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A Quick Chat about SOMF Capabilities



Discovering Conceptual Services

Training material for architects, business analysts, system analysts, software developers, modelers, team leaders, and managers

Use the SOMF modeling capabilities for enterprise architecture, application architecture, service-oriented architecture (SOA), and Cloud Computing projects.

SOMF is empowered by Sparx Systems Enterprise Architect modeling platform



What is a Conceptual Service?

To be able to establish solutions to organizational concerns and justify the construction of software products, business analysts, architects, developers, modelers, and managers focus on founding conceptual services for a project. Remember, conceptual services are not tangible entities or software executables that can be deployed to production; they are merely concepts that address business or technological concerns.

For example, the *customer profile* conceptual service tackles the absence of a systematic collection and organization of customers' records in a database. Therefore, the practitioner should be engaged in the establishment of conceptual services before the construction phase of a project to propose viable solutions to existing concerns.

Discovering Conceptual Services

The process of discovering conceptual services requires the construction of a *decision tree*. This tree structure, as illustrated in Figure 1, is comprised of two sections: Attributes and Conceptual Services. The former contains selected attributes arranged in a tree like structure (to learn how to collect service attributes for a project refer to training document “Constructing a Service-Oriented Attribution Model” on this site). The latter includes the derived services that are formed after navigating the decision tree downward.

The sections that follow elaborate on the process and method for discovering conceptual services by constructing a decision tree.

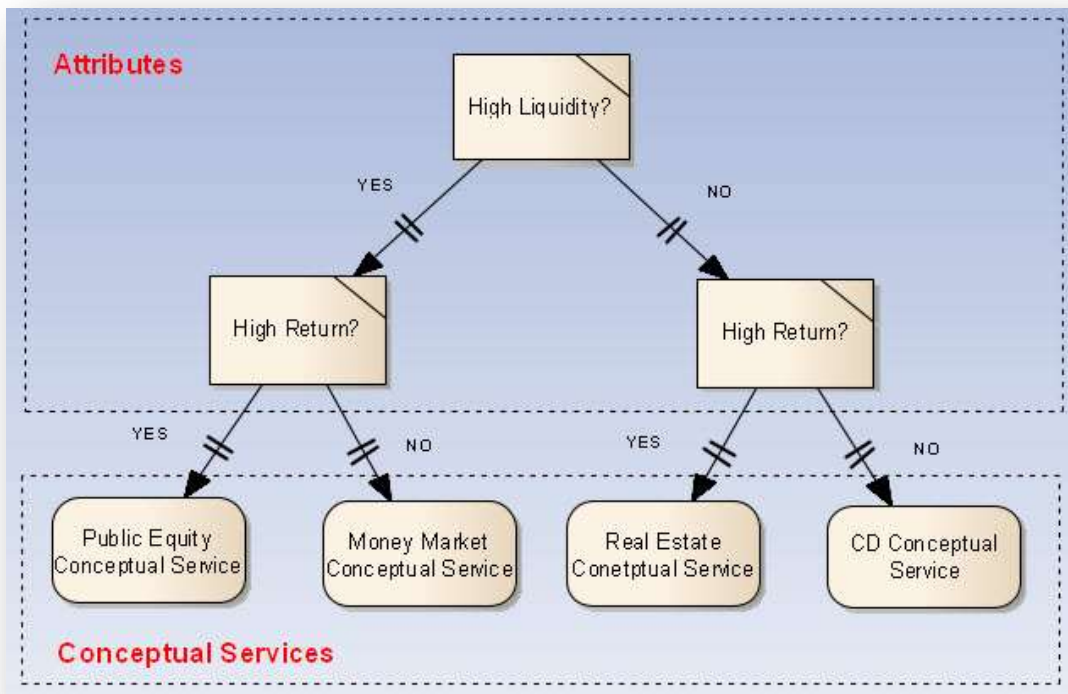


Figure 1: Decision Tree Example

Decision Tree Building Blocks

When constructing a decision tree use the three symbols illustrated in Figure 2:

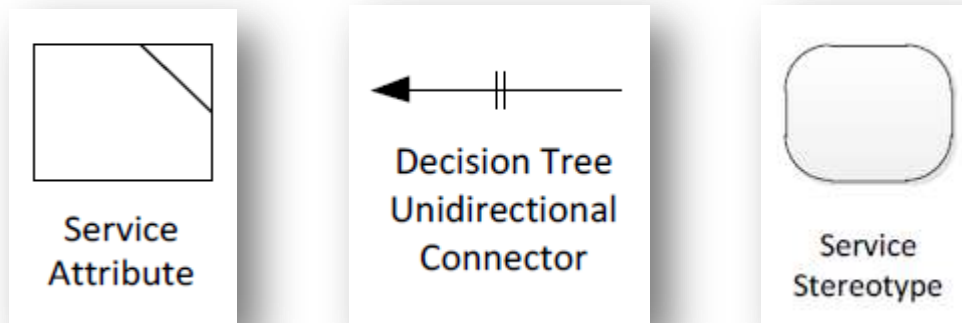


Figure 2: Decision Tree Notation Symbols

- *Service Attribute*. A tree node that includes an attribute of a service
- *Decision Tree Unidirectional Connector*. A one-way connector that links a parent attribute to a child attribute in a decision tree structure, or to a discovered conceptual service
- *Service Stereotype*. A generic conceptual service that does not identify any particular service structure pattern

Constructing a Decision Tree Skeleton

Follow the simple three steps to construct a skeleton for the decision tree. Arrange the selected service attributes in a tree-like structure, as illustrated in Figure 3. The building direction should always be downward:

1. The most dominant attribute should be placed on the top of the decision tree in Level 1 (Liquidity is the leading attribute in Figure 3)
2. The other service attributes should populate subsequent levels. As shown in Figure 3 (Level 2 contains the Return attribute)
3. Each parent service attribute should be linked with a child service attribute who is positioned on a lower tree level by using a Decision Tree Unidirectional Connector

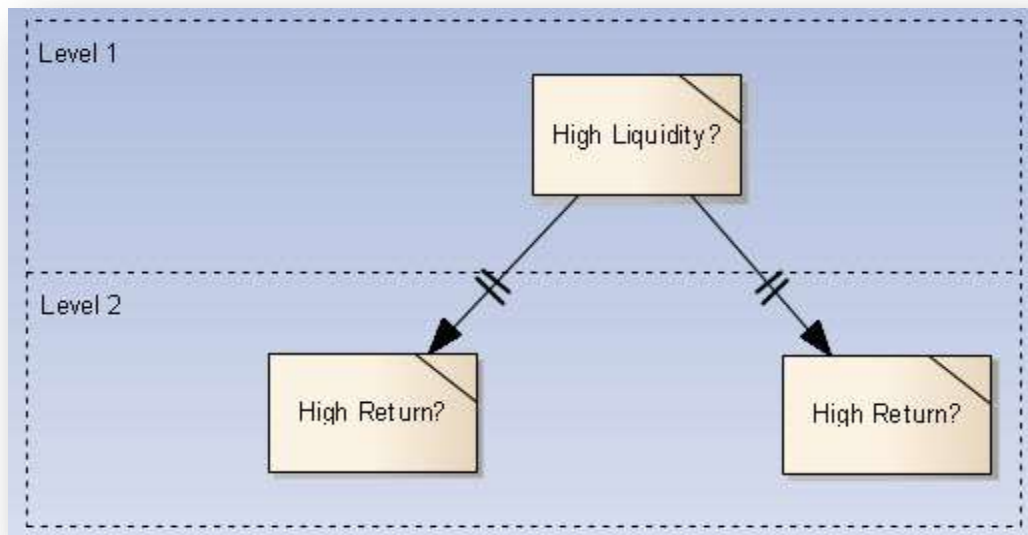


Figure 3: Attributes Section in a Decision Tree

Adding Business Rules

Now is the time to add business rules to decision tree skeleton, as depicted in Figure 4. A rule is a value that corresponds to each Decision Tree Unidirectional Connector that links a parent attribute to a child attribute. This method would help navigate the tree downward.

In Figure 4, for example, the practitioner will navigate from the top High Liquidity attribute to the corresponding child attribute by determining if the proposed service should offer high liquidity features. If the answer is “YES” the tree navigation will turn left to the corresponding child attribute named High Return, otherwise the direction would be to the right – accepting the “NO” rule.

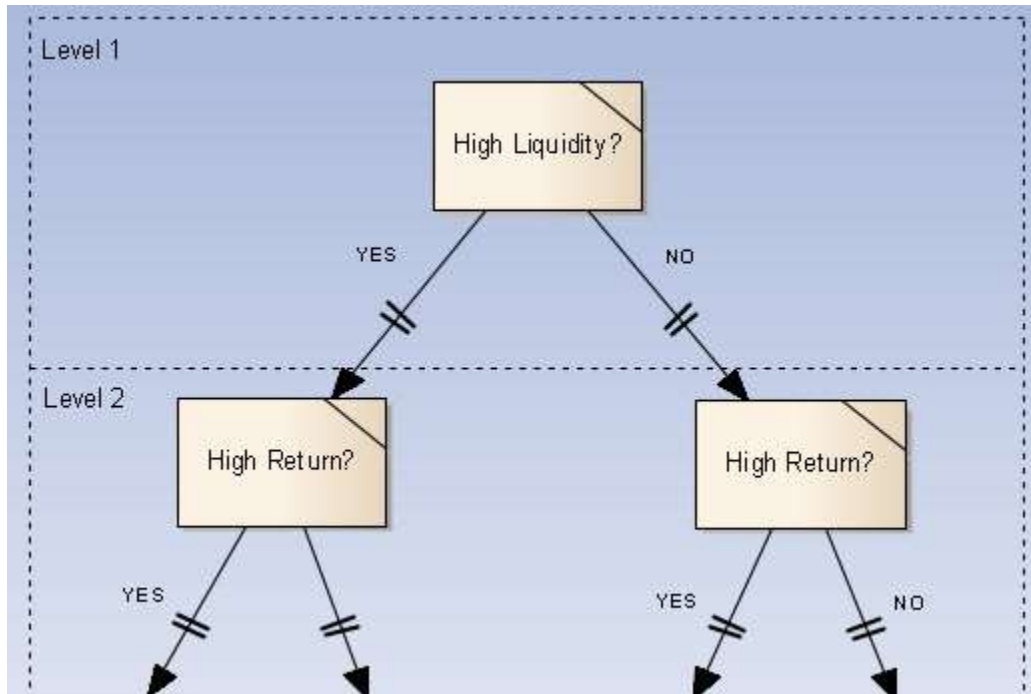


Figure 4: Decision Tree Skeleton with Business Rules

Discovering Conceptual Services

After building the decision tree skeleton and assigning the proper business rules, as discussed in the previous sections, the time to discovering conceptual services has arrived. This discovery should result in the formation of a conceptual services section, as illustrated in Figure 5. To discover the proper conceptual services, consider the three simple steps:

1. Start navigating the decision tree from the top parent service attribute
2. Each business rules that is attached to every connector should dominate the navigation downward
3. Once the last child service attribute has been reached, identify a conceptual service that corresponds to all the rules in this navigation path

As apparent, a conceptual service is discovered based on all accumulated attributes that are encountered in the navigation path. For example, the discovered CD Conceptual Service in Figure 5 embodies two attributes: High Liquidity=NO and High Return=NO.

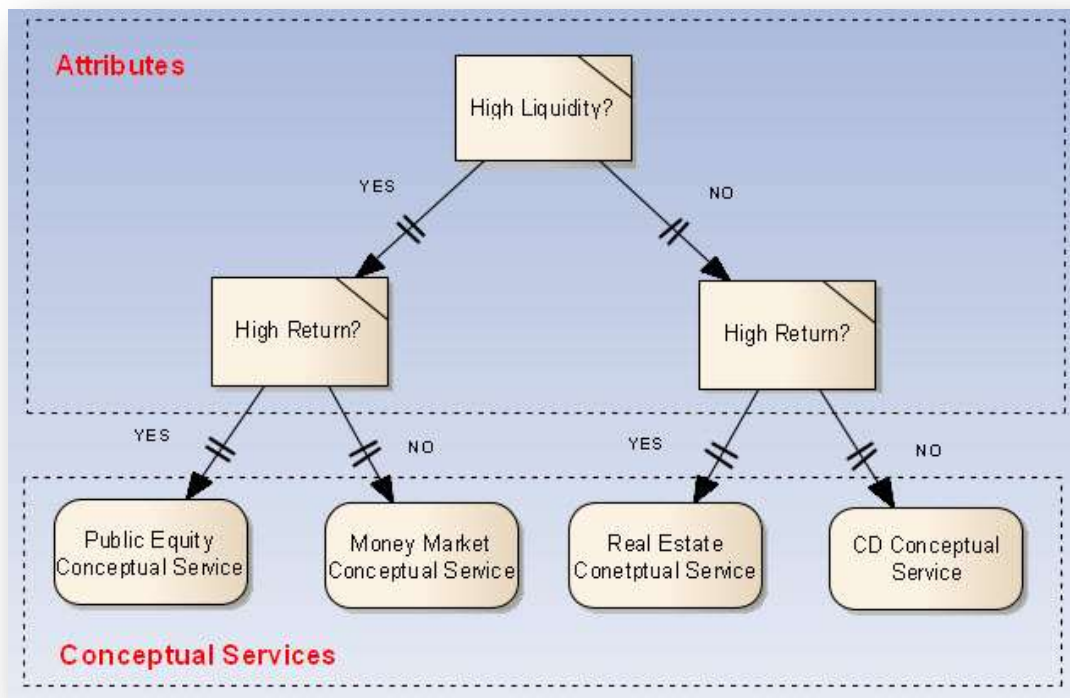


Figure 5: Decision Tree with Discovered Conceptual Services

Next Steps...

The degree to which it is possible to generalize and abstract an organization's business requirements and separate business concerns will influence enterprise asset reusability, loose coupling, and even the consolidation of redundant business functionality. Now that initial services are identified their relationships to one another should be classified into structured associations for further refinement. Continue reading the chat entitled "Forming Conceptual Service Associations".

Further Reading

To learn more about many SOMF capabilities, modeling methods and formal notation, and patterns for enterprise architecture, application architecture, service-oriented architecture (SOA), and Cloud Computing refer to these books:

