	
	Preliminary Product Design				
		Final Product Design			
				Sustaining Engineering	

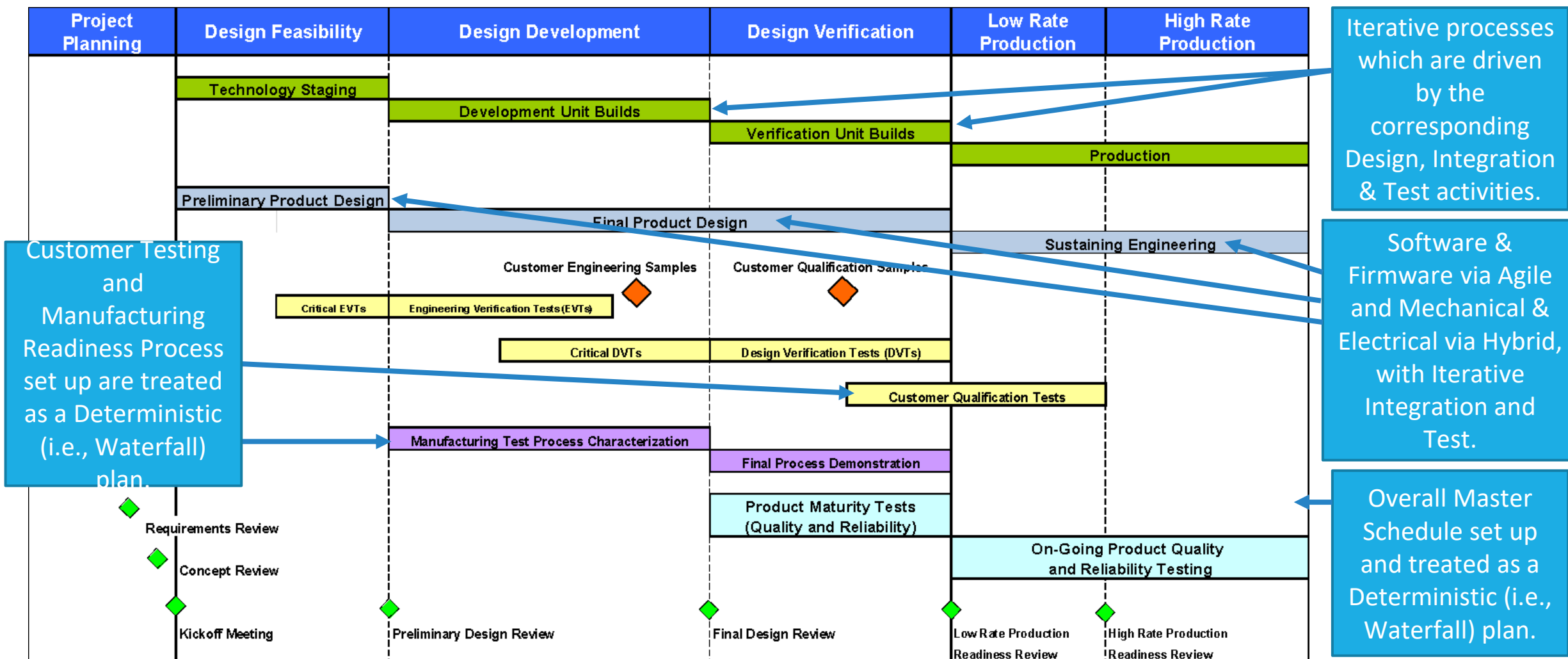
# Product Development Process

## Example of Project with Phases (another Best Practice)




# Product Development Process

## Example of Project with Mix of PDPs - Hybrid



# Product Development Processes

## Key Definitions of Different PDPs, Per PMI, Inc.



Predictive	Iterative	Incremental	Agile
Requirements are defined up-front before development begins	Requirements can be elaborated at periodic intervals during delivery	Requirements are elaborated frequently during delivery	
Deliver plans for the eventual deliverable. Then deliver only a single final product at end of project timeline	Delivery can be divided into subsets of the overall product	Delivery occurs frequently with customer-valued subsets of the overall product	
Change is constrained as much as possible	Change is incorporated at periodic intervals	Change is incorporated in real-time during delivery	
Key stakeholders are involved at specific milestones	Key stakeholders are regularly involved	Key stakeholders are continuously involved	
Risk and cost are controlled by detailed planning of mostly knowable considerations	Risk and cost are controlled by progressively elaborating the plans with new information	Risk and cost are controlled as requirements and constraints emerge	

**Figure X3-1. The Continuum of Project life Cycles (Appendix X3)**

Project Management Institute. (©2017). A Guide to the Project management Body of Knowledge (PMBOK® Guide) – 6<sup>th</sup> Edition.

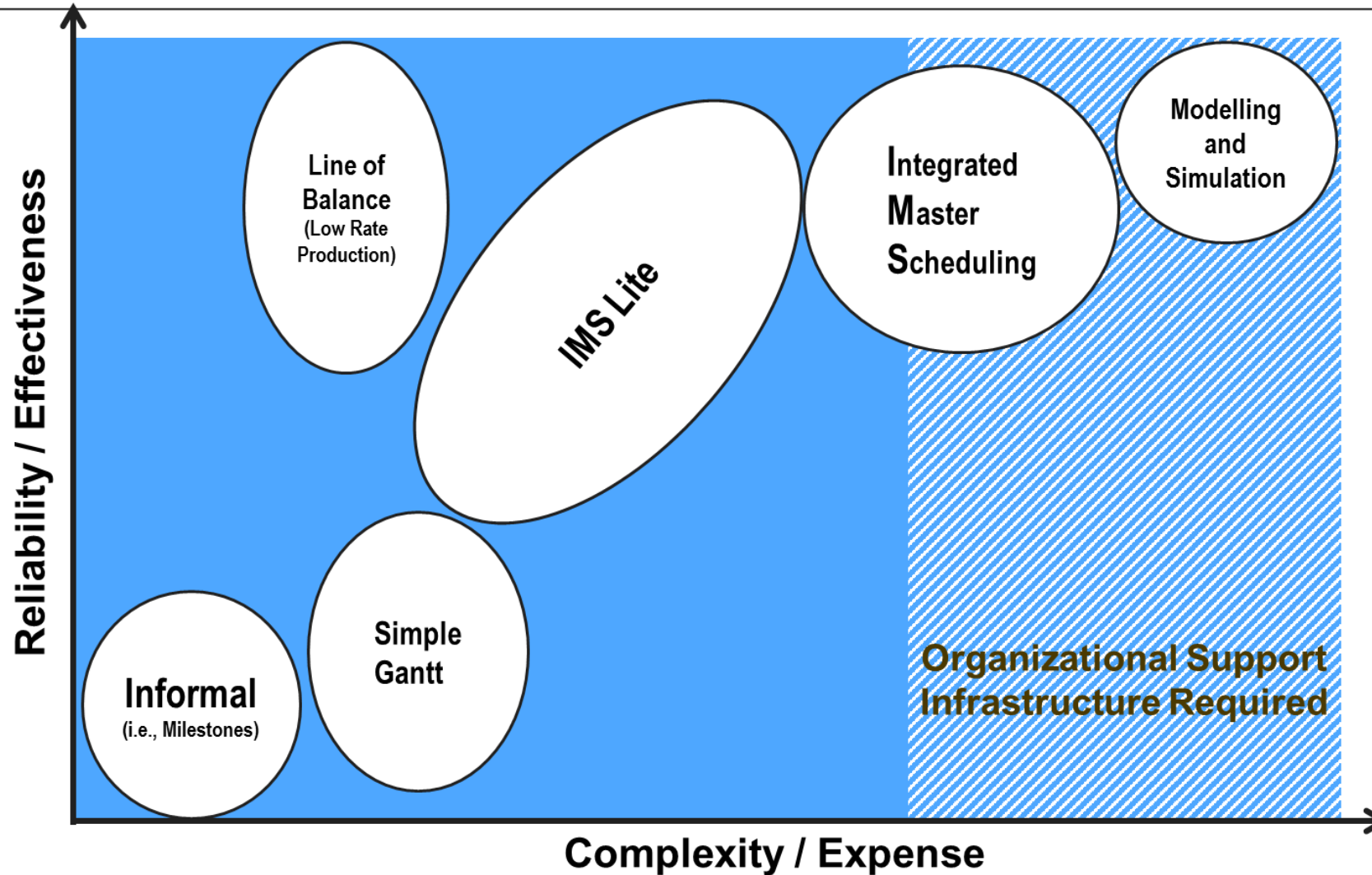
# The “Right” PM Tools & Techniques

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**DETERMINING PROJECT “BEST PRACTICES”**

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# Scheduling Tools & Techniques



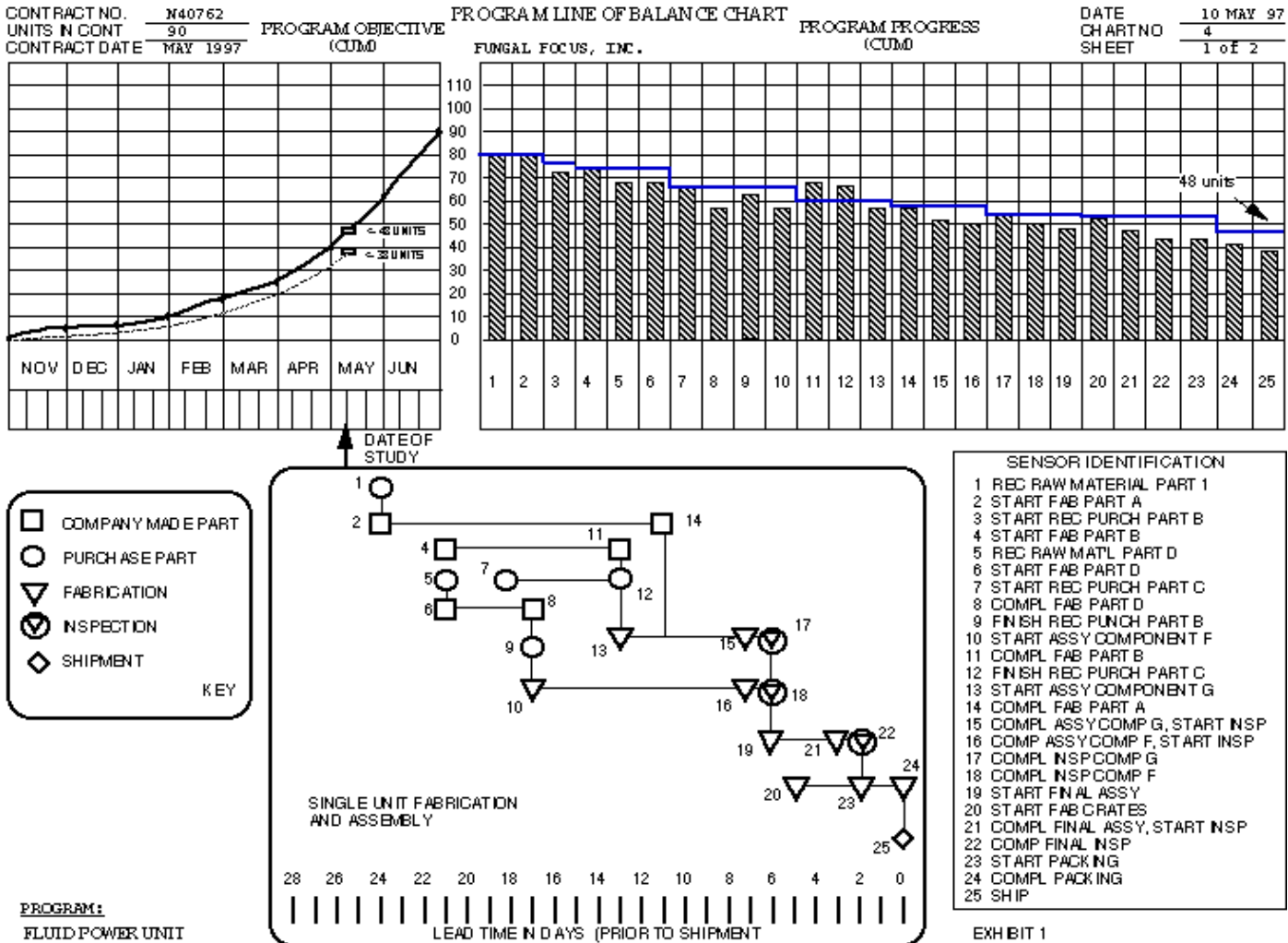


# Scheduling via Milestones

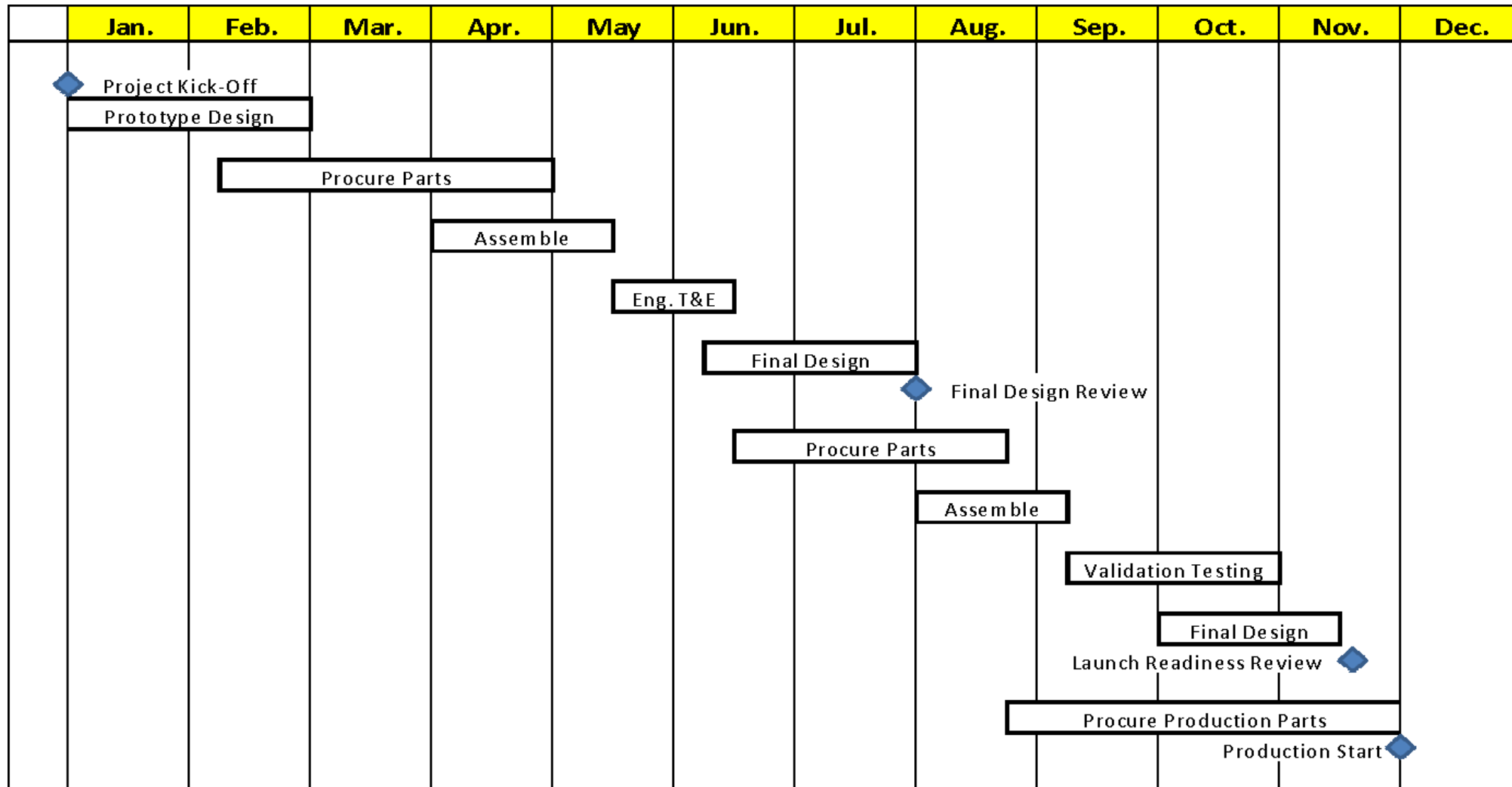
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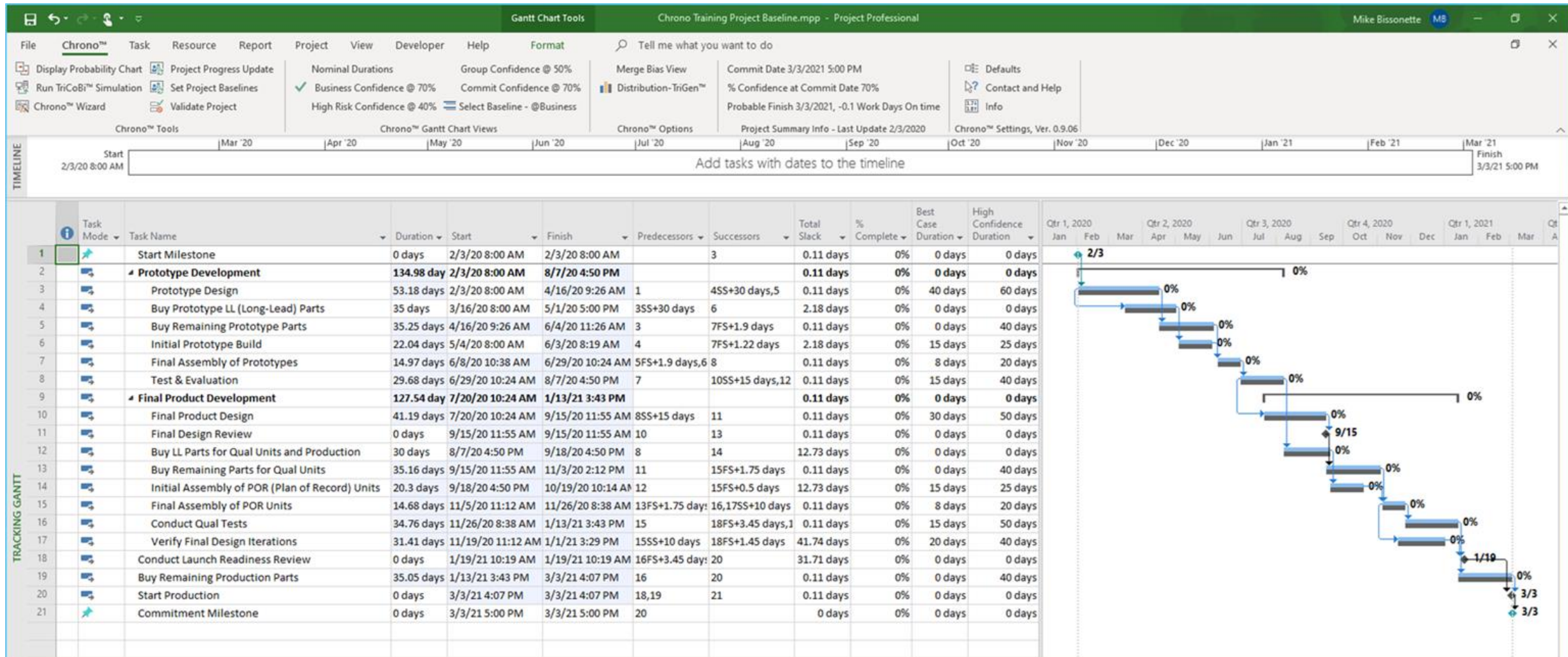
# Scheduling via Line of Balance (LOB)



# Scheduling via Simple Gantt Chart



# Scheduling via IMS Lite



# Scheduling Options

## *Methods Should be Based on Project Priorities*



Chrono™ Options	Min. User Profile Rqmts.*	Sch. Priority	Cost Priority	Examples
<b>A. Simple IMS Schedule ala MS Project</b>	Casual or New User for Informal Projects	<b>Simple IMS Schedule ala MS Project</b>		
1 No Baseline / Updates or Costs		Low	Low	Non-Critical (LOE)
2 No Baseline / Updates or Costs, but Valid IMS		Low-Med	Low	Process Improvement
<b>B. Simple IMS with Costs as well</b>	Capable User of MS Project (Can Use Task "Cost" Features)	<b>Simple IMS with Costs as well</b>		
1 No Baseline / Updates		Low-Med	Low-Med	Home Improvement
2 Single Baseline		Med	Med	Capital Equip. / Production
<b>C. Advanced IMS with SRA and ES per Chrono</b>	Advanced User w Risk Management Understanding and Training	<b>Advanced IMS with SRA and ES per Chrono</b>		
1 No Baseline / Updates		Med	Low-Med	High Risk R&D
2 Nominal Baselines and Updates		Med-High	Med	Internal Med. Risk R&D
3 Dual (Nominal & Commit) Baselines/Updates		High	Med-High	Contract R&D (CPFF)
<b>D. Adv. IMS with SRA, EVM per ES and EC (Earned Costs)</b>	Advanced User w Risk Management Understanding, and Experience with Strategic Projects	<b>Adv. IMS with SRA, EVM per ES and EC (Earned Costs)</b>		
1 Nominal and Commit Baselines / Updates		Med	Med	Internal Critical R&D
2 Dual (Nominal & Commit) Tracking Metrics		Med-High	Med-High	Critical Sub-Contracts
3 Dual Baselines/Updates for both Sch. & Costs		High	High	Critical Contracts
<b>E. Adv. IMS with SRA, and Formal EVMS</b>	Expert User w Risk Management Experience on Strategically Important Projects with Contract Commitments, including EVMS Requirements.	<b>Adv. IMS with SRA, and Formal EVMS</b>		
1 Nominal and Commit Baselines / Updates		Med-High	Med-High	Contract Critical R&D
2 Dual (Nominal & Commit) Tracking Metrics		High	High	Critical Contracts
3 Dual Baselines/Updates for EVMS Compliance		Very High	Very High	Critical EVMS Contracts

\* Support Personnel to be considered as well, if available.

# Project Postmortems

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## **DETERMINING PROJECT “BEST PRACTICES”**

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# Retrospectives

## *What are They and Why are They Important?*



### ❑ Definition of **Project Postmortem**

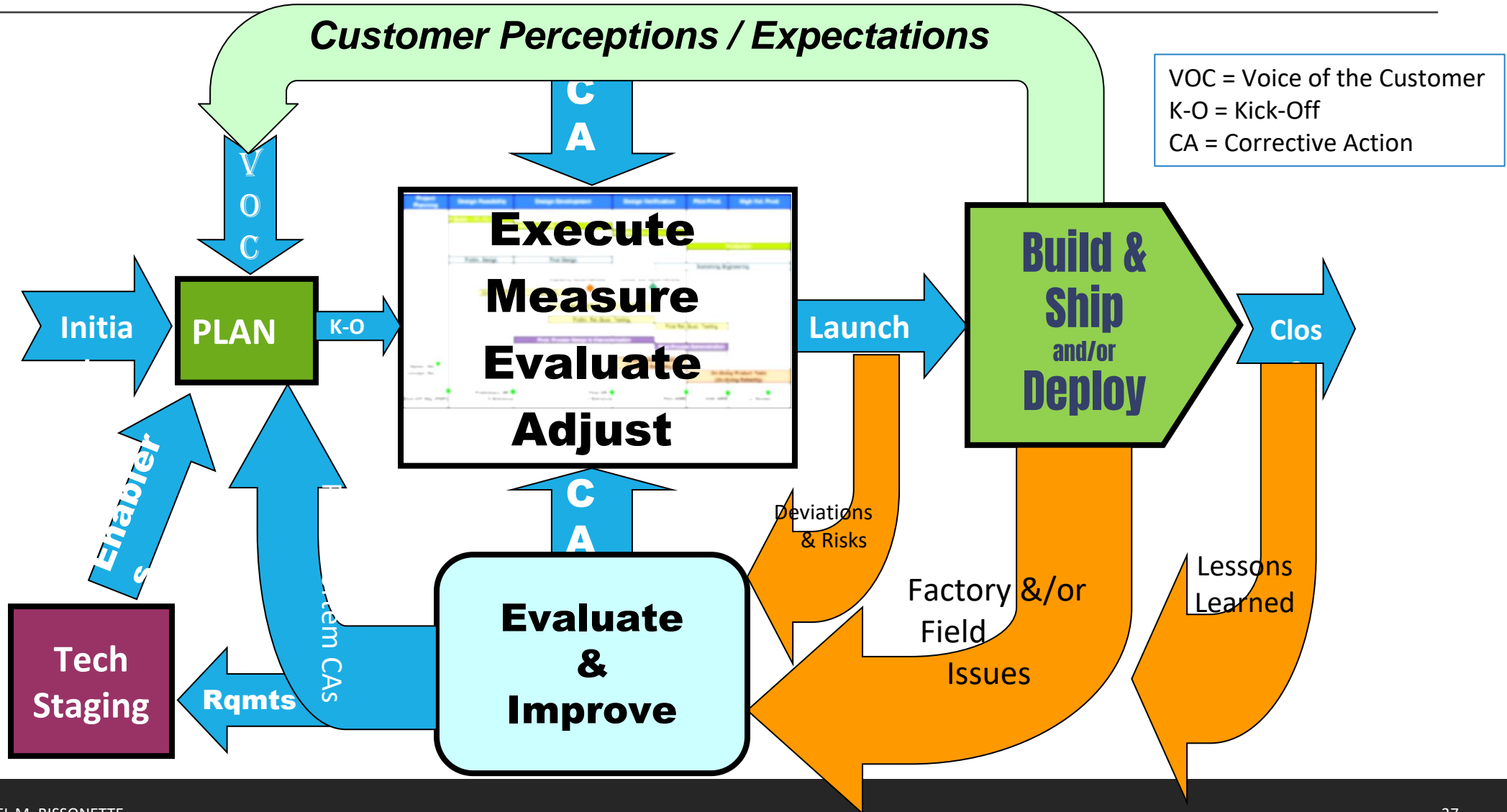
- A **Retrospective** (20/20 hind-sight) Evaluation of Completed Project(s)
- Builds off **Factual/Objective Outcomes and Data**
- To:
  - Assess Both *Good & Bad Performance*
  - Determine *Root Cause of Issues* that Impacted Project Performance
  - Develop *Systemic Corrective Actions* for Benefit of Future Projects
  - *Implement Corrective Actions*

### ❑ Should **NOT** be a “Witch Hunt”

- ❑ Should **Pro-Actively Prevent Re-Occurrence of Issues** which Caused Poor Execution – i.e., **Reduce Risk**
  - *Refine PM Best Practices* – Tools, Processes & PM Competencies
  - Establish *Systemic Changes*

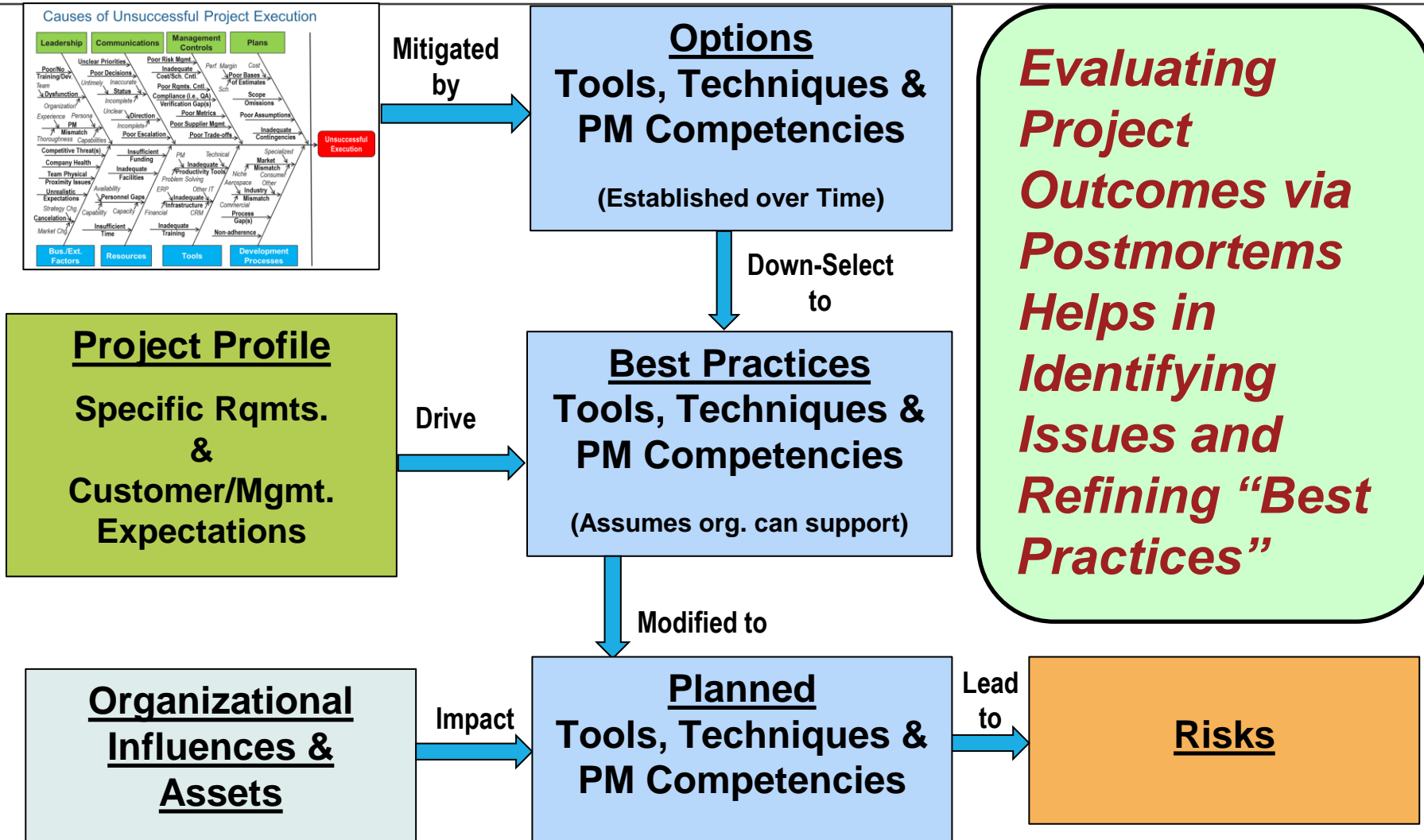
# Generic Product Development Cycle

## Feedback for Technical Improvements





# “Best Practices” – Refined Over Time



# WRAP-UP

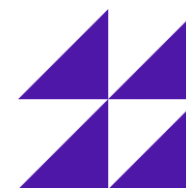
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## DETERMINING PROJECT “BEST PRACTICES”

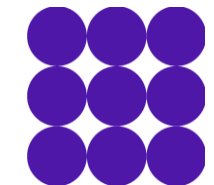
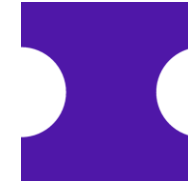
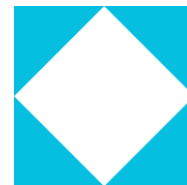
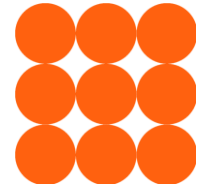
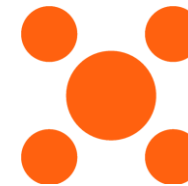
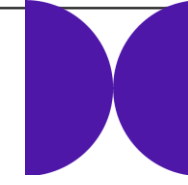
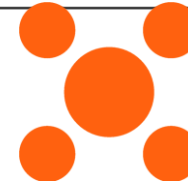
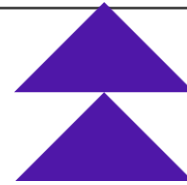
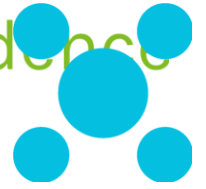
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