

Ubiquitous Clinical Support: Providing Support at the Point of Care

Wojtek Michalowski

University of Ottawa, Canada

Szymon Wilk

University of Ottawa, Canada

Poznan University of Technology, Poland

Ken Farion

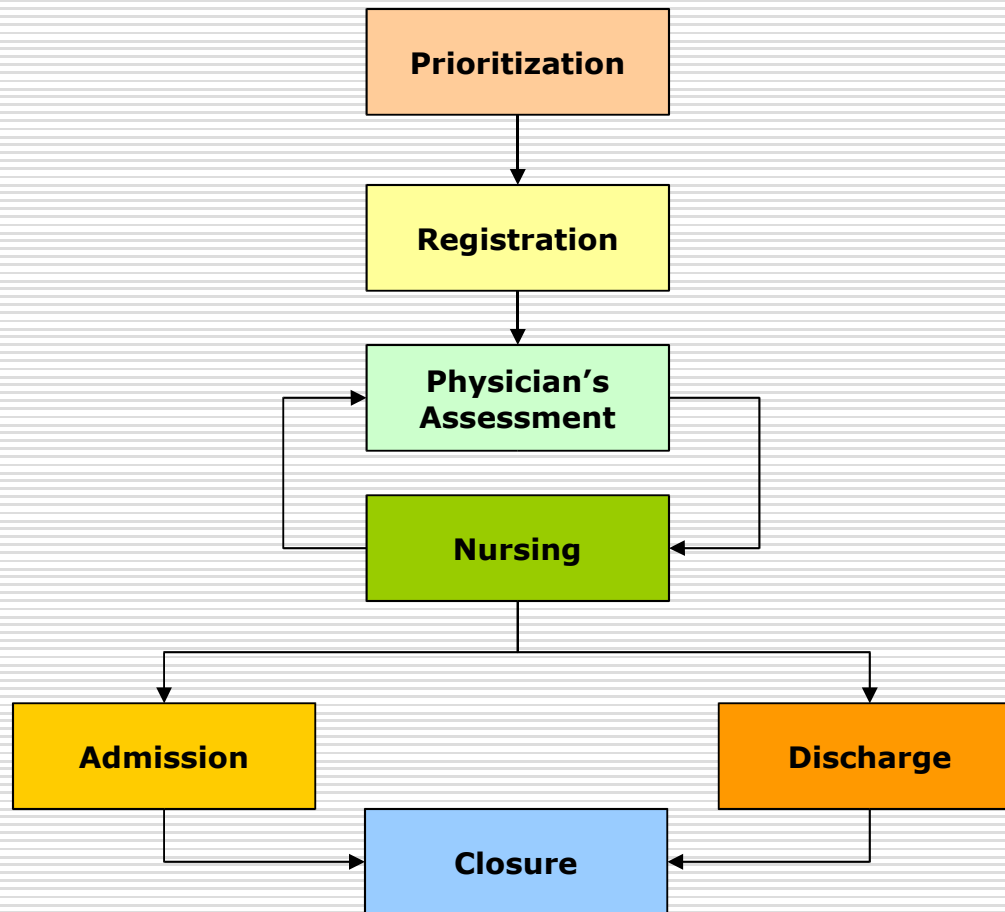
Children's Hospital of Eastern Ontario, Canada



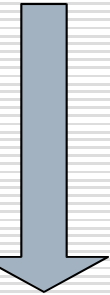
Outline

- Clinical workflow
 - Requirements for a CDSS
 - Model-based architecture (MDA)
 - Ubiquitous framework for a CDSS
 - Implementation of the framework - MET
 - Discussion
-

Clinical Workflow



Clinical Workflow

- Several different functions are provided simultaneously by different staff members
 - Different staff members require different level of support – from general to patient-specific
 - Different staff members require support in different places and at different times – from the point of care to the office, from on-line to off-line
- 
- Ubiquitous clinical decision support
-

Requirements for a uCDSS

- A uCDSS should offer simultaneous and diversified support for multiple users and multiple patient management problems
 - A uCDSS should run on different access platforms – depending on the problem it supports, its location and nature
 - A uCDSS should offer support in „the background“ and in conjunction with electronic patient records
-

Design Requirements for a uCDSS

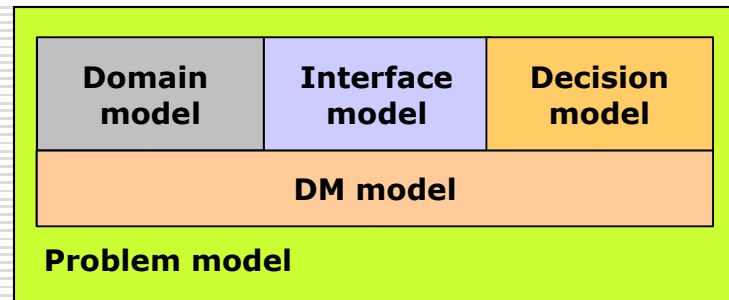
- Developing a specific DSS for each possible combination of problem, user and platform is not feasible (too many possibilities)
- The solution is anytime & anywhere architecture
 - A specific DSS created temporarily on user's request for a specific problem and a specific platform

Anytime & Anywhere Architecture (3A)

- A way of writing specifications and developing DSS, based on models of system components
 - It consists of problem models (domain model, interface model, decision model, DM model) and platform models. Specific DSS (problem/platform) is rendered from these logical models
 - Other architectures are generally tied to a particular problem and platform. With 3A, functionality and behavior are modeled only once.
-

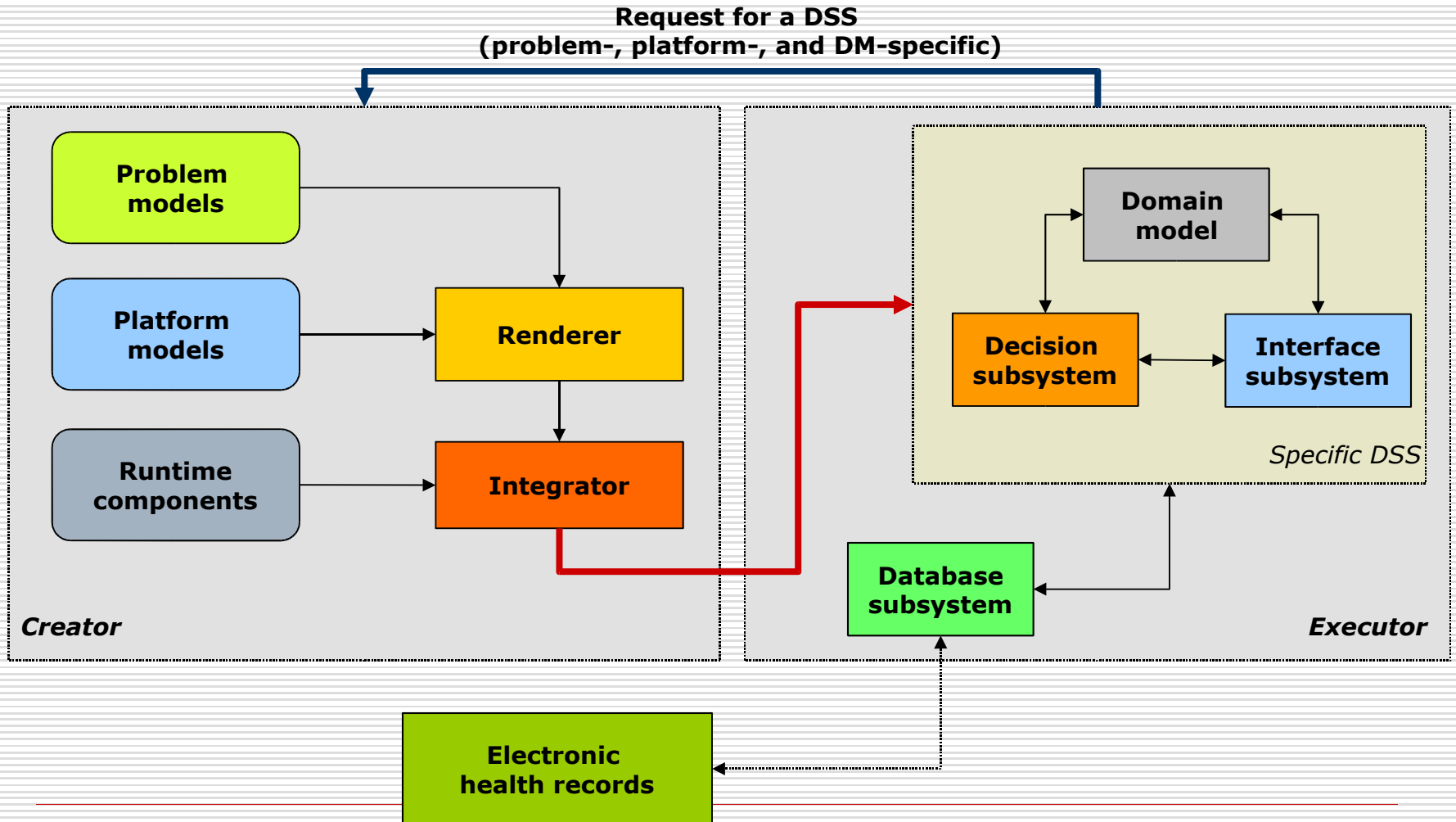
3A for a uCDSS

- Model of a decision problem contains a platform-independent descriptions



- There are different problem models for different clinical decision problems
 - Problem models together with platform models are used to render specific DSS
-

3A for a uCDSS



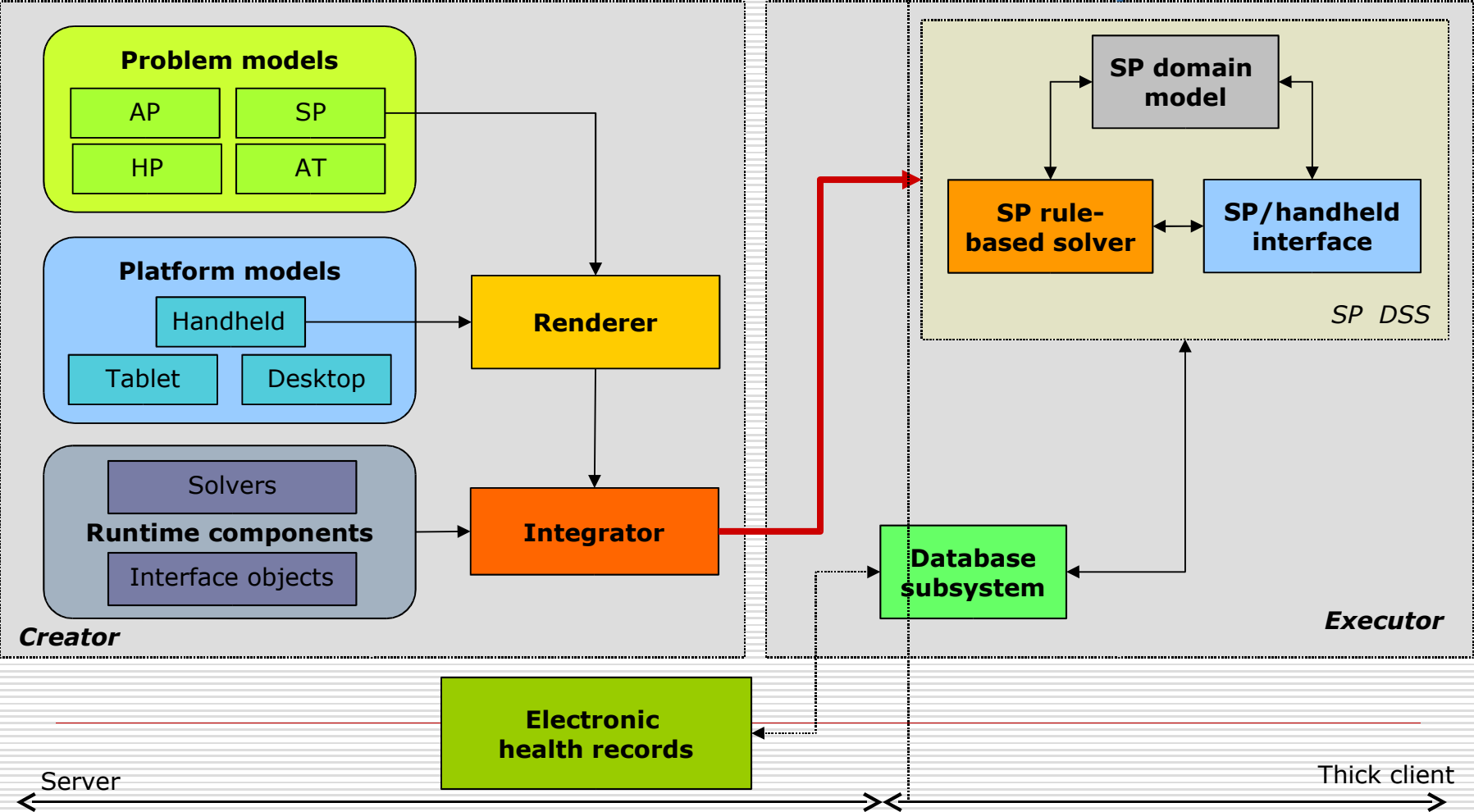
MET System

- uCDSS for supporting triage of acute conditions at the point of care
 - Acute pain (abdominal, scrotal, hip)
 - Asthma
- Runs on a variety of platforms (handheld, tablet and desktop computers)
- Successfully tested in hospital setting during a clinical trial

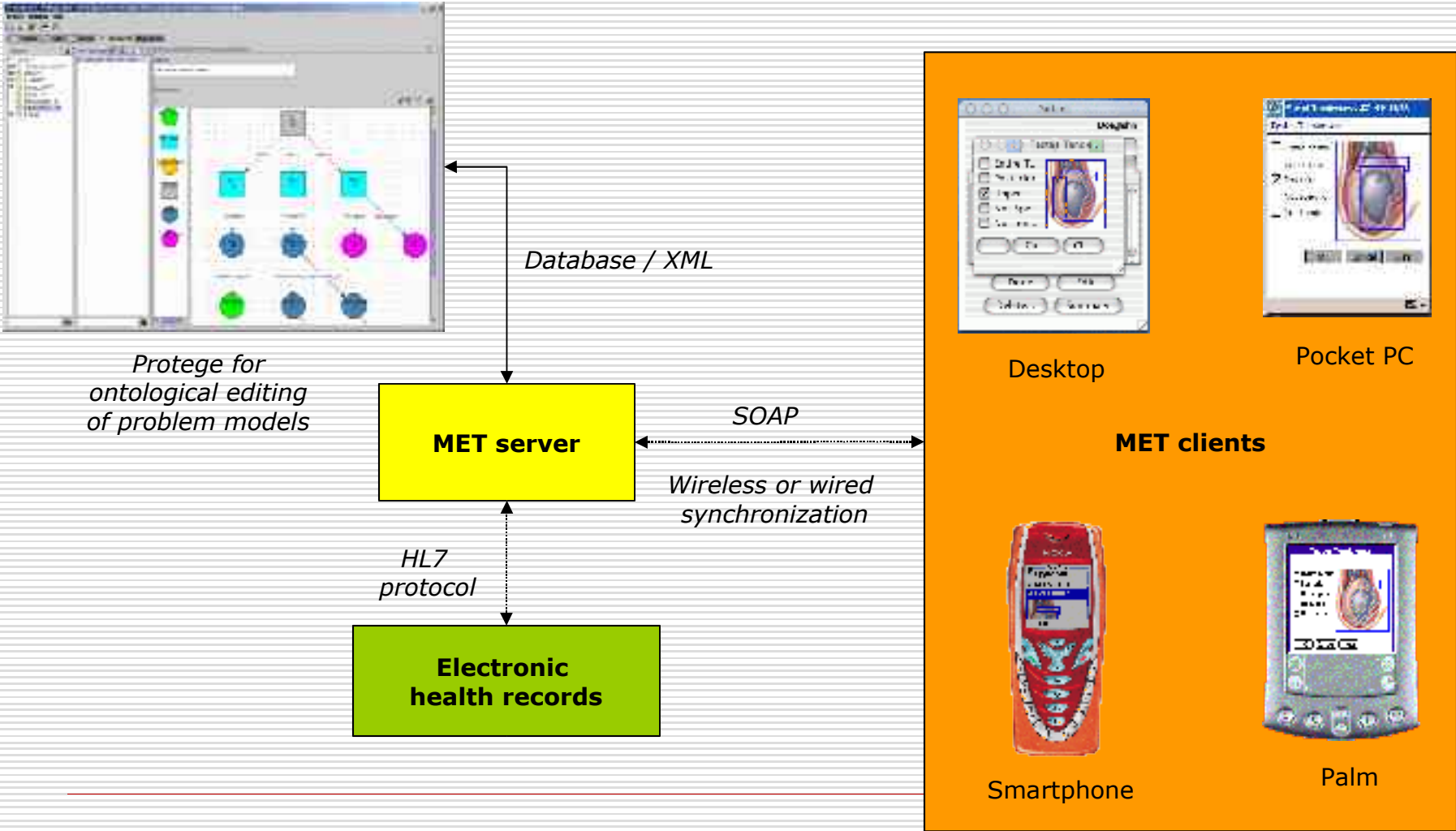


MET Architecture

Request for a CDSS (triage of scrotal pain on a handheld by a resident)



MET Implementation



MET Hospital Trial

- Prospective ED cohort study at CHEO recruiting patients 24/7 with acute abdominal pain
 - More than 100 users (staff physicians and residents) utilizing MET for over 7 months
 - 574 patients evaluated using MET
 - Positive feedback from users and patients
-

Discussion

- Clinical workflow requires ubiquitous decision support for many users and many problems
 - 3A is required for truly ubiquitous support
 - 3A involves „mobility of code” and adaptability of the interface
 - MET is a successful implementation of 3A, tested in a hospital
-

Acknowledgements



Thank You

Visit us at:

<http://www.mobiledss.uottawa.ca>
