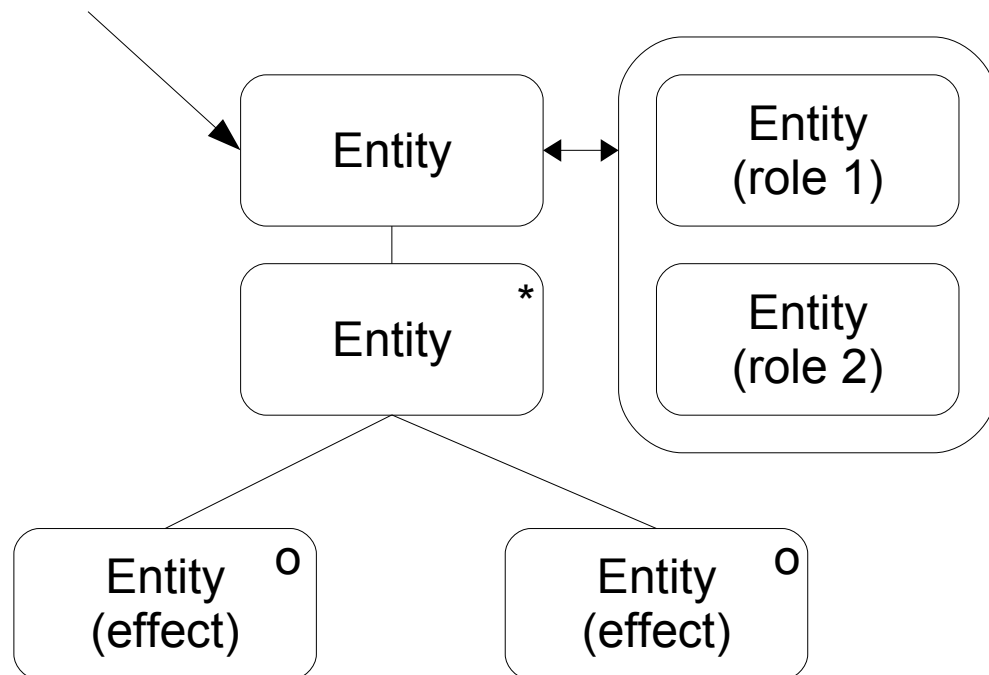


CSA 1010 – Principles of Structured Design

ECDs Notes and Examples



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Lecture Schedule

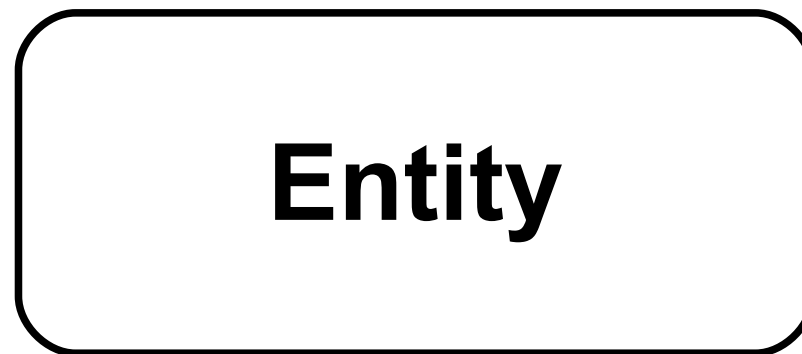
- ECDs Overview & Aims
- ECDs Notations
- Steps to designing ECDs
- Examples
- Questions

Effect Correspondence Diagrams

- **ECDs** are used **to analyse** the **effects** from the **events perspective**.
- ECDs **follow ELHs**.
- The aim is to:
 - Illustrate which entities are affected by a given event.
 - To define how the effects on these different entities correspond with each other.
 - To provide us with update access paths for use in logical design.

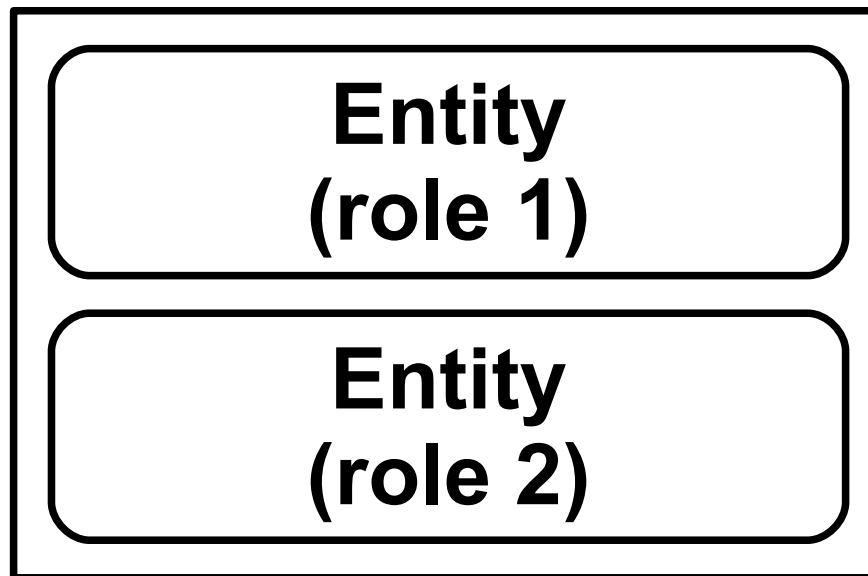
ECDs – Notations - Entity

- An entity is an **object** that **acts** and is **acted** on by the system.
- Entities are represented as a **rounded rectangle**.



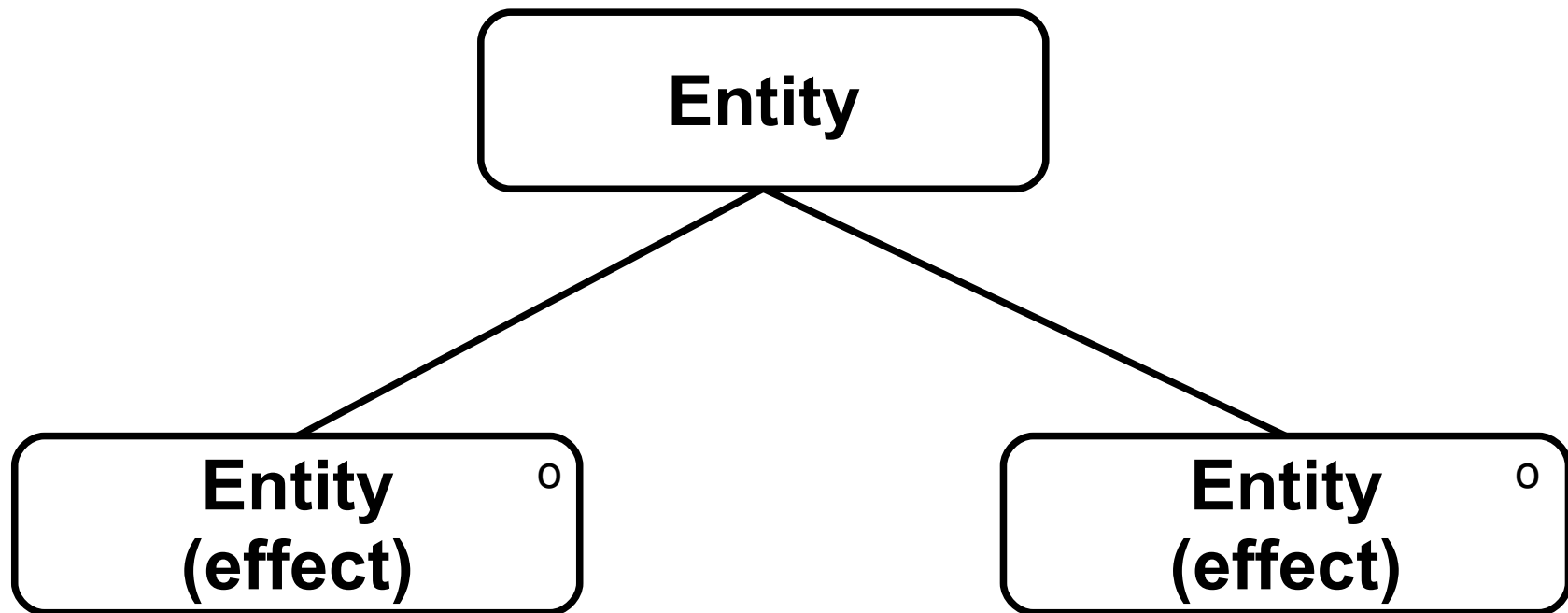
ECDs – Notations – Simultaneous Effects

- When an effect causes an entity to take more than one role **simultaneously** we **encapsulate the roles** in question in a **rectangle**.



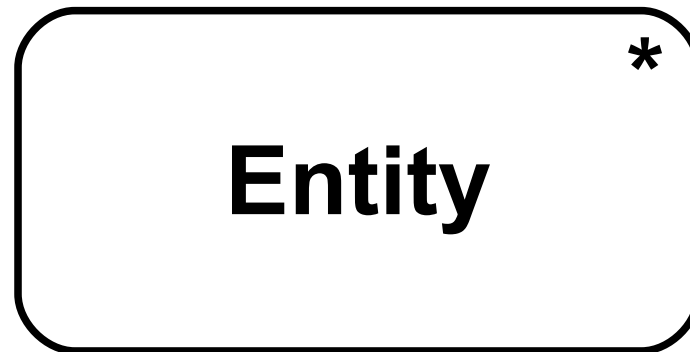
ECDs – Notations – Optional Effect

- A small 'o' is added to the entity from which two or more **mutually exclusive effects** may be resulted due to an effect.



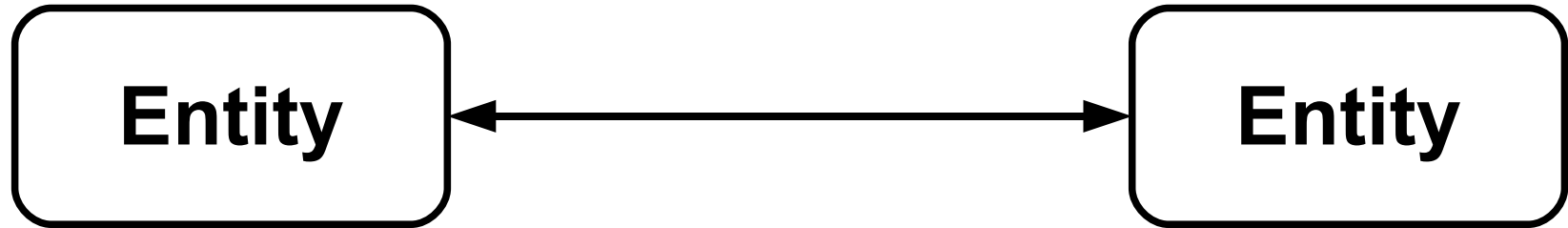
ECDs – Notations - Iteration

- An **asterisk** is added to an entity that is **affected multiple times**.



ECDs – Notations – One to One Correspondence

- When **two entities** are **updated at the same time** they are connected by a **double-headed arrow**.



ECDs – Steps to Designing ECDs (i)

- Following are the 8 steps required for building an ECDs:
 1. **Identify all entities** which are affected by the event (by looking at the effect boxes in their ELHs), and draw a round-cornered box for each one.
 2. **Identify simultaneous effects** for the event, and draw a separate box for each entity role concerned.
 3. **Identify** where an **event affects an entity** in **one or more mutually exclusive ways**, and add the effects as options below the relevant entity box.

ECDs –

Steps to designing ECDs (ii)

4. **Identify entities iteratively affected** by the event, draw an iteration box for each one.
5. **Identify effects** which are in **one-to-one correspondence**, and connect the affected entities with a double-headed arrow.
 - For each affected occurrence of this entity, is there a directly related occurrence in any of the other entities that is also affected by the event?
 - For each affected occurrence of this entity, is there a directly related set of occurrences in any of the other entities that is also affected by the event?

ECDs -

Steps to designing ECDs (iii)

6. If an entity is affected in more than one iterative way by an event, then the two iteration **structures should be merged** into **either a selection of iterations, or an iteration of selections.**

8. Add non-updated entities

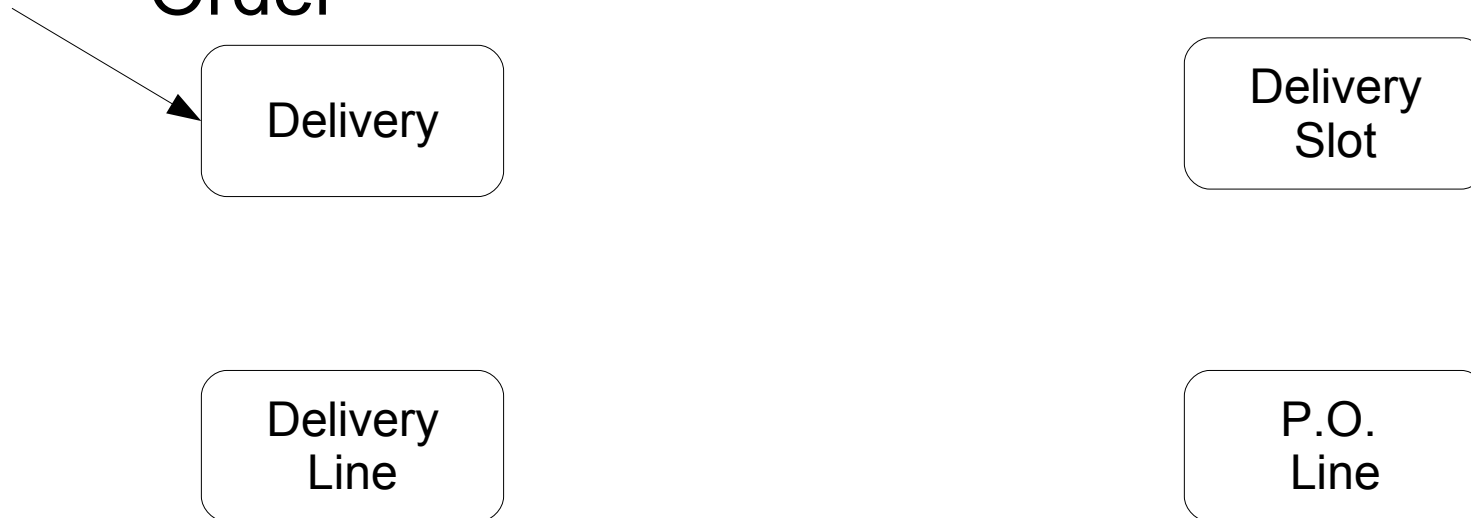
- To provide access to entities that are needed to provide output data (possibly for event confirmation).
- To link together two sets of affected entities which are not directly connected via relationship on the LDS.

9. List the input data (or 'event data') under the entry point for the event.

ECDs – Example 1 (i)

Consider an “Arrange Delivery” event

- Identify all entities which are affected by the event:
 - Delivery, Delivery Line, Delivery Slot and Purchase Order

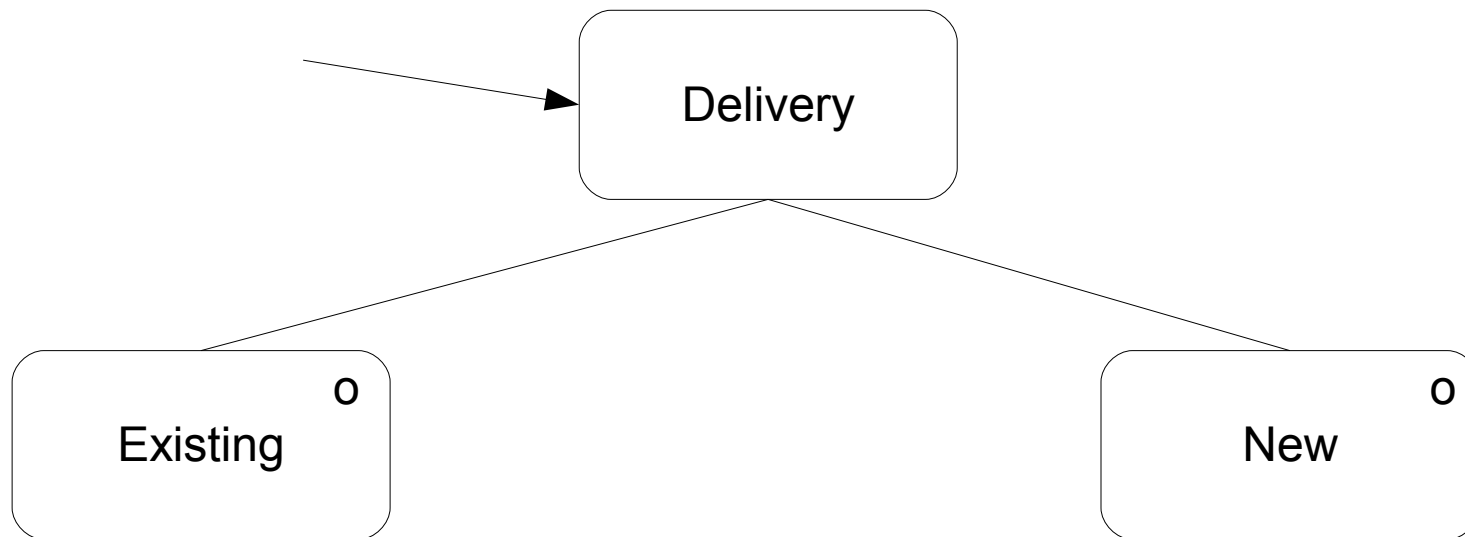


ECDs – Example 1 (ii)

- Identify simultaneous effects for the event, and draw a separate box for each entity role concerned.
 - N/A

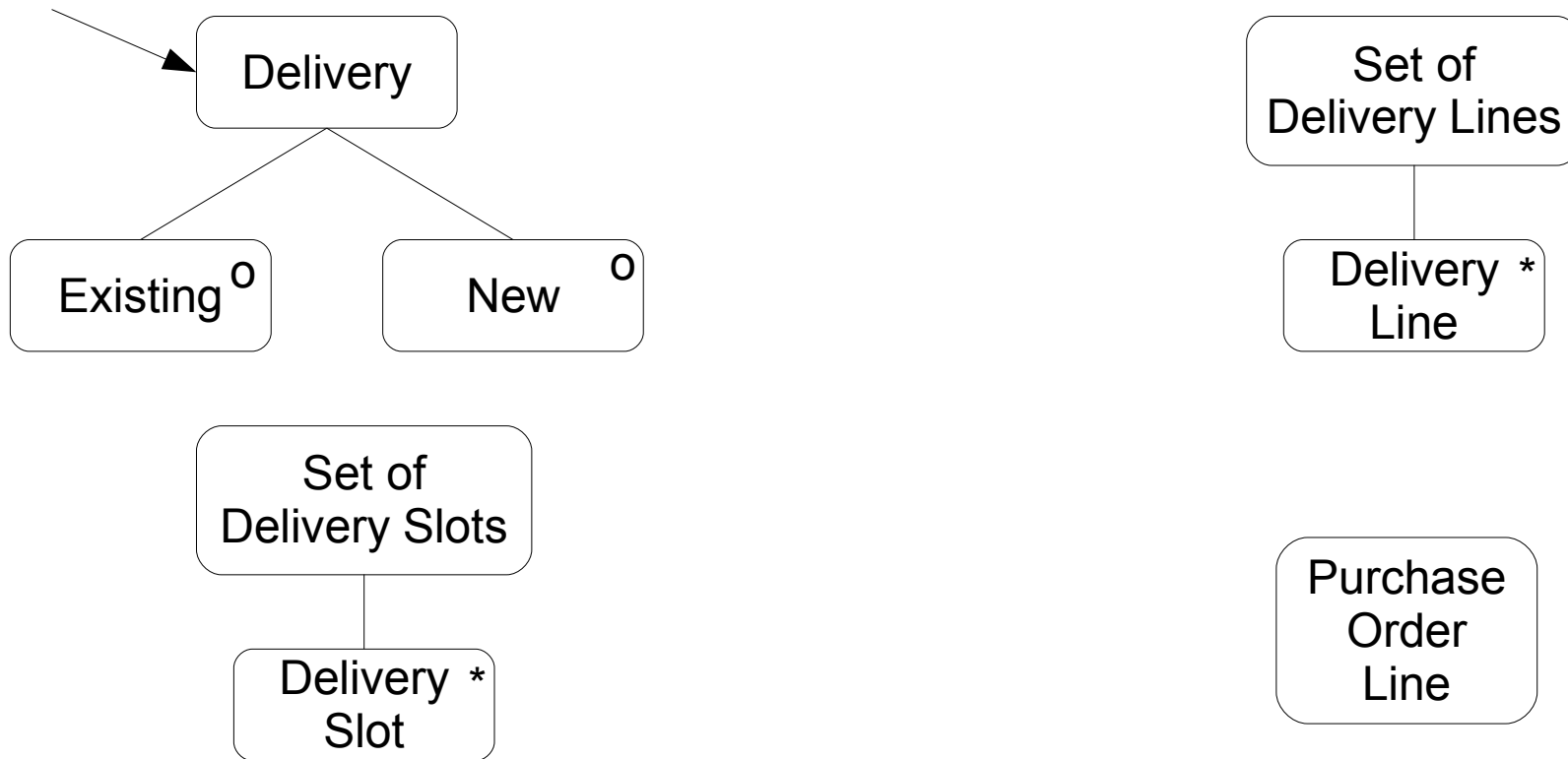
ECDs – Example 1 (iii)

- Identity where an event affects an entity in one or more mutually exclusive ways, and add the effects as options below the relevant entity box.



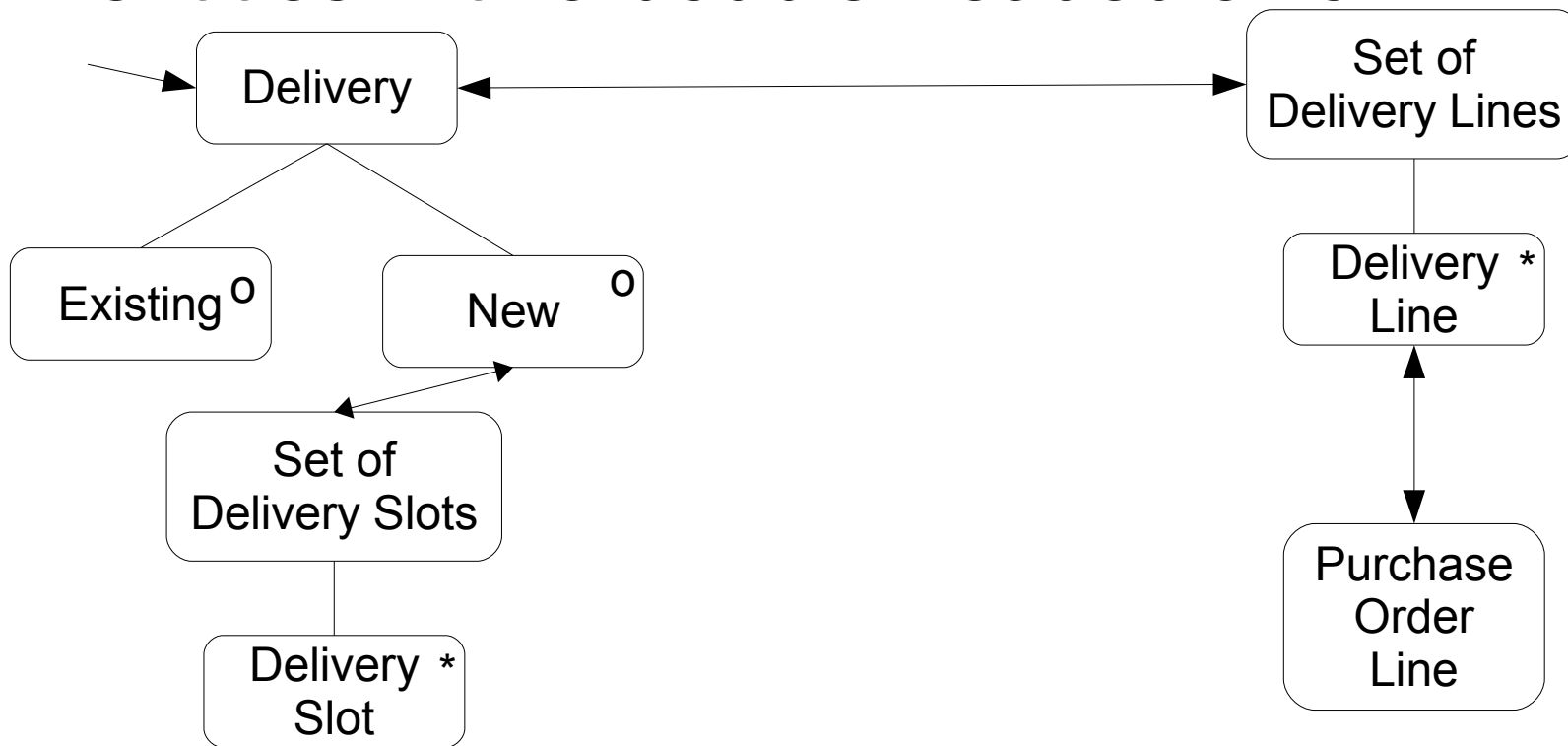
ECDs – Example 1 (iv)

- Identify entities iteratively affected by the event, and draw an iteration box for each one.



ECDs – Example 1 (v)

- Identify effects which are in one-to-one correspondence and connect the affected entities with a double-headed arrow.

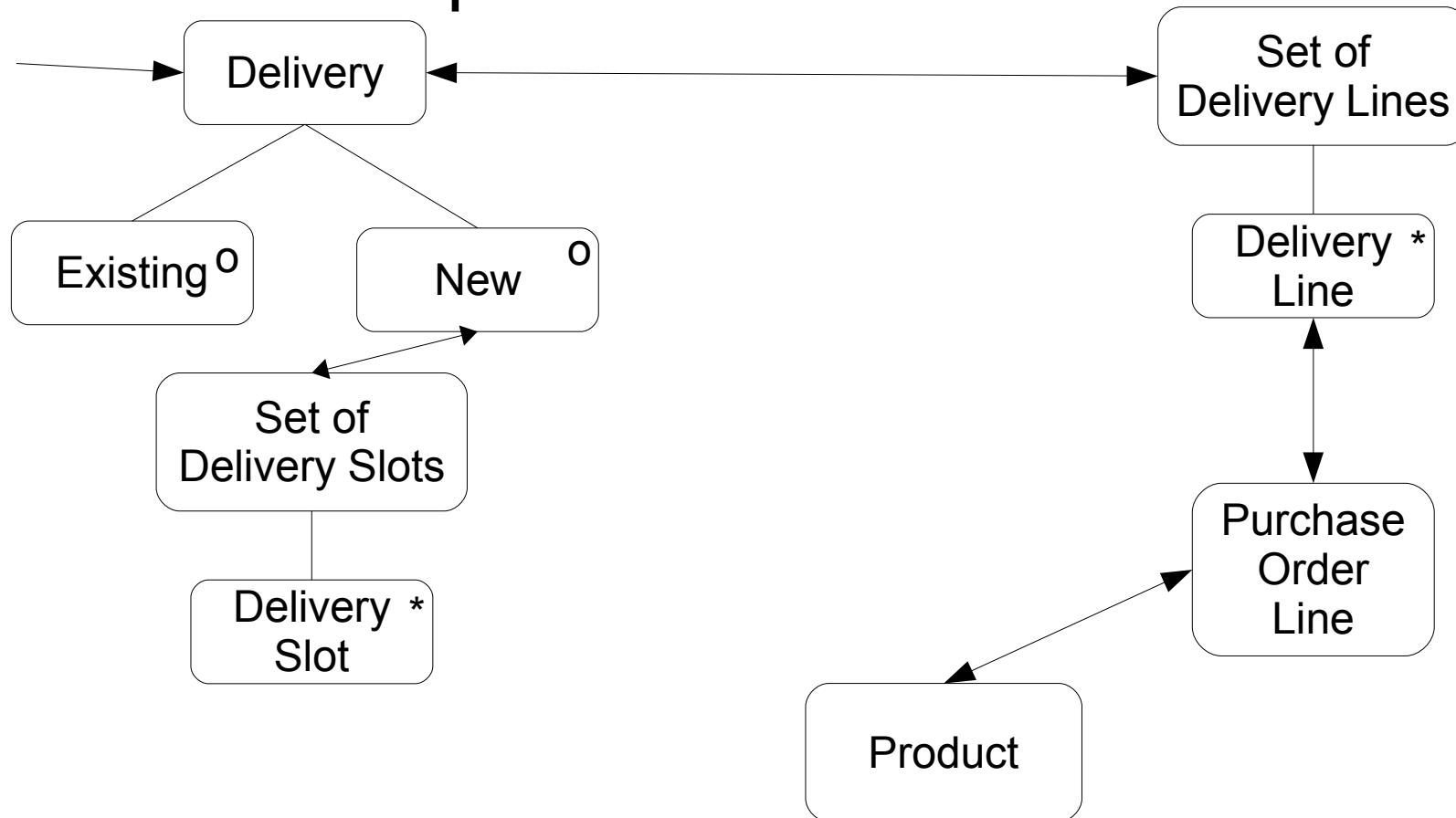


ECDs – Example 1 (vi)

- If an entity is affected in more than one iterative way by an event, then the two iteration structures should be merged into either a selection of iterations, or an iteration of selections.
 - N/A

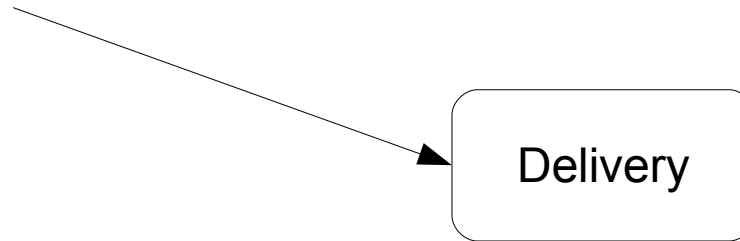
ECDs – Example 1 (vii)

- Add non-updated entities



ECDs – Example 1 (viii)

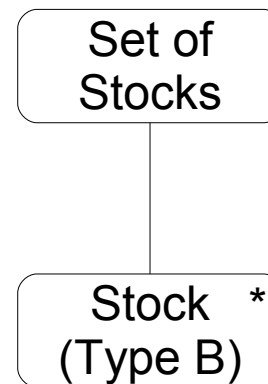
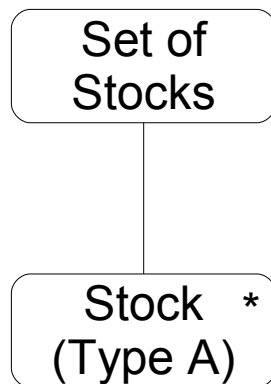
- List the input data under the entry point for the event.



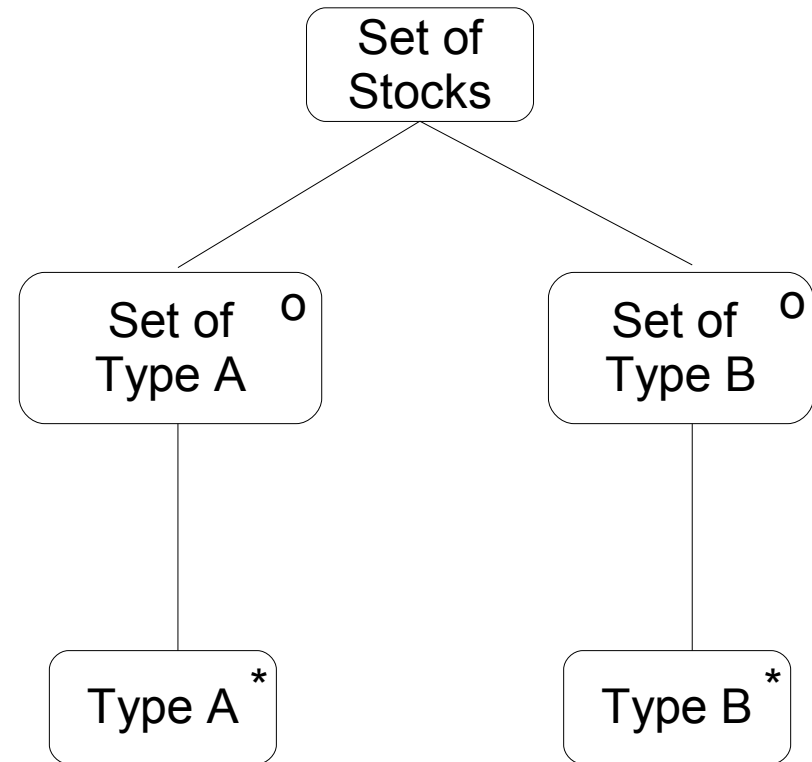
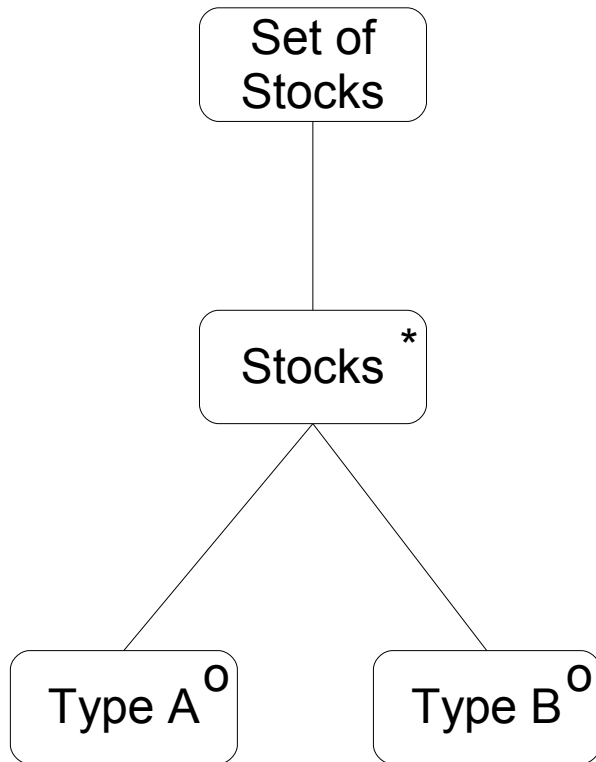
Delivery ID, Slide
ID., P.Order No.,
P.O Line No.,
Quantity,etc

ECDs – Additional Examples (i)

- If an entity is affected in more than one iterative way by an event then the two iteration structures should be merged into either a selection of iterations, or an iteration of selections.



ECDs – Additional Examples (ii)



References

- **Practical SSADM Version 4 - A Complete Tutorial Guide**
 - By Philip L Weaver
- **Smartdraw**
 - <http://www.smartdraw.com/>

Questions?

Now is your time for questions!