



# A BFO-based Framework for Authority in Healthcare Corporations

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# Motivation

We have been seeking for an account for **healthcare corporations** based on BFO Framework.

One of our interests within this general context is how to explain **authority**.

We use theories of intention, agency and plans to come up with an alternative to understand **authority in healthcare corporations**.

Authority is not present in well-known theories of agency and intention, which address small contexts.

# Context

The world today is marked by the enormous scale of social life.

Business corporations

Consumer cooperatives

Trade unions

Universities

NGOs

Hospitals

Organized religions

Governments

Legal systems

Armies

Political parties

These modern ventures include **alienated people**, individuals that are not committed with the goals of corporations.

Dealing with alienated people requires authority.

# Rationale

Corporations require authority.

Authority requires norms.

Corporations require norms.

If plans are kinds of norms.

Corporations require plans.

# Outline

1- BFO and  
Modeling  
Corporation

2- Intention  
and Agency

Shared  
Intention and  
Agency

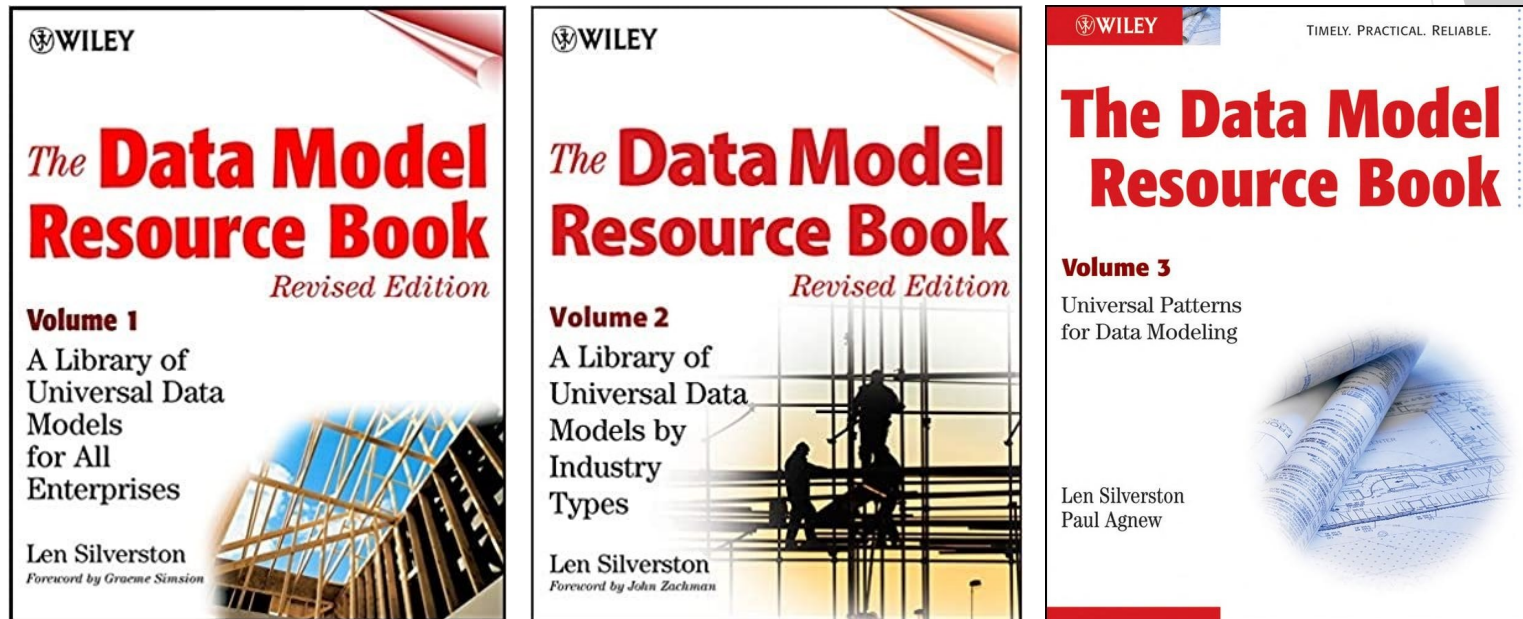
3- Limitations  
of Shared  
Agency

4- Where does  
authority come  
from?

5- Plans and  
Authority

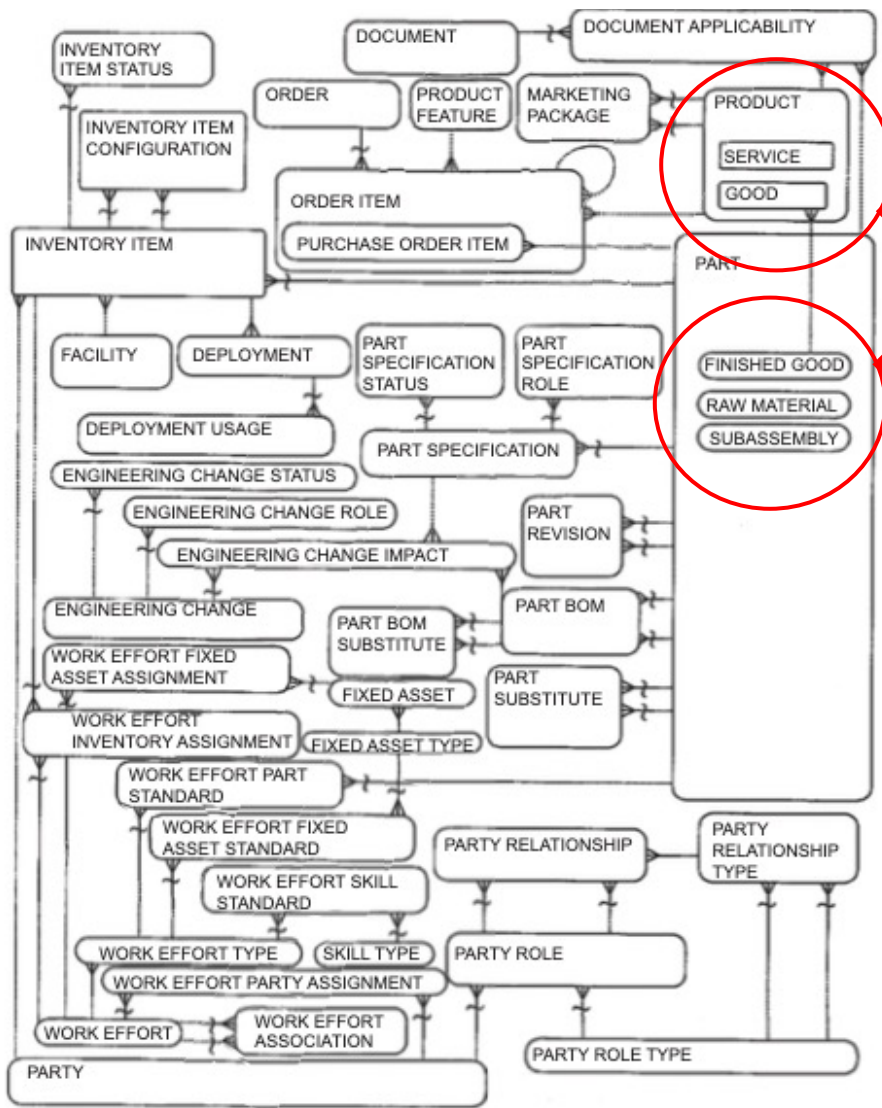
# Part I - BFO and modeling corporations

# I.1. Databases models and ontological-based models



Collection of books for database models, beginning of 2000s (Silverston et al. 2001).

The time a software engineer affords to design the database is directly proportional to its quality.



UML model for manufacturing systems

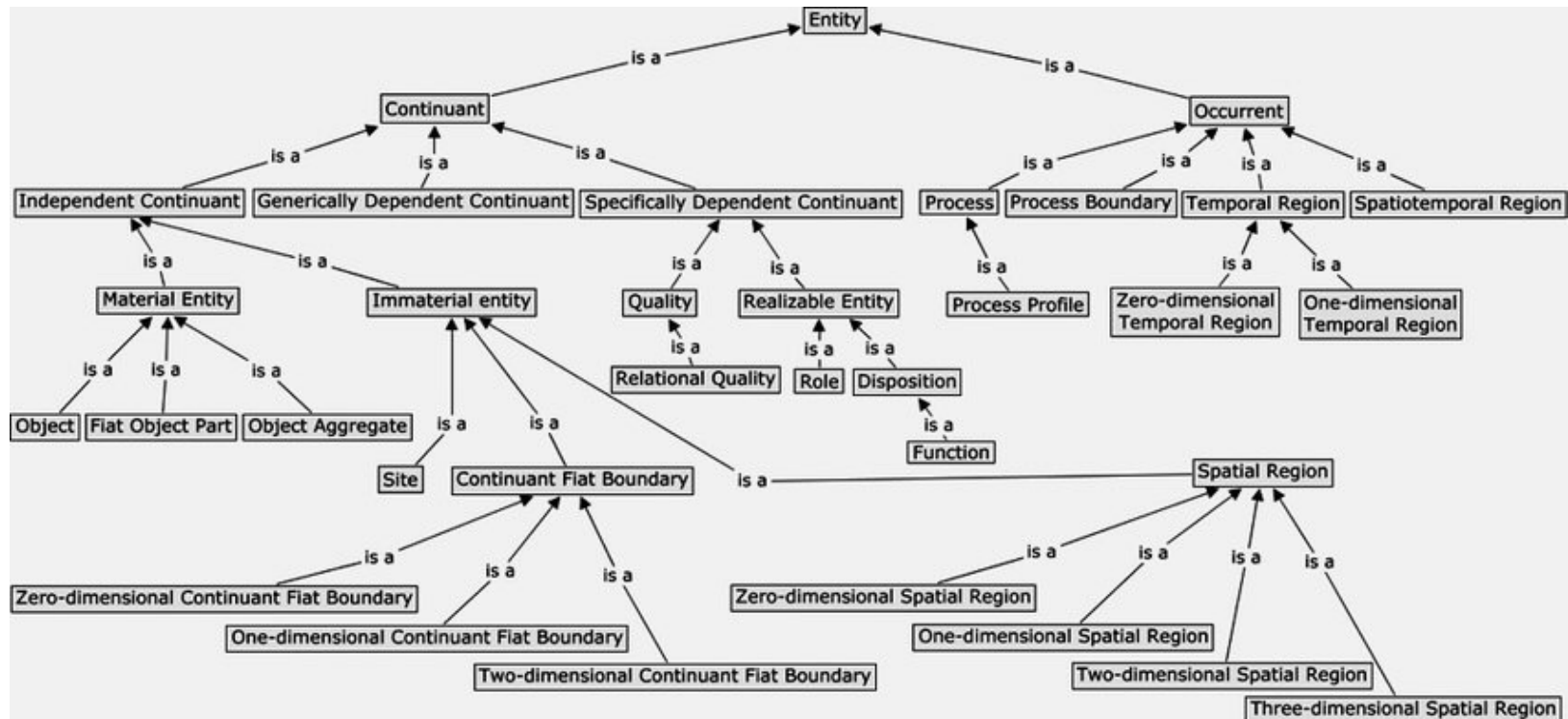
“Service” is a kind of “product(?)”

“Finished good” is a “good(?)”

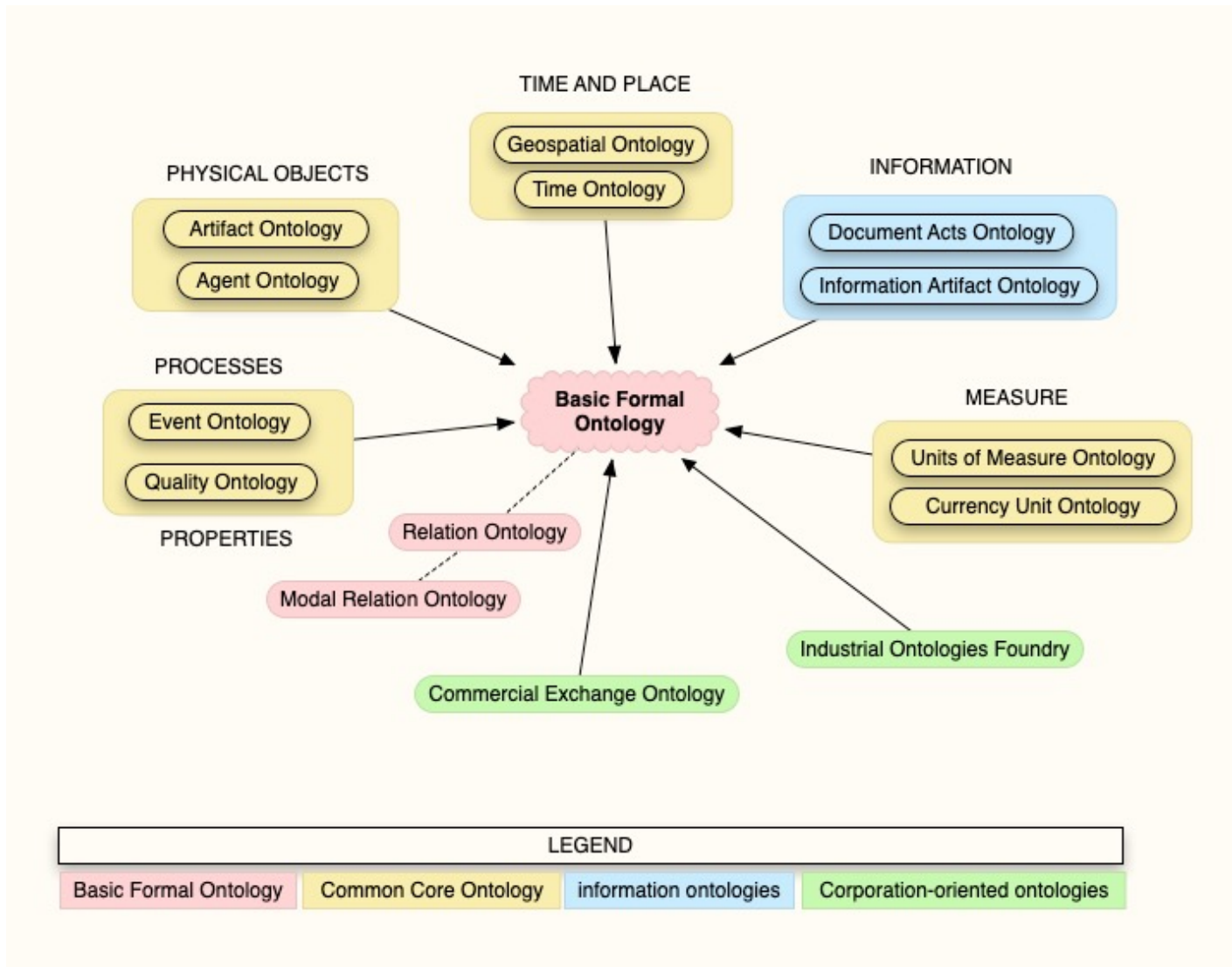
Silverston (2001, p. 74).



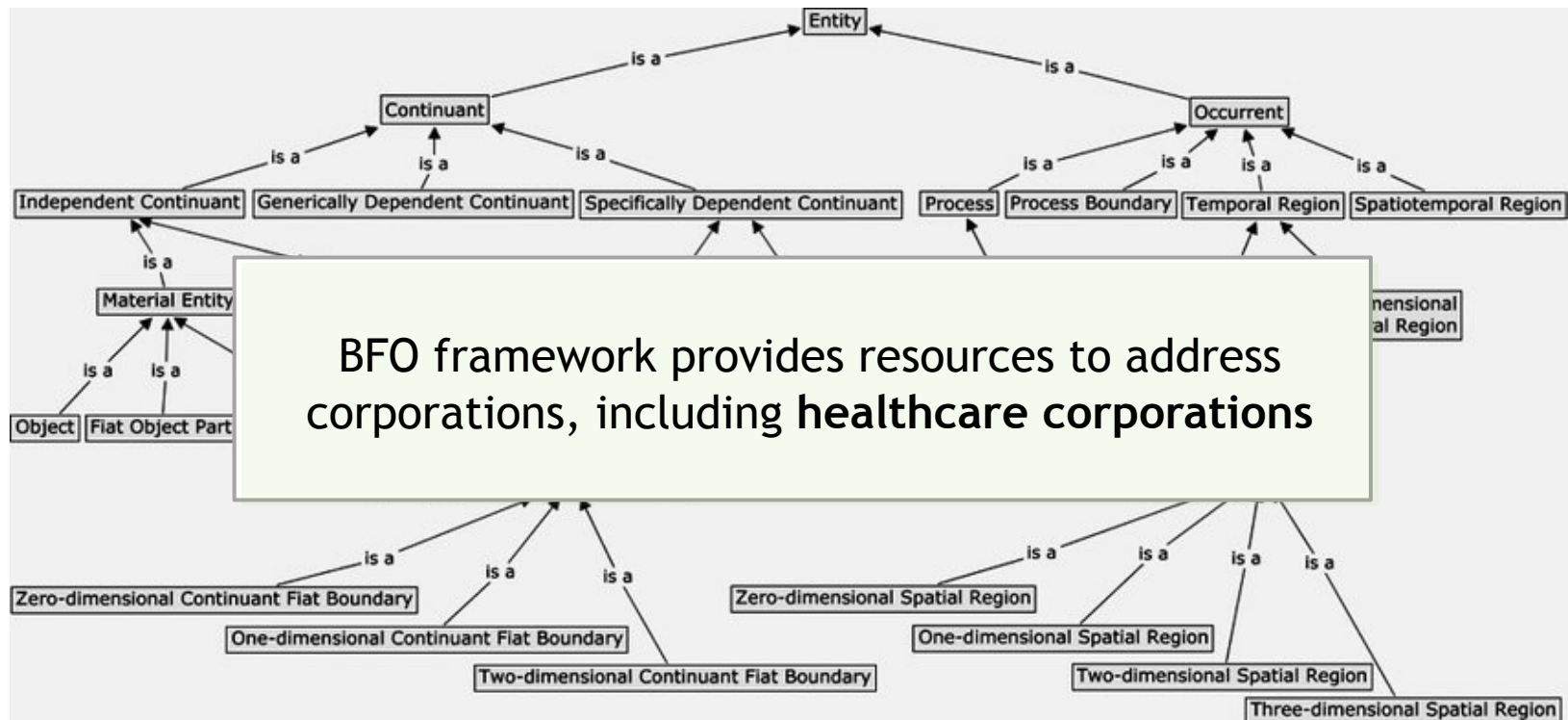
# I.2. BFO resources to modeling corporations



BFO taxonomy

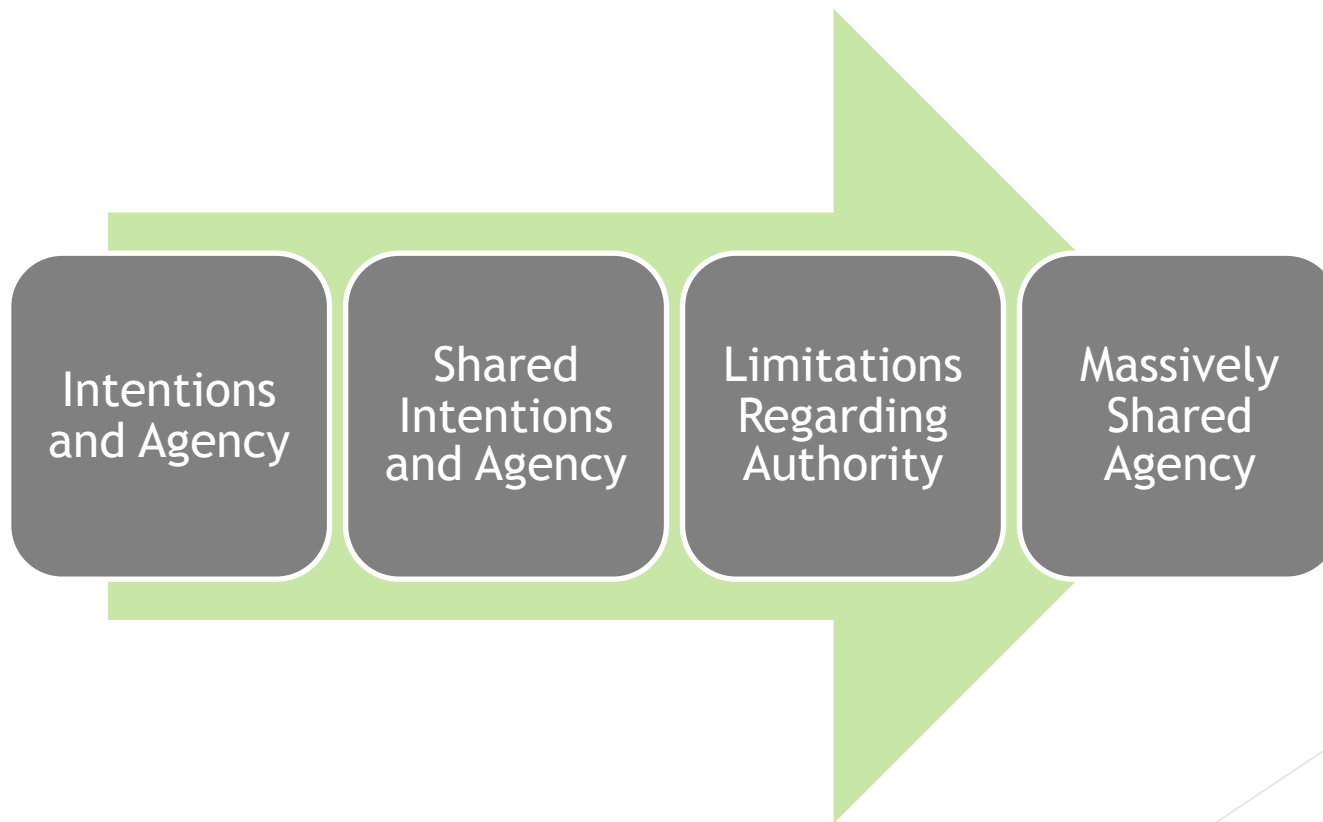


# I.2. BFO resources to modeling corporations



BFO taxonomy

# Part II - Intentions, Agency and Massive Shared Agency



## II.1. Intention and Agency

Agency denotes the exercise or manifestation of the acting capacity.

For an action to be intentional, it must be intended by an agent.

Intentional action is defined in terms of some state of mind, namely, the "intention."

## II.2. Shared Intention and Shared Agency

To understand a shared intention, let's see an example:

I cooked the dinner last night.

My wife and I cooked the dinner together.

My neighbor also cooked the dinner last night.

My neighbor and I did not cooked the dinner together.

Why my wife and I cooked together, but my neighbor and I did not?

What kind of intention is the intention of acting together?

# Shared Intention

**Requirement 1.** A shared intention plays three functional roles:

It coordinates the actions of each participant towards the realization of their goal, as well as the associated norms.

It coordinates the planning of each participant so that they can achieve the intended goal.

It specifies a background for bargaining in case of conflict.

by Bratman (1999)

# Shared Intention

**Requirement 2.** Shared intentions are constituted by the individual intentions of the group members.

**Requirement 3.** Shared intentions are reducible to the plural intentions of the group members.

The intentions of each group member refer to the group's activity.

E.g. My shared intention consists in my plural intention that we cook dinner and my wife's plural intention that we cook dinner.



# Shared Intention

**Requirement 4.** Shared intentions include interlocking intentions.

We share an intention to an activity A when we intend that we do A by way of the other's intention that we do A.

E.g. My wife and I intend that we cook just in case that:

I intend that we cook because of her intention that we cook, and  
She intends that we cook because of my intention that we cook.

# Shared Intention

## Requirement 5. Shared intentions include meshing subplans

Each participant must intend to engage in the joint activity because of each other's sub-plans but she must also intends to do so in accordance with subplans that “mesh.”

E.g. Our original plan for cooking includes to put sugar on the desert; if I substitute it by another sweetener, I will be inconsistent with a subplan.

## Requirement 6. Shared intentions include common knowledge that all members have interlocking plural intentions.

# Shared Intention

In short, we have shared intentions iff:

- 1-a-i) I intend that we do the activity A.
- 1-a-ii) I intend that we do A in accordance with meshing subplans of (1-a-i) and (1-b-i).
- 1-b-i) You intend that we do the activity A.
- 1-b-ii) You intend that we do A in accordance with meshing subplans of (1-a-i) and (1-b-i).
- 2) It is common knowledge between us that (1)

# Shared Intentional Agency

**Requirement 1.** A shared intentional activity (SIA) requires mutual responsiveness of intention.

During the planning of the joint activity, each participant must be attuned to the subplans of the other participants.

**Requirement 2.** SIA needs mutual responsiveness in action.

During the execution of the joint activity, each participant must adjust the own behavior accordingly so as to achieve the intended results.

# Shared Intentional Agency

In short, we have SIA iff:

- 1) We do A
- 2) We have the attitudes specified in (1-a) and (1-b)
  - 1-a-i) I intend that we do the activity A.
  - 1-a-ii) I intend that we do A in accordance with meshing subplan of (1-a-i) and (1-b-i).
  - 1-b-i) You intend that we do the activity A.
  - 1-b-ii) You intend that we do A in accordance with meshing subplan of (1-a-i) and (1-b-i).
- 3) Item (2) leads to item (1) by way of mutual responsiveness in intention and action.

## II.3. Limitations of the SIA regarding authority

**Limitation 1.** Activities like “cooking a dinner” and similars do not include authority.

**Limitation 2.** Authority may change meshing subplans:

In SIA, every participant is committed to acting in accordance with meshing subplans, but authorities may order to enforce their own intentions.

Subjects must adopt the order as their subplans, and revise the other subplans to mesh with the order.

### **Limitation 3. Authority and interlocking intentions:**

Vertically interlocking of participant's intentions is not enough for creating authority since there are shared activities morally harmful.

There is no obligation to participate of harmful activities: bank robberies, terrorist plots, unfair business practices.

### **Limitation 4. Plural intentions and activities:**

Participants must have plural intentions in favor of the activity.

Shared agency with plural intentions excludes alienated participants, which are today present in all corporations.

### Limitation 5. Interdependence of plural intentions:

Intentions can be interdependent in activities involving small number of participants.

The interdependence cannot endure in large-scale ventures, like modern corporations.

### Limitation 6. The requirement of the functional roles:

Not any complex of mental states that satisfies the three roles is a shared intention.

It seems too strong to require that shared intentions provide a basis for bargaining (requirement 1).



## II.4. What is Massive Shared Intentional Agency? (MSIA)

MSIA is the shared agency in the context of large corporations, which include alienated individuals.

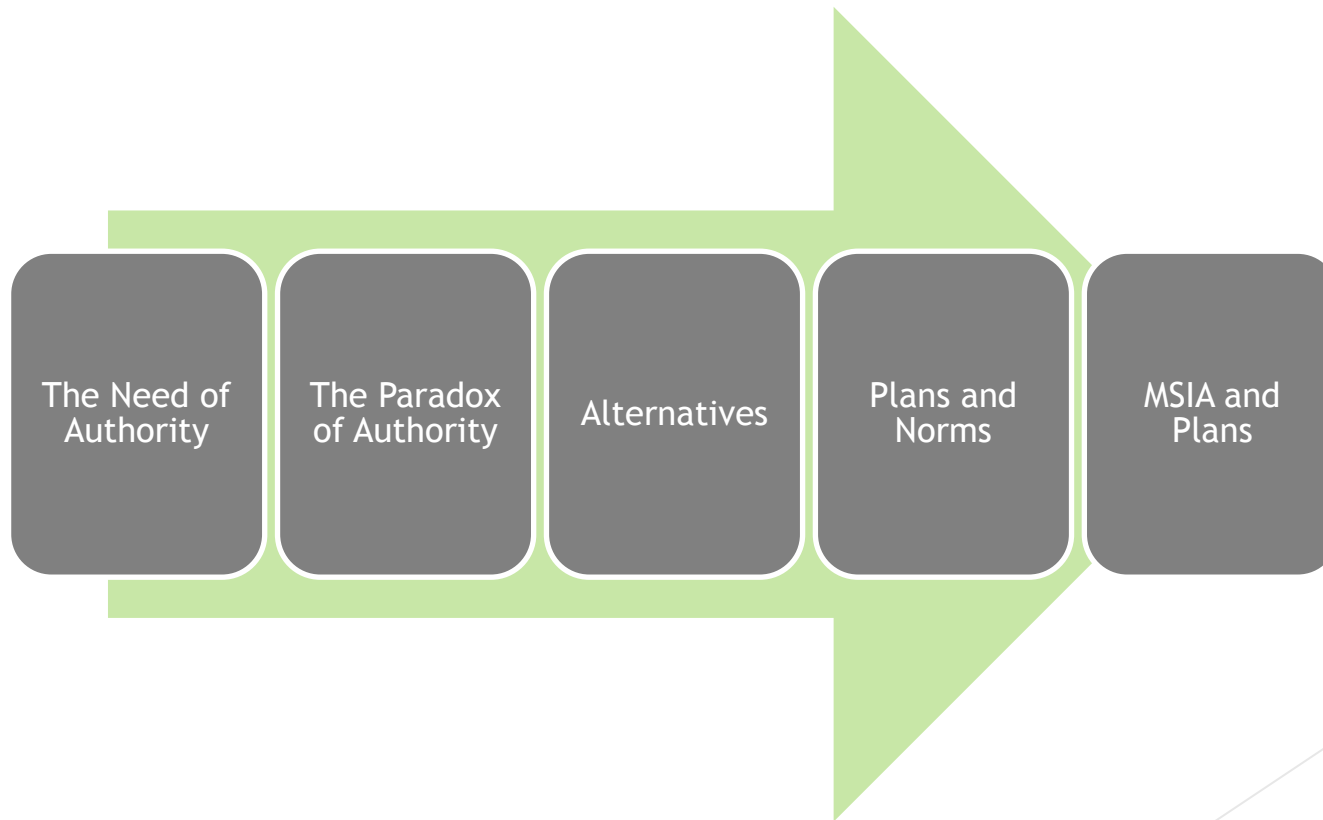
The MSIA context suggests the need of authority:

In small shared activities – cook the dinner, paint the house, play the duet, etc. – there is no need of authority.

Large groups contain alienated people that are disinterested, unmotivated and inexperienced individuals.

Within MSIA, individuals can work together even towards ends they do not value.

# Part III - PLANS AND AUTHORITY



# III.1. The Need of Authority

Why authority is needed?

Civilization is possible only with social cooperation and interdependence.

Social cooperation is possible only when a community has the ability to regulate social relations.

The authority provides the ability to regulate social relations.

Without authority for settling disputes, competition for scarce resources would result in no civilization.

## III.2. The paradox of authority

The authority A1 has power to create a set of legal norms.  
So, there exists a norm which confers that power on A1.  
This power-conferring norm is called N1.

Who created N1 which confers power on A1?  
So a different authority, called A2, must have created N1.

But, where did A2 get the power to create N1?  
Another power-conferring norm called N2 is required...

# A Note About Terminology: Norms and Rules

According to Information Artifact Ontology (IAO):

“A rule is an executable which guides, defines, restricts actions.”

The meaning of the terms as applied here...

“Rules” refers to general directives.

E.g. If Congress enacts legislation that imposes a one-time tax on Acme Corp., it has not created a rule because it applies only to Acme and for one time only.

“Norms” may refer to both individual and general directives.

## III.3. Alternatives for the paradox of authority

Alternatives for explaining authority (in law):

The ultimate authority is God (classical natural view).

The ultimate authority is the political community representing people (modern natural view).

The ultimate authority depends on brute force, coercion (positivist view, John Austin).

The ultimate authority is traceable to a social rule (positivist view, H.L.A. Hart).

## III.3. Alternatives for the paradox of authority

There are issues involving these solutions:

### The **positivist solutions**

How can normative knowledge be derived exclusively from descriptive knowledge?

### The **natural solutions**

How to explain perverse, morally illegitimate regimes? Do they have an underlying valid legal system?

## III.3. Alternatives for the paradox of authority

Shapiro's alternative for the paradox of authority:

Norms are sociologically determined entities (not morally).

Plans are sociologically determined entities.

Plans are kinds of norms.

by Shapiro (2011)



## III.4. Plans and Norms

Plan here is not the intention of “having a plan”: Intentions are not plans, but take plans as their objects.

Common characteristics of plans and norms:

Plans are entities that require, permit, or authorize agents to act in certain ways under certain conditions.

Norms are entities that function as guides for conduct.

Plans and norms work as guides: their function is to pick out courses of action that are required, permitted, or authorized.

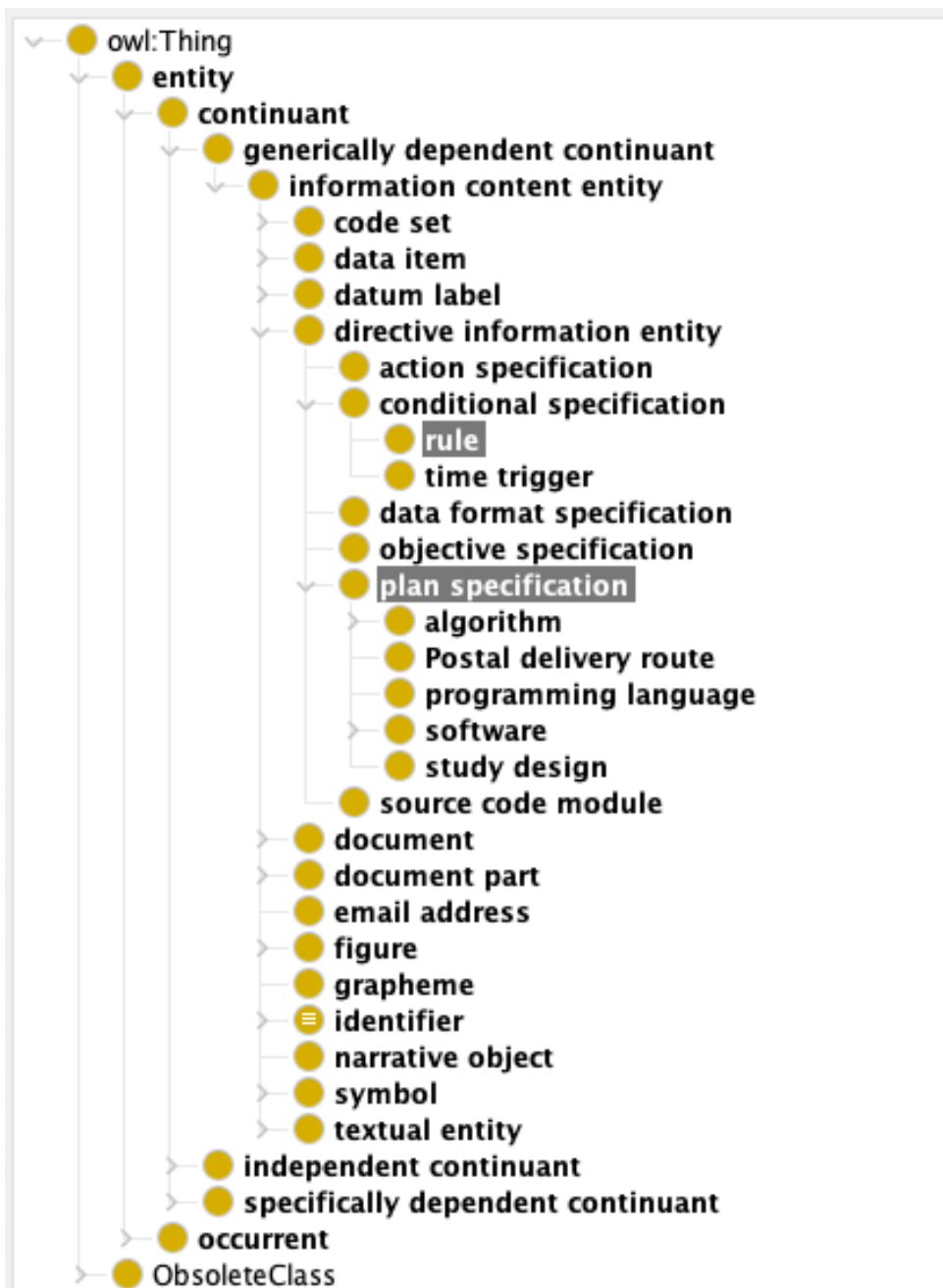
## III.4. Plans and Norms

In short, plans are norms (but not all norms are plans):

They have a typical structure that is partial, composite, and nested.

They are created by an incremental, purposeful process that disposes the subjects to comply with the norms created.

They intend to resolve questions about what should be done.



## III.5. Massively Shared Intentional Agency (MSIA) and Plans

What does mean planning for a group (without authority)?

The structure of shared plans is similar to that of individual plans:

Shared plans are typically partial.

Shared plans are composite: they have parts that are plans.

Shared plans are nested: they identify the overall purpose and specify in subplans the part that each one should take.

Participants in a group activity are not always able to think through how to optimize the next step.

## III.5. Massively Shared Intentional Agency (MSIA) and Plans

Conditions that transform “my plan” into “our plan”:

The plan is shared in a group.

The members of the group act in accordance with the plan.

The plan is made publicly accessible to all members.

The members resolve conflicts peacefully and openly in performing the plan.

...

## III.5. Massively Shared Intentional Agency (MSIA) and Plans

The challenge of managing a large group of alienated individuals requires them to surrender large amounts of planning power.

MSIA requires horizontal and vertical division of work:

Horizontal division creates a net of subplans through policies and guidelines.

Vertical division empowers skillful people for supervision through permissions and instructions.

This division of working requires authority.

## III.5. Massively Shared Intentional Agency (MSIA) and Plans

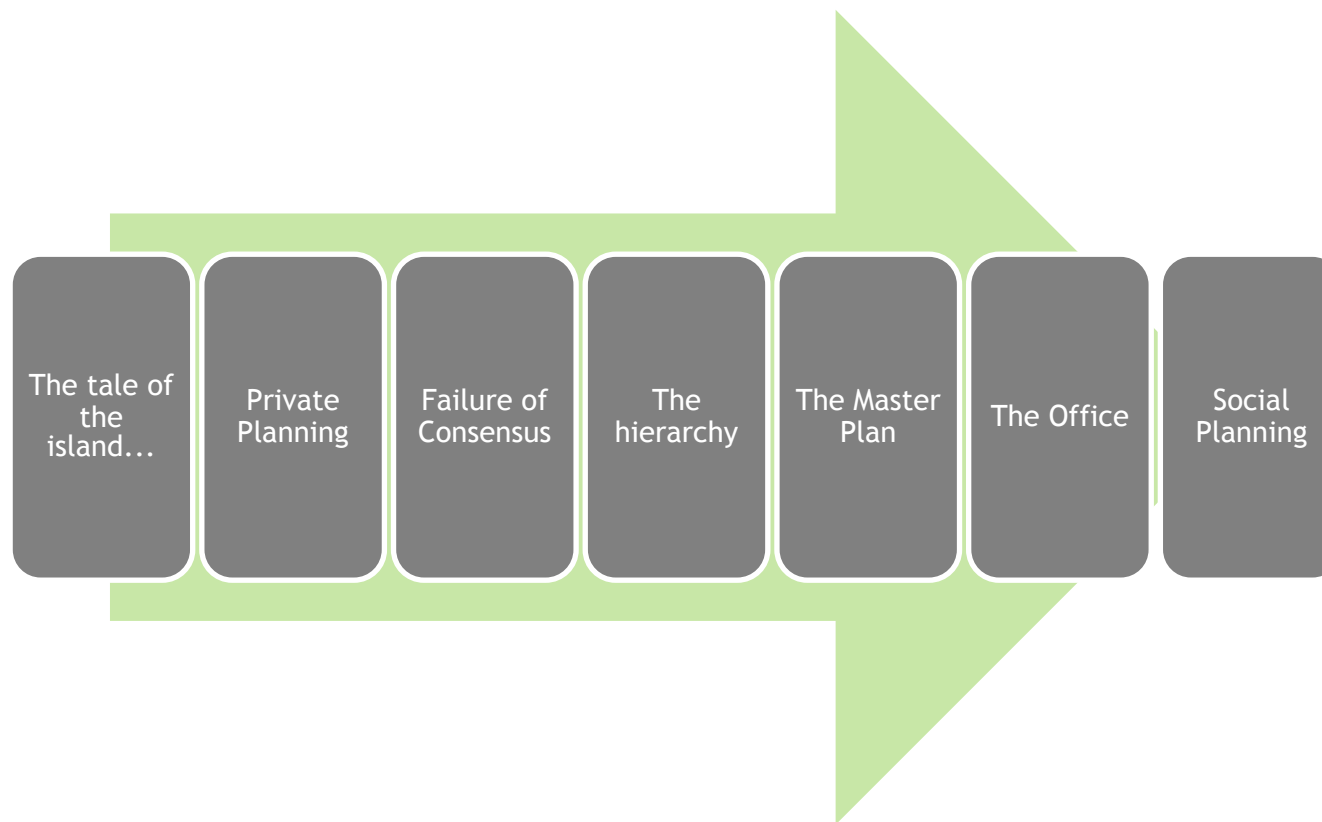
The prevalence of alienated participants in MSIA demands that the shared agency conforms to some conditions:

Not all participants need to accept the plan for the plan to be shared.

The shared plan must be accepted only by the majority of members who are expected to participate.

...

# Part IV - WHERE DOES AUTHORITY COME FROM?





# IV.1. The Tale of the Island community

A small group of friends bought an island to live and to start a new community.

The group's first needs were met by informal group planning: building huts, finding food, preparing meals, etc were spontaneously organized collectively.



# Private Planning

In instances of group planning in small contexts no one has the authority to tell everyone what to do.

Questions about individual and shared activities that should be regulated were not resolved on a community basis.

While there were a lot of group planning, there were no social planning.



# Private Planning

Let's say a cow goes out of the pasture and eats the neighbor's crops. Who is the responsible for the damage?

The owner of the cow or the neighbor for not building a fence?

The group does not have a shared plan for this, and the parties resolve the conflict through private deliberations.



# The Need for Social Planning

The preliminary shared plan solves many social problems, but questions of rights are becoming more and more important.

Who can use the water for irrigation? Who owns the food produced? Who owns what part of the land?

To compensate for the failure of private ordering, residents turn back to the previous experience of social planning and regularize it as a shared activity.

# The Need for Social Planning

They began to meet several times a week to discuss how to deal with the group's social issues.

The property rights assigned to each family in the original shared plan were dismembered and recombined in new packages of claims and duties.



# Failure of Group Consensus

Social planning via consensus has apparent flaws: plans are useful only as long as they are accepted by everyone.

As the island's economy and population grows, the consensual method of governance becomes unfeasible.

It is no longer possible to get everyone to agree on particular solutions to many social problems.

The time and expense incurred in the process of reaching consensus is enormous.

# The solution: hierarchy

Recognizing that the need for morally sound plans and judgments exceeded the ability to generate them, residents converged on the idea of hierarchy.

They decided to split social work vertically, outsourcing stages of social planning to a small group of trusted residents.



# The solution: hierarchy

The new hierarchical approach distributed the work of planning among a few designated social planners.

First, they identify three residents who will be plan adopters to develop social plans for the community.

Second, they identify three residents to act as plan applicers to determine the course of action in disputes.

...



# The master plan

The plan that establishes the hierarchy of the island is a shared plan: it was designed for social planners.

The plan guides the behavior of social planners so that each one knows what role to play in the shared activity.

It is a shared plan for social planning.

The shared plan was designed for a handful of social planners, so they share the plan, not the residents as a whole.

The shared plan is the master plan for the group.



# The Office

New policies were developed to define structural roles and identify occupants in institutional terms.

Regarding plan adopters, three new policies were agreed:

**Authorizations:** Plan adopters have the power to adopt plans for residents.

**Guidelines:** Plan appliers are obligated to apply the plans approved by the plan adopters in cases that arise.

**Stipulations:** A person will be considered a plan adopter if and only if she is a resident and receives enough votes in the election.

# The Office

This hierarchical structure establishes the office, determining the responsibilities and rights of the plan adopter position.



# Social Planning

At this point, the island has developed a kind of legal system:

The social planners are the **legal officers**.

The plan adopters are the **legislators**.

The plan appliers are the **judges**.

The master plan is the **constitution** that defines the offices.





## In short...

A community (as a corporation) can be structured by shared plans that are developed for the staff, enabling them to work together to plan for all.

These plans are norms that establish divisions of social work, specifying who is authorized to formulate, adopt, and apply the plans.

These norms also instruct officers on how to engage in the steps of social planning.

In other words, **people are able to create norms because they are able to create and share plans.**

## IV.2. Interpretations for authority

What are we imputing to someone when we say she has **authority**?

Adjectival interpretation: We are saying that the person has moral authority by virtue of being an officer of a legal body.

Perspectival interpretation: We are not necessarily imputing any kind of moral authority to anyone.

## IV.3. The Legal Point of View

What is the **legal** point of view here?

The legal point of view is not that others are morally obligated to comply and their disobedience would be moral criticizable.

The legal point of view is the perspective of a normative system.

Those authorized to act may be morally illegitimate and their actions may not generate moral obligations to be obeyed.

According to this normative system, those who are authorized by the norms of the corporation have moral legitimacy and, when they act in accordance with the norms, generate an obligation to obey.



## IV.4. Expressing the interpretation

The perspectival interpretation can be expressed:

(1) X has legal authority over Y regarding matter Z in system S iff from S's point of view, X has authority over Y regarding Z.

The relationship between the legal point of view and the master plan can be expressed as follows:

(2) From S's point of view, X has moral authority over Y regarding matter Z iff S's master plan authorizes X to plan for Y regarding Z.

## IV.4. Expressing the interpretation

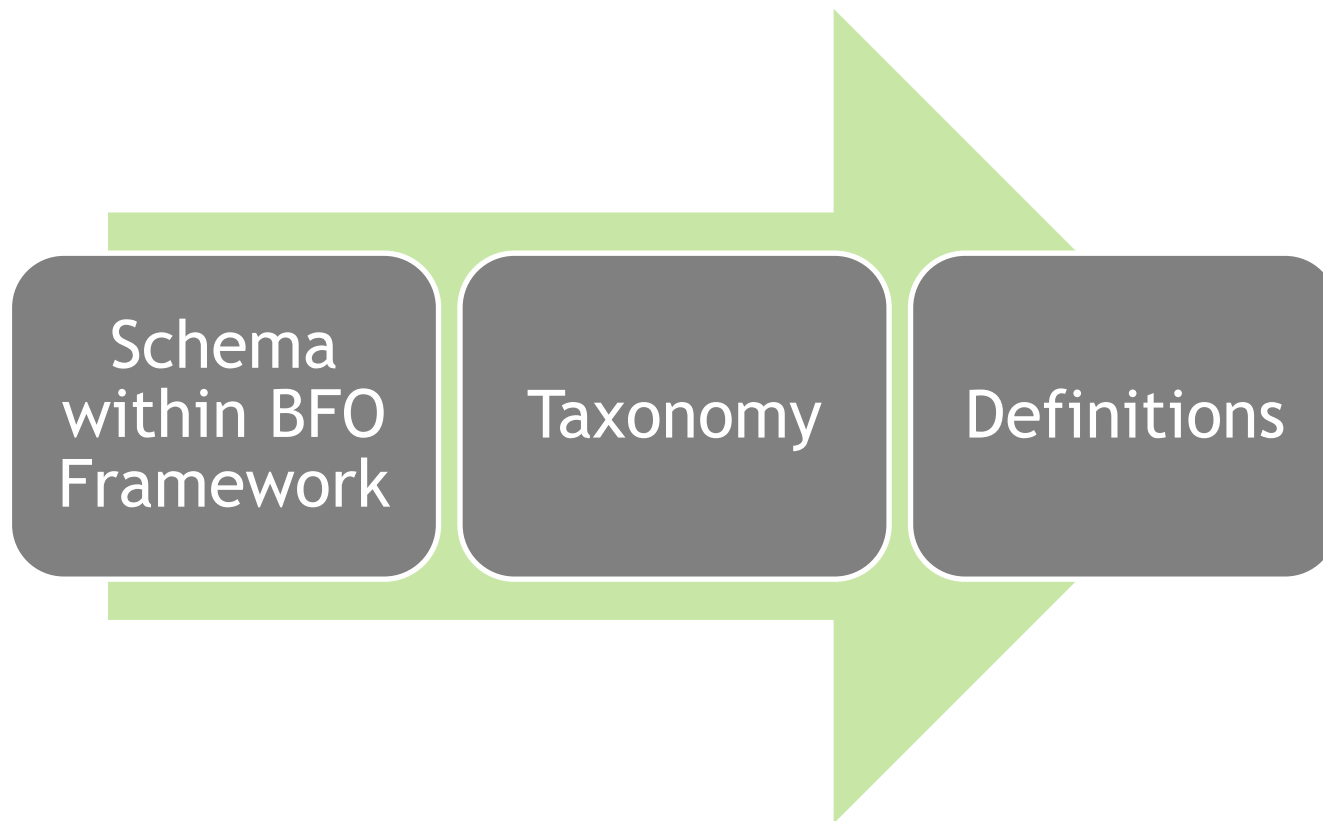
It follows from (1) and (2) that a body will have legal authority within a legal system if the system's master plan authorizes that body:

(3) X has legal authority over Y with respect to object Z in system S iff S's master plan authorizes X to plan for Y with respect to Z.

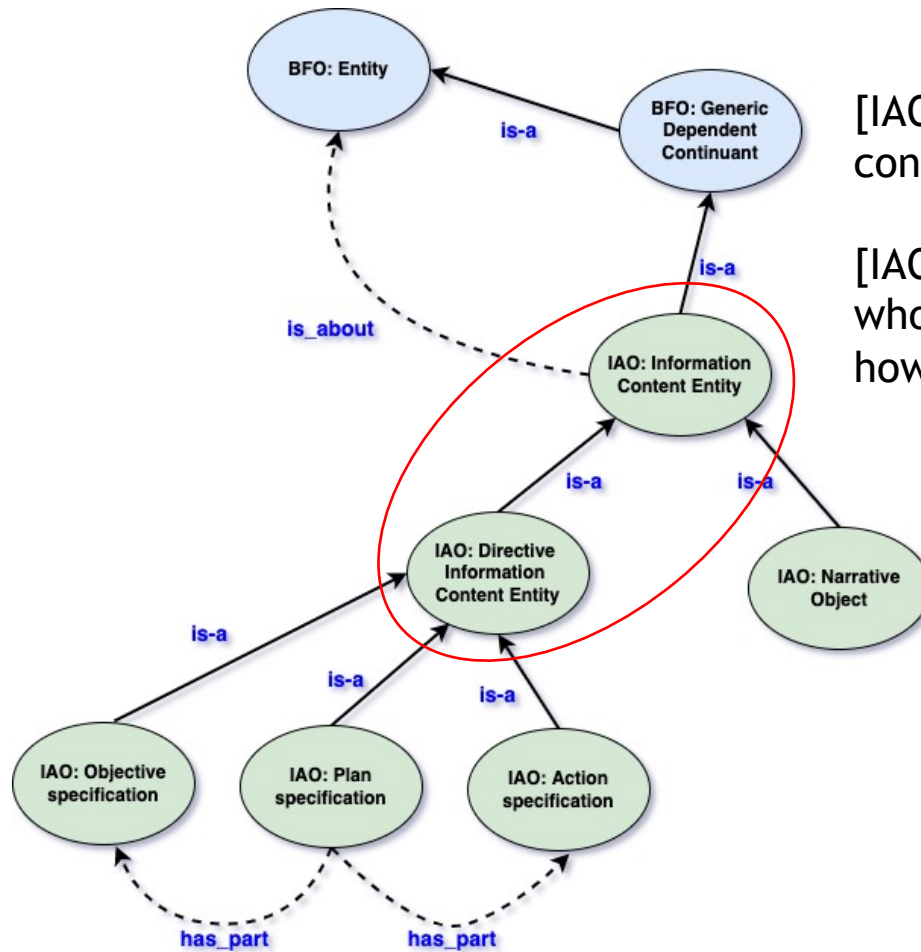
For example:

The “VP of Finance” has authority over the “supply chain manager” with respect to “purchasing” within “Acme Corp” iff “Acme’s Budget” authorizes the “VP of Finance” to plan for the “supply chain manager” with respect to “purchasing.”

# Part V - SCHEMA



# V.1. Schema within BFO Framework

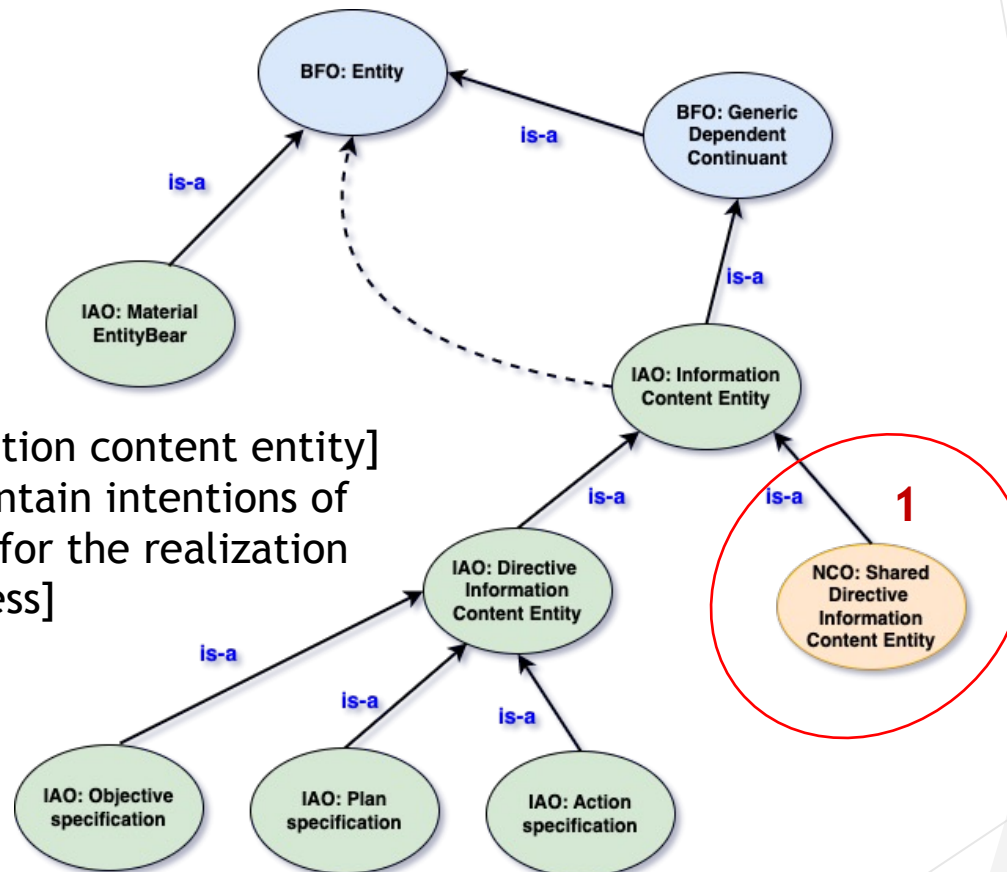


[IAO:ICE] is a generically dependent continuant that is about some thing.

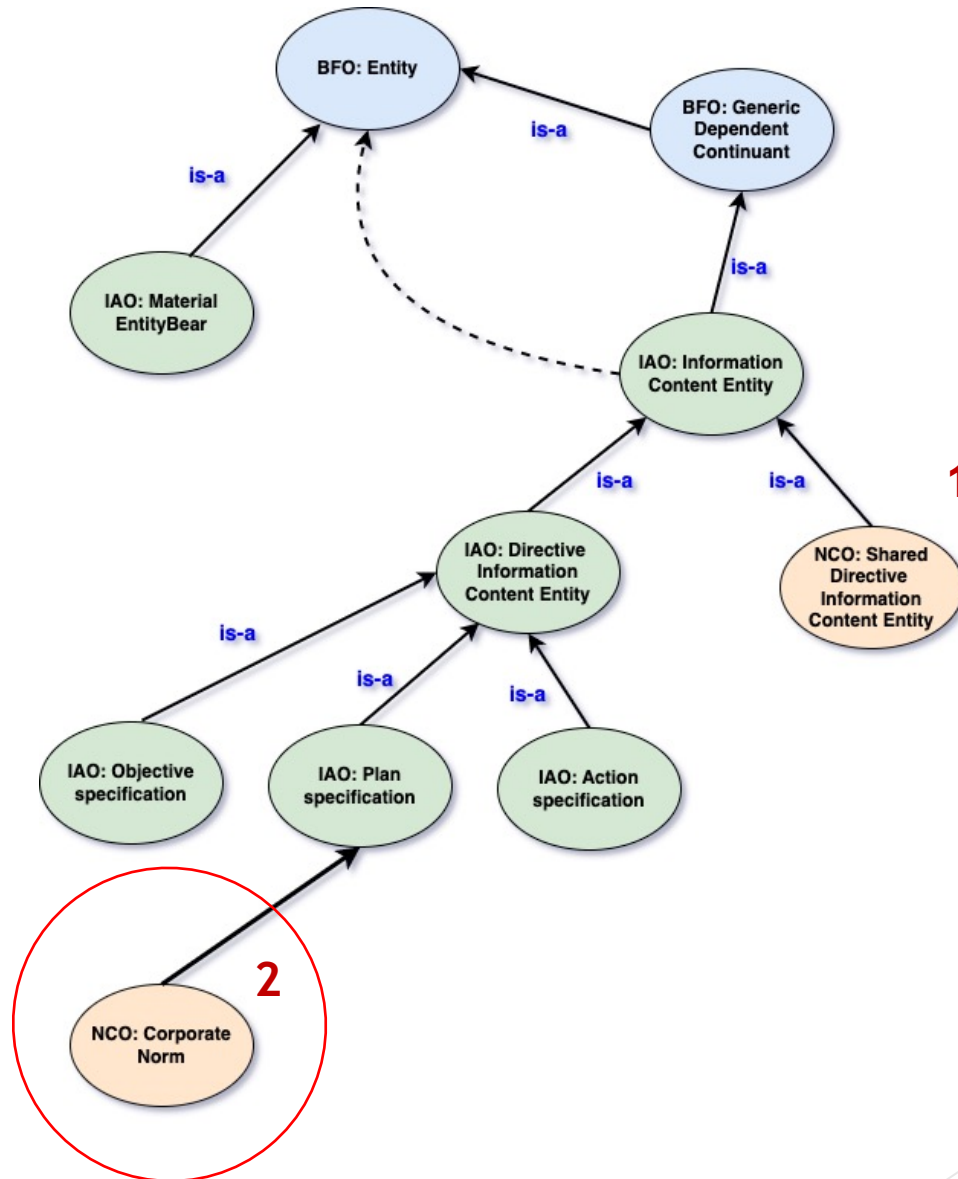
[IAO:DIE] is an [information content entity] whose concretizations indicate to their bearer how to realize them in a [process].

Fragment of Information Artifact Ontology

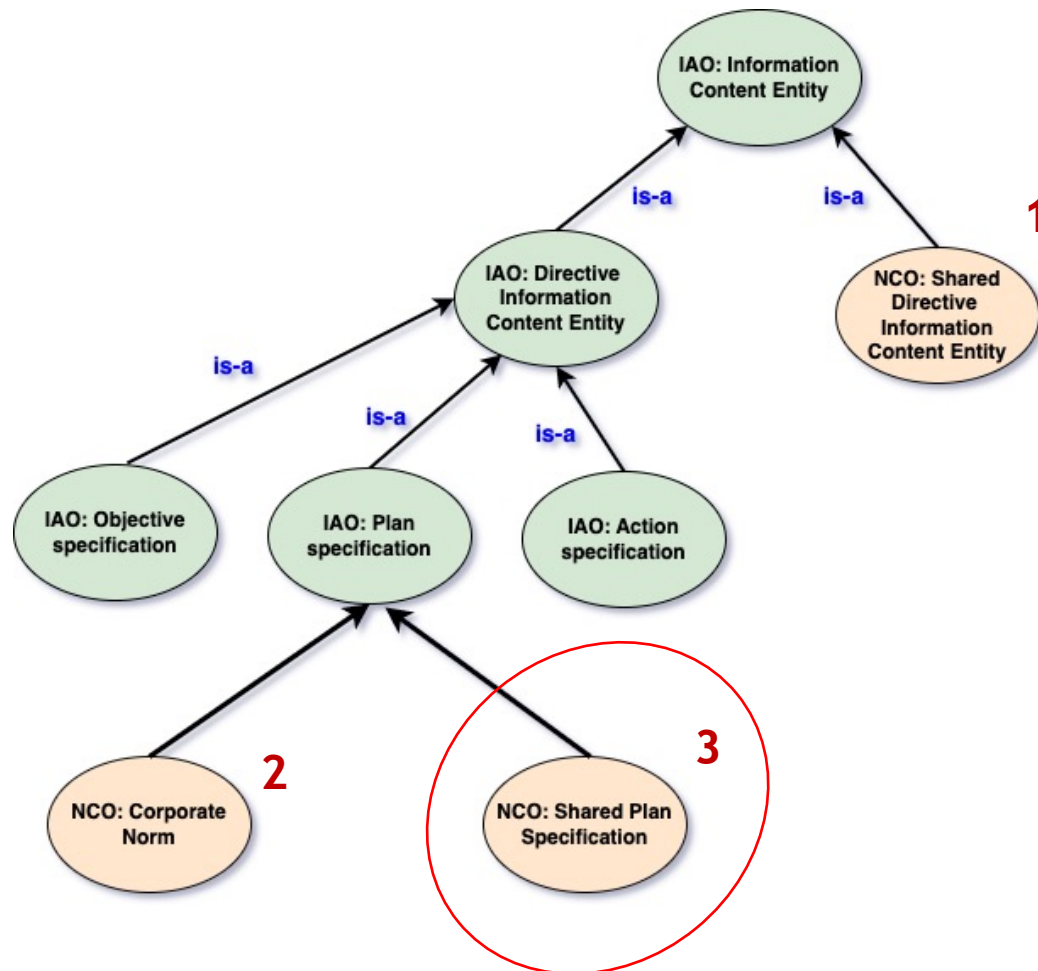
# IV.1. Taxonomy



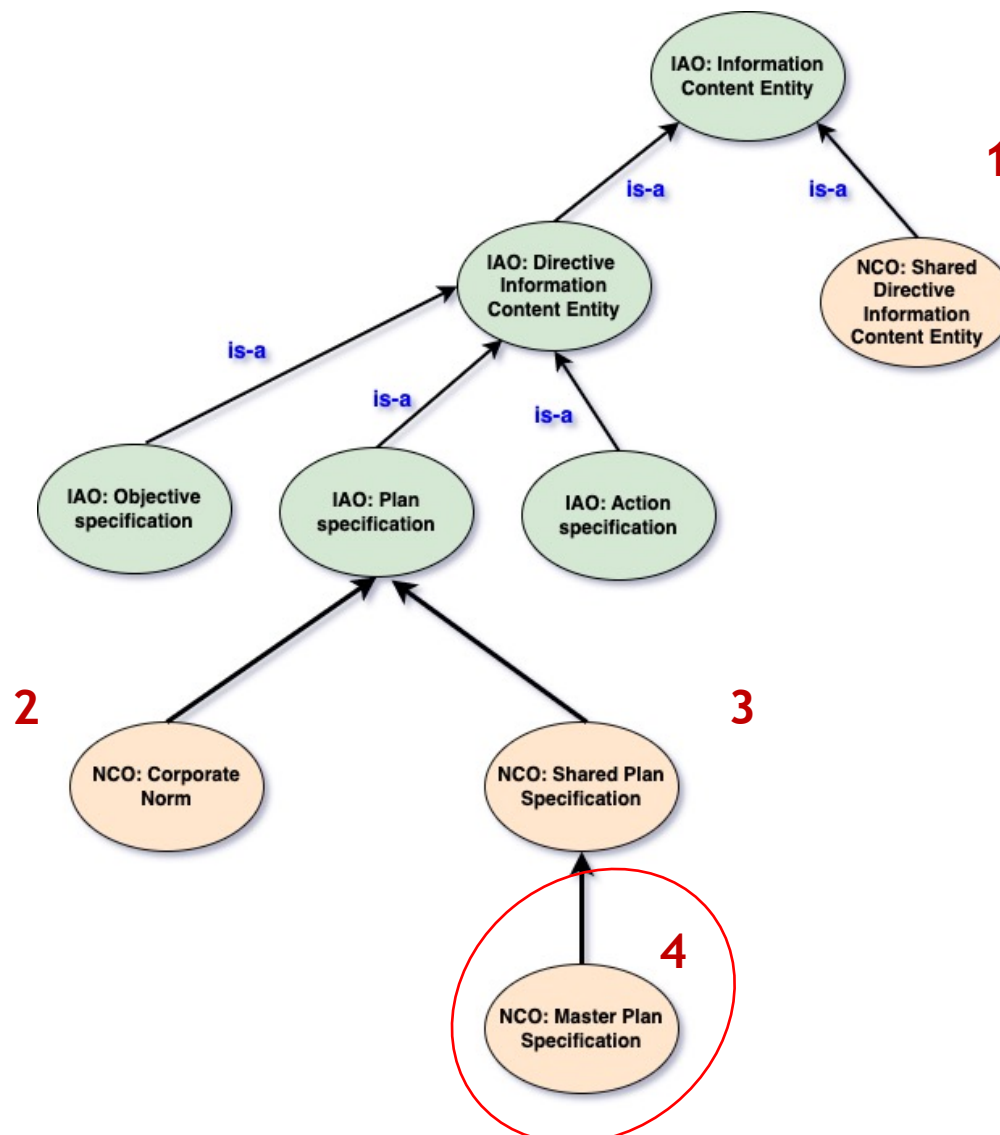
[NCO:SDIE] is an [information content entity] whose concretizations contain intentions of an [aggregate of people] for the realization of some [normative process]



[NCO: Corporate Norm] is a [IAO:Plan Specification] that is concretized in the disposition to follow a [NCO:Master Plan Specification]

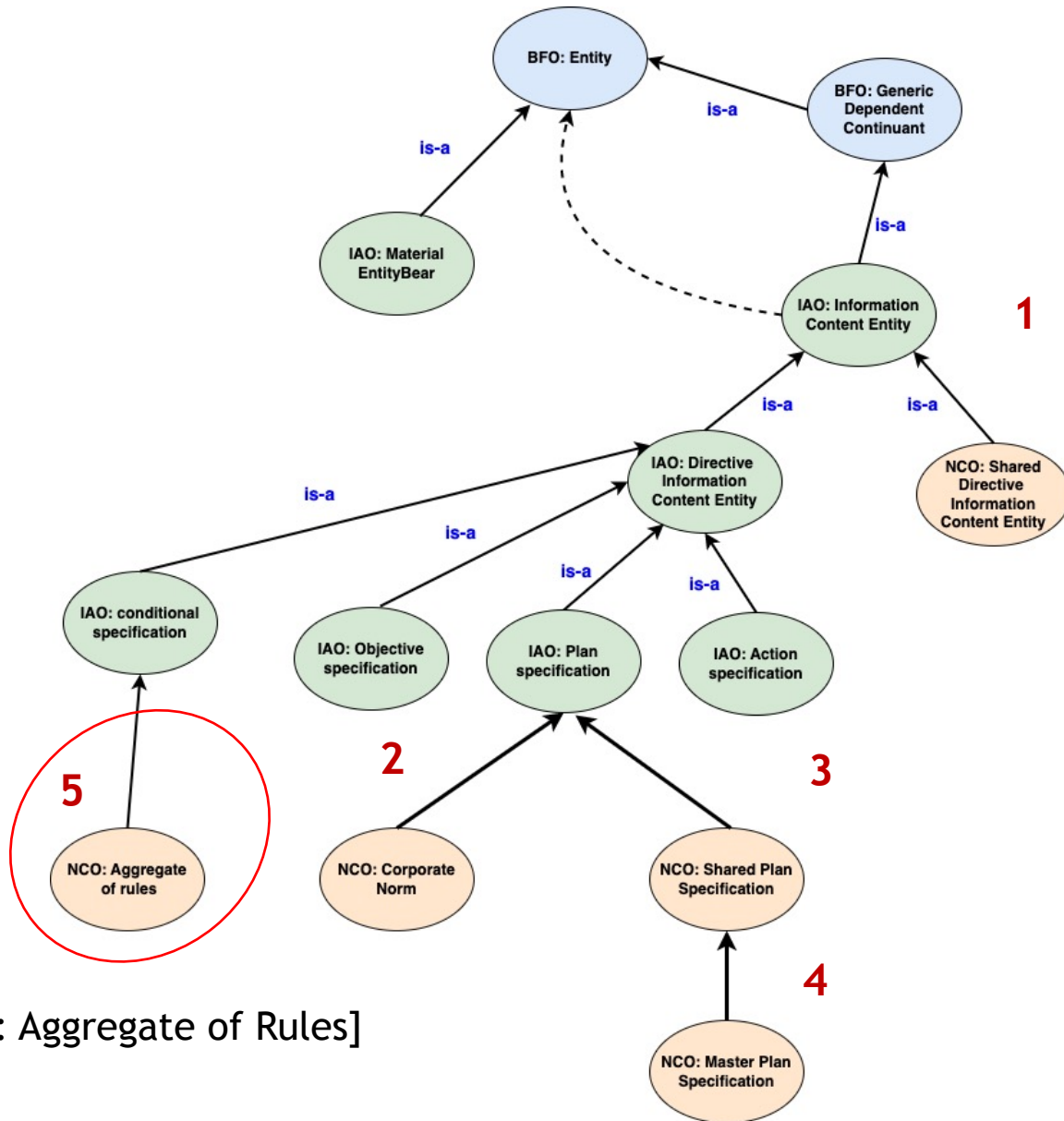


[NCO:Shared Plan Specification] is a [IAO:Plan Specification] that is created by an aggregate of people and may be concretized as a [NCO:Claim] or an [NCO:Obligation]

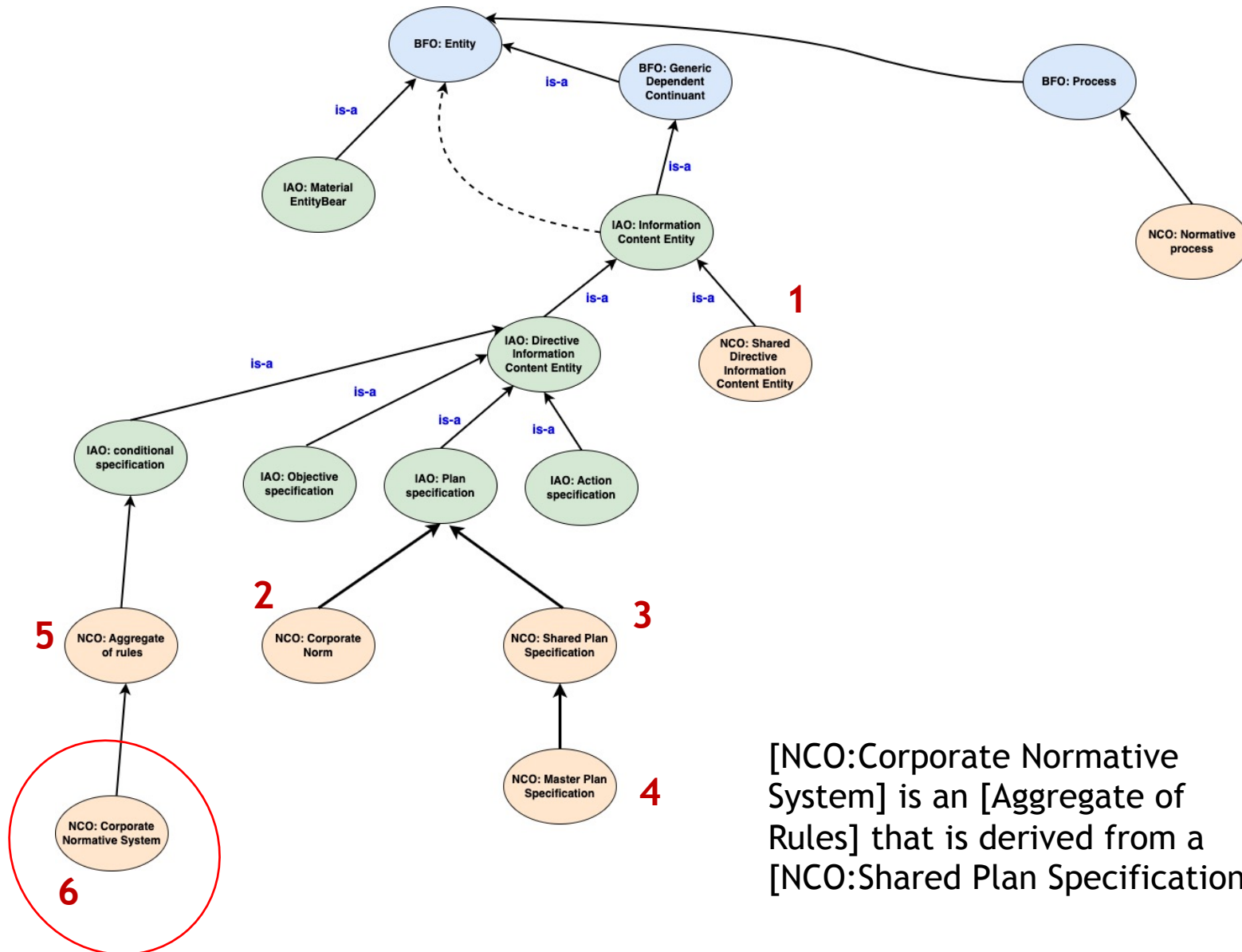


[NCO:Master Plan Specification] is a [NCO:Shared Plan Specification] that deliberates which person (or aggregate of people) participates in an [NCO:Authorization] within a [NCO:Corporate Normative System]

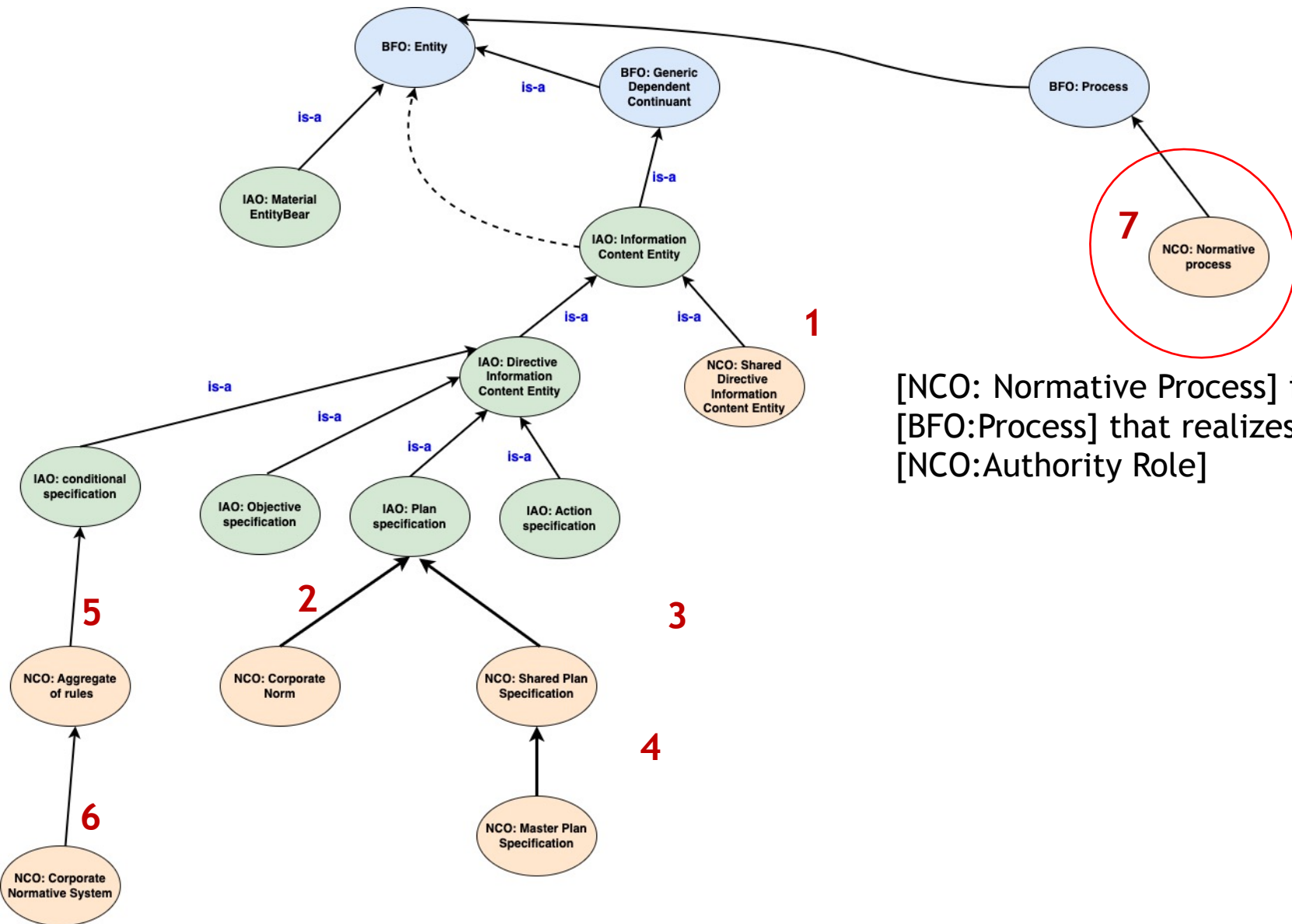




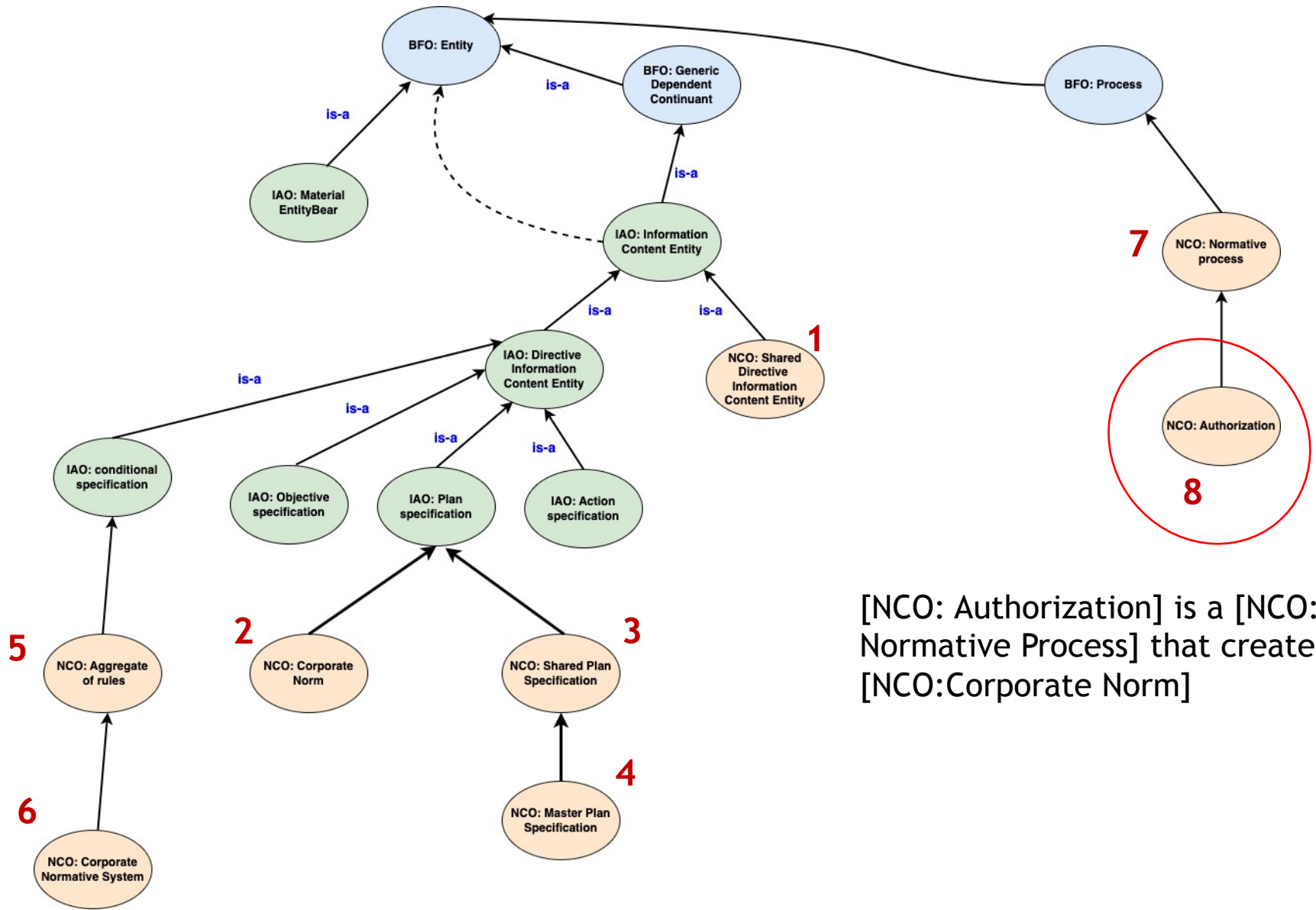
[NCO: Aggregate of Rules]



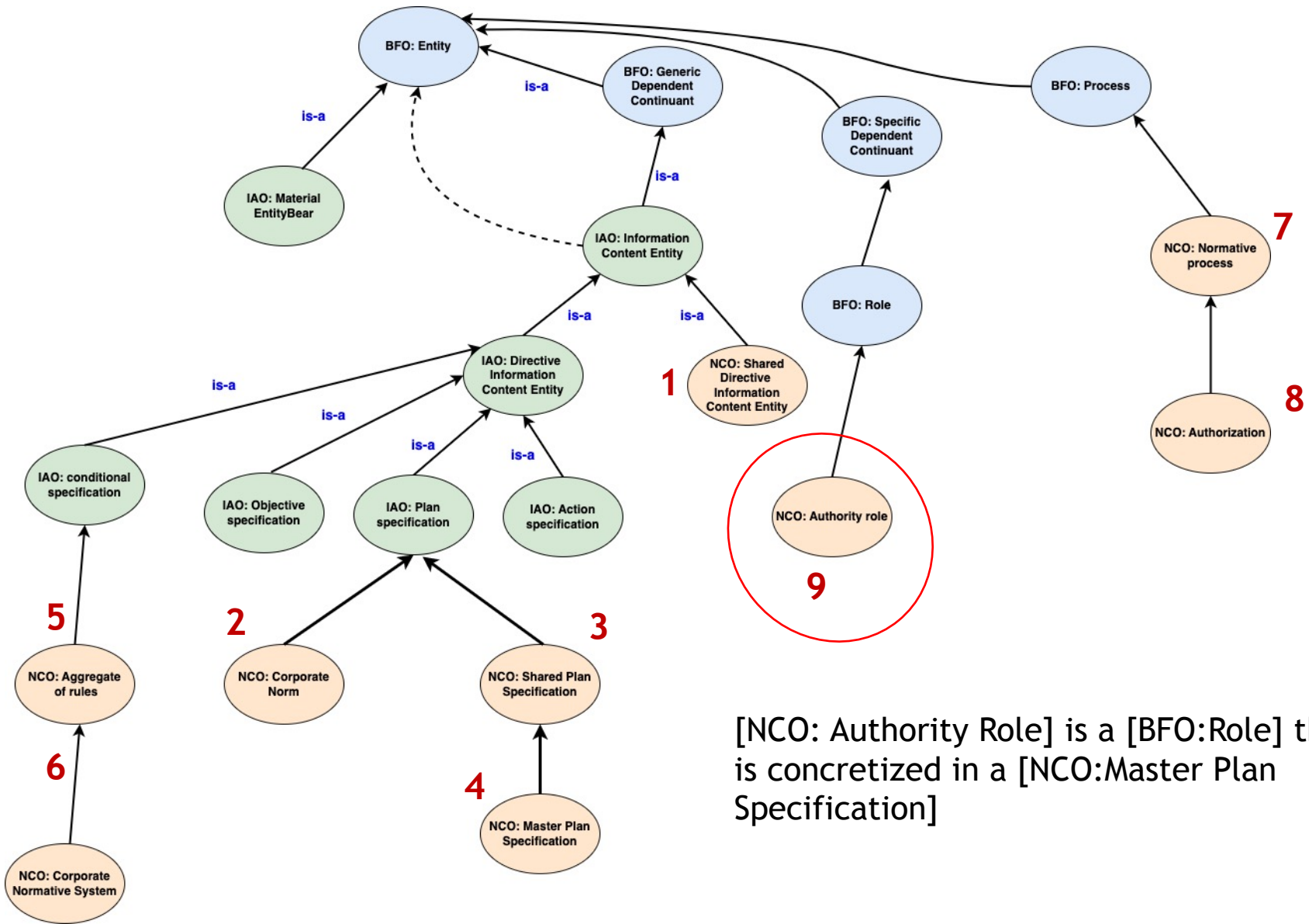
[NCO:Corporate Normative System] is an [Aggregate of Rules] that is derived from a [NCO:Shared Plan Specification]



[NCO: Normative Process] is a [BFO:Process] that realizes an [NCO:Authority Role]

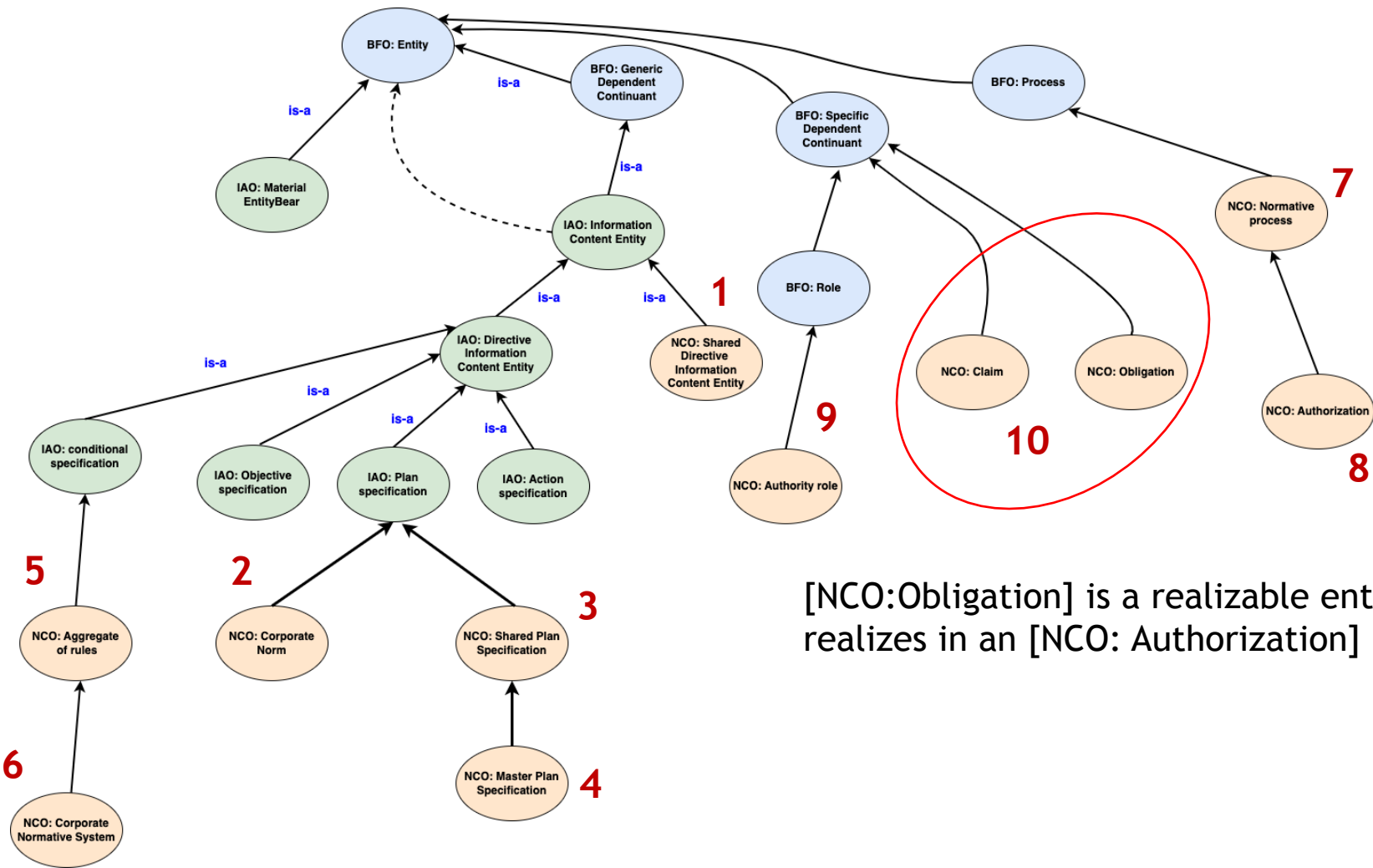


[NCO: Authorization] is a [NCO: Normative Process] that creates a [NCO:Corporate Norm]



[NCO: Authority Role] is a [BFO:Role] that is concretized in a [NCO:Master Plan Specification]

# IV.2. Full Taxonomy



[NCO:Obligation] is a realizable entity that realizes in an [NCO: Authorization]

# In conclusion...

Usual approaches to agency and intention are not enough to deal with authority in the current contexts.

To explain authority in large contexts – full of alienated individuals – we use plans.

A master plan authorizes someone to plan for others with respect to some subject.

A theory of plans is an alternative to explain deontic powers within ontologies.

# Thanks!

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