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Building an SOA Roadmap

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Agenda

- Introduction
- SOA Maturity Model
  - Exercise: Maturity Assessment
- SOA Roadmap Creation Process

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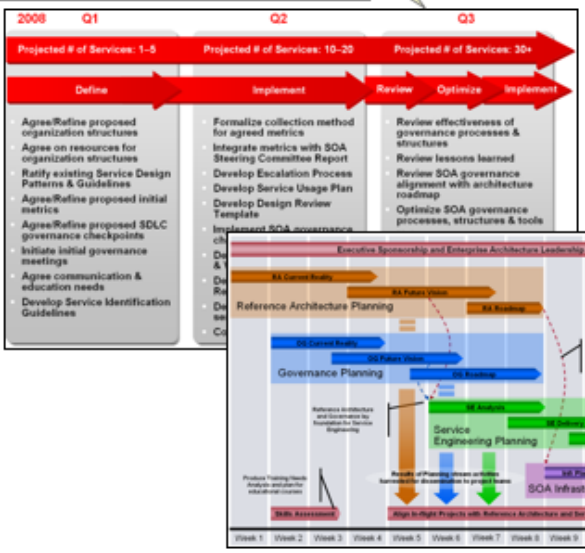
Review: Providing Guidance and Coordination

Multiple projects progress in parallel and remain coordinated.
Typical time horizon of 2–3 years
Regularly reviewed and updated
Incremental improvement and correction



SOA Roadmap consists of three fundamental parts:
- Program-level efforts
- Portfolio of projects that build specific business solutions
- Portfolio of shared services

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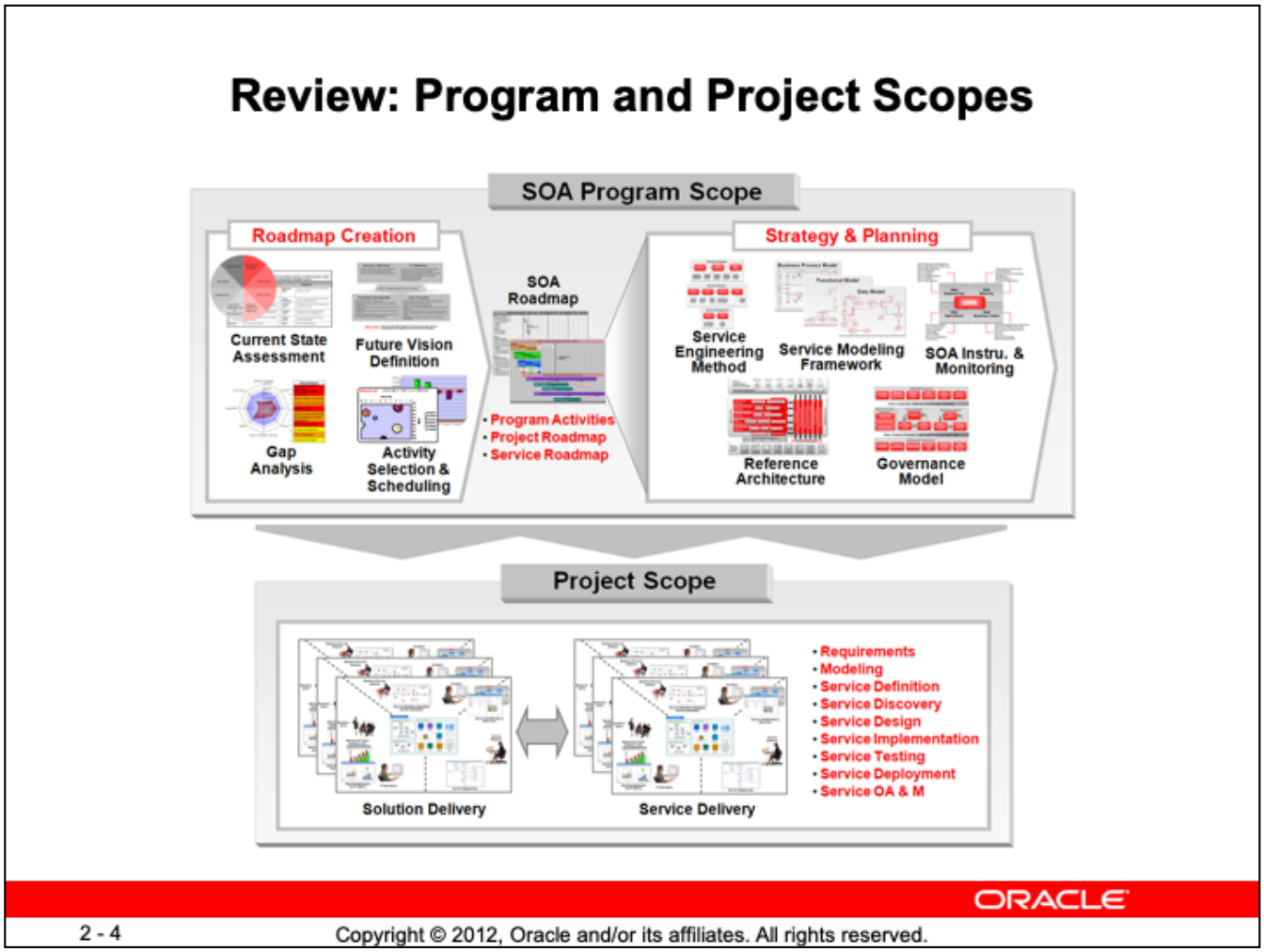
An SOA Roadmap provides guidance to the SOA initiative, enabling multiple projects to progress in parallel yet remain coordinated. This ultimately results in a common goal that provides value greater than the sum of the individual projects.

Generally the time horizon for an SOA Roadmap is 2–3 years. This could be longer or shorter depending on the planning cycles for each organization. The initial phases (for example, first six months) of the roadmap will contain much greater detail than the later phases. This is appropriate and by design. The SOA journey is a journey of discovery, incremental improvement, and regular roadmap corrections. The SOA Roadmap should be regularly reviewed and updated. The business never stays static, so do not expect the SOA Roadmap to remain static either.



As previously stated, Oracle's SOA ETS topics cover the whole life cycle. To create better focus, there are two main engagement scopes: program scope and project scope. The activities in these scopes are grouped into three major categories: roadmap creation, strategy, and planning and execution.

Program Scope

Within the program scope, the primary focus areas are the roadmap creation phase and the strategy and planning phase. As the name suggests, the roadmap creation phase focuses on assessing the current state of the enterprise in respect to the SOA goals and the maturity of the capabilities required to execute SOA successfully. The strategy and planning phase concentrates on defining a number of key frameworks such as an SOA reference architecture, a service engineering method, and an SOA Governance model. The main artifact at the end of the program scope is an incremental SOA implementation roadmap that maps out the build-out of the infrastructure, the solution roadmap, and the services roadmap

Project Scope

At the project scope level is the execution phase. This is where enterprises start to execute their incremental implementation roadmap and start to deliver value to the business. The execution phase covers the different life cycles of delivery of solutions and delivery services

and the associated service infrastructure.

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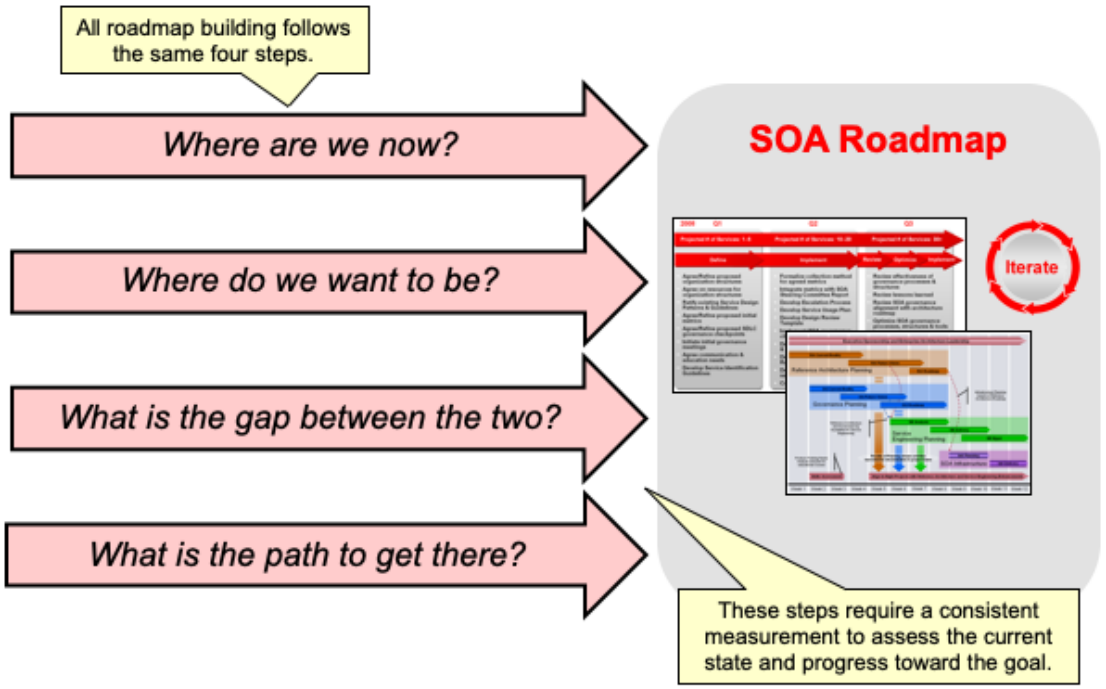

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Oracle's SOA Maturity Model: Key Concepts

Oracle's SOA Maturity Model includes four key concepts: capabilities, domains, maturity, and adoption.

The SOA Maturity Model is agnostic in terms of technology, standards, and products.

- Capabilities capture best practices that Oracle has collected over many years working with a wide variety of companies.
- Additional capabilities are added as more best practices emerge.
- Eight domains classify and organize related capabilities.
- Capabilities include a description for each level of maturity and each level of adoption.

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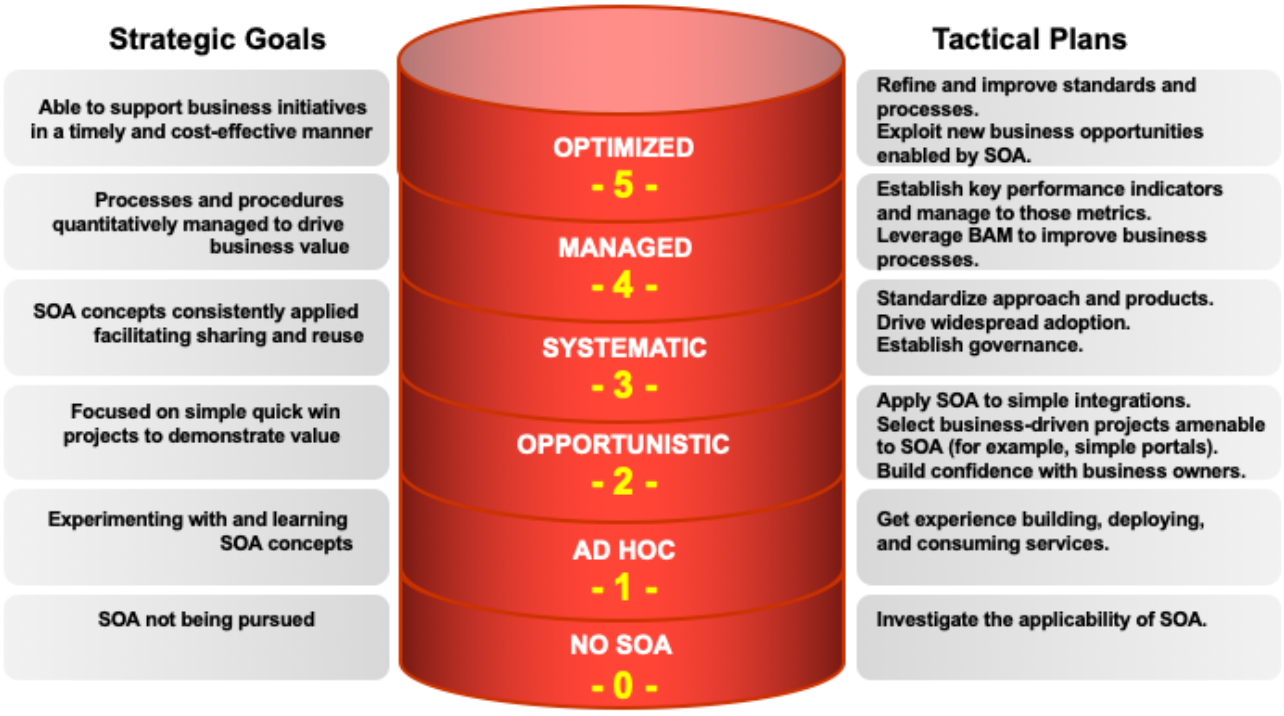
The SOA Maturity Model defines the following key concepts: capabilities, domains, maturity, and adoption

A full SOA Maturity Model includes dozens of capabilities that capture the best practices that Oracle has collected over many years working with a wide variety of companies. There is still considerable debate on what constitutes SOA best practices, and standards and products change fairly regularly. Therefore, the SOA Maturity Model is not specific to any particular technology, standards, or product, but it still captures the major goals and principles of a complete SOA strategy.

Additional capabilities are added as more best practices emerge. Thus, the details of the SOA Maturity Model will continue to evolve as more experience with SOA is gained. This allows the specifics to develop and improve with advancements in industry and Oracle knowledge about SOA.

SOA Capability Maturity Levels: Higher Levels Have Higher Capabilities



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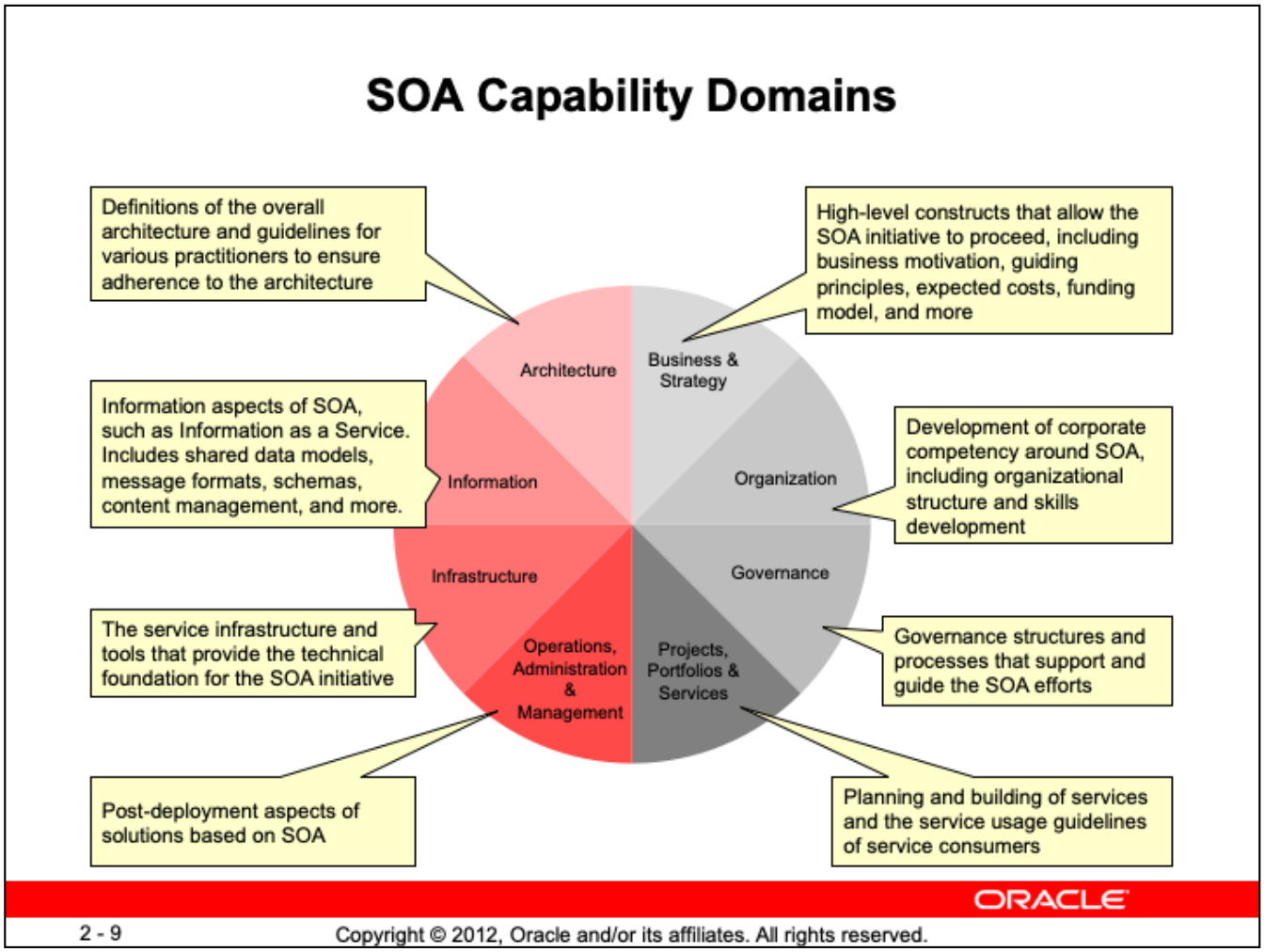


These eight domains, although interrelated, are sufficiently distinct. To succeed at SOA adoption, an organization must make adequate progress in all of these domains. Inevitably an organization will be more advanced in some domains (and further in some of the capabilities within a domain) than others. Therefore, it is important to be able to measure the relative maturity within each domain (and capabilities therein) and across domains to identify areas that are lagging. After the lagging areas have been identified it is possible to formulate remedies and thereby improve the success of the overall SOA initiative.

Business and Strategy capabilities include having well-articulated guiding principles, business reasons for doing SOA, and goals for your initiative.

Organization capabilities include having roles defined that you need to do SOA (and probably don't have if you're not doing SOA). Examples include an executive sponsor or a services librarian.

Governance capabilities evaluate the governance structure that is in place to oversee your SOA assets and processes.

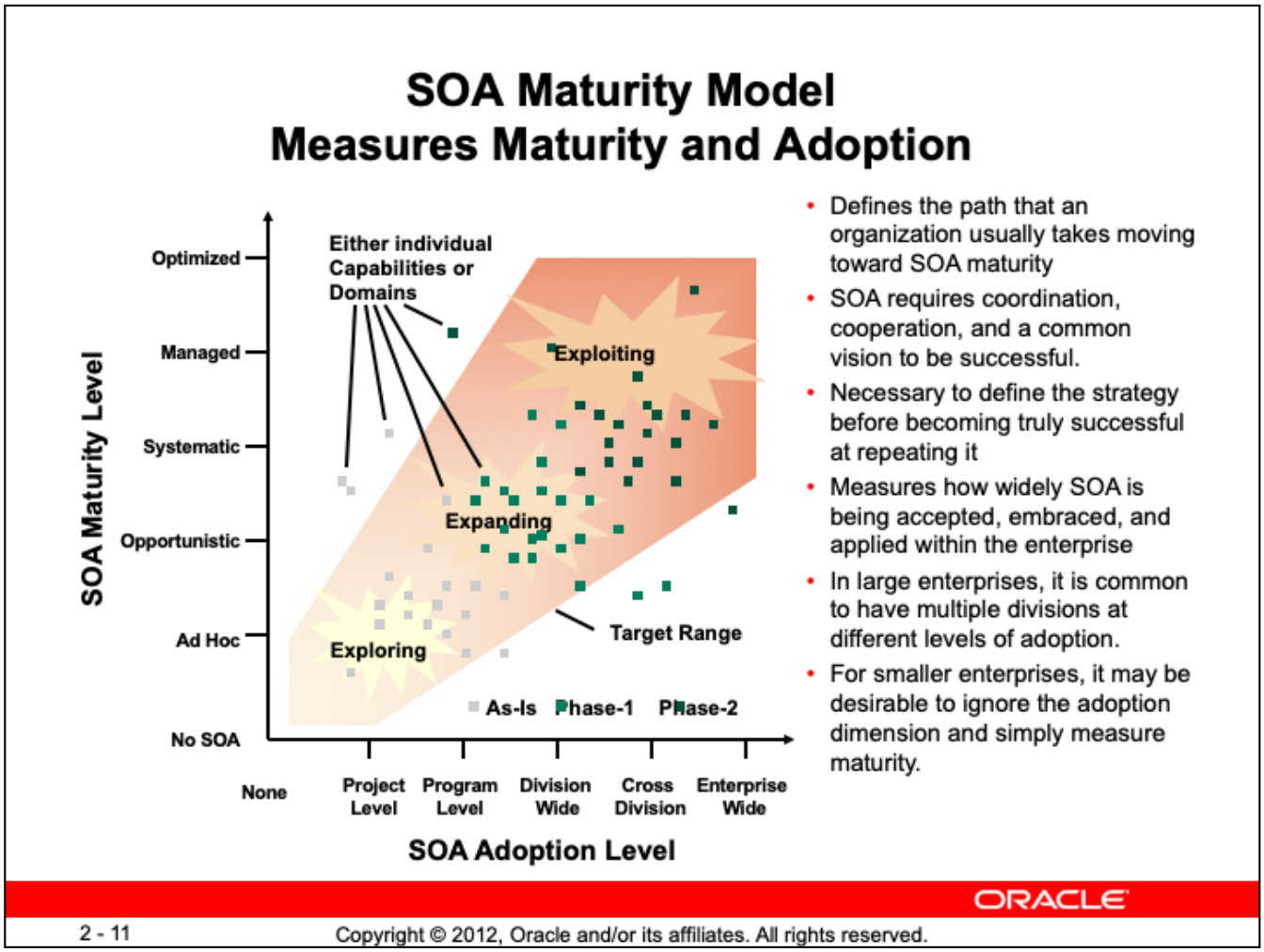
Projects, Portfolios and Services capabilities are focused on the service engineering discipline, answering questions such as "How do you build services?" and "How do you maintain a service portfolio?"

Architecture capabilities include having a defined reference architecture and high-level strategies for SOA in place. A list of examples of these strategies would include things like a versioning strategy or a security strategy.

Information capabilities are concerned with the data objects and elements you need to manage as part of SOA. It includes things like metadata management and storage of service contracts.

Infrastructure capabilities constitute the realization of the pieces of the reference architecture that you will need to build out over time.

Operations, Administration, and Management capabilities describe how you will monitor, manage, and administer your SOA initiative after it is in production.



In the slide graph, the Y axis of the SOA Maturity Model identifies six levels of maturity:

- **No SOA:** There is no SOA approach being taken. SOA is not in progress.
- **Ad Hoc:** Awareness of SOA exists, and some groups are starting to build services. There is no SOA plan being followed.
- **Opportunistic:** An approach has been decided on and is being opportunistically applied. The approach has not been widely accepted or adopted. It may be informally defined or (if it is documented) may exist primarily as “shelfware.”
- **Systematic:** The approach has been reviewed and accepted by affected parties. There has been acceptance of the documented approach, and the approach is always (or nearly always) followed.
- **Managed:** The capability is being measured and quantitatively managed via some type of governance structure. Appropriate metrics are being gathered and reported.
- **Optimized:** Metrics are being consistently gathered and are being used to incrementally improve the capability. Assets are proactively maintained to ensure relevancy and correctness.

The X axis of the same graph identifies six levels of adoption. Adoption measures how *widely* SOA is being accepted, embraced, and applied within the enterprise. For smaller organizations within a single line of business, maturity and adoption are usually tightly related since there is a single approach to SOA being followed by the entire organization.

However, within large companies with multiple divisions or lines of business, this is not usually the case. It is common to have one or more divisions that are relatively mature in SOA while other divisions are not even attempting SOA. The SOA Maturity Model handles these situations by providing a separate measure for adoption level. This allows a single division to be effectively evaluated for SOA maturity while still capturing the lack of widespread adoption as a separate measure.

- **No Implementation:** There is no current implementation anywhere in the enterprise of the capability being measured.
- **Project Level:** Individual projects implement the capability as appropriate for that specific project. There may be informal and unregulated sharing across projects.
- **Program Level:** A relatively small group of projects (a program) share an implementation of the capability. The program is under a single management structure below the VP level and encompasses less than an entire division or business unit. **Note:** This use of the word *program* differs from the strategic activities that are part of the SOA program scope.
- **Division Wide:** The capability is implemented consistently across a division or business unit. A division or business unit is led by an executive at the VP level or higher.
- **Cross Division:** The capability is implemented by multiple divisions using a common approach (that is, the approach is being shared by or is spreading to multiple divisions).
- **Enterprise Level:** The capability is implemented consistently across the enterprise (that is, all divisions or business units are applying the same approach).

Example: Architecture Domain Capability

Topic	Versioning Strategy
Description	Definition of the service versioning strategy, including a numbering scheme, version concurrency control, and decommissioning of obsolete versions

Maturity		Adoption	
Optimized	New versions of services are commissioned and old versions decommissioned with minimal or no impact to service consumers.	**Enterprise Wide**	Service versioning is done consistently enterprise-wide.
Managed	Adherence to the service versioning strategy is measured and enforced.	**Cross Divisional**	Service versioning is done consistently across multiple divisions.
Systematic	Service versioning strategy has been accepted by affected groups. Adoption is widespread .	**Division Level**	Consistent service versioning approach is used division-wide.
Opportunistic	A service versioning strategy has been defined, and adoption of the approach is underway.	**Program Level**	Projects within a program follow a consistent versioning approach.
Ad Hoc	Service versioning is left up to individual project teams.	**Project Level**	Project teams determine service versioning approach.
No SOA	No versioning strategy	**None**	No versioning strategy

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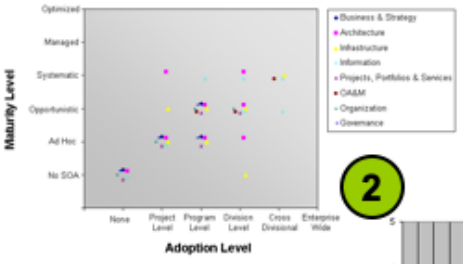
The table in the slide shows an example capability: Versioning Strategy, from the Architecture domain. These finer-grained capabilities assist with defining actionable steps for a focused roadmap.

The maturity and adoption levels do not depend on any particular standard or product. The standards and products chosen by any particular enterprise will depend on multiple factors (for example, existing infrastructure, risk tolerance, and industry vertical).

As shown in the table, for each capability included in the model, a description for each level of maturity and each level of adoption is provided. (The maturity and adoption levels are defined in the lower rows of the table.) Although there is always some level of subjectivity when measuring capability, these descriptions minimize the subjectivity injected, and thereby provide, as best as possible, an objective measure of both maturity and adoption.

Graphing SOA Assessment Results

1



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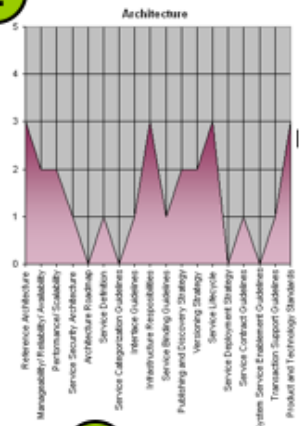

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Select the graphics that convey the information that is most relevant to the audience. Examples include spider graphs, scatter plots, domain detail, and heat maps.

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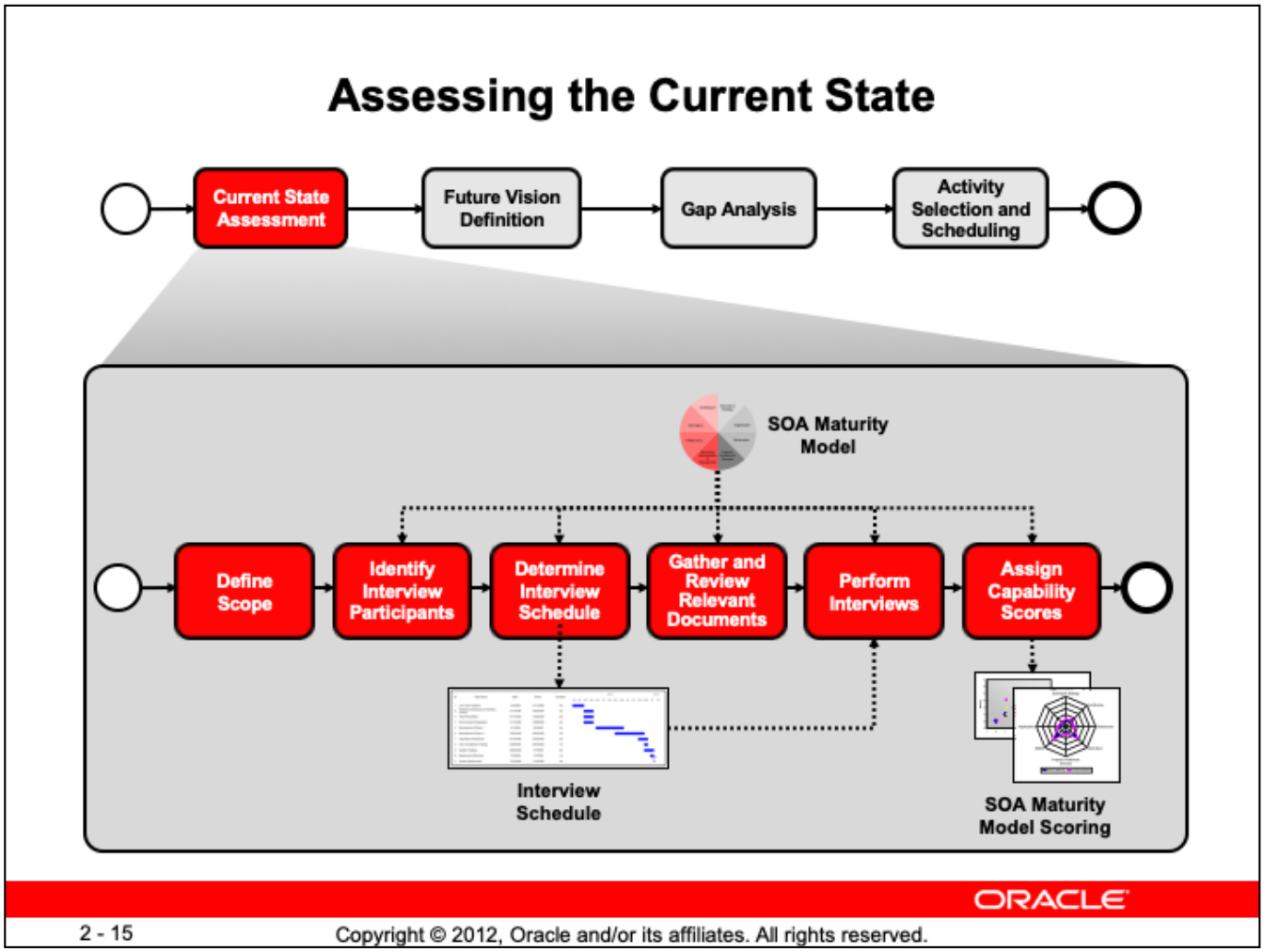
Graphing the results of the maturity assessment can help us better visualize areas on which to focus when planning the SOA Roadmap. The slide shows several examples:

1. The spider graph reveals that the enterprise is behind in business and strategy capabilities, but is well positioned in both the Operations, Administration, and Management capability and the Information capability.
2. The scatter plot graphs individual capabilities on two axes.
3. The domain detail graph reveals the individual capabilities within the Architecture domain, and reveals which capabilities might hold the organization back.
4. The heat map provides a color-coded tabular view of individual capabilities within each domain.



Attempting to capture a full, detailed description of the current state of an IT environment of a large company can lead to analysis paralysis. To avoid this problem, the method described here uses a focused scope and a pragmatic, time-boxed approach. The underlying goal is not to fully capture an IT environment current state. Rather, it is to evaluate the current state *relative to the capabilities that are required to successfully adopt SOA*.

The current state assessment is based on the Oracle SOA Maturity Model.

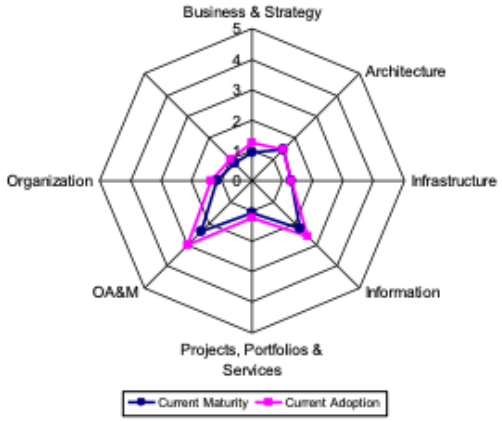
The SOA Maturity Model includes dozens of capabilities that capture the best practices that Oracle has collected over many years working with a wide variety of companies. These capabilities provide the detail necessary to accurately measure and guide the progress of an SOA initiative. Focusing on these specific capabilities ensures a focused scope for the assessment.

The current state assessment should be tightly time-boxed to ensure timely completion of this phase. The size and complexity of an organization determine the actual amount of time that must be allocated to the assessment. Two weeks is a reasonable amount of time to devote to the assessment.

Understanding the Current State

- Define the scope of the assessment (ultimately the scope of the roadmap as well).
- Choose participants to ensure that all capabilities within the SOA Maturity Model can be accurately scored.
- Review existing IT and SOA documents.
- Ask intelligent questions and resolve inconsistencies during interviews.

Score each capability in the SOA Maturity Model for maturity and adoption.



Scores are analyzed in the gap analysis phase.

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It is important to define the scope of the assessment before it begins. This scope will identify which divisions or geographic regions of the enterprise are participating in the SOA initiative. This will determine who you need to interview, and will ultimately determine the scope of the roadmap that you create.

Quiz

In any enterprise, there is a direct relationship between SOA maturity and SOA adoption.

a. True

b. False

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Answer: b

For smaller organizations within a single line of business, maturity and adoption are usually tightly related since there is a single approach to SOA being followed by the entire organization. However, within large companies with multiple divisions or lines of business, this is not usually the case. It is common to have one or more divisions that are relatively mature in SOA while other divisions are not even attempting SOA.

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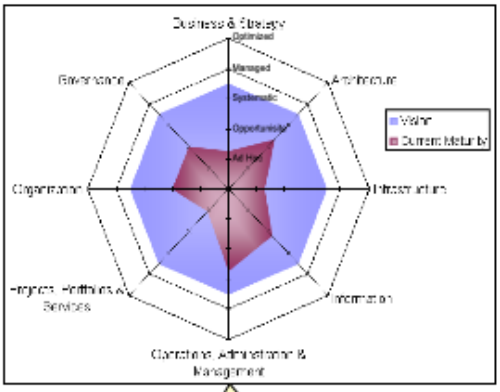
Practice 2-1: Maturity Assessment

2	Question	Response	1	2
3	What is the 2-3 year goal for your SOA initiative?	4	Develop experience building services to provide a foundation for further investments in SOA.	Apply SOA to som projects to demons the benefits of SO build credibility wit business owners.
4	What is the desired scope of your 2-3 year SOA initiative?	4	A small number of projects will be applying service-orientation.	One or more busin units will use SOA address all of their projects.
5	How well is your SOA initiative aligned with the business strategy?	1	Very limited linkage between business strategy and the SOA iniative.	Using the business strategy to help id areas best address by service orientati
	What is the level of business sponsorship for the SOA initiative?	2	SOA primarily perceived as an IT initiative.	Business is aware benefits possible f SOA, but limited business support initiative.

The assessment tool is based on answering 26 questions in a spreadsheet.

- The first two questions are used to set the vision for the SOA initiative that is being undertaken by the organization.
- The remaining 24 questions evaluate the status of the initiative and encompass all eight capability domains in the SOA Maturity Model.



The results are graphed in a spider diagram on the Results tab of the spreadsheet.

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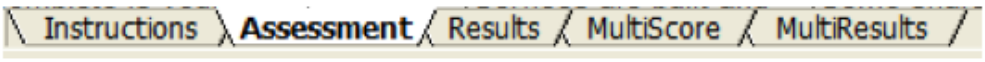
Practice 2-1 Overview: Maturity Assessment

1. Read the THFC company background document:
   - `MaturityAssessment_CompanyBackground.doc`
2. Open the assessment tool:
   - `MaturityAssessmentTool.xls`
3. Enter information on the Assessment tab:
   - Select the response that best matches the current status from the five choices provided for each question.
   - Enter the associated number (from `1` to `5`) in the Response column of the worksheet.
4. Review the assessment results on the Results tab.



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Note the MultiScore and MultiResults tabs. This maturity assessment may be done by several people with diverse points of view and concerns, for a more rounded assessment.

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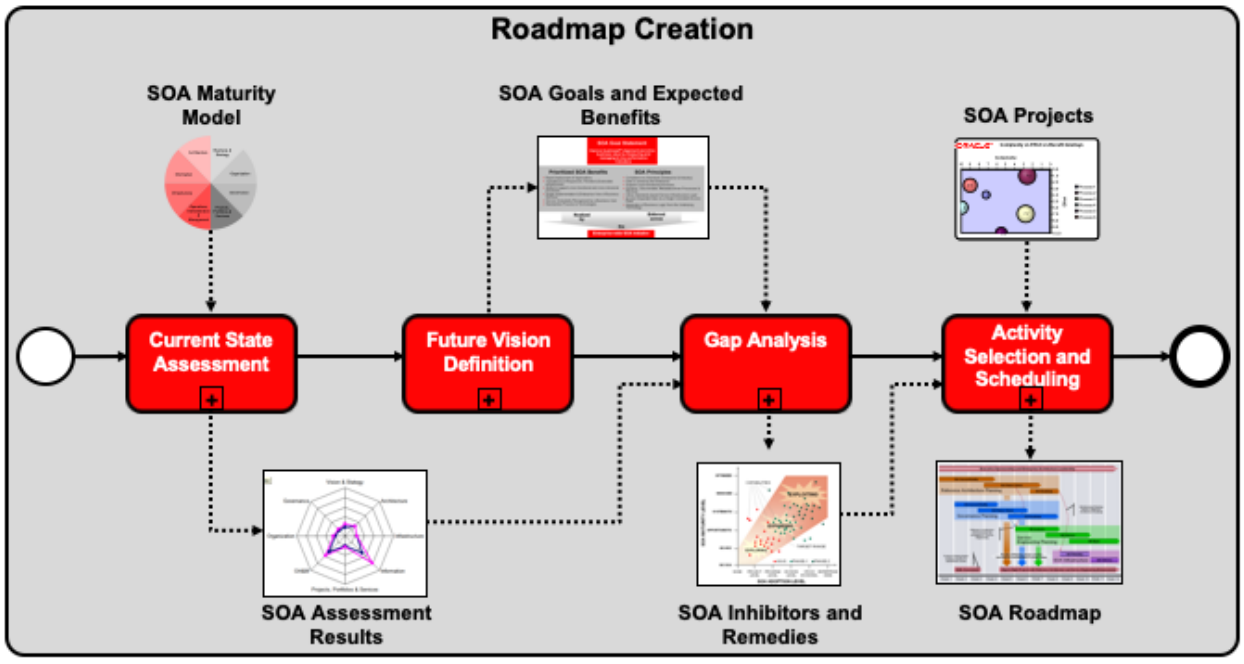
Roadmap Creation Process: Overview



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There are four main phases in the roadmap creation process: current state, future vision, gap analysis, and roadmap creation.

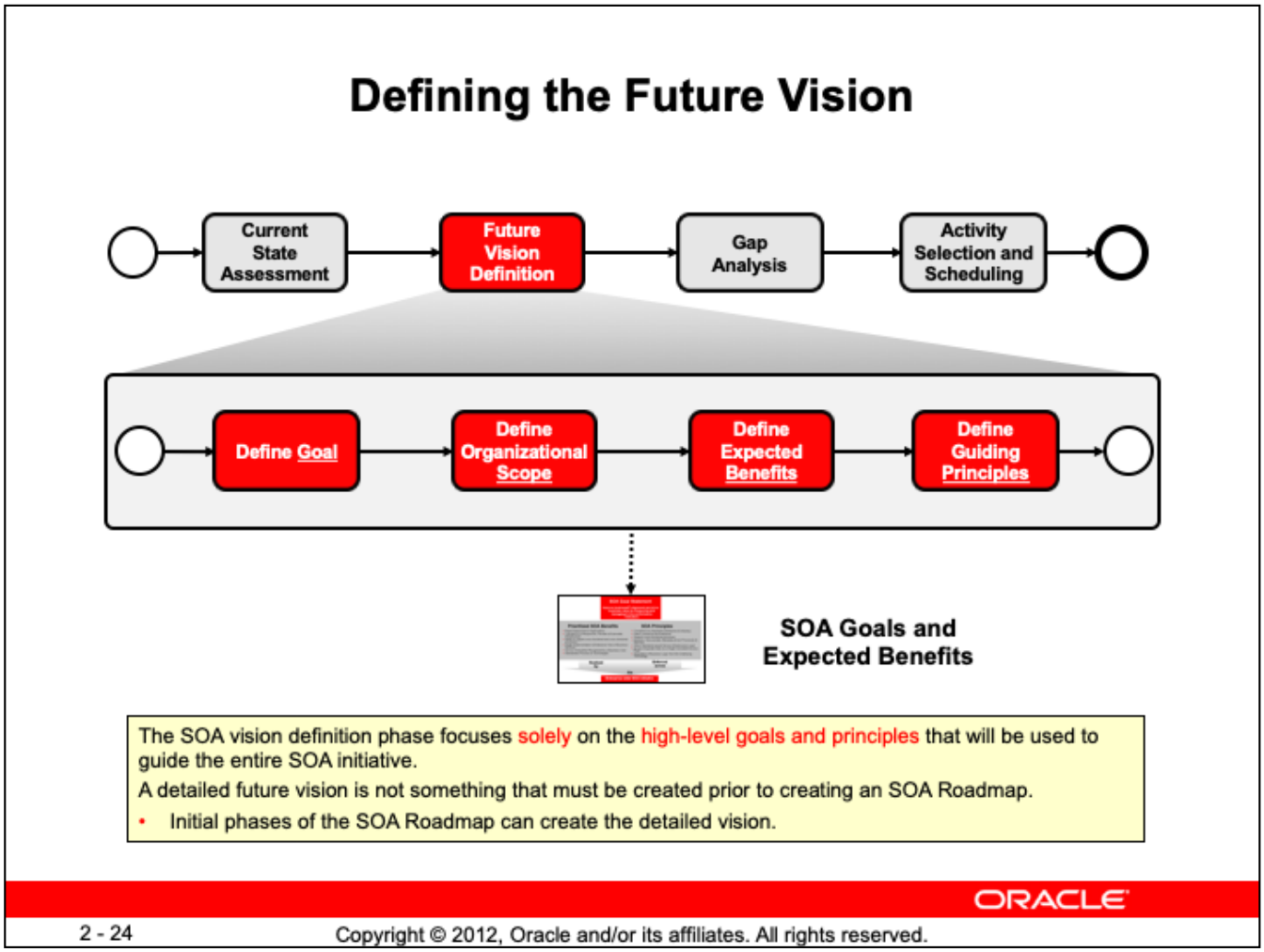
The **current state** is measured based on the Oracle SOA Maturity Model. Using this approach to assess the current state of the SOA initiative provides a consistent measurement scale while keeping the effort focused on capabilities important to SOA success and avoiding the scope creep that frequently undermines current state evaluation efforts.

The **future vision** phase is used to establish the high-level goal and reason for the SOA program. While a fully fleshed out future vision is needed eventually, the initial roadmap creation only requires the high-level vision since the development of the detailed vision can itself be part of the SOA Roadmap. Of course, if the current state of the SOA initiative includes a more detailed future vision, that vision can be leveraged when creating the roadmap.

The **gap analysis** phase evaluates the gap between the current state and the future vision for each of the capabilities. Generally the capabilities exhibiting the largest gap are given highest priority during the roadmap creation phase. However, part of the gap analysis also includes evaluating the relative importance of each of the capabilities for this particular organization. Size, organizational structure, existing assets, funding priorities, and even politics can significantly affect the relative importance of capabilities.

The final phase is the **activity selection and scheduling** phase. This phase uses the output from the gap analysis phase to create a logical ordering of work to be done. Emphasis is placed on the program-level efforts for the initial phases to establish the assets and processes used across projects and services. Projects are evaluated for business benefit, risk, and SOA applicability, and are then prioritized based on that evaluation. The service portfolio is derived from the needs of the prioritized projects.

The SOA Roadmap creation process is itself an iterative process. The first iteration may have very limited detail on the project and service portfolios, and focus heavily on the program-level efforts. As the roadmap is reviewed and updated, additional details will be added for the project and service portfolios. As maturity increases and adoption spreads, it is also likely that later phases will include additional program-level activities.

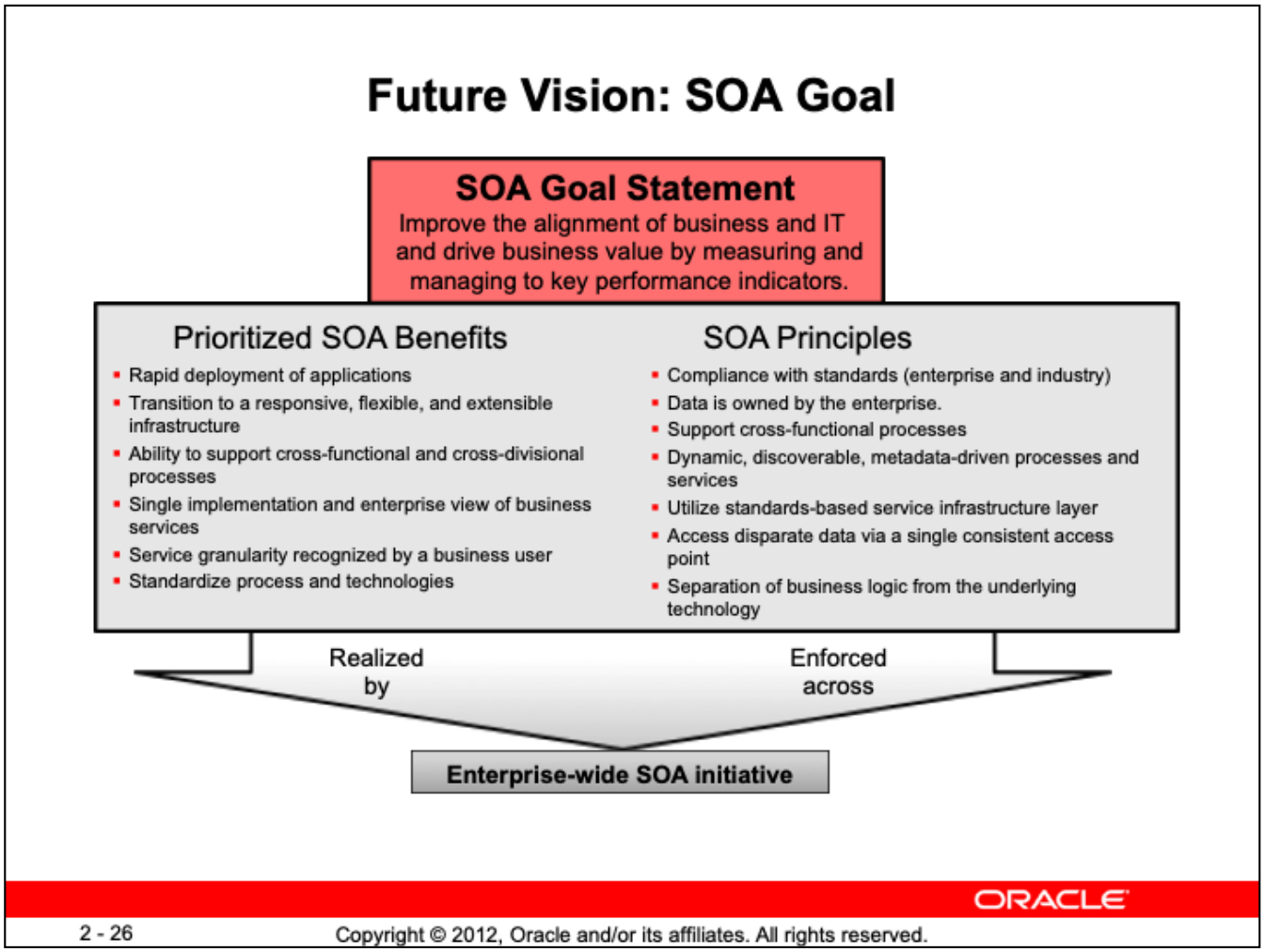


Questions must be answered by the executive(s) leading the SOA initiative. This will typically take a few hours, but may take longer if there is no pre-existing understanding of SOA or if there is substantial disagreement on why SOA is being pursued.

- What are the goals of the SOA initiative?
  - The goal being defined is the goal for the SOA initiative by the end of the roadmap. The recommended roadmap planning horizon is 2–3 years; therefore the future vision should be the goal of the SOA initiative 2–3 years from now.
  - Goal statements are used to estimate the extent and complexity of the entire SOA initiative.
- What is the organizational scope of the SOA initiative?
  - The organizational scope defines which departments, divisions, and lines of business are included in the initiative. The most common scopes are either by division or by the enterprise, but other options are possible depending on the company's organizational structure.
  - Defining the scope of the SOA initiative is essential to determining a roadmap. With a greater scope, the number of organizational boundaries to be crossed increases. This increases the complexity of the effort and requires greater

organizational maturity.

- What are the benefits that SOA is expected to deliver to the organization?
  - There are many benefits that an organization can realize by successfully adopting SOA. However, not all benefits can be realized in parallel. When creating an SOA Roadmap, you should emphasize the highest-priority benefits and leave the lower-priority benefits for later phases.
  - After a list has been created, the benefits should be prioritized based on the business and IT objectives of the organization. The easiest way to prioritize the benefits is to assign a high, medium, or low prioritization to each possible benefit. Roughly one third of the possible benefits should be in each prioritization. (There is no advantage in listing all the possible benefits as high priority.)
- What are the guiding principles for the SOA initiative?
  - The guiding principles are derived from the top-priority benefits and provide enforceable guidance to the SOA initiative.
  - The guiding principles should be sufficiently clear and detailed so that the principles can be enforced on the entire scope of the SOA initiative as well as on specific projects that fall under the purview of the initiative. The principles should also serve as a foundation to make more specific decisions in the future.



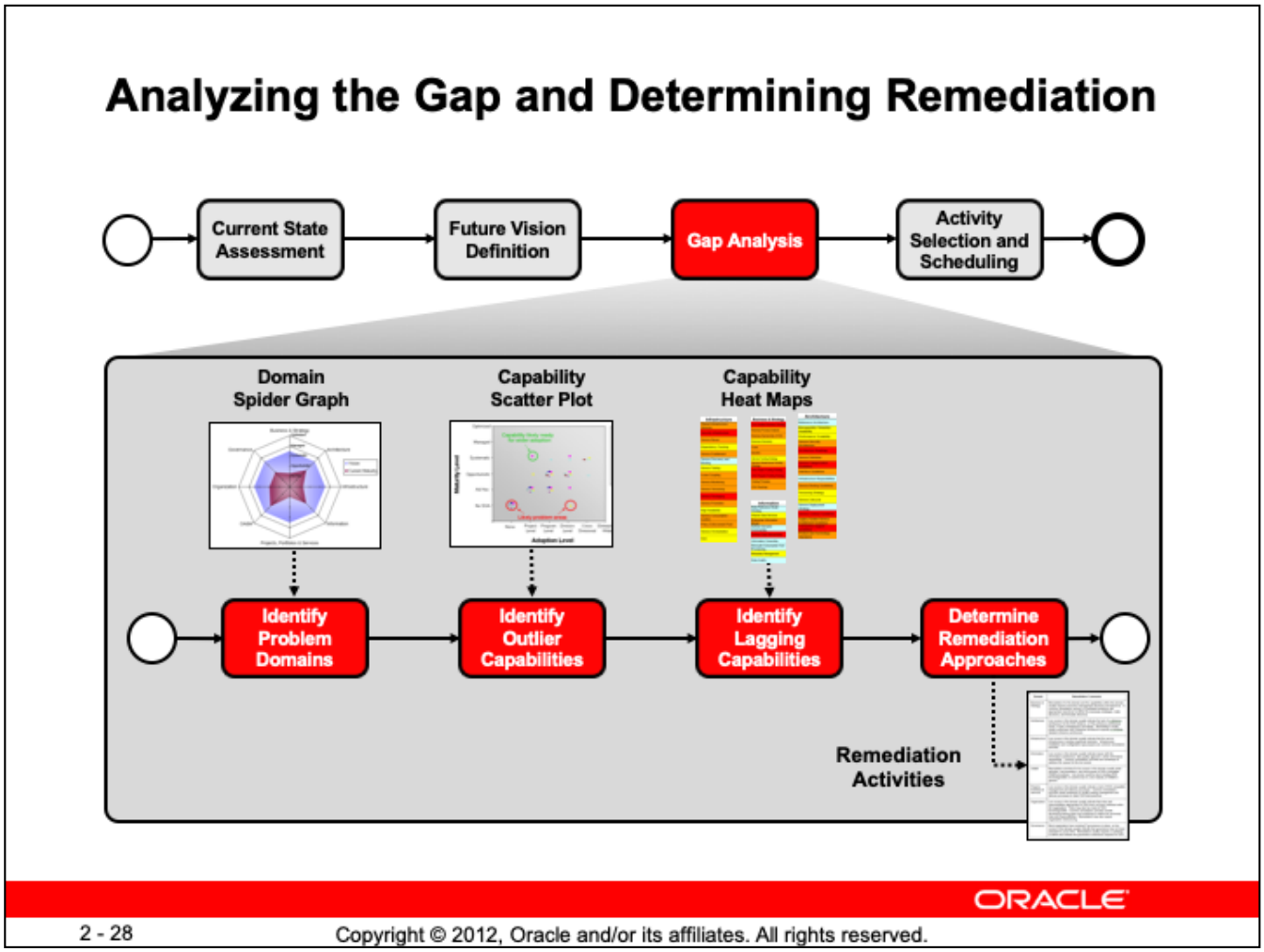
This vision for the SOA initiative can be captured in a single summary slide and used to educate and align the organization with the SOA initiative. Note that this goal is very high level, and does not address specific problems or link to individual maturity measures. Detail can be added as part of roadmap creation.

The hallmark of an effective set of SOA principles is a clear trail of evidence from the business to the SOA principles: high-level principles and statements about how SOA is used in the business. Clarify the enterprise objectives for SOA. This will assist in establishing the direction for all other decisions. If principles are not clear, it is unlikely that the other decisions will coalesce meaningfully.

Companies should not allow SOA principles to be set by IT alone because this will assume significant risk. (Recall that SOA aligns business and IT.) This leads to technically sound principles, but not an SOA business-enabled architecture. The risk of failure is high as business units will not accept that they have as much to do with getting value from systems as do the IT departments. Consider questions such as the following:

- Why are you considering SOA?
- How will SOA affect the business?
- Have you documented the benefits you expect to achieve?

Each principle should have a definition statement plus associated rationale and implications statements. These will promote understanding and acceptance of the principles themselves, as well as support the use of the principles in explaining and justifying why specific decisions are made.



The **gap analysis** phase compares the current state of the SOA initiative (as measured in the assessment phase) with the goal for the initiative (defined in the vision phase). The gap between the two is then analyzed to determine the causes. Remediation approaches are identified.

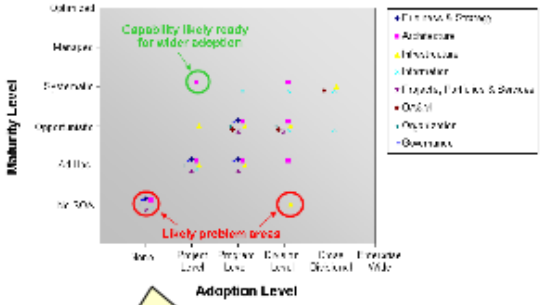
The maturity and adoption scores from the current state assessment phase measure the progress of an SOA initiative and, more importantly, identify specific capabilities that are lacking or lagging and are therefore inhibiting the SOA initiative.

The gap between where the organization is currently and where it needs to be to achieve its goal is categorized by capability domain (from the SOA Maturity Model) to identify lagging domains. It is further categorized by individual capability to identify specific capabilities that are lacking or lagging.

After the lagging capabilities have been identified, a remediation approach for each of the identified inhibitors is determined from industry best practices and prior experience.

Problem Domains and Outlier Capabilities

Identify the domains that exhibit the largest gap between current maturity and the maturity needed to achieve the SOA goal.



In outlier capabilities, the maturity and the adoption are significantly out of sync.
This usually indicates a capability that should receive early attention in the roadmap.

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Plotting the current maturity against the vision (as shown in the slide) provides a visual representation of the gap between where the organization is with respect to SOA and where it needs to be to meet the goal of the SOA initiative. This analysis is fed into the roadmap creation phase.

In this example, the graph clearly shows that the Organization domain is the area requiring the most attention, followed closely by the Business and Strategy domain. These lagging domains are the probable best area of focus for the early phases of the SOA Roadmap.

When illustrated on a scatter plot, the maturity and adoption scores for capabilities usually fall along the diagonal. A capability that falls well above the diagonal indicates a capability that is being done very well within a relatively small area of the organization. In this example, there is a capability at a Systematic level of maturity that is being done within a single project (noted by the green circle). Fostering greater adoption of this capability provides an easy win for the SOA initiative because there is no need to develop greater competency for this capability, since it already exists within the organization. Some training or mentoring can spread the ability more broadly within the organization.

A capability well below the diagonal indicates a capability that is being done poorly (or in a non–SOA compliant fashion) very broadly. In this example, there is a capability being done at a No SOA level of maturity across the entire division. Corrective action needs to be taken for this capability because, if left uncorrected, it will inhibit (and probably already has inhibited) the SOA initiative.

Capabilities that plot toward the lower-left corner are capabilities that are either nonexistent or lagging behind the other capabilities. These capabilities will be addressed in the next step of the gap analysis process.

The capabilities that plot toward the upper-right corner are capabilities that are currently being done well. No remediation is required, and the organization should continue business as usual for those capabilities.

Lagging Capabilities and Remediation

Capability heat maps can be used to visually identify low maturity capabilities.

- Not all capabilities are of equal importance for a particular organization.
- Capabilities may be deemed unimportant or not applicable.

Domain	Remediation Comments
Business & Strategy	Remediation for this domain and the capabilities within this domain usually requires executive management decisions and directives. A common remediation activity is a facilitated workshop with appropriate executives to define the necessary strategies, make decisions, and formulate directives.
Architecture	Low scores in this domain usually indicate the lack of a reference architecture for the SOA initiative, or if the reference architecture exists, it lacks completeness and details. Remediation usually entails workshops with Enterprise Architects to specify a complete, detailed reference architecture.
Infrastructure	Low scores in this domain usually indicate that the service infrastructure is lacking significant elements. Infrastructure installation and configuration type projects are common remediation activities.
Information	Low scores in this domain usually indicate issues with the information architecture, data quality approach, and/or information stewardship. Common remediation activities are workshops to address the causes for the low scores.
OA&M	Remediation activities for low scores in this domain usually entail definition, documentation, and enforcement of SOA compatible OA&M procedures. Low scores could be due to lacking SOA knowledge/skills or could be due to a low maturity of OA&M in general.
Projects, Portfolios & Services	Low scores in this domain usually indicate a lack of SOA compatible management and delivery processes. Common remediation activities entail workshops to modify existing management and delivery processes to inject SOA best practices.
Organization	Low scores in this domain usually indicate that roles and responsibilities appropriate for SOA have not been instituted within the organization. There may also be a lack of SOA knowledge/skills. Common remediation activities include developing training plans and workshops to define the necessary roles and responsibilities. Remediation may also require organization restructuring.
Governance	Most organization have existing IT governance in place, so low scores in this domain usually indicate that governance has not been extended to cover SOA. Remediation usually requires a workshop to define and institute the governance extensions required for SOA.

Remediation activities have been identified to address the lagging domains and capabilities.

Remediation activities provide a primary input into the roadmap creation process.

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A capability heat map is a color-coded visual identification of lagging capabilities. The red and orange capabilities correspond to those in the lower-left corner of the scatter plot, at either the No SOA level or the AdHoc level of maturity. These are the areas that need to be addressed.

On the right side of the slide is a table with some general comments about remediation for low scores in each domain. The specific action for individual lagging capabilities will vary by implementation.

Lagging Capabilities and Remediation

Domain	Comments
Business and Strategy	Remediation usually requires executive management decisions and directives. A common remediation activity is a workshop with appropriate executives to define the necessary strategies, make decisions, and formulate directives.
Architecture	Low scores usually indicate the lack of a reference architecture for the SOA initiative. Or, if the architecture exists, the low scores indicate that it lacks completeness.
Infrastructure	Low scores usually indicate that the service infrastructure is lacking significant elements. Infrastructure installation and configuration type projects are common remediation activities.
Information	Low scores usually indicate issues with the information architecture, data quality approach, and/or information stewardship.

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At this point in the gap analysis process, the problem domains have been identified and the problem capabilities within each domain have also been identified. The next step is to identify remedies for each problem domain and capability. The remedies depend on the problem being addressed and also frequently have some aspect that is specific to an organization. Thus, unfortunately, it is not possible to provide a prescriptive approach to determining remediation activities for every SOA capability. However, based on the domains, there are some general guidelines that can usually be applied to creating remediation activities. The table in the slide lists some of those guidelines.

Lagging Capabilities and Remediation

Domain	Comments
OA&M	Low scores could be due to lacking SOA knowledge/skills or could be due to a low maturity of OA&M in general.
Projects, Portfolios and Services	Low scores usually indicate a lack of SOA-compatible management and delivery processes.
Organization	Low scores usually indicate that roles and responsibilities for SOA have not been instituted within the organization. There may also be a lack of SOA knowledge and skills.
Governance	Low scores usually indicate that existing IT governance has not been extended to cover SOA.

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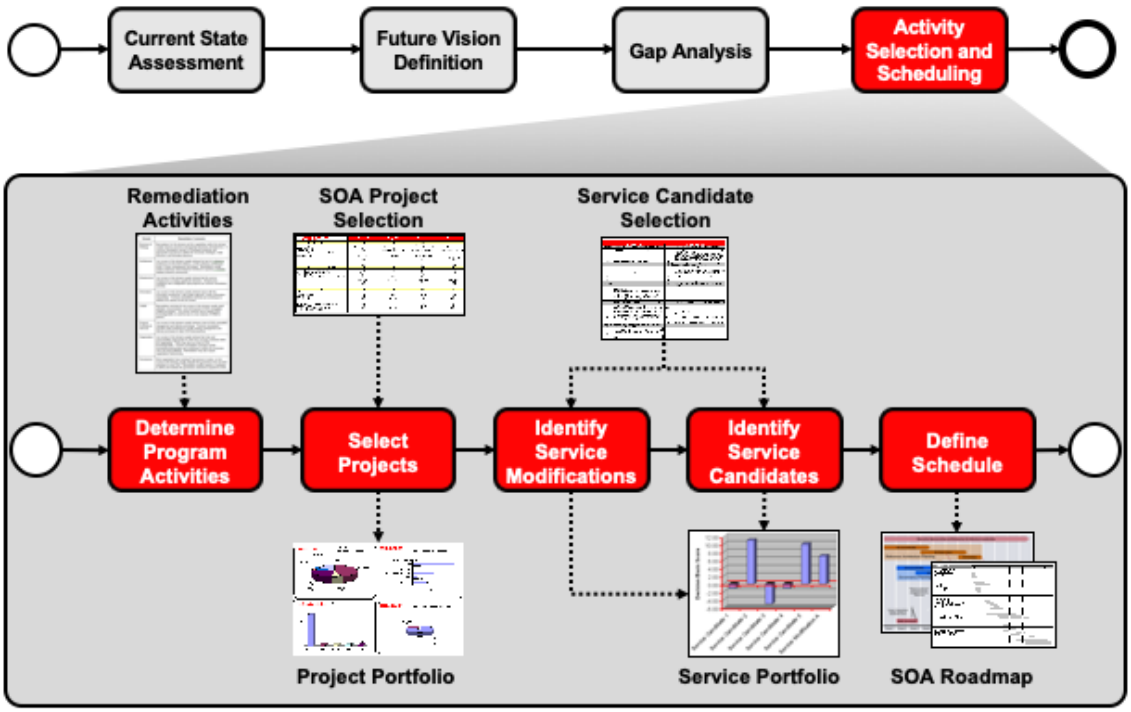
Activity Selection and Scheduling



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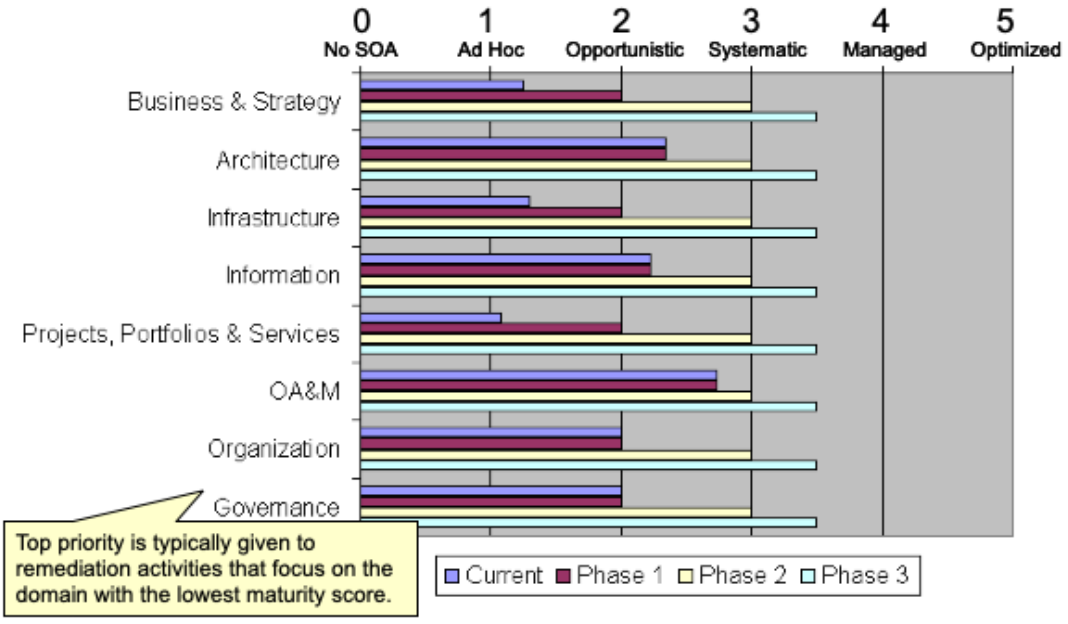
You start activity selection and scheduling by looking at remediation activities to fix those things identified as impediments to SOA success. With those impediments identified and noted, the next step is to select the projects. Service modification and service candidate identification come next. With those selections made, you then examine the choices to learn how they align and what the dependencies are. From that, a schedule can be built.

Roadmap Creation: Prioritize Remediation Activities



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According to Tom Termini, “Cultural resistance is often the primary reason for failure in enterprise IT endeavors. If your adoption posture is incremental, you will lessen the impact on your organization, customers, and partners so they can assimilate change gradually.”

Top-priority remediation activities are usually the first activities in the roadmap because the results from these activities are leveraged across the solution and service delivery efforts.

Program-level activities frequently entail changes with wide-ranging impacts. For example, changing the software development process (to inject service-oriented best practices) affects all development teams within the scope of the SOA initiative. Organizational changes can be even more taxing. Therefore, it is usually necessary to undertake these changes in a series of iterations.

The graph illustrates three iterations, each of which increases the maturity of one or more domains until the desired “vision” level of maturity is achieved. Notice that the first phase focuses on bringing all domains up to the opportunistic level of maturity. This means that the first phase will include remedy activities for the Business and Strategy, Infrastructure, and Projects, Portfolios and Services domains. After near parity is achieved across domains, follow-on phases address the eight domains more uniformly to keep the SOA initiative progressing smoothly.

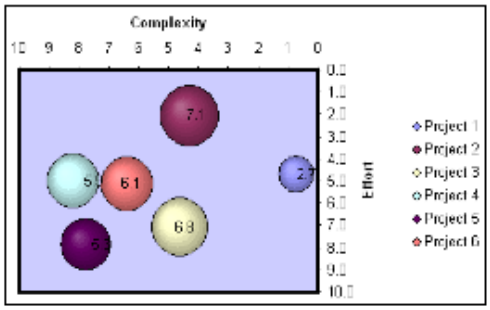
You should undertake changes in a series of iterations or phases. The duration of each iteration must:

- Be long enough to accomplish some meaningful progress
- Be short enough to minimize risk
- Maintain a continuous pace of incremental progress

Each iteration must not exceed the organization’s ability to absorb that change.

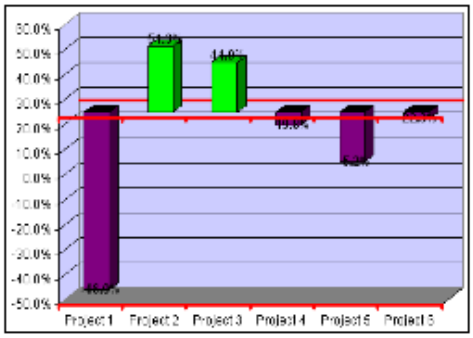
Project Selection: Provide Business Value

The SOA Roadmap extends traditional project portfolio planning with additional SOA criteria to rank projects. (These projects typically are on an existing list.)



Projects selected must:

- Provide measureable business value
- Be appropriate for a service-oriented approach
- Advance the SOA initiative
- Be desirable after costs, complexity, benefits, and risks are considered



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Each iteration should increase the maturity of the organization while also providing business value. Usually the program-level activities do not produce quantifiable business value. Rather, it is the solution development efforts that create measurable business value.

There may also be new risks associated with taking a service-oriented approach to a project. These risks can be specific to the project or might be associated with the SOA initiative itself. For example, if there is no experience or defined best practice for the service infrastructure, a project using the service infrastructure has additional risk associated with that usage.

Selecting projects requires balancing all these new SOA factors with the traditional factors (including cost, complexity, benefits, and risks).

The graph in the slide shows the analysis results for six different projects. The size of the bubble represents the relative benefit that the project would provide. The bubble is plotted against the complexity and effort for the project. Large bubbles toward the upper-right corner are projects that provide the greatest benefit for the least effort and complexity. From this analysis, project 2 is the best choice and projects 1, 3, and 6 are also contenders for inclusion in the roadmap. The next step is to analyze the risk associated with the projects.

This graph plots the benefit-to-risk ratio for each of the projects. Projects with higher numbers will have more benefits than risks. This graph clearly shows that projects 2 and 3 are the best projects to include in the SOA Roadmap. Project 1, which was a contender from the cost and complexity perspectives, is clearly not a good choice due to its low benefit-to-risk ratio.

SOA Project Selection

Evaluate each project in terms of effort, complexity, benefits, and risks.
Generate a numeric score to help select projects for the SOA Roadmap.
The framework is not intended to replace existing project portfolio planning.

ORACLE	Project 1	Project 2	Project 3	Project 4	Project 5
Technical Complexity Criteria	6.70	4.30	4.60	8.20	7.75
Architecture Type	Simple Sequence of Steps	BPM (Orchestration + Workflow)	System Integration (EAI)	Composite Application	Composite Application
Transaction Control?	No	No	Yes	Yes	No
Type of Connectivity	None	Web Services / WSIF / EJB	Web Services / WSIF / EJB	Web Services / WSIF / EJB	System Adapters
Upgrading or Changing Integrated Systems ?	No	Yes	No	Yes	No
SOA Components	BPEL / ESB	BPEL / ESB	BPEL / ESB / OWSM	BPEL / BSB / OWSM / BAM / Rules / WebCenter	BPEL / BSB / OWSM / BAM / Rules / WebCenter
-	None	None	None	None	None
-	None	None	None	None	None
-	None	None	None	None	None
Functional Effort Criteria	4.70	2.10	7.10	5.90	7.85
Number of Process and Sub-Process	4 - 6	1 - 3	4 - 6	4 - 6	> 12
Average Number of Steps for a Process	6 - 20	1 - 7	> 35	21 - 35	> 35
Number of Systems	0	1	> 6	2 - 4	1
Average Number of Interactions/Operations (per System)	0	3 - 6	1 - 3	> 7	1 - 3
% from Existing Shared Services	0% - 25%	51% - 75%	26% - 50%	76% - 100%	26% - 50%
-	None	None	None	None	None
-	None	None	None	None	None
-	None	None	None	None	None
Benefits Criteria	2.50	7.30	6.65	5.70	5.95
ROI	Low	High	High	None	Low
Investment Needed	High	Low	Medium	None	Low
New Revenues	Low	High	High	None	Low
Cost Reduction	None	Medium	High	Medium	None
Payback Time	Low	High	High	Low	Low
More business and technical flexibility and agility	Low	High	High	None	Low
SOA Asset Creation	Low	None	Medium	High	Medium
Alignment with Prioritized SOA Benefits	Low	Medium	Low	Medium	Low
Alignment with SOA Principles	Low	Medium	Medium	Medium	Low

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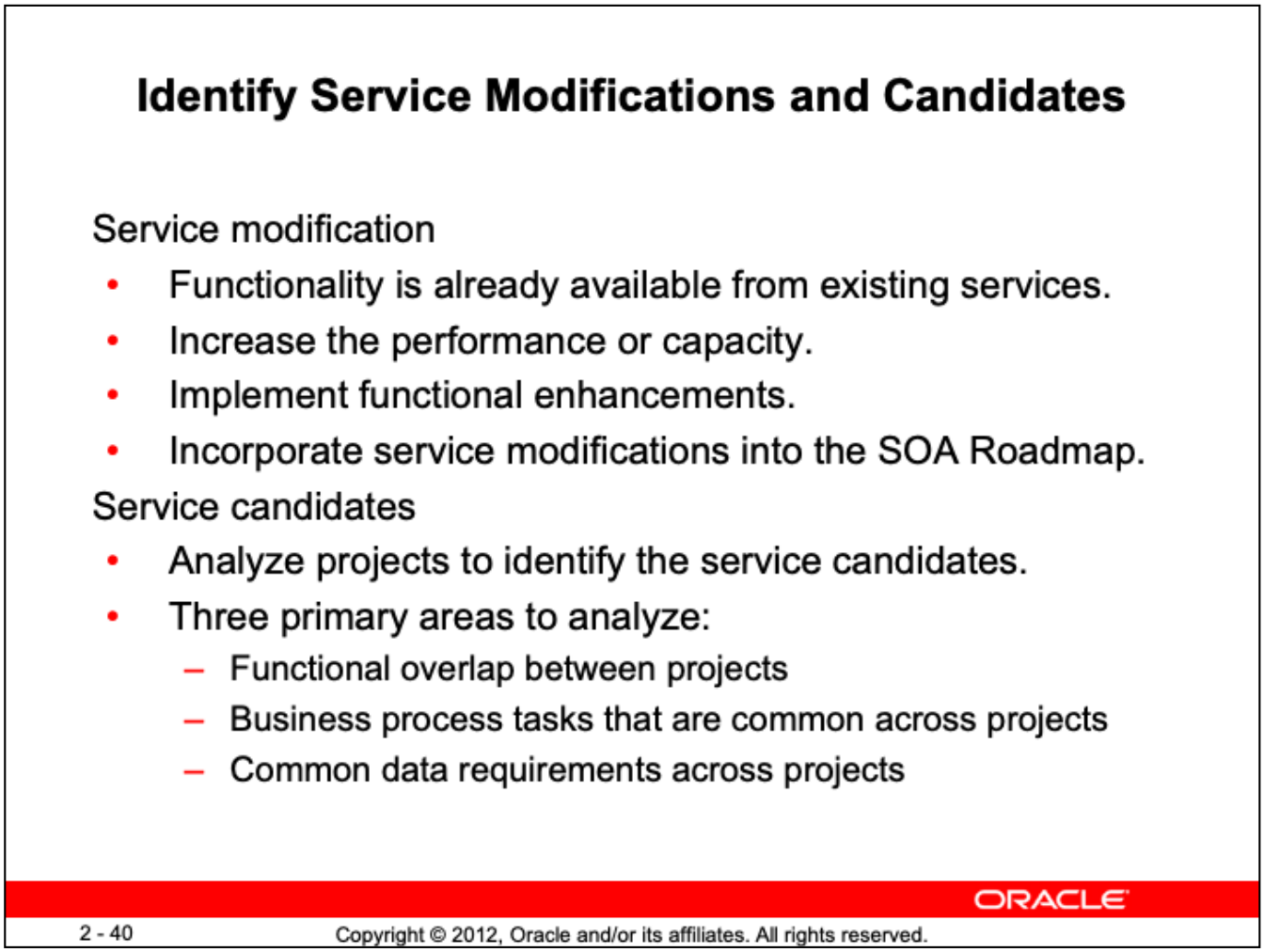
The diagram in the slide shows an example of a project selection tool that has been used to evaluate several projects in terms of effort, complexity, benefits and risks. A numeric score has been generated to help select projects for the SOA Roadmap.



Now that projects have been selected to become part the SOA Roadmap, the next step is to identify services and candidate services that should be included in the roadmap.

Service Modification

An existing service needs enhanced functionality to support the new project. Ideally the changes can be done in a backward-compatible manner, thereby allowing existing consumers of the services to move to the new version deployed to support the new project. Notice that a service versioning strategy should be in place to support these types of changes.

Either type of change to existing services needs to be incorporated into the SOA Roadmap. The projects that use the existing services have a dependency on the service modification activities, and this dependency must be captured in the roadmap.

Service Candidates

After the service candidates have been identified, a selection process should be applied to these (similar to the process used for the projects).

The service candidates that are selected are included in the SOA Roadmap. Service candidates (and service modifications) that are not selected should be recorded for future iterations of the roadmap. Although a service candidate did not make the cut for this iteration of the roadmap, it might very well make the cut in a future iteration.

SOA Service Candidate Selection

For each service candidate, assess realization benefits and inhibitors, assigning a numeric score to each.

ORACLE	Service Candidate 1	Service Candidate 2	Service Candidate 3	Service Candidate 4	Service Candidate 5	Service Modification A
Realization Benefits Scores	**9.00**	**12.00**	**1.00**	**6.00**	**12.00**	**11.00**
Scope Score	Enterprise	Enterprise	Application	LOB	Multi-Enterprise	Multi-Enterprise
Reuse Score	Low	High	Low	Medium	High	Low
Agility Score	Low	High	None	Medium	High	High
Compliance Score	Medium	High	None	Low	High	Low
Enablement Score	High	Low	None	None	None	High
-	None	None	None	None	None	None
-	None	None	None	None	None	None
-	None	None	None	None	None	None
Realization Inhibitor Scores	**10.00**	**1.00**	**6.00**	**7.00**	**2.00**	**4.00**
Skill-set Impact Score	High	None	Low	Medium	Low	Medium
Technology Capability Score	Medium	None	High	Medium	None	Low
Project Impact Score	High	Low	Low	Medium	None	None
QoS Feasibility Score	Medium	None	Low	Low	Low	Low
-	None	None	None	None	None	None
-	None	None	None	None	None	None
-	None	None	None	None	None	None
-	None	None	None	None	None	None
Decision Basis Score	**-1.00**	**11.00**	**-5.00**	**-1.00**	**10.00**	**7.00**

The overall numeric score is used to justify service candidates for realization.

The outcome does not determine if the functionality should be built, but may justify the extra effort to build a reusable service.

If the reusable service is not justified, functionality is built by the project.

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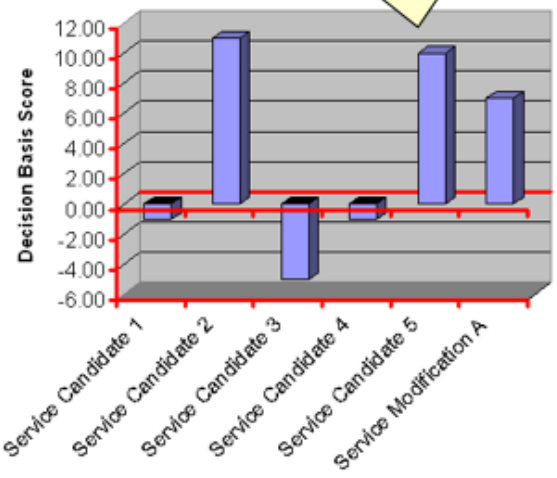
The diagram in the slide shows an example of a tool that is used to aid in service candidate selection. For each service candidate, a numeric score has been assigned to each realization benefit and inhibitor. The overall numeric score is used to justify service candidates for realization. Note that this does not determine whether or not the functionality should be built—it serves only as an indicator that extra effort is needed to build a reusable service. If extra effort is not needed, the functionality will be built by the project.

SOA Service Candidate Selection

Different weights can be applied to each score.

Weight Distribution	
Realization Benefits Scores	100%
Scope Score	20%
Reuse Score	20%
Agility Score	20%
Compliance Score	20%
Enablement Score	20%
-	0%
-	0%
-	0%
Realization Inhibitor Scores	100%
Skill-set Impact Score	25%
Technology Capability Score	25%
Project Impact Score	25%
QoS Feasibility Score	25%
-	0%
-	0%
-	0%
-	0%

Results can be graphed in various ways.



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Define Schedule

1. Determine start date and duration of the program-level activities.
2. Determine start dates for selected projects.
   - Projects should not begin in earnest until program-level activities complete. (Some overlap is allowed.)
   - End date is determined by effort, complexity, resource availability, and business needs.
3. Determine delivery dates for service modifications.
   - Service modifications usually must be available in time for project integration testing.
4. Determine delivery dates for service candidates.
   - Dates are driven by the needs of projects that require the new service.

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The schedule defined in this step is the schedule for the entire SOA initiative. It is therefore the high-level schedule that illustrates the ordering and dependency relationships between program-level activities, the selected projects, service modifications, and the selected service candidates.

The high-level phases of the SOA Roadmap were shown earlier, but those phases did not include actual timelines since that could not be determined until the projects, service modifications, and service candidates had been identified. The steps to put together the schedule are as follows:

- Create the program-level activities schedule.
- Create the high-level project schedule.
- Determine delivery dates for service modifications.
- Determine delivery dates for service candidates.

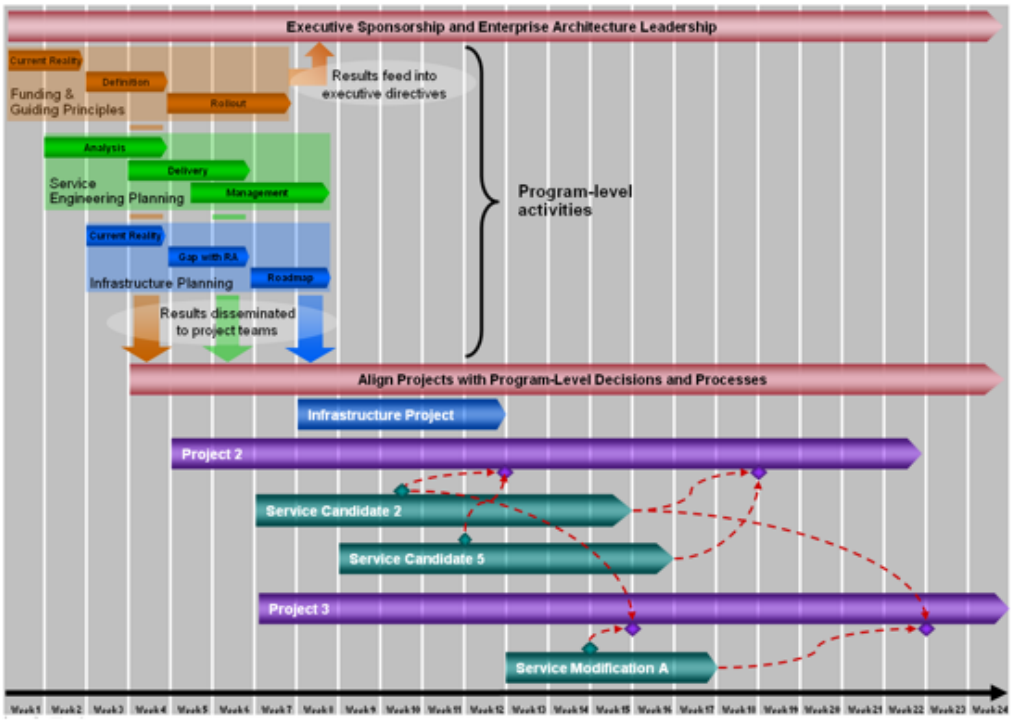
The first activity for defining the schedule is to determine the start date and duration for the program-level activities. These are the initial activities that are put in the SOA Roadmap.

The next step is to determine the start dates for the selected projects. Projects that are expected to leverage the outcomes of the program-level activities (usually all projects) should not begin in earnest until the program-level activities complete. Some overlap is allowed since the earliest phases of a project (for example, Inception in UP) can usually begin before the program-level activities are completed. The end date for the project is determined by effort, complexity, and resource availability. Sometimes the end date is mandated by business needs. In either case, the end date for the project is put into the schedule.

The delivery dates for the service modifications are determined by the needs of the project requiring the changes. Generally the service modifications must be available in time for project integration testing. Of course, an earlier delivery date is certainly acceptable and, in fact, preferable.

Finally, the delivery dates for the selected service candidates are determined. These delivery dates are also driven by the needs of the project requiring the new service. Again, the delivery date should meet or beat the date on which integration testing for the project begins. Additionally, the interface definition for the new service(s) should be available to support detailed design for the project.

Example SOA Roadmap: Phase 1 Schedule



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The schedule shown in the slide begins with three program-level activities to address the three domains (Business and Strategy; Projects, Portfolios and Services; and Infrastructure) that scored below the “Opportunistic” maturity level. The results from the program-level activities are then disseminated to all the projects and service candidate realization activities shown in the bottom half of the figure. The two projects, two service candidates, and service modification that were selected for inclusion in the roadmap are included in the schedule. The schedule uses dashed lines to show the dependencies between the service realization efforts and the two projects. Both the dependency on the service interface definition and the service deployment are shown, because both of these dependencies are important from a scheduling perspective.

As discussed earlier, the detail in the initial phase of the SOA Roadmap will be much greater than the detail provided for the later phases. The later phases will likely include additional program-level activities and more projects and the service candidates on which they are dependent, but it will also contain less detail.

Quiz

The *gap analysis* phase compares the current state of the SOA initiative (as measured in the assessment phase) with current industry best practices.

a. True
b. False

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Answer: b

The gap analysis phase compares the current state of the SOA initiative (as measured in the assessment phase) with the goal for the initiative (defined in the vision phase). The gap between the two is then analyzed to determine the causes. Remediation approaches are identified.

Summary

The SOA Roadmap encompasses:

- Program-level activities
- Project activities

The SOA Roadmap should be based on facts.

- Facts ensure that the roadmap accomplishes the goal of the SOA initiative.
- Tackle the largest inhibitors early.
- Focus on early wins to build momentum.

SOA is a journey of discovery and learning.

- An iterative approach is required.
- You should evaluate and adjust regularly.

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