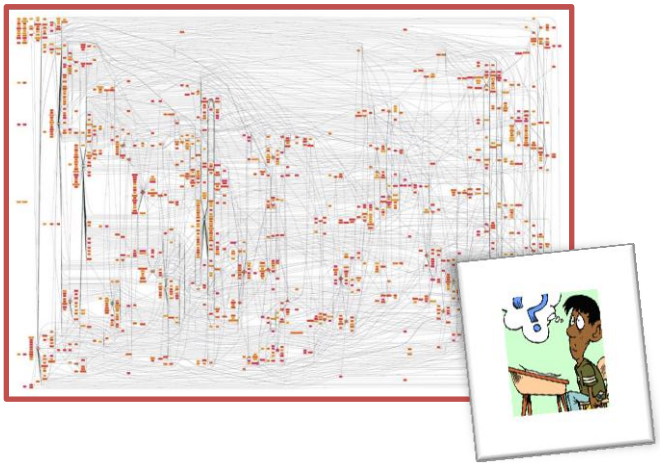
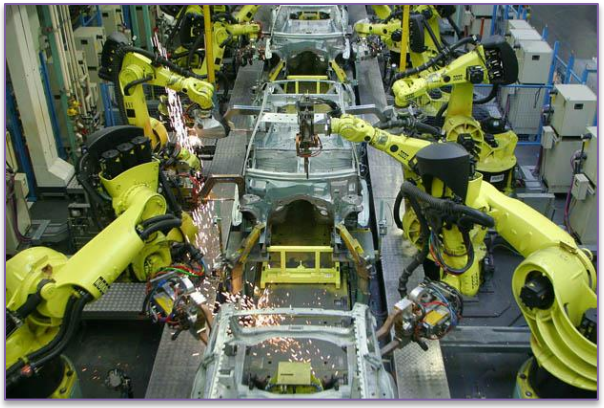
Problem: Teaching in the Small

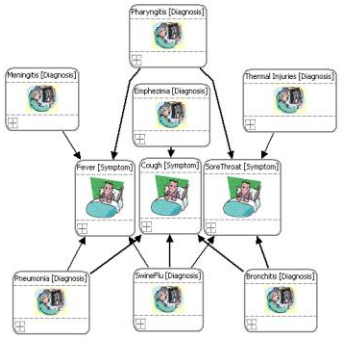
- ***How important is the role of examples & associated models in such a course? How important is it to use models of real problems?***
  - Even in coding, examples that students see in an undergrad curricula are often tied to small examples that do not highlight the challenges of real development that has different scale

- Need for deeper scale examples that show challenges of engineering changes in the presence of complex underlying heterogeneous platforms; students may gain appreciation of challenges they were unaware
- Example contexts
  - Cloud variations, mobile computing platforms, different robot vendors
- Challenge is implementing this scale in presence of single assignment; perhaps benefits more in case of individual research experience rather than course-based



Highlighting Modeling Benefits





Problem: Teaching Syntax

- ***How to overcome the bias some students have against using modeling in software?***
  - Many current courses focus on teaching syntactic issues of UML
  - Missing: Topics of creativity, social impact, general abstraction, broader issues of modeling benefit
  - Comparison to new effort in USA for K-12 CS Education
    - Current focus on teaching syntax of Java
    - Introduction of new "CS Principles" course with broader application and understanding of computing
    - Concentrates on "Big Ideas" of Computer Science
    - What are the "Big Ideas" of modeling that motivate its usage in a way that is more appealing than learning about the specific semantics of state diagrams

Modeling for Non-Majors

- Most CS departments teach general CS literacy courses to non-majors
  - Does a similar modeling course also make sense?
- What would a modeling course for non-majors look like?
  - Perhaps not UML; screams for DSMLs
- Similarities and differences:
  - What are the things taught in this class that would **not** be taught in a similar course for CS majors?
  - What things would be taught in this class that would also be taught in a similar course for CS majors?