

MET System: A New Approach to m-Health Emergency Triage

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MET Project Outline

From Knowledge Discovery

- *capturing the knowledge of the “experienced”*

Through Clinical Decision Support

- *using that knowledge to help the “inexperienced”*

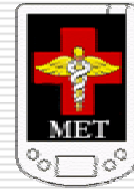
To m-Health

- *bringing the support to the bedside*

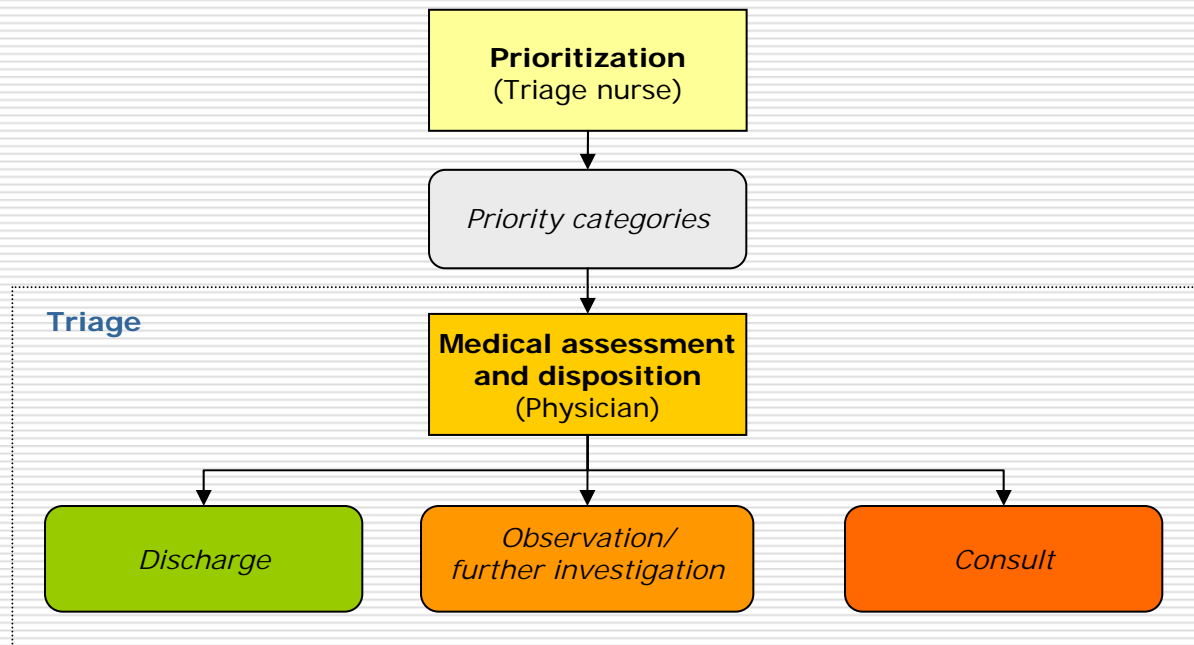


Outline

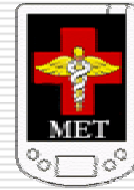
- Clinical workflow for the triage in the Emergency Department (ED)
- Clinical DSS and m-health
- **MET** system
- Abdominal pain in children and clinical trial



Assessment of a Child in the ED



The issue: To facilitate ED triage of acute childhood conditions at the point of care



Clinical DSS and m-Health

- **Clinical decision support systems** (Clinical DSS):
“computer based tools using explicit knowledge to generate patient specific advice or interpretation”
- **e-Health**: providing clinical and medical advice using communication and information technologies
- **m-Health**: providing clinical and medical advice at the point of care using most suitable technologies



Mobile Emergency Triage System

MET is a **Clinical DSS** designed to assist physicians at the point of care with **triage** decisions as to whether a child presenting to the ED with a specific acute complaint should be **discharged** to the family physician, needs **further investigation or observation**, or requires **urgent specialist consultation**



Some Facts

Retrospective chart reviews were conducted during 1993-2003 at CHEO for **abdominal pain, scrotal pain, hip pain**:

- Inductive learning was used to develop a set of clinical rules (clinical algorithm)
- Clinical algorithm was verified with the medical specialists;
- Mobility was introduced by implementing clients on PDAs and tablet PCs
- Retrospective and prospective validation of the system was conducted in a hospital

Providing Clinical Support at the Point of Care

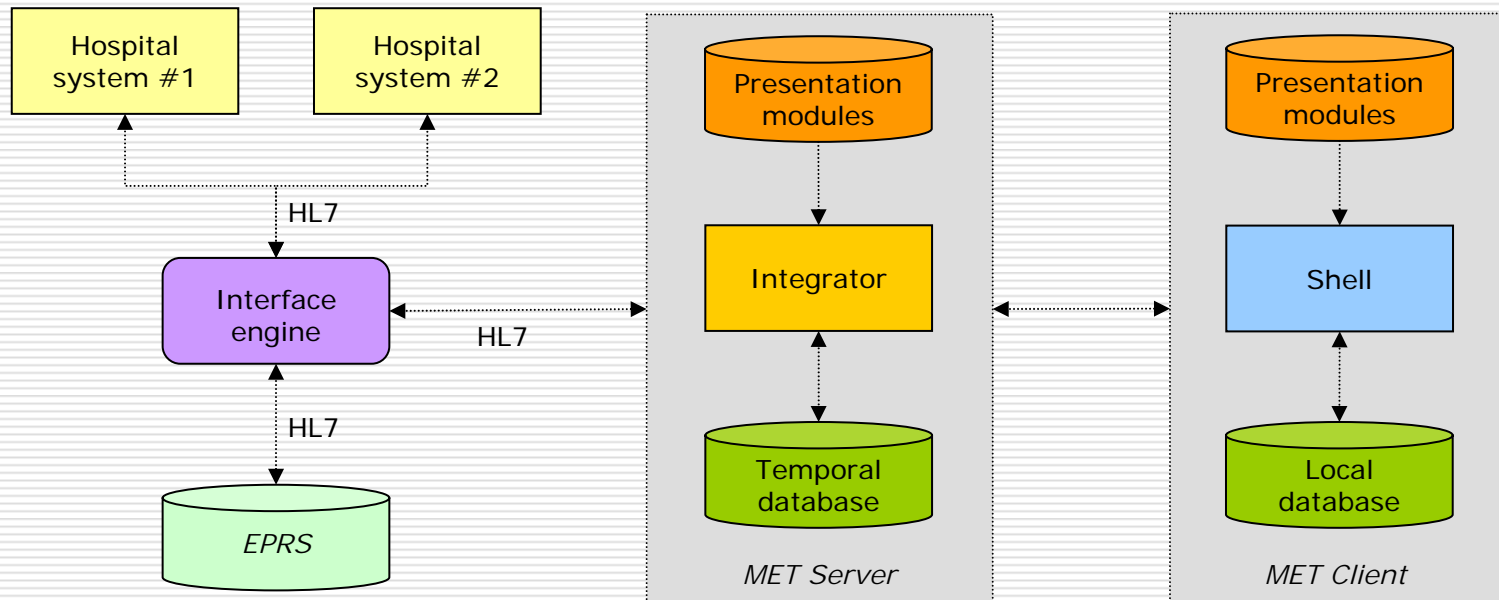


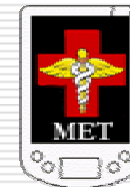
- Need to rely on portable (mobile) computing devices that can also work offline
- Need to have a versatile and context-aware system in order to support complex patient management problems



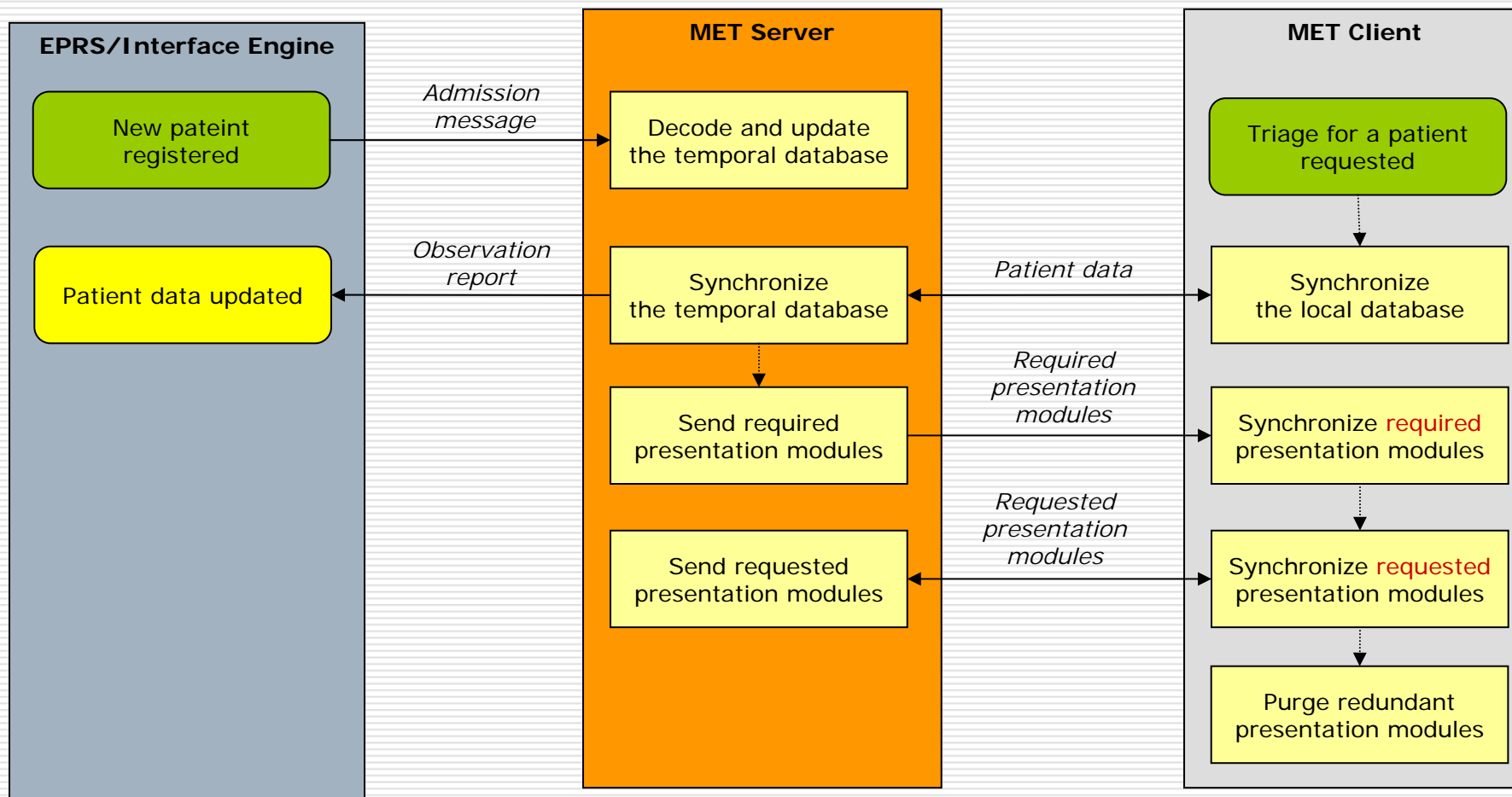
MET Design

- New design: extended client-server architecture



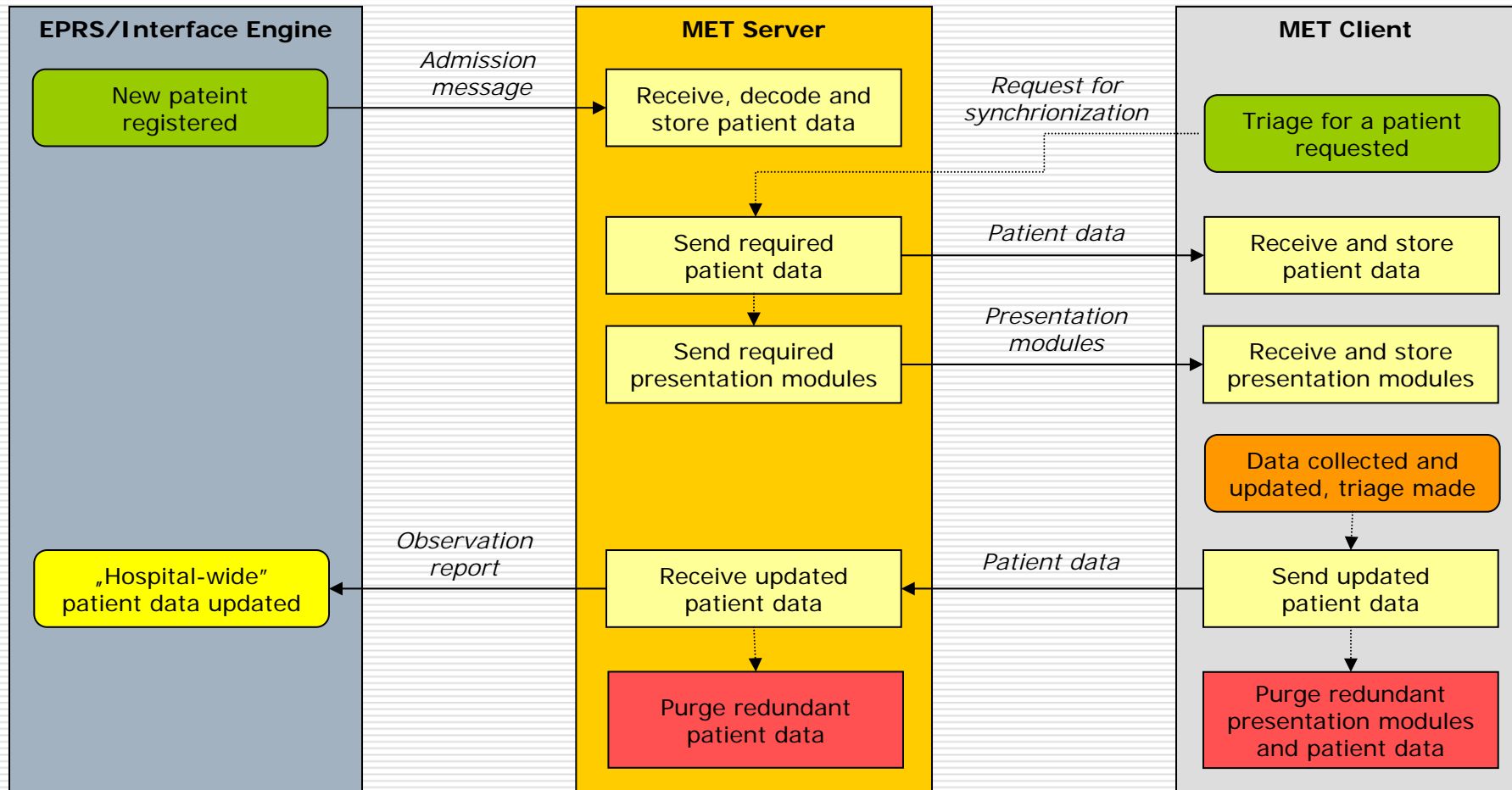


MET Operations (#1)

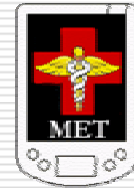




MET Operations (#2)



MET Interactions: Aligning with the ED Workflow



MET Interactions: Natural Mappings #1



MET Interactions: Natural Mappings #2





Abdominal Pain in Children

Common presenting complaint

Over 3000 patient visits per year

8-10 patients/day

Other patients presenting with other complaints

Time-consuming process

Average arrival to assessment 60-90 minutes

Average MD to disposition 150-180 minutes

55% have lab, 26% have imaging



Trial Design

- Recruit patients with acute abdominal pain presenting to CHEO ED
- 24/7 recruitment by triage/registration/resident/staff
- Informed consent to collect patient data and make follow-up telephone call
- Where possible – 2 independent observations by staff/resident or resident/staff
- All clinicians blinded to **MET** recommendation
- Patients followed until final outcome is established



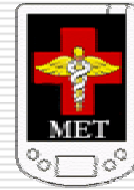
Trial Results

- Analysis of 457 patients with complete F/U
2x2 Consult vs Non-consult
Physicians: Sens 71%, Spec 95%, Accuracy 92%
MET: Sens 71%, Spec 92%, Accuracy 90%



Other successes

- Integration with hospital IS
- Structured and real-time data collection by physicians



Conclusions

Structured data capture

Contribution to timely patient management

Fit of the system to the ED workflow



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Thank You

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