HUMAN COMPUTER INTERACTION RESEARCH

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Human-Computer Interaction (HCI)

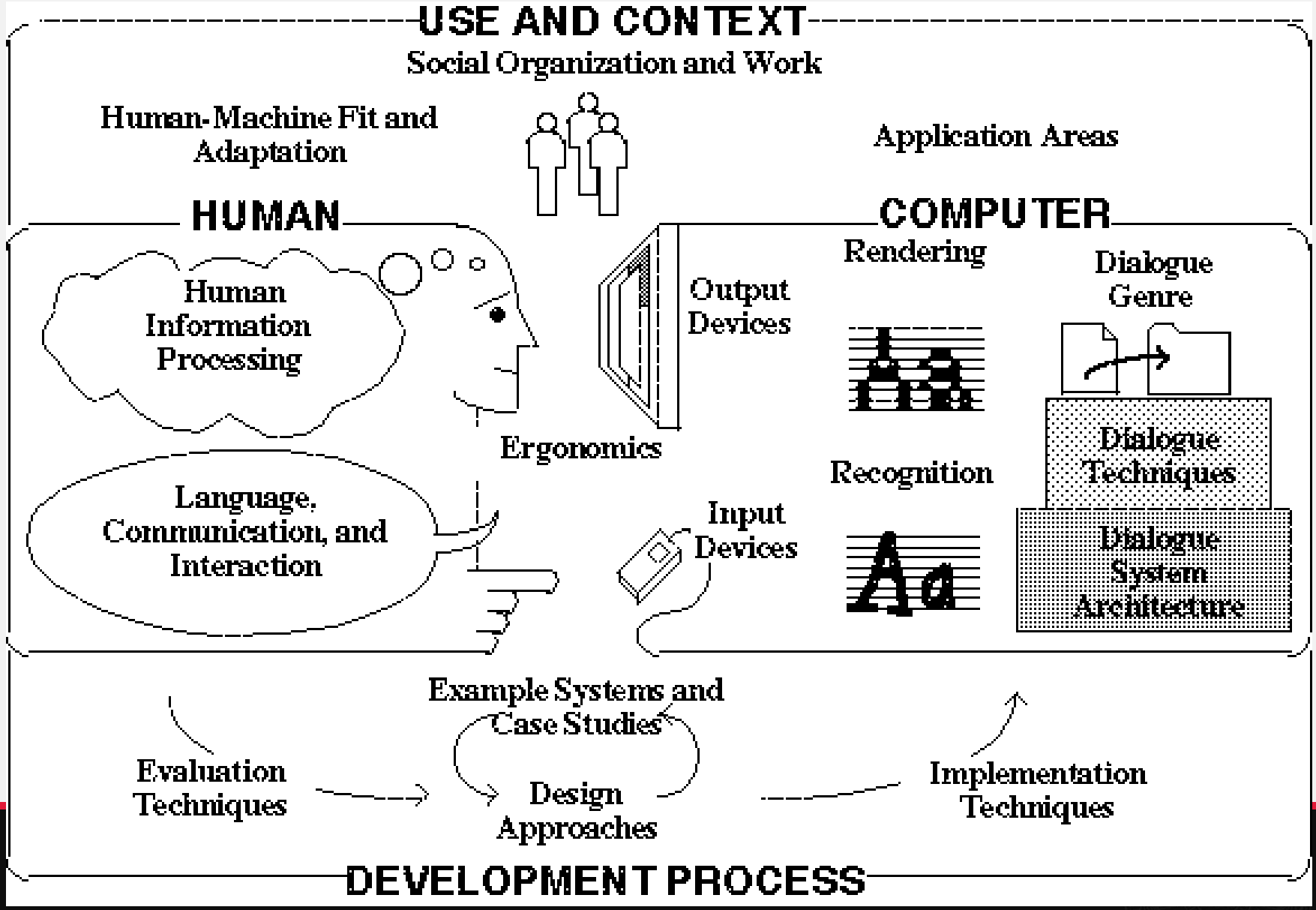
HCI research focuses on improving the quality of the interaction between an individual and a computer.


REQUIRED
DAYS A WEEK
7:00 a.m. - 10:00 p.m.
STEP 1 PUSH ANY BUTTON TO START UNIT
STEP 2 FOLLOW DIRECTIONS ON DISPLAY
STEP 3 TAKE RECEIPT PLACE ON DASH

Human-Computer Interaction

- Human
  - the end-user of a program (you and me)
  - the others in the organization
- Computer
  - the machine the program runs on
- Interaction
  - the user tells the computer what they want
  - the computer communicates results

What is HCI?


USE AND CONTEXT
Social Organization and Work
Human-Machine Fit and Adaptation
Application Areas
HUMAN
COMPUTER
Human Information Processing
Output Devices
Rendering
Dialogue Genre
Ergonomics
Recognition
Dialogue Techniques
Language, Communication, and Interaction
Input Devices
Dialogue System Architecture
Example Systems and Case Studies
Evaluation Techniques
Design Approaches
Implementation Techniques
DEVELOPMENT PROCESS

HCI is concerned with...

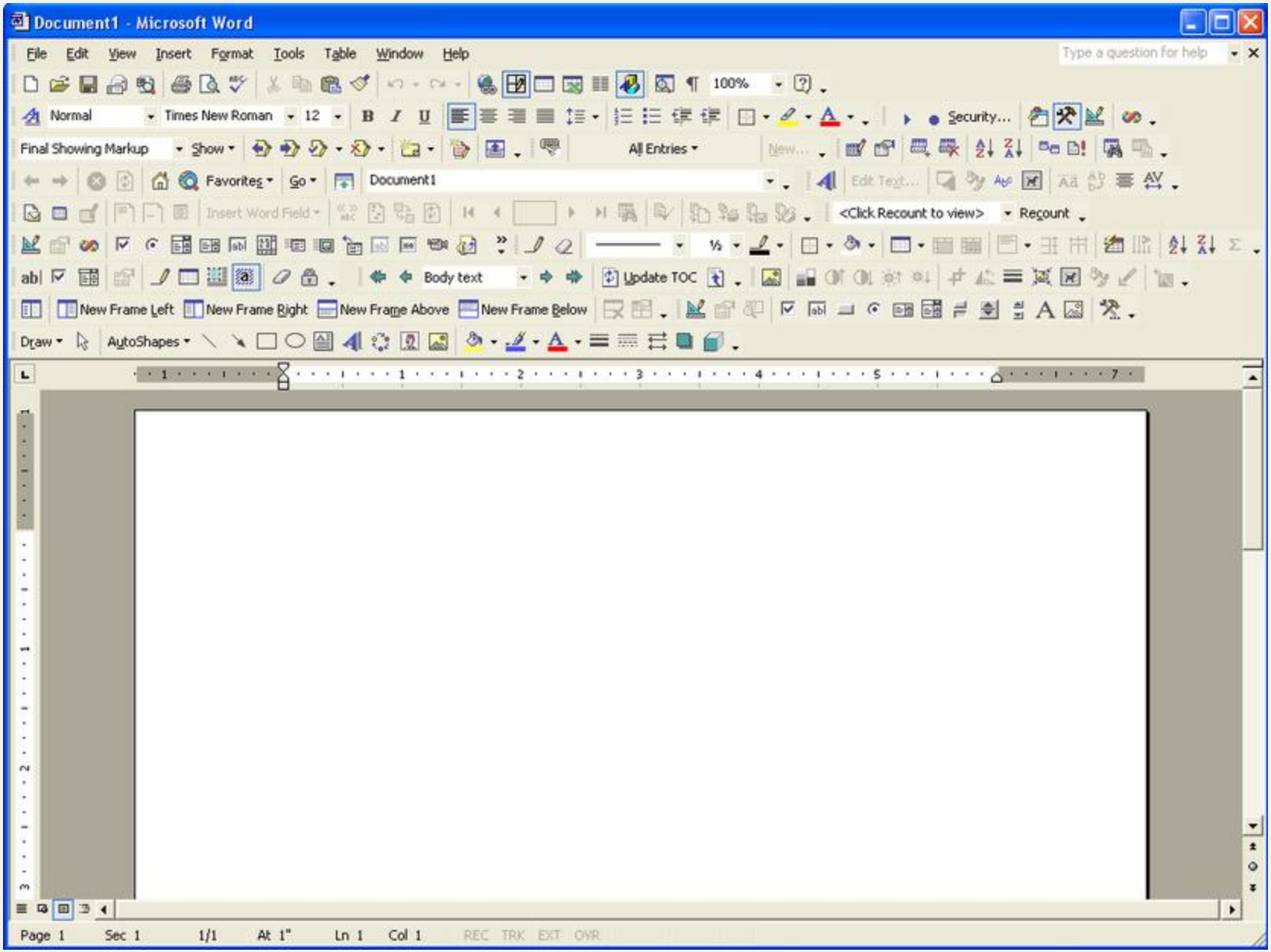
- the *joint performance of tasks* by humans and machines;
- *human capabilities* to use machines (psychology)
- the process of *specification, design, and implementation* of human-machine systems; and design trade-offs.
- HCI is *multidisciplinary*, comprising topics from computer science, cognitive science, psychology, engineering, ergonomics, human factors, and social and organizational psychology.

User Interfaces

- What are user interfaces (UIs)?
  - Part of a system that allows
    - users to interact with computer, allowing users to carry out tasks
- NOT necessarily software-related
  - Human Factors/Ergonomics
  - i-pad, phone, smart watch, examples...

Why Study User Interfaces?

- Major part of development for programs
  - As much as **90%** of code for some UIs
- User interfaces are hard to perfect
  - general population with diverse characteristics
  - people are unpredictable **Bad** user interfaces **cost** organizations:
  - Money (5 % satisfaction relate to profits by up to 85 %)
  - Lives…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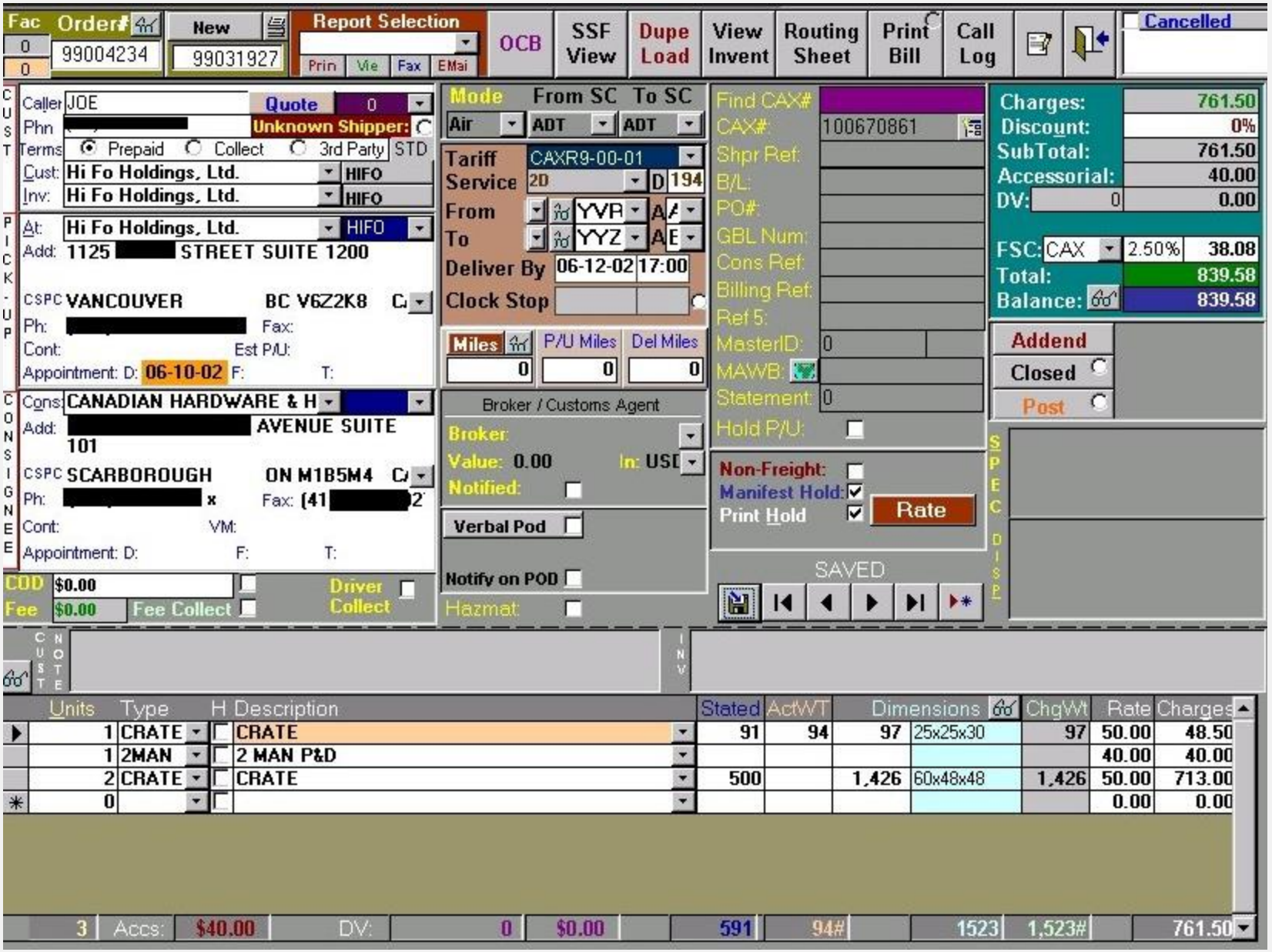
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What is Usability?

- Ease of learning
  - requires little formal training (learn as you do)
- Recall
  - remember how from one session to the next
- Productivity
  - perform tasks quickly and efficiently
- Minimal error rates
  - if they do occur, good feedback so user can recover
- High user satisfaction
  - confident of success

Cognitive Walkthrough Analysis

- Berge, M., Fossum, M., Fruhling, A. (2012). A Cognitive Walkthrough and Focus Group Study of Nursing Personnel to Improve EHRs used in Nursing Homes, Scandinavian Conference on Health Informatics 2012.

User Interface Evaluation of PDAs

- Hansen, L., Fossum, M., Fruhling, A. (2012). Experiences of Nursing Personnel using PDAs in Home Health Care Services in Norwegian Municipalities. Proceedings for 11th Conference in Nursing Informatics, Montreal, Canada, June, 2012.

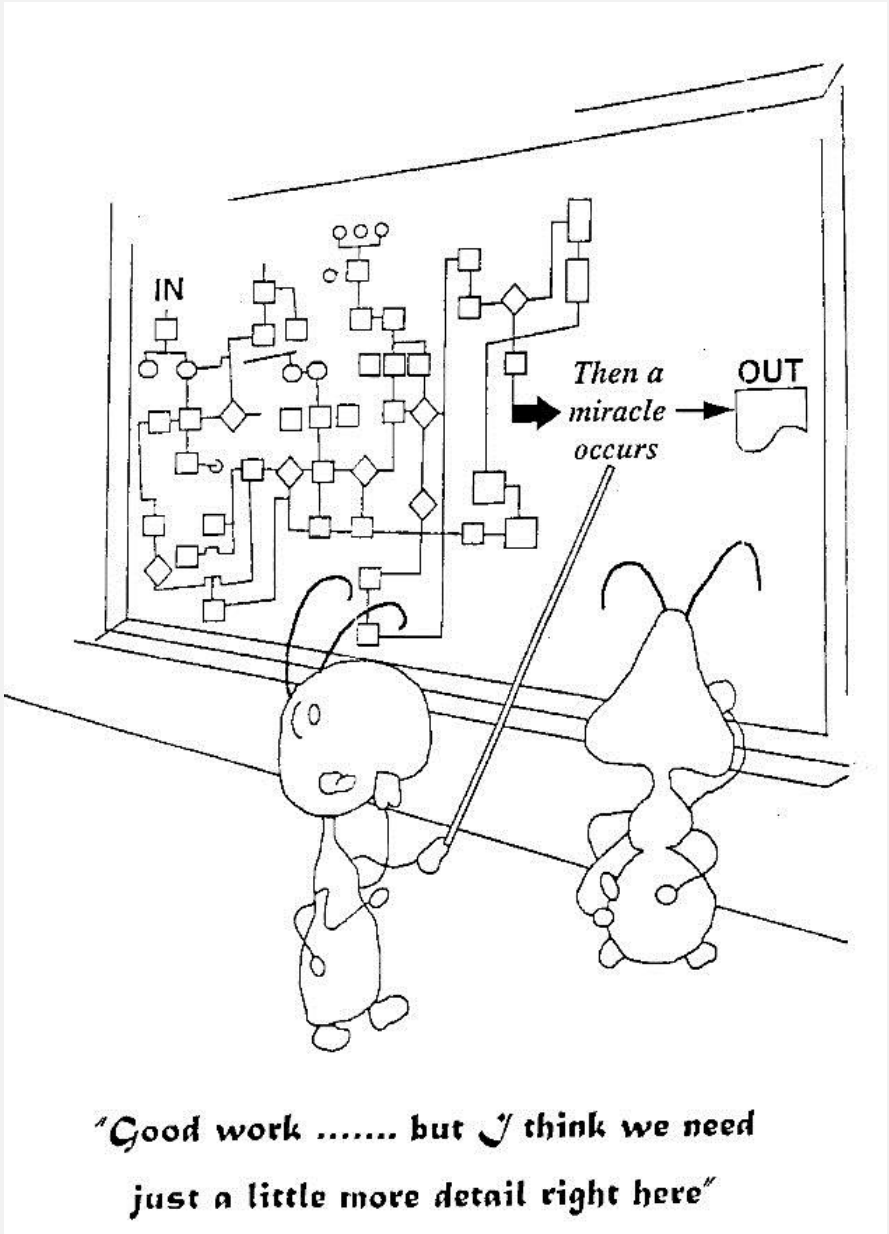
Other Joint Research

- Fossum, M., Ehfors, M., Fruhling, A., Ehrenberg, A. (2012). The Experiences of Using a Computerized Decision Support System. Proceedings for 11th Conference in Nursing Informatics, Montreal, Canada, June, 2012 (Poster).

- Fossum, M., Ehnfors, M., Fruhling, A., Ehrenberg, A., (2011), "An Evaluation of the Usability of a Computerized Decision Support System for Nursing Homes", *Applied Clinical Informatics,* ACI 2011 2 4: 420-426. http://dx.doi.org/10.4338/ACI-2011-07-RA-0043.

Why

collaborating with information science researchers might be a good idea!!



University of Nebraska Omaha