



# Creating Strategic Models with Enterprise Architect

Strategic Modeling enables an organization to plan for the future and make decisions in accordance with its mission and values. Enterprise Architect can model every stage of the planning and development process, taking an idea 'from the clouds to reality.' This Quick Start Guide demonstrates how to create Strategic Models, including a Mind Mapping Diagram, Organizational Chart, Flowchart, Value Chain, Balanced Scorecard, Strategy Map and Decision Tree. An on-line strategy for a restaurant is used to illustrate how Enterprise Architect can cross-link various strategic models, providing comprehensive traceability that enables stakeholders to trace a requirement directly to a recorded discussion or corporate strategy.



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## Introduction

Strategic Modeling can help an organization develop strategic goals, make decisions and solve complex problems. Enterprise Architect's Model Driven Generation (MDG) Technology is capable of producing a variety of Strategic Models including a Mind Mapping Diagram, Balanced Scorecard, Strategy Map, Value Chain, Decision Tree and Flow Chart. Each Strategic Model within Enterprise Architect is examined in detail, culminating in a hypothetical Restaurant that uses Strategic Modeling principles to increase revenue, improve traceability, reduce over-time and manage staff.

## What You Will Learn

This Quick Start Guide teaches you how to:

- Develop Strategic Models that support decision making and problem solving.
- Use Enterprise Architect to take notes, manage collaborative discussions, make decisions and solve problems using a model based visual notation.
- Layout diagram elements in order to improve readability and reduce complexity.
- Develop an Organizational Chart that outlines staff responsibilities and reporting structures.
- Interpret and improve a decision making process using a Flowchart.
- Explain the purpose and benefits of Strategic Modeling.
- Use existing Patterns within Enterprise Architect to rapidly create a Value Chain, Balanced Scorecard, Strategy Map and a Decision Tree.

## What You Will Gain

Applying the information in this Quick Start Guide will give you:

- The ability to trace models from the highest levels to ensure that Strategic Plans become a reality.
- A visual notation to help you conduct and record meetings, brainstorming sessions and collaborative discussions.
- An understanding reporting structures, roles and responsibilities within your organization.
- Analysis and benchmarking tools that enhance customer and shareholder value.
- Performance Management techniques for analyzing and improving your business.
- An understanding of the relationship between corporate planning and real world outcomes.

## Assumptions

This Guide has been written under the following assumptions:

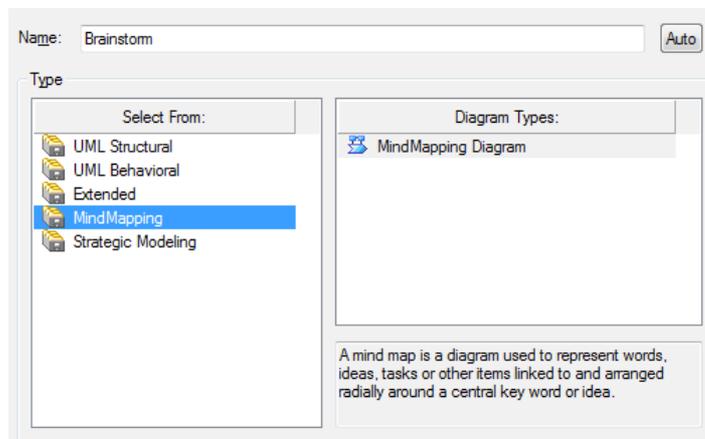
- You have a copy of Enterprise Architect installed.
- You have a basic understanding of diagram creation and how to access the Toolbox, Project Browser and the Properties Dialog.



## Creating a Mind Mapping Diagram

Mind Mapping Diagrams offer a flexible, visual notation to convey complex information. Typically they are used for studying, collaborative discussions, problem solving, brainstorming, presenting complex ideas and decision making. Using this non-linear approach allows the information to be interpreted in many ways, producing unique and innovative solutions.

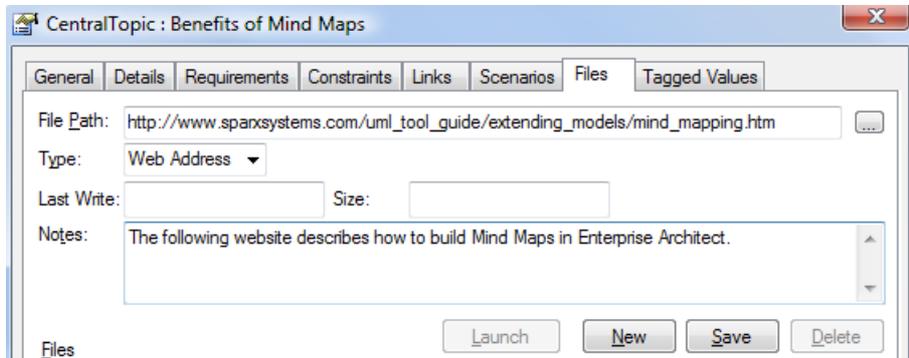
1. Open Enterprise Architect and create a new file called “StrategicModel.eap”. Create a Simple View entitled “The Enterprise”, followed by a package called “MindMapping”.
2. Right-click the MindMapping Package and select Add | Add Diagram. Create a new MindMapping diagram called “Brainstorm”.



3. **Start with the central theme:** Open the Toolbox and place a Central Topic called “Benefits of Mind Mapping” into the middle of the Diagram View.



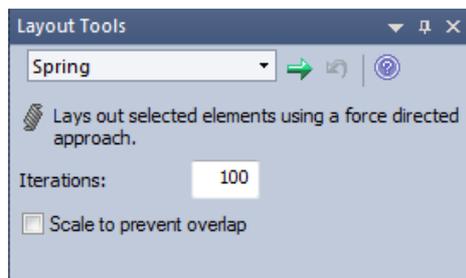
4. **Create associated topics:** Use the Quick Linker Arrow to create three Main Topics entitled “Problem Solving”, “Memory Recall” and “Decision Making” as shown below. Alternatively you can use the Relationship connector in the Toolbox to link to related topics.
5. Select “Memory Recall” and create three associated Topics called “Association”, “Visual Memory” and “The Brain”.
6. Select “The Brain” Topic and create four Sub-topics entitled “Emotion”, “Language”, “Imagination” and “Visual Processing”. Your diagram should now contain 11 related topics.
7. **Create links to on-line resources and important meta-data:** Access the Properties Dialog for the Central Topic called the “Benefits of Mind Mapping”. Select the Files tab and enter the URL below in order to access the Enterprise Architect Help Entry related to Mind Mapping Diagrams. Enterprise Architect can easily link to any supplementary material including local the minutes of a meeting, relevant documents, files and web pages.



8. **Make elements stand out by adding color:** Sometimes you may wish to draw attention to a particular topic or concept. Use the Format toolbar (shown below) to alter the font color of the Visual Processing Sub-Topic to the color blue. Color can be used to structure information and enhance readability.



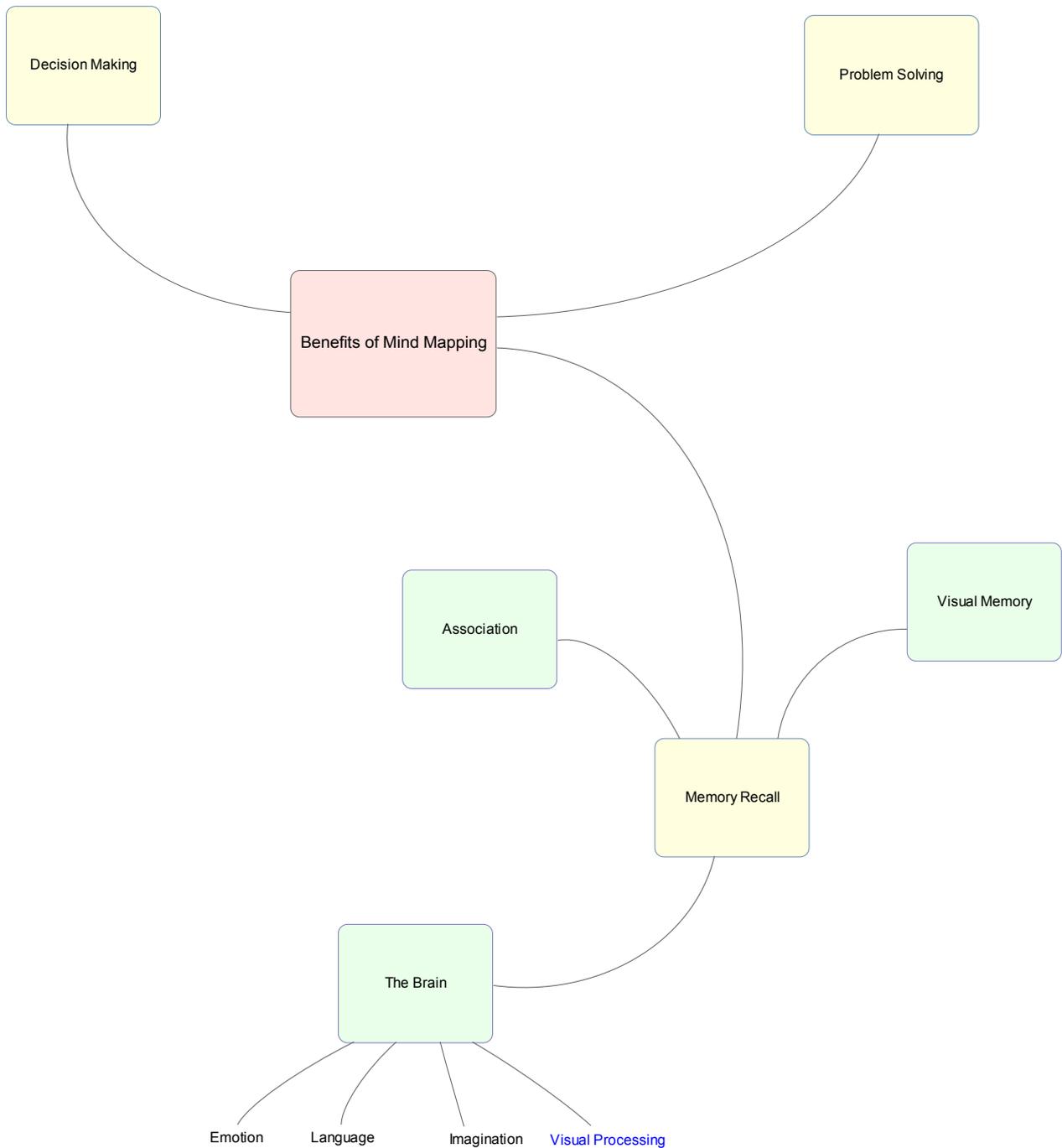
10. **Layout the diagram:** Select View | Layout Tools to alter the appearance of a Diagram. These Tools provide a large number of customization options to enhance the visual layout and presentation of your diagrams. Please Note: Mind Mapping diagrams traditionally use curved lines.



11. **Adjust the height and width of your diagram:** Right-click your Mind Mapping diagram to modify the layout of the diagram based on the following attributes:
  - Align elements (left, right, top, bottom, centers).
  - Modify size (Auto-size, same height and width).
  - Space evenly (Equal distance across and down).
  - Layout selected elements.



## Benefits of Mind Mapping Example

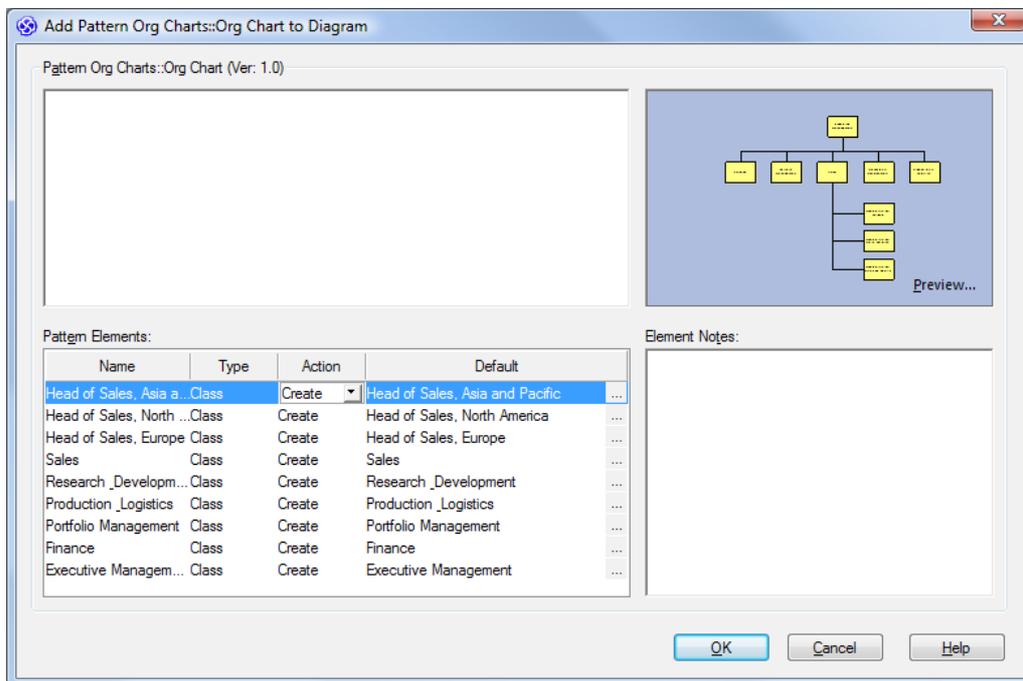




## Developing an Organizational Chart

An Organizational Chart (Org Chart) is a graphical representation of the structure of an organization, describing the roles and responsibilities of each staff member. Enterprise Architect provides an Org Chart pattern to speed up the creation of Organizational Charts. The following example illustrates how easy it is to modify the basic pattern to suit your individual needs.

1. Create a new package entitled “The Org Chart”. Right-click the package and then select Add | Add Diagram. Create a new Organizational Chart called “Company Structure” and click on OK.
2. From the Toolbox, select the “Org Chart” Pattern and drag it onto the Diagram View. Modify the Pattern elements by selecting the ellipsis button next to each role.



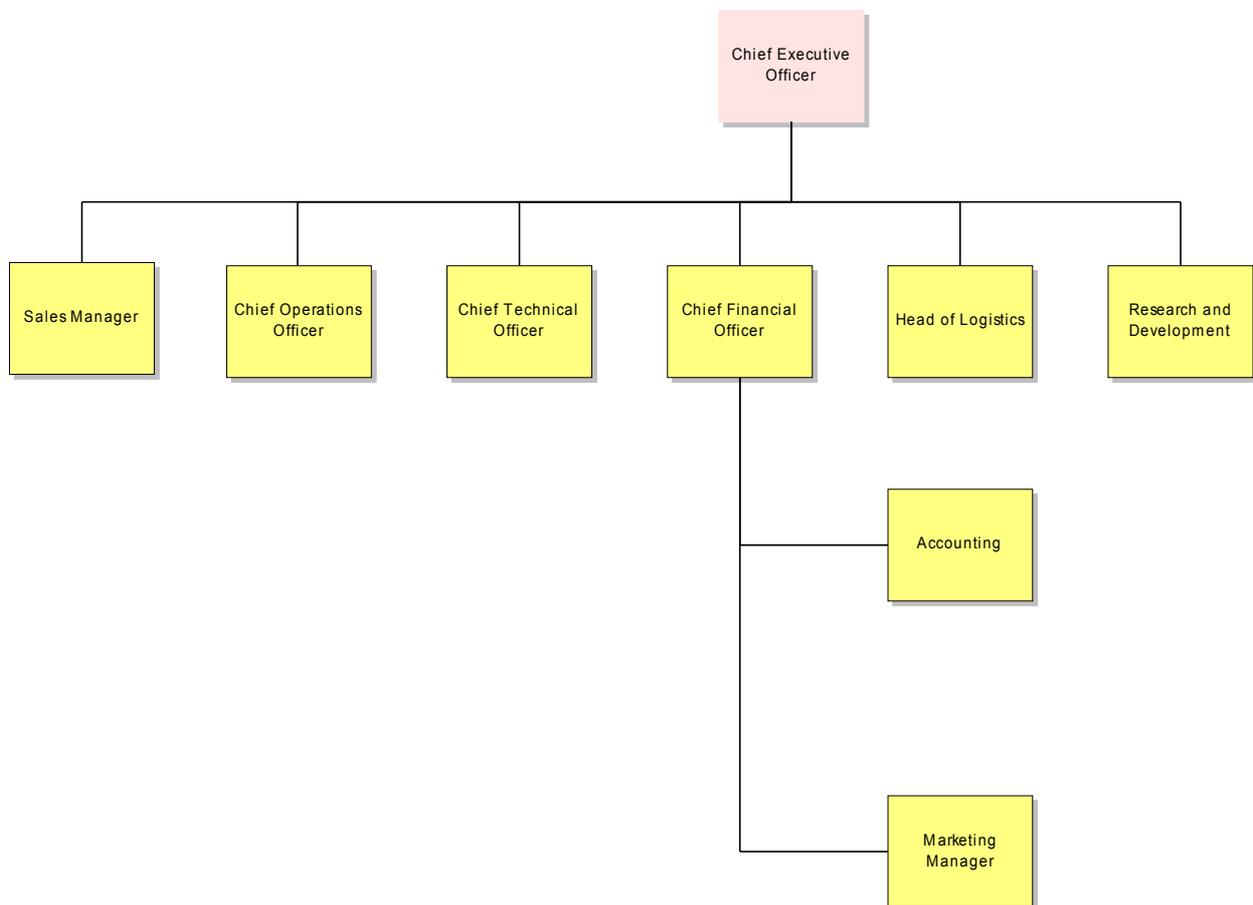
3. Create the following roles in order :
  - Marketing Manager
  - Sales Manager
  - Accounting
  - Chief Financial Officer
  - Head of Logistics
  - Research and Development
  - Chief Technical Officer
  - Chief Operations Officer
  - Chief Executive Officer



6. Move the Sales Manager Role so that they can report directly to the CEO.
7. Delete the connector to the Sales Manager Role. Move this Role next to the Chief Operations Officer. Select the 'Reports to (Vertical Tree)' connector from the Toolbox and link Sales Manager to the Chief Executive Officer.
8. Select the Chief Executive Officer and change the Line and Fill Color to 'Rose' using the Format Toolbar.

### Organizational Chart – Completed Example

Each Role in the diagram below can be linked to a position description, web page or personal CV via the element's Properties or using a Linked Document. Enterprise Architect can also generate RTF and HTML documentation in order to publish the Organizational Chart for distribution to staff.

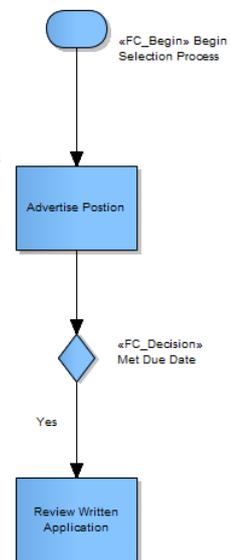
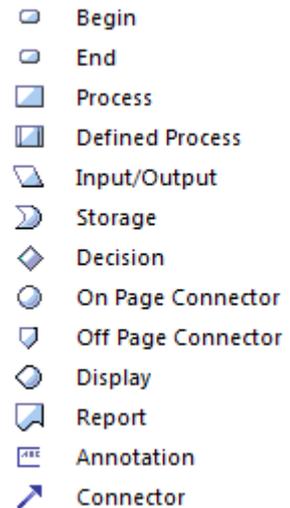




## Creating a Flow Chart

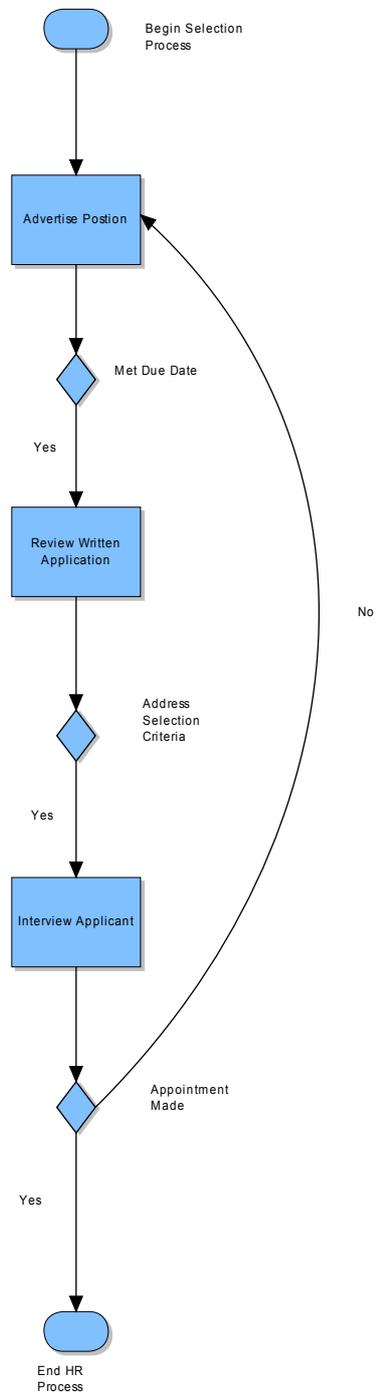
A Flow Chart is a graphical representation of a sequence of events, helping decision makers understand the relationship between their decisions and a given outcome. Flowcharts use a range of simple geometric shapes to represent a process, decision, storage or output (shown below). Create a flowchart for hiring staff at a Restaurant.

1. Create a new package entitled "Flow Chart". Add a Flow Chart diagram from the Strategic Modeling category.
2. Place a Begin and End icon onto the Diagram View. Name the two respective items "Begin Selection Process" and "End HR Process".
3. Create two different Processes called "Advertise Position" and "Review Written Application".
4. Create a Decision called "Met Due Date". This decision will be used to determine if a candidate will proceed to the written application stage.
5. Draw a connector between "Begin Selection Process" and "Advertise Position", followed by another connector between "Advertise Position" and "Met Due date".
6. Right-click the Connector located between "Advertise Position" and "Met Due date" and select the ControlFlow Properties.
7. Name the Connector 'Yes' as shown below.
8. By labeling the ControlFlow with the word "Yes", we assert that if an application is received by the due date then it will be reviewed by staff in the Human Resources department. Any submissions received after the due date will not be reviewed by staff. Create a Decision called "Address Selection Criteria". Draw a Connector from "Review Written Application" to the Decision "Address Selection Criteria".
9. Create a Process called "Interview Applicant".
10. Draw a Connector from "Address Selection Criteria" to "Interview Applicant" and label the connector 'Yes' - denoting that if the applicant has addressed the selection criteria, then proceed to "Interview Applicant".
11. Create a Decision called "Appointment Made". For the 'Yes' response, draw a connector to "End HR Process".
12. For the 'No' response, draw a connector to "Advertise Position". Note: You could use a Bezier Connector (a curved line) to improve the diagram layout. Select the entire diagram (Ctrl+A) and Select Align Centers | Align Vertically.





### Flow Chart – Completed Example





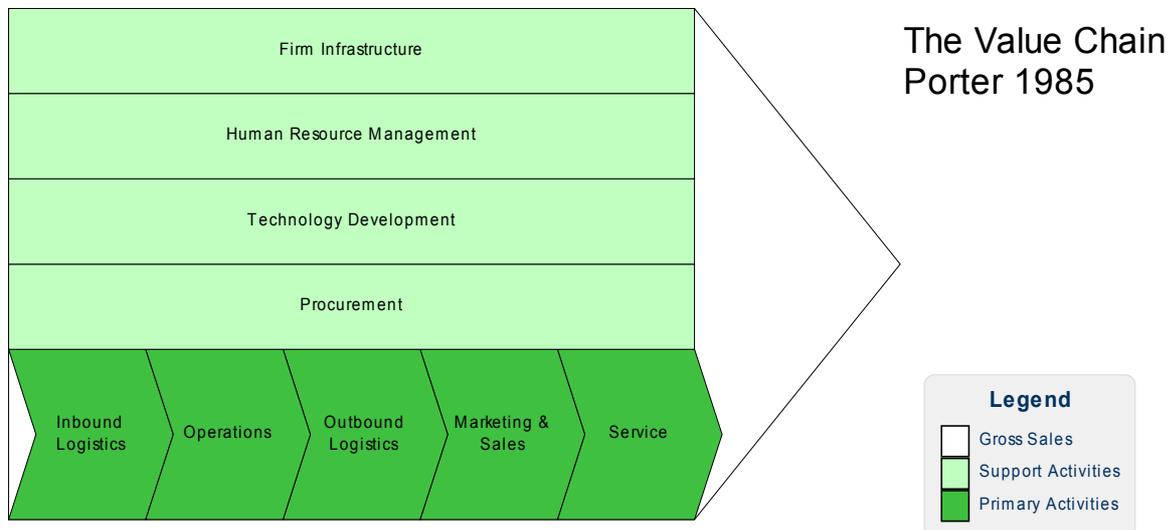
## Creating a Value Chain

A Value Chain (Porter, 1985) examines the performance and cost of each value-creation activity within an organization. It is a tool that can be used for strategic planning purposes, to identify parts of an organization that provide the best value for customers and shareholders. A Value Chain is often used in conjunction with financial reporting to control cost drivers and identify areas that need improvement.

If a company can derive greater value from one of the activities in the Value Chain, they will be able to beat the competition, creating greater value for the shareholder and customer. For example: A business may have access to cheaper raw materials (Inbound Logistics), use a more efficient manufacturing process (Operations) or reduce transport and storage costs (Outbound Logistics). These primary activities are in turn supported by a number of secondary activities such as HR Management and Technology. A Business is able to gain a competitive advantage by analyzing each activity in the chain, benchmarking the activity against the competition, improving processes, providing better differentiation and reducing costs.

Enterprise Architect is able to link each activity in the Value Chain to support documentation, including budgets and benchmark results. The ability to link to competitors' websites and web based market information extends the power of the Value Chain beyond a traditional text based model.

1. Create a new package entitled "Value Chain".
2. Create a new Value Chain diagram called "Our Company" and click on OK.
3. Select the Value Chain pattern from the Toolbox and place it on the Diagram View.



4. The default Value Chain can be customized to reflect how your company operates.
5. You can easily modify the color of each activity using the Format Toolbar.





## Creating a Balanced Scorecard

Traditional performance management tools only focus on financial outcomes and often fail to consider other important factors like loyal customers or skilled staff. A more balanced approach is to consider non-financial performance measures in relation to Company Strategy. For example, customers might be prepared to pay more for goods and services produced from an environmentally friendly company. A Balanced Scorecard (*Kaplan and Norton, 1992*) gives equal weight to four different perspectives. In a single diagram you can record key financial and non-financial goals, with links to meaningful benchmarks and performance measures. The Scorecard acts as a communication and measurement tool to address strategic planning.

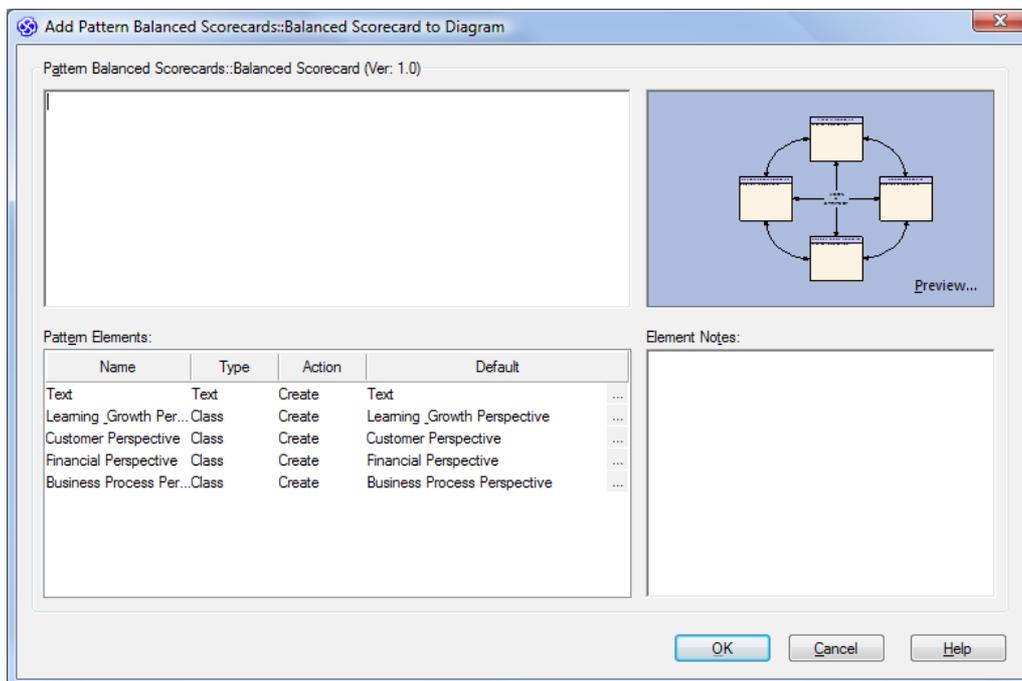
Balanced scorecard - Four perspectives:

- Financial, Customer, Internal Business Process, Learning and Growth.

Each perspective must consider the following items:

- Strategic Objectives (growth, profitability, customer satisfaction, process excellence)
- Measures (revenue growth, return on equity, number of complaints, yield)
- Targets.
- Initiatives.

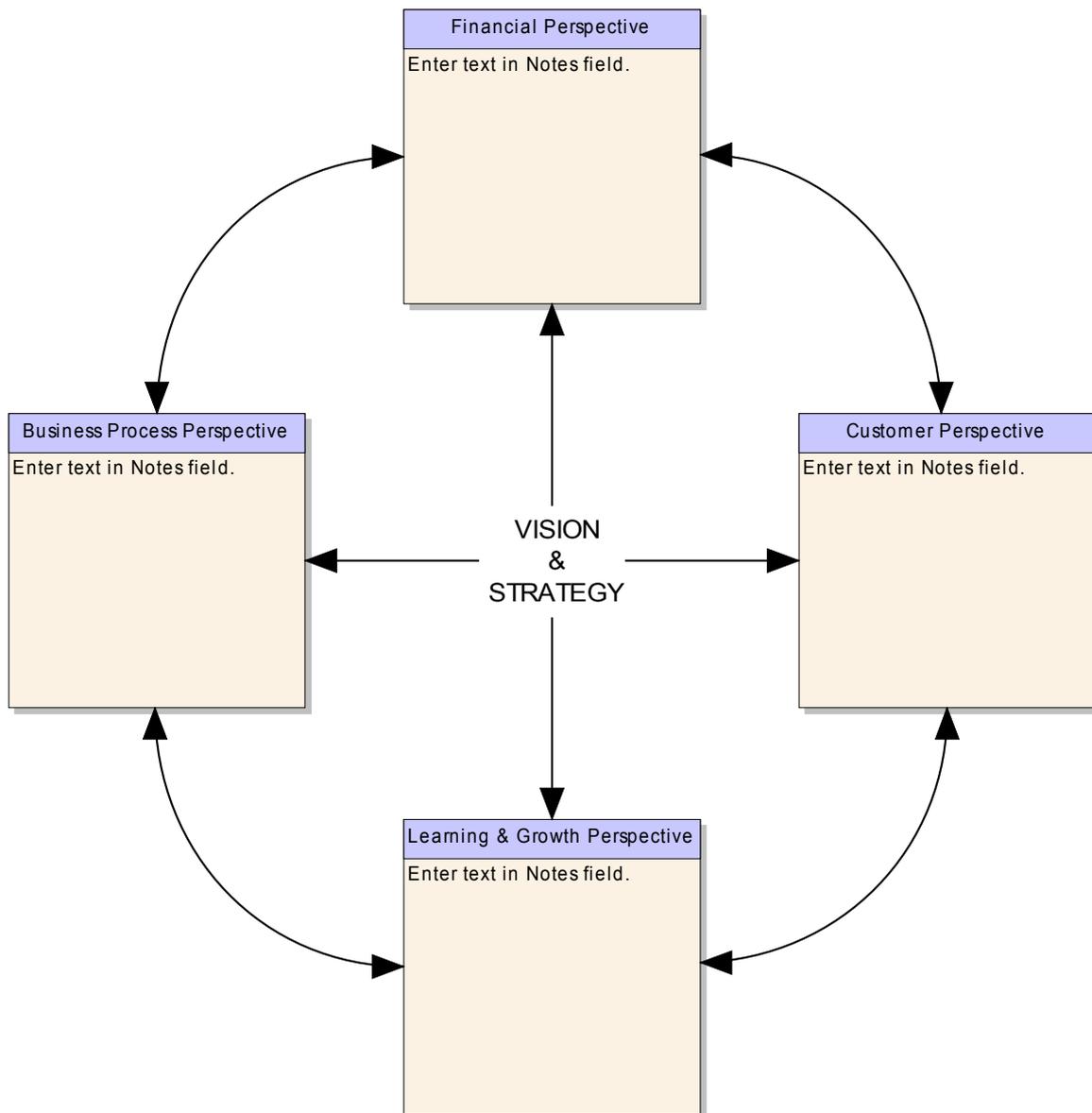
1. Create a new package entitled “Balanced Scorecard”.
2. Right-click the Balanced Scorecard package and select Add | Add Diagram.
3. Create a new Balanced Scorecard diagram called “Four Perspectives” and click on OK.
4. Select the Balanced Scorecard pattern from the Toolbox and place it on the Diagram View.





### Balanced Scorecard – Completed Example

The diagram below illustrates how the company vision and strategy is directly tied to each of the four perspectives. Resource allocation is based on results and strategy rather than a set of arbitrary financial numbers from the previous financial year. The Balanced Scorecard approach helps to ensure that business activity is engineered to adhere to company values and meet targets. Enterprise Architect allows each perspective to be linked to supporting documentation, model information and rigorous benchmarks that verify whether strategic initiatives have been undertaken and associated targets met.





## Creating a Strategy Map

Kaplan and Norton developed the Balanced Scorecard and the Strategy Map (*Kaplan and Norton, 2004*). The Strategy Map extends the Balanced Scorecard approach in order to clarify corporate strategy, using four perspectives and their 'cause and effect' relationship. The four perspectives are:

- Financial
- Customer
- Internal Business Process
- Learning and Growth.

Strategy Maps are typically used for planning and communicating the overall strategy of a given organization in order to create sustained value for customers and shareholders in the form of a 'cause and effect' chain. Strategy Maps provide a greater emphasis on measuring and managing the value created by enhancing an organization's intangible assets.

Intangible assets are items of value that can not necessarily be seen or touched. Examples of intangible assets include your brand, intellectual property, reputation, good will, patents, creativity and staff morale. A large percentage of an organization's shareholder and customer value is associated with intangible assets, yet traditional financial management systems fail to track, measure or evaluate them. As a result it is important that tools such as a Balanced Scorecard and Strategy Map are used to develop a more balanced approach to Strategic Planning. The ability to see 'cause and effect' relationships helps an organization understand the chain of events that sees intangible assets transformed into real value.

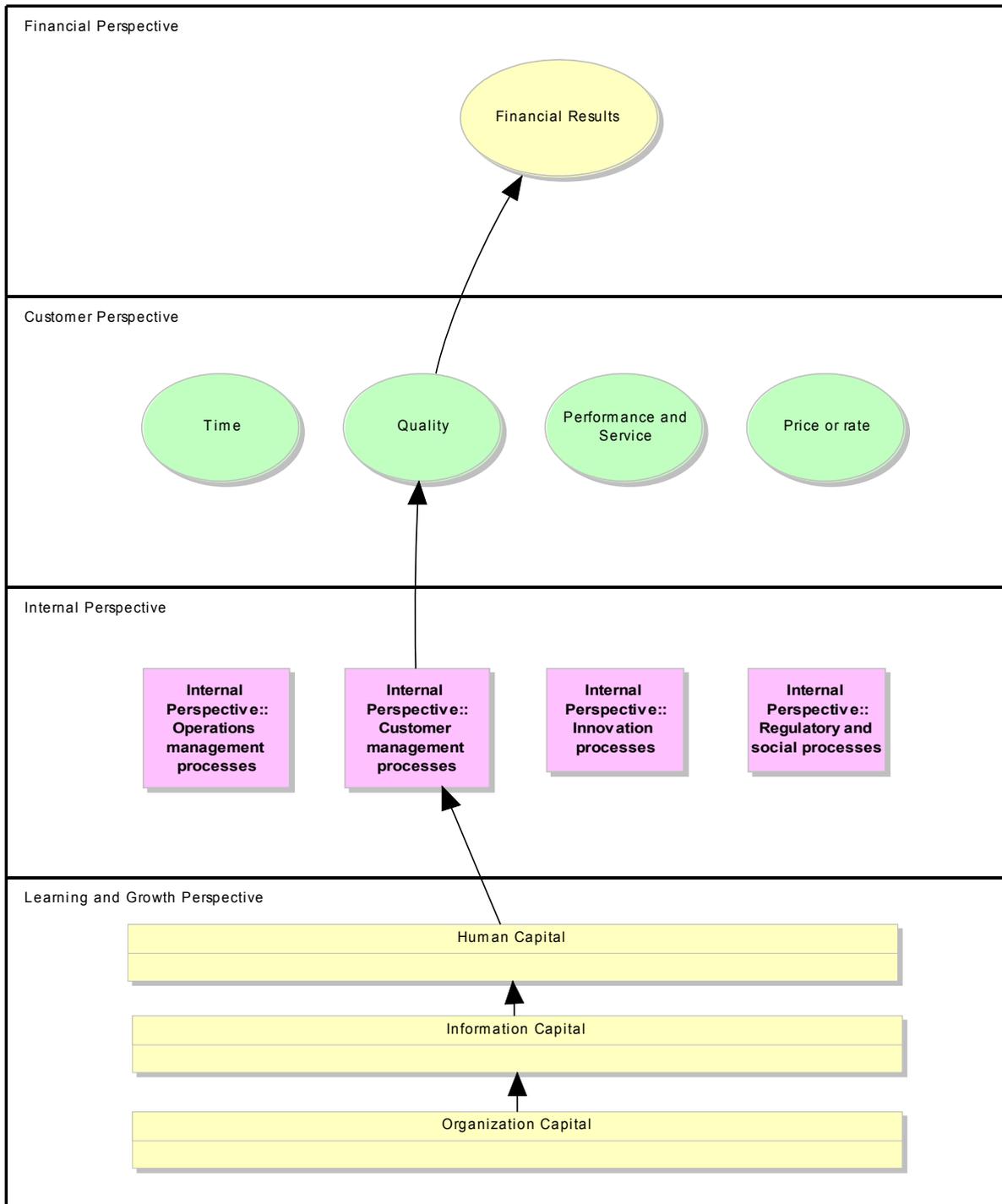
Enterprise Architect provides three basic Patterns that can be used to create a Strategy Map. The first Pattern is very basic and provides the greatest flexibility with respect to the layout of your Strategy Map. The Toolbox provides a number of tools such as a mission and intangible asset. The second and third Pattern provide a more comprehensive overview, with far more internal processing and intangible assets.

Strategic objectives are represented as an oval.

1. Create a new package entitled "Strategy Map".
2. Create a new Strategy Map diagram called "Our Strategy" and click on OK.
3. Select the Pattern entitled "Strategy Map 2" and place it onto the Diagram View.
4. This diagram will display all four perspectives and includes a detailed breakdown of each.
5. Examine the two additional patterns in order to see the layout of each alternative Strategy Map example.



### Strategy Map – Completed Example

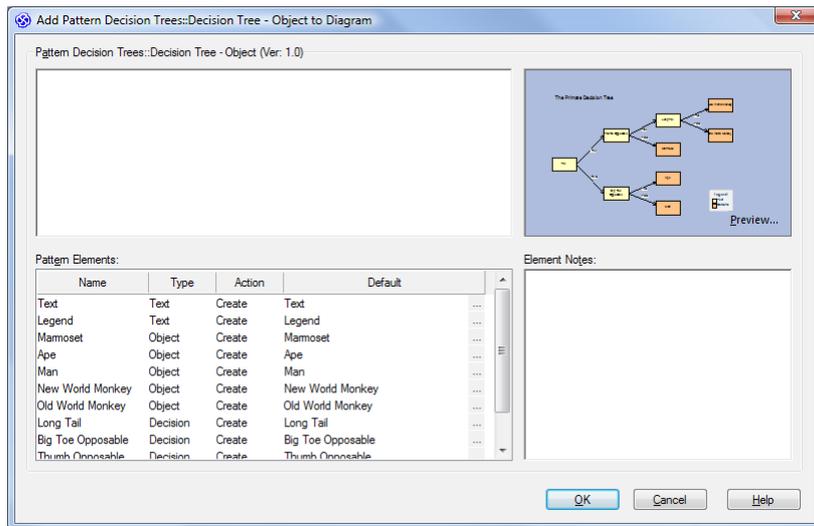




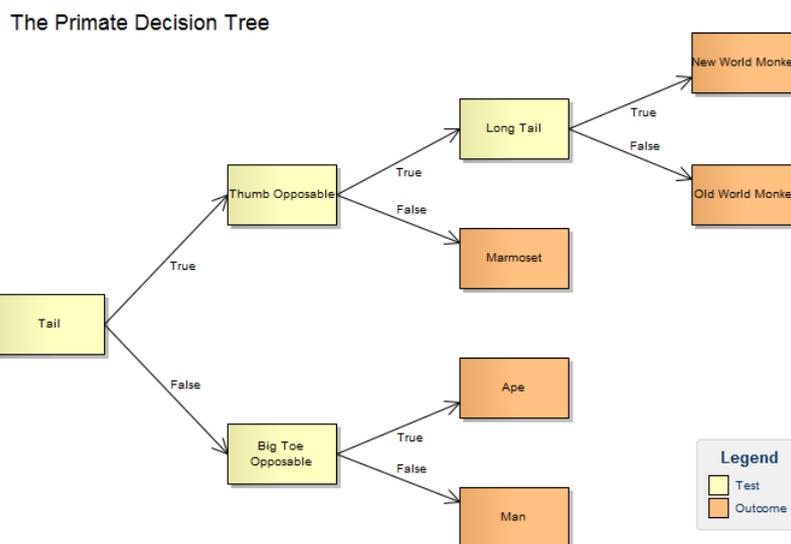
## Using a Decision Tree Pattern

A Decision Tree uses a visual notation to represent a series of decisions and possible outcomes. It can be used in either a descriptive or predictive manner to visualize outcomes and decision points.

1. Create a new package entitled “Decision Tree”, followed by a Strategy Map Diagram called “Key Decisions”.
2. Select the Pattern “Decision Tree - Object” and place it on the Diagram View.



Modify the The Primate Decision Tree Template below to create a Decision Tree related to the interview process for staff at a restaurant.

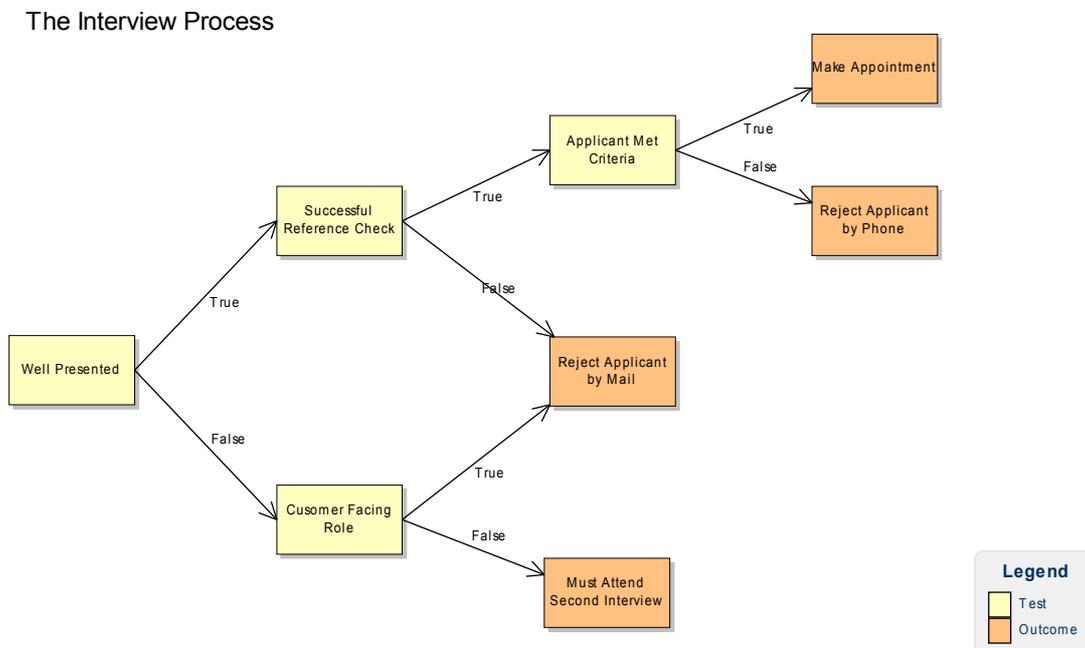




### Creating a Decision Tree

1. Replace the heading “Primate Decision Tree” with the words “The Interview Process”.
2. Delete the Outcome “Marmoset”. Right-click and use the Properties dialog to modify the name of the Test called “Tail” to “Well Presented”.
3. Make the following changes to each Test described below:
  - “Thumb Opposable” → “Successful Reference Check”
  - “Big Toe Opposable” → “Customer Facing Role”
  - “Long Tail” → “Applicant Met Criteria ”
4. Make the following changes to each Outcome Object described below:
  - “New World Monkey” → “Make Appointment”
  - “Old World Monkey” → “Reject Applicant By Phone”
  - “Ape” → “Reject Applicant by Mail”
  - “Man” → “Must Attend Second Interview”
5. Draw a Boolean False connector between “Successful Reference Check” and “Reject Applicant by Mail.

### Decision Tree – Completed Example



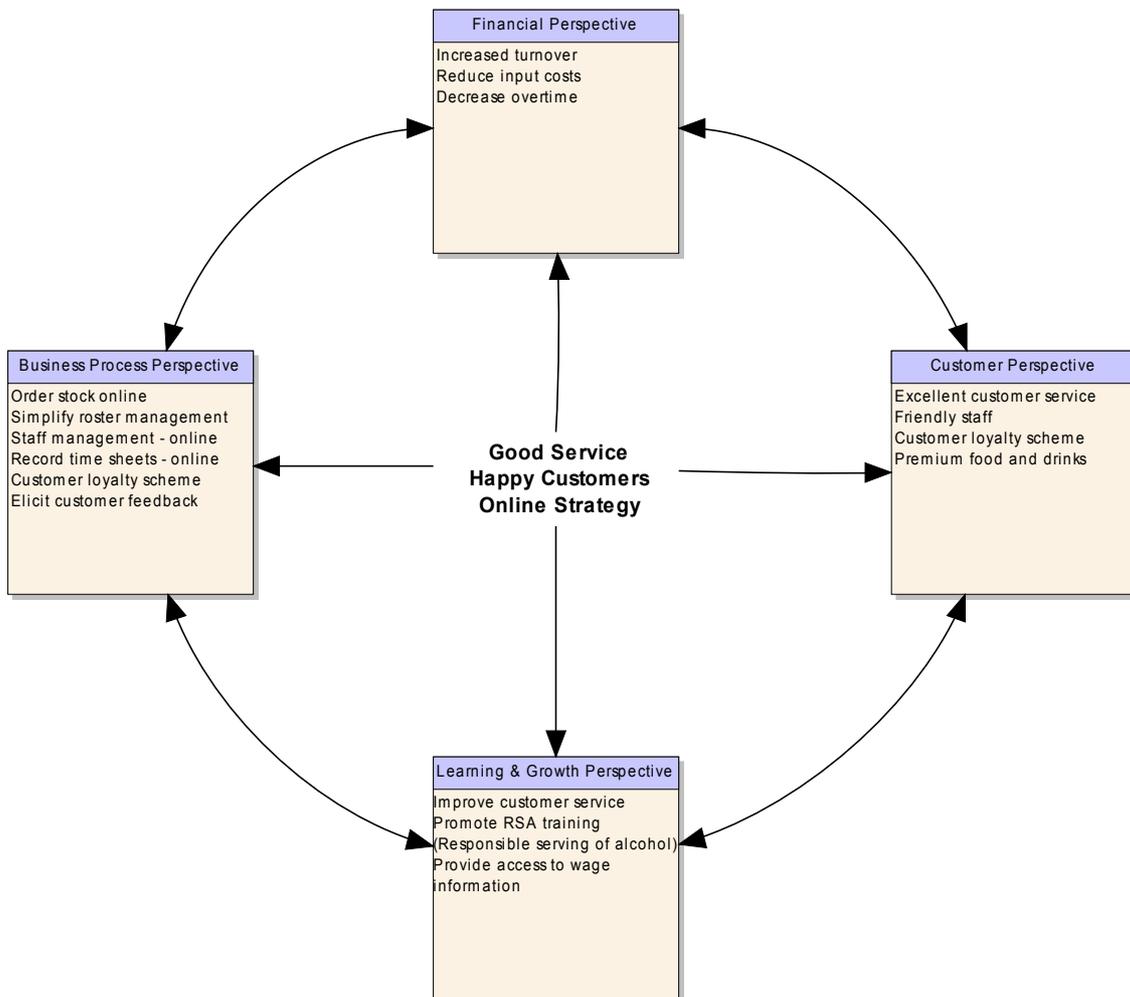


## The Restaurant Example – Putting the Pieces Together

Enterprise Architect has the ability to model every stage of the system development life cycle. Each element can be cross-linked to provide comprehensive model traceability. The following example illustrates how Enterprise Architect can link corporate strategy to the development of a corporate website for a large restaurant, bringing ideas and corporate strategy into reality.

### Creating a Balanced Scorecard for Our Restaurant

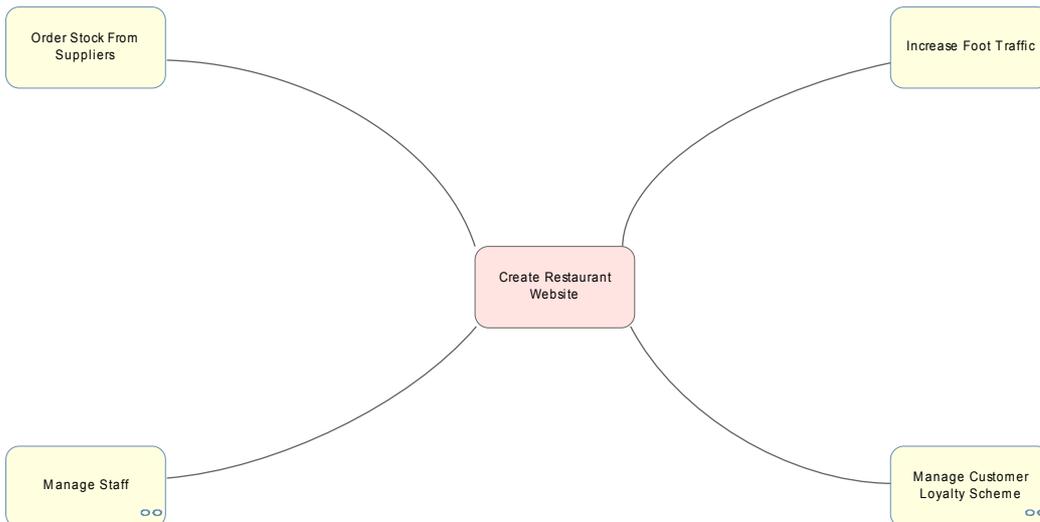
The Balanced Scorecard below aligns a restaurant's business activity with its vision and strategy, to be more customer focused. A number of intangible assets such as customer satisfaction and staff morale are identified as being crucial to success, and an online strategy will be employed to achieve these aims. Traditional financial accounting methods fail to measure intangible assets even though they are vital for the success of a service based business, such as a restaurant.



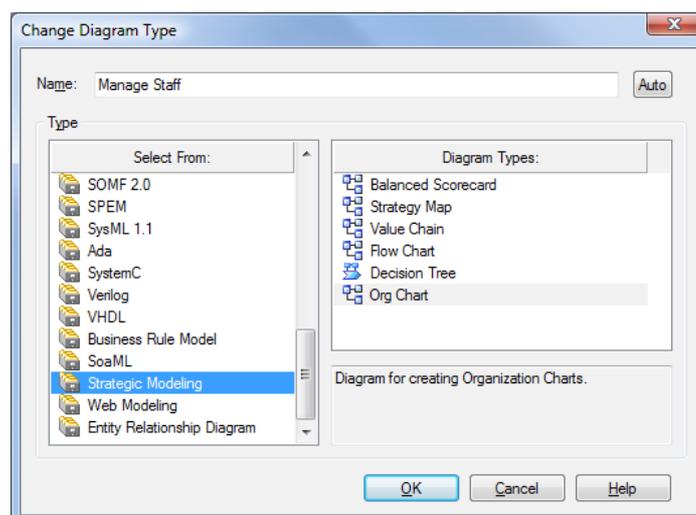


## Brainstorming the Creation of a Restaurant Website

After modeling the Balanced Scorecard, the business brainstorms ideas related to the development of a website in order to support the company vision. The site needs to promote the business and manage customers, suppliers and staff. The following Mind Mapping diagram outlines the key aspects of the proposed website with each Main Topic linking to plans, requirements and system information.

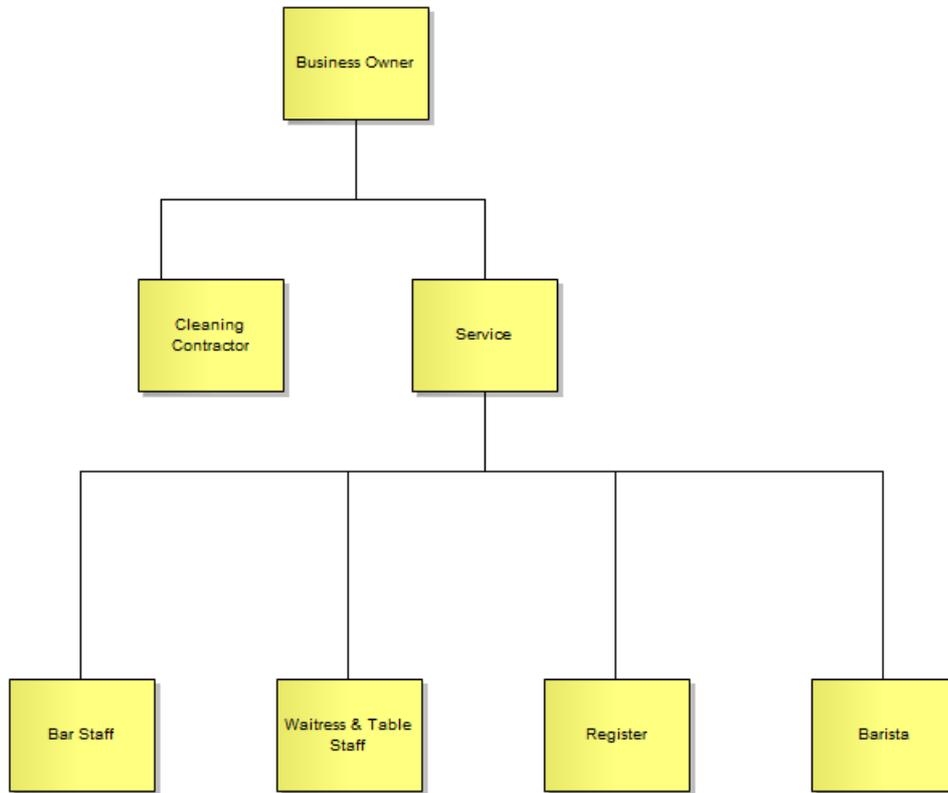


Each of the discussion points raised in the Mind Mapping diagram can be expanded. For example, “Manage Staff” will contain an organizational chart, weekly rosters, shift allowances, leave forms and other administrative functions. Right-click “Manage Staff” and select Advanced | Make Composite. Double-click Manage Staff to open the Composite diagram. By default the Composite diagram is the same as the parent, a Mind Mapping Diagram. From the Main Menu select Diagram | Change Type. Then select Strategic Modeling followed by Org Chart as shown below. We shall now produce an Organizational Chart outlining the reporting structures needed to manage staff effectively.

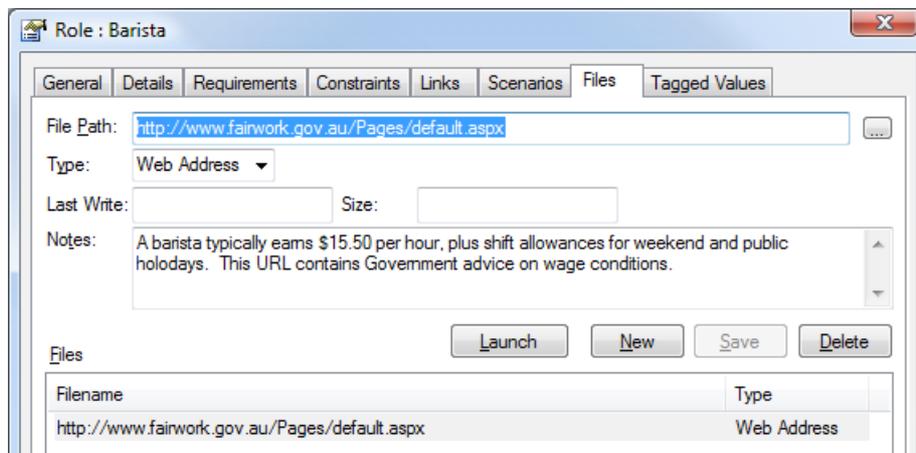




## Organizational Structure of the Restaurant

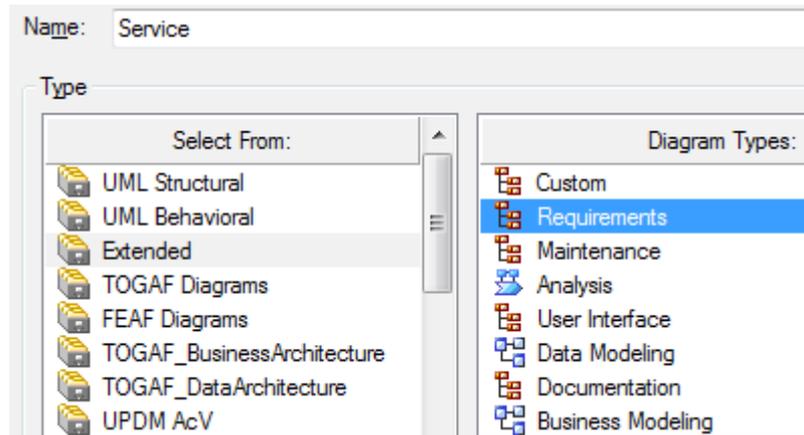


Enterprise Architect lets you model at each level of abstraction, from corporate strategy to detailed system logic. By linking elements across these levels of abstraction, you can readily achieve end-to-end traceability. The example below links corporate strategy to shift allowances and employment legislation.

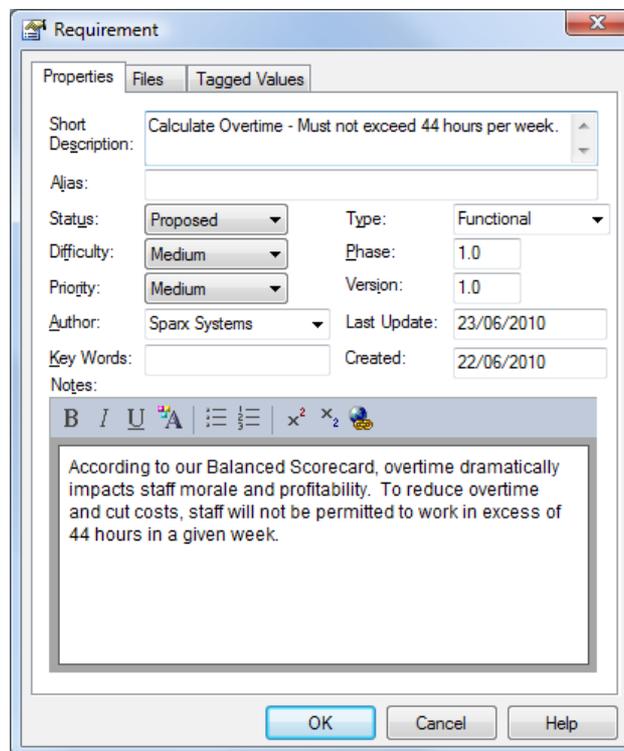




The next step is to develop a series of requirements for a roster system to be used by all Service Staff. Right-click the Service Role in the Org Chart and select Advanced | Make Composite. Change the Diagram Type by selecting Diagram Type from the Diagram Menu. Select Extended | Requirements.



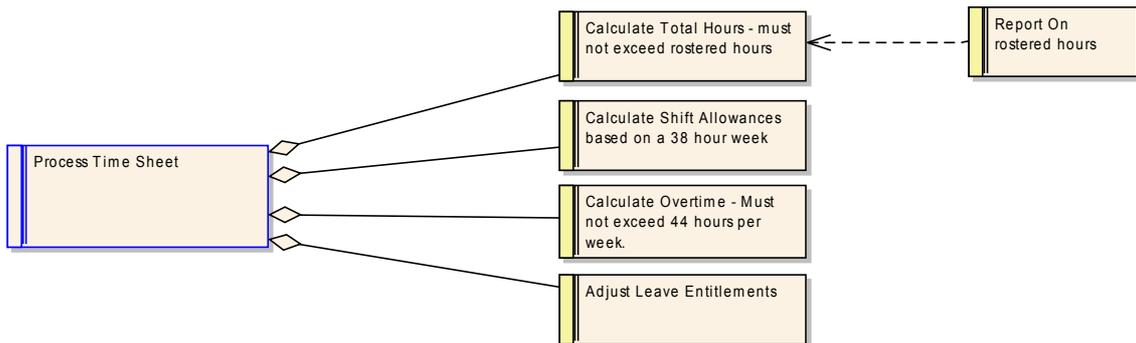
We shall now create a series of requirements that will govern the rostering system. The requirement described below illustrates how system requirements can be directly tied to the strategic planning outcomes on the Balanced Scorecard, such as reducing overtime. This also helps management to identify and trace how strategic planning influences system design, including the creation of system requirements.



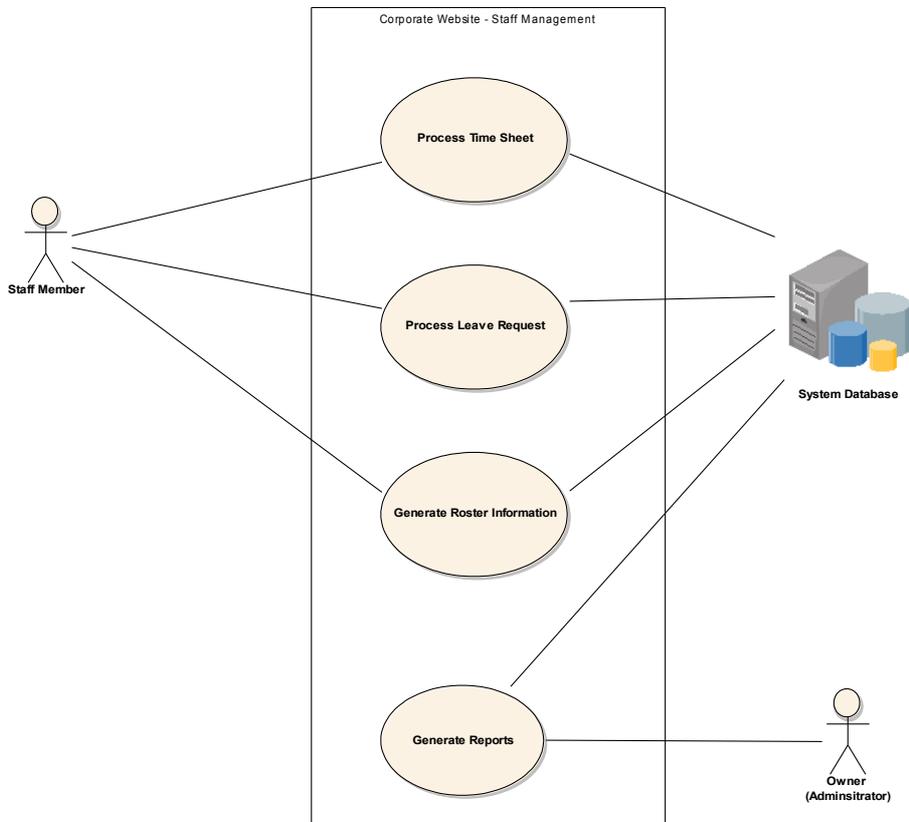


### System Requirements

Listed below are a series of requirements that form a subset of the online rostering system. Note that the Aggregation relationships indicate that 'Process Time Sheet' contains a number of more specialized requirements.



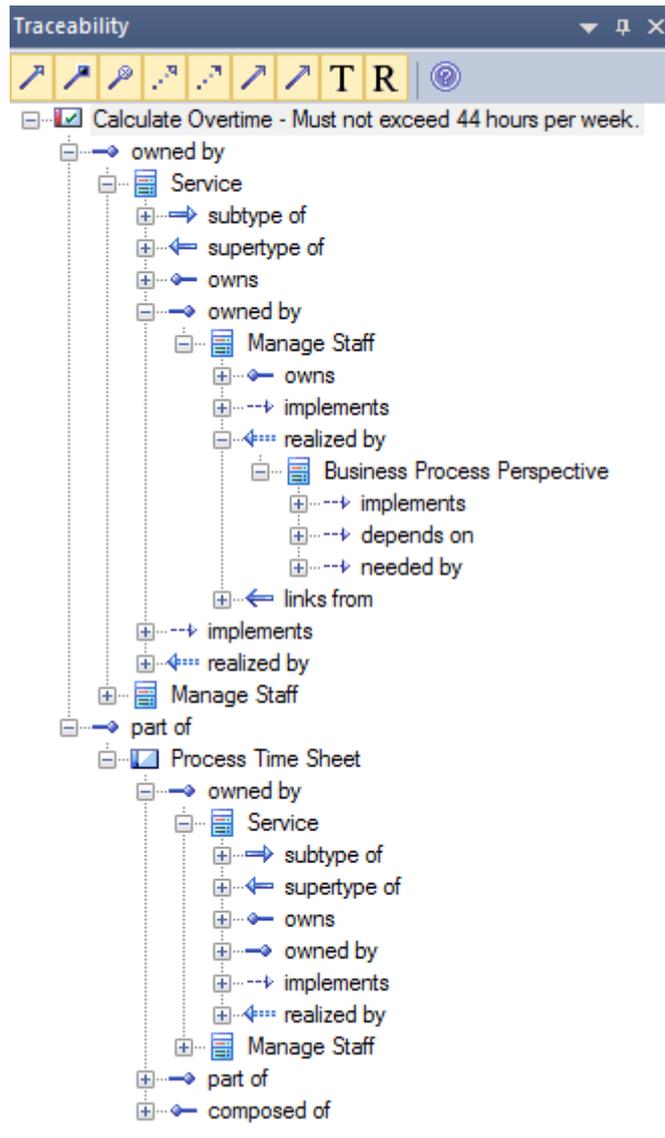
The following Use Case Diagram illustrates how the owner and restaurant staff interact with the website to access reports and time sheets.





## Traceability

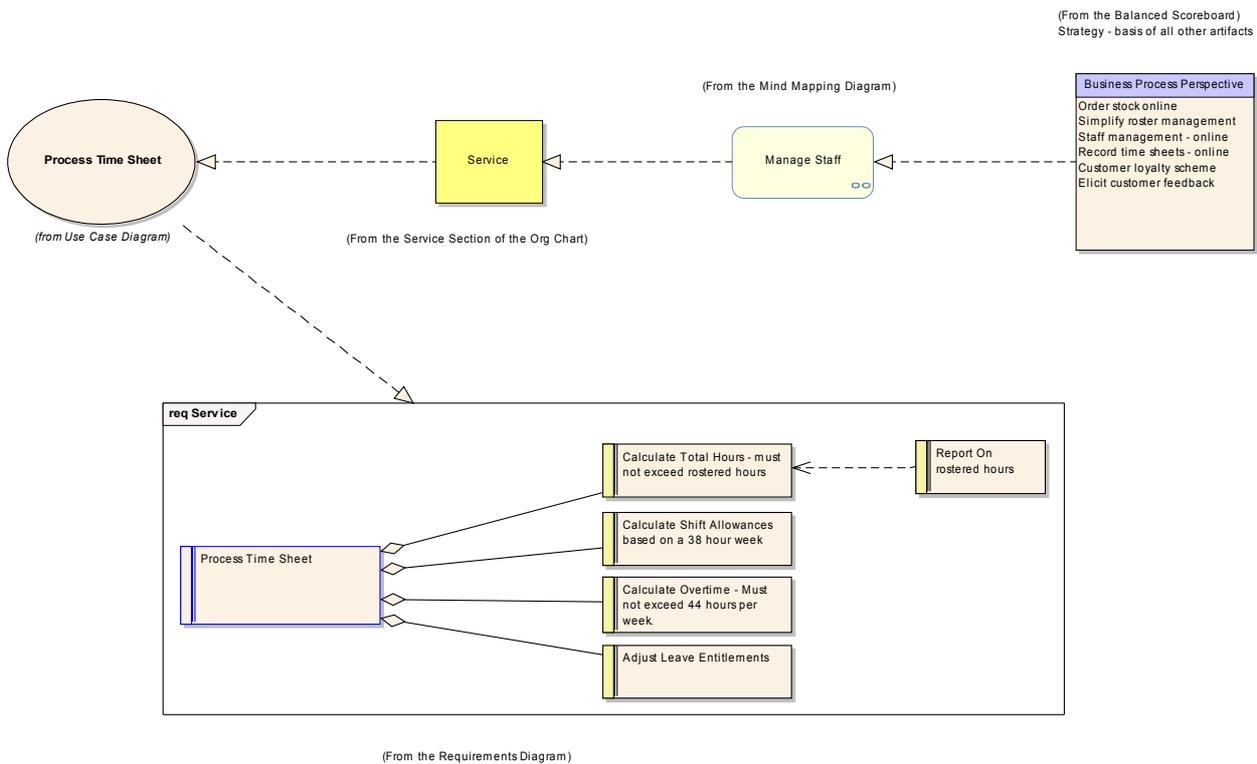
Enterprise Architect can track relationships in a number of different ways including using a Custom diagram, the Relationship Matrix and the Traceability View. Enterprise Architect provides a context-sensitive trace of an element's relationships in the model. For example, in the Traceability window below, note the relationships between a Requirement Element and other parts of the model.





## Traceability Model

The Custom diagram below illustrates how an idea from the Balanced Scorecard can evolve from strategy to reality. The Online Strategy that was formalized in the Balanced Scorecard through a series of meetings and brainstorming sessions, eventually becomes a series of real world requirements for a web site and online business strategy. The relationship between each Enterprise Architect model element is outlined in the Custom Diagram below:



## Traceability Summary

Enterprise Architect can help you highlight the relationships and dependencies between various phases of the development process. It is important that management is able to identify and trace how corporate strategy becomes a reality. Strategic Modeling also communicate the relevant facts to enable staff to build the right systems according to an organization's mission and values.



## References & Background Reading

The following list of resources define important concepts and provide background information on how strategic modeling can be used to save time, make better decisions, improve collaborative discussions and solve problems.

Cobbold, I. and Lawrie, G. (2002a). *The Development of the Balanced Scorecard as a Strategic Management Tool*. Performance Measurement Association 2002. Accessed from <http://www.2gc.co.uk/pdf/2GC-PMA02-1f.pdf>

Buzan, Tony. (2000). *The Mind Map Book*, Penguin Books, 1996. ISBN 978-0452273221

Murthy S. (1998). Automatic construction of decision trees from data: A multidisciplinary survey. *Data Mining and Knowledge Discovery*.

PORTER, M. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*, Free Press, New York, 33-61. Accessed from [http://www2.agsm.edu.au/agsm/web.nsf/AttachmentsByTitle/read37.pdf/\\$FILE/read37.pdf](http://www2.agsm.edu.au/agsm/web.nsf/AttachmentsByTitle/read37.pdf/$FILE/read37.pdf)

Porter, M. (1996). *What is Strategy?* *Harvard Business Review*, November-December, 61-78. The Value Chain.

Kaplan R S and Norton D P (1992). "The Balanced Scorecard: Measures That Drive Performance", *Harvard Business Review* Jan – Feb pp. 71–80.

Kaplan R S and Norton D P (1993) "Putting the Balanced Scorecard to Work", *Harvard Business Review* Sep – Oct pp2–16.

Kaplan R S and Norton D P (2004). *Strategy Maps: Converting Intangible Assets Into Tangible Outcomes*. Harvard Business School Publishing Corporation.

Wikipedia. (2010). Strategic Modeling. Topics include:

[http://en.wikipedia.org/wiki/Balanced\\_scorecard](http://en.wikipedia.org/wiki/Balanced_scorecard)

[http://en.wikipedia.org/wiki/Decision\\_Tree](http://en.wikipedia.org/wiki/Decision_Tree)

<http://en.wikipedia.org/wiki/Flowchart>

[http://en.wikipedia.org/wiki/Mind\\_Mapping](http://en.wikipedia.org/wiki/Mind_Mapping)

[http://en.wikipedia.org/wiki/Strategy\\_map](http://en.wikipedia.org/wiki/Strategy_map)

[http://en.wikipedia.org/wiki/Value\\_Chain](http://en.wikipedia.org/wiki/Value_Chain)



## Section Review



### What have we learned?

The Strategic Modeling Quick Start Guide examined the following topics:

- Enabling Strategic Modeling and MindMapping MDG Technology
- Mind Maps
- Organizational Charts
- Flow Charts
- Value Chain
- Balanced Scorecard
- Strategy map
- Decision Tree

Enterprise Architect can be used to assist business professionals undertake Strategic Modeling. The Strategic Models discussed have a wide range of applications including managing collaborative discussions, illustrating complex ideas, outlining staff responsibilities, planning for the future and achieving balanced organizational goals. The modeling process helps the business to gain a greater understanding of organizational performance, long term strategic objectives and organizational structure. Enterprise Architect provides templates that can save time and rapidly build comprehensive models such as a Balanced Scorecard that can easily link to support documentation, web based resources, model elements, traceability tools and code generation facilities. This comprehensive set of features provides a powerful environment for any business professional involved in Strategic Modeling and long term planning.

The Restaurant example was used to illustrate how to take an idea 'from the clouds to reality.' We were able to take an element from our corporate strategy and directly link this to the specification of an individual system. By extending this traceability model in Enterprise Architect for each level of abstraction, we can achieve end-to-end traceability across the entire lifecycle.