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For components with multiple inputs, the task manager generates all valid combinations of constructs.

Once registered, a component is instantiated as soon as data is available for each of its inputs.

Decoupling instantiation task generation from component instantiation reduces integration costs of 3rd party components.

Challenge #1
How does data move between components?

Model and Message Queues

- Handler is instantiated with input constructs
- Handler instance sends query for other constructs
- Model replies with constructs that match query
- Handler instance runs and generates new constructs
- Model routes new constructs to other waiting instances

Document Fields

- ID
- Type
- Lineage
- Data

Example Document

- ID: "hypothESIS:0053782-488-400-941d-ea7a62b27640"
- Type: "hypothESIS"
- Lineage: "["dataset:00242835-788-800-485-090-6792d5b9f8f5]
- Data: "It will rain today"

Challenge #2
How does a component get instantiated?

Model and Invokers

- Client registers component with a workflow
- Task Manager queries model for input constructs
- Model replies with constructs that match query
- Task Manager creates a new task for each input set
- Invoker creates a new instance of the component

Task Manager and Invokers

Write Before Query

The model allows handlers in ACS to handle both cases in the same way.

Message queues allow the creation and consumption of messages to happen asynchronously.

The model and message queues decouple the generation of the "task" of instantiating a component from the instantiation of the component.

ACE decouples the generation of the "task" of instantiating a component from the instantiation of the component.