ENTERPRISE DATA MANAGEMENT
EDM COUNCIL

FIBO Shared Semantics

Ontology-based Financial Standards

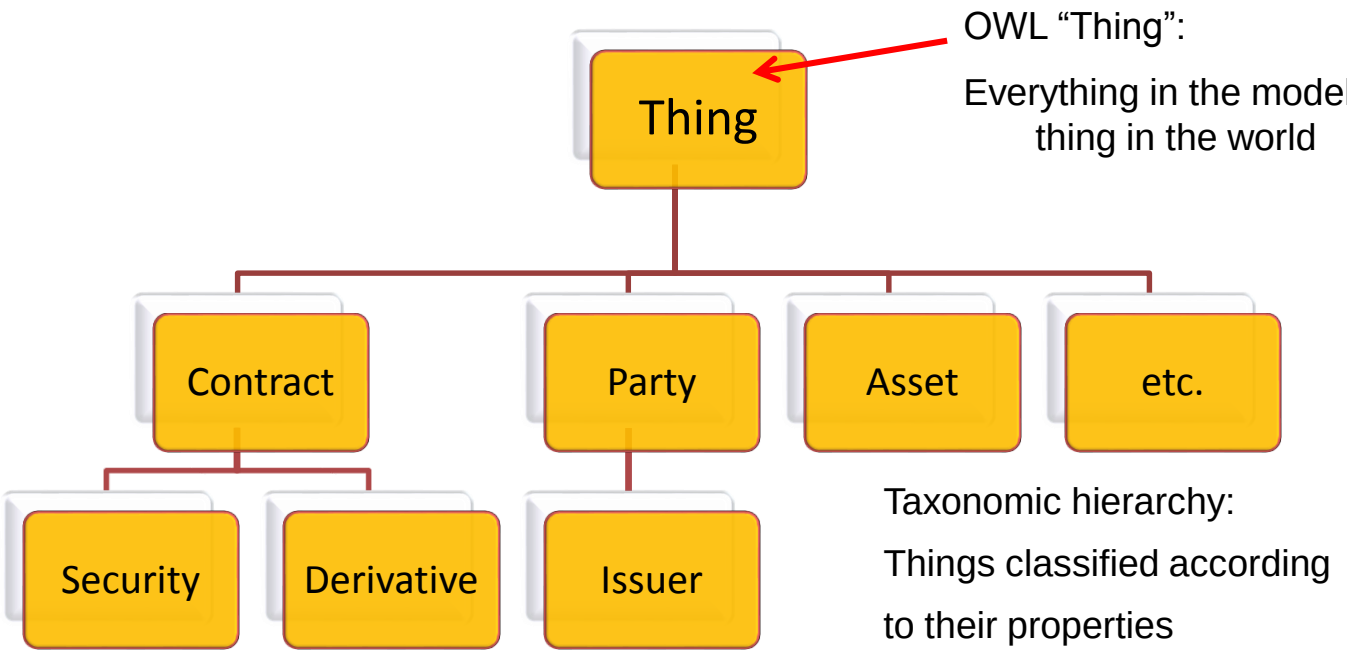
Thursday Nov 7th 2013

FIBO Conceptual and Operational Ontologies: Two Sides of a Coin

- **FIBO Business Conceptual Ontologies**
  - Primarily human facing
  - Visual blueprint
  - Standard terms and definitions for business concepts
  - Broad based expressions of conceptual specifications, provenance, linkage and context of business constructs

- **FIBO Operational Ontologies**
  - Primarily machine facing (RDF/OWL)
  - Derived from FIBO Conceptual Ontologies
  - Optimized for performance and scalability. Fewer abstractions. Inferred relations, mappings.
  - Classification, data linkage, validation and semantic query.
  - Deliver executable functionality to fulfill use cases, enable data linkage, transparency and risk analytics

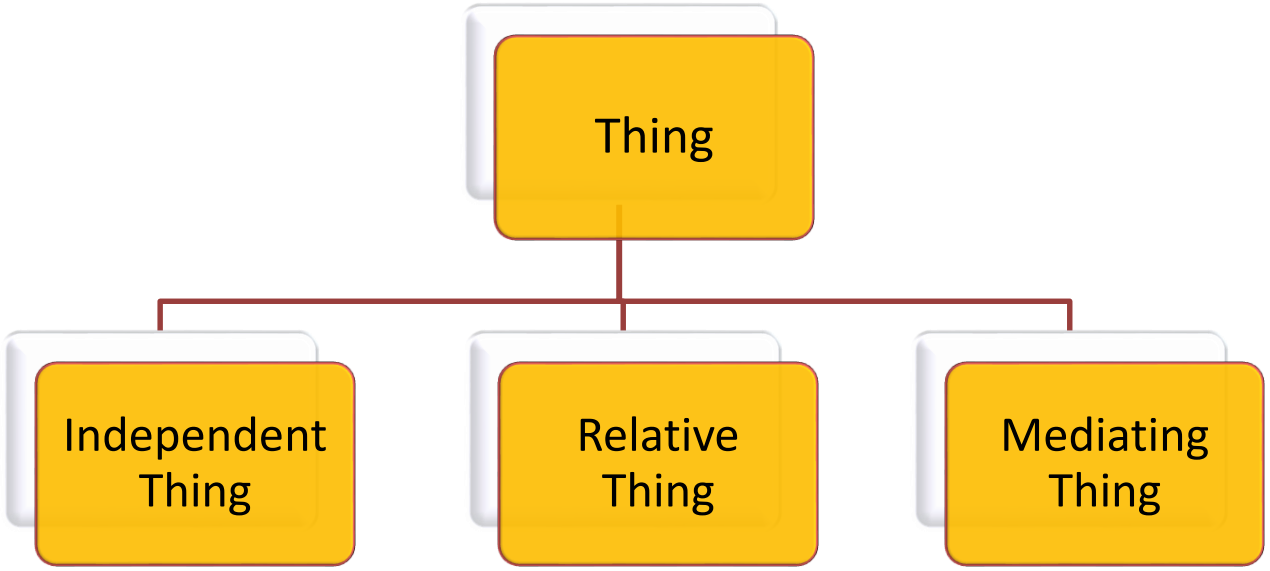
Introduction to Business Semantics



- OWL Thing: The ontology makes a specific commitment to being a model of things in the world
- Classes of thing are classified according to their properties
  - Additional properties
  - Restrictions on existing properties
- Classes may also be defined “extensionally” as a list of members

Ontology Partitioning (1) Philosophical Order

- Everything which may be defined falls into one of three categories:



"Thing in Itself"

- e.g. some Person

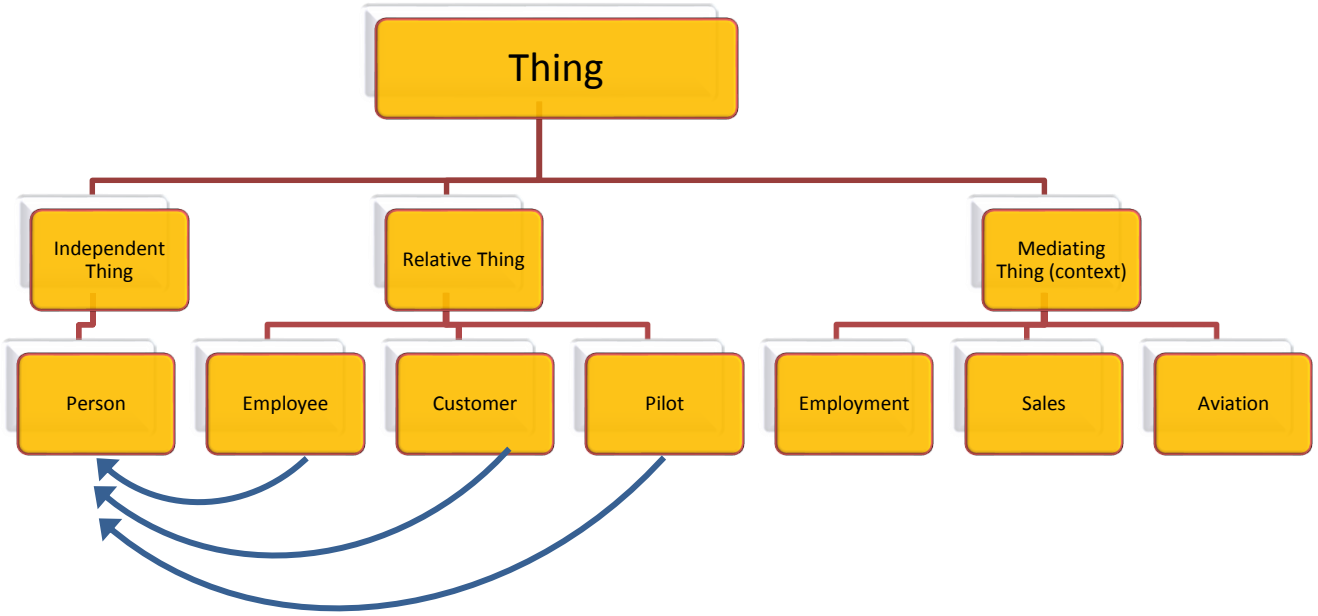
Thing in some context

- e.g. that person as an employee, as a customer, as a pilot…

Context in which the relative things are defined

- e.g. employment, sales, aviation

Ontology Partitioning (1) Philosophical Order

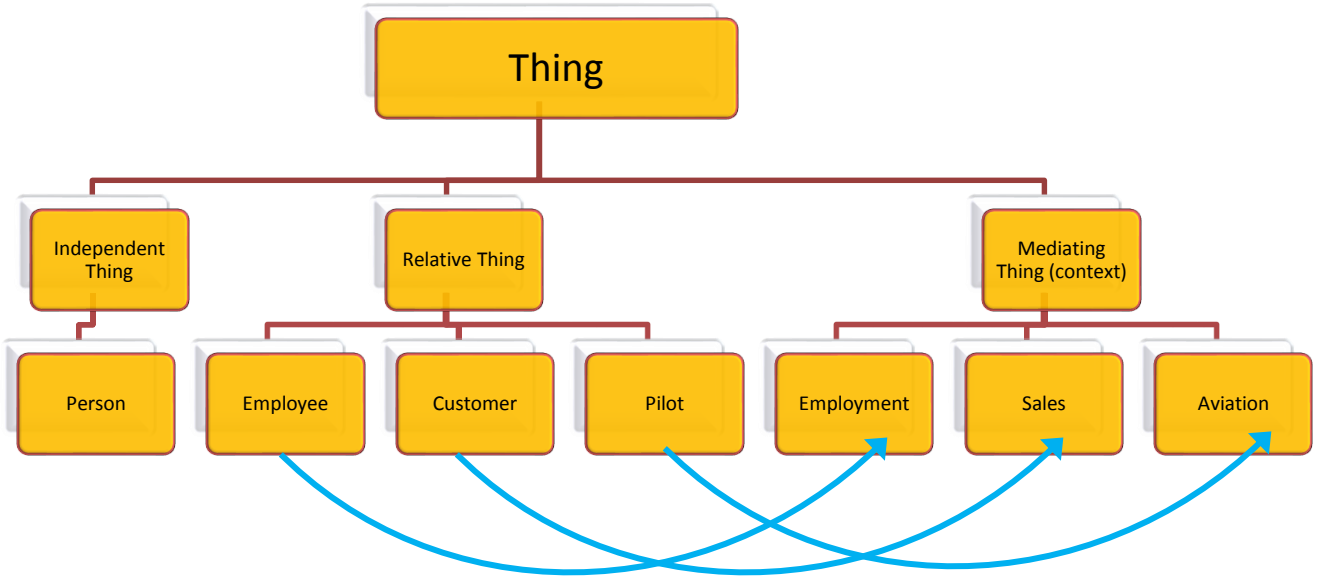


"Has identity" relationship:

That which performs the

role of the "Relative Thing"

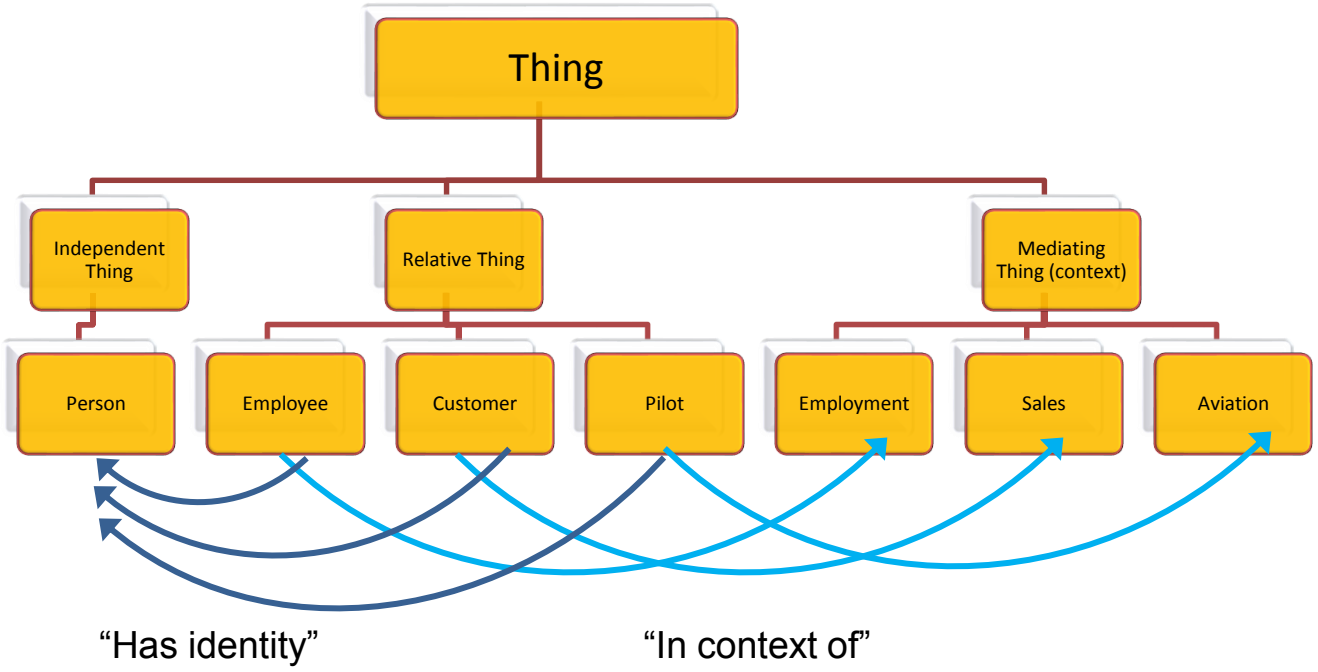
Ontology Partitioning (1) Philosophical Order



"In context of" relationship:

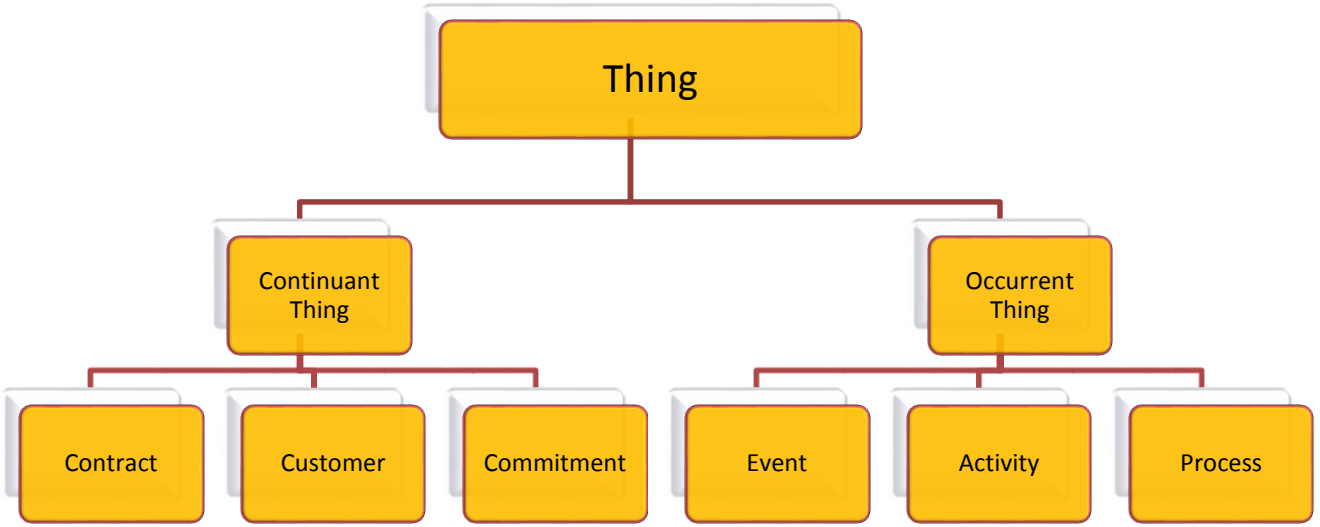
Context in which the Independent Thing performs the role of the "Relative Thing"

Ontology Partitioning (1) Philosophical Order



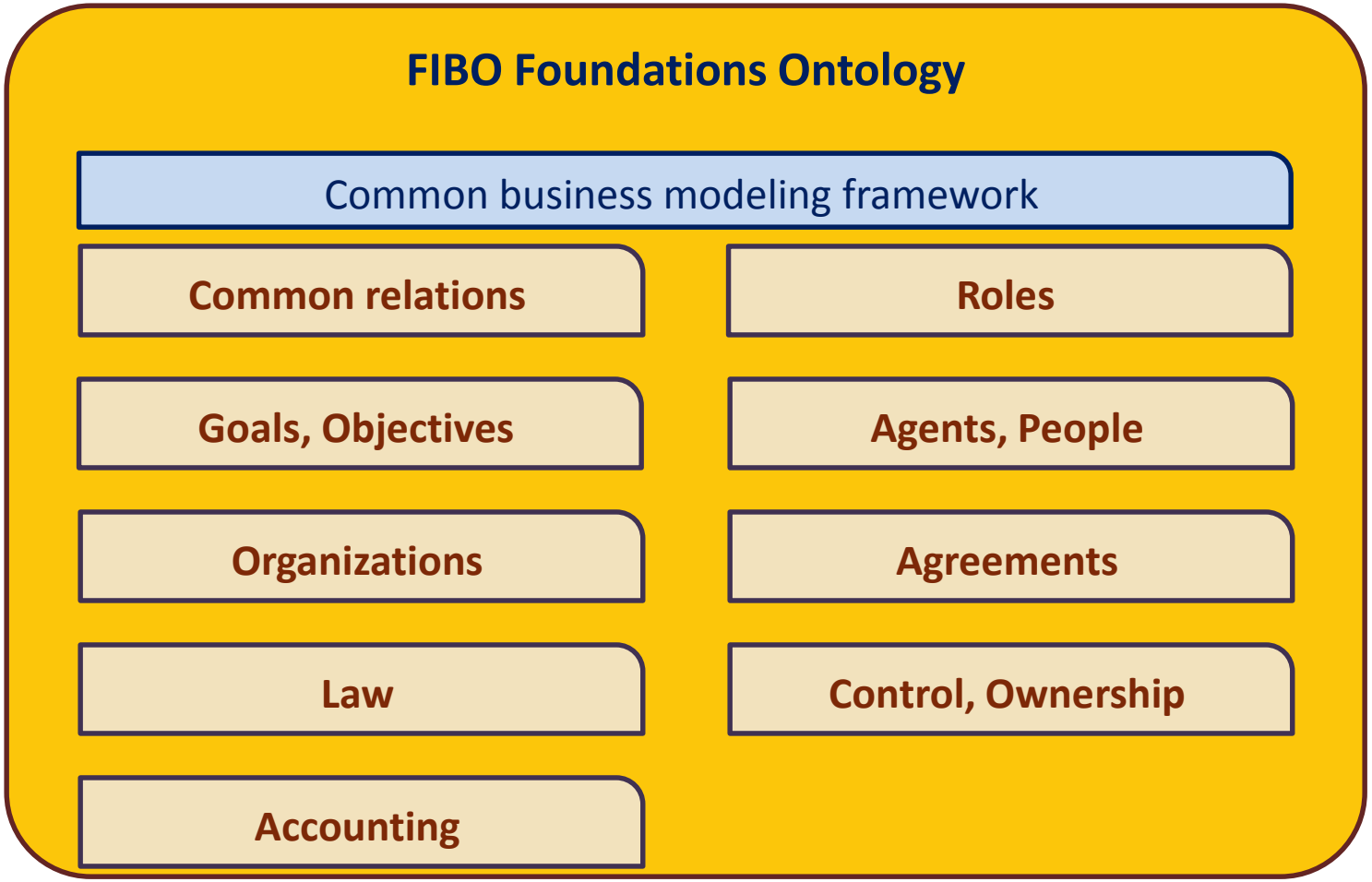
- Everything which may be defined falls into one of these three categories
- In order to complete a model of business terms and definitions, all three are needed
- This extends beyond conventional ontology applications into a full and legally nuanced conceptual ontology

Ontology Partitioning (2) Temporality



- Partitions are deliberately underspecified
- What's asserted here is that
  - **Continuant Thing:** Concept has its definition or meaning without reference to time
    - It will still of course exist over time, and have a start and an end
  - **Occurrent Thing:** Concept has its meaning only with relation to some temporality
    - Things which cannot meaningfully be talked about without reference to the temporal dimension
- This lets us talk about events, activities, process, state etc.

FIBO Foundations

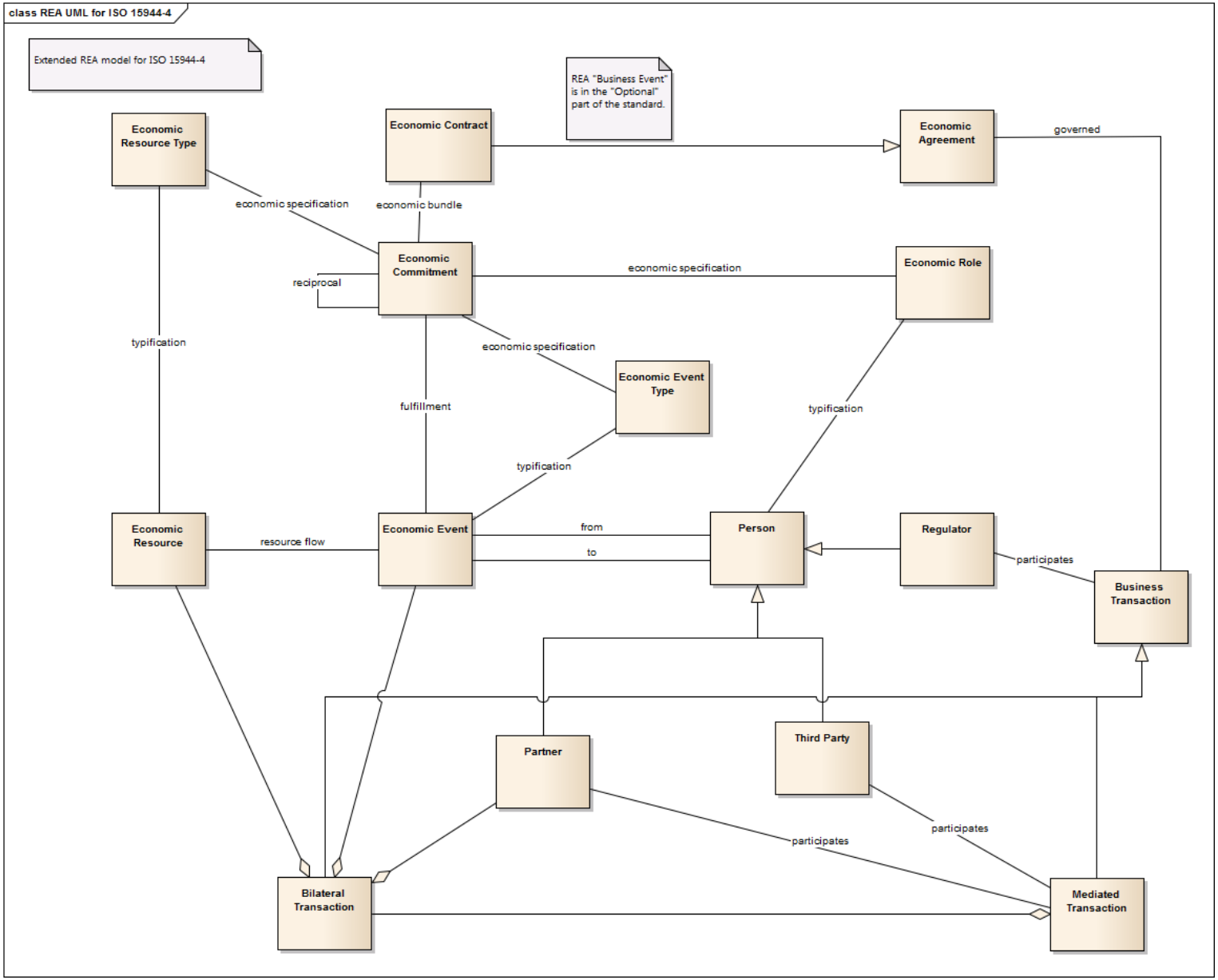


- FIBO Foundations provides the basic conceptual “Glue”
- Common abstractions grounded in law and business

FIBO Business Entities

- Types of corporate structure
- Organizational hierarchies / relationships

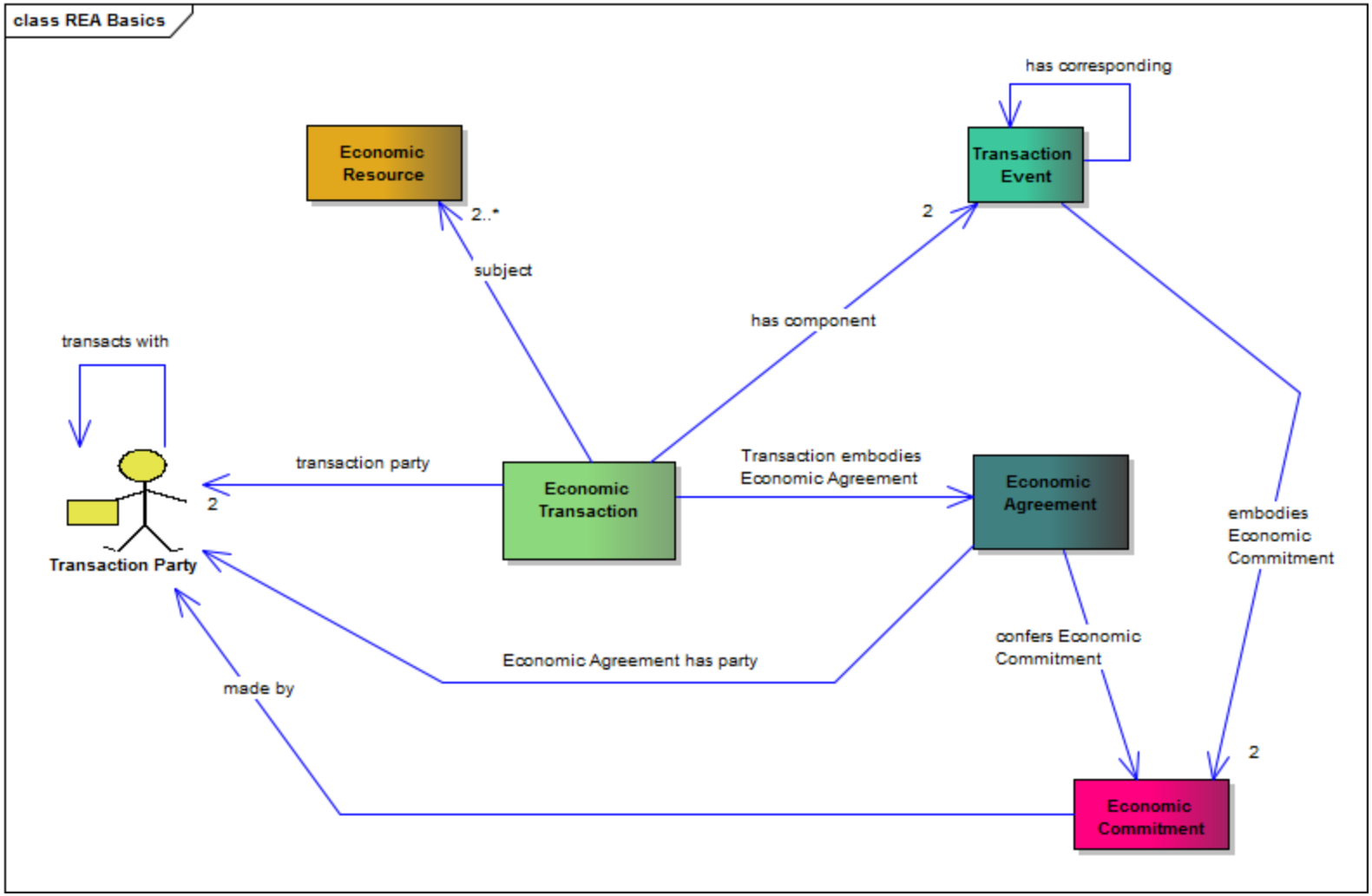
ISO 15944-4 UML Representation



Ambitions

- Frame the REA concepts in terms of abstractions in FIBO
  - Contracts, Commitments etc.
- Use the REA terms where possible
  - Forms the conceptual grounding for derivatives, securities transactions etc.
- Promote concepts from the transaction context to broader contexts where feasible
  - i.e. re-using the REA terms as widely as possible

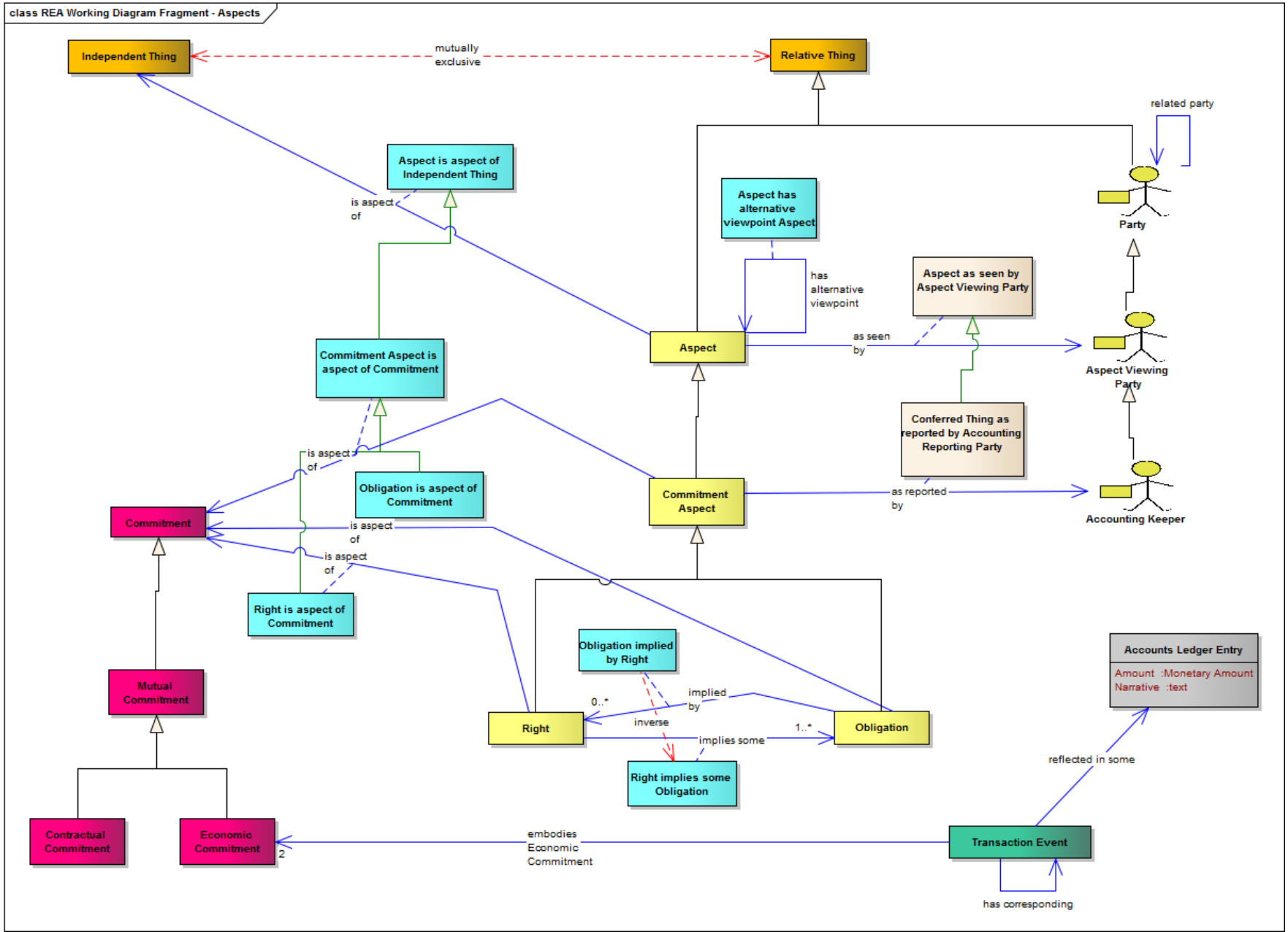
Transaction Semantics: The Basics



Transaction Sides

- Every transaction has two “Sides”
  - REA: Event
  - FpML: Swap Leg; Swapstream
  - Securities trades (FIX etc.): Delivery, Settlement
- Every Side is seen from two perspectives
  - Delivery Side:
    - Obligation to deliver
    - Right to receive
  - Payment / Settlement Side
    - Right to receive payment
    - Obligation to Pay
- How to frame these semantically?

Transaction Sides



Use of FIBO Partitions for Sides and Aspects

- Each “Event” or leg of a transaction is an independent thing
  - It is seen “in the round”, in REA
  - In accounting, it is seen from the perspective of one or other party to the transaction
- The rights and obligations of each party are each a “Relative Thing”
  - Needed a word for the thing in the round, and words for the two perspectives on that thing
    - Chose “Commitment” as the thing in the round (independent thing)
    - Chose “Obligation” and “Right” for the aspects as seen by the parties (relative thing)
- Needed to frame each in terms of the other

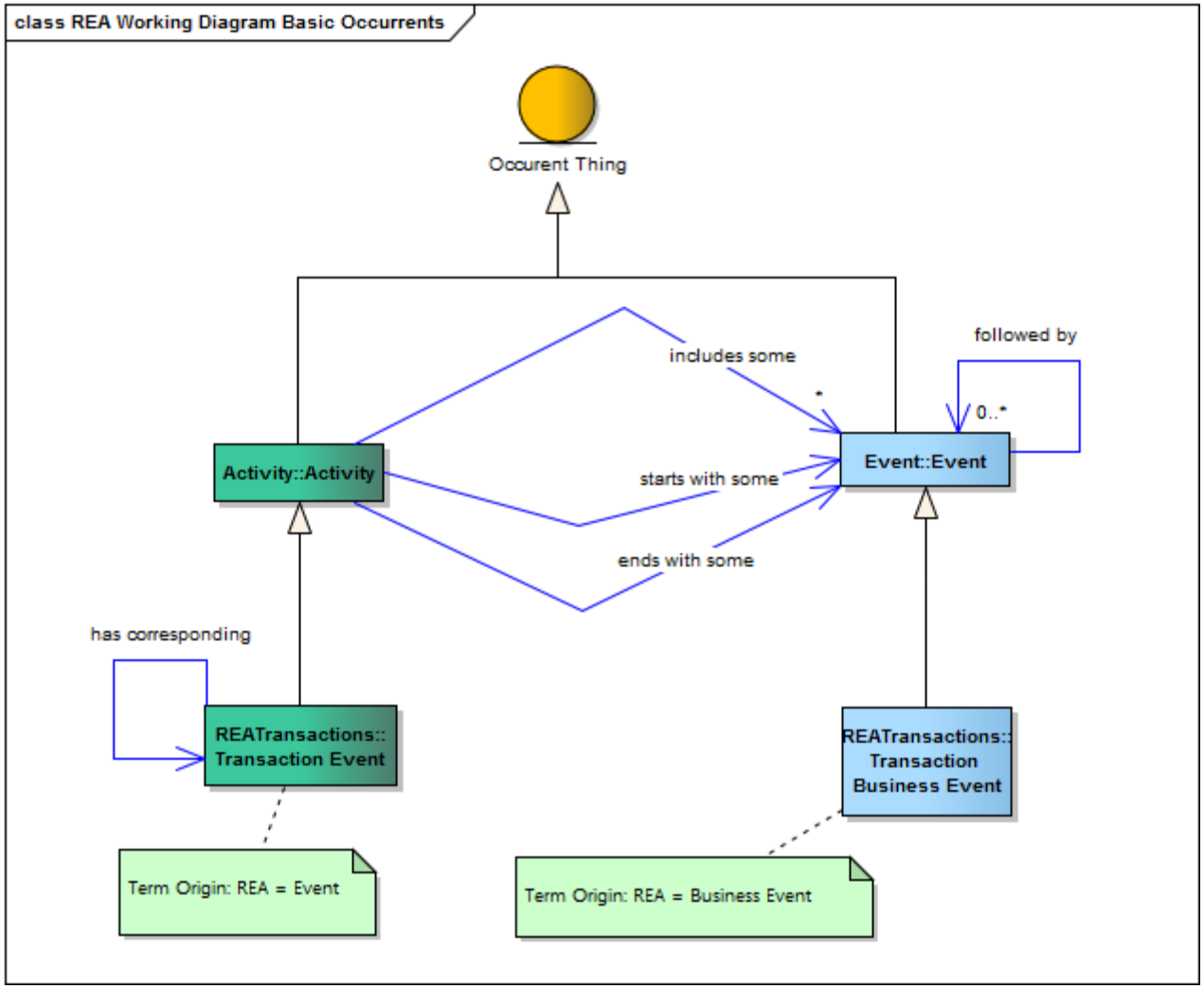
Transaction Sides and Double Entry Book-keeping

- Each transaction event is reflected in the books of both parties
  - Party 1: Asset
  - Party 2: Liability
- The two “aspects” of the obligation are reflected in the accounts as assets or liabilities according to that party’s perspective on the event
- For a transaction, each party would expect to see two such events, tied to the same transaction
- NOTE: This is NOT the same as another use of the word “Transaction” in double entry accounting
  - The ledger transaction is not a transaction as defined here
  - This is the posting of some entry
- More work required on the details of accounting
  - Intend to leverage XBRL-GL for this

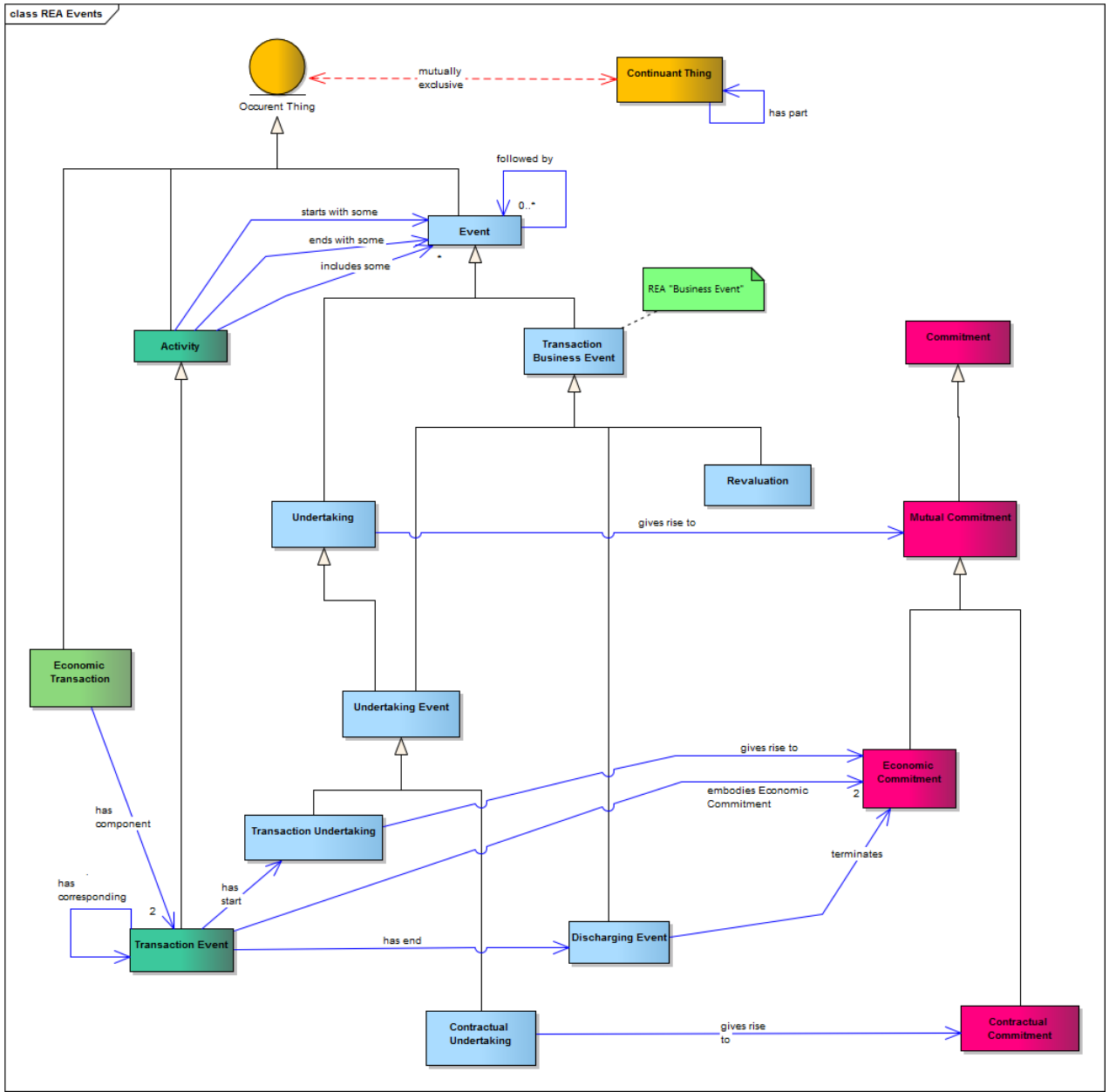
REA Event Dimension

- Here we used a separate pair of partitions:
  - Continuant v Occurrent
- Framed “Event” in terms of this
  - An Event is something with a time and a place
- Also framed the concept of a Process
  - A process is a kind of Activity
  - A process has start and end, and contains events and activities
- The REA “Event” is actually a Process
  - E.g. settlement process; payment processes
  - Also the complex set of payments in a swap leg
- The FIBO Event concept also exists in REA and in ISO 16944-4, as “Business Event”

Transactions Temporality



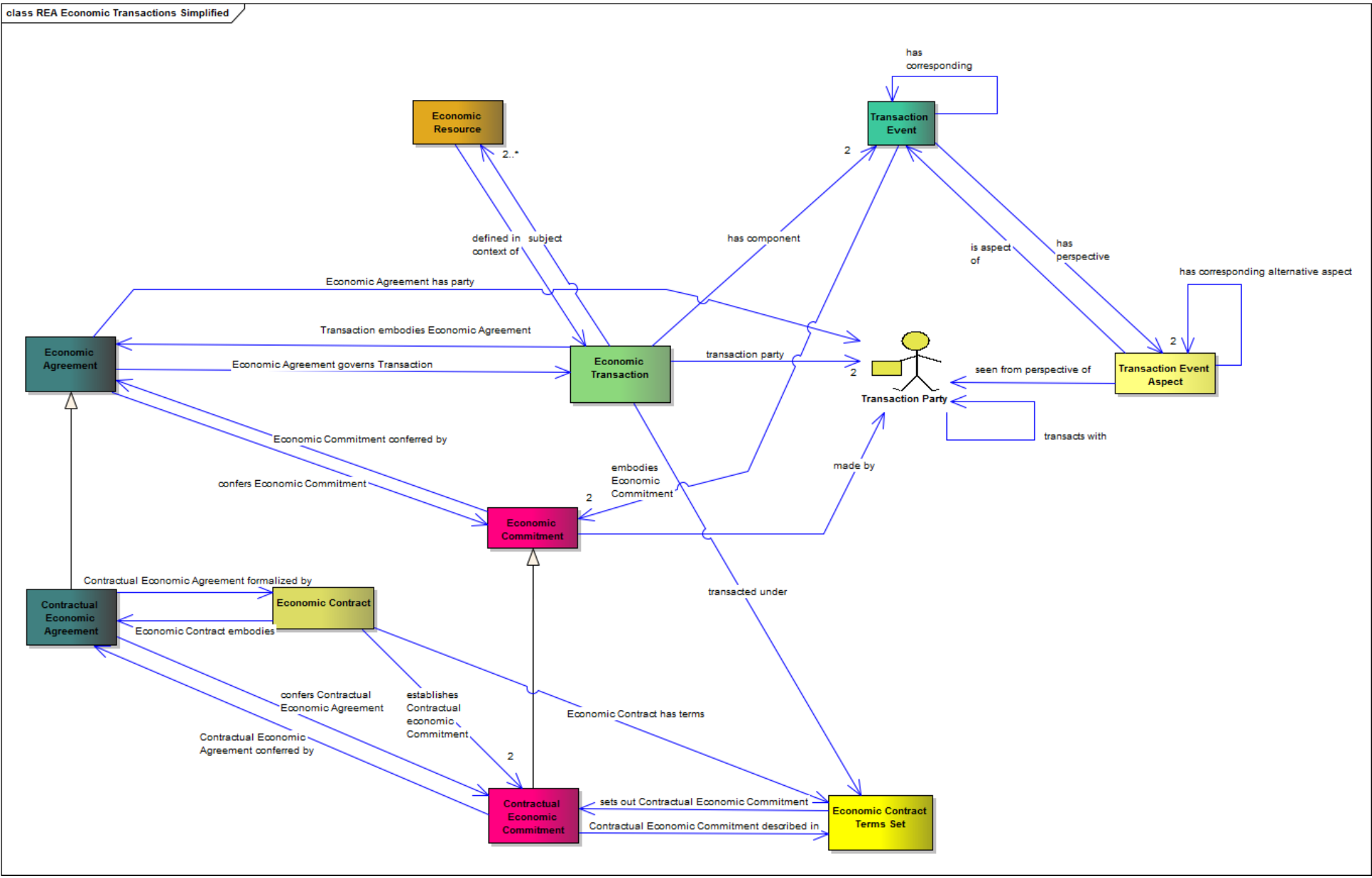
Transactions Temporality - Detail



Agreements, Commitments and Transactions

- Not all commitments are contractual
- Not all transactions are contractual
  - REA supports internal transactions within an organization; these are not based on a contract between two separate, contractually capable entity
- Needed a complex segregation between contractual and non contractually based transactions
  - Linked the Transaction to an “Agreement” rather than a “Contract”
  - Distinguished contractual and non contractual transactions

REA Completed Model (simplified)



Questions?