Modeling System and Organization

This chapter explores how to model groups of agents, from simple collections to complex, multi-faceted organizations that perform different functions like manufacturing and sales.

# Pattern: Multi-Faceted Organizations: Manufacturer and Seller

## Scenario Objective

This scenario illustrates how to represent a single company that performs multiple, distinct business functions, such as manufacturing a product and also selling that same product. It focuses on:

* Showing how a single top-level organization can contain specialized sub-units (e.g., a manufacturing division).
* Clearly distinguishing between manufacturing processes/roles and business/sales processes/functions.
* Modeling how the same product is the output of one process (production) and a participant in another (sales).

## General Pattern Description

A single enterprise (iof:Organization) can be classified with multiple types to represent its different capabilities. It can be both a iof:BusinessOrganization (focused on commercial transactions) and a iof:Manufacturer (focused on production).

1. **As a BusinessOrganization:**
   * It has an iof:BusinessFunction (e.g., "jet engine sales function").
   * This function is bfo:realizes by a iof:SellingBusinessProcess.
   * The iof:MaterialProduct is a bfo:has\_participant in this selling process.
2. **As a Manufacturer:**
   * It has a iof:ManufacturerRole (e.g., "jet engine production role").
   * This role is bfo:realizes by a iof:ProductProductionProcess.
   * The iof:MaterialProduct is the iof:has\_output of this production process.

Often, a specific sub-division within the larger company is the entity that directly holds the manufacturer role and is part of the main organization.

## Use Case: ABC Aerospace - Manufacturer and Seller of Jet Engines

A large, integrated company like ABC Aerospace designs, manufactures, and sells complex products like jet engines. We need to model these distinct activities as being part of the same overall enterprise.

## Use-Case Pattern Description:

* **The Enterprise (ns1:abc-aerospace):** This is the top-level iof:Organization. It also functions as a iof:BusinessOrganization because it has a sales function (ns1:jet-engine-selling-function).
* **The Manufacturing Division (ns1:abc-manufacturer):** This is a more specific iof:Manufacturer unit that is bfo:continuantPartOfAtAllTimes the main ns1:abc-aerospace enterprise. This division bears the iof:ManufacturerRole (ns1:jet-engine-production-role).
* **The Product (ns1:jet-engine):** This is the iof:MaterialProduct at the center of both activities.
* **The Processes:**
  + **Production:** The ns1:jet-engine-production-process realizes the ns1:jet-engine-production-role and has the ns1:jet-engine as its iof:has\_output.
  + **Sales:** The ns1:jet-engine-selling-process realizes the ns1:jet-engine-selling-function and has the very same ns1:jet-engine as a bfo:has\_participant.

This pattern clearly separates the "making" from the "selling" while showing how they are connected within one company and centered on the same product.

A diagram of a company

AI-generated content may be incorrect.

Diagram: ABC Aerospace Functions