Representation Issues for Reengineering Interactive Systems
Melody M. Moore
College of Computing, Georgia Institute of Technology
ACM Computing Surveys, Vol. 28, No. 4es (Dec. 1996), Pages 199-es

This paper originated in a position statement prepared for the Workshop on Strategic Directions in Computing Research.

Introduction
- Maintenance activities account for 70-80% of software lifecycle.
- 48-100% of code for interactive systems is user interface code!

The Representation Issue
- A foundational issue in reengineering in general is the abstract representation of the system.
- Representation must be complete and robust enough to represent adequately all functional requirements of the user interface throughout the evolution process.
- Design representations are not intended to support recovery of a system-level interface specification from a legacy application.
- Design representations do not adequately address the special issues that arise in the reengineering process.

Requirements for Reengineering

Levels of Abstraction
- Ideal behavioral specification of the system is an abstract form with enough detail to allow appropriate user-interface techniques to be chosen in the new interface domain.

Separation of User Interface from Computational Code
- User interface can be maintained separately from the application semantics.

Constructability
- Significant advantage is gained if the specification generated from reverse engineering can be automatically transformed to executable code. See User Interface Management System as an example.
Reasoning

- Allows the analyst to ask questions about the function of the code and can formally prove issues such as equivalence.

Architectural Restructuring

- Legacy systems tend to be computation-dominant.
- Modern systems tend to be dialog (interface) dominant.
- Reengineering representation must handle both.

Domain Support

- Domain analysis may provide a basis for recognition of domain-specific patterns in code.

Interaction with Other Models

- Extraction of a user interface occurs at several different levels and requires several different models.

Conclusions

- This is a paramount nascent technology area.
- Major goal is to develop representational systems that can handle legacy systems as well as generate new systems.