Work on Viewpoints at Kent

EPSRC projects:

Cross Viewpoint Consistency in ODP and *ODP Viewpoints in a Development Framework*.

Aim to develop tools and techniques to support consistency checking in ODP.

Open Distributed Processing (ODP) - uses 5 viewpoints to specify distributed systems.

Viewpoints - are partial specifications of the final system under consideration.

They provide a separation of concerns and give structure in terms of different points of view.

But we need to check the *consistency* of the viewpoints to show that the different specifications do not impose contradictory requirements

ODP has an interest in the use of formal methods - we have concentrated on Z and LOTOS.

Using formal methods allows

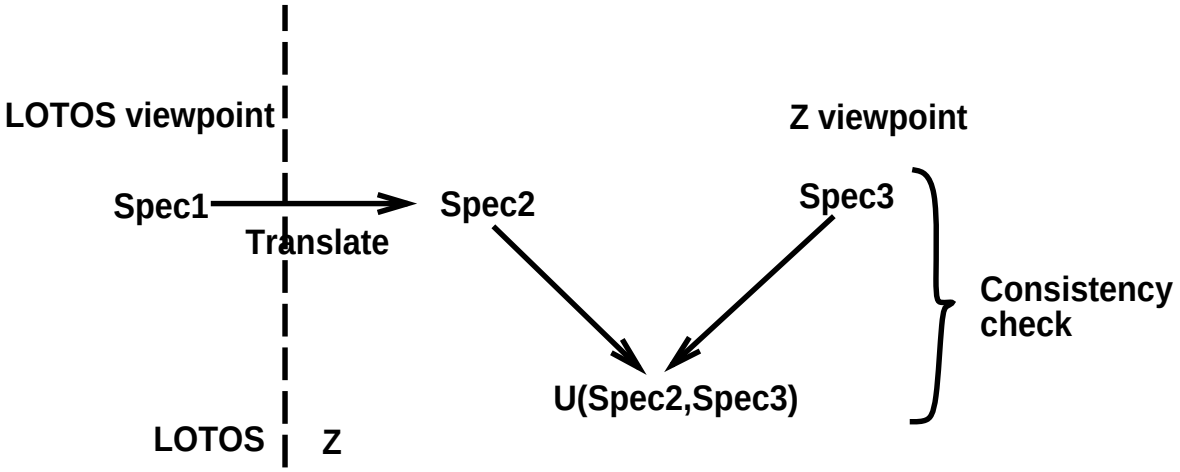
- a precise meaning of consistency to be given;

- development of algorithms to support consistency checking.

In ODP consistency has become to mean that *there exists a common refinement of all the viewpoints*.

General Strategy

These mechanisms have turned out to be general rather than ODP specific.



The correspondence between the viewpoints is important in deriving unifications.

Correspondence relations document the dependency between the viewpoints, the unification is relative to this correspondence.

Applications to Feature Interaction

Consider the base specification (e.g. POTS) as one viewpoint, and each separate feature (e.g. Call Waiting) as another viewpoint.

Look for feature interactions between the underlying system and collections of features as a problem in consistency checking.

This requires that the individual features can be structured as specifications on their own, this is feasible using a language such as Z.

The behavioural definition of consistency means that we look to see if an implementation exists that satisfies both the base specification and the selected features.

A constructive notion of composition produces a specification combining all features if one exists.

Work so far has looked at how to structure the features in the Z notation.

Simple examples show that the technique does detect known FI.

The fact that the features appear at the same level of granularity is very useful (in contrast with general partial specifications).

Technique limited to one particular type of problem that is labelled FI.