EIP

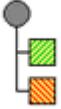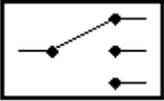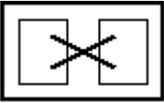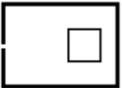## Enterprise Integration Patterns

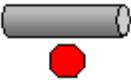Camel supports most of the Enterprise Integration Patterns from the excellent book by Gregor Hohpe and Bobby Woolf.

If you are new to Camel you might want to try the Getting Started in the User Guide before attempting to implement these patterns.

The EIP icons library is available as a Visio stencil file adapted to render the icons with the Camel color : sand. Download it here for your presentation, functional and technical analysis documents. The original EIP stencil is also available in OpenOffice 3.x Draw (thanks to Marco Garbelini) , Microsoft Visio, or Omnigraffle.

Messaging Systems

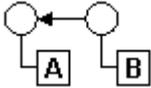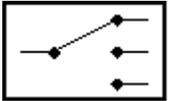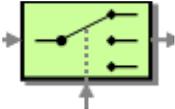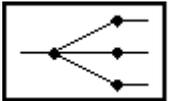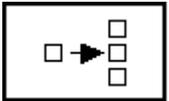|		
	Message Channel	How does one application communicate with another using messaging?
	Message	How can two applications connected by a message channel exchange a piece of information?
	Pipes and Filters	How can we perform complex processing on a message while maintaining independence and flexibility?
	Message Router	How can you decouple individual processing steps so that messages can be passed to different filters depending on a set of conditions?
	Message Translator	How can systems using different data formats communicate with each other using messaging?
	Message Endpoint	How does an application connect to a messaging channel to send and receive messages?

Messaging Channels

	Point to Point Channel	How can the caller be sure that exactly one receiver will receive the document or perform the call?
	Publish Subscribe Channel	How can the sender broadcast an event to all interested receivers?
	Dead Letter Channel	What will the messaging system do with a message it cannot deliver?
	Guaranteed Delivery	How can the sender make sure that a message will be delivered, even if the messaging system fails?

	Message Bus	What is an architecture that enables separate applications to work together, but in a de-coupled fashion such that applications can be easily added or removed without affecting the others?

Message Construction

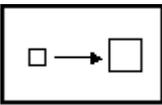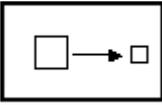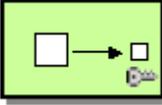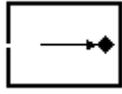|	Event Message	How can messaging be used to transmit events from one application to another?
	Request Reply	When an application sends a message, how can it get a response from the receiver?
	Correlation Identifier	How does a requestor that has received a reply know which request this is the reply for?
	Return Address	How does a replier know where to send the reply?

Message Routing

	Content Based Router	How do we handle a situation where the implementation of a single logical function (e.g., inventory check) is spread across multiple physical systems?
	Message Filter	How can a component avoid receiving uninteresting messages?
	Dynamic Router	How can you avoid the dependency of the router on all possible destinations while maintaining its efficiency?
	Recipient List	How do we route a message to a list of (static or dynamically) specified recipients?
	Splitter	How can we process a message if it contains multiple elements, each of which may have to be processed in a different way?
	Aggregator	How do we combine the results of individual, but related messages so that they can be processed as a whole?
	Resequencer	How can we get a stream of related but out-of-sequence messages back into the correct order?
	Composed Message Processor	How can you maintain the overall message flow when processing a message consisting of multiple elements, each of which may require different processing?
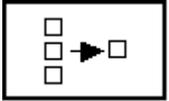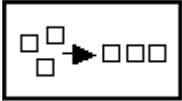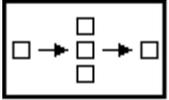
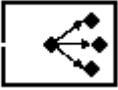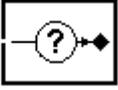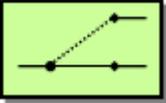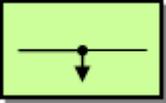|		
	Scatter-Gather	How do you maintain the overall message flow when a message needs to be sent to multiple recipients, each of which may send a reply?
	Routing Slip	How do we route a message consecutively through a series of processing steps when the sequence of steps is not known at design-time and may vary for each message?
	Throttler	How can I throttle messages to ensure that a specific endpoint does not get overloaded, or we don't exceed an agreed SLA with some external service?
	Sampling	How can I sample one message out of many in a given period to avoid downstream route does not get overloaded?
	Delayer	How can I delay the sending of a message?
	Load Balancer	How can I balance load across a number of endpoints?
	Hystrix	To use Hystrix Circuit Breaker when calling an external service.
	Service Call	To call a remote service in a distributed system where the service is looked up from a service registry of some sorts.
	Multicast	How can I route a message to a number of endpoints at the same time?
	Loop	How can I repeat processing a message in a loop?

Message Transformation

	Content Enricher	How do we communicate with another system if the message originator does not have all the required data items available?
	Content Filter	How do you simplify dealing with a large message, when you are interested only in a few data items?
	Claim Check	How can we reduce the data volume of message sent across the system without sacrificing information content?
	Normalizer	How do you process messages that are semantically equivalent, but arrive in a different format?
	Sort	How can I sort the body of a message?
	Script	How do I execute a script which may not change the message?
	Validate	How can I validate a message?
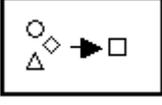
Messaging Endpoints

	Messaging Mapper	How do you move data between domain objects and the messaging infrastructure while keeping the two independent of each other?
	Event Driven Consumer	How can an application automatically consume messages as they become available?
	Polling Consumer	How can an application consume a message when the application is ready?
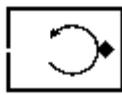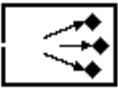
	Competing Consumers	How can a messaging client process multiple messages concurrently?
	Message Dispatcher	How can multiple consumers on a single channel coordinate their message processing?
	Selective Consumer	How can a message consumer select which messages it wishes to receive?
	Durable Subscriber	How can a subscriber avoid missing messages while it's not listening for them?
	Idempotent Consumer	How can a message receiver deal with duplicate messages?
	Transactional Client	How can a client control its transactions with the messaging system?
	Messaging Gateway	How do you encapsulate access to the messaging system from the rest of the application?
	Service Activator	How can an application design a service to be invoked both via various messaging technologies and via non-messaging techniques?

System Management

	ControlBus	How can we effectively administer a messaging system that is distributed across multiple platforms and a wide geographic area?
	Detour	How can you route a message through intermediate steps to perform validation, testing or debugging functions?
	Wire Tap	How do you inspect messages that travel on a point-to-point channel?
	Message History	How can we effectively analyze and debug the flow of messages in a loosely coupled system?
	Log	How can I log processing a message?