Capturing Knowledge in an Integration Matrix

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- Capture knowledge in a simple and straightforward way
- Leverage lessons learned to quickly drill down on a small set of integration options
- Identify potential challenges early

Alternative and recurring design options

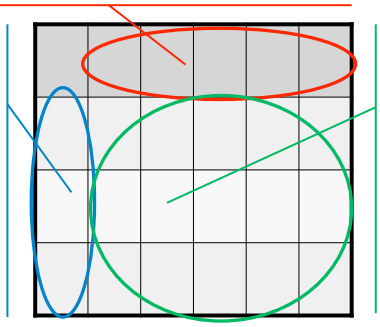
- Patterns
- Styles
- Data management solutions
- Combinations of COTS products

Design options and outcomes tailored for different organizations and domains

- Health care information systems
- Enterprise databases
- Intelligence and sensor fusion

Desired properties and outcomes

- Quality goals and non-functional properties
- Integrated system capabilities
- Required features



Relationships between options and outcomes

- A concise symbol (+/-) or rank (1 – 10)
- A link to textual explanation of the relationship (rationale and past experiences)

Constructing an Integration Matrix

- Define design options and solutions that recur often in the given domain or organization
- Define general or domain-specific properties of interest
- Establish the effect of a design option on a property of interest
- Capture rationale/knowledge

Using an Integration Matrix

- Determine the primary properties of the planned integration
- Summarize the positives/negatives
- Eliminate low-value design options
- Weigh tradeoffs between high-value options, while using the documented rationale, knowledge, and prior experience

Example: Integration Styles

http://softarch.usc.edu/wiki/doku.php?id=integration_style_table:start

Integration Style = Connector Roles + Topology + Linkage Mechanisms

Hub becomes a bottleneck for high data volumes

Shared bus provides delivery guarantees

Shared data repositories are difficult to scale

Integration styles vs. Properties	Topology		Linkage		Connector	
	Hub and Spoke	Shared Bus	Shared Data	Data Streaming	Adapter	Arbitrator
Secure	-	o	-	o	o	+
Data intensive	-	-	+	+	o	+
Data consistency	+	o	+	-	o	+
Interaction protocols incompatible	+	o	+	o	+	o
Reliable	-	+	-	o	o	+
Real time	-	+/-	+	+	o	+
Always available	-	o	-	o	o	+
Scalable	-	+	-	o	o	+
Caching	+	+	+	-	o	+
Distributed transactions	+	+	+	o	o	+

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