The Promises And Pitfalls Of SOA

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OFFICE OF ENVIRONMENTAL INFORMATION

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Session Objectives: Attendees Will Learn

- “SOA What?” - what benefits SOA can really deliver
- What barriers stand in the way
- What proven methods can be used to overcome the barriers
- How to get going and start getting benefits NOW
- Q&A After Each Major Section

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"SOA What?": What Is Service Oriented Architecture (SOA) And What Benefits Can It Deliver?

ARCHITECTURE
(Planning and Oversight)

ORIENTED AROUND

SERVICES

Enterprise Level

- Across Enterprises
- Throughout Entire Enterprise

Portfolio Level

- Business Processes
- IT Portfolios

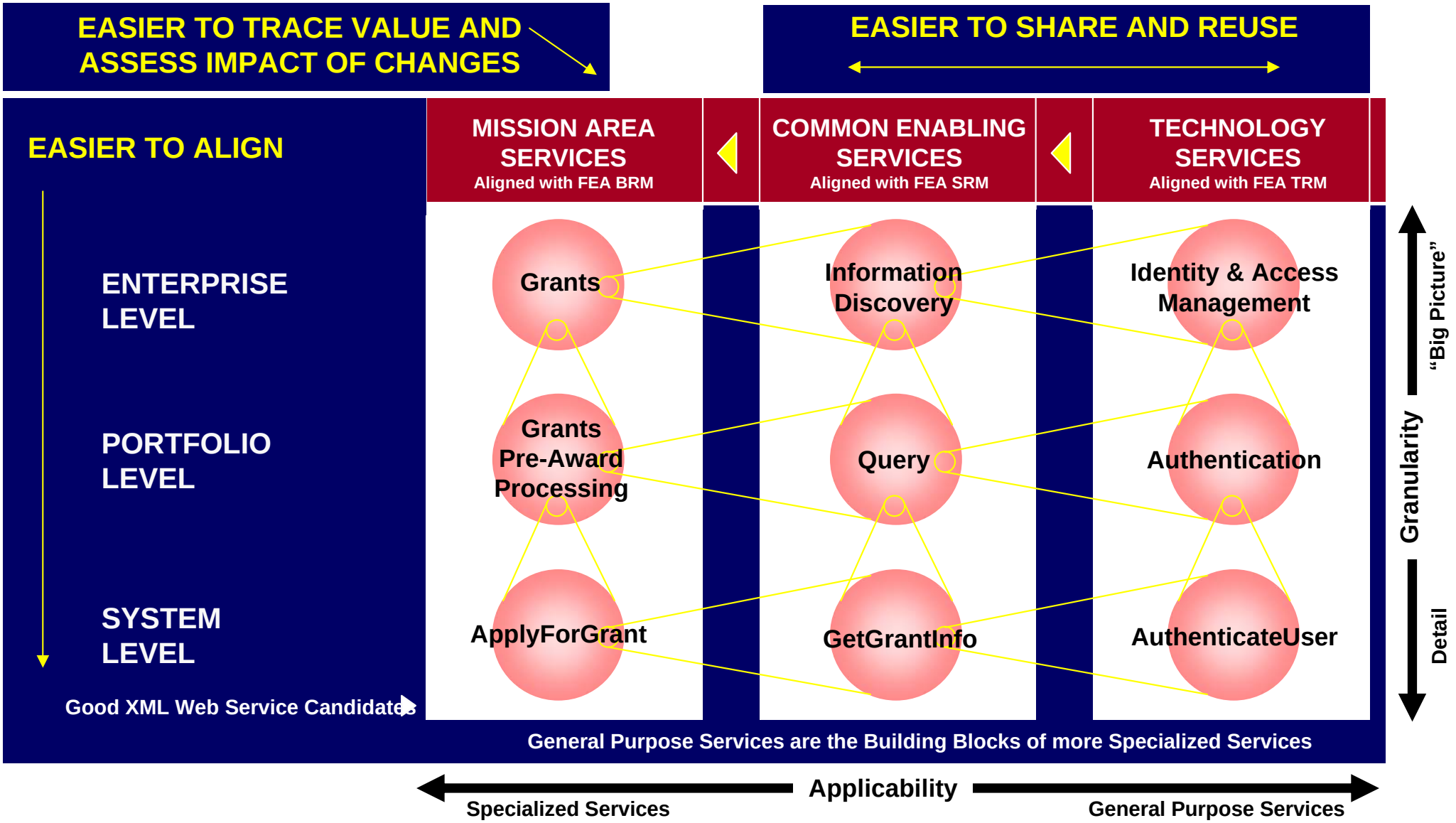
System Level

- IT Systems
- Components

KEY BENEFIT:
Get the most "bang for the buck" out of the Services you provide and use

- Maximize efficiency and effectiveness of ***services*** provided and consumed
- Use ***services*** like building blocks to "assemble" operational processes and IT systems
- Make it easier for those who need ***services*** to find and connect with those who provide services
- Use Internet standards and SOA tools to make ***services*** easier to share and use
- Useful for all ***services***, not just software (e.g., XML web services)

SOA: An Example



To Avoid The Pitfalls And Fulfill The Promise Of SOA, Keep On The Proven Path To Success

SOA FEATURE	PROMISE	PITFALL	PATH TO SUCCESS
Decision Making Focused On Services (Service Orientation)	Boost The Value Delivered By Services	Silo Orientation	Education And Outreach
Modular Services Used As Building Blocks	Spend Less Time And Money	Selecting The Right Services	Service Catalogs
SOA Standards And Enabling Services	Do More Than You Could Before	Additional Costs	Early Adopters (Start Small, Scale Rapidly)
Shared Services	Leverage Strengths And Gain Efficiencies	Cultural Resistance	Balanced Governance
Service Roadmaps	Adapt And Optimize	Making “In-Flight” Changes	Agile Services Lifecycle

SOA FEATURE
Decision Making Focused On Services

PROMISE
Boost The Value Delivered By Services

PITFALL
Silo Orientation

Example: The IT Organization Is Focused On Its Own Silo, Not On Value Delivered To Its Customers

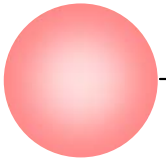
Customers

"The IT Organization just told my organization to delete files off our shared network folders because we are taking up too much room!"

"I just accidentally deleted an important file, and the IT Organization just said they didn't backup the files last night!"

"I have a suggestion for improving this service, but I have no idea who to make it to so that it will be heard, so I'll just give up."

Shared Workspace Service



SERVICE PROFILE

Does the Customer Know…?		Does the Provider Know…?
YES	Service Name	YES
NO	Service Description	YES
NO	Customers & Stakeholders	NO
YES	Value Delivered	NO
YES	Functionality	YES
NO	Performance Thresholds	YES
YES	Interface	YES
YES	Inputs and Outputs	NO
NO	Subscription Agreements	NO
YES	Problem Handling	YES
NO	Change Management	YES

IT Organization

"We need some extra storage for a new program, so we'll borrow some from the shared workspace"

"We don't backup the files on weekends anymore because it's too expensive"

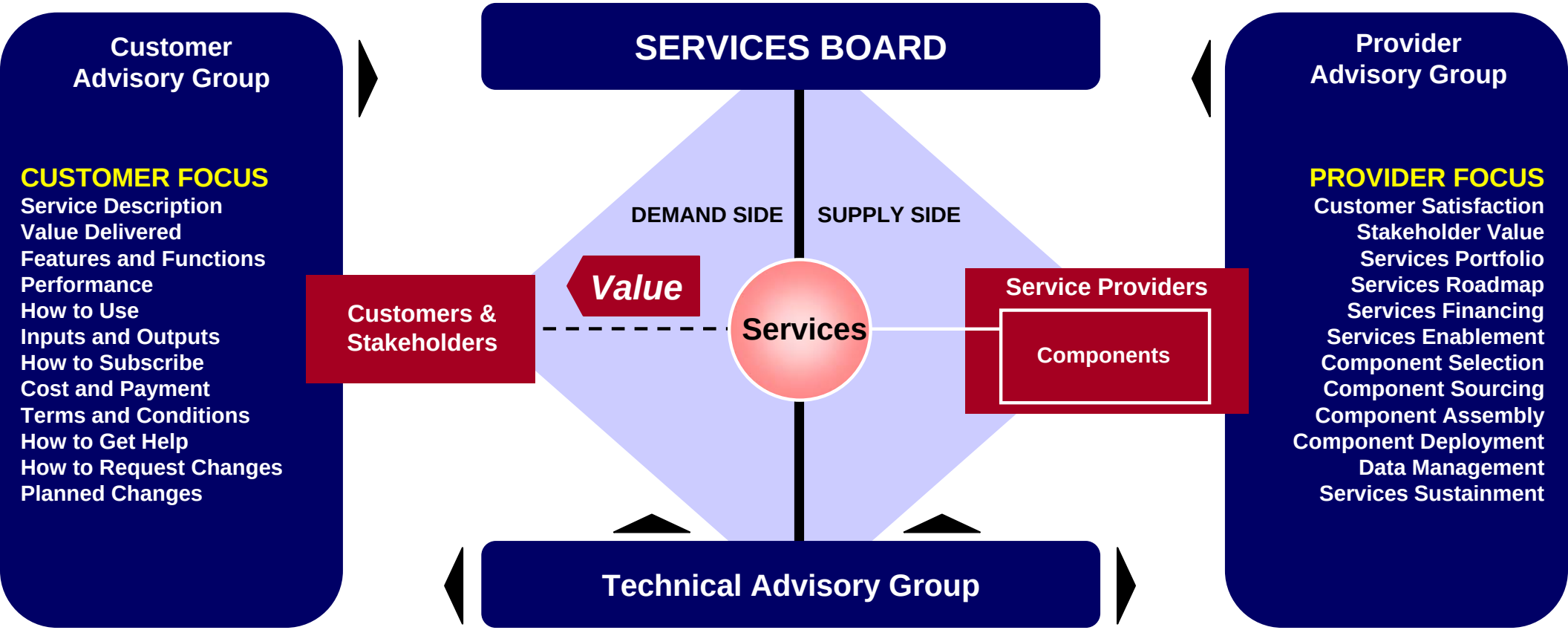
"We're doing well when we don't hear from our customers"

SOA FEATURE
Decision Making
Focused On Services

PROMISE
Boost The Value
Delivered By Services

PATH TO SUCCESS
Education And
Outreach

Service Orientation: Educating The Decision Makers And Reaching Out To The Customers



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Promise Fulfilled: The Value Delivered By The IT Organization Increased, Building Customer Trust

Shared Workspace Service

Customers

"I know that our organization has 650 GB of storage available, so we can manage how we use our shared folder"

"I know that the shared work-space isn't backed up on weekends so I'll be sure to make a backup copy of my work"

"Our organization has some special storage needs that we are willing to pay for, and we have submitted a change request scheduled for review"

SERVICE PROFILE

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YES	Subscription Agreements	YES
YES	Problem Handling	YES
YES	Change Management	YES

IT Organization

"We need some extra storage, but we can't just take it from the shared work-space because 3 customers may need it this month"

"Perhaps we should work with our customers to see if they would be willing to help defray the costs of weekend backups"

"We're doing well when our customers express satisfaction and participate in making our services better"

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SOA FEATURE
Modular Services Used As Building Blocks

PROMISE
Spend Less Time And Money

PITFALL
Selecting The Right Services

The Grants Management Office Hasn't Selected The Services That Will Save The Most Time And Money

Grants Management Service
(New & Improved)

Provider: Grants Management Office

New Custom Grants Management System Components

(too expensive & time consuming)

PATH TO SUCCESS
Service Catalogs

The Grants Management Office Uses The Enterprise Service Catalog To Find Modular Services It Needs

Enterprise Service Catalog

MISSION AREA SERVICES
Aligned with FEA BRM

Grants:
- Planning
- Award Processing
- **Monitoring**

Performance Evaluation:
- Evaluation Strategy
- Information Collection
- Performance Analysis

Research:
- Strategy
- Analysis & Assimilation
- Impact Assessment

Administration:
- Financial Management
- Personnel Management
- Operations Management
- IT Management

COMMON ENABLING SERVICES
Aligned with FEA SRM

Productivity:
- **Collaboration**
- **Work Management**
- Case Management

Knowledge & Data:
- Content Management
- **Document Management**
- Data Exchange
- **Data Warehouse**

Customer & Interface:
- Portal
- Customer Management
- Mobility

Analytics:
- Survey Support
- Business Intelligence
- Statistical Analysis

TECHNOLOGY SERVICES
Aligned with FEA TRM

IT Lifecycle Support
- Planning
- Implementation
- Sustainment

SOA Enabling Platforms:
- Service Discovery
- Messaging
- Mediation
- Service Management

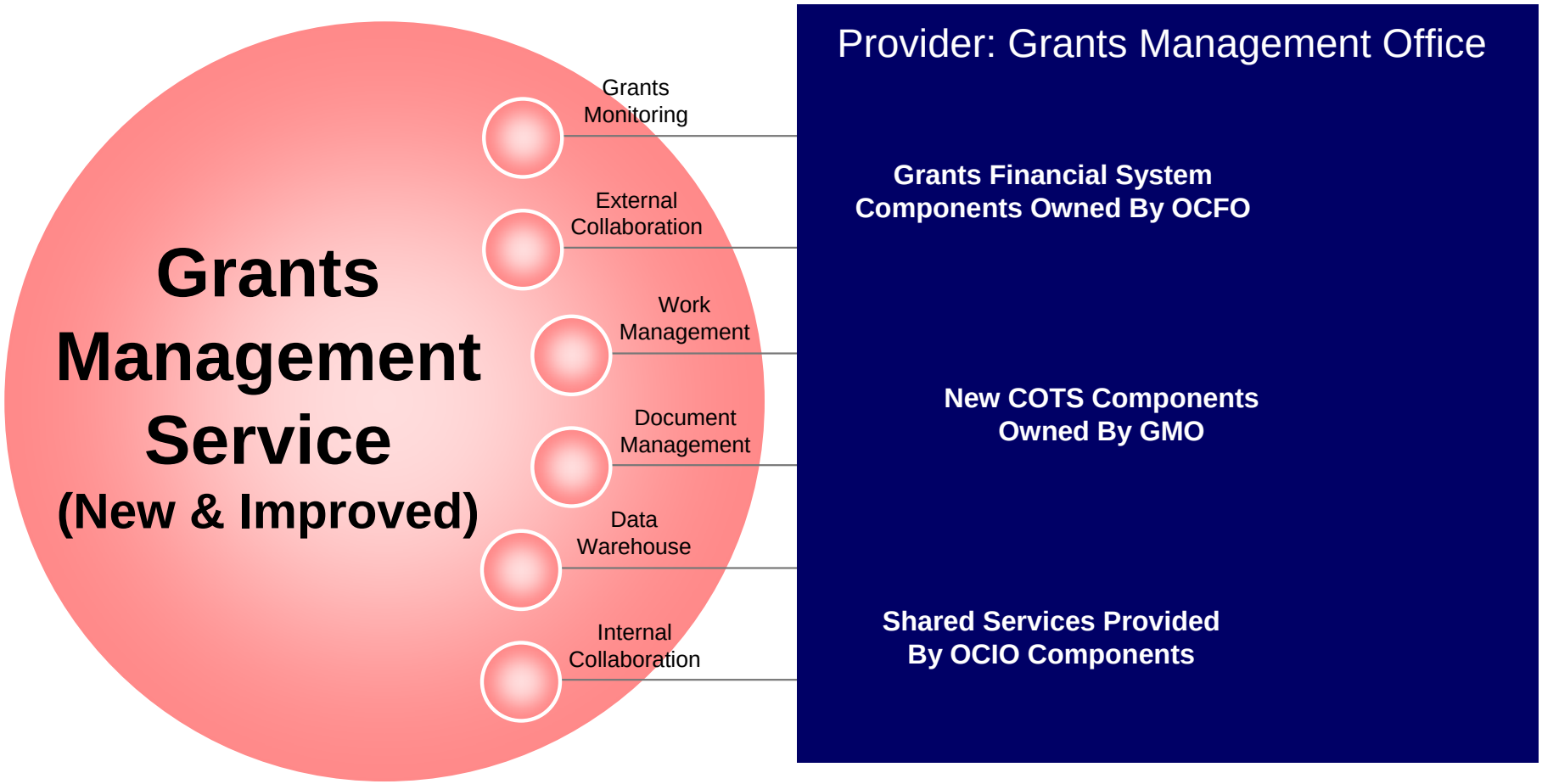
IT Infrastructure Platforms
- Computing
- Storage
- Network

Security & Privacy
- Identity Management
- Authentication
- Encryption

General Purpose Services are the Building Blocks of more Specialized Services

Specialized Services ← **Applicability** → **General Purpose Services**

Promise Fulfilled: The Grants Management Office Saves Time And Money By Using Modular Services To Make Improvements



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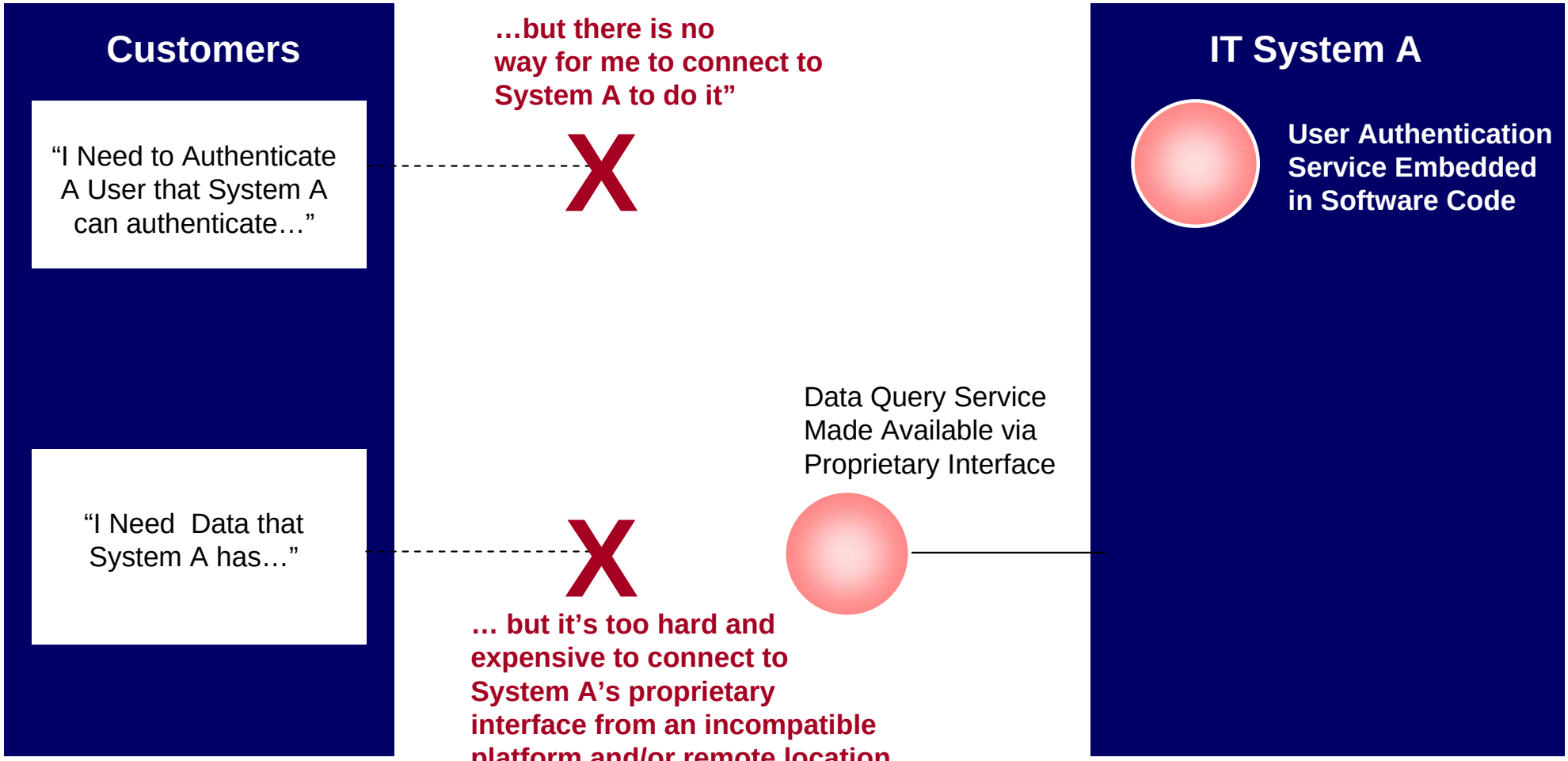
SOA FEATURE
SOA Standards And Enabling Services

PROMISE
Do More Than You Could Before

PITFALL
Additional Costs

Customers Can't Use Services That Already Exist Because It's Too Hard / Expensive To Connect

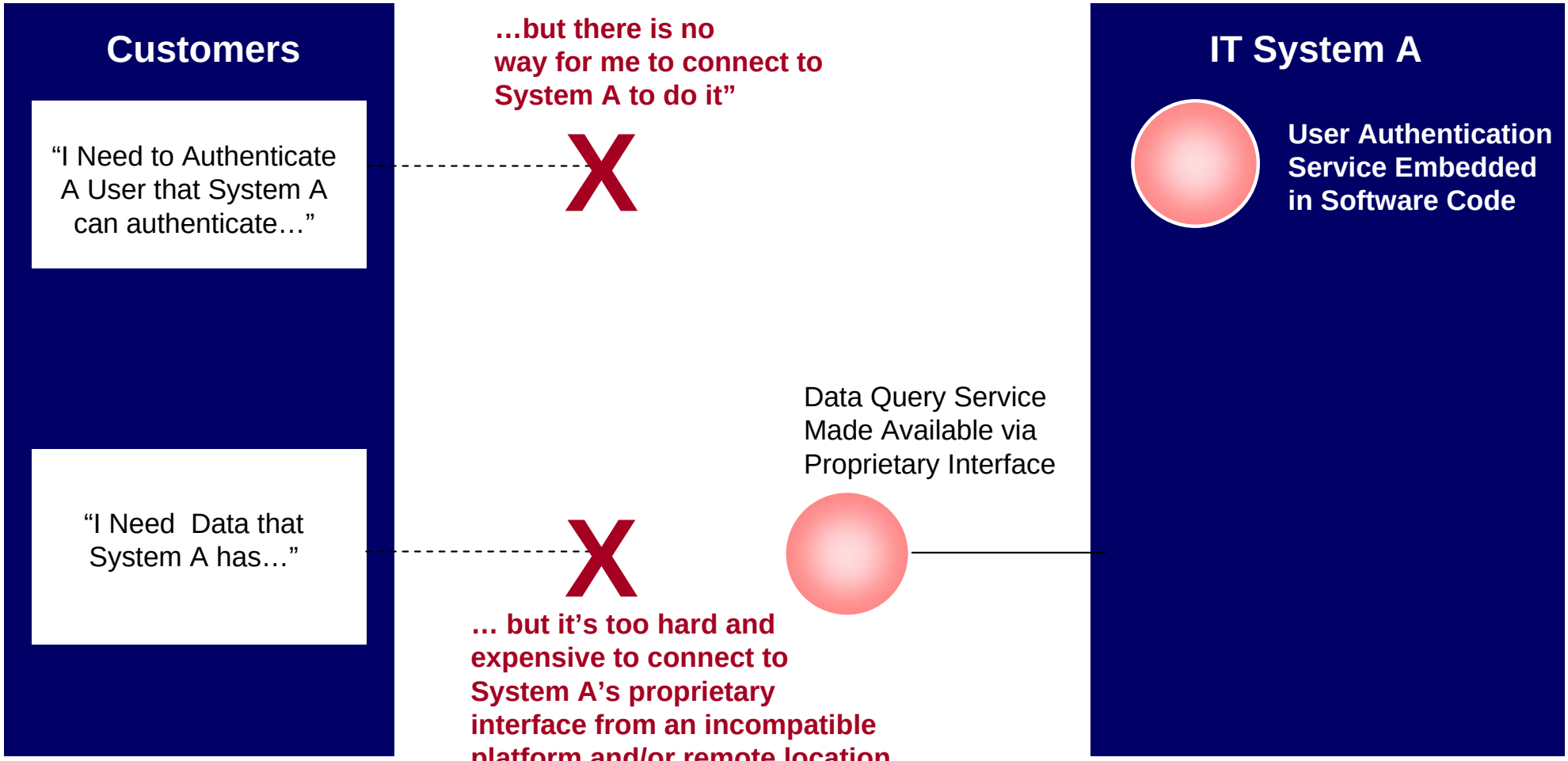


SOA FEATURE
SOA Standards And Enabling Services

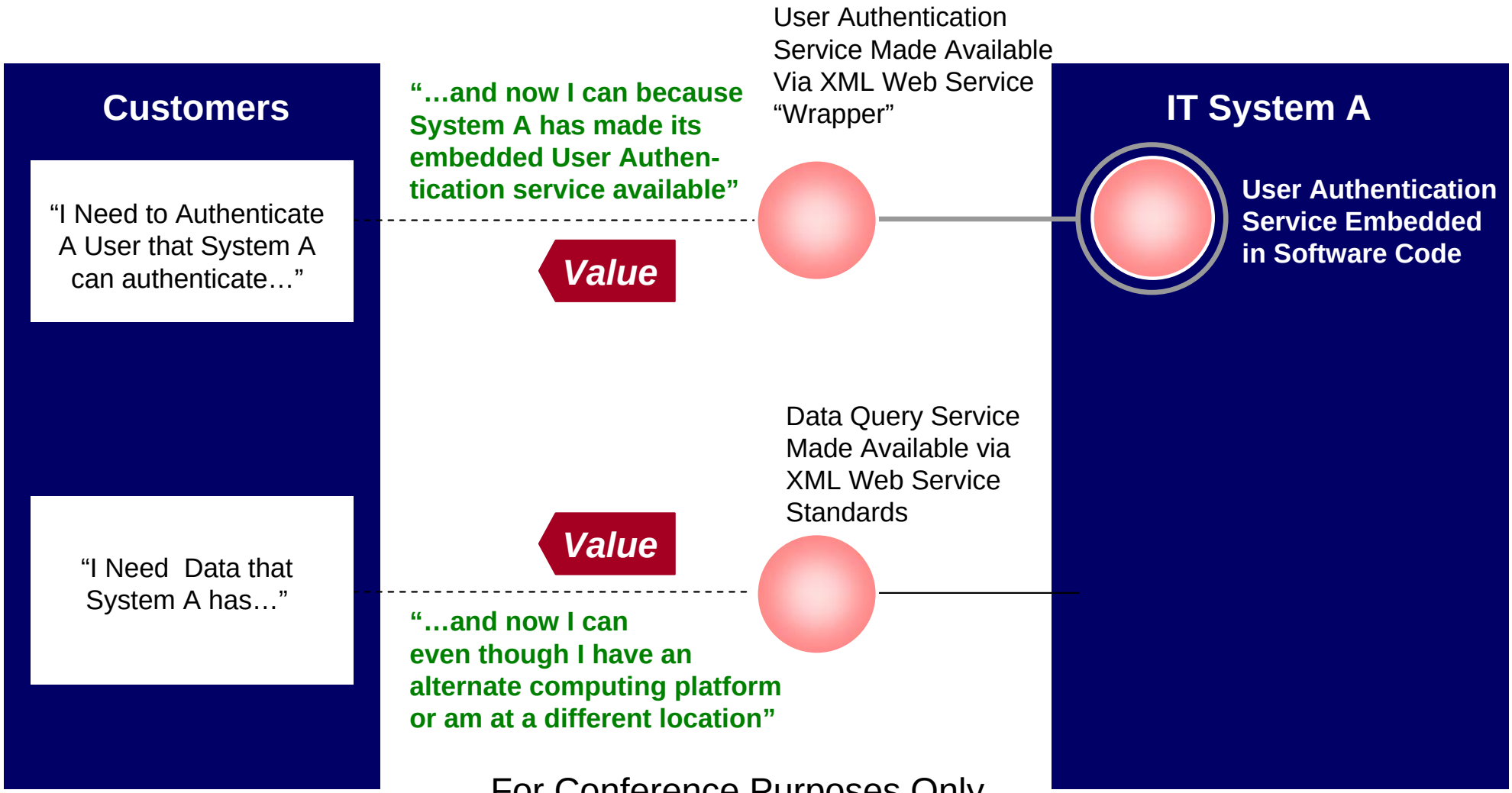
PROMISE
Do More Than You Could Before

PATH TO SUCCESS
Early Adopters (Start Small, Scale Rapidly)

Business Case Can Justify Costs Of Standardization For Customers, Providers, And Sponsors

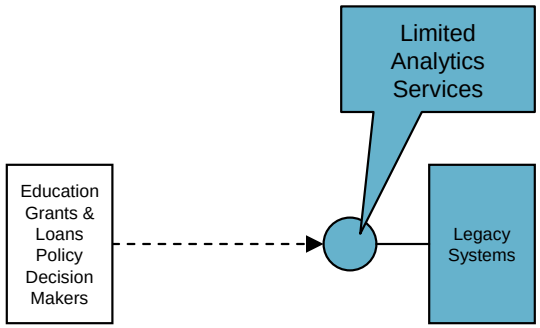


Promise Fulfilled: Customers Can Connect Much Easier To Existing Services



DoED Example: Enable New Data Warehouse / Analytics Service

CONSTRAINING CONDITION	SOA FEATURE	PROMISE
Limited Capability Available	**SOA Standards And Enabling Services**	**Do More Than You Could Before**

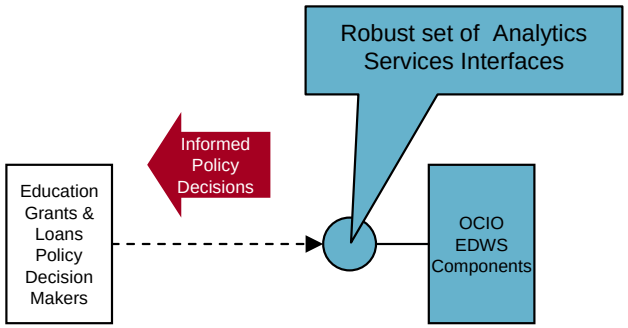


The new Enterprise Data Warehouse Service (EDWS), enabled Education grants managers to access information to improve policy compliance

PITFALL

Additional Costs

DoED did not have an EDW tool, so implementing the tool meant additional costs amid cost constraints and a slow budget change request process



BEFORE

AFTER

PATH TO SUCCESS

Early Adopters (Start Small, Scale Rapidly)

Improving the impact of Education Grants was a vital concern to the Undersecretary of Education, who became a key sponsor of the EDWS.
A venture capital fund was used to shorten the budget process

LIMITATIONS

With the enactment of the No Child Left Behind Act, DoED's grant and loan policy responsibilities expanded, but ED lacked enough analytics capabilities for policy decision support

NEGATIVE CONSEQUENCES

$60B in US Education Grants & Loans were not used as effectively as they might have been

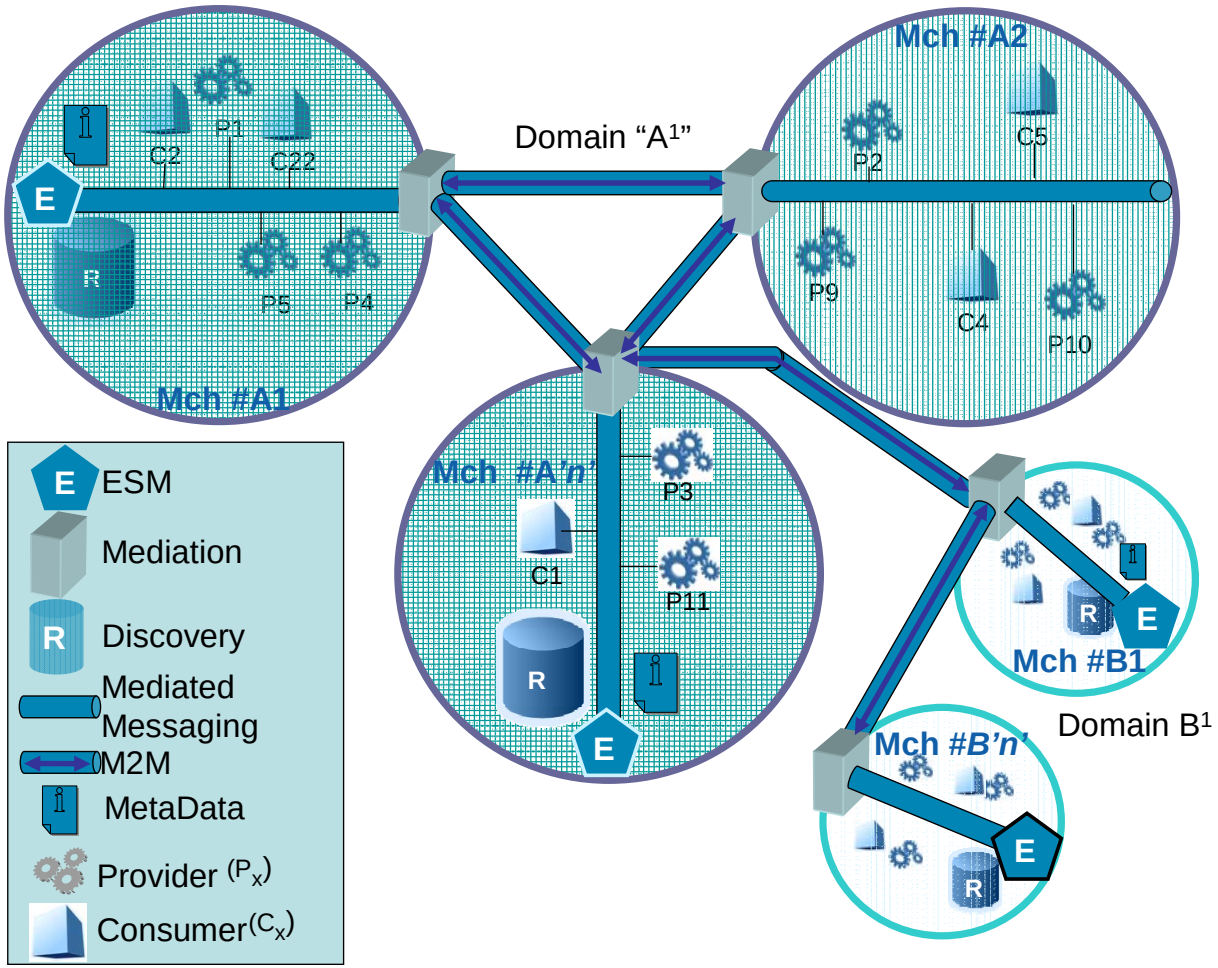
DIRECT BENEFITS

DoED was able to do more to improve Educational quality and equal access to Education in the US, because the EDWS was used to support policy decisions about, and increase the impact of, Grants

DESIRABLE EFFECTS

$60B in US Education Grants & Loans were increasingly used more effectively

SOA Foundation Services Enable Consumers And Providers To Share Trustworthy Services And Information More Quickly And Easily



SOA Foundation Services

- **Service Discovery** allows systems that need services and information to discover systems that provide it
- **Machine to Machine Messaging** allows systems to communicate by sending messages to one another
- **Mediation** acts like an "adapter", allowing one system to connect with another system when they are otherwise incompatible
- **Enterprise Service Management** allows systems to monitor usage and performance of their services, and to meet their service level agreements

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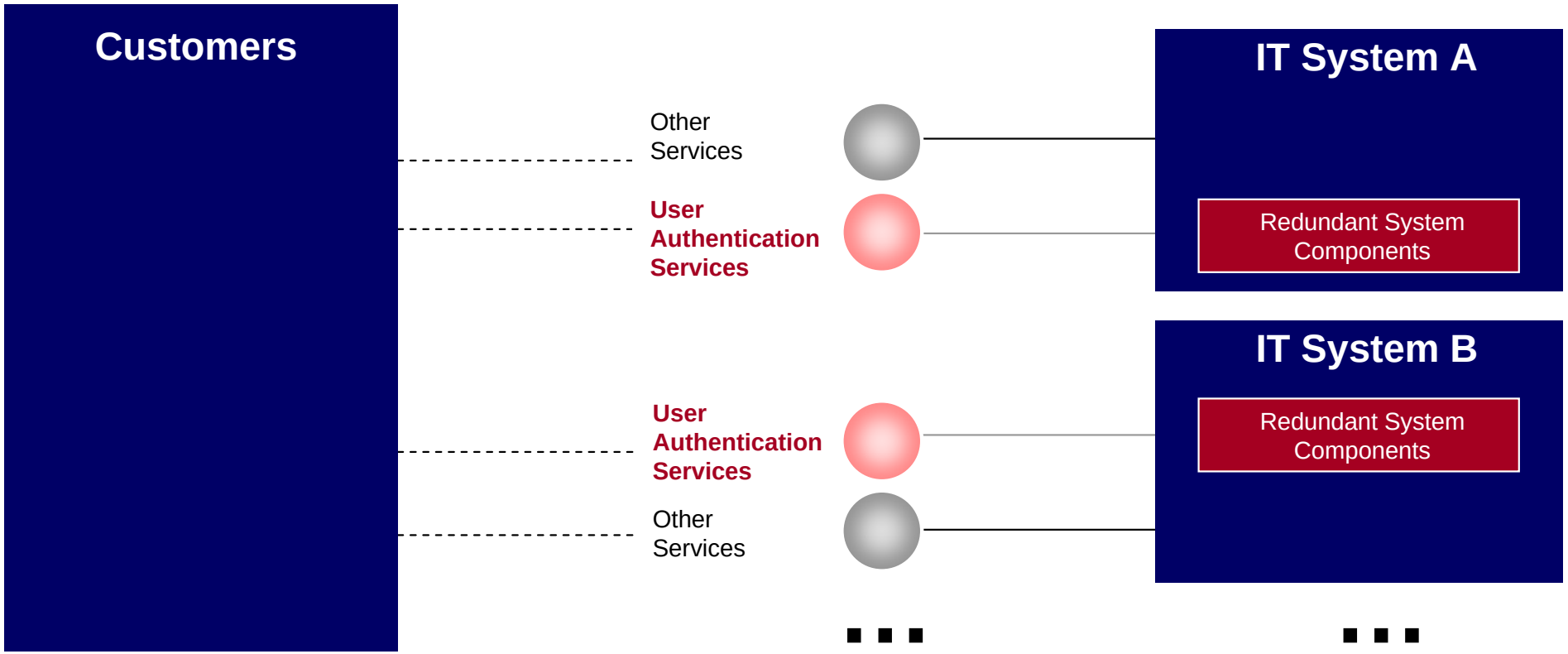
PROMISE
Leverage Strengths
And Gain Efficiencies

PITFALL
Cultural
Resistance

Cultural Resistance Prevents Establishment Of A Single User Authentication Service Across Systems



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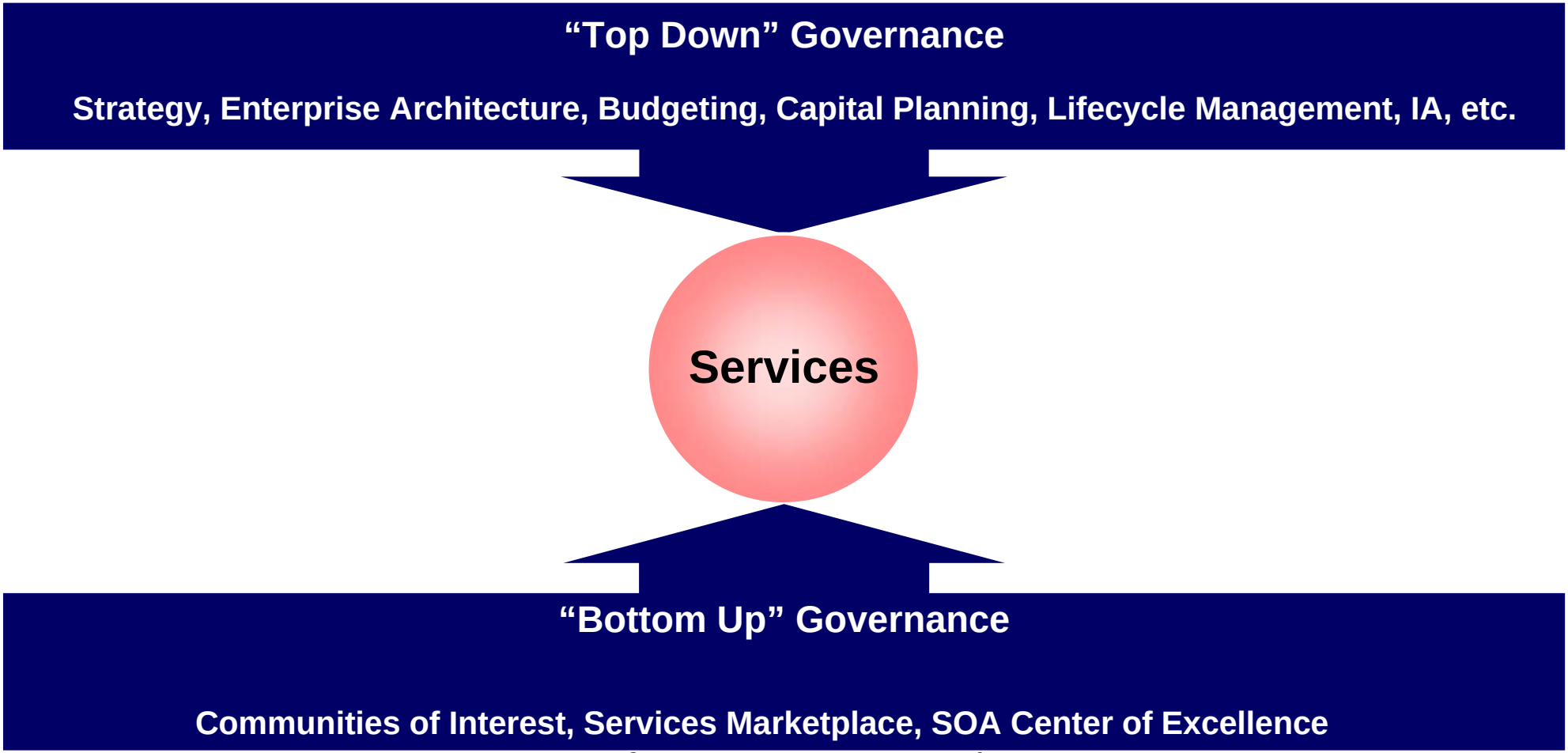
SOA FEATURE
Shared Services

PROMISE
Leverage Strengths
And Gain Efficiencies

PATH TO SUCCESS
Balanced
Governance

"Top Down" Governance Via Management Processes Can Force Sharing; "Bottom Up" Governance Via Communities Of Interest Can Encourage Sharing



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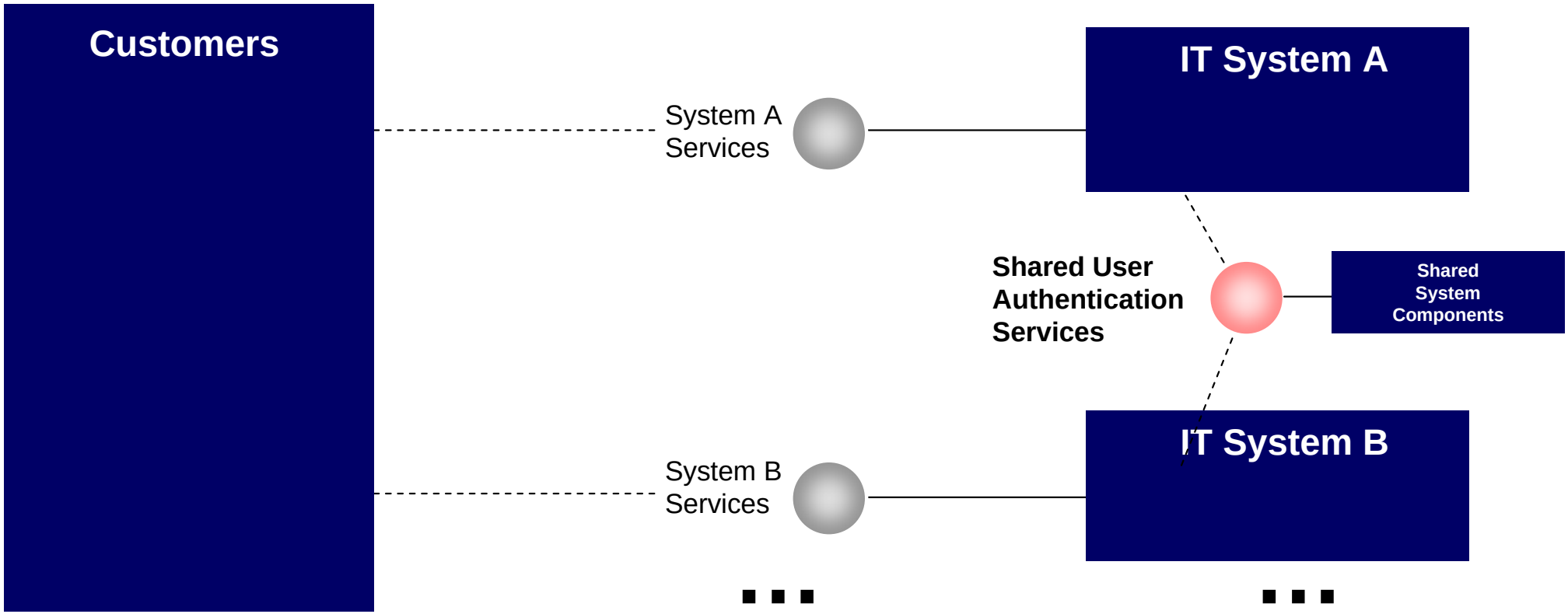
Promise Fulfilled: Shared User Authentication Services Are Provided By Only The Best Providers



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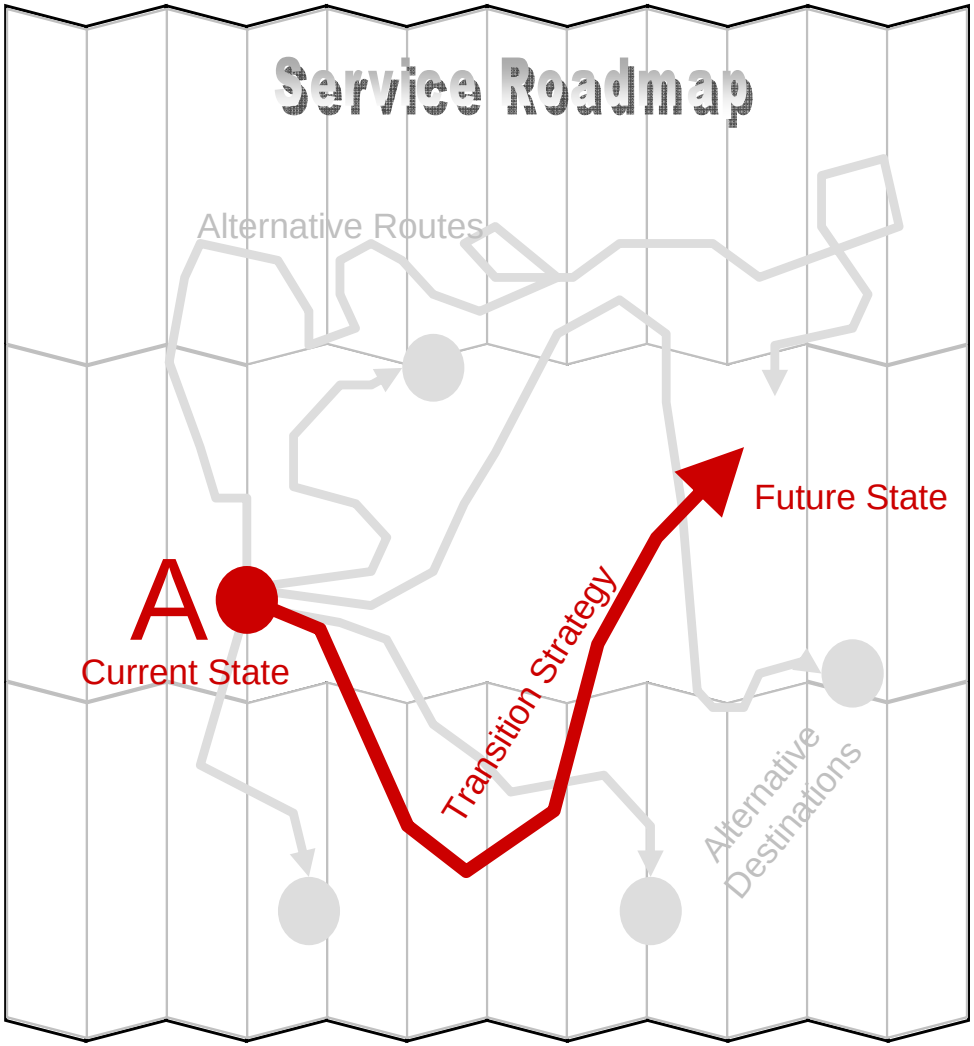
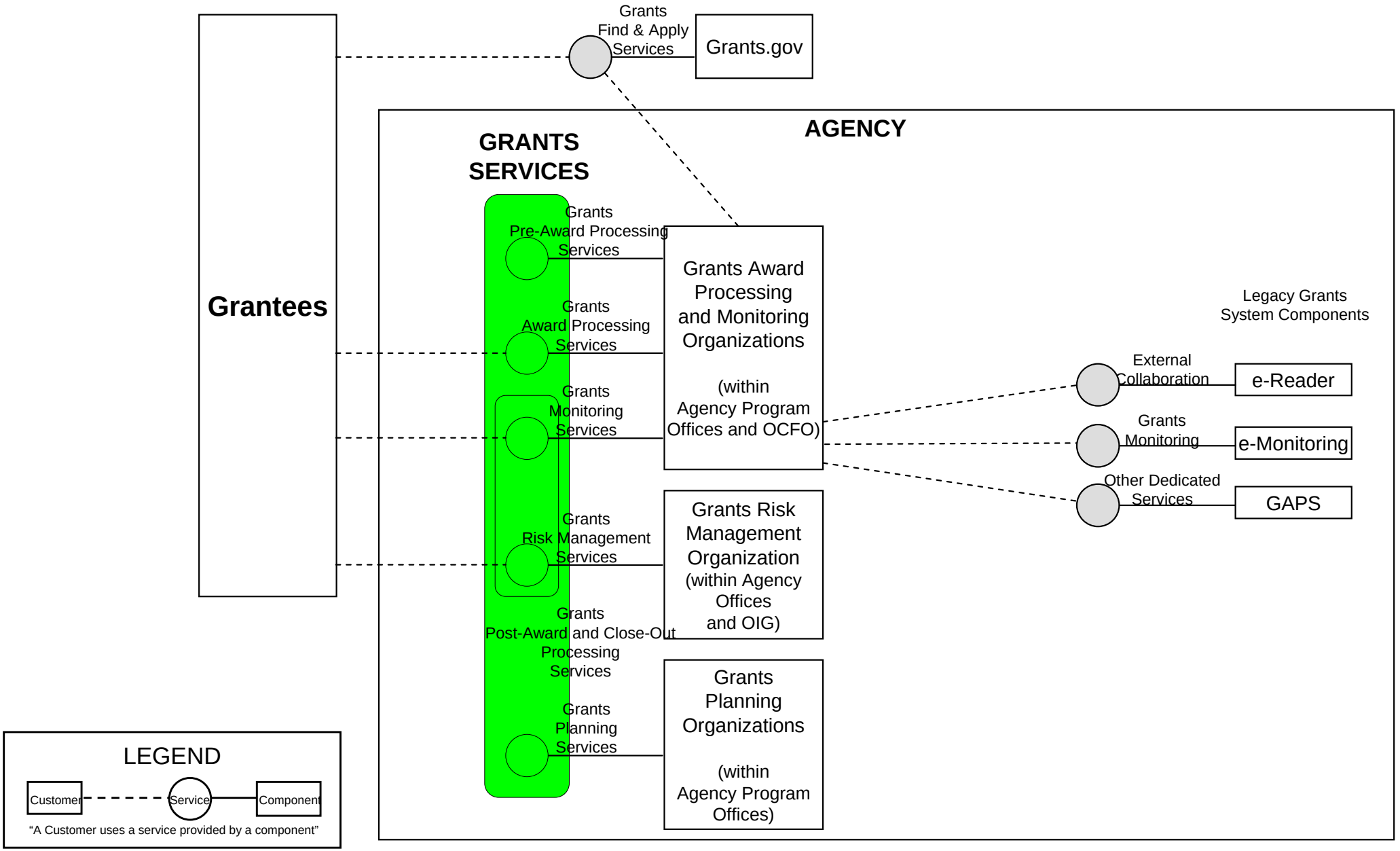
Developing Service Roadmaps

Service Roadmap Objectives

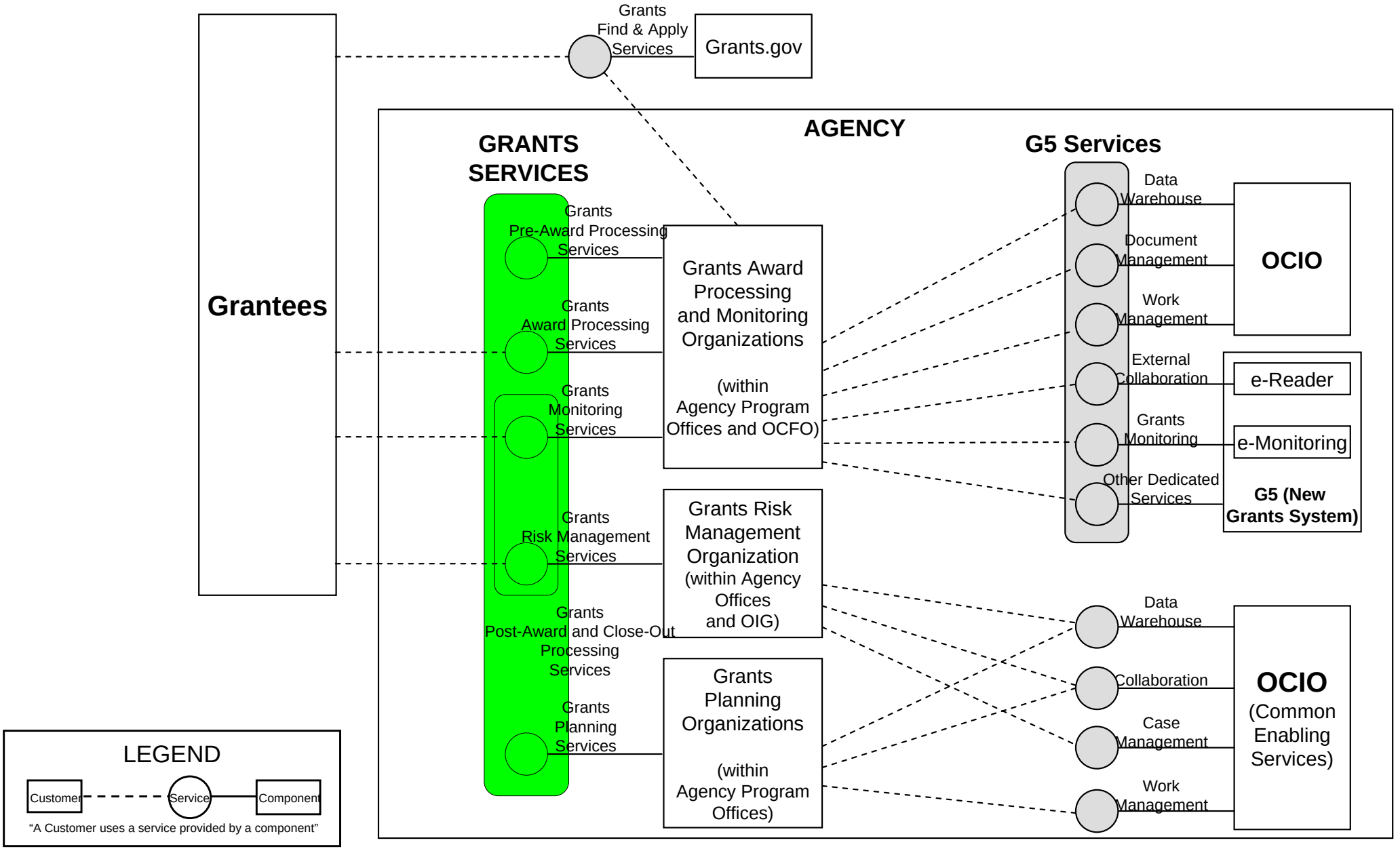
- Outline how key services can be ***leveraged*** over time
- Define the service and summarize key industry ***trends and forecasts***
- Explain how the service is currently being used (***Current State***)
- Analyze opportunities, risks, problems, and ***available options***
- Recommend where to go with the service (***Future State***) and the best way to get there (***Transition Strategy***)



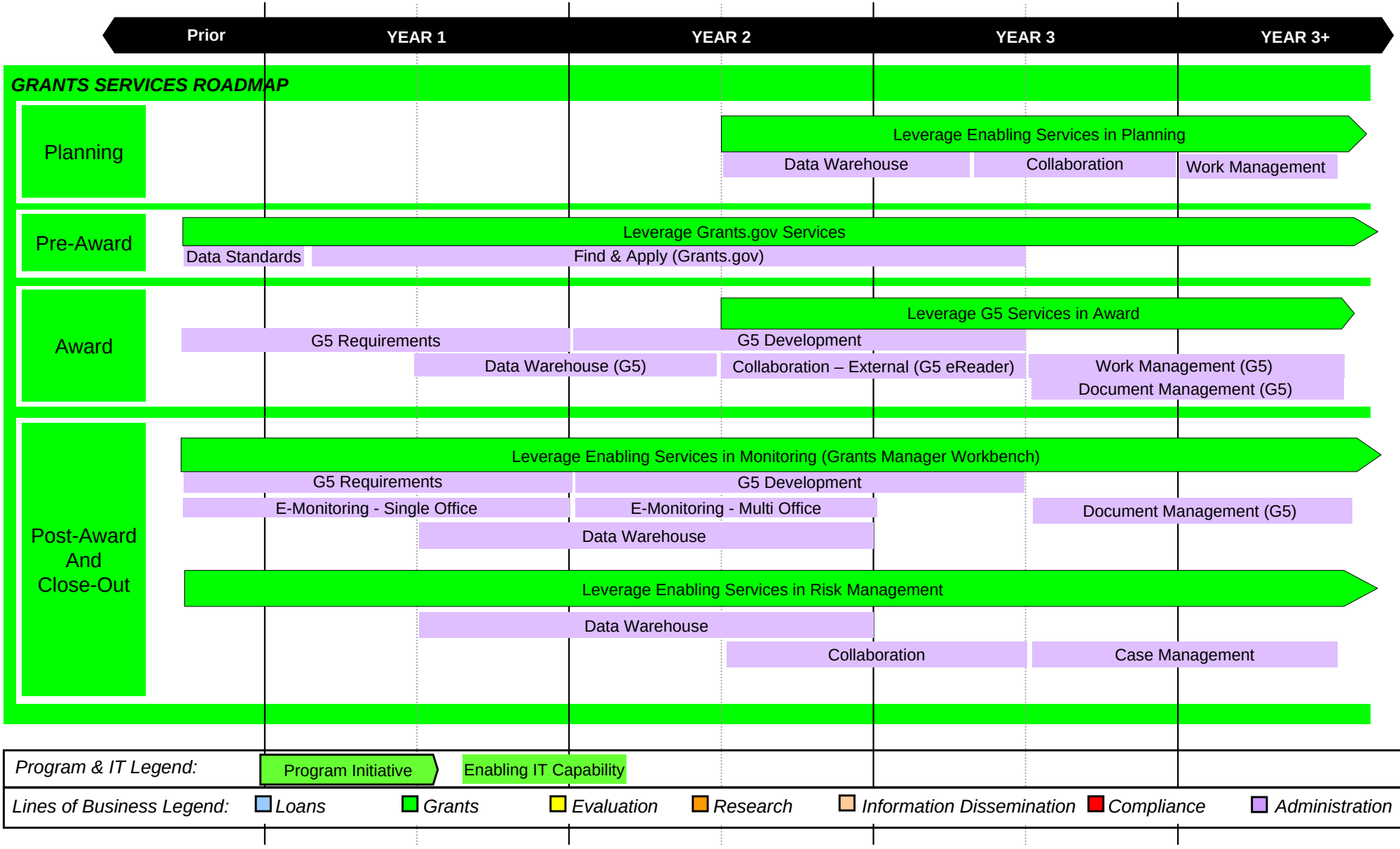
"AS-IS" Customers, Services, Providers, And Interdependencies



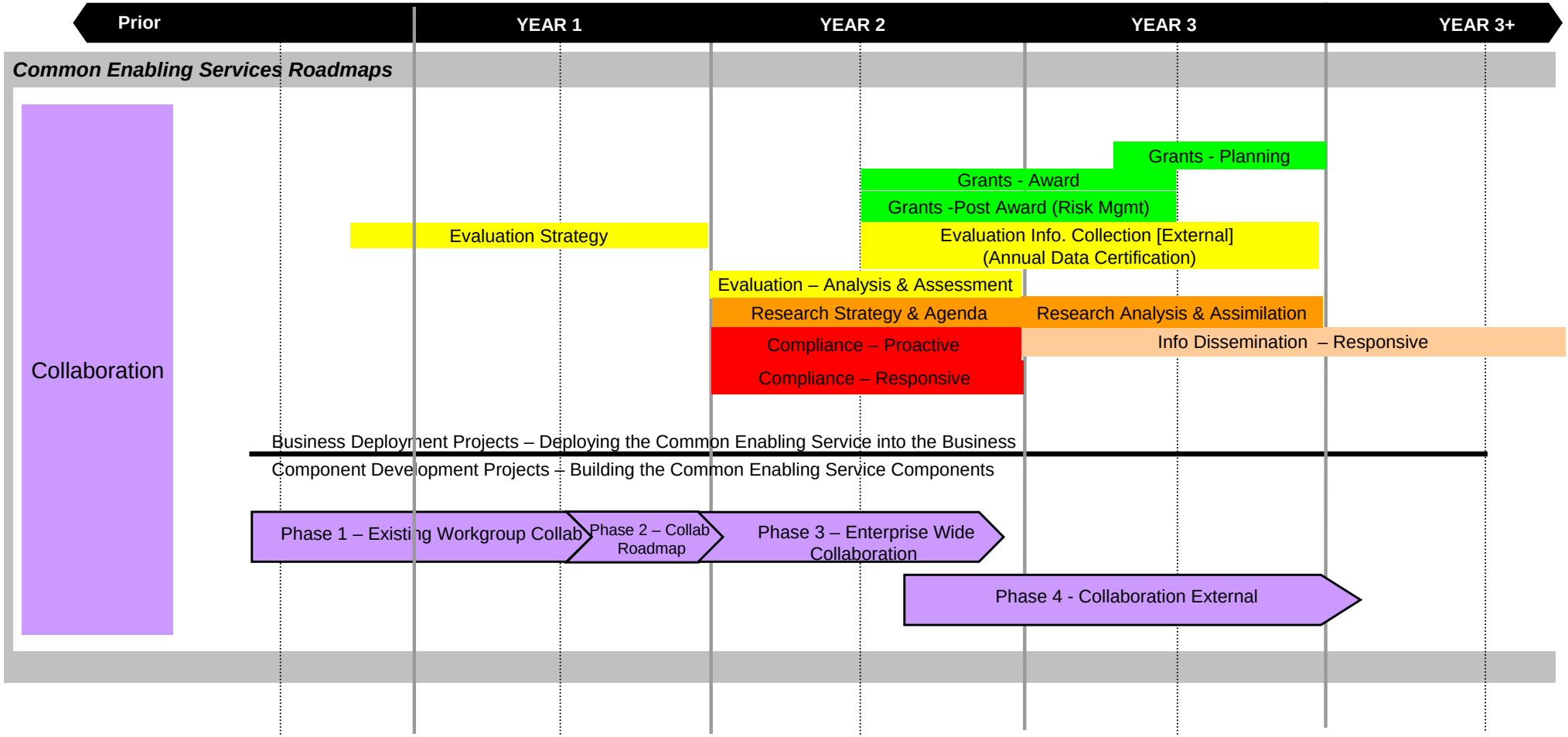
"TO-BE" Customers, Services, Providers, And Interdependencies



Grants Services Roadmap



Collaboration Services Roadmap



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Business Services Legend: *Loans* *Grants* *Evaluation* *Research* *Information Dissemination* *Compliance* *Administration*

PITFALL
Making "In Flight" Changes

"Big Bang" Changes To Business Operations Often Fall Short Of Expectations

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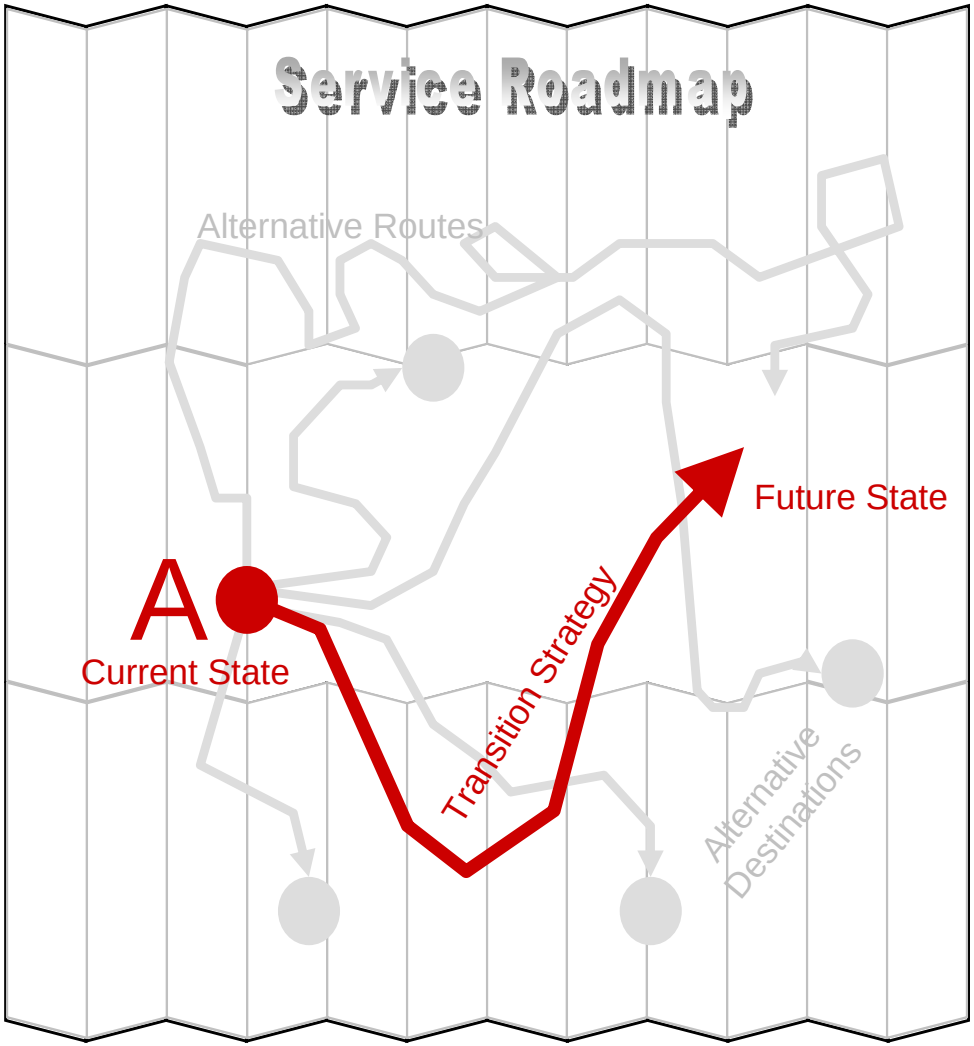
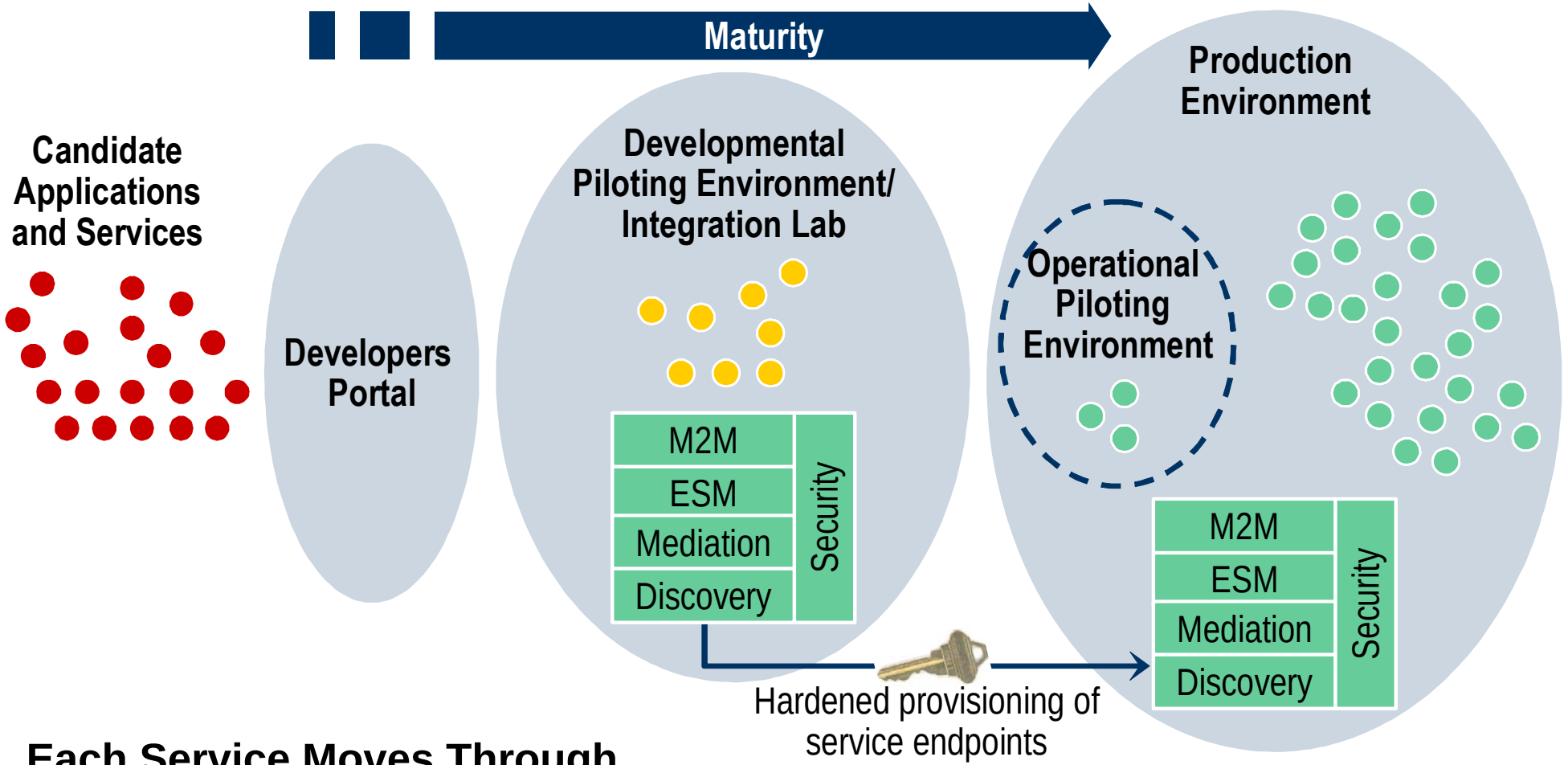


PATH TO SUCCESS
Agile Services Lifecycle

Use An Agile Service Lifecycle To Implement Service Improvements And Deliver Value *Fast* And *Often*



Each Service Moves Through Its Lifecycle At Its Own Pace

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- ✓What barriers stand in the way
- ✓What proven methods can be used to overcome the barriers
- How to get going and start getting benefits NOW
- Q&A After Each Major Section

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Take These Steps To Start Getting Benefits *Now*

Features & Benefits	Proven "Light and Fast" Steps On The Path To Success			
Use Service Orientation To Enhance The Value Of Services	Focus Decision Making on Key Services	Profile Key Services to Inform Decision Making	Pragmatic Education And Outreach	Proactive Customer Solution Support
Use Modular Services To Spend Less Time And Money	Service Catalogs	Assemble New Processes And Systems Using Modular Services	Re-factor Legacy Processes And Systems Using Modular Services	
Use SOA Standards And Enabling Services To Do More	Standardize Services (Flexibility vs. Maintainability)	SOA Foundation Services (e.g., Enterprise Service Bus)	Enabling Services (e.g. Collaboration)	
Use Shared Services To Leverage EPA Strengths	Re-Use Available Services	"Top Down" SOA-Enablement via Management Processes	"Bottom Up" SOA Enablement via Communities of Interest	
Use Service Roadmaps To Optimize Processes And Applications	Service Roadmaps For Key Services	Agile Service Lifecycle Management	SOA Enablement Center	

Summary

- You provide and use services right? SOA can help you get the most “bang for the buck” out of these services
- It’s easy to get going with SOA, start taking proven steps down the path to success
- SOA is for all services, not just technical services (but technical services are still a very important focus)
- Business value should be the driver for every step in your SOA roadmap
- Be sure to balance flexibility with maintainability when implementing SOA

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