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Financial Industry Business Ontology (FIBO)
[FIBO– Business Entities]

Understanding the Business Conceptual Ontology
For FIBO-Business Entities
September 5, 2012

FIBO-BE

Understanding the Legal Foundations of Business Entity Types, Ownership and Control

Financial Industry Business Ontology

- Overall Goal: standardize the terms and definitions of all reference data attributes stored in master files of financial institutions (unambiguous shared meaning)

- We must get the language straight in order to manage complexity

  - Precise nomenclature translates into a common language between systems and sources

  - Common language facilitates data comparability and reduces the cost of doing business

  - Data comparability promotes confidence in data among users and provides the foundation for business process automation

- Business conceptual ontology = terms + precise definitions + how the concepts relate to one another (full and factual representation of business reality grounded in legal (i.e. rights and obligations) and financial (i.e. debt and ownership) concepts

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Business Conceptual Ontology (BCO)

- FIBO-Business Entities is designed to be a formal and factual representation of business entity structures

- The draft BCO is complete and ready for evaluation by subject matter experts (business, legal and technical)

  - Align with the Financial Stability Board (FSB) process for Legal Entity Identification (LEI)

  - Evaluate against real world use cases to ensure that it can be used in the real world to address real business challenges

  - Design so that it is capable of being deployed as an operational ontology for semantic processing

- The BCO contains two important components: (1) the **TYPES** of entities that exist and (2) the **RELATIONSHIP** (including ownership and hierarchical structure) of entities to each other
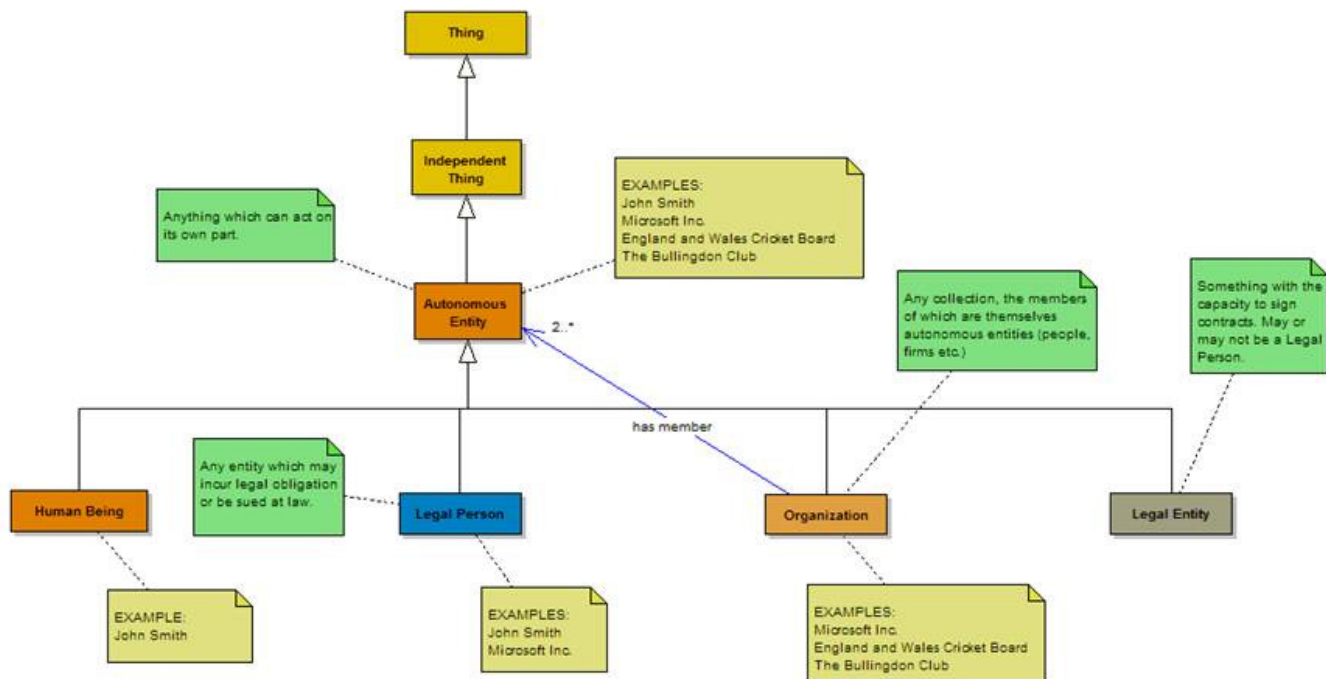
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- The FIBO Model consists of

  - **Things** (known as 'classes' in the Web Ontology Language

    - A 'thing' should be understood as a set theory construction. Each 'thing' in FIBO is defined by (and distinguished from) other things by its facts. No ambiguity of interpretation
    - FIBO supports the concept of inheritance and uses set theory notions of 'union' and 'disjoint.' Things are arranged in a taxonomy (i.e. taxonomy of species)

  - **Facts** (known as 'properties' in OWL)

    - 'Simple' facts represent concepts such as names and dates (i.e. issue date is a simple fact about a security)
    - 'Relationship' facts represent the relationship of one thing to another (i.e. a share confers voting rights)

- Example

  - If an animal has a backbone, it belongs to a set of all things that are a vertebrate
  - If the animal has hair, is born alive, feeds its babies with milk and has a four chambered heart, it belongs to the set of vertebrates that are a mammal

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Part One: Types of Entities

There are Four Basic Types of Entities in the FIBO-BE Model

(Human Beings ● Legal Persons ● Organizations ● Legal Entities)

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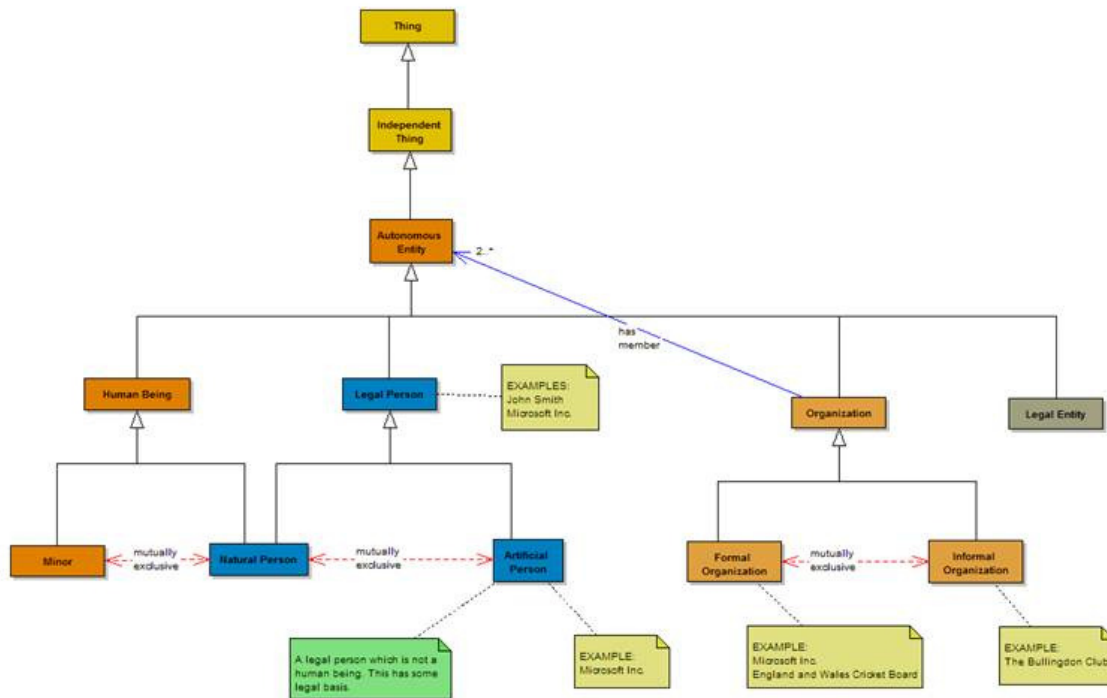COUNCIL

Types of Entity: Basic

The four basic types of entities in the FIBO-BE model include:

1. **Human Being**: any member of the genus homo sapiens

2. **Legal Person**: legal personality is the characteristic based on the capacity to incur debt (grounded in law)

3. **Organization**: any autonomous entity which has other autonomous entities as members

4. **Legal Entity**: covers any entity that can be a signatory to a contract; it may incur debt but may or may not be the entity on whom the liability ultimately unwinds; includes Trust, Partnership;

These basic entity types are sub-categories of "autonomous entity" – which is defined as any entity that can act on behalf of itself.

- Many of the entities in the financial industry can be both an "organization" and a "legal person." For example, a "limited company" is both.

- Some organizations are not "legal persons" (e.g. partnerships) and some "legal persons" are not "organizations" (e.g. people).

- We further understand that people are not considered as "legal persons" until they have attained the age of majority in their jurisdiction (or if they do not have the capacity to incur liabilities for some other reason such as mental illness).

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Types of Entity: Organization and Legal Person

- It is also true that not all "organizations" are "formal organizations." "Formal organizations" have some legal arrangements among the principals (e.g. a partnership arrangement), whereas "informal organizations" do not. Informal organizations may be of interest in some money laundering applications.

- In order to be classified as a "legal person," an entity must be either an adult human being ("natural person") or something which is constituted by some legal instrument under some jurisdiction. We refer to the later as an "artificial person" (to distinguish it from a "natural person"). The concept of an "artificial person" began with the formation of the Dutch East India Company in the 17th century.

- Both "natural person" and "artificial person" may also be a type of "legal entity."

Types of Entity: Incorporated Company
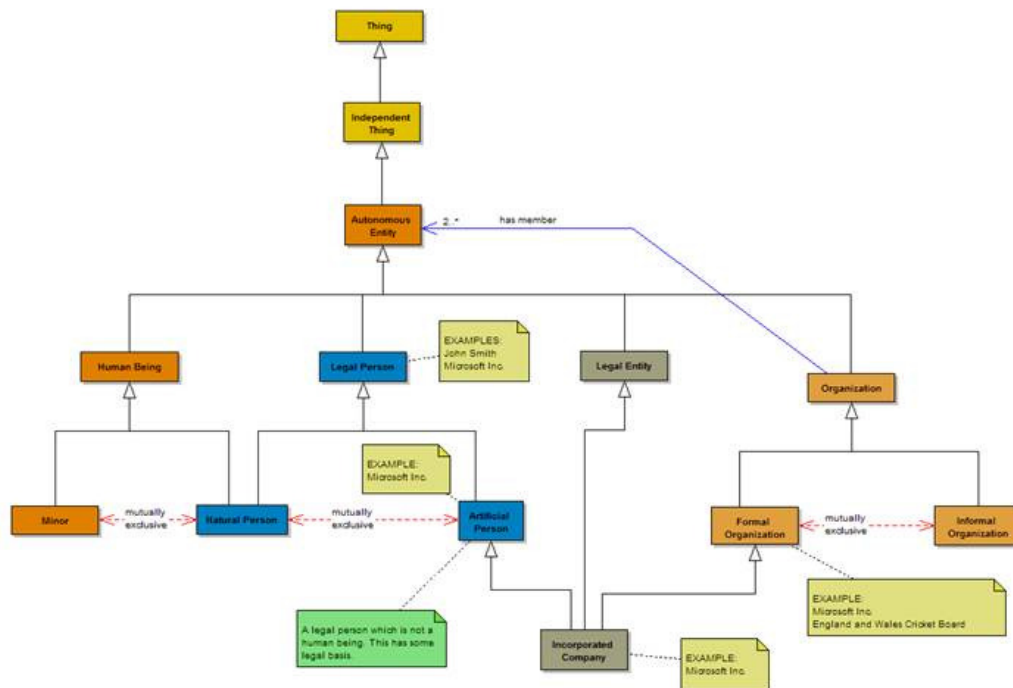
- To capture the concept of "incorporated company" we begin to use the notion of multiple inheritance in the model. Multiple inheritance is used to indicate things which are a "legal person", a "formal organization", and a "legal entity" all at the same time. Most business entities will be all of these things but some (such as "trusts" and "non-incorporated partnerships" will be just one or two of these things).

- The type of entity shown in this section of the BCO is an "incorporated company" – defined as a limited liability entity formed by the issue of shares. Other "legal Person" types, such as "legally incorporated partnerships", are modeled in the same way (i.e. they are both "legal persons" and "formal organizations").

Legal Persons: Fundamentals
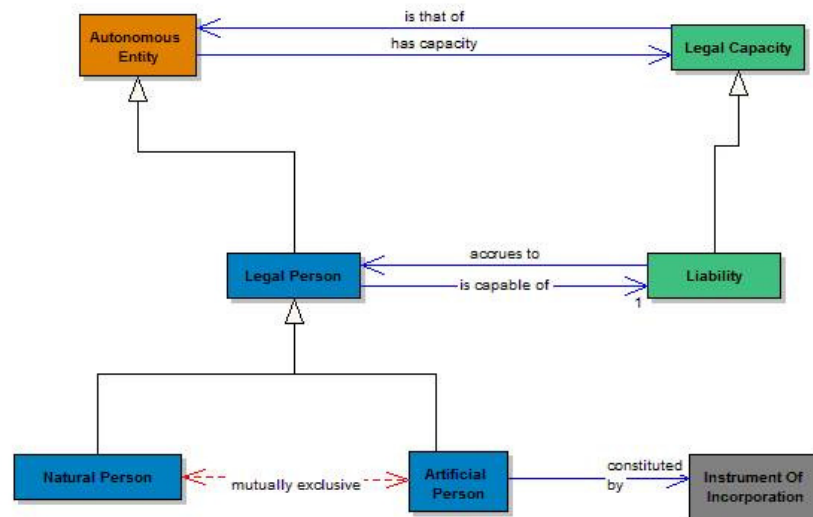
- To be a "legal person" is to have the capacity to incur liability (including debt).

- In order to be a "legal person" without having been born a human being, an entity generally has to be constituted in some jurisdiction according to the body of statute within that jurisdiction. This is done by the formation of a statutory instrument such as the "Memorandum of Incorporation" or "Articles of Association" for limited companies.

- This constitution in some jurisdiction is shown as a property of "artificial person." Each kind of "artificial person" must have some such instrument, although the names for these statutory instruments may vary according to the legal person type or jurisdiction.
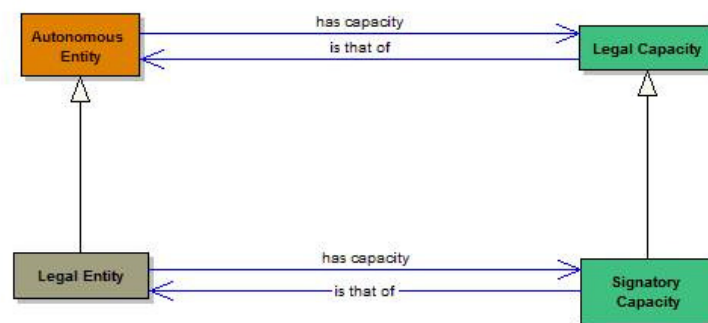
- As with "legal person," the concept of "legal entity" is characterized by its factual definition. A "legal entity" is defined as something which is able to enter into a contract. Most such entities are also "legal persons."

- Please note that the "legal entity" is that which is able to take on a contractual liability, regardless of whether it is also the entity which is capable of that liability. When a party seeks redress, the "legal entity" is the first point they come to, even if the liability is held elsewhere.

Legal Entity vs. Legal Person

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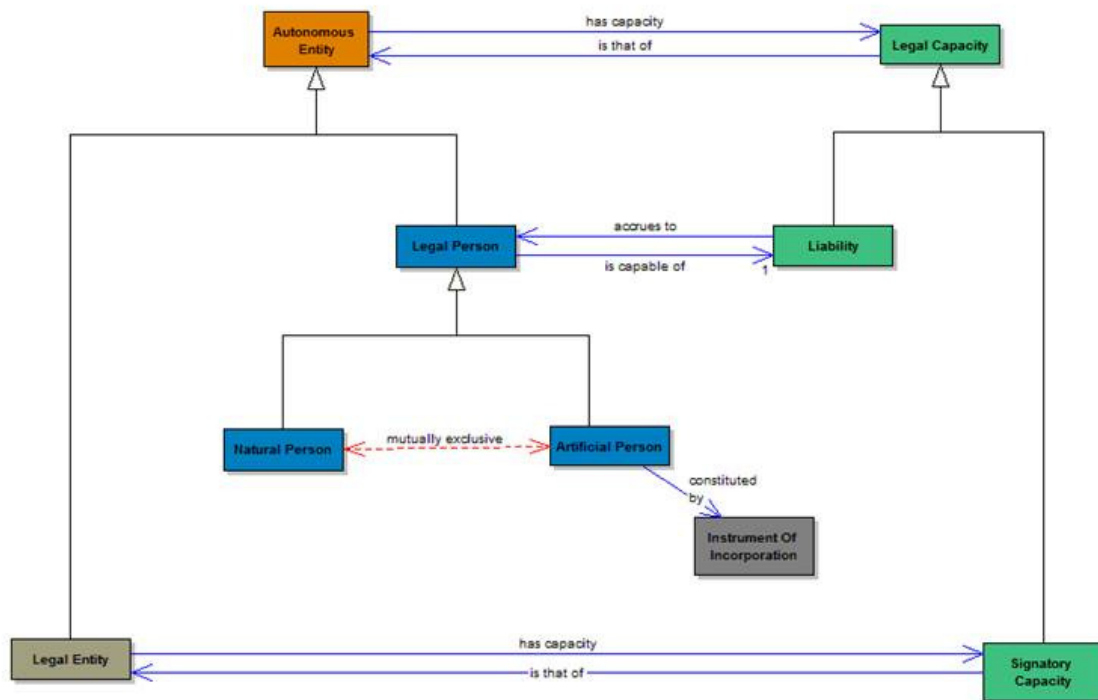
- "Legal person" and "legal entity" are distinguished by "legal capacity." "Legal person" are further classified into "natural person" (a human being with legal capacity) and "artificial person" (a "legal person" which is not a human being).

- **Open Issue**: A refinement similar to "legal person" may be desirable for "legal entity." We are thinking about the use case for the scope of the LEI standard. And since the scope of LEI excludes natural persons, we could define this as being mutually exclusive with "human being" - thereby defining an entity which not only has "signatory capacity", but is not a "natural person." These questions will be the subject of further investigation and our approach to modelling.

Legal Persons: Overview
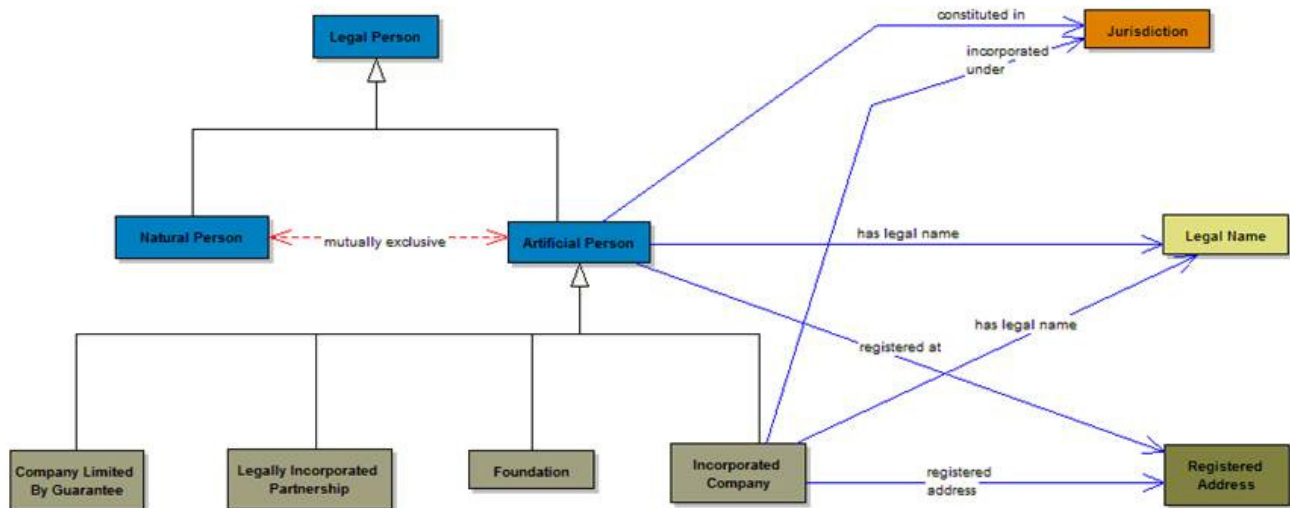
- Building on the foundations established in the previous slides, we can now define the full range of "legal person" types. This diagram shows the main types of "legal person" in the model. Remember that the entities in FIBO-BE have some legal form and are registered in some jurisdiction with formally required properties of "legal name" and "registered address."

- **Open Issue**: Future review is needed to refine the necessary properties of "legal name" and "registered address." For example, it is possible in some jurisdictions (e.g. Belgium and Canada) for "legal person" to have more than one "legal name."

- **Note One**: "Legal person" does not include "trusts" or "non-incorporated partnerships" since these are not "legal persons" in this sense.

- The above categories define the kinds of entity that may exist in different jurisdictions. The names of these entity types will vary according to jurisdiction and language, but the basic mechanisms by which a "legal person" may be brought into existence and by which it can isolate itself from liability are relatively limited.

- We culled this information from a report by the World Bank titled *The Puppet Masters* that defined the types of "legal person" that we believe need to be modelled. According to the World Bank, people can isolate themselves from liability through (1) the issuance of shares and (2) the issuance of guarantees and by creating a "partnership" (which is a "legal person" in its own right and isolates the partners from liability)

- **Open Issue**: Further elaboration is needed for the concept of "foundation" because of the complexity of their arrangements in various jurisdictions. Research is required to determine whether "foundations" are "legal persons" or "legal entities." Of particular interest to organizations such as the World Bank are the kinds of "foundation" which may be created in the jurisdictions of Panama and of Luxembourg which have particular arrangements unique to their jurisdiction.

Formal Organization: Fundamentals
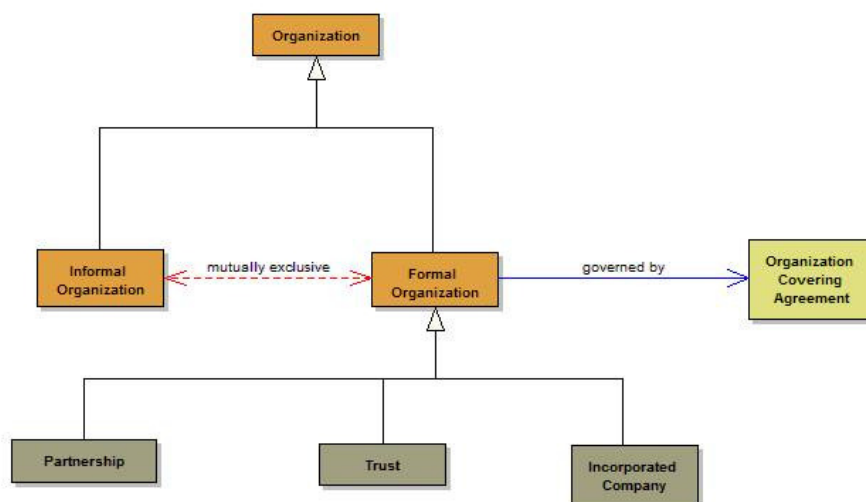
- The previous slides showed how an "organization" may be constituted as a "legal person". This slide addresses the concept of "organization" itself. An "organization" is something which is made up of parts (which are themselves "autonomous entities"). Units of an "organization" may consist of either human persons (i.e. people) or artificial persons (i.e. companies in a group).

- We are particularly interested in the kinds of organizations which may enter into transactions or other formal business relationships. These are identified as "formal organization." A "formal organization" is defined by the existence of some formal contractual agreement among its principals (identified here as the "organization covering agreement"). An organization that does not have such an agreement is not a "formal organization". For some entity types, (such as "trusts" or "partnerships") this agreement is relatively standard. Remember, this agreement does not give the organization standing as a "legal person" in its own right. That is the role of the "instrument of incorporation".

- We introduced the concept of "formal organization" into the model to distinguish it from organizations more generally. Our goal with FIBO is to define each concept at its most general level. In that regard, "organization" may be any entity that consists of other entities. We have included the concept of "informal organization" in FIBO to enable communication in the context of money laundering – such as where a group of informally associated individuals (i.e. a crime syndicate) might hold a significant number of shares.

- Limited companies also typically have a "Directors Agreement" among the principals. Directors agreements are distinct from the Memorandum and Articles of Incorporation by which an entity is formed. Entities which are both a "legal person" and a "formal organization" have both.

- "Organizations" may also be organized in distinct parts or structures, such as branches and divisions. This is distinct from a subsidiary which relates one limited company to another via the ownership of shares. Subsidiaries are examples of relationships between (not within) organizations. This is also distinct from a group which is defined as an "organization" composed of limited companies.

Formal Organization: Overview
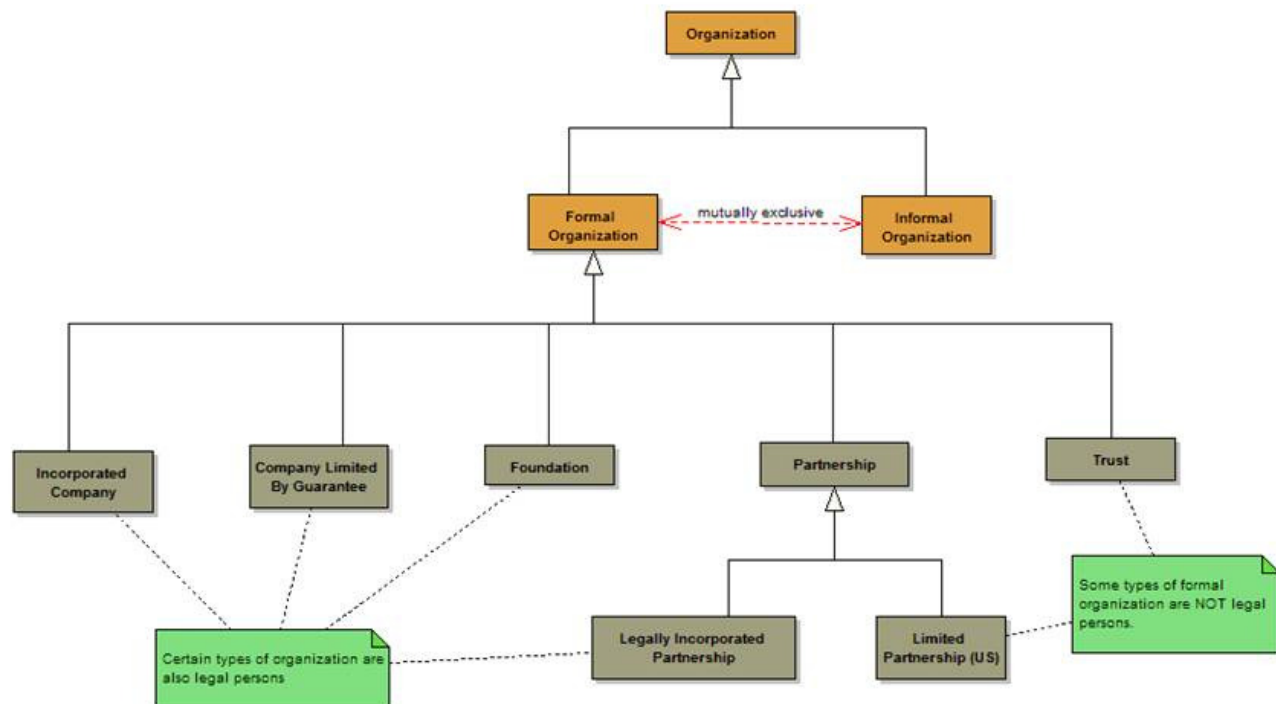
- Based on the models of "legal person", "legal entity" and "formal organization," we can define the complete hierarchy of "formal organization" (i.e. the types of entities which may be a business and which may engage in transactions, etc.). There are five types of "formal organization" which exist in the model. These "formal organizations" are also "legal entities.

- **Open Issue**: We have defined a "legally incorporated partnership" as both a "partnership" and a "legal person." We recognize that some forms of partnerships are not strictly "legal persons" (however they are "legal entities"). Further review may prove that the nature and scope of LEI is satisfied by the concept of "formal organization." As our starting point, these two types of entity are kept distinct (one is defined by having a formal contract among its principals and the other is defined by its ability to sign contracts). This distinction is made to enable detailed discussion of these two concepts. It might be possible to amalgamate them into a single concept possessing both properties.

Business Entities: Taxonomy
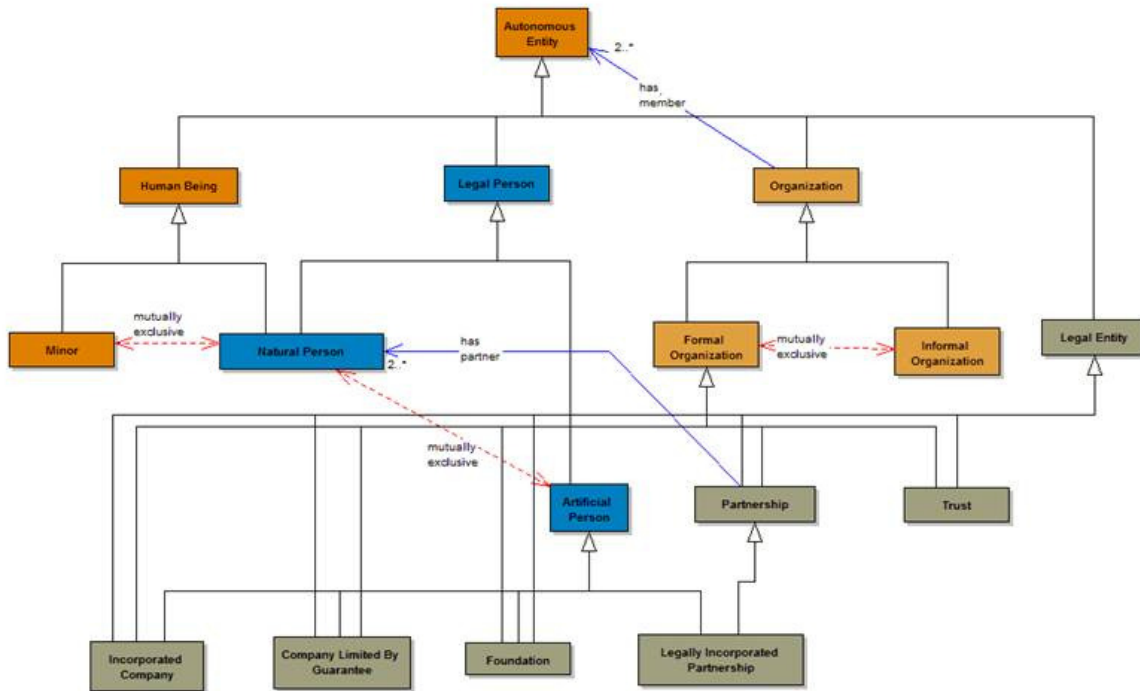
- This diagram shows all the main concepts (in a hierarchical structure) related to business entities as well as how they are classified. Please note that the bulk of the items which are of interest (i.e. "limited companies") are categories which sit in more than one hierarchy. Some of these are "legal persons" in their own right. Most are types of "formal organization." All of them "legal entities."

- From a practical perspective, one would want to extract one of these hierarchies based on the application requirement (use case). Virtually all of the entities of interest to the financial industry are "artificial persons." However, if one were extracting terms for a loan-related application, then human beings would also be of interest, and one would use the "legal persons" hierarchy. Conversely, if one were extracting a hierarchy of possible contract counterparties or securities holders (which are distinguished by their ability to be a party to a contract), the "legal entity" hierarchy would be extracted.

Corporation Facts
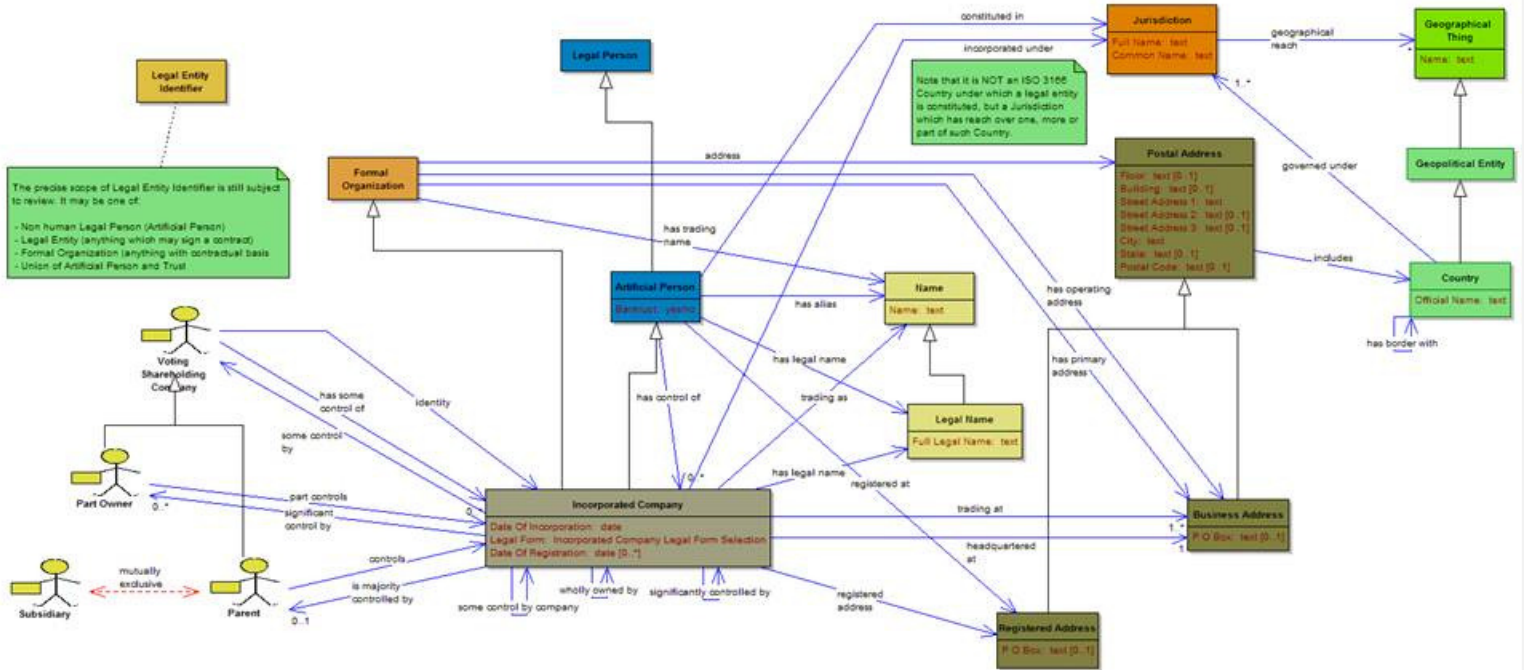
- The focus on this slide is on the "Incorporated Company" ("incorporated companies" are defined as founded by the issuance of shares)

- An "incorporated company" is always constituted in some jurisdiction and governed by of statute law of that jurisdiction. One of the properties of an entity may be "domiciled in" which relates to the address of location within a country – but the formation of a company always relates to a jurisdiction, not a country.

- Jurisdictions do often have a one-on-one relationship with countries – but not always. Federations (such as the USA, Canada and Australia) consist of states, provinces or territories that have their own legal jurisdiction. There are also some historical holdovers (such as the United Kingdom) where the principal jurisdictions are "England and Wales" and "Scotland."

- Entities that are constituted in a specific jurisdiction are governed by the requirements of the jurisdiction (such as the stipulation that the entity must have a formal "registered address" which must be shown on all correspondence). After meeting the requirements, the entity will be recorded with attributes (usually a "legal name," a "registered address," and a "registration number").

- **NOTE:** the "registered address" may be, but doesn't have to be, the same as the address where the entity does business. Even if the "registered address" is the same as the address where the entity does business, the meaning of the address might be different (i.e. the address for serving legal actions might be different from the address for correspondence or from the address for product purchase)

- **NOTE**: The "address" concept in FIBO is currently a place holder. We are searching for a suitable global standard for addresses. Future drafts of FIBO-BE will include an updated address ontology

Part Two: Relationships Between Entities

Defining the Essential Concepts of "Control" and "Ownership"


Relationships: Overview

- Understanding Basic Relationships Between Incorporated Companies

  - "Incorporated company" is the focus of this segment because it deals with the holding of shares in one entity by another entity

  - These relationships are about "controlling ownership" based on "voting shares" being held by a "limited company" (note: we are using "limited company" to narrow down the scope of parent/subsidiary relationships that exist)

  - Other forms of "legal person" will include similar (but not identical) relationship constructs

- Other relationships are defined in FIBO-BE (i.e. managerial control, the ability to appoint board members, etc.) but are not documented in these slides

- The concept of "ownership" (i.e. "beneficial ownership" and control associated with "beneficial ownership") exists as a separate concept within FIBO-BE but are also not documented in these slides
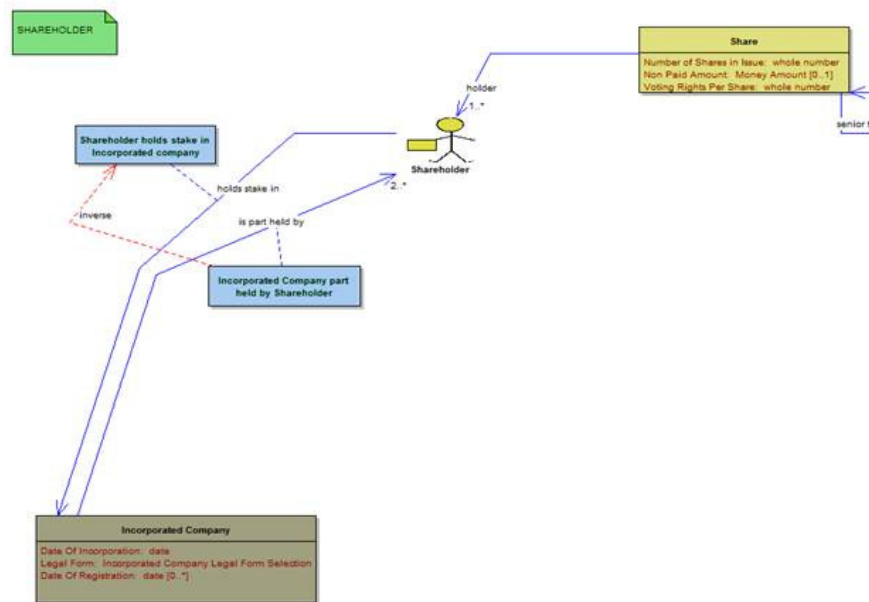
- The ownership of shares in an "incorporated company" is the basic building block of these kinds of relationships because shares may only be owned in an "incorporated company". For this illustration, these may be any form of share (i.e. with or without voting rights).

- We use the *stick man* icon in FIBO to represent a "party". The concept of a "party" denotes that an "entity" is performing some "role." In FIBO this is known as a "relative" concept (i.e. the definition applies to the entity in the context of the specific role, not to the entity itself). The concept of "party" includes properties that identify the type of entity that can perform the specific role. With these concepts established, we can now show the types of relationships that exist between "parties."

- In this case, the party is a "shareholder." The definition of the "shareholder" shows that they are the holding party of some "share" (which is equivalent to the company being held in part by some "party"). Because of this logical connection, an inverse relationship also exists and is shown as the "part held by" being equivalent to "holds stake in."
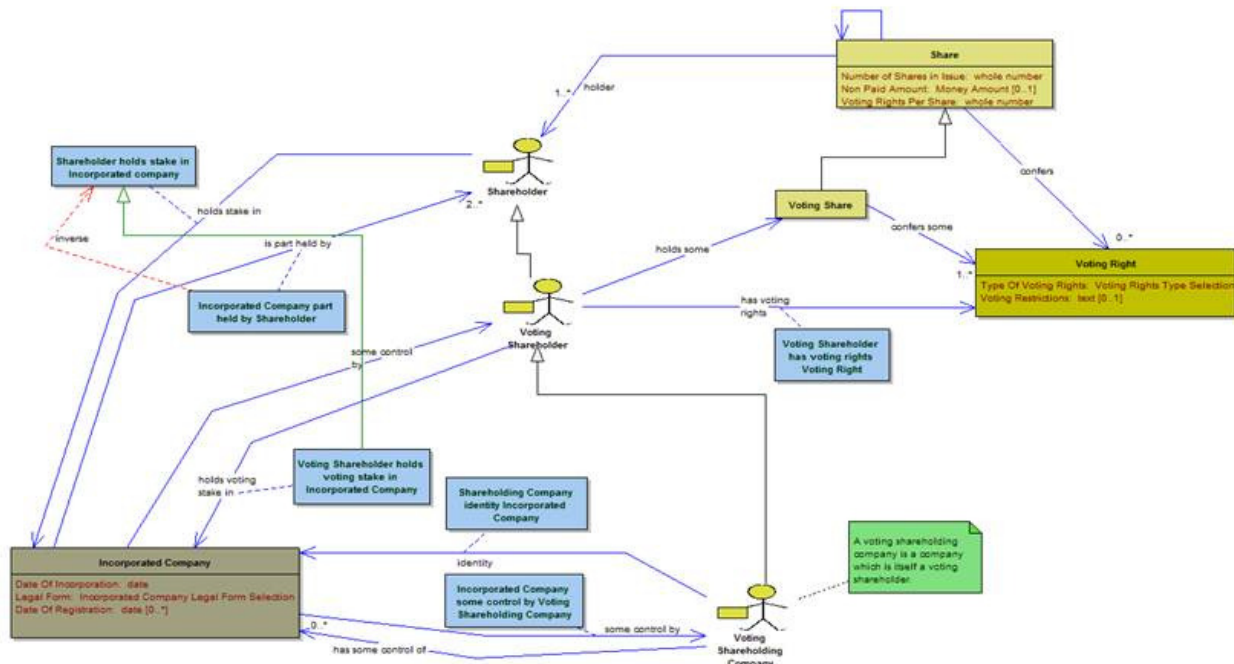
Control = Voting Share
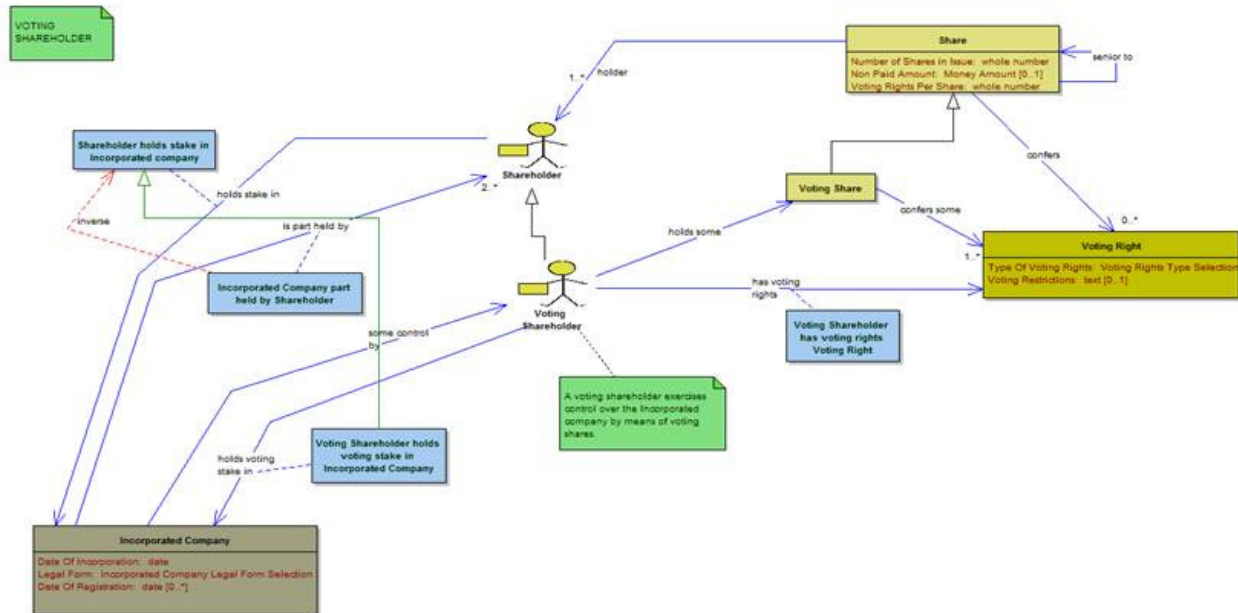
- Now that we have established the concepts of "shareholder" and "share," we can refine the type of share ("voting share") to one that gives some degree of control to the holding party ("voting shareholder").

- **NOTE:** This is a basic concept in FIBO. Just as shares (which are like contracts) give a "party" certain rights, "voting shares" give the "holding party" some "voting rights." FIBO models other concepts of control, but this form of ownership/controlling relationship is the basis for other important concepts such as "part owner," "parent" and "subsidiary" - so we've limited the illustration to "voting share" for ease of comprehension.

Company Based Control

- In order to define the relationships of interest (i.e. "parent", "part owner", "subsidiary," etc.) the party which is the "voting shareholder" must also be a "limited company". This concept is shown by the identity relationship which establishes the meaning of "voting shareholding company".

- **NOTE**: All of the relationship concepts of interest will be specializations of this controlling relationship. As such, all "parties" which are identified as "parent," "part owner", and their corresponding inverses (i.e. "subsidiary") will be derived from this set of terms.
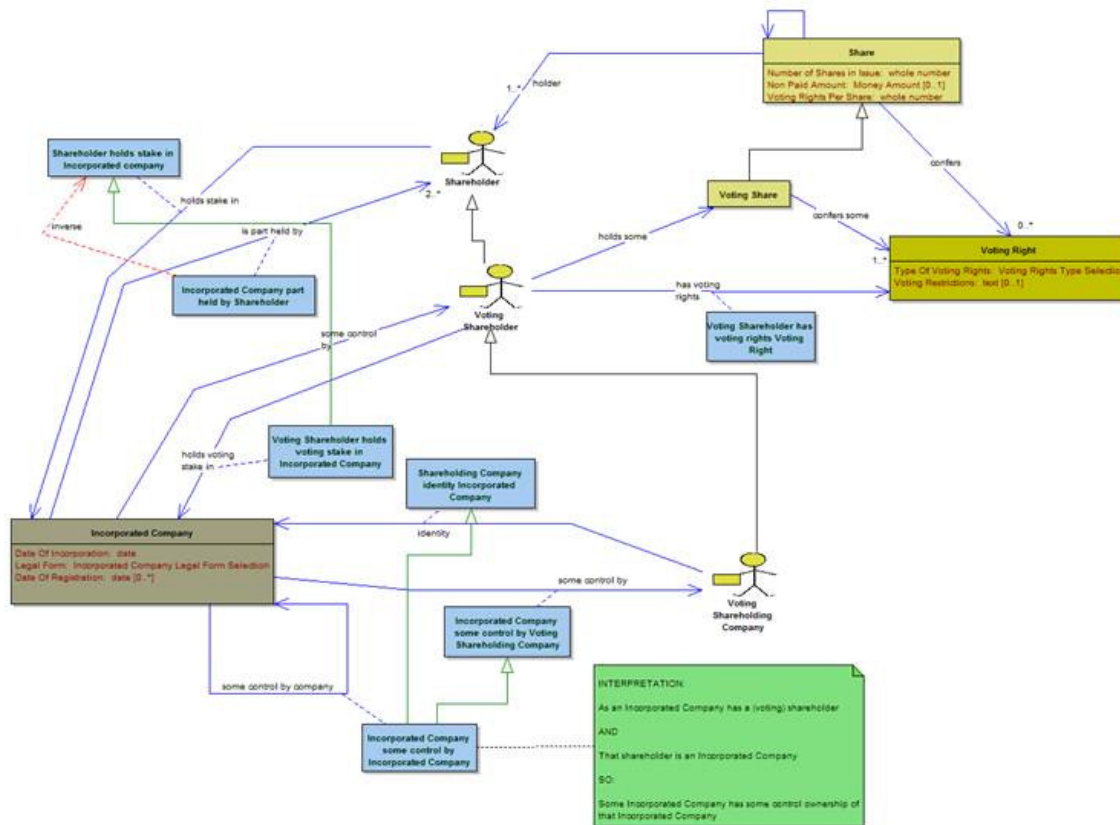
- The previous diagram established the notion of a direct relationship between one "incorporated company" and another. The concept of "ownership relationship" derives its meaning by combining the relationship **TO** the party with the identity **OF** the party.

- **NOTE:** The addition of "ownership relationship" is a new addition to FIBO-BE and has not yet been incorporated into every party-based relationships. This will become a standing feature in all future releases.

- The next few diagrams show the same arrangement applied to types of parties that can be derived from "voting shareholding company."
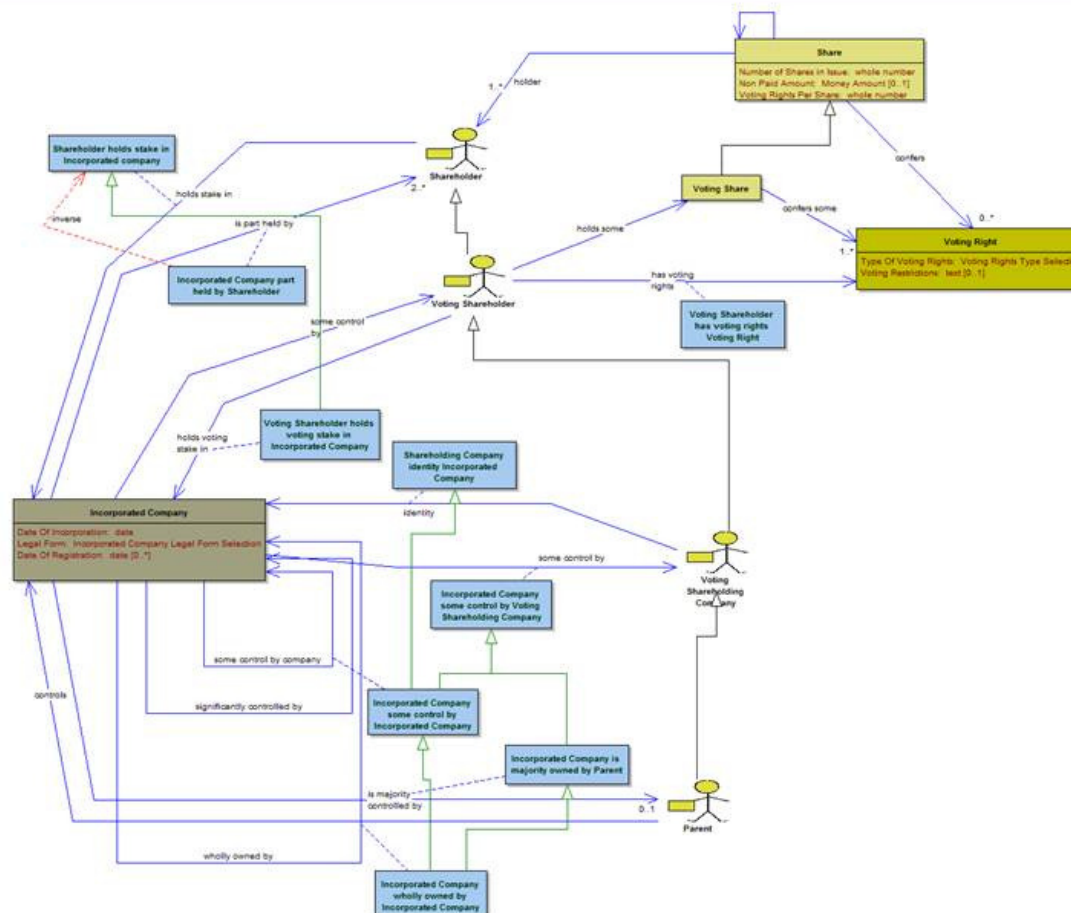
Part Ownership
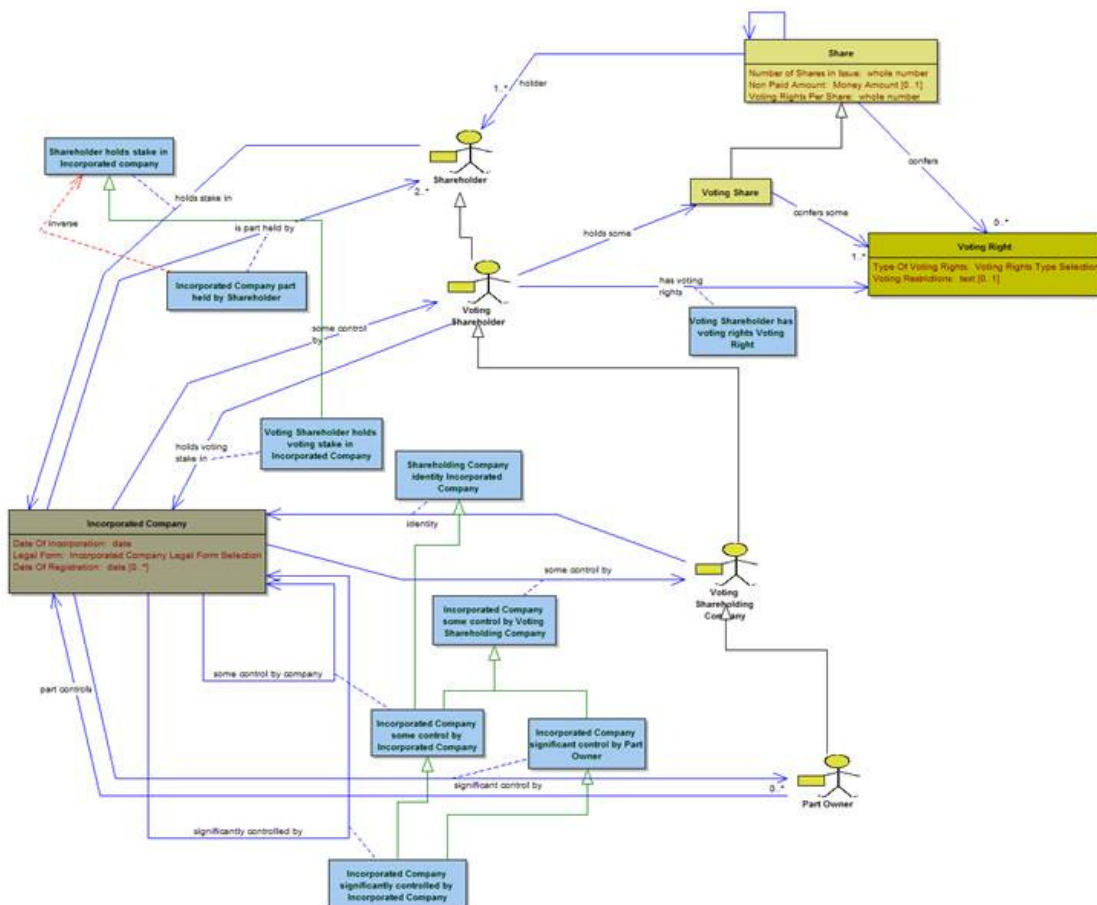
The first relationship we can derive from the party known as "voting shareholding company" (including its relationship to the "incorporated company") is that of "part owner." There are several possible meanings that could apply to the term "part owner" depending on the minimum/maximum thresholds that exist for "ownership."

- In FIBO-BE we use the definition of "parent" as some party which has 50% +1 share ownership (in voting shares) stake in the "incorporated company".

- **NOTE**: Regulators, market authorities or other stakeholders might wish to apply different thresholds to the definition of "parent." To ensure consistency of language we are using the term "deemed parent" (and the corresponding "deemed subsidiary"). These concepts are not shown in these slides but are contained in FIBO-BE. For "deemed parent" there is an additional property added to define ownership threshold (i.e. 25% ownership stake used by the CFTC for derivatives transparency).
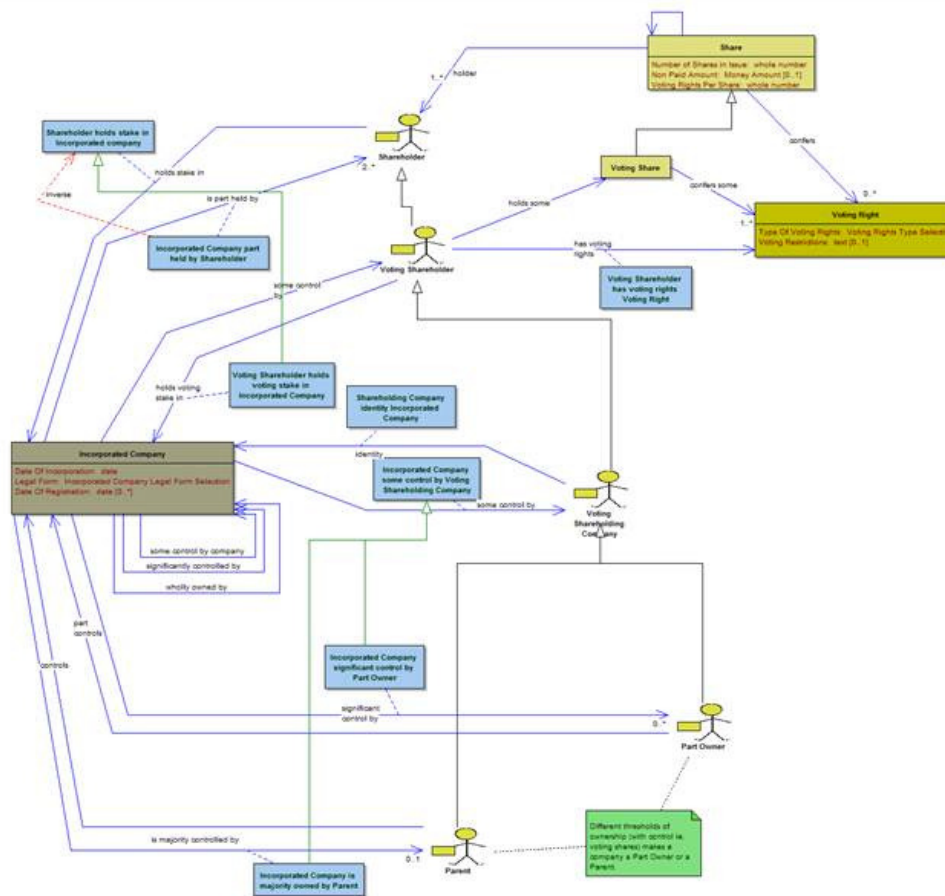
Resultant Model

- This slide shows all the relationships from the preceding slides in a single view. We have expressed the concepts of "part owner" side-by-side with "parent."

- **NOTE**: "part owner" does not refer to any shareholder, but rather it is an "entity" which owns a stake above some minimum but below 50%.

- **NOTE 2**: It is important to recognize that each relationship from the "incorporated company" to the "party" has a corresponding inverse relationship going the other way.
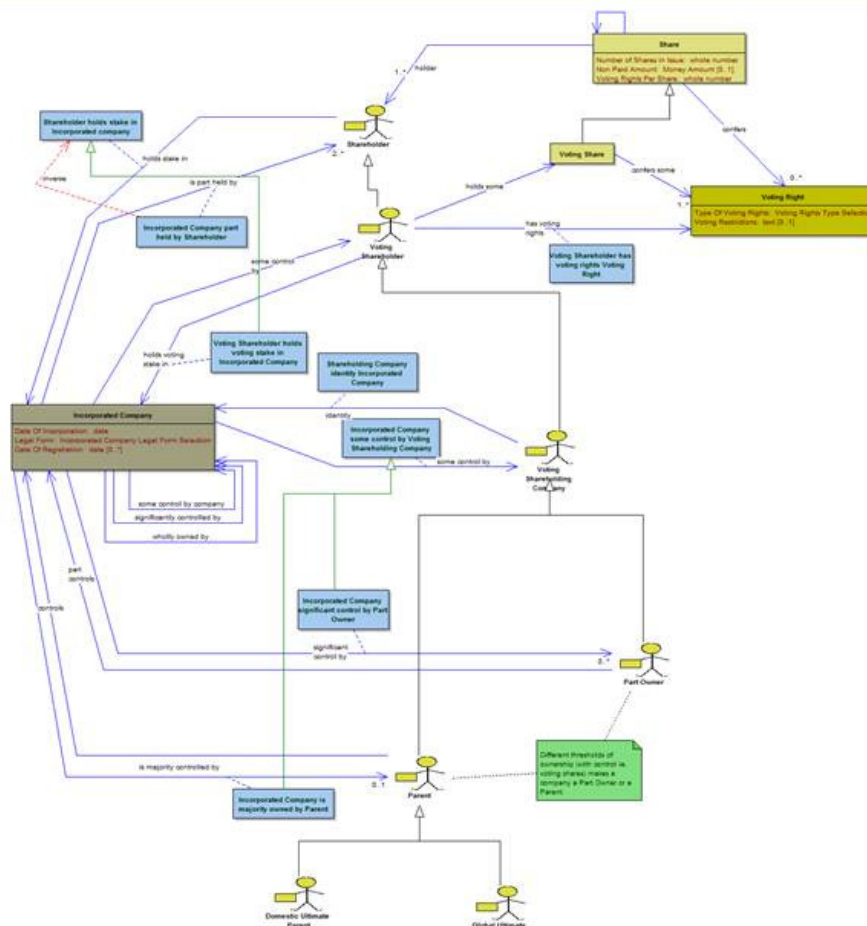
Based on terms used in regulatory discussions (and elsewhere), there are two concepts associated with "ultimate parent" – a domestic ultimate parent and a global ultimate parent. In FIBO, both are simply shown as sub-classes of "parent." These terms will exists however in data models – as companies which fulfil these roles.

FIBO-BE Concluding Thoughts

- FIBO-BE is a business conceptual model (grounded in law). This is the baseline for operational ontologies and for deployment in production environments.

- The next task is evaluation, adjustment and alignment. We are planning a series of operational review calls with SME's (legal, operational, conceptual) to ensure that we've correctly captured the underlying components and that they are expressed in a useful manner

- Access to FIBO (full model) http://www.edmcouncil.org/repository (click on business entities)

- We will be refining FIBO-BE to capture and incorporate important nuances

  - Distinctions between ownership and control
  - Beneficial ownership, management control, share-based control, non-voting shares, etc.
  - Ownership by entities other than corporations
  - Flexible definitions of "parent" based on thresholds and use cases

- Next Steps (after SME review)

  1. Determination of concepts that are included/excluded from the initial OMG standard
  2. Release schedule of operational ontology and links between the conceptual and operational models
  3. Expression of the FIBO-BE conceptual and operational models in the Adaptive Metadata product (and completion of the user interface)
  4. Links between FIBO-BE and the rest of the FIBO model (securities, derivatives, market data, corporate actions, transactions, etc.) for instrument → entity → obligation analysis

For more detail on FIBO-BE and for help with modeling FIBO – contact Mike Bennett, Head of Semantics and Standards for the EDM Council (mbennett@edmcouncil.org, +44 (0)20 7917 9522)

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