



# *MET* System: From Academic Laboratory to Clinical Trial in the Hospital Emergency Department

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# Outline

- *MET* system overview
- Clinical trial @ CHEO
- Integrating with hospital's IS infrastructure
- Conclusions



# *M*obile *E*mergency *T*riage system

The *MET* system is a software implementation of a **clinical triage support** decision model that aids physicians in making triage decisions as to whether a child presenting in the Emergency Department of a hospital with a specific pain complaint should be **discharged** to the family physician, needs to be admitted for **further investigation/observation**, or requires **urgent specialist consult**



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# *MET* System Architecture

*Extended* client-server architecture with mobile clients working under weak connectivity conditions.

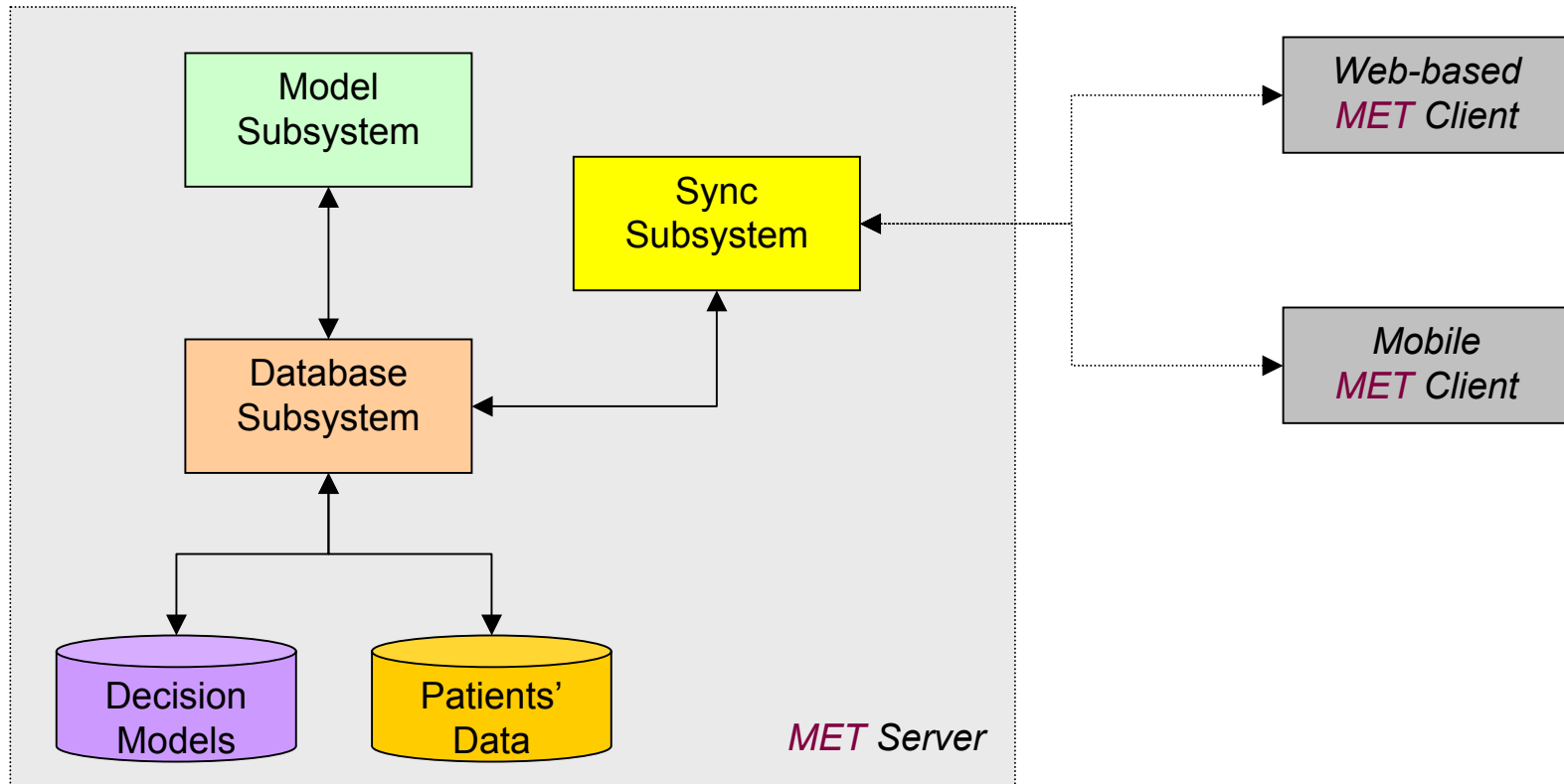
Complex triage decision models need to be executed on “lean” mobile clients.

System designed as *flexible* DSS

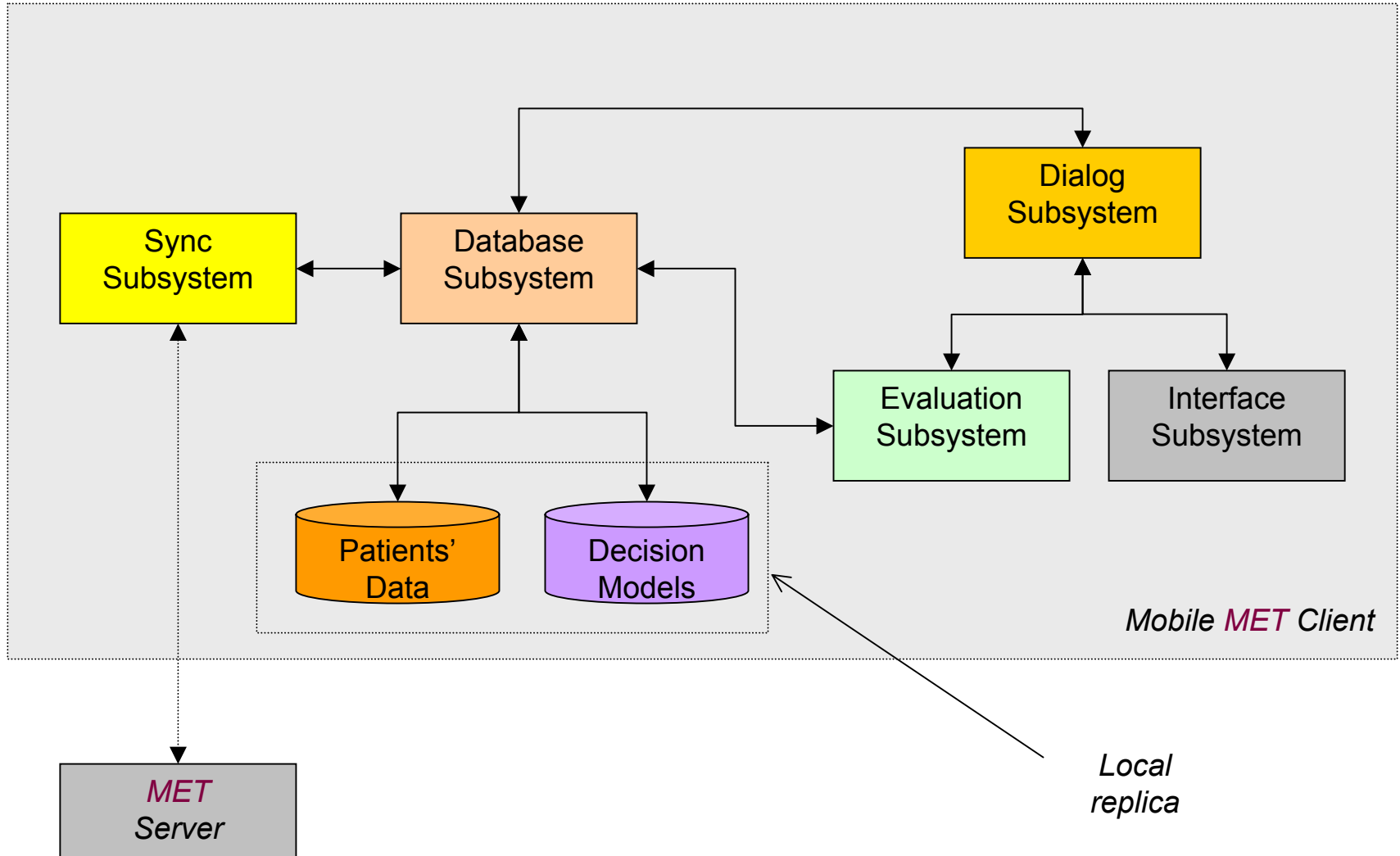


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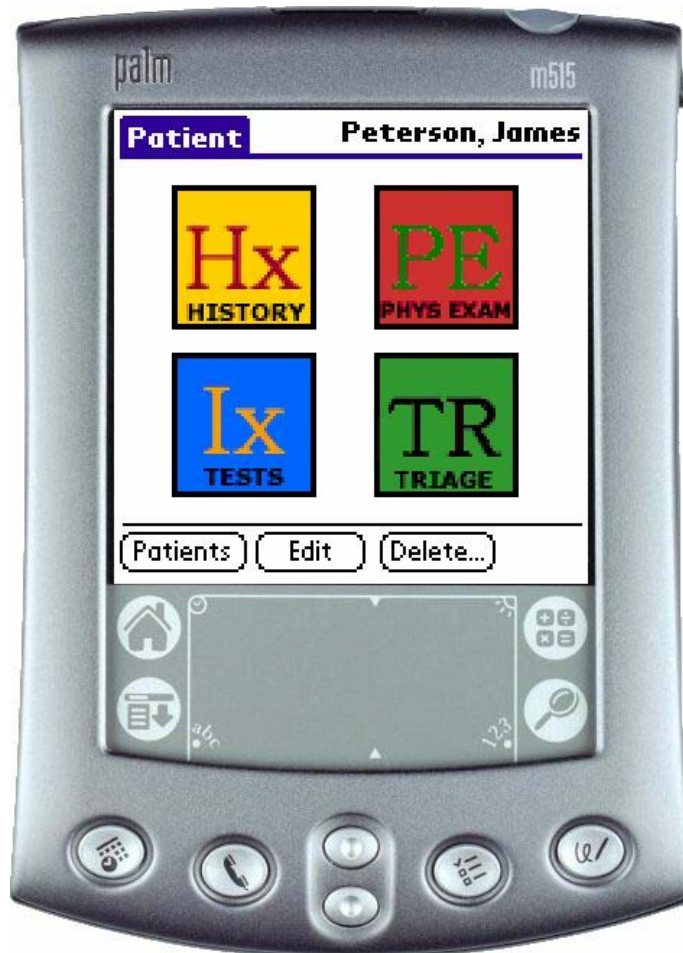
# MET Server



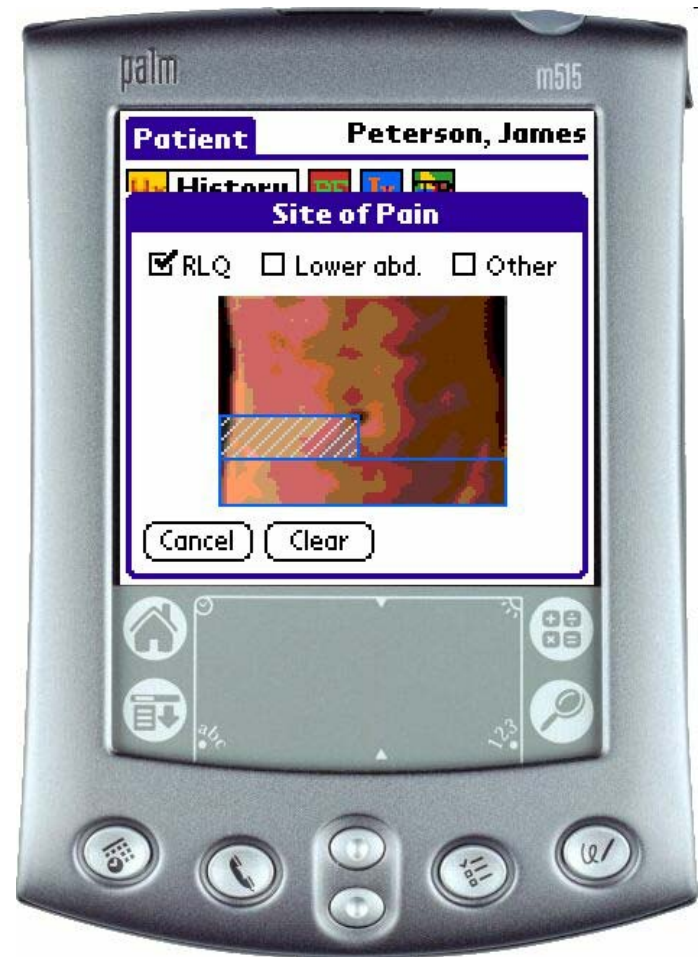
# Mobile *MET* Client



# *MET* Interactions: Few Examples



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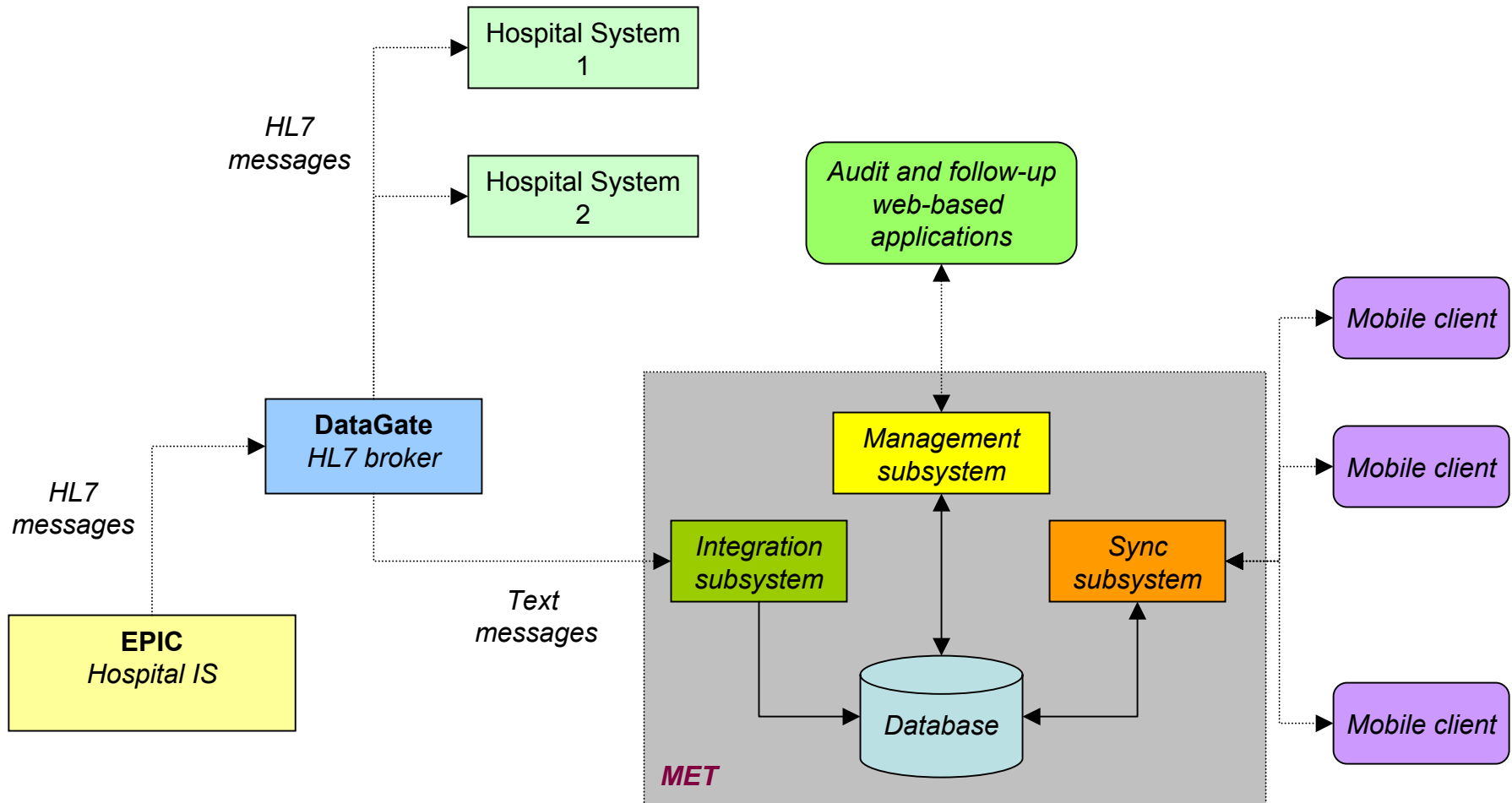




# Clinical Trial

- Prospective evaluation of *abdominal pain* model;
- Enrollment of approx. 600 emergency patients;
- System to be used by over 50 physicians;
- Rules appropriate for new procedure/drug testing have to be followed;
- Primary/secondary observer and a follow-up for each patient;
- Two stages of a trial: (1) validity of a model, (2) impact of model's solution on physician's triage.

# Integrating with Hospital's IS





# Capturing Patient's Demographic Data

## *Original HL7 message*

```
MSH|^~\&|EPIC|Epic|||20030  
3231628|PRDGUI|ADT^A01|196  
3848|D|2.3|||EVN|A01|20030  
3231628|||PRDGUI^^^^^^SA  
^^^^SAPID|||006542146^^^2  
^EPI||DOE^JOHN^A^^^||...
```

*Transformation*

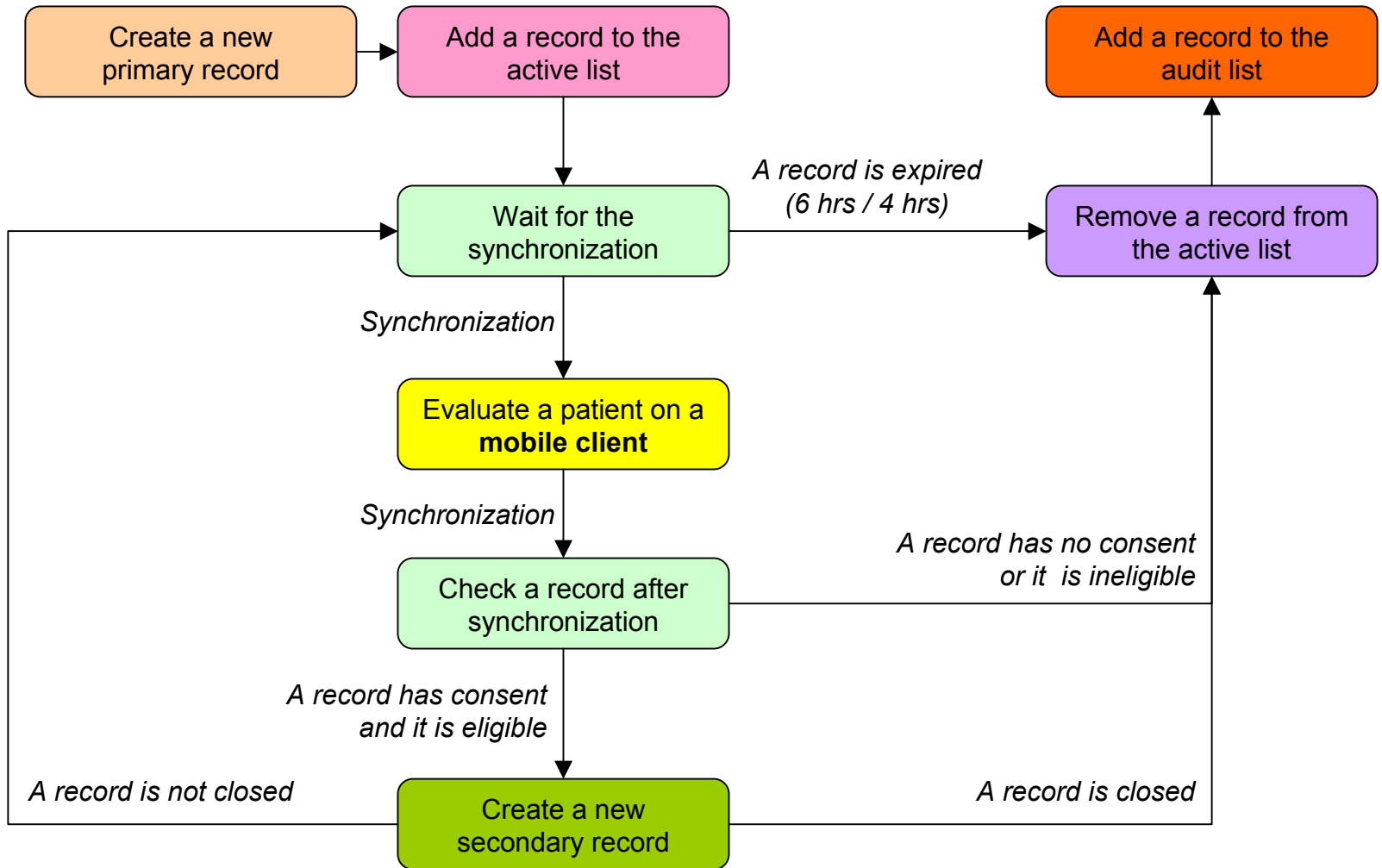
## *Transformed text message*

```
200303231628|A01|1963848|DOE  
|JOHN|A|M|19890312||| (613  
) -234-5876| |...
```

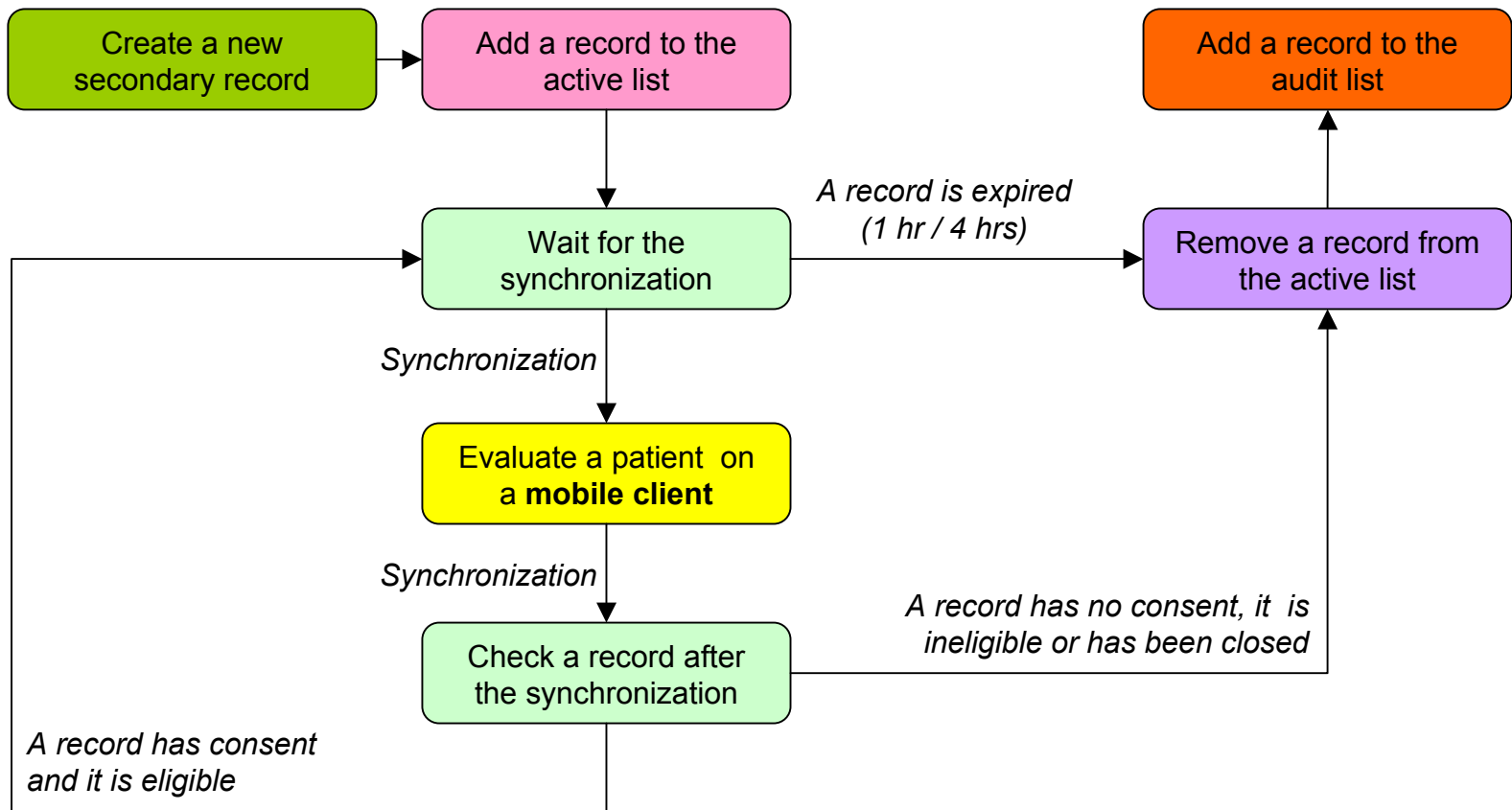
Text messages are transmitted to the *MET* system using FTP



# Managing Records: Primary Observer



# Managing Records: Secondary Observer





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# “Other” Issues

- Security/privacy of patients’ data;
- Work environment in the Emergency Department;
- Information session for the Emergency Department clerical staff;
- Training/orientation sessions for physicians and residents;
- Deploying a “fool-proof” system that does not require any support.



# Conclusions

- “Side” issues are of significant importance;
- New perspective for theoretical and “academic” modeling;
- End-user’s perception is as important as good modeling practice

**Why “*MET* = model + software” should be evaluated similarly to a drug or a clinical procedure?**



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