

Interaction Design in a Mobile Clinical Decision Support System: The MET System Example

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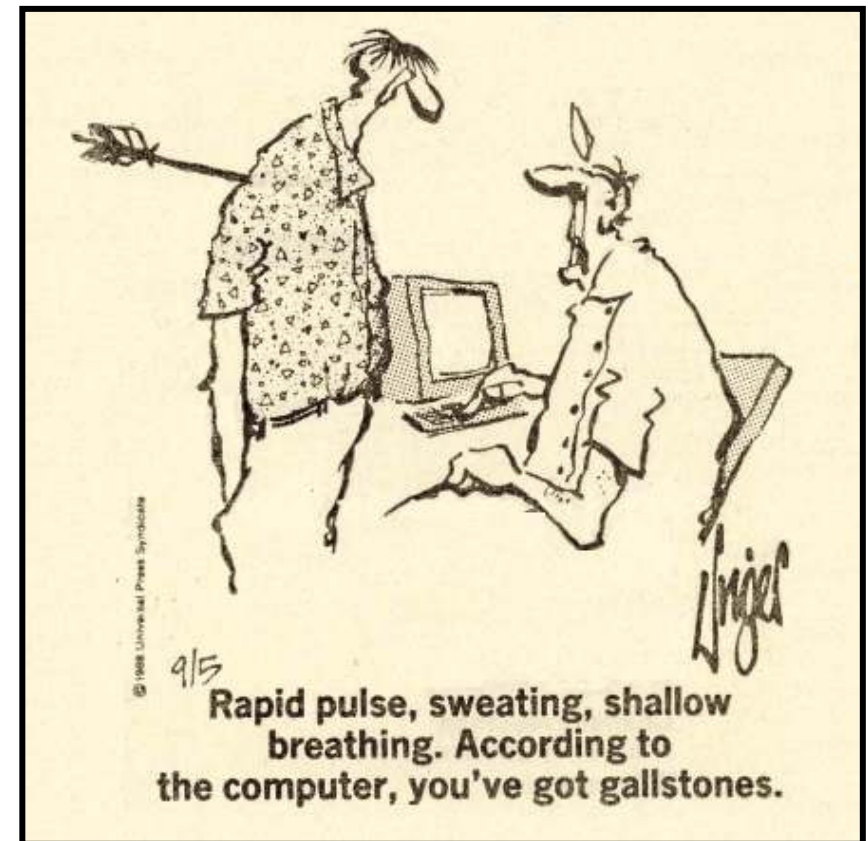
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Introduction

- Clinical Decision Support Systems (CDSS) developed to aid health care professionals:
 - Deal with the constantly growing amount of clinical information that has to be collected
 - Process and analyze data to support making evidence-based and cost effective decisions
 - Improve healthcare processes and patient outcomes





Interaction Design

- ❑ Matching users tasks to system functions
- ❑ Organizing communication between the user and the system
- ❑ Designing the interface

Motivation

- CDSs within decision support research focus tends to be on creating good decision models rather than on creating user friendly/usable systems
- Poor interaction design can cause more problems than the system is intended to solve
- When clinical/medical devices fail to support the tasks they were meant for they frequently contribute to medical error
- This ultimately leading to diminished quality of health care.

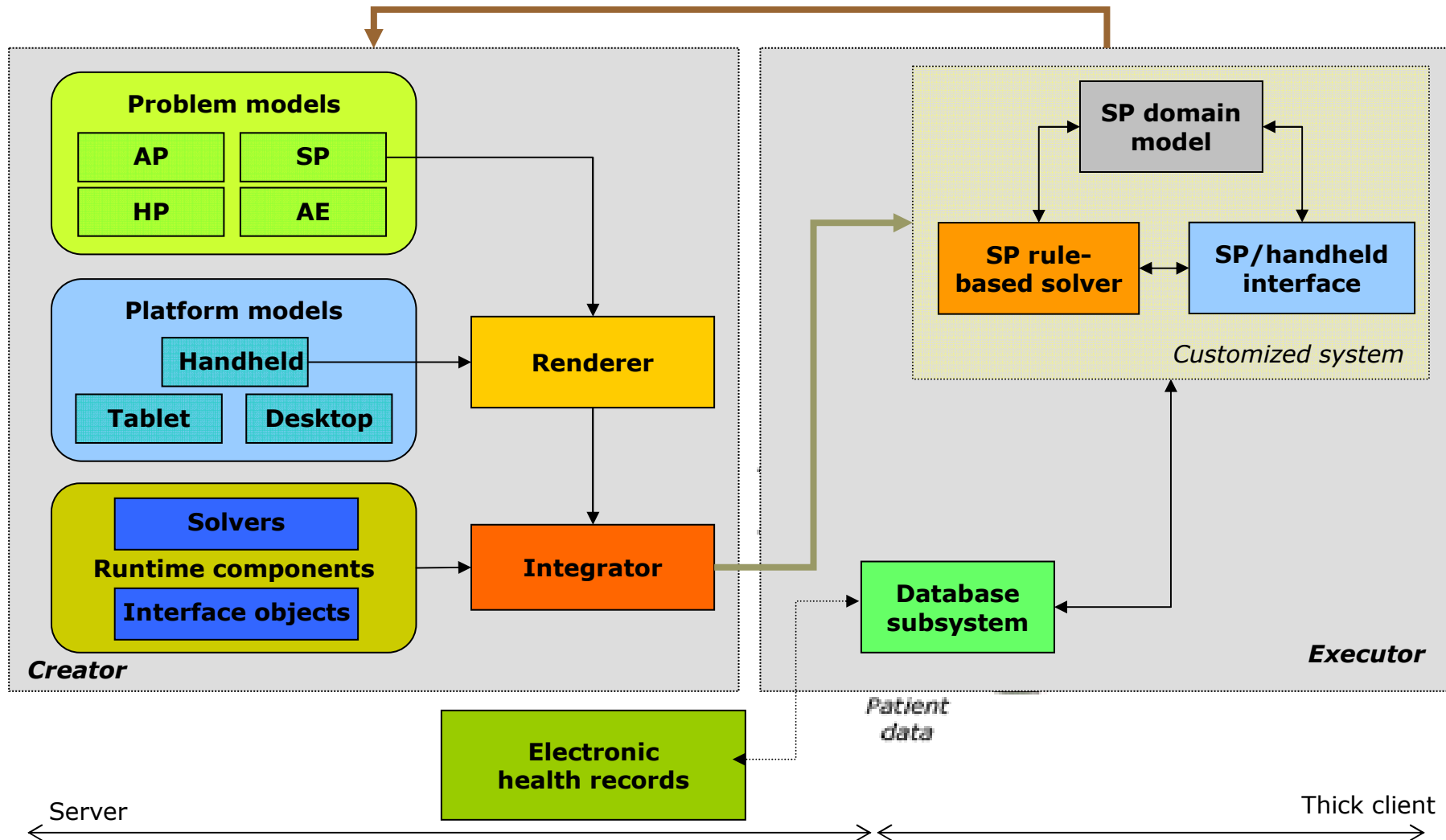
MET: Mobile Emergency Triage

- ❑ Ubiquitous clinical support system
- ❑ Supports emergency triage of children with different acute conditions at the patient's bedside
- ❑ Runs on a variety of platforms (handheld, tablet, desktop)



The MET System

Request to support triage of scrotal pain (SP) coming from a physician using handheld

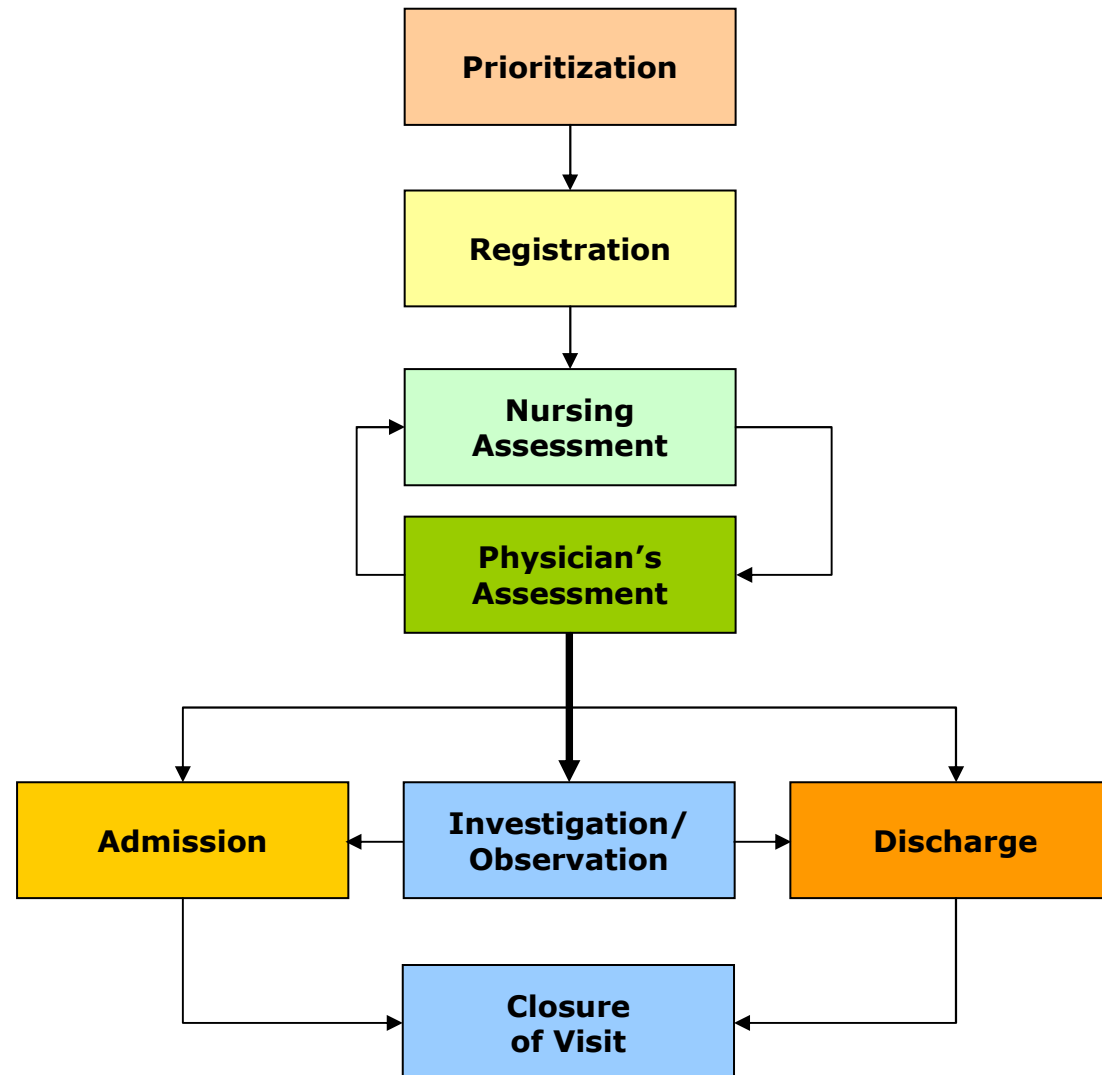




MET Interaction Requirements

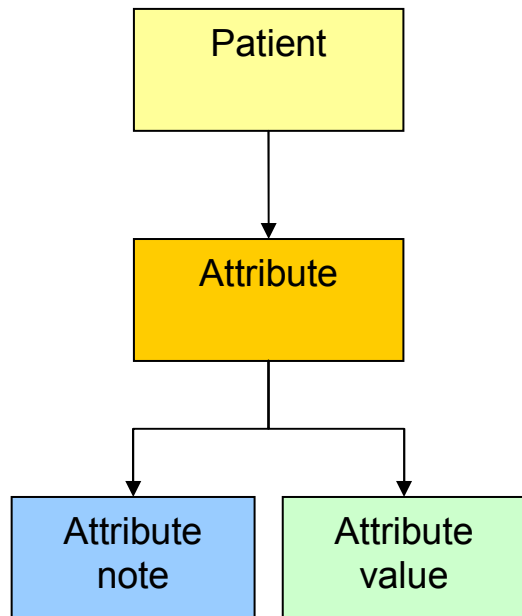
- Minimize possibility for error
- Easy to use, intuitive, no cognitive burden
- No obstruction to the task at hand
- *Alignment to the workflow*

Triage Workflow

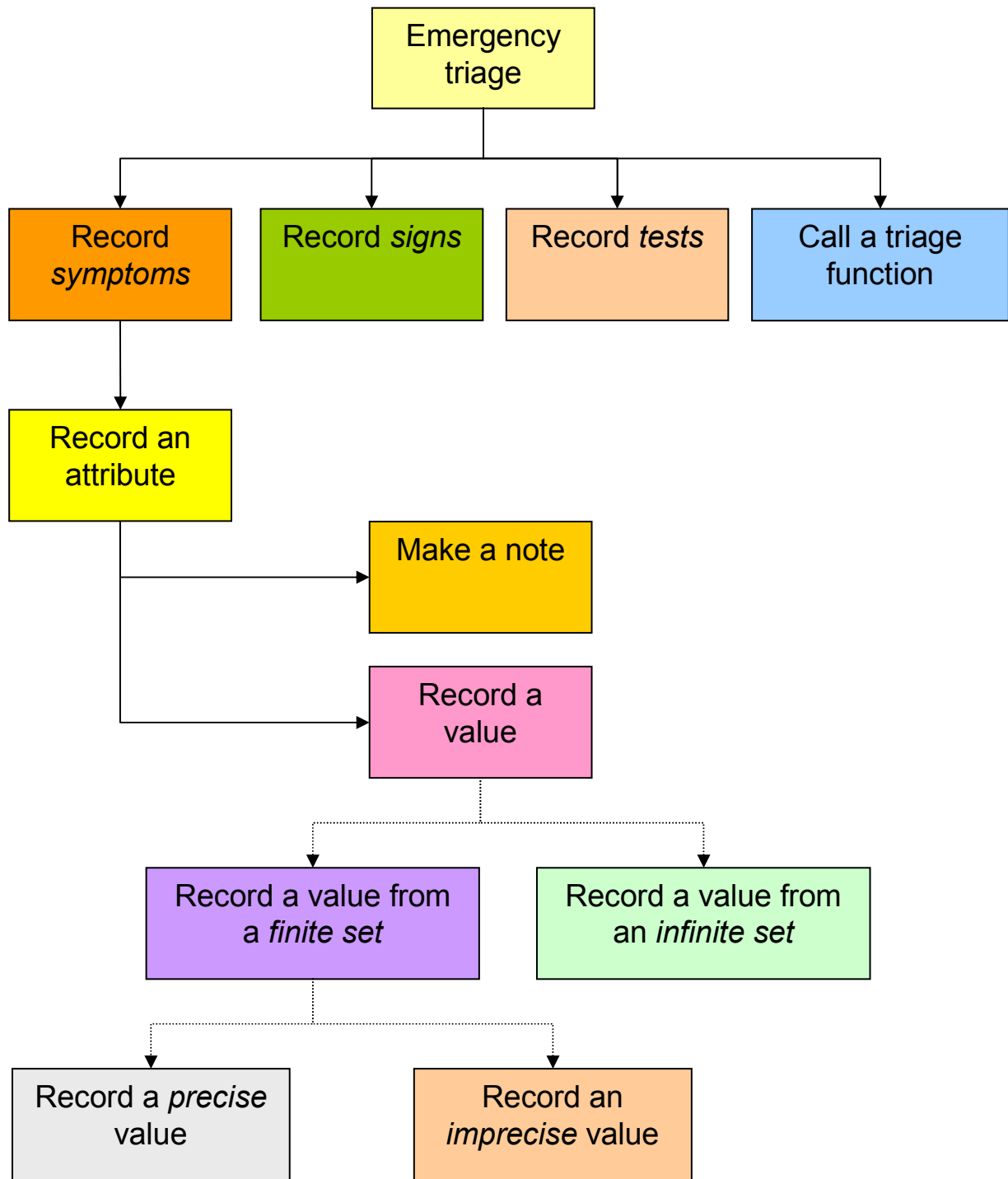


MET Interaction Solutions

- In order to align the interactions with the triage workflow we focused on:
 - matching clinical tasks to system functions (*OAI model, Scenario-based design*)
 - organizing communication between users and the system (*OAI model, scenario-based design*),
 - and designing a usable interface (*Domain-specific design, Eight Golden Rules of Interface Design*).



Objects



Actions







MET Evaluation

- MET-AP underwent successful clinical trial (7 months, 574 patients)
- Not possible to do an empirical clinical study for interactions framework, however, MET-AP received positive feedback during the clinical trial

Conclusions

- Important to focus on interaction design of any DSS in order for it to successfully integrated into intended domain.
- Many interaction models and guidelines exist and appropriate ones to the domain should be adhered to.

Thank you

- Please visit us at:



www.mobiledss.uottawa.ca

Clinical Trial Results

	Staff Physician Assessments (n=457)	Resident Assessments (n=339)	Difference Between Physician Type for Method
MET-AP Triage Accuracy	72.2% (67.9, 76.1)	69.3% (64.2, 74.0)	2.9% p=0.755
MD Prediction Accuracy	70.2% (65.9, 74.2)	62.8% (57.6, 67.8)	7.4% p=1.000
Difference Between Methods for Physician Type	2.0% p=0.518	6.5% p=0.836	