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# Are Domain-Specific Models Easier to Maintain Than UML Models?

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# Objectives

- Proponents claim that a key driver of DSM is easier comprehension of system structure and behavior, which should make evaluating and maintaining the models easier.
- But, DSM haven't yet gained wide acceptance in practice, because the claims of increased productivity and ease of understanding haven't yet been verified by independent studies.
- We investigate this through the following research question: Does DSM improve the maintenance performance of designers, compared to general-purpose modeling using UML?
  - How each type of modeling language affects model comprehension
    - Syntax & Semantic
  - The correctness of changes
  - The degree of changes made during a maintenance task

# Research Design

- 64 senior undergraduates IT students
  - Advanced UML training
  - EMADSM (Enterprise Mobile Application DSM) training
  - Time: UML >> EMADSM
- The experimental task involved designing a mobile-phone application for conference registration.
  - Symbian S60-based mobile-phone application framework
- Randomly split the participants into DSM and UML groups.
  - Gave them a high-level textual description of the system objectives and requirements.
  - Asked them to perform the maintenance task, which involved modifying the models to satisfy a new requirement for the application.
  - After performing the task, the participants answered questions evaluating their syntactic and semantic comprehension and the models' changeability.

# Discussion

**Table 1**

**A comparison of UML and domain-specific modeling in maintenance performance**

Dependent variable	Unit	UML	DSM	p value
Syntactic accuracy	The percentage of correct answers	66.4	70.3	0.03
Semantic accuracy	The percentage of correct answers	68.8	76.4	0.03
Correctness of change	The score on a 100-point scale for the changes' correctness	68.5	83.2	<0.01
Degree of change	The number of "steps" involved in incorporating the change, weighted by each step's size	8.7	4.6	<0.01

**Figure 1. A comparison of comprehension and changeability (the ease of modifying a model) between UML and domain-specific modeling (DSM). DSM is better in both model comprehension and model changeability.**

