

## Instantiating the STEPmod Interface resources (some examples)

The instance diagrams below represent a generic interface between a generic 13A UK power outlet



and a generic computer



made using a generic “kettle-style” power lead



Clearly, such an interface may be represented at different levels of detail.

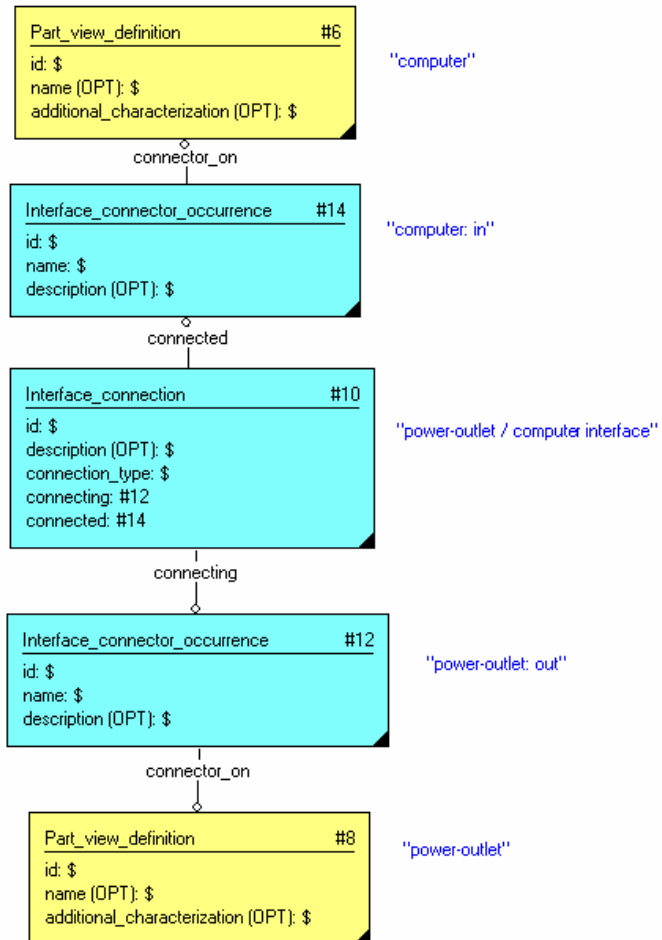


The completed interface between a power-outlet and a computer (see above) is represented with varying degrees of complexity below:

NOTE 1: The examples provided are for *types* (e.g. designs) of computers, power outlets and connectors *not* for *tokens* (e.g. serial numbered individual parts) of these things.

NOTE 2: Example classifications shown as blue text - see section 7) below for an explanation of how classification is used to assign reference data in AP233.

1) An interface between a power-outlet and a computer:



rface

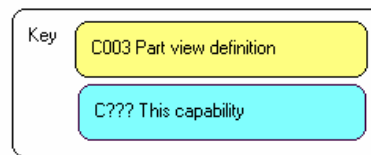
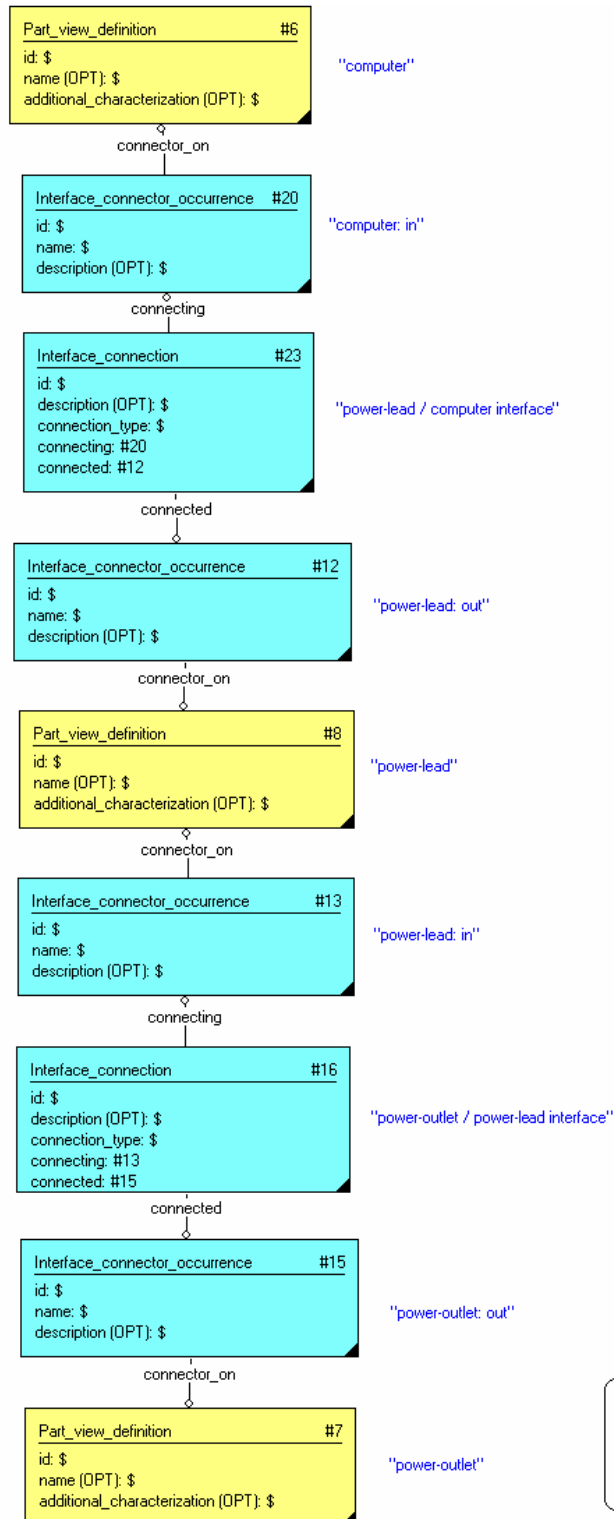


Figure 1: power-outlet / computer interface

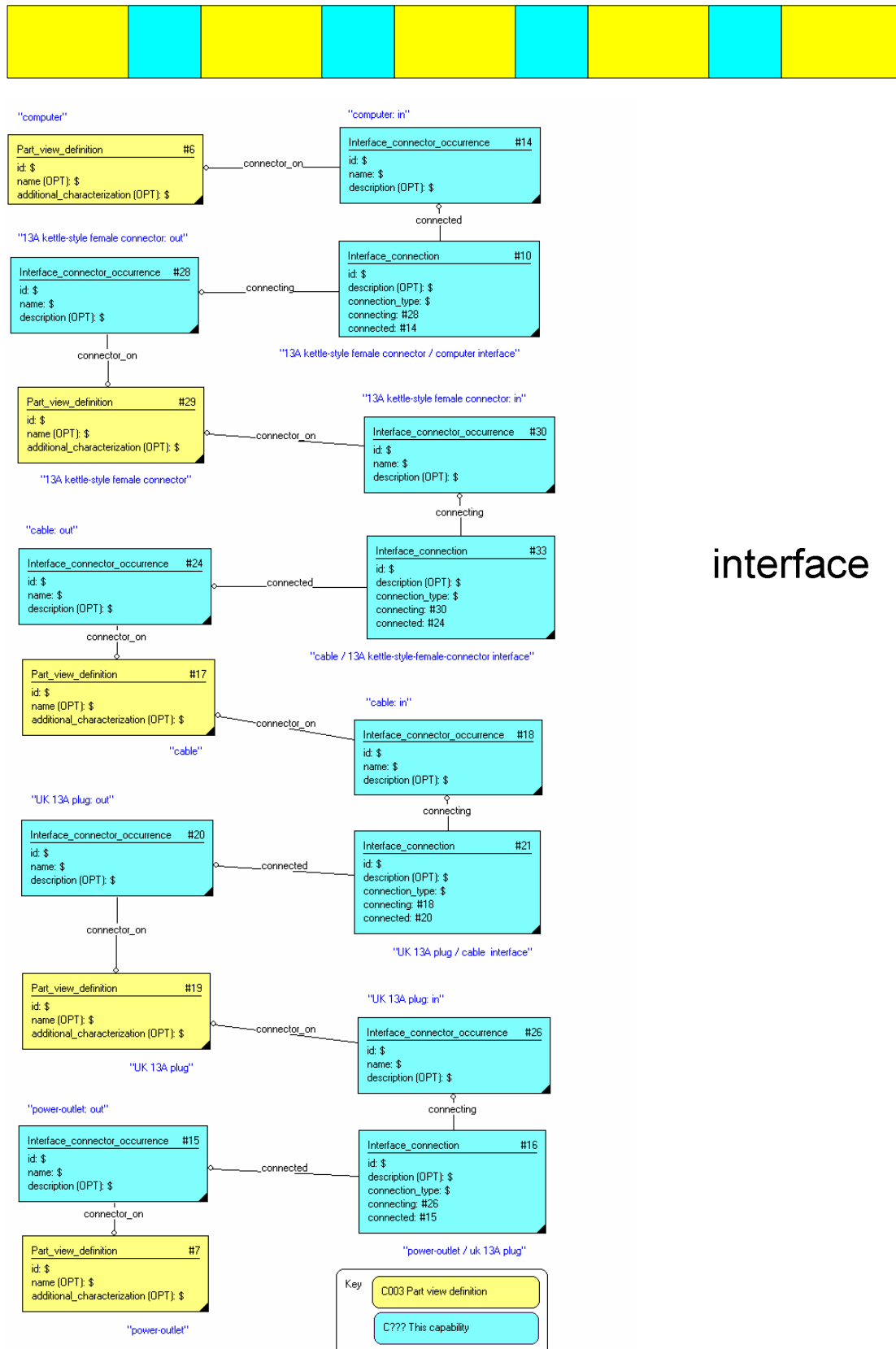
2) Interfaces between a power-outlet, a power-lead, and a computer:



interface

Figure 2: power-outlet / power-lead / computer interfaces

- 3) Interfaces between a power-outlet, a 13A plug, a cable, a 13A “kettle-style” female connector, and a computer:



interface

13A-plug

Figure 3: power-outlet / plug / cable / connector / computer interfaces

- 4) A (hierarchically structured) hybrid of interfaces between a power-outlet, a power-lead, and a computer; and a more detailed set of interfaces between a power-outlet, a 13A plug, a cable, a 13A “kettle-style” female connector, and a computer:

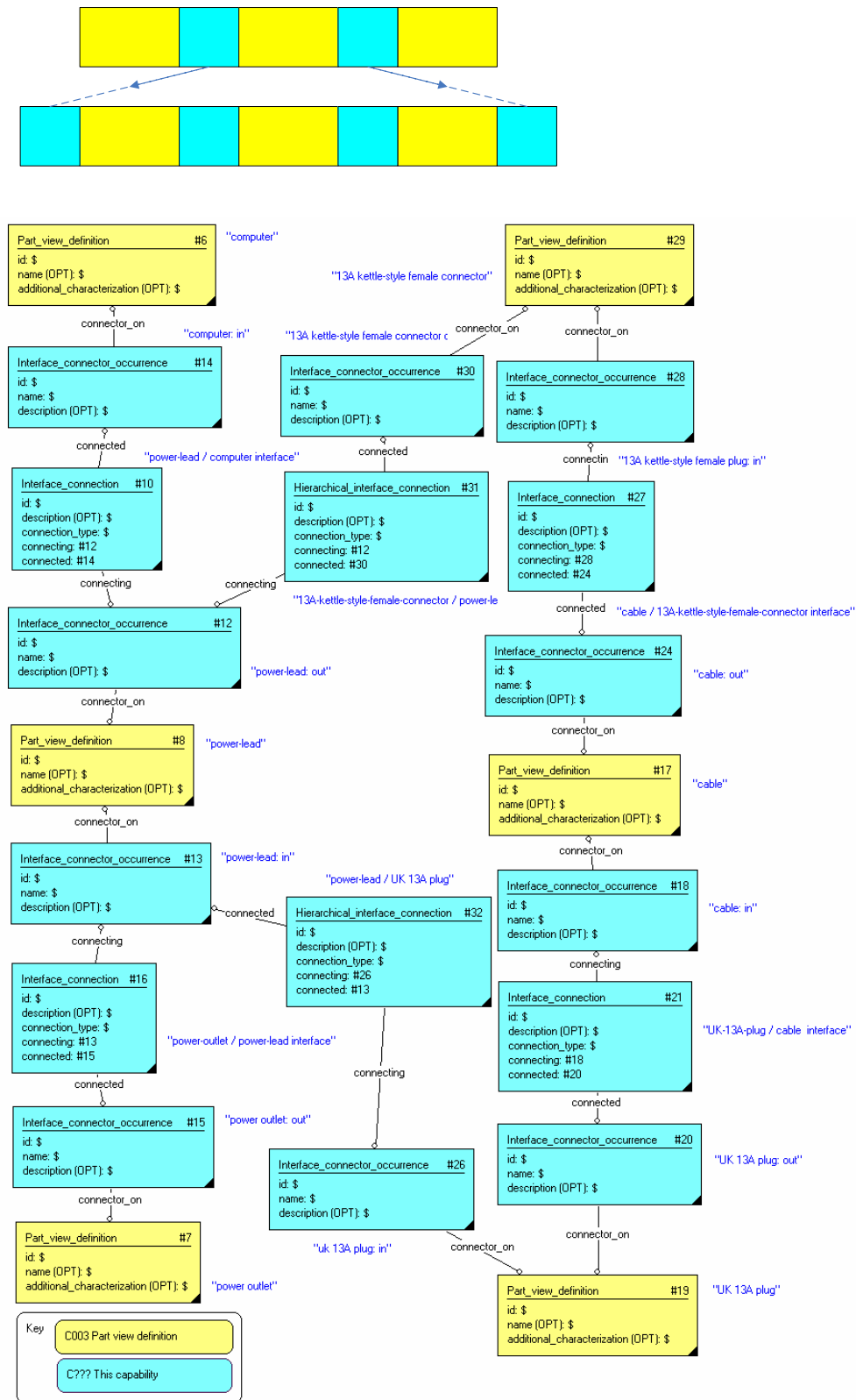


Figure 4: hybrid: simple and detailed interfaces for power-lead

- 5) A (hierarchical) hybrid of interfaces between a power cable and a 13A plug; and a more detailed set of interfaces between the three pins of the a 13A plug, and the three wires of the power cable:

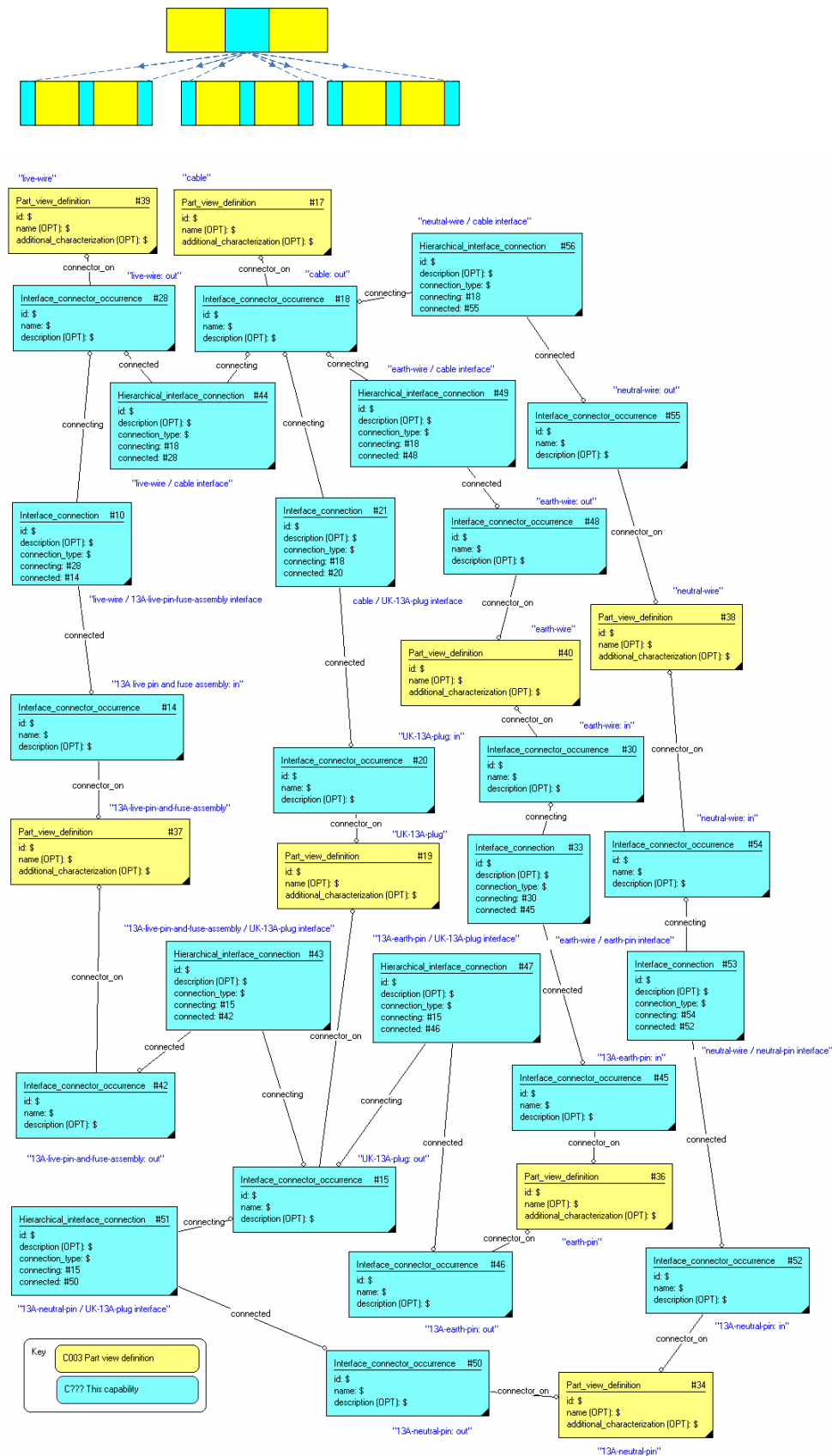
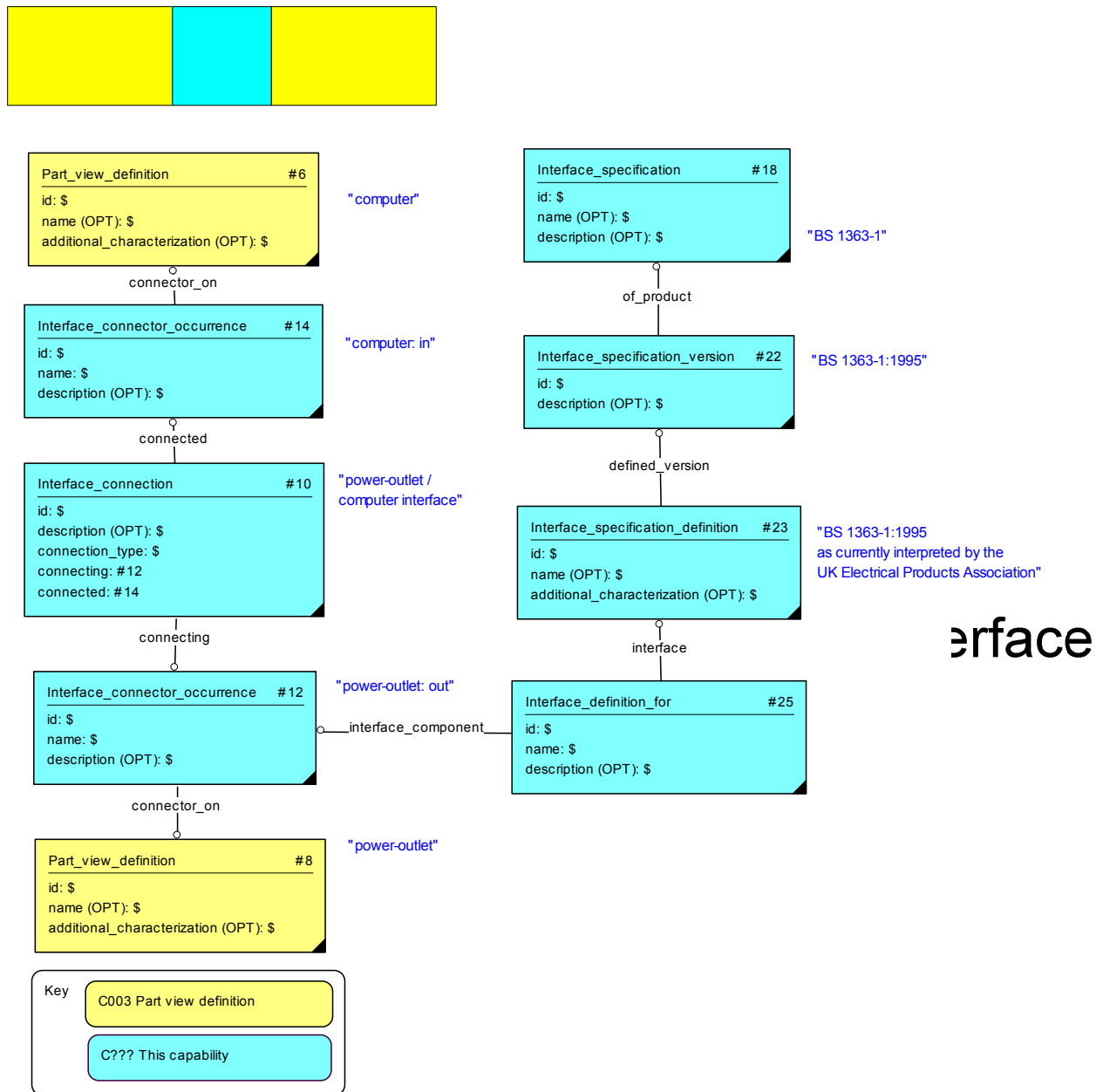


Figure 5: hybrid: simple and detailed interfaces for plug and cable with pin assignments



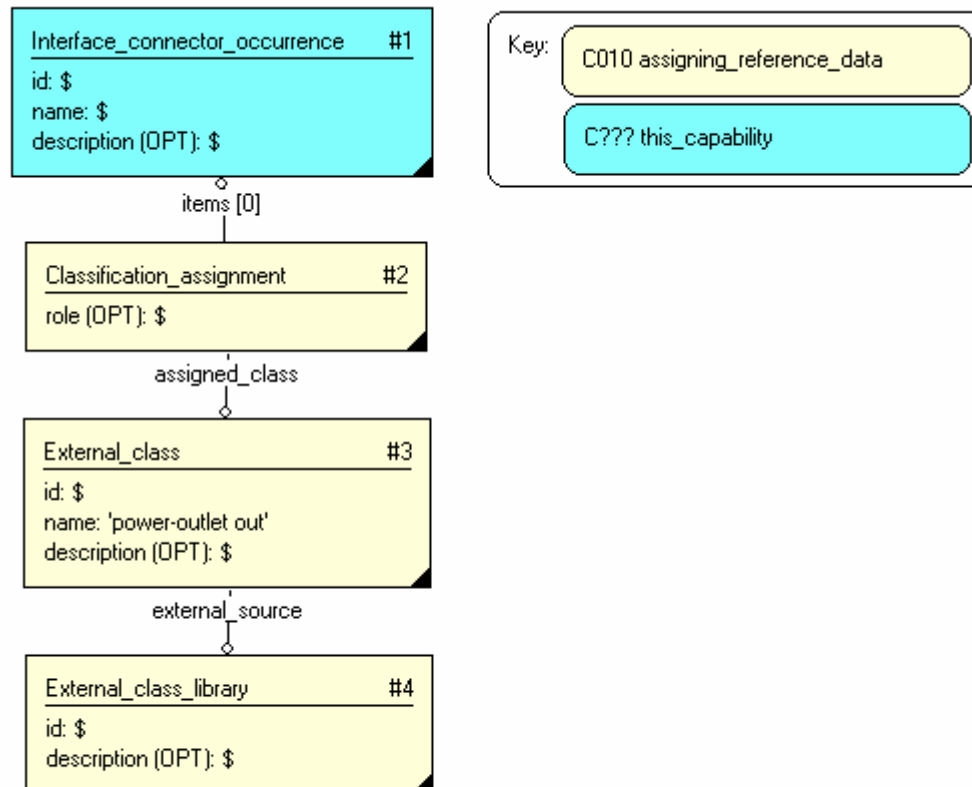
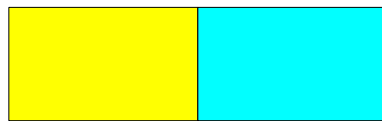
- 6) The assignment of a specification (a British Standard in this example) to an interface connector - in this case, certain (out-facing) aspects of a UK 13A socket:



**Figure 6: assignment of a specification to an interface**

NOTE: It is not possible, using the current STEPmod resources, to assign a specification to a *connection* (rather than a *connector*). An example here might be the requirement that a connection between a 13A plug and socket should not require more than a given amount of force (perhaps given in newtons) to break the connection. On the other hand, it could be argued that such a requirement could only ever be given real substance through the imposition of certain specifications on the component connectors. After all, unless plugs and sockets (conforming to a particular type) are manufactured to certain specifications, there is no way of guaranteeing that a arbitrarily chosen pair of connectors will met a specification placed on the connection made when the pair is conjoined.

- 7) The instance diagram below illustrates the classification mechanism whereby specific values (reference data) are assigned to interface instances in AP233 (represented with blue text in the other instance diagrams):



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**Figure 7: classification of power-outlet instance**

- 8) The instance diagram below illustrates the identification of a part (type) used in an interface; of a (type of) port or connector on that part (type); and of a (type of) connection made by this connector (and another connector that is not identified here). In the case of the connection identifier, the organization responsible for assigning the identifier is represented. The example is based on a simple power-outlet/computer interface:

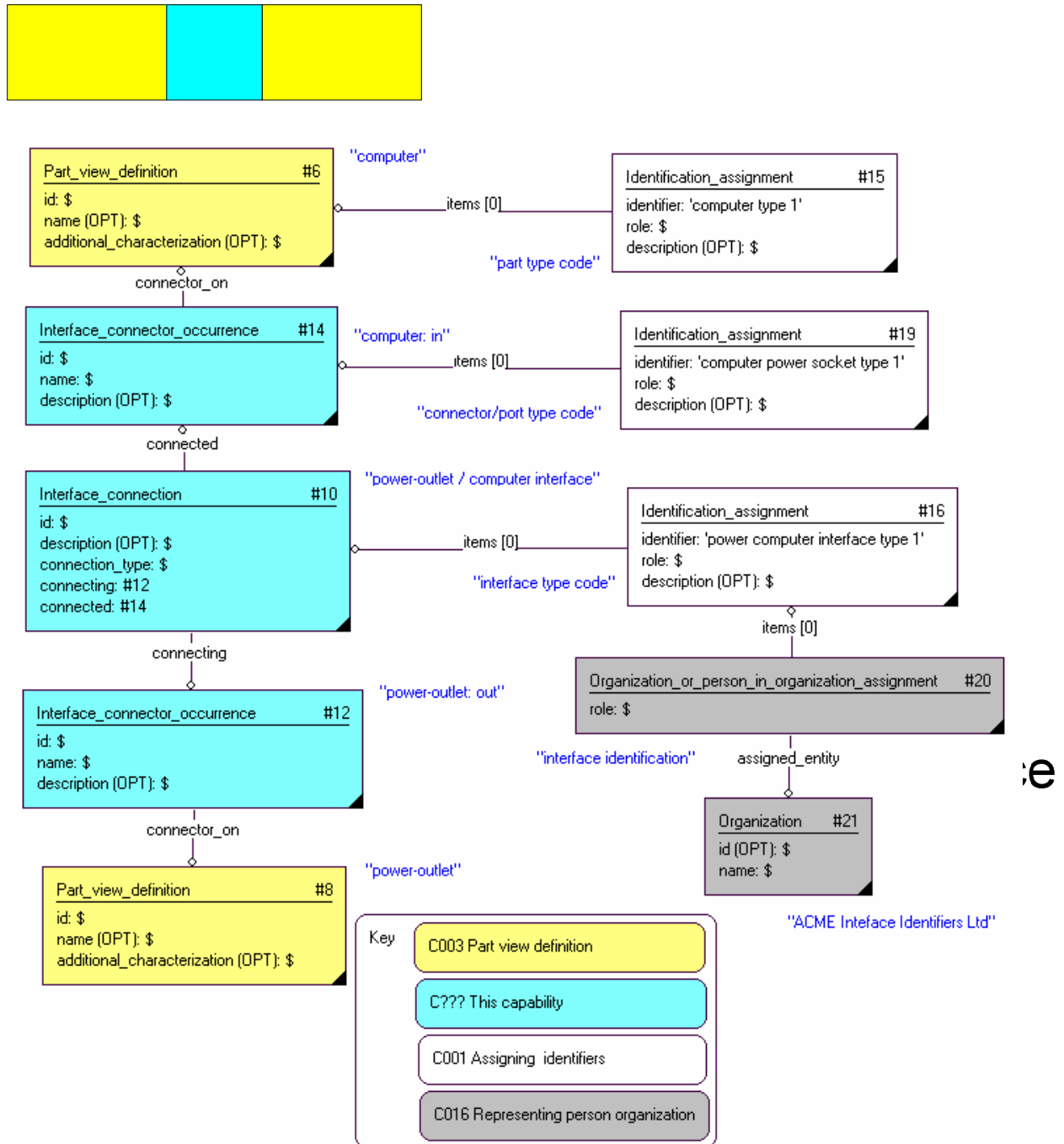
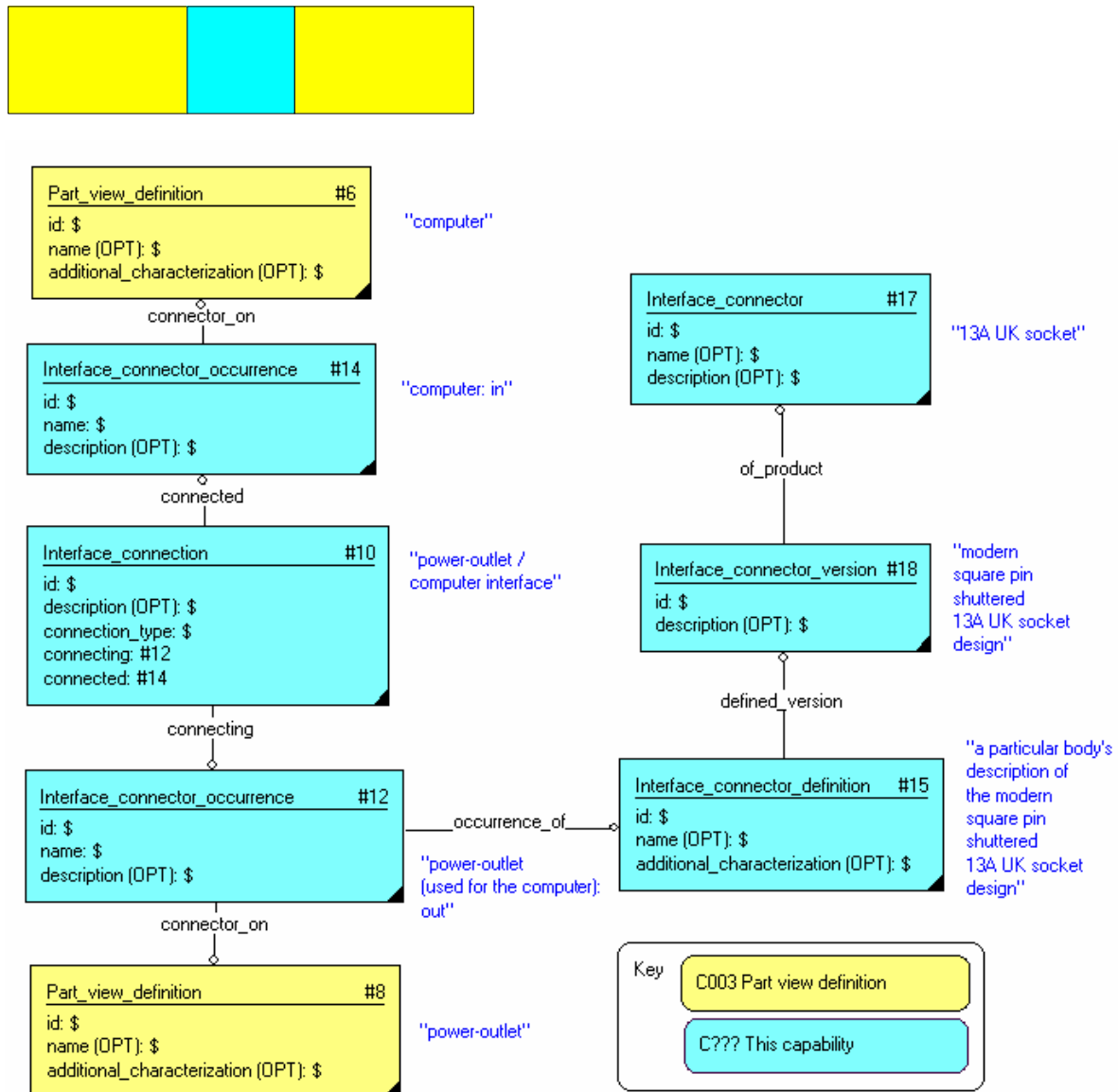


Figure 8: identification of parts, connectors, and connections

- 9) The instance diagram below illustrates the use of Interface\_connector\_occurrence to represent a particular use of a Interface\_connector\_definition (which represents a particular view of a version of a connector) in a (type of) connection.

NOTE 1: The same definition of (say) a 13A power outlet might occur more than once in the description of a set of interfaces formed by a computer and its various related equipment – e.g. the second gang (on the same power outlet plate) that is used for the monitor.



**Figure 9: definition of a connector**

NOTE 2: If a Part\_view\_definition occurs multiple times in a particular assembly of connections and connectors (where various levels of detail are included in the same model) Next\_assembly\_usage\_occurrence is used.