



Model Portfolio Management (MPM): A Guide for Best Practices

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Agenda

MPM Guide Presentation Topics

- **Background**

- *Problem/Solution*
- *Implementation*
- *Definitions*
- *Use Cases*
- *Approach*
- *Deliverables*
- *Roles and Responsibilities*

- **Life Cycle (Goals, Work Products, and Activities)**

- *Initiation*
- *Planning*
- *Execution*
- *Monitoring and Control*



Problem/Solution

Bottom Line Up Front (BLUF)

• Problem

- *Acquirers that routinely ask for “Model Management” work and get large variance of responses*
- *“Model Management” scored low by organizations – INCOSE Model-Based Capabilities Matrix*
- *“Model Management” as a significant area of improvement – SERC SE Survey*
- *No prior guide or standard that addresses managing a collection of models*

• Solution

- *The Aerospace Corporation wrote the “Model Portfolio Management (MPM) Guide” technical operating report TOR-2021-01577, cleared for public release to serve organizations that would like to manage their collection of models and to serve as a solicitation reference document*
- *The TOR is already been used as a reference for US government acquisitions*
- *INCOSE is in the process of adopting the guide*



Implementation

Where does the MPM Guide fit in

Define
“what”
needs to be
done

DE Strategy

DE Implementation

MBSE Implementation

Model Portfolio
Management Guide

Address
the “how”
and “how
well”

Model Life Cycle
Management Guide

Model Requirement
Guide

Model Security Guide

Model Integration
Guide

Model Metrics Guide

Model Configuration
Management Guide

Model Style Guide

Model Verification &
Validation Guide

Model Development
Plan

Source: MPM Guide Figure 2. Model-Relevant Tree



Definitions

Key Definitions in MPM Guide

Term	Definition
Portfolio	<i>A collection of projects grouped together to facilitate effective management of work to meet strategic business objectives. (Mathur, 2006)</i>
Model Portfolio	<i>A collection of models grouped together to...</i>
Model Portfolio Management	<i>The administration of a collection of models to achieve strategic objectives...</i>
Model Portfolio Management Life Cycle	<i>A continuous set of activities to be performed for the Model Portfolio Management process to be successful.</i>

Full definitions to these terms and many others can be found in the MPM Guide

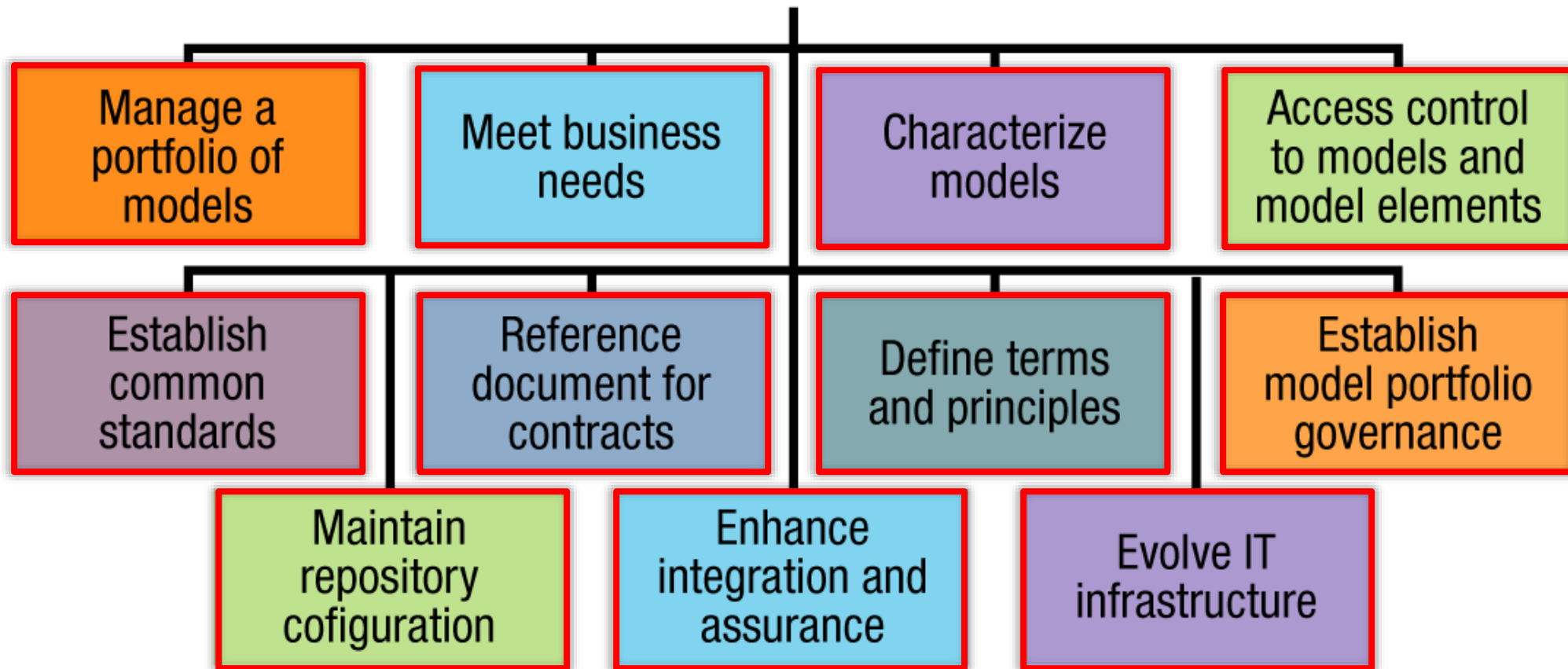
Source: "The Standard for Portfolio Management," Project Management Institute (PMI).

Use Cases

How to use the MPM Guide



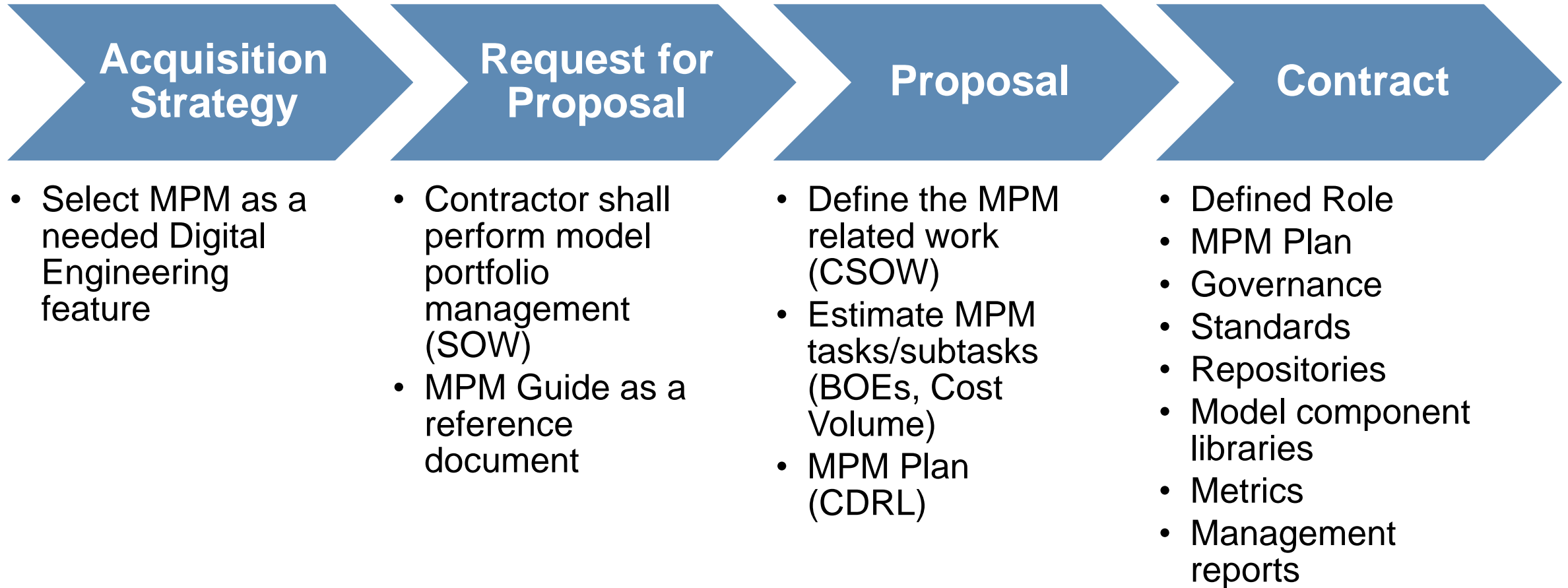
Users



Full definitions to these Use Cases and many others can be found in the MPM Guide

Approach

Approach for Contracting



MPM Guide as an RFP Reference Document to ensure government insight, access, and use.



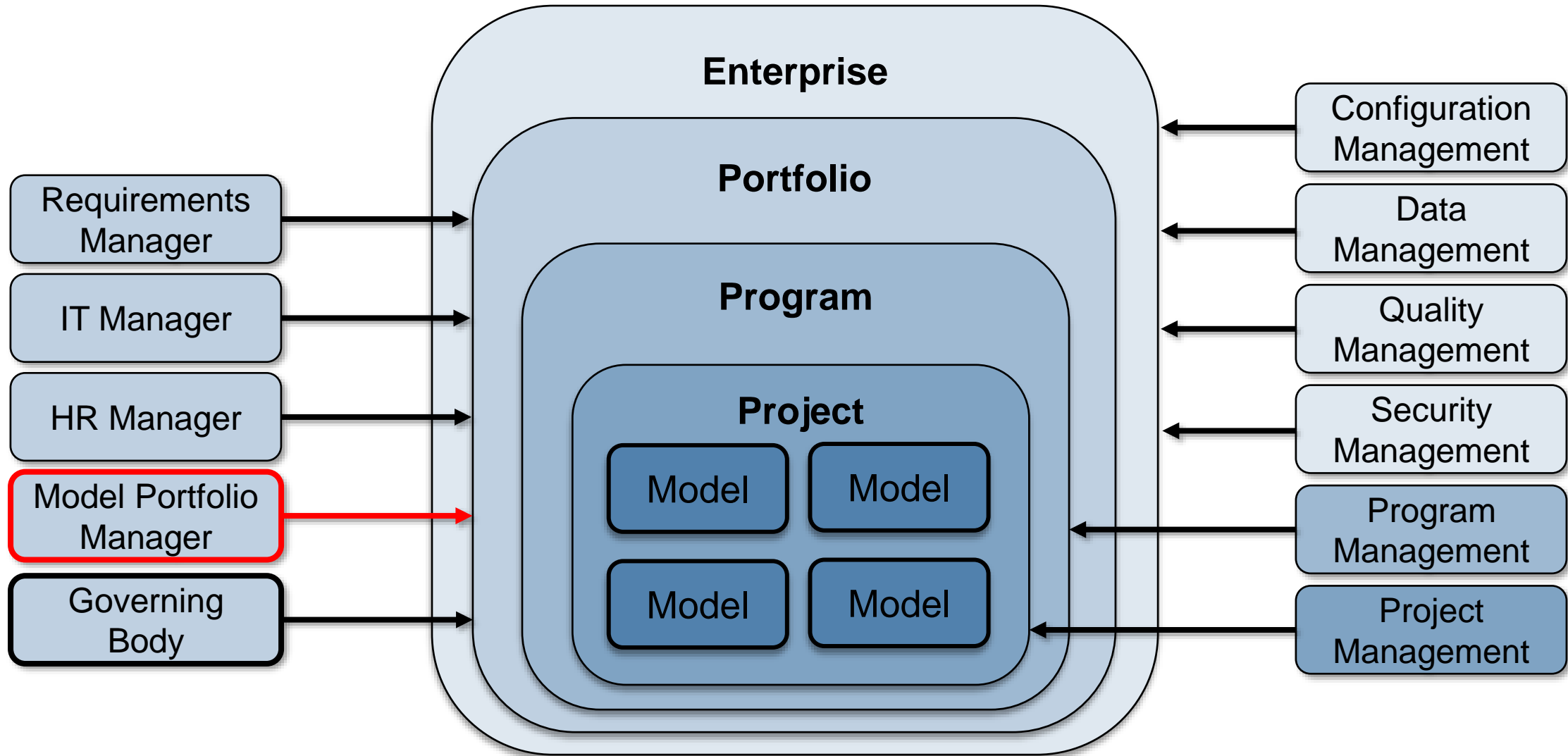
Deliverables

Recommended Deliverables from Contractors to Government

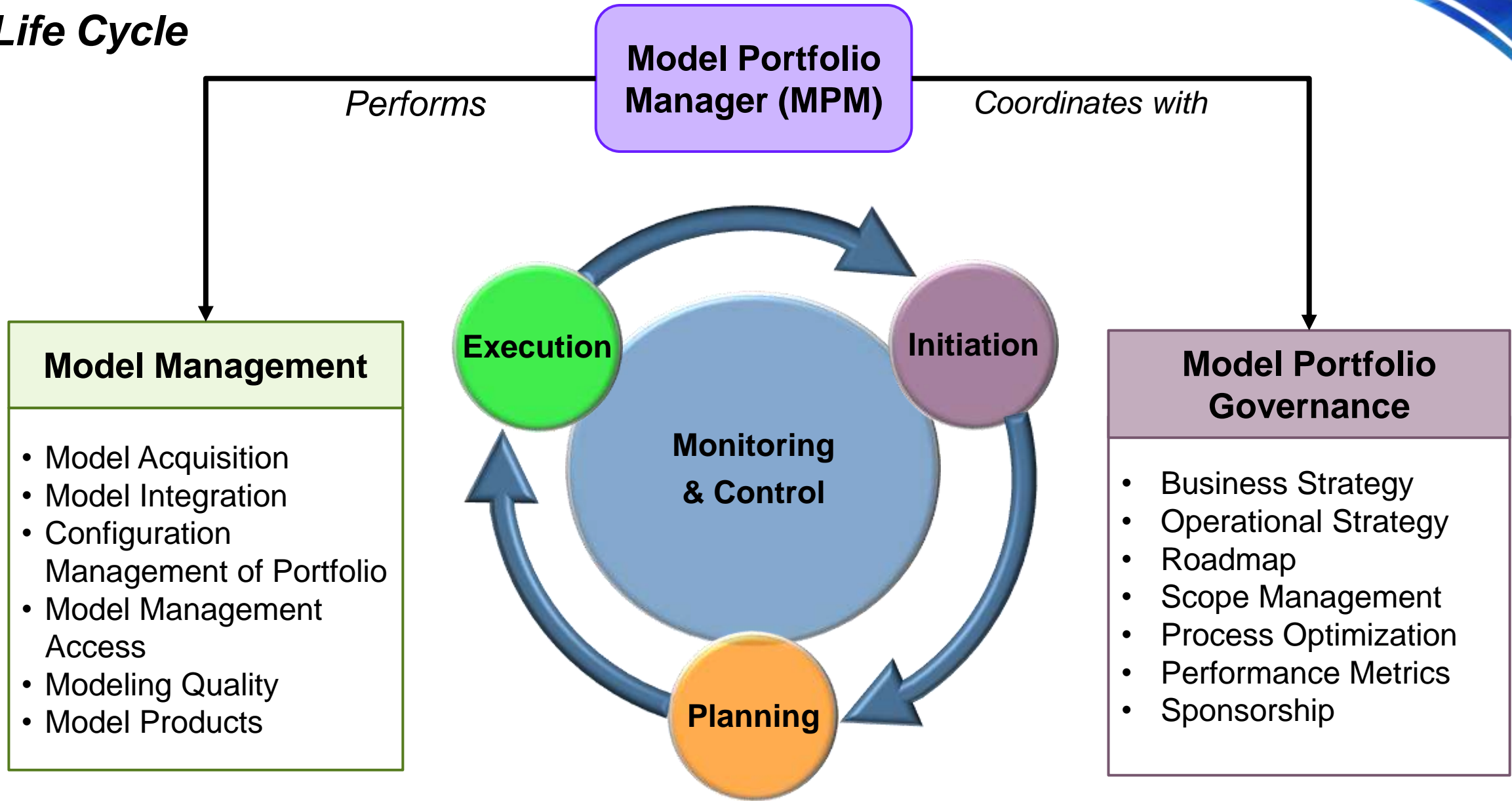
Name	Description
MPM Plan/Model	Defines the key components in the MPM Life Cycle (resources, structure, hierarchy, processes, users, scope, etc..)
Governance Plan/Model	The governance plan may be a stand-alone view (documented or modeled) or may be a subsidiary to the MPM Plan.
Model Accession List	An index of working models made readily available for review by model integrators.
Model Data Accession List	An index of working data items accessible to relevant stakeholders to review model data.
Model View Accession List	An index of digital views accessible to relevant stakeholders to review model views.
MPM Risks Register	An index of risks and mitigation plans impacting the model portfolio.

Full Description to these deliverables and many others can be found in the MPM Guide

Roles and Responsibilities



Life Cycle



MPM roles of Management and Governance across the MPM Life Cycle

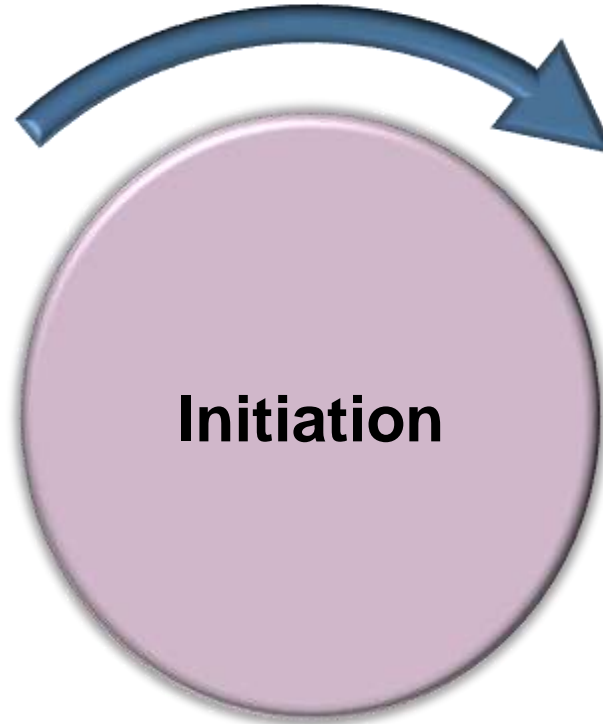
Source: "The Standard for Portfolio Management," Project Management Institute (PMI)



GOALS



ACTIVITIES



Examples

- *Stakeholders' Definition & Roles*
- *Strategy*
- *Modeling Guidelines*
- *Intellectual Property Rights*
- *IT Infrastructure*



Table 1. Stakeholder Roles, Interest and Expectation

Stakeholder	Roles	Interests	Expectations
Sponsor or Organizational Executive	Provide funding and resources	Alignment with goals	Informed regularly of key portfolio decisions and milestones
Model Portfolio Manager	Provides the management of the portfolio of models needed by the organization	Portfolio of models meets the organizational goals and objectives	At the sponsor's request, performs portfolio model management with the Portfolio Governing Body and model managers
Portfolio Governing Body	Oversees the portfolio priorities, manages spending, and manages timely delivery of value	Portfolio level risks and issues that require key decision and change management	Informed regularly of developments, change needs, and progress
Model Managers	Ensures model life cycle management	Mitigates portfolio level risks and issues impacting their model	Adheres to MPM agreements and is informed of portfolio changes, risks and issues



← GOALS → ACTIVITIES →

- MPM Plan
- MPM Scope
- Budgeting
- Model/Data Interdependencies
- Risks & Issues
- Resourcing
- Prioritization
- Sponsor/Stakeholder Accountability
- Portfolio Metrics
- Scope of Components
- Product/Service Requirements



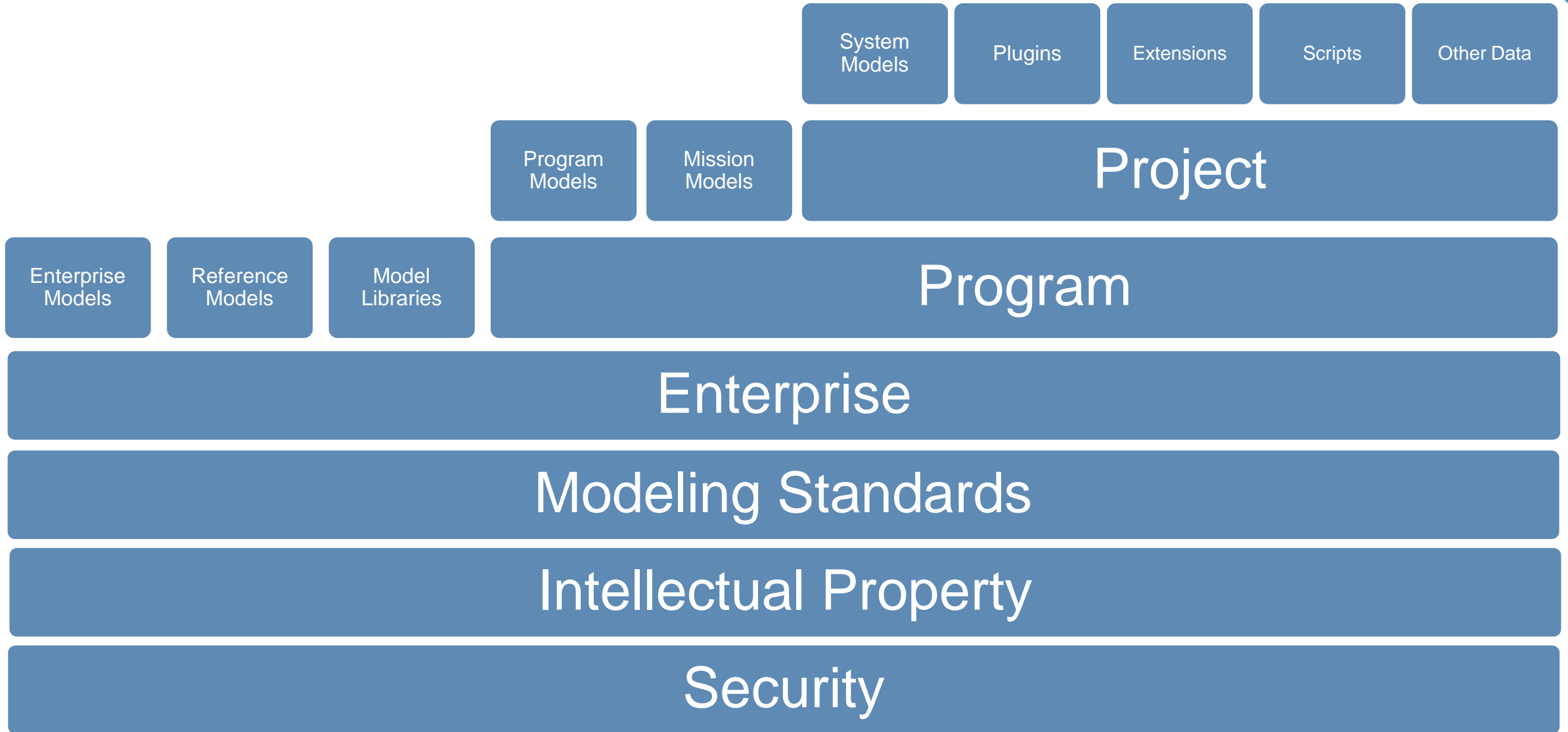
- MPM Scope Plan
- MPM Plan
- Modeling Resources



Examples

- *Portfolio Components*
- *Model & Data Registries*
- *Accession Lists*
- *Modeling Software*
- *Model Libraries*

Figure 3. Portfolio Components



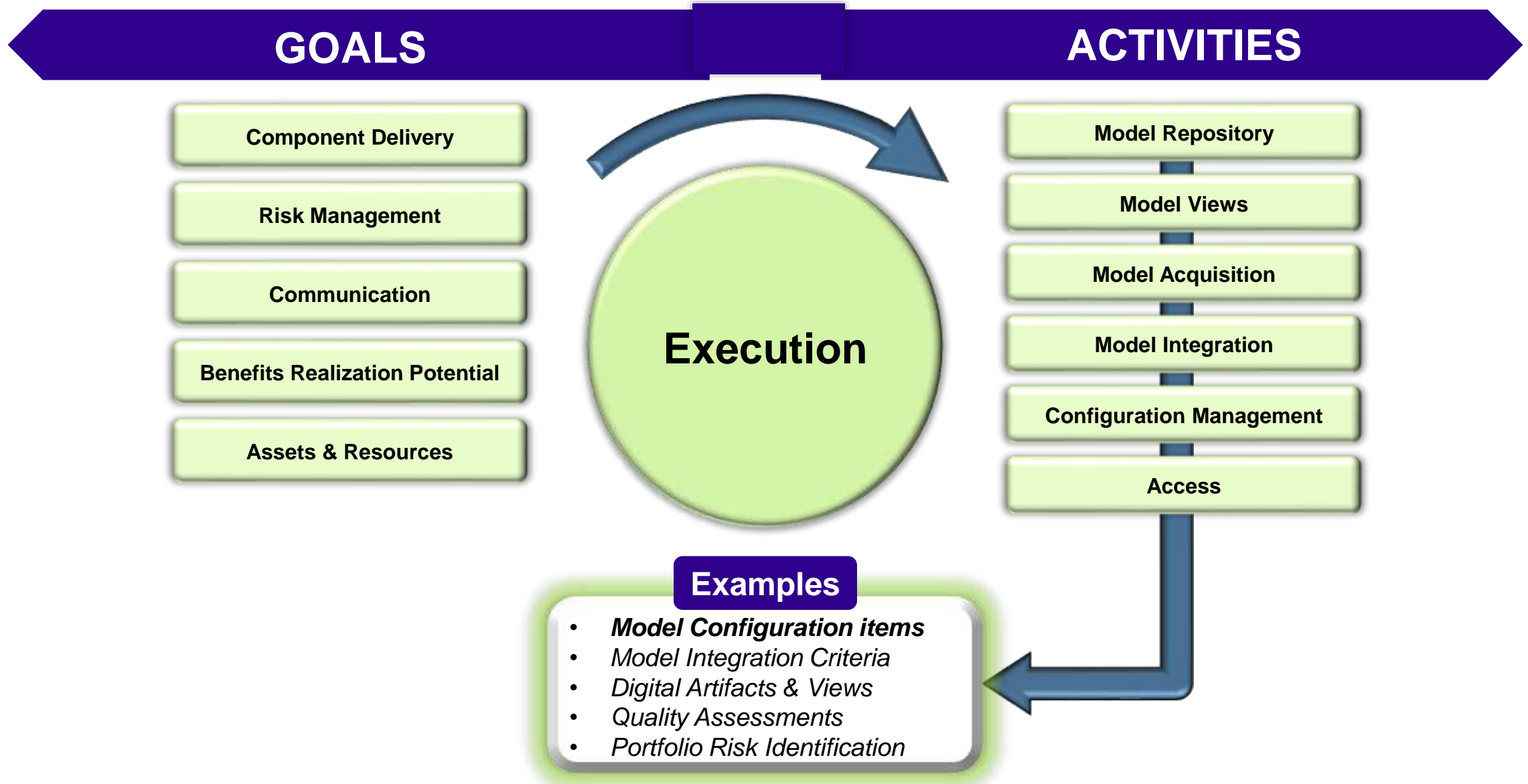
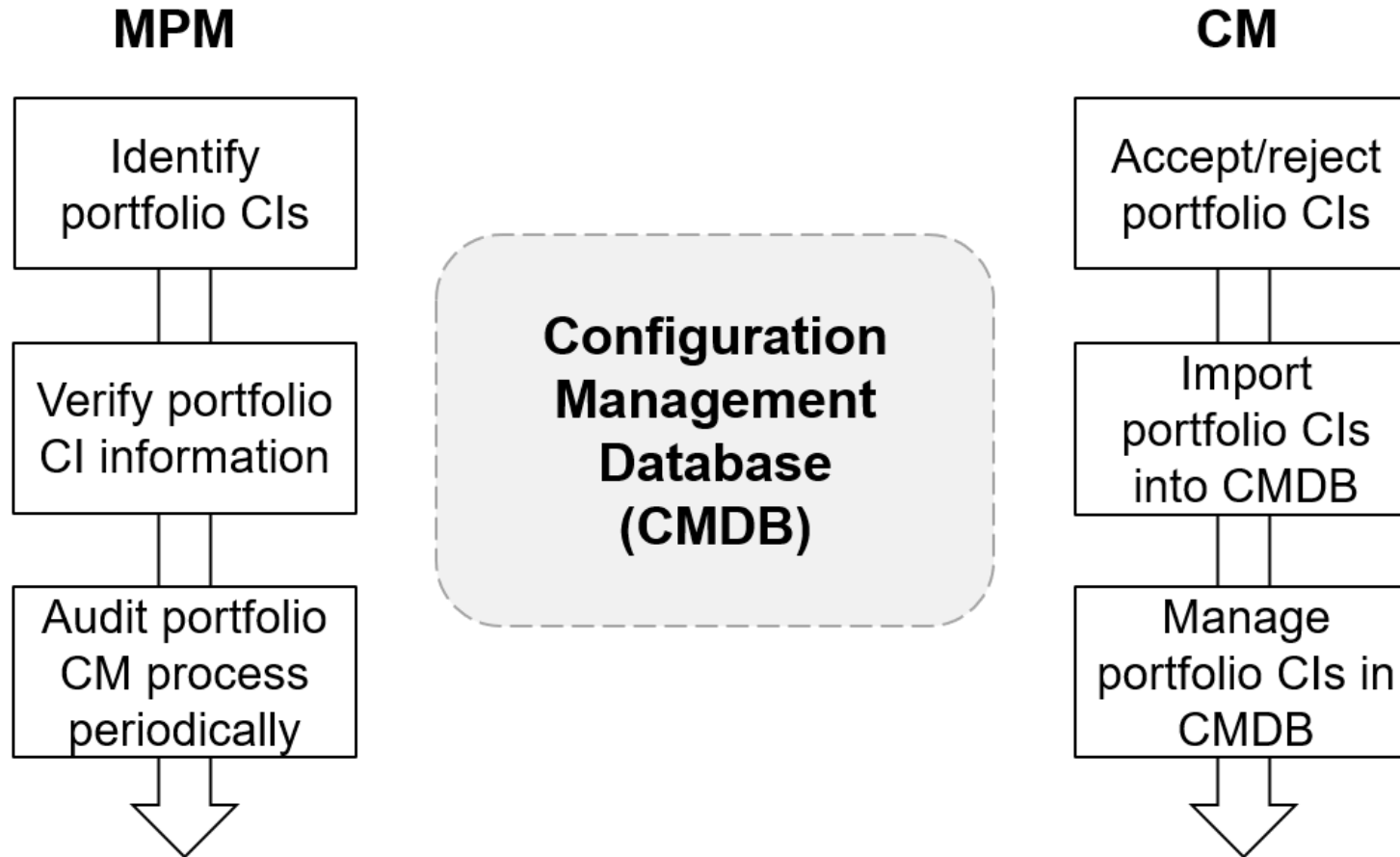




Figure 5. Responsibilities of Portfolio CM



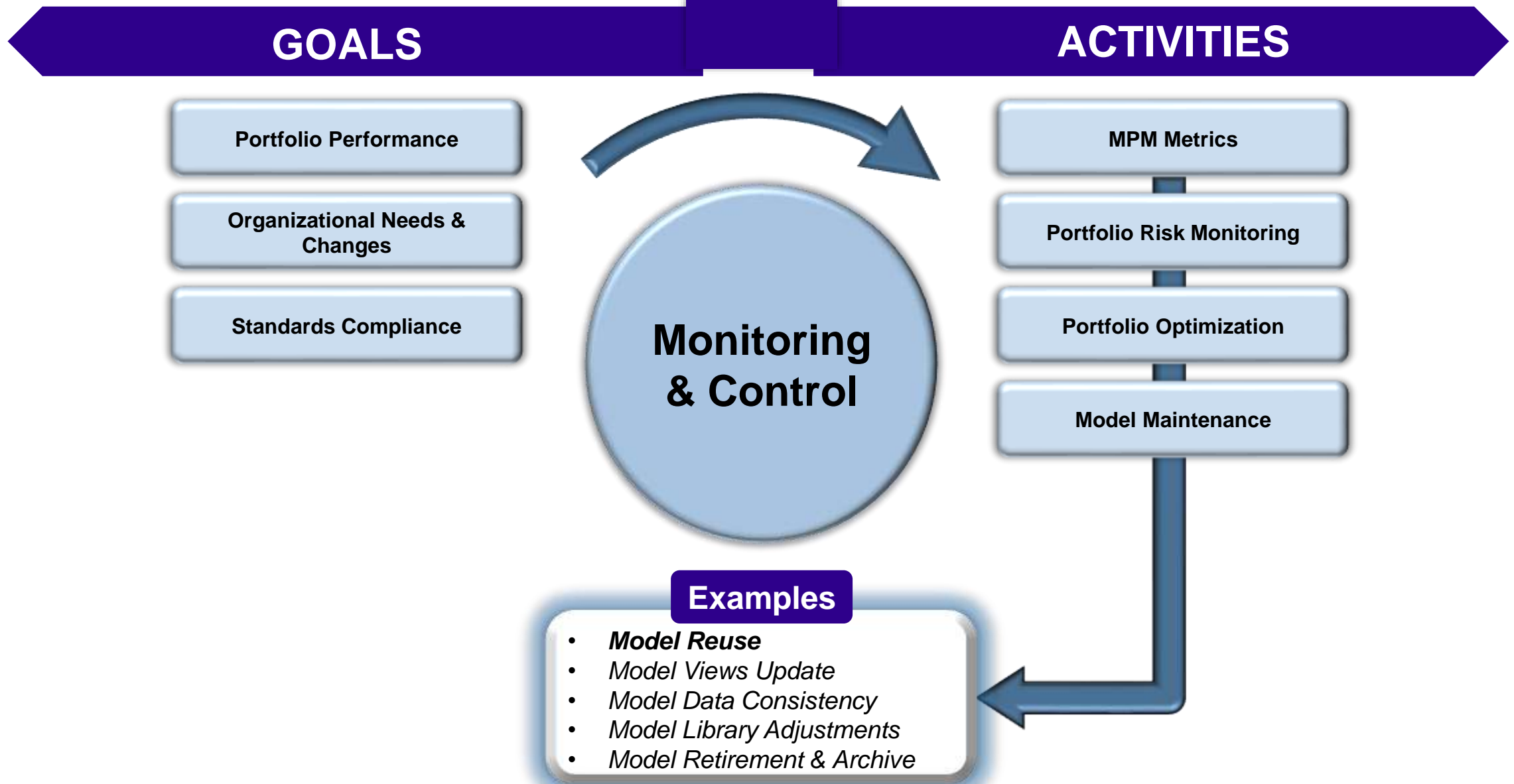
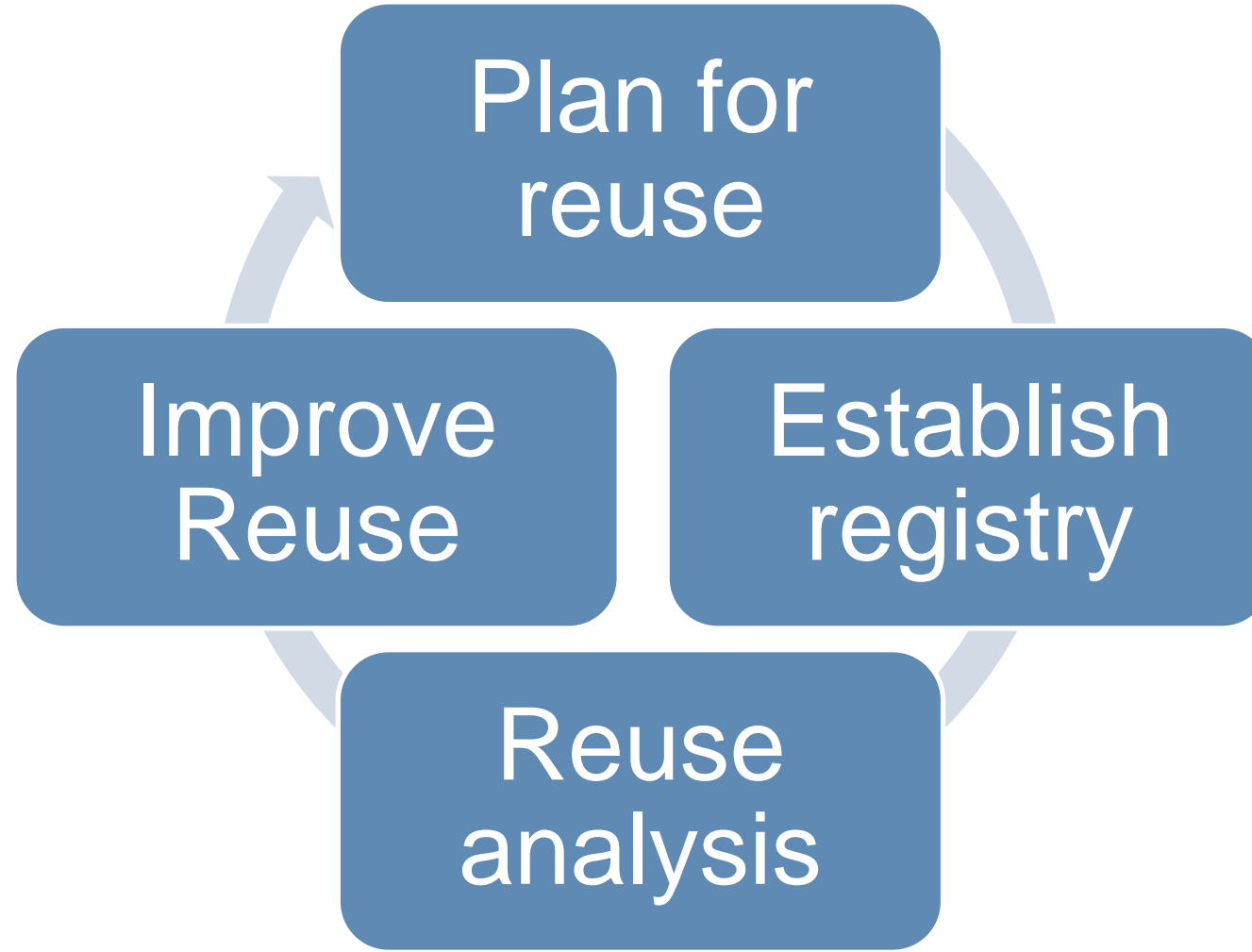


Figure 6. Model Portfolio Reuse





Summary

The Model Portfolio Management Guide:

- Solution to not having a common definition of what is “Model Management”
- Tailorable to choose what is most important to an organization
- Serves as a reference document for model-based acquisition to ensure government insight, access, and use
- Already being used by US government
- Cleared for public release
- Being adopted by INCOSE



Questions

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Related Publications

- Model Portfolio Management Guide
 - *A. Hoheb, A. Chang, M. Zetilyan, J. Howie – TOR-2020-01577*
- Model Portfolio Management Guide Overview
 - *A. Hoheb, M. Zetilyan – 2021 INCOSE International Workshop (OTR 2021-00292)*
- Model Portfolio Management (MPM) Guide: A Guide to Defining the Scope, Purpose, Tasks and Products of Model Portfolio Management
 - *A. Hoheb, M.Zetilyan, A. Chang, J. Howie (OTR 2021-00592)*
- Defeat Entropy: A Guide To Managing Your Model Portfolio
 - *June 2021 issue of Getting It Right*
 - <https://aerospace.org/story/defeat-entropy-guide-managing-your-model-portfolio>