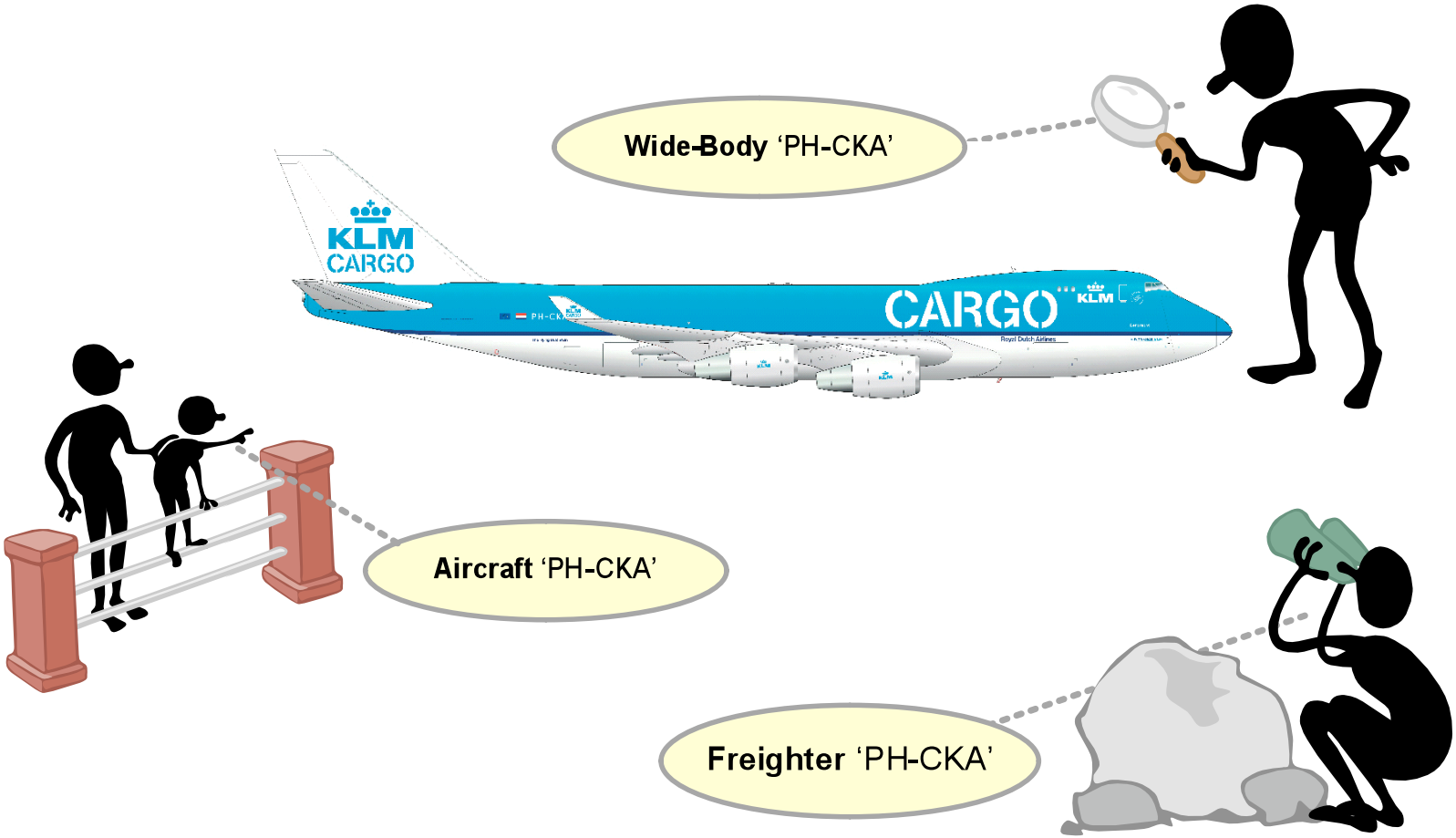
AIR FRANCE KLM

Writing Business Rules

A vision on some advanced topics

June 2008

2 Problem: The right abstractions



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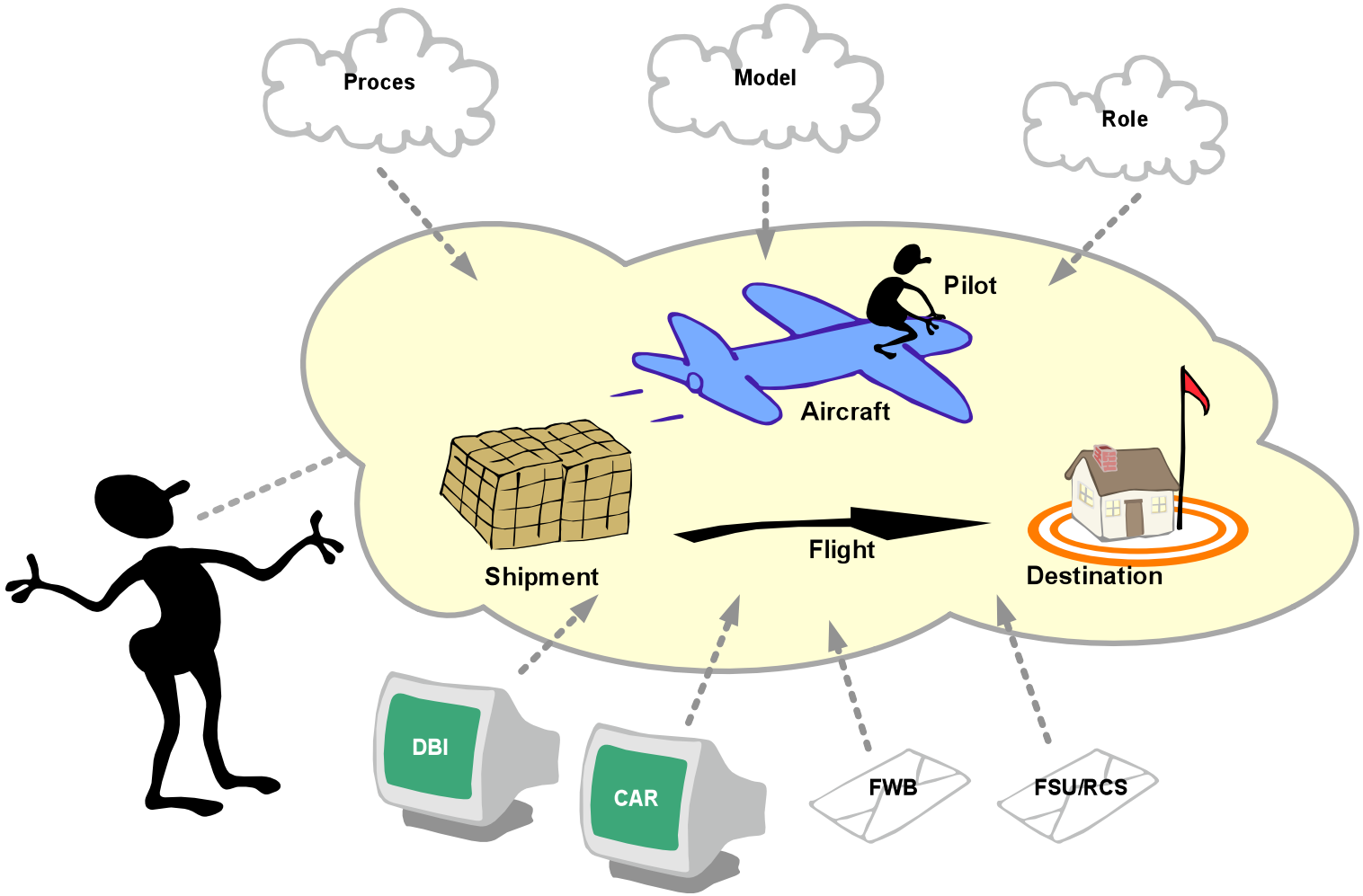
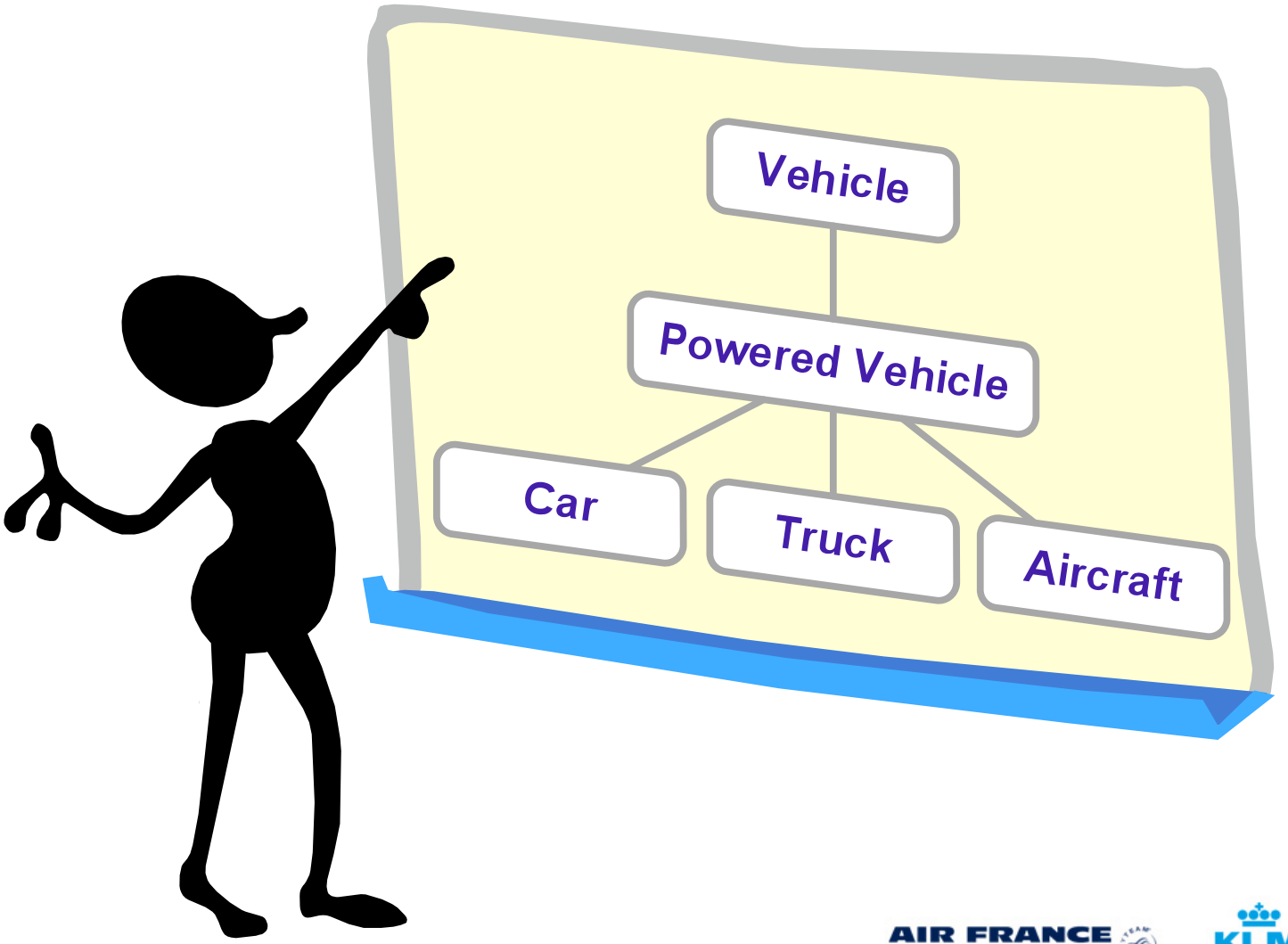
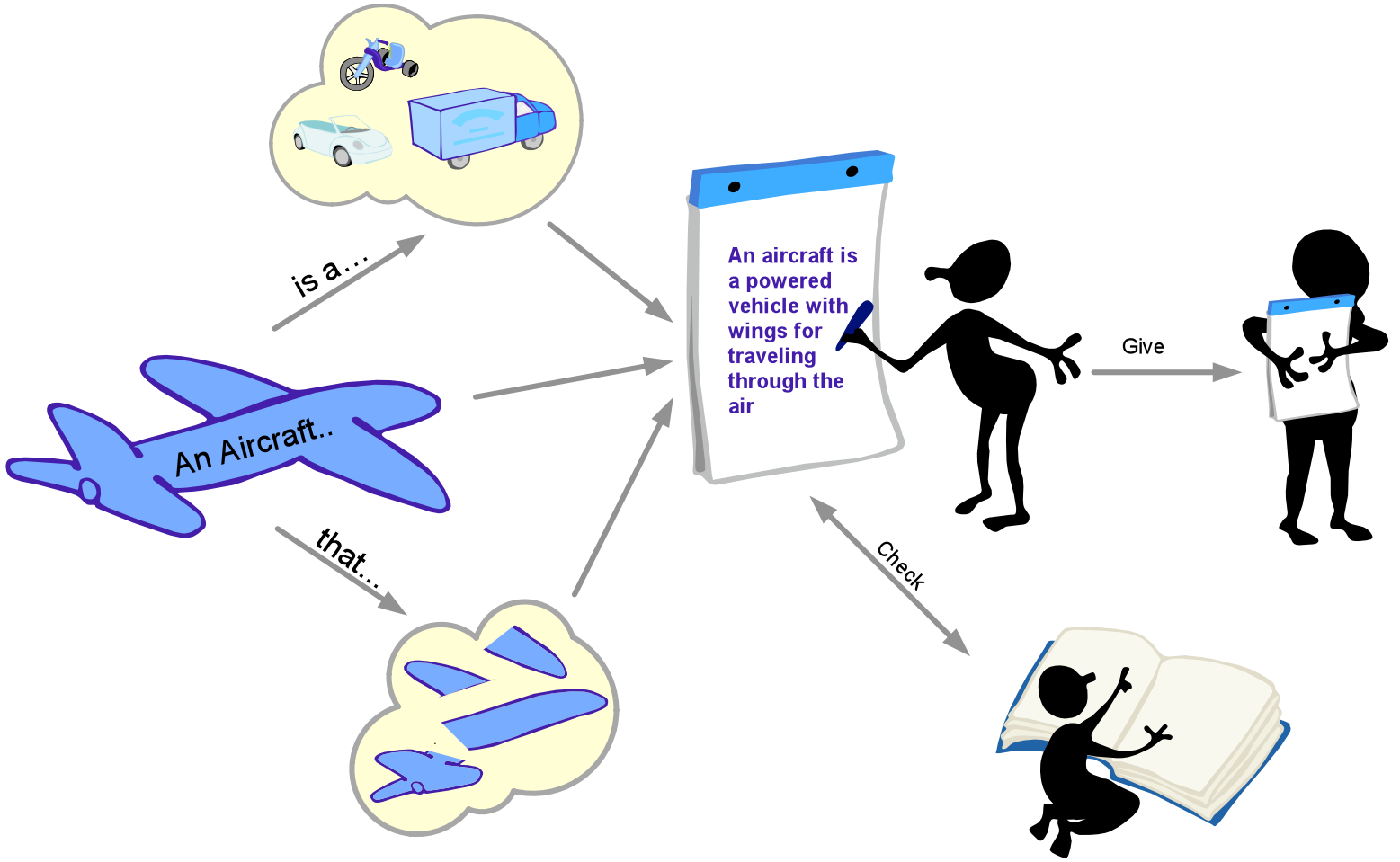
3 Problem: The right level



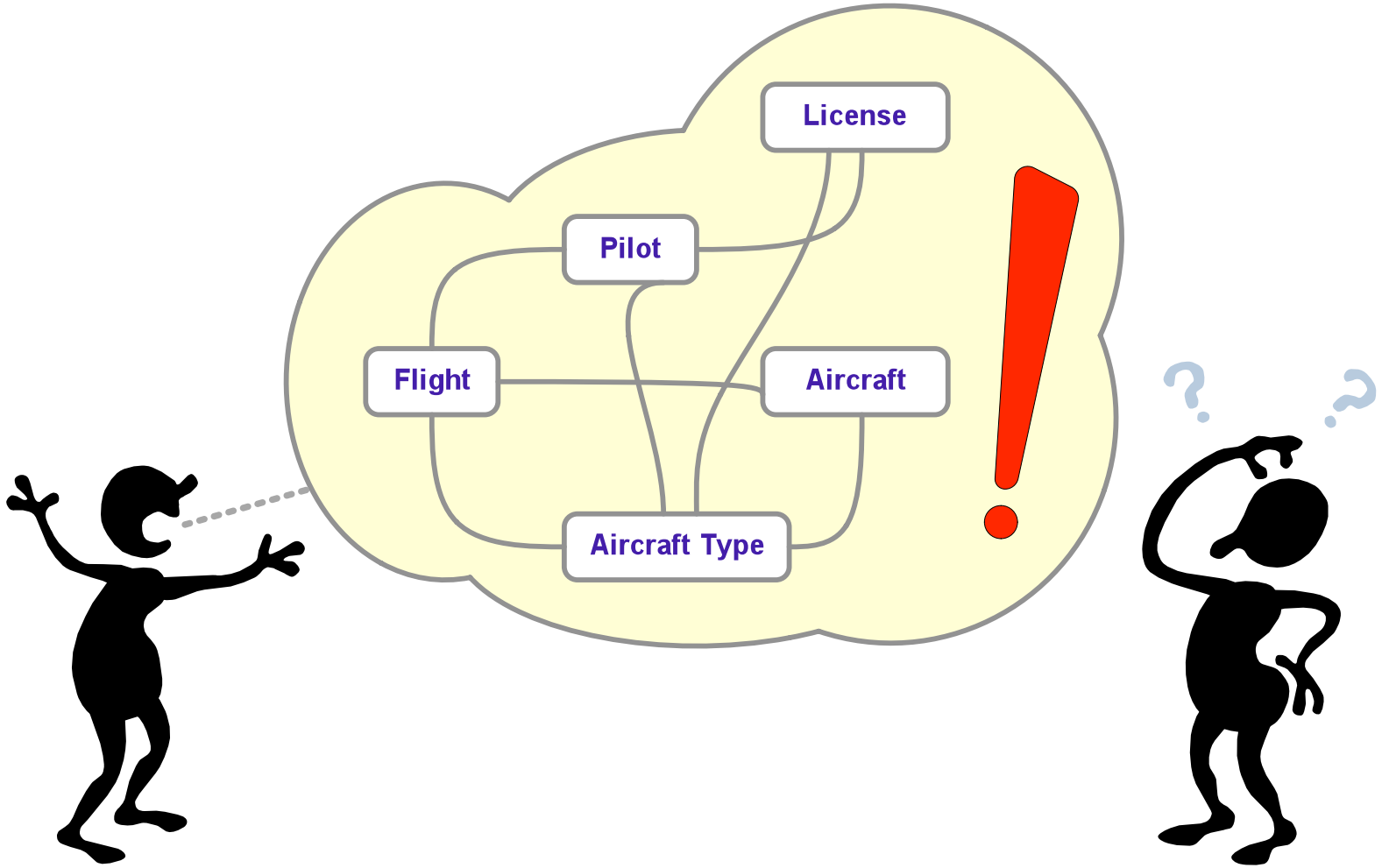
4 Solution: Vocabulary



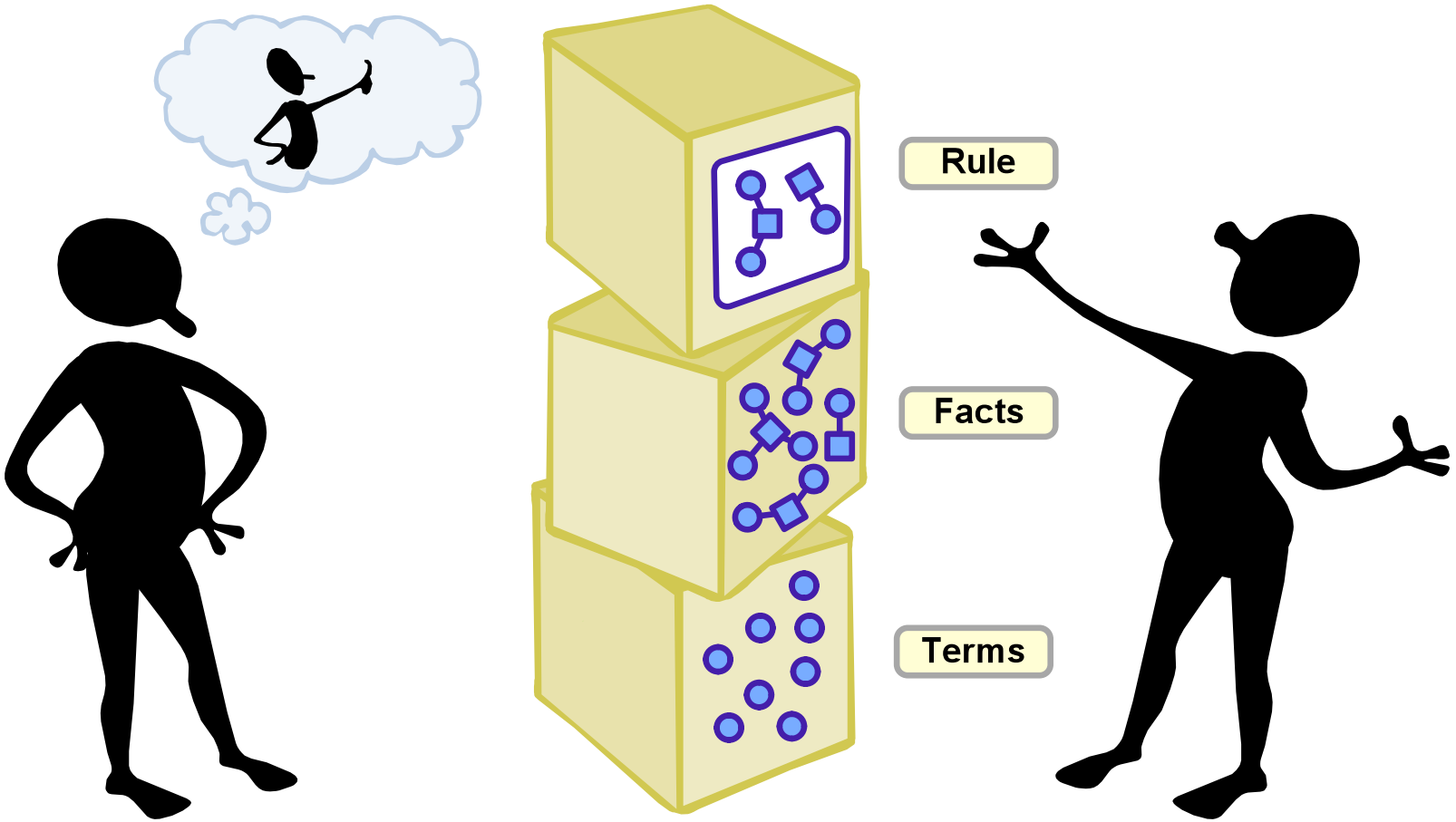
5 Background: Definition



6 Problem: quality of rules



7 Solution: quality check on rules



8 Background: Structural Rules (Facts)

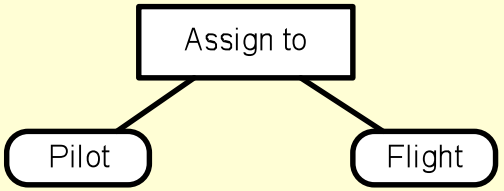
A pilot must be assigned to a flight

1	**Establish referring expressions** ~~A~~ pilot ~~must~~ be assigned to ~~a~~ flight
2	**Remove quantifiers** ~~A~~ ... must be assigned to ~~a~~ ...
3	**Remove modality** ... ~~must~~ be assigned to ...
4	**Remove tense** ... be assigned to ... → ... assign to ...

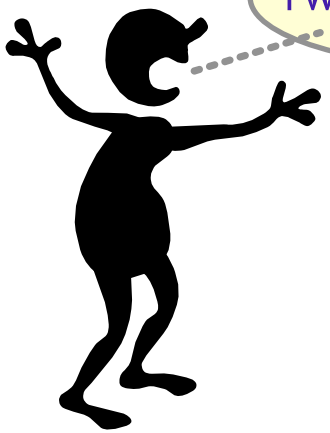
As a relation

ASSIGN_TO(Pilot, Flight)

As a picture



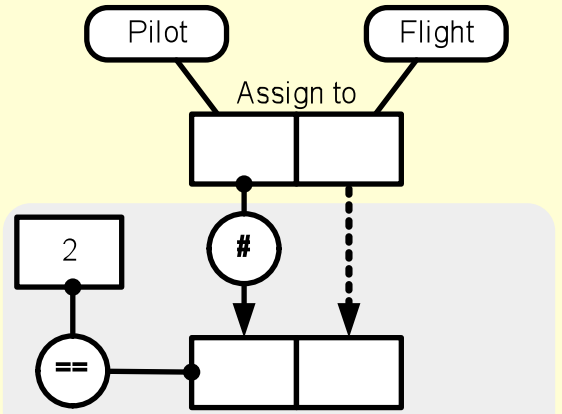
9 Background: Constraints



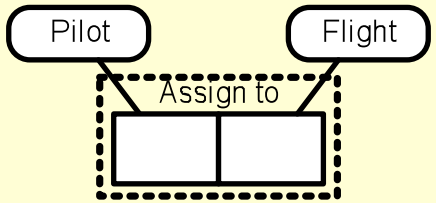
Two pilots must be assigned to a flight

1	**Replace relations** Two ASSIGN_TO(Pilot, Flight)
2	**Add operators** Two COUNT(ASSIGN_TO(Pilot, Flight))
3	**Insert comparison** COUNT(ASSIGN_TO(Pilot, Flight)) = 2
4	**Add quantifiers** Flight COUNT(ASSIGN_TO(Pilot, Flight)) = 2

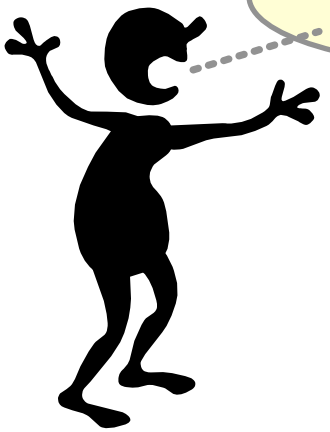
Detailed Picture



Overview Picture



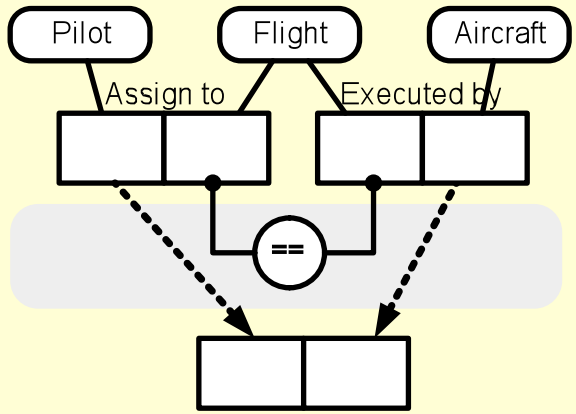
10 Background: Complex Paths



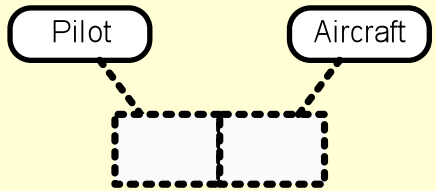
… Pilot of an Aircraft …

1	**Initial Analysis** OF_A(Pilot, Aircraft)
2	**Find connection points** Pilot → Flight → Aircraft
3	**State facts involved** ASSIGN_TO(Pilot, Flight) EXECUTED_BY(Flight, Aircraft)
4	**Link it up..** ASSIGN_TO(Pilot, $Flight_1$) AND ASSIGN_TO($Flight_2$, Aircraft) AND $Flight_1$ == $Flight_2$

Detailed Picture



Overview Picture

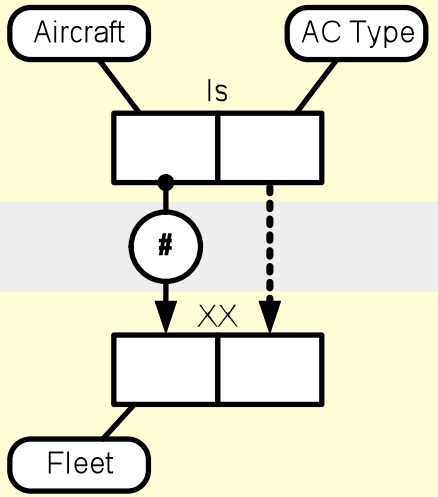


11 Background: Production Rules

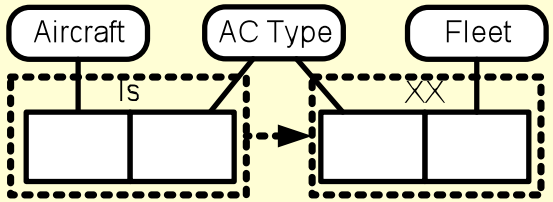
The Fleet of an Aircraft Type is
the number of Aircraft of that Aircraft Type

1	**Replace relations** XX(Fleet, Aircraft Type) is the number of IS_A(Aircraft, Aircraft Type)
2	**Add operators** XX(Fleet, Aircraft Type) is COUNT(IS_A(Aircraft, Aircraft Type))
3	**Insert comparison** XX(Fleet, Aircraft Type) = COUNT(IS_A(Aircraft, Aircraft Type))
4	**Add quantifiers** Aircraft Type: XX(Fleet, Aircraft Type) = COUNT(IS_A(Aircraft, Aircraft Type))

Detailed Picture



Overview Picture



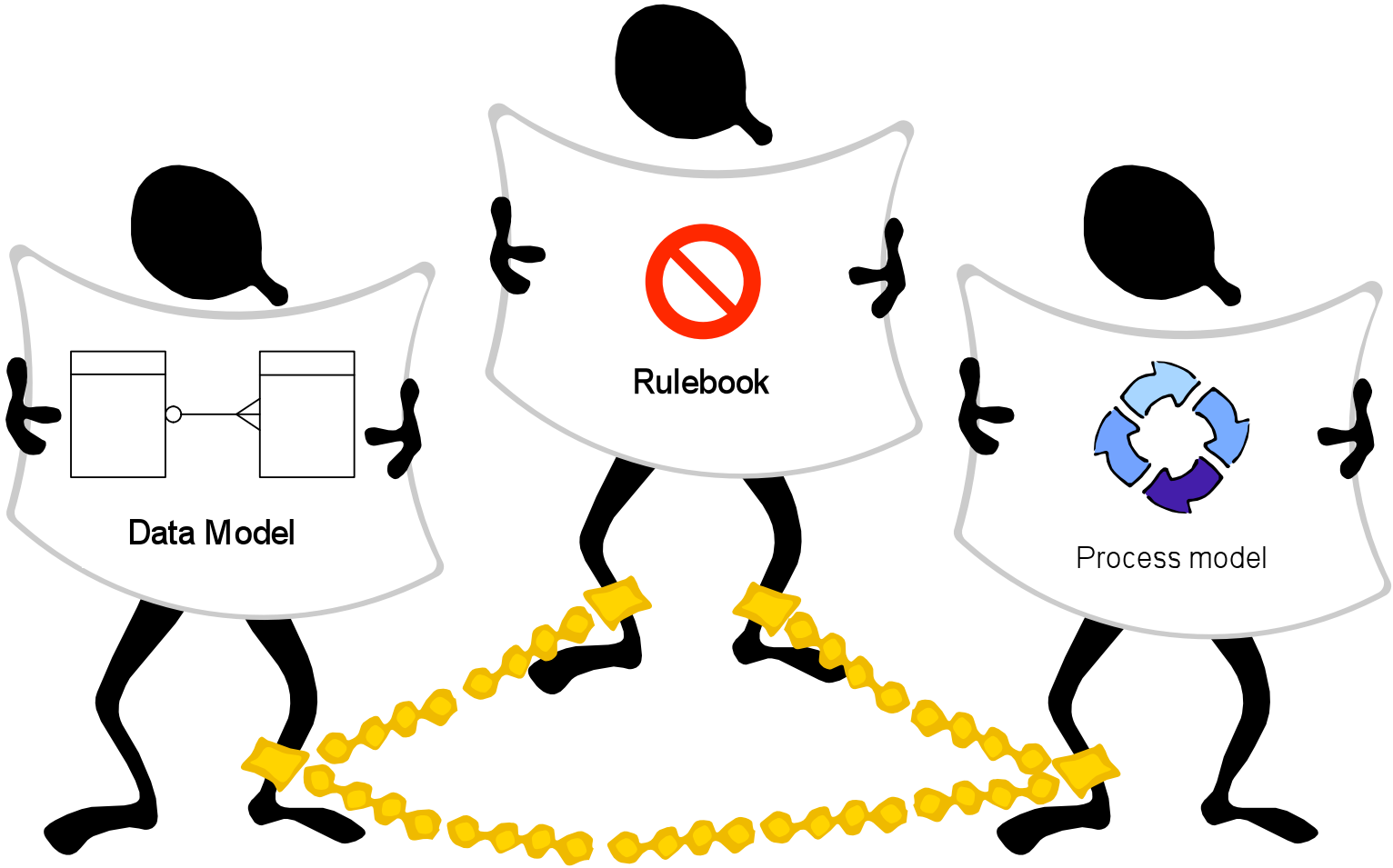
12 Background: Conditional rules

- Simple addition of a condition, link of two constraints by an ‘if’
- Write the consequence first; it is more logical to business people
- Logic only in antecedent, using applicability (see Graham) also is a good way
- Applicability..

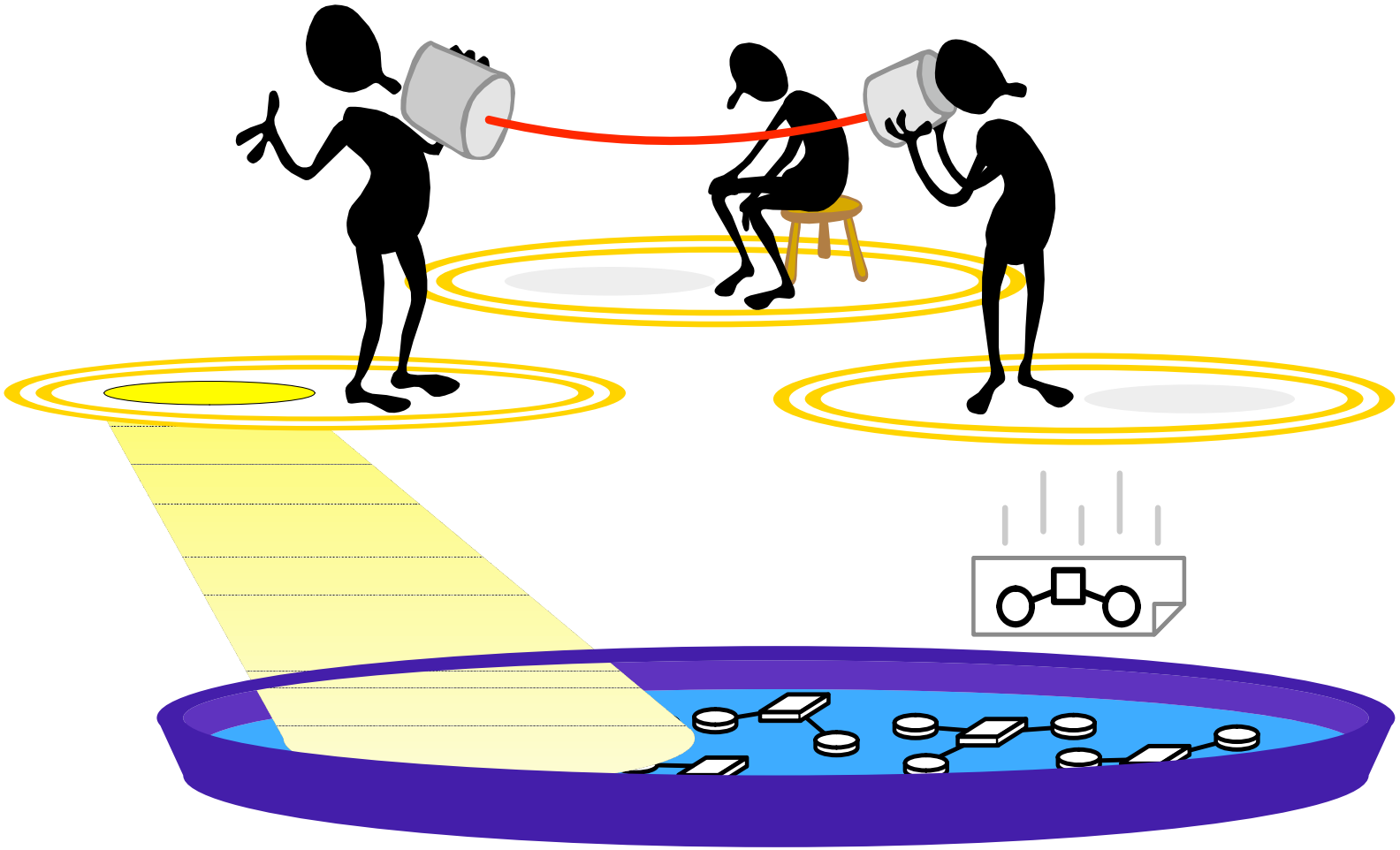
13 Vision: What a future DBMS should be

- 5 levels of enforcement:
  - Strict: adding a conflicting fact should fail
  - Approved: adding a conflicting fact leads to a workflow
  - Explained: adding a conflicting fact leads to a pop-up text
  - Managed: adding a conflicting fact is reported
  - Guideline: adding a conflicting fact is OK
- Put these facilities in a DBMS in stead of good-old things like triggers

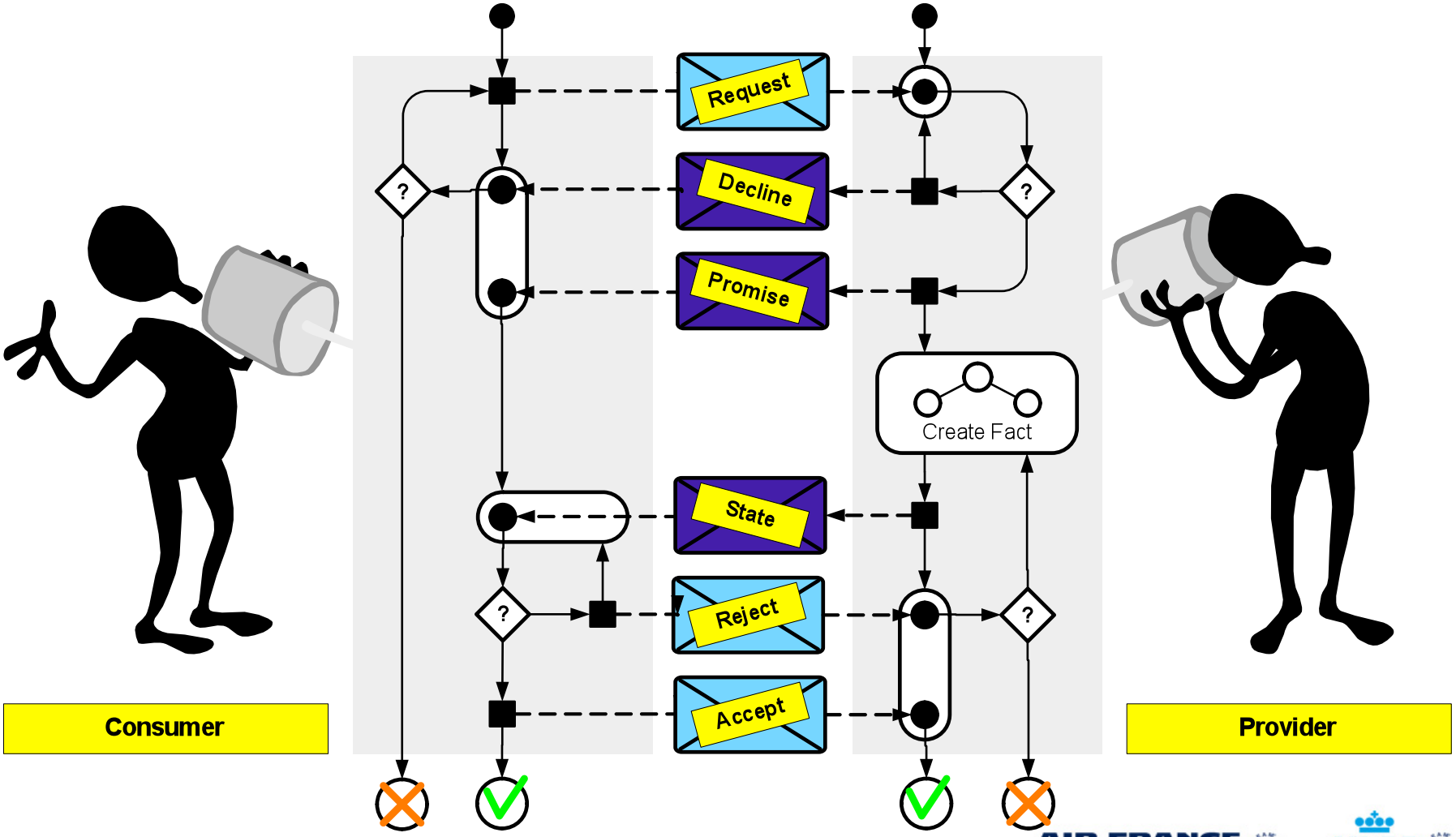
14 Problem: Consistency with Process



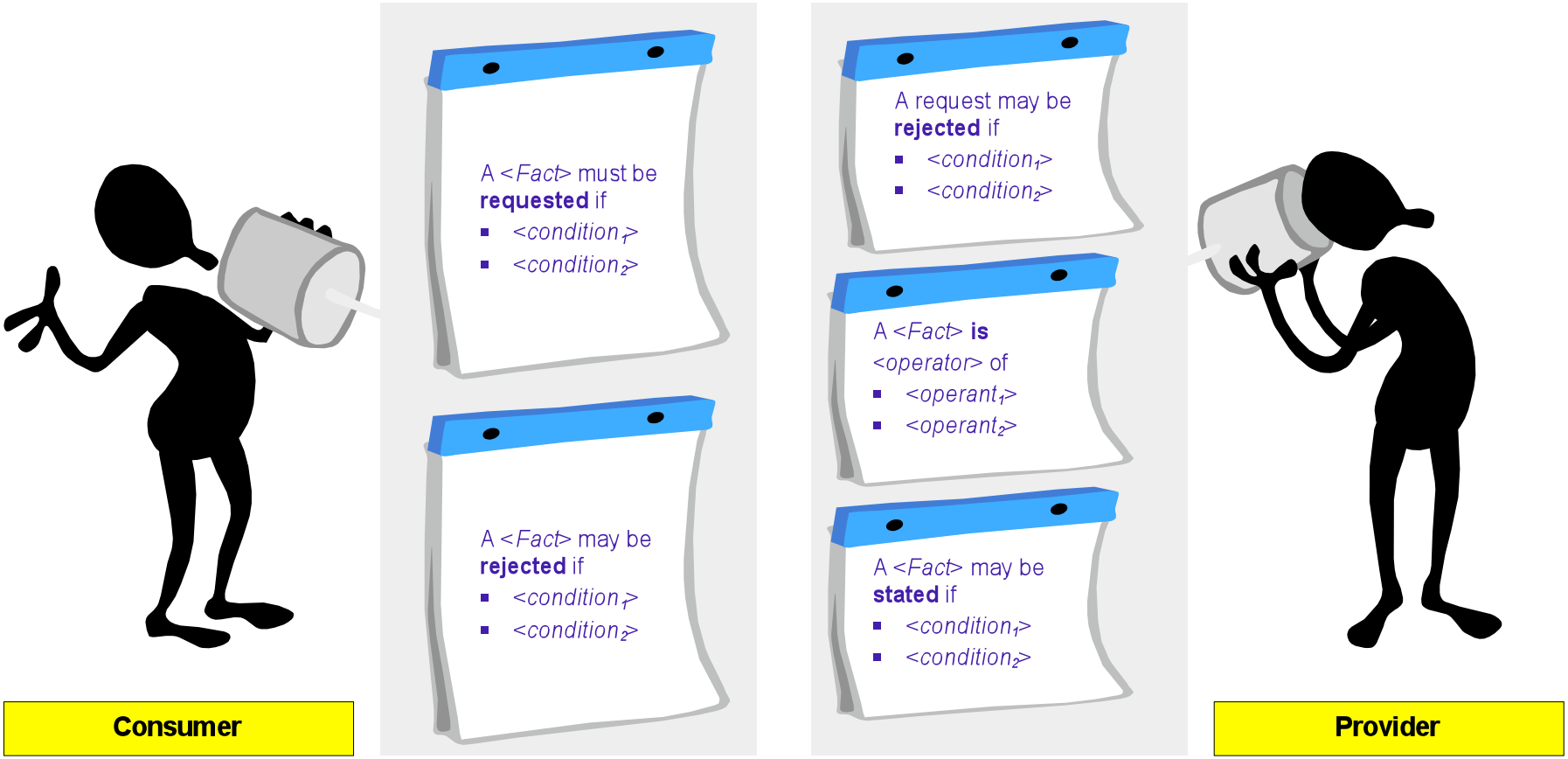
15 Solution: Establishing Domains



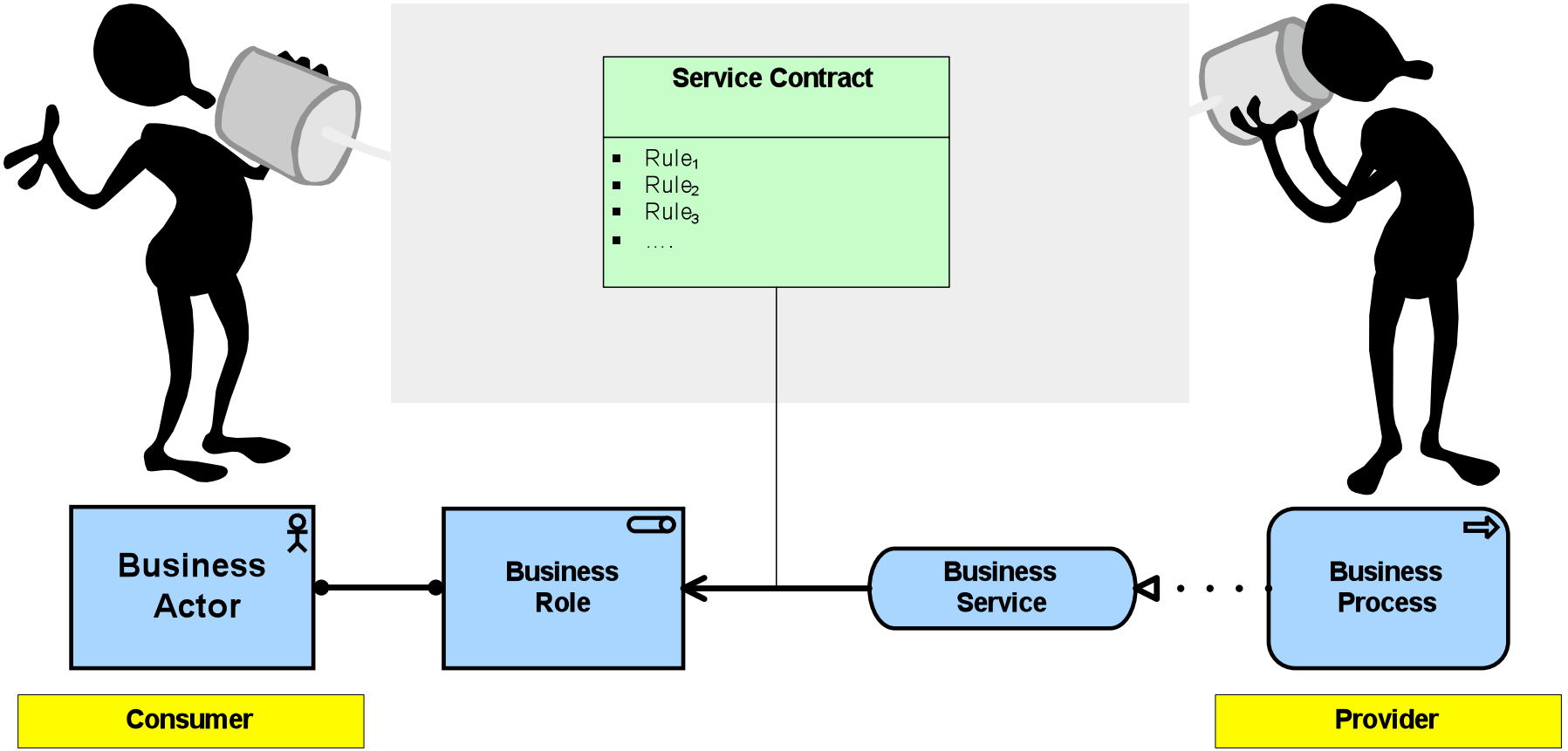
16 Solution: Linguistic view of a Process



17 Solution: Rules to govern the process



18 Finally: Transaction as Service



19 Vision: Complete business model

The formal structure of an organization can be completely described using a limited but readable set of sentences (the rules), for which we can envision the meta data model and the graphical models.

(so why not?)

20 Appendix: Events