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Introduction to the Organizational Cost Community Framework: Update

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Leone Young

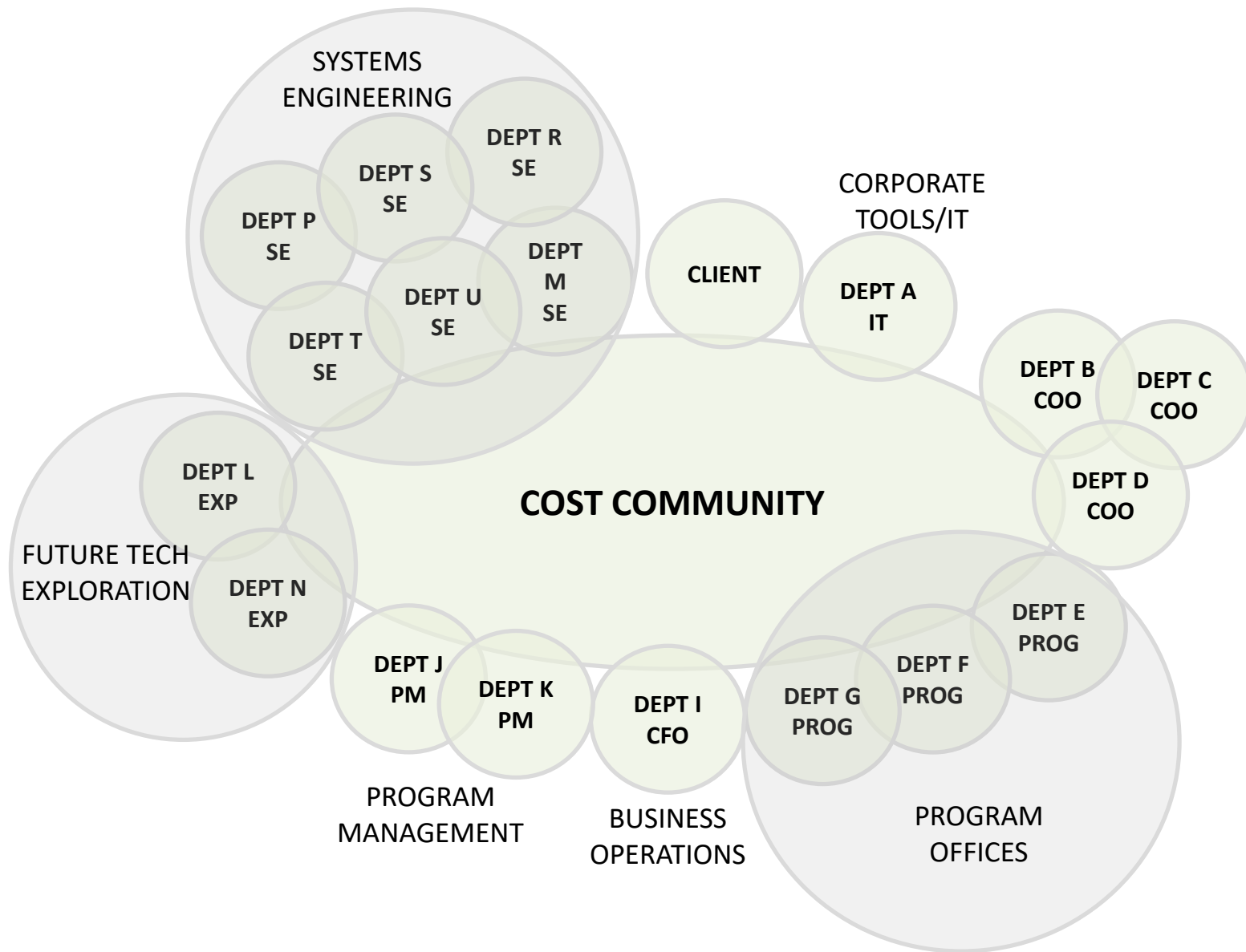Phil Chamberlin

SAND2018-2882
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U.S. DEPARTMENT OF ENERGY

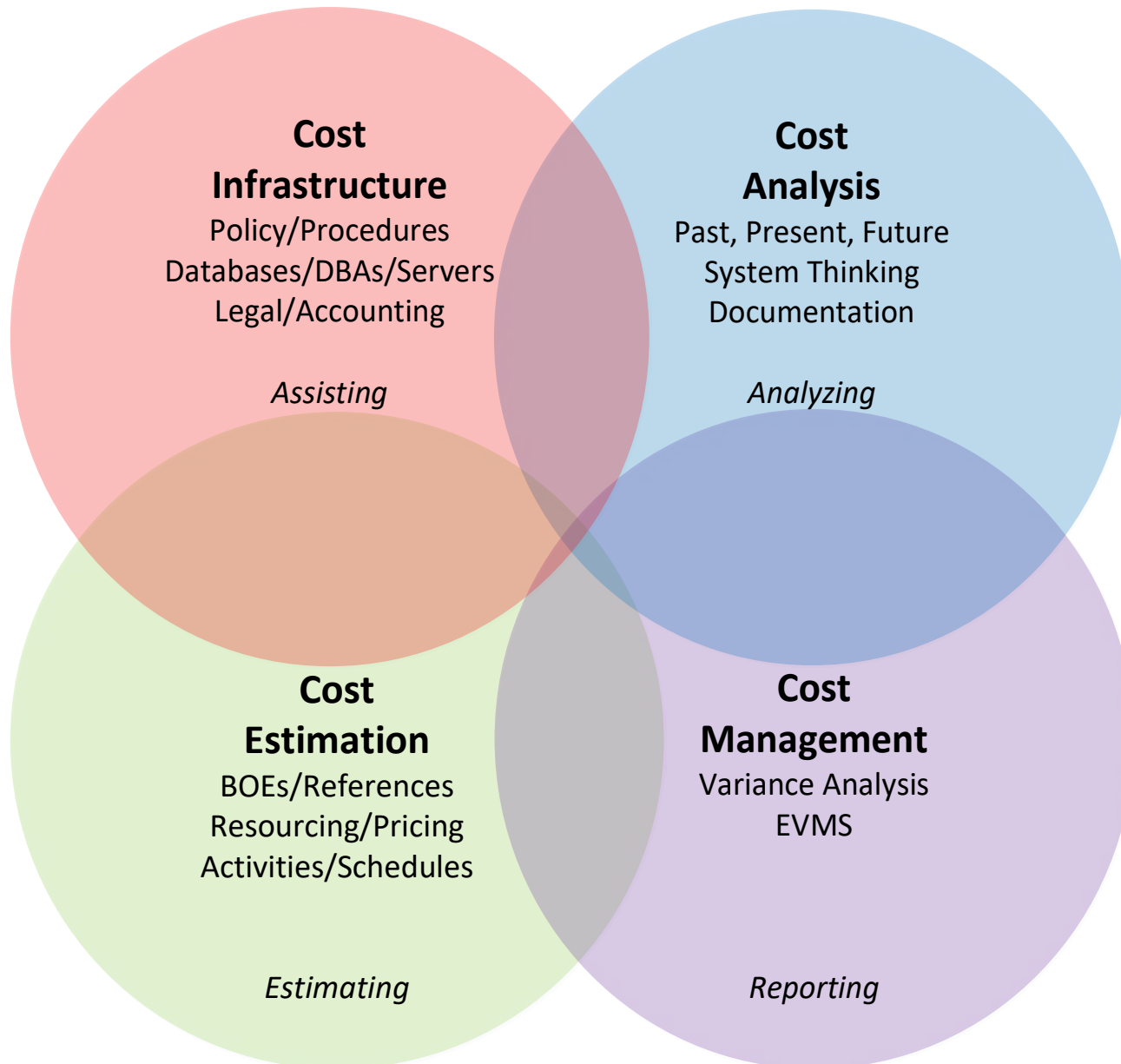National Nuclear Security Administration

Agenda

- Takeaways

- Background

- Cost Community
  - Cost Functions
  - Process Steps of the Cost Functions
  - Participants of the Process Steps of the Cost Functions
  - Organizational Cost Community Framework

- Case Studies

- Takeaways

Takeaways

- Innovative framework for cost estimating and analysis that documents, describes and visually displays the lifecycle of a program through an organization with discrete handoffs

- The framework may be applicable to any organization
  - R&D
  - FFRDC
  - Government entities, etc.

- The framework may assist in the identification of organizational gaps and overlaps
  - Process improvement

Background

SYSTEMS ENGINEERING

DEPT R SE

DEPT S SE

DEPT P SE

DEPT M SE

DEPT U SE

DEPT T SE

CORPORATE TOOLS/IT

CLIENT

DEPT A IT

DEPT B COO

DEPT C COO

DEPT D COO

COST COMMUNITY

DEPT L EXP

FUTURE TECH EXPLORATION

DEPT N EXP

DEPT E PROG

DEPT J PM

DEPT K PM

DEPT I CFO

DEPT G PROG

DEPT F PROG

PROGRAM MANAGEMENT

BUSINESS OPERATIONS

PROGRAM OFFICES

Cost Functions

**Cost
Infrastructure**
Policy/Procedures
Databases/DBAs/Servers
Legal/Accounting

Assisting

**Cost
Analysis**
Past, Present, Future
System Thinking
Documentation

Analyzing

**Cost
Estimation**
BOEs/References
Resourcing/Pricing
Activities/Schedules

Estimating

**Cost
Management**
Variance Analysis
EVMS

Reporting

5

# Process Steps of the Cost Functions

Cost <u>Infrastructure</u> Process View

Cost Infrastructure Process View

Initiate Cost Infrastructure
Define Cost Infrastructure
Execute Cost Infrastructure
Review Cost Infrastructure
Close Out Cost Infrastructure
Submit to Cost Infrastructure Data Repository

Cost <u>Analysis</u> Process View

Cost Analysis Process View

Initiate Cost Analysis
Define Cost Analysis
Execute Cost Analysis
Review Cost Analysis
Close Out Cost Analysis
Submit to Cost Analysis Data Repository

Infrastructure   Analysis

Estimation   Management
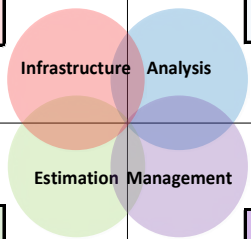
Cost <u>Estimation</u> Process View

Cost Estimation Process View

| |
|---|
| Initiate Cost Estimation |
| Define Cost Estimation |
| Execute Cost Estimation |
| Review Cost Estimation |
| Close Out Cost Estimation |
| Submit to Cost Estimation Data Repository |

Cost <u>Management</u> Process View

Cost Management Process View

Initiate Cost Management
Define Cost Management
Execute Cost Management
Review Cost Management
Close Out Cost Management
Submit to Cost Management Data Repository

Participants of the Process Steps of the Cost Functions

Cost Infrastructure Process View

Cost Infrastructure Process View

	Name	Initiate Cost Infrastructure
Process Step 1	Participants	Cost Infrastructure Team Cost Infrastructure Customer
Process Step 2	Name	Define Cost Infrastructure
	Participants	Cost Infrastructure Team Cost Infrastructure Customer
Process Step 3	Name	Execute Cost Infrastructure
	Participants	Cost Infrastructure Team
Process Step 4	Name	Review Cost Infrastructure
	Participants	Cost Infrastructure Team Cost Infrastructure Customer Cost Infrastructure Review Team
Process Step 5	Name	Close Out Cost Infrastructure
	Participants	Cost Infrastructure Team
Process Step 6	Name	Submit to Cost Infrastructure Data Repository
	Participants	Cost Infrastructure Team

Cost Analysis Process View

Cost Analysis Process View

|	Name	Initiate Cost Analysis
Process Step 1	Participants	Cost Analysis Team Cost Analysis Customer
Process Step 2	Name	Define Cost Analysis
	Participants	Cost Analysis Team Cost Analysis Customer
Process Step 3	Name	Execute Cost Analysis
	Participants	Cost Analysis Team
Process Step 4	Name	Review Cost Analysis
	Participants	Cost Analysis Team Cost Analysis Customer Cost Analysis Review Team
Process Step 5	Name	Close Out Cost Analysis
	Participants	Cost Analysis Team
Process Step 6	Name	Submit to Cost Analysis Data Repository
	Participants	Cost Analysis Team
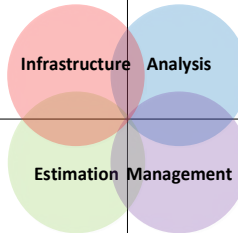
Cost Estimation Process View

Cost Estimation Process View

|	Name	Initiate Cost Estimation
Process Step 1	Participants	Cost Estimation Team Cost Estimation Customer
Process Step 2	Name	Define Cost Estimation
	Participants	Cost Estimation Team Cost Estimation Customer
Process Step 3	Name	Execute Cost Estimation
	Participants	Cost Estimation Team
Process Step 4	Name	Review Cost Estimation
	Participants	Cost Estimation Team Cost Estimation Customer Cost Estimation Review Team
Process Step 5	Name	Close Out Cost Estimation
	Participants	Cost Estimation Team
Process Step 6	Name	Submit to Cost Estimation Data Repository
	Participants	Cost Estimation Team

Cost Management Process View

Cost Management Process View

	Name	Initiate Cost Management
Process Step 1	Participants	Cost Management Team Cost Management Customer
Process Step 2	Name	Define Cost Management
	Participants	Cost Management Team Cost Management Customer
Process Step 3	Name	Execute Cost Management
	Participants	Cost Management Team
Process Step 4	Name	Review Cost Management
	Participants	Cost Management Team Cost Management Customer Cost Management Review Team
Process Step 5	Name	Close Out Cost Management
	Participants	Cost Management Team
Process Step 6	Name	Submit to Cost Management Data Repository
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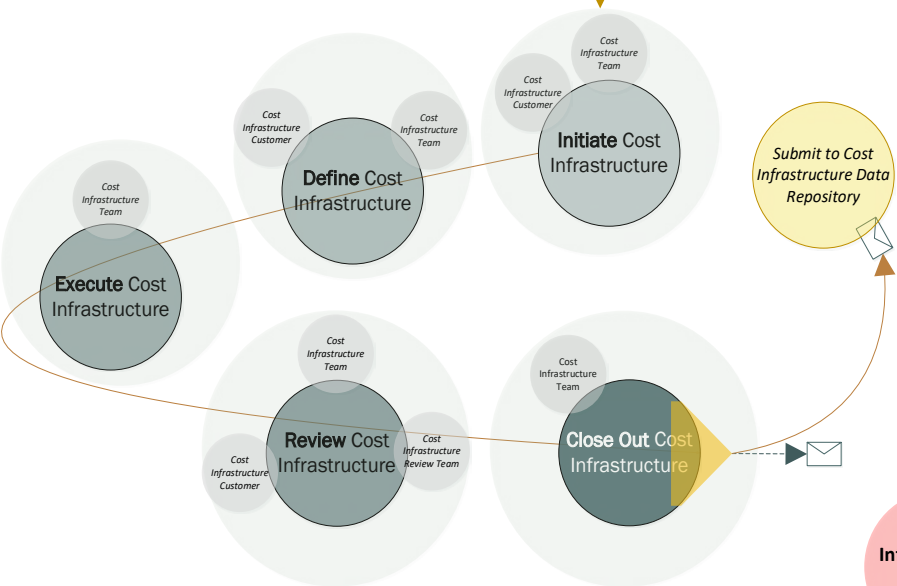
Infrastructure   Analysis
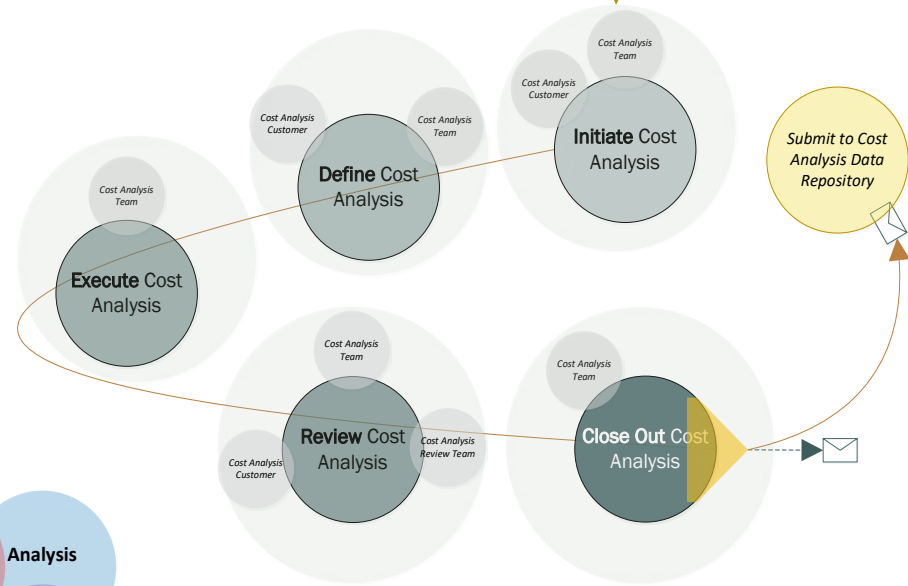
Estimation   Management
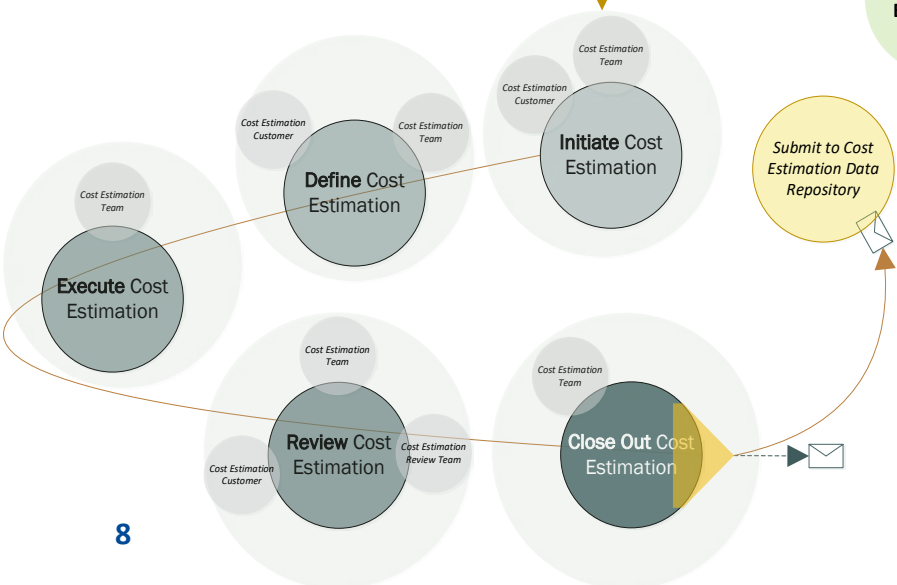
Organizational Cost Community Framework

Organizational Cost Community Framework

Cost <u>Infrastructure</u> Process View

Cost <u>Analysis</u> Process View

Case Study 1: An organization receives a request from an external customer for a cost estimate based on a redesign of an asset that the organization previously designed in the mid-1990's. In the mid-1990's, the organization was in the early stages of capturing cost data in digital format. The customer request placed a substantial time constraint on the Cost Estimation Team, and their priorities did not include sufficient time to discover historical cost data.
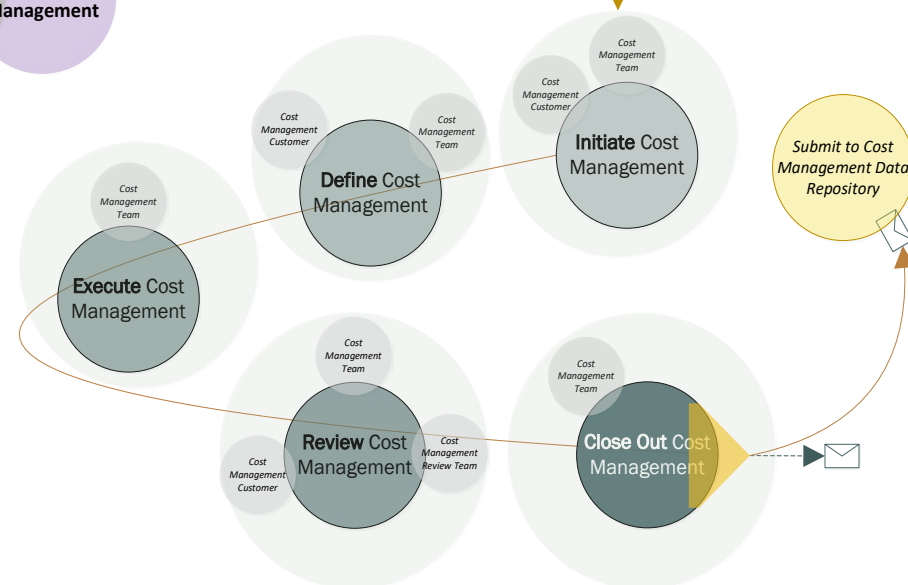

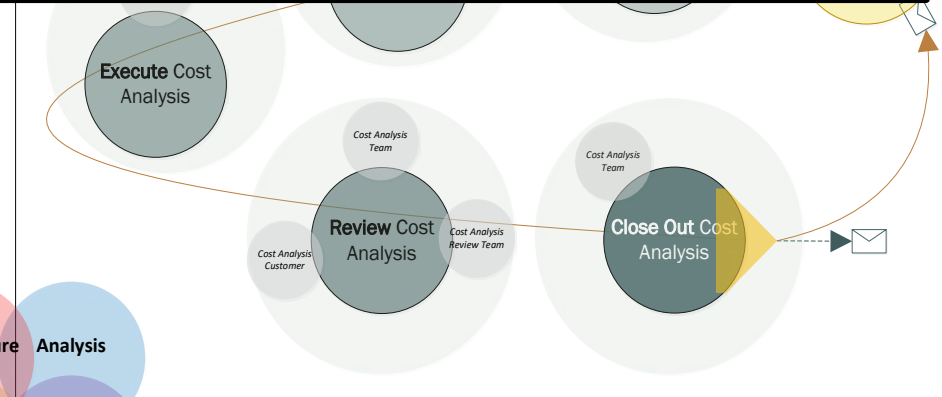Cost <u>Estimation</u> Process View

Cost <u>Management</u> Process View

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Organizational Cost Community Framework

Cost Infrastructure Process View

Cost Infrastructure Team

Initiate Cost Infrastructure — **13**

Cost Infrastructure Customer

Cost Infrastructure Team

Define Cost Infrastructure — **14**

Cost Infrastructure Team

Execute Cost Infrastructure — **15**

Cost Infrastructure Team

Review Cost Infrastructure — **16**

Cost Infrastructure Customer / Cost Infrastructure Review Team

Cost Infrastructure Team

Close Out Cost Infrastructure — **17**

Submit to Cost Infrastructure Data Repository — **18** / **12**

Cost Analysis Process View

Cost Analysis Team

Initiate Cost Analysis — **7**

Cost Analysis Customer

Cost Analysis Team

Define Cost Analysis — **8**

Cost Analysis Team

Execute Cost Analysis — **9** **19**

Cost Analysis Team

Review Cost Analysis — **20**

Cost Analysis Customer / Cost Analysis Review Team

Cost Analysis Team

Close Out Cost Analysis — **21**

Submit to Cost Analysis Data Repository — **22** / **10**

Infrastructure / Analysis

Case Study 2: Based on the feedback that the Cost Estimation Team received in Case Study 1 from the organization's leadership, the Cost Estimation Team initiated the Cost Analysis Process to explore what historic data may exist with respect to their asset in order to revisit the Cost Estimation Process.

Cost Estimation Customer

Initiate Cost Estimation — **1**

Cost Estimation Customer / Cost Estimation Team

Define Cost Estimation — **2**

Cost Estimation Team

Execute Cost Estimation — **3**

Cost Estimation Team

Review Cost Estimation — **4**

Cost Estimation Customer / Cost Estimation Review Team

Cost Estimation Team

Close Out Cost Estimation — **5**

Submit to Cost Estimation Data Repository — **6**

Cost Management Customer

Initiate Cost Management

Cost Management Customer / Cost Management Team

Define Cost Management

Cost Management Team

Execute Cost Management

Cost Management Team

Review Cost Management

Cost Management Customer / Cost Management Review Team

Cost Management Team

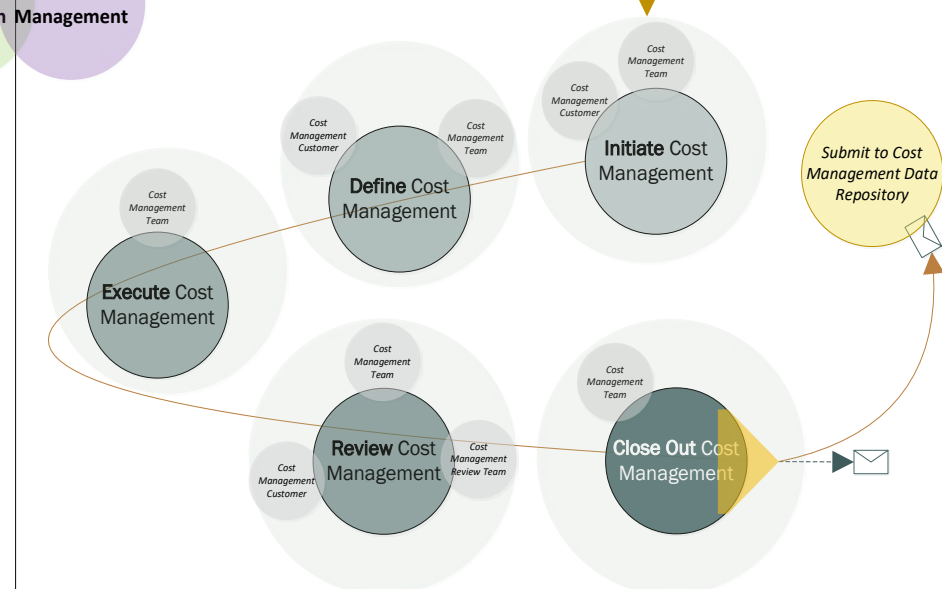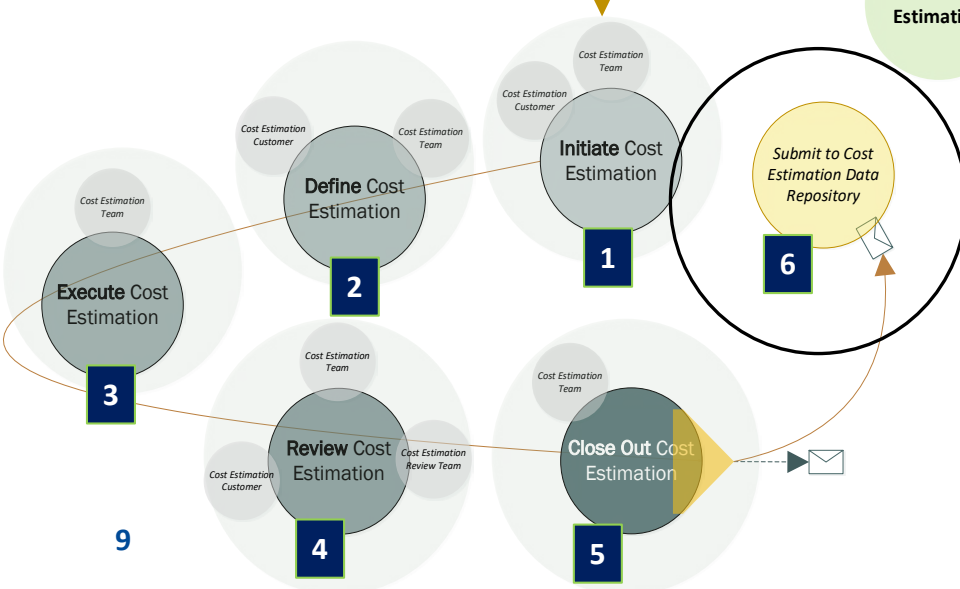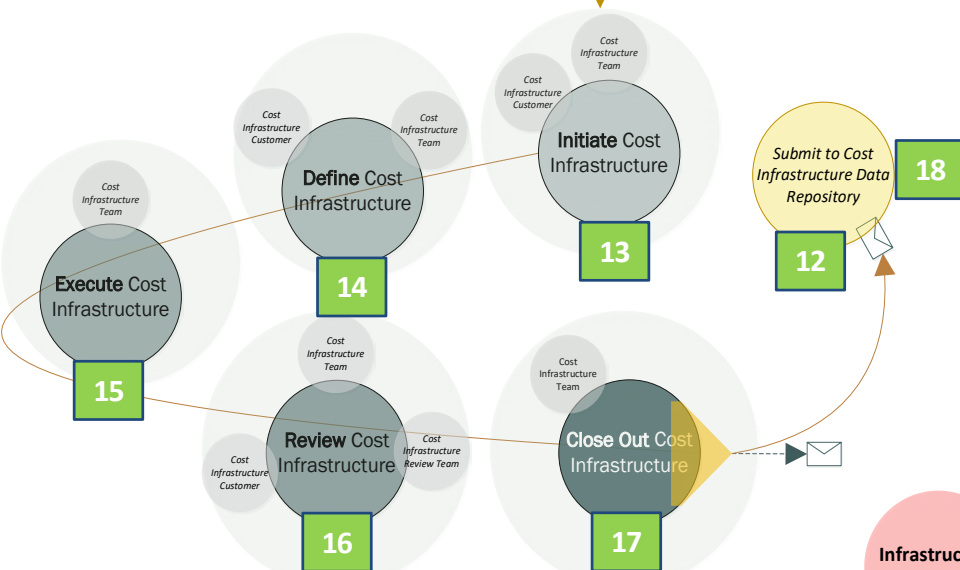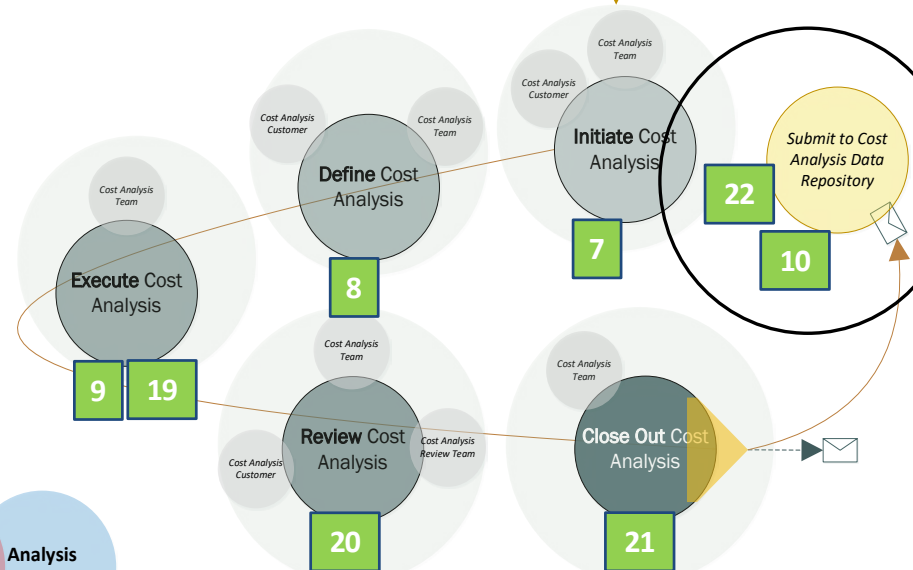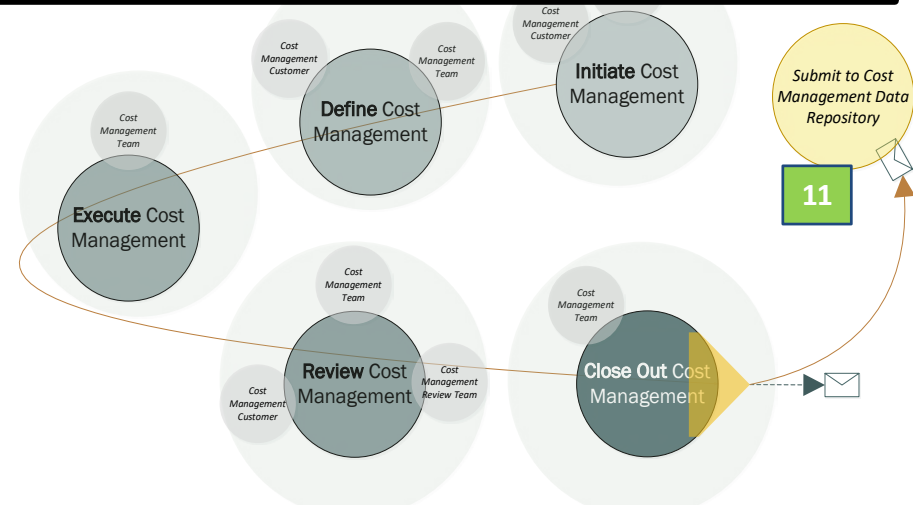Close Out Cost Management

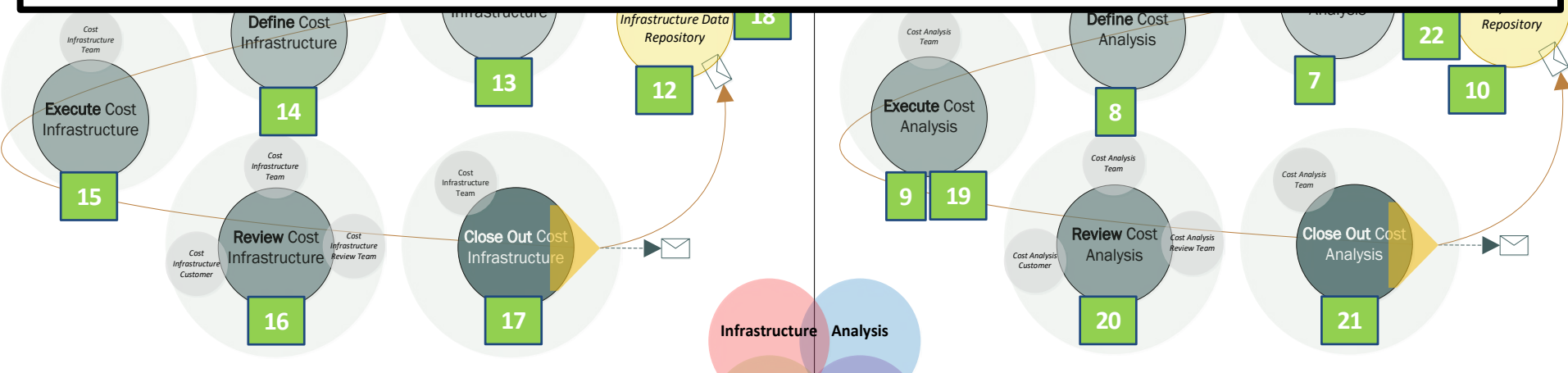Submit to Cost Management Data Repository — **11**

Organizational Cost Community Framework
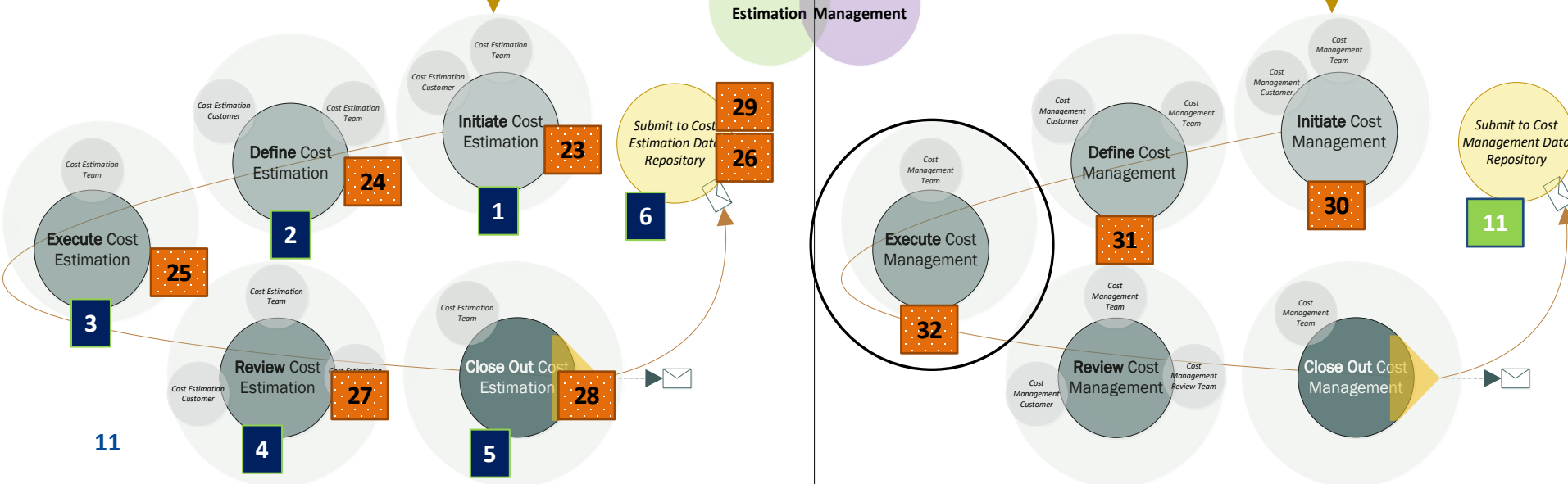
Cost _Infrastructure_ Process View

Cost _Analysis_ Process View

Case Study 3: The Cost Analysis Team, through the Cost Analysis Process, completed the scope defined by the Cost Estimation Team in Case Study 2. The Cost Estimation Team revisits the Cost Estimation Process to seek approval from organizational leadership.
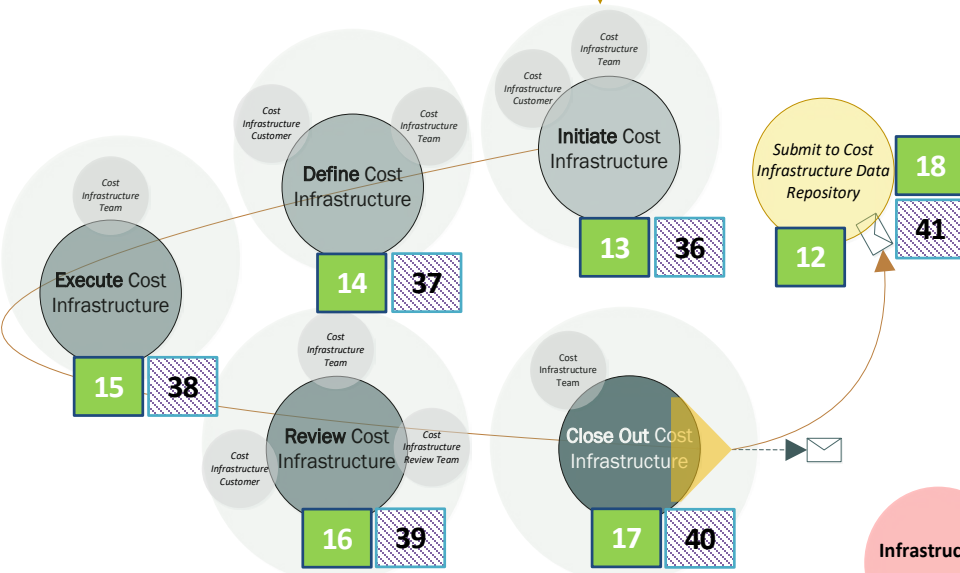
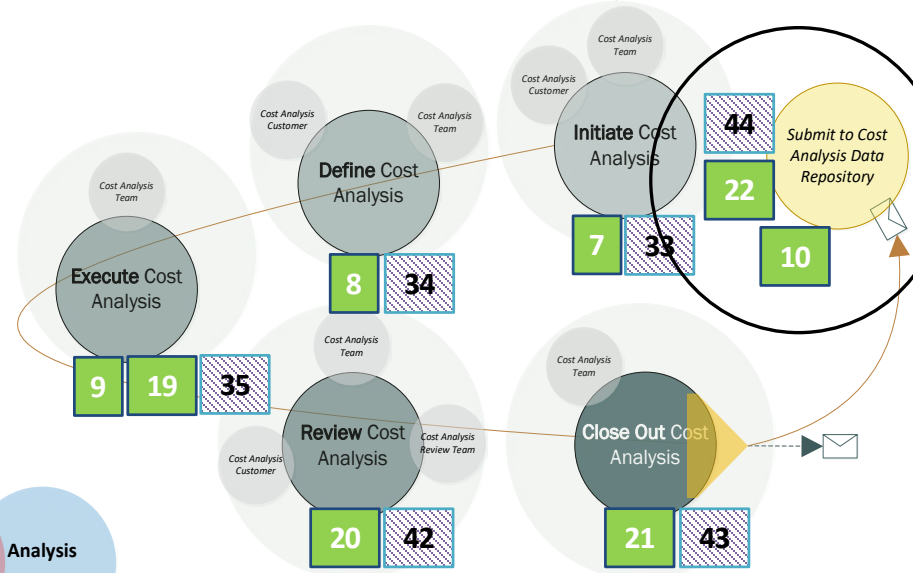Cost _Estimation_ Process View

Cost _Management_ Process View
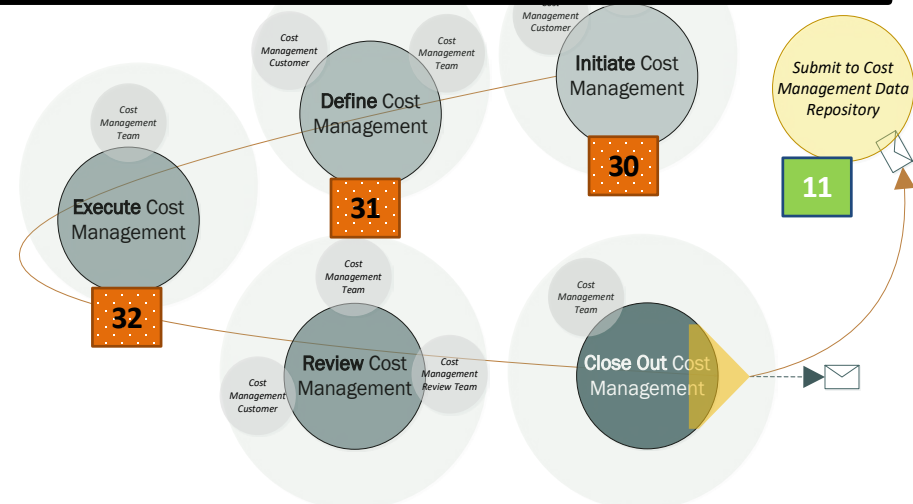

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Organizational Cost Community Framework

Cost Infrastructure Process View

Cost Infrastructure Team

Cost Infrastructure Customer

Cost Infrastructure Team

Initiate Cost Infrastructure

Define Cost Infrastructure

Execute Cost Infrastructure

Cost Infrastructure Team

Cost Infrastructure Customer

Cost Infrastructure Team

Submit to Cost Infrastructure Data Repository

18

13 · 36

14 · 37

12 · 41

15 · 38

Review Cost Infrastructure

Cost Infrastructure Team

Cost Infrastructure Review Team

Close Out Cost Infrastructure

Cost Infrastructure Team

16 · 39

17 · 40

Cost Analysis Process View

Cost Analysis Team

Cost Analysis Customer

Cost Analysis Team

Initiate Cost Analysis

Define Cost Analysis

Execute Cost Analysis

Cost Analysis Team

Submit to Cost Analysis Data Repository

44

22

7 · 33

10

8 · 34

9 · 19 · 35

Review Cost Analysis

Cost Analysis Team

Cost Analysis Customer

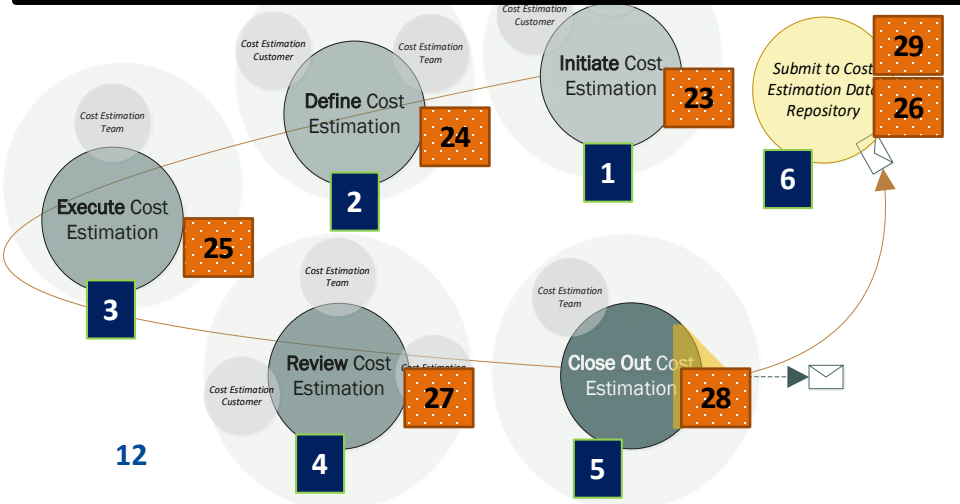Cost Analysis Review Team

Close Out Cost Analysis

Cost Analysis Team

20 · 42

21 · 43

Infrastructure · Analysis

Case Study 4: The Cost Analysis Team, based on their discovery of historic cost data from Case Study 2, initiated the Cost Analysis Process to reconcile the continuum of historic cost data. Furthermore, the Cost Analysis Team initiated the Cost Infrastructure Process to develop an enabling capability to use the historic data for future estimation and analysis.

Cost Estimation Customer

Cost Estimation Customer

Cost Estimation Team

Initiate Cost Estimation

Define Cost Estimation

Execute Cost Estimation

Cost Estimation Team

Submit to Cost Estimation Data Repository

29

23

26

24

6

2

25

3

Cost Estimation Team

Review Cost Estimation

Cost Estimation Team

Close Out Cost Estimation

Cost Estimation Team

Cost Estimation Customer

27

28

4

5

Cost Management Customer

Cost Management Team

Cost Management Team

Initiate Cost Management

Define Cost Management

Execute Cost Management

Cost Management Team

Submit to Cost Management Data Repository

30

31

11

32

Cost Management Team

Review Cost Management

Cost Management Team

Close Out Cost Management

Cost Management Customer

Cost Management Review Team

Takeaways

- Innovative framework for cost estimating and analysis that documents, describes and visually displays the lifecycle of a program through an organization with discrete handoffs
- The framework may be applicable to any organization
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  - FFRDC
  - Government entities, etc.
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QUESTIONS/COMMENTS?

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