

# **Incorporating uncertainty in CAD systems**

## **Development of XML Schema**

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**05/03/2002**

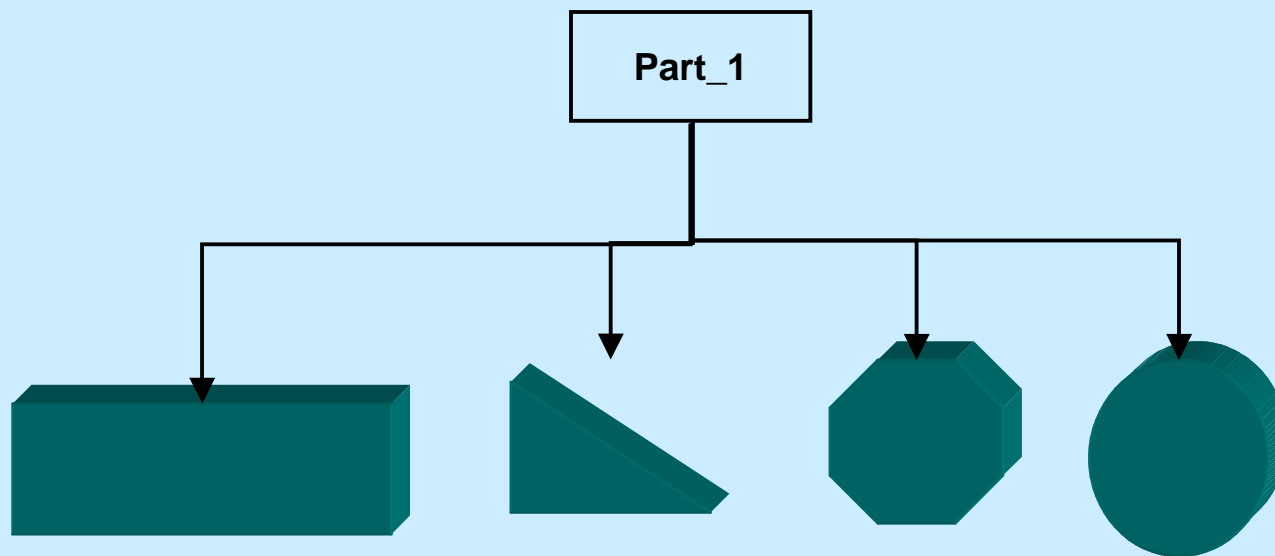
**Jitesh H Panchal**

**Michael Carone**

**Injoong Kim**

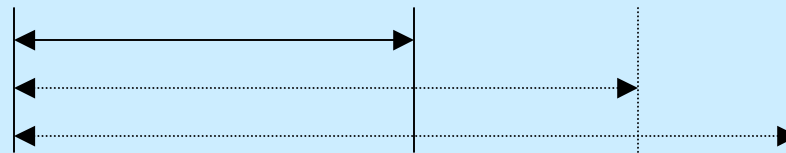
Engineering Information Systems Lab, [eislabs.gatech.edu](http://eislabs.gatech.edu)

## ■ Geometry Uncertainty of Part

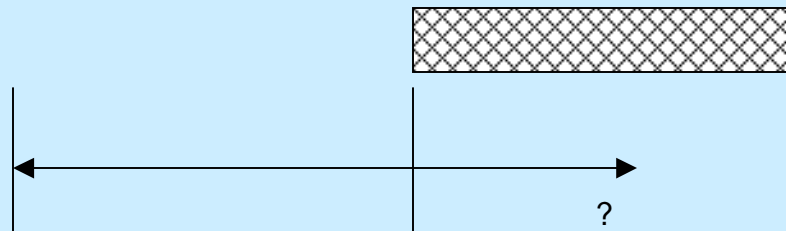


# ■ Dimensional Uncertainty of Part

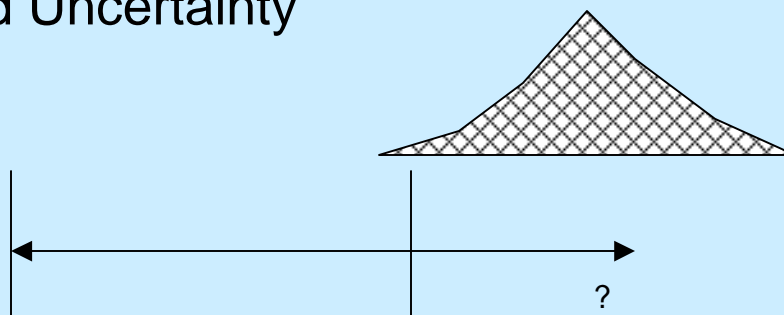
## (1) Discrete Uncertainty



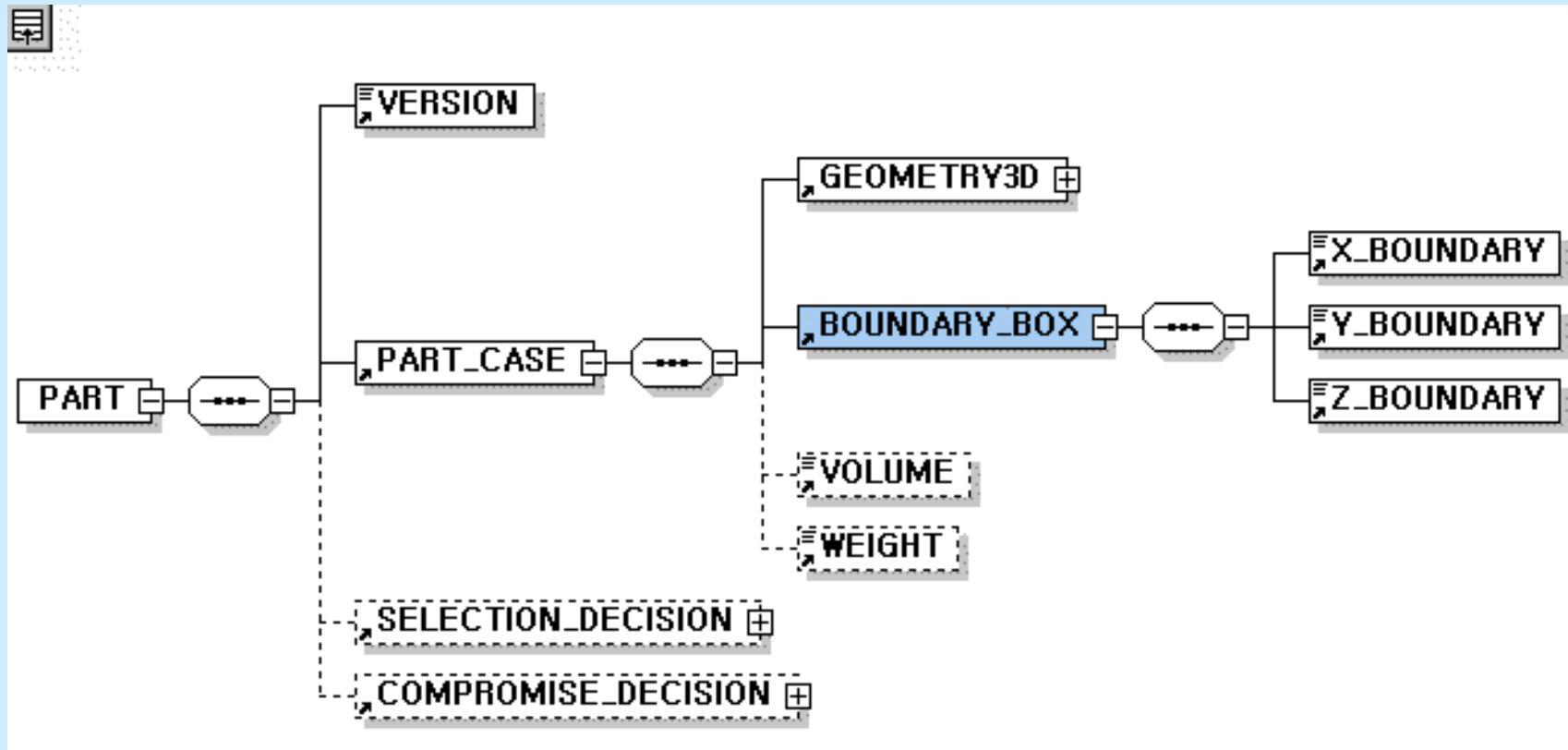
## (2) Uniform Uncertainty



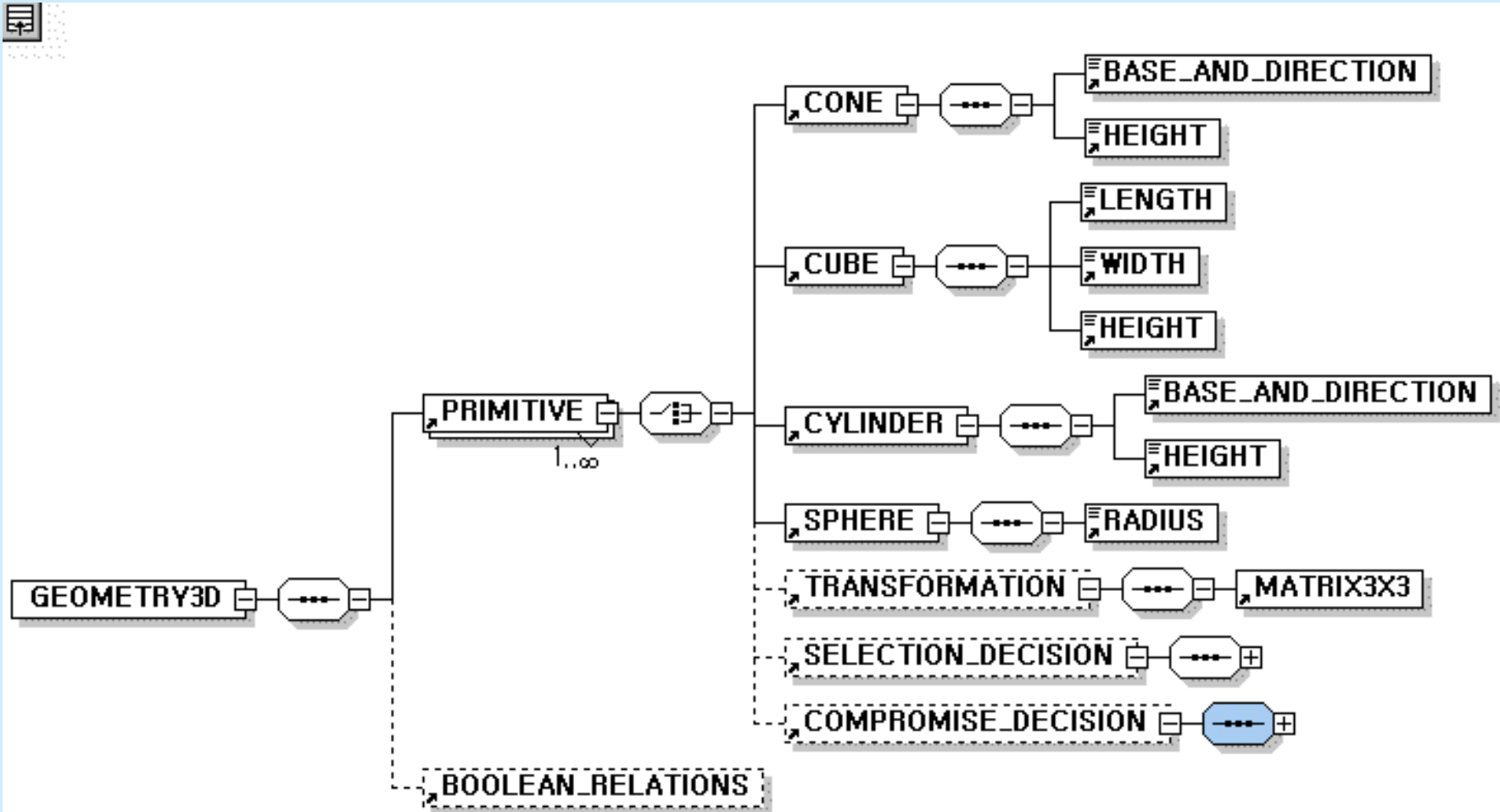
## (3) Distributed Uncertainty



## ■ XML Schema for part



# XML Schema for geometry from Design XML

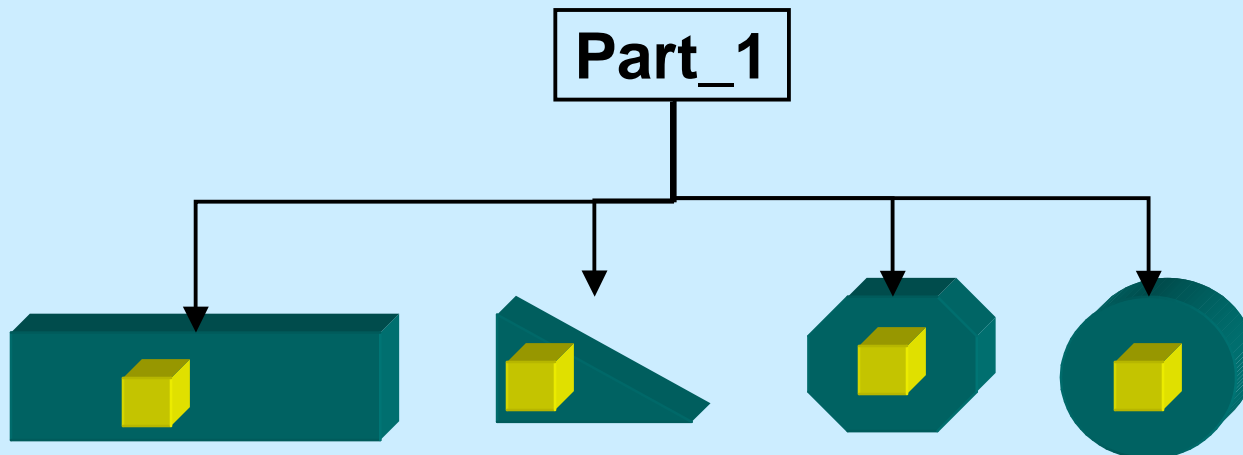


# ■ Boundary Box Concept for Assembly

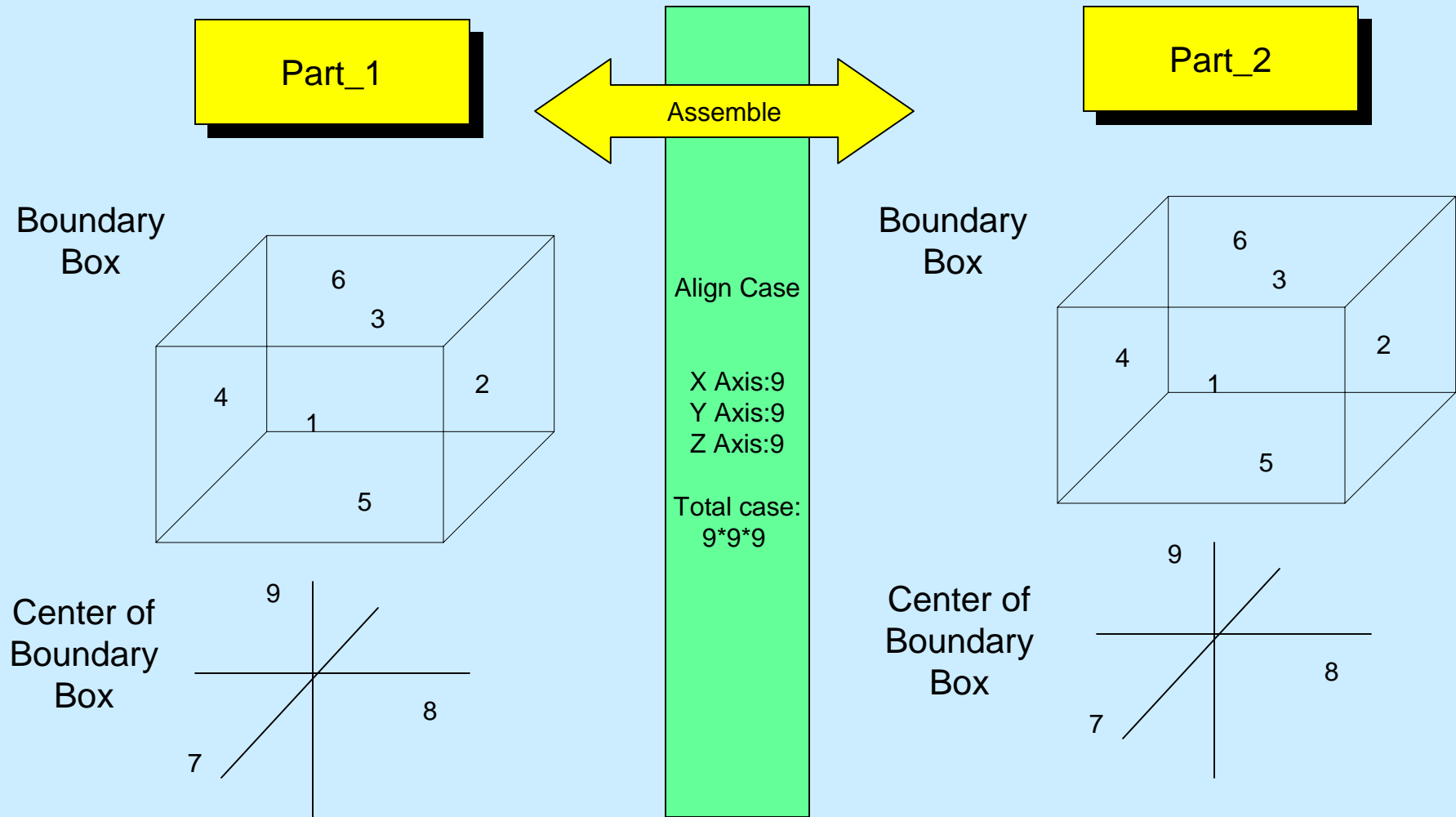
(1) Boundary Box



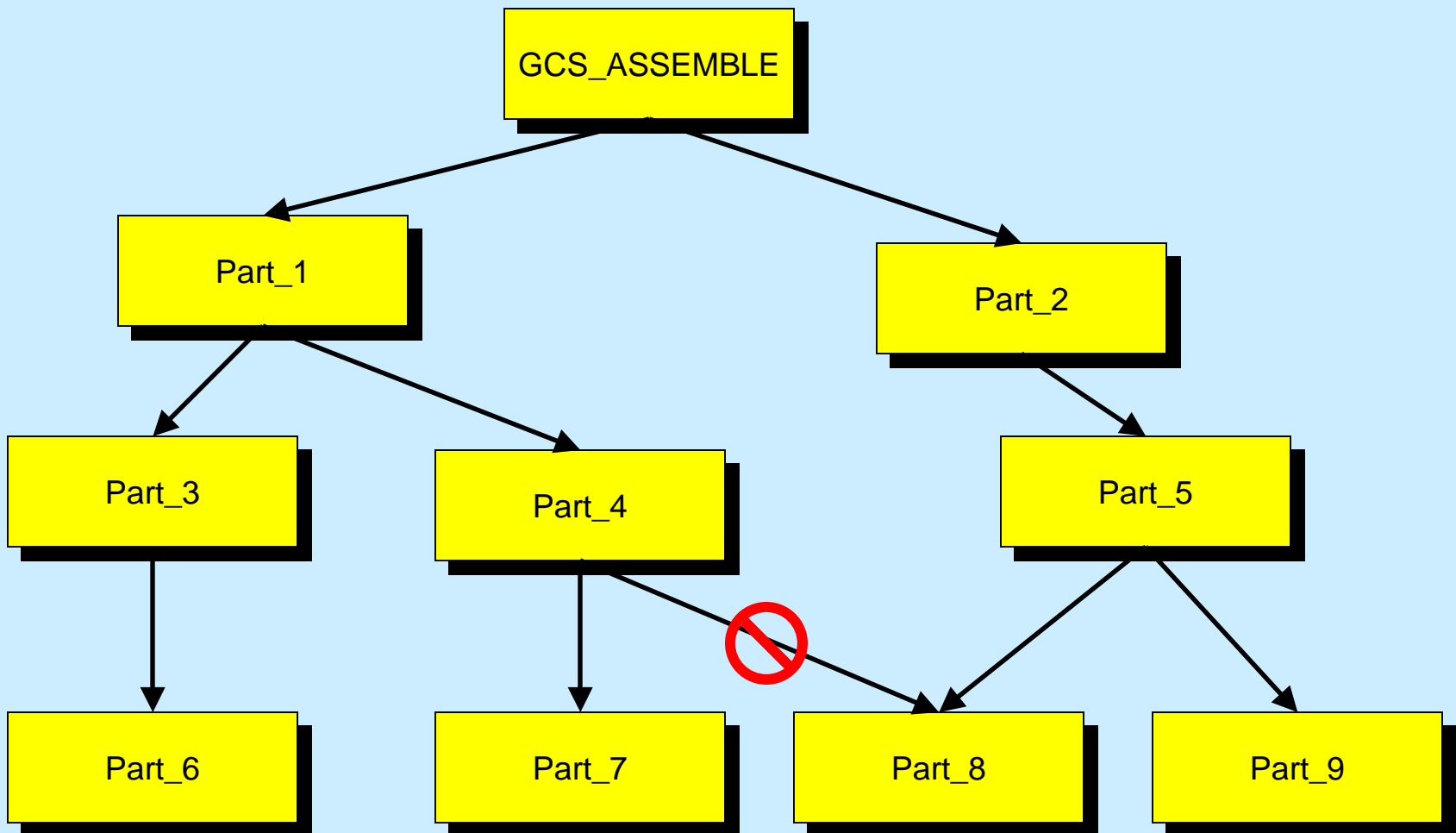
(2) Alternative way : Developing Interfaces



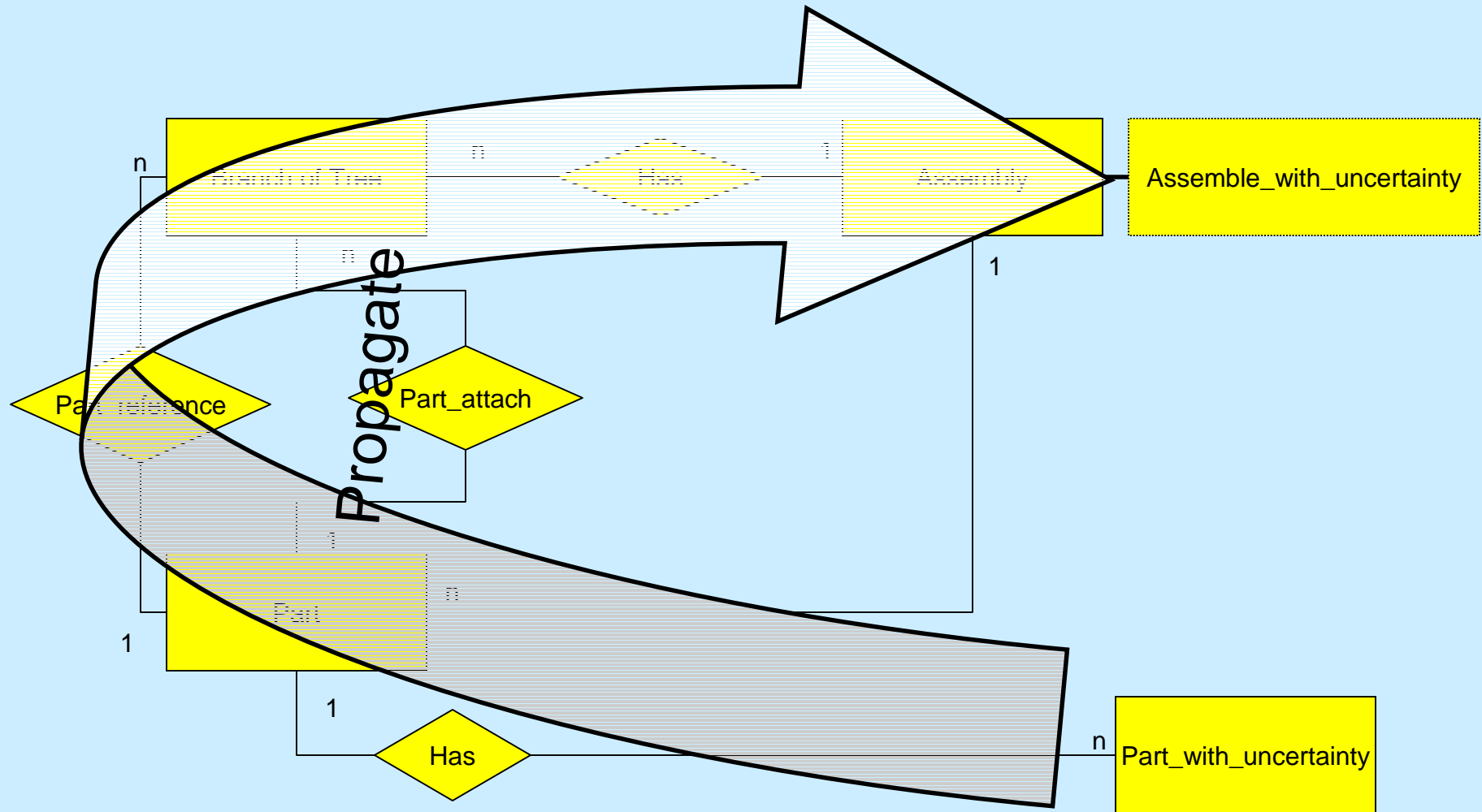
# ■ Mating Cases between Two Parts



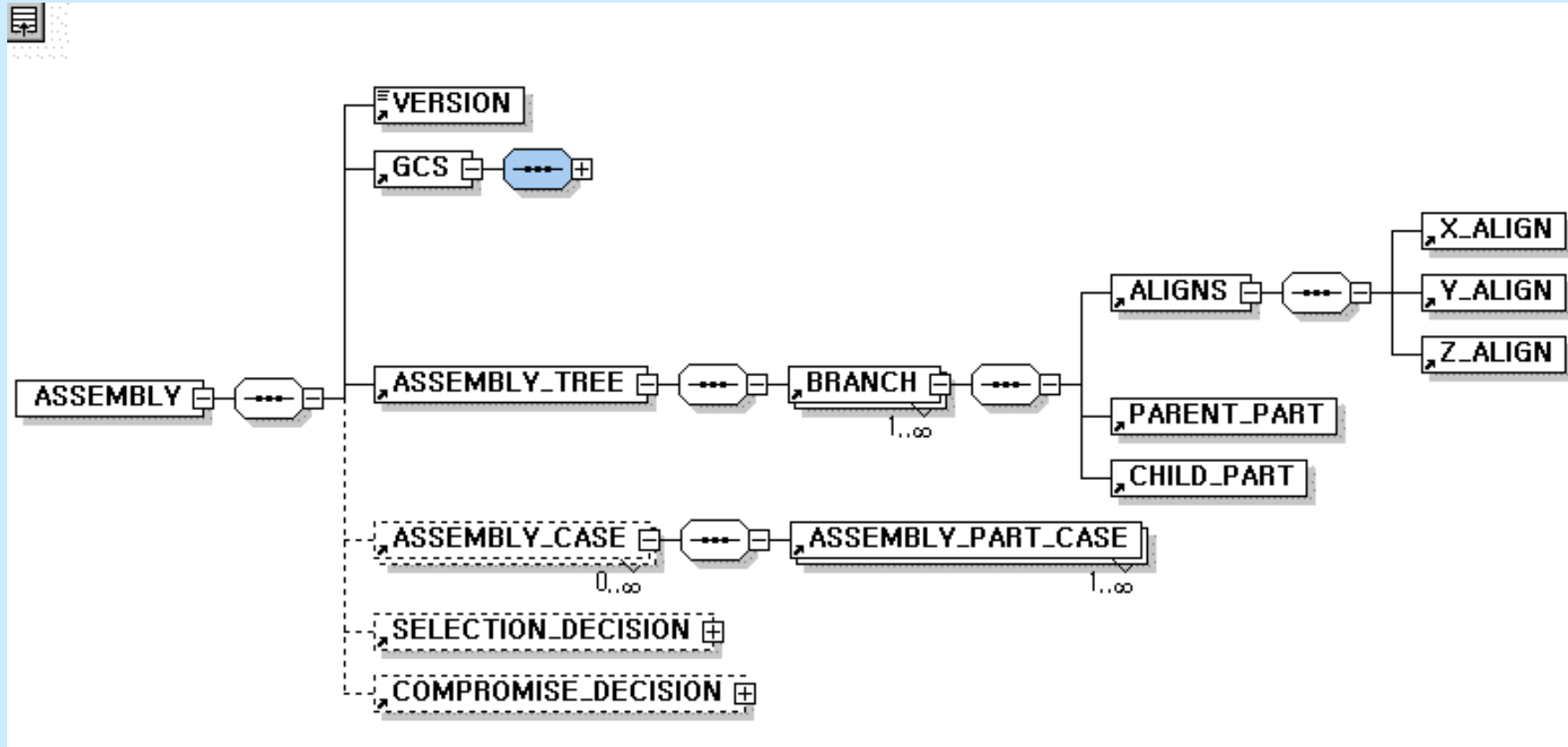
## ■ Simplified Assembly Tree



# ■ Propagation of Uncertainty of Parts to Assembly

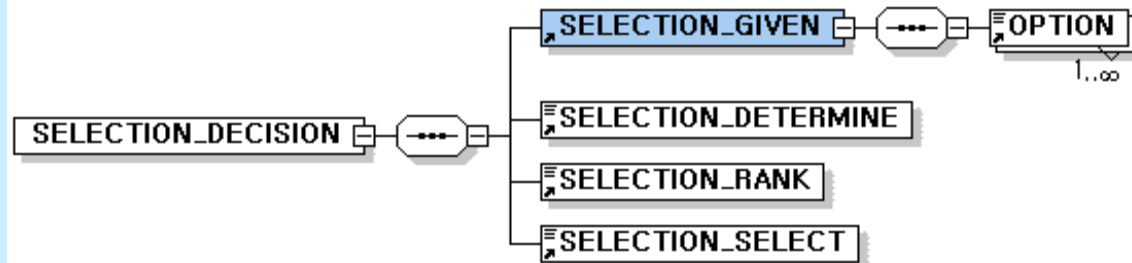


# XML Schema for Assembly

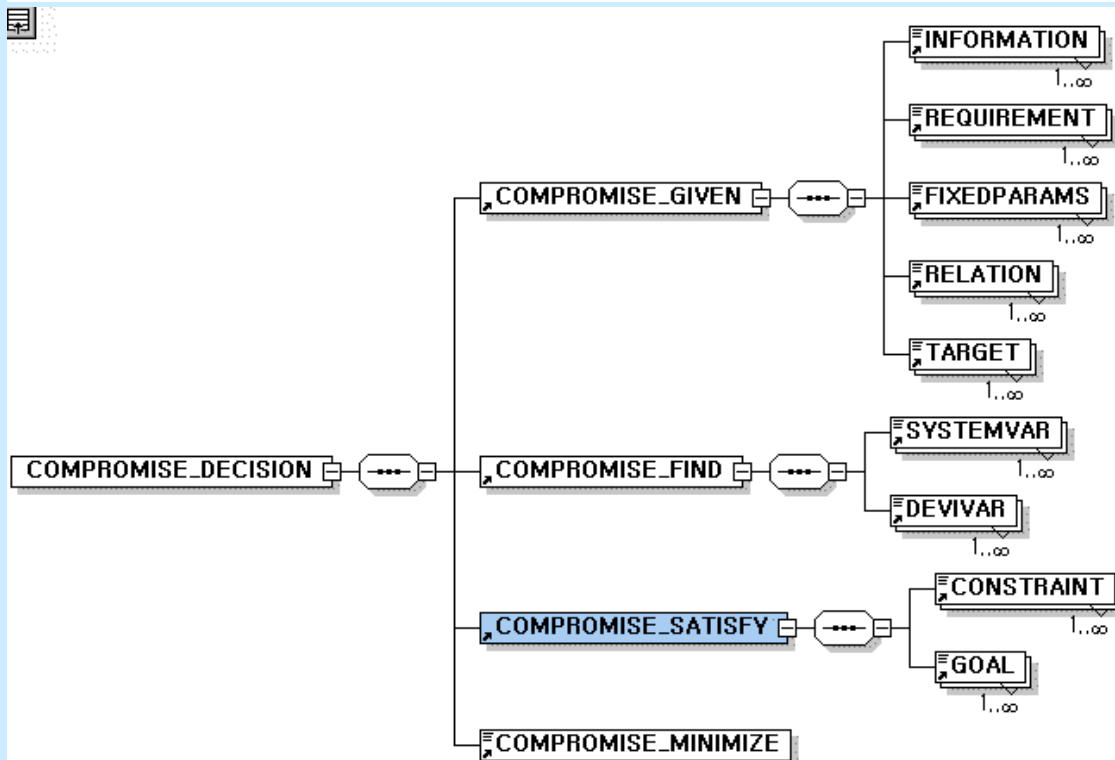


# ■ Evaluation

## (1) Selection



## (2) Compromise



# XML Schema for Design with Uncertainty

