



Providing Decision Support *Anytime and Anywhere:* ***MET*** System Experience

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Outline

- ❑ Decision support *anytime and anywhere*
- ❑ Computer in a pocket
- ❑ Classical DSS design
- ❑ New architecture for *anytime and anywhere* DSS
- ❑ Mobile Emergency Triage
- ❑ Discussion

Providing Decision Support

Anytime and Anywhere



- Decision support is needed when a decision problem arises
 - This calls for use of computing devices that are more handy than desktop computers and that can work offline
- Decision support is required for complex problems with sophisticated solution strategies (e.g. triage support and clinical caremap)
 - This calls for system's design that allows for versatility and easy adjustment to problem on hand
- Support *anytime and anywhere* – available on demand for a class of decision issues of diversified complexity



Computer in a Pocket

Mobile devices with “lean” computing capabilities
(notebooks, tablets, handhelds, cell phones)

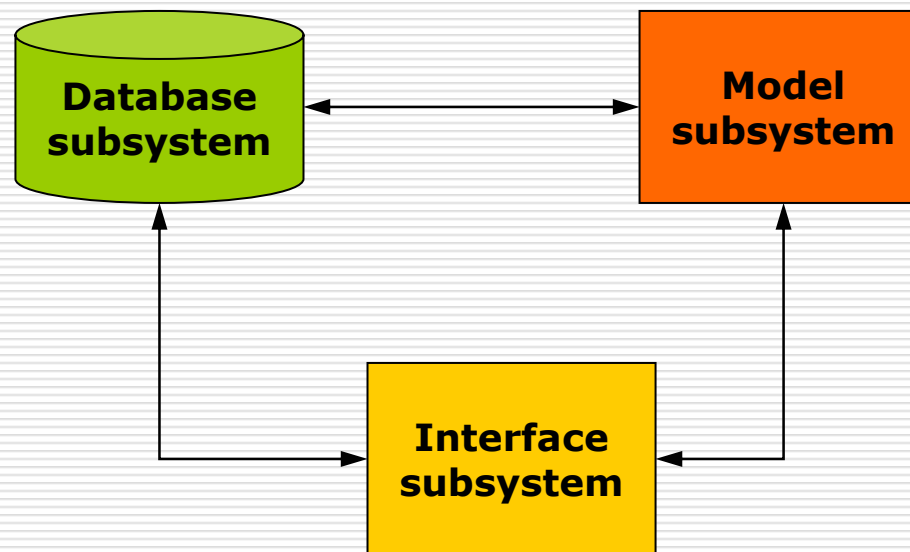
- Issues
 - Diversity of platforms
 - Diversity of decision making settings (the same system may be used in doctor’s office and an ambulance)

- Solution
 - Versatile decision support system that can be accessed on different mobile platforms and can support a range of decision issues



Classical DSS Design

- Sprague (1980)





System's Architecture for Classical DSS

- Stand-alone
 - Functionality confined to a single system

- Client-server
 - Functionality distributed between powerful server and "thin"client(s)
 - Client acts as a terminal hosting interface subsystem
 - Server manages dialog with a user and hosts database and model subsystems
 - Typical example: web-based DSS



Issues with Classical DSS Architecture

- Requires fairly “strong” computing platform
 - But stand alone system is not feasible for many decision situations

- Requires strong and stable connection
 - But "thin" client – server system is not feasible for many decision environments

- Requires uniform platform specifications for an interface
 - But hard-coding interface into a DSS is not feasible for many cross-platform implementations



Postulates

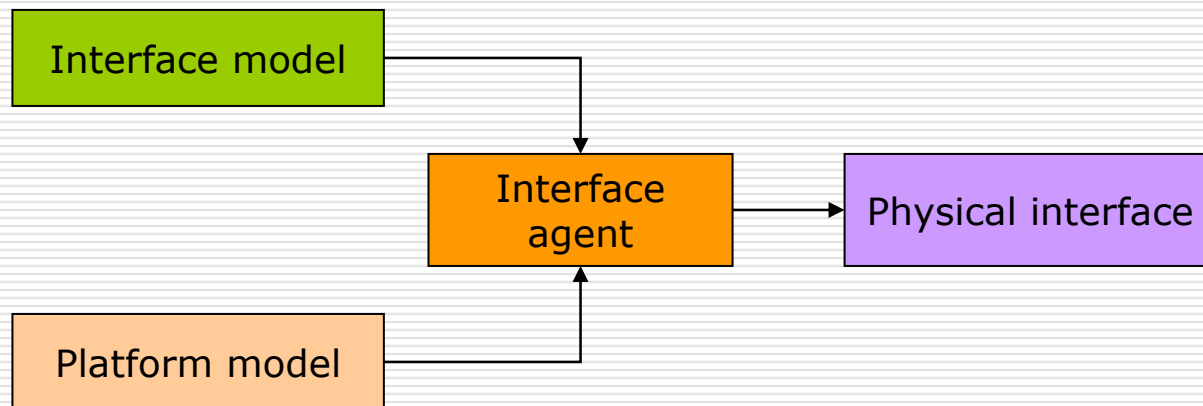
- ❑ If computing platform is not powerful enough, a DSS should be “decomposed” into appropriate executable components
- ❑ If a connection is not stable or constant, a "thin" client still should be able to operate and provide support
- ❑ If computing platforms are heterogeneous, an interface should be adaptable to changing requirements



Our Solution

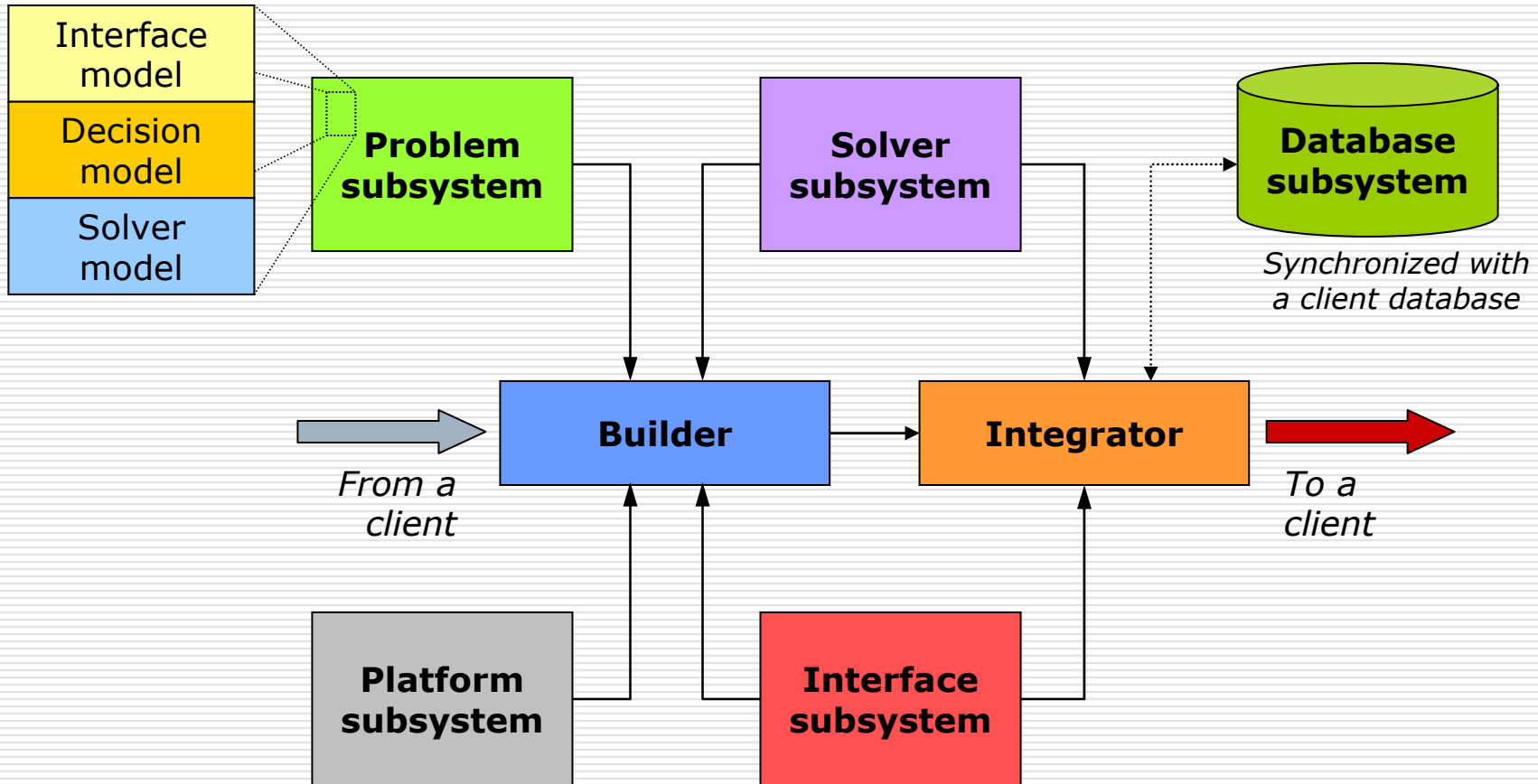
- New architecture: extended client-server paradigm
 - Client performs some tasks of a server while there is no connectivity

- Model-based interface design



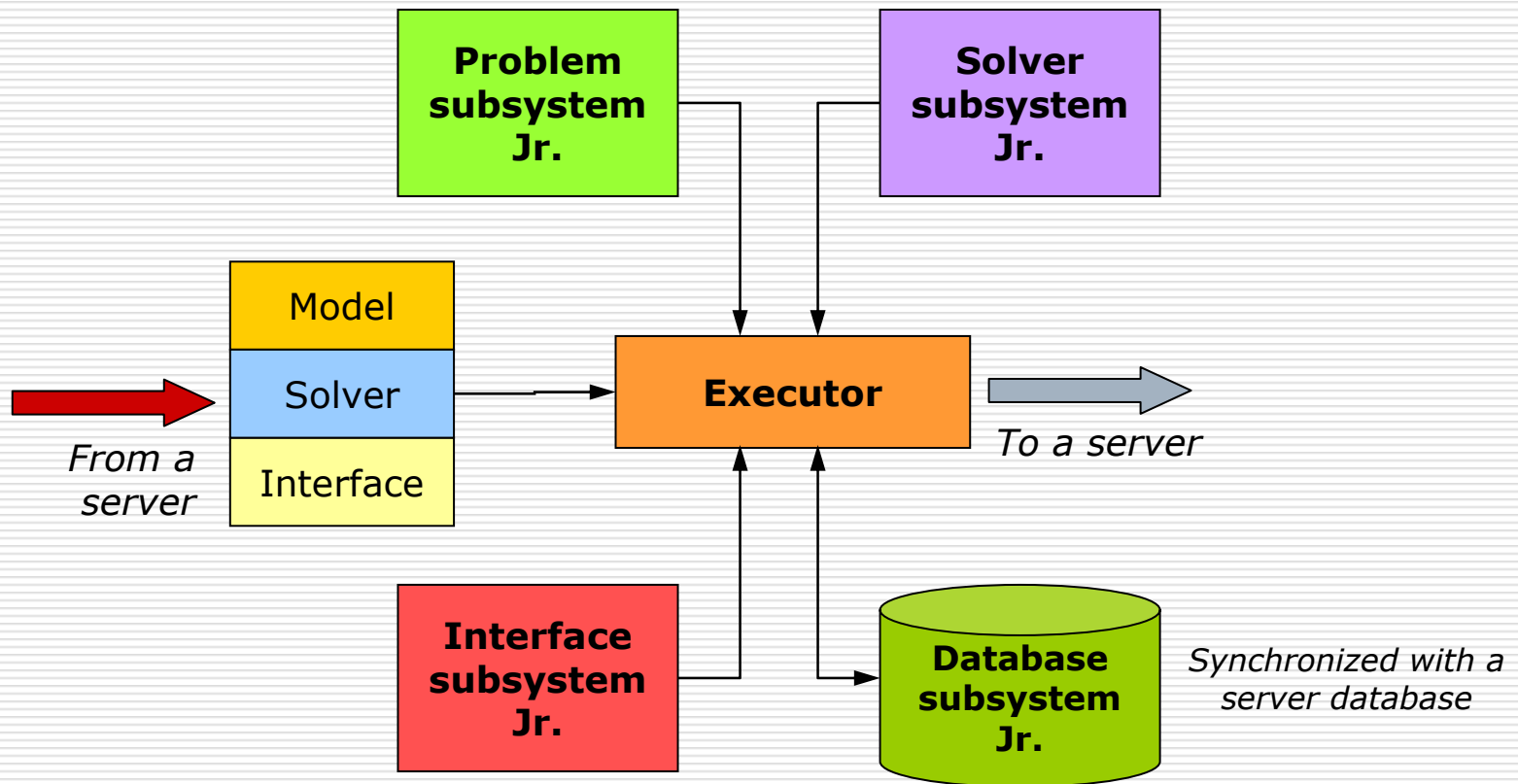


New Architecture – Server





New Architecture – Client



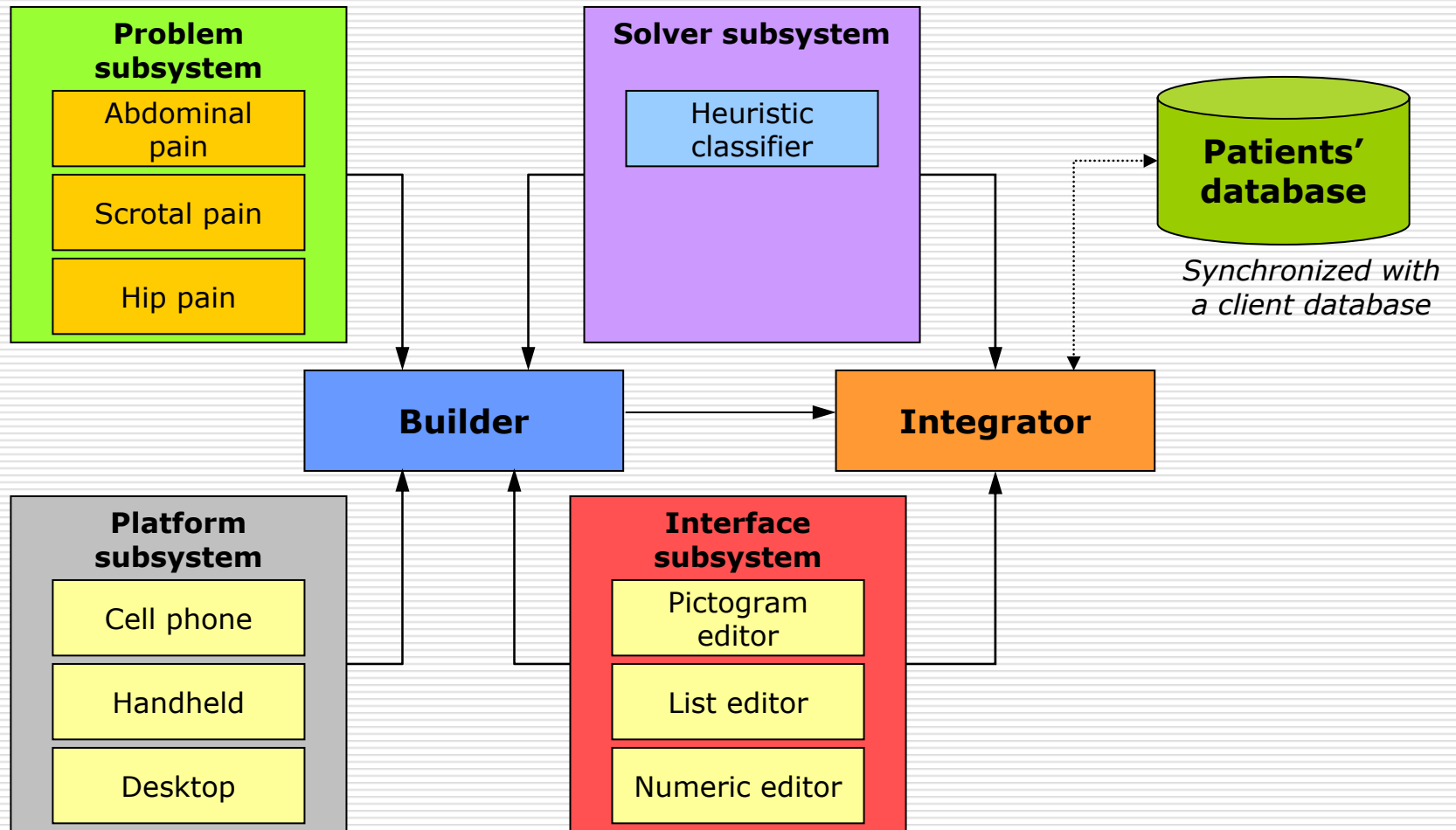


MET – Mobile Emergency Triage

- ❑ Clinical support system to be used by the Emergency Department medical personnel for triage of patients with acute pain condition
- ❑ Developed as a flexible DSS that can be accessed anywhere and anytime and used to support medical decision making with regards to a heterogeneous set of clinical decision problems (abdominal pain, scrotal pain, hip pain, etc)
- ❑ Designed according to an extended client – server architecture. Client component can run on a desktop computer, a tablet computer, a handheld, and a mobile phone

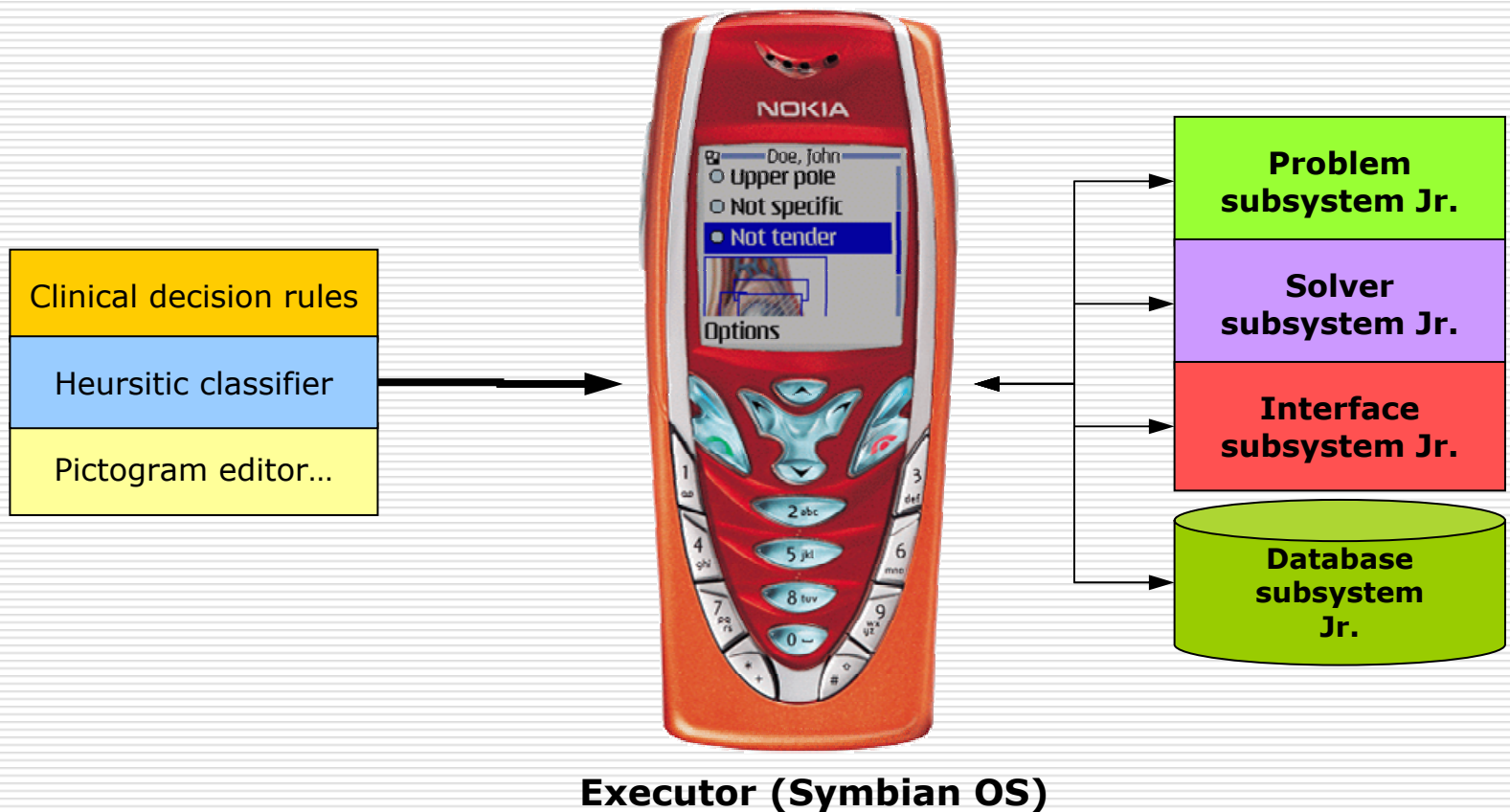


MET Server



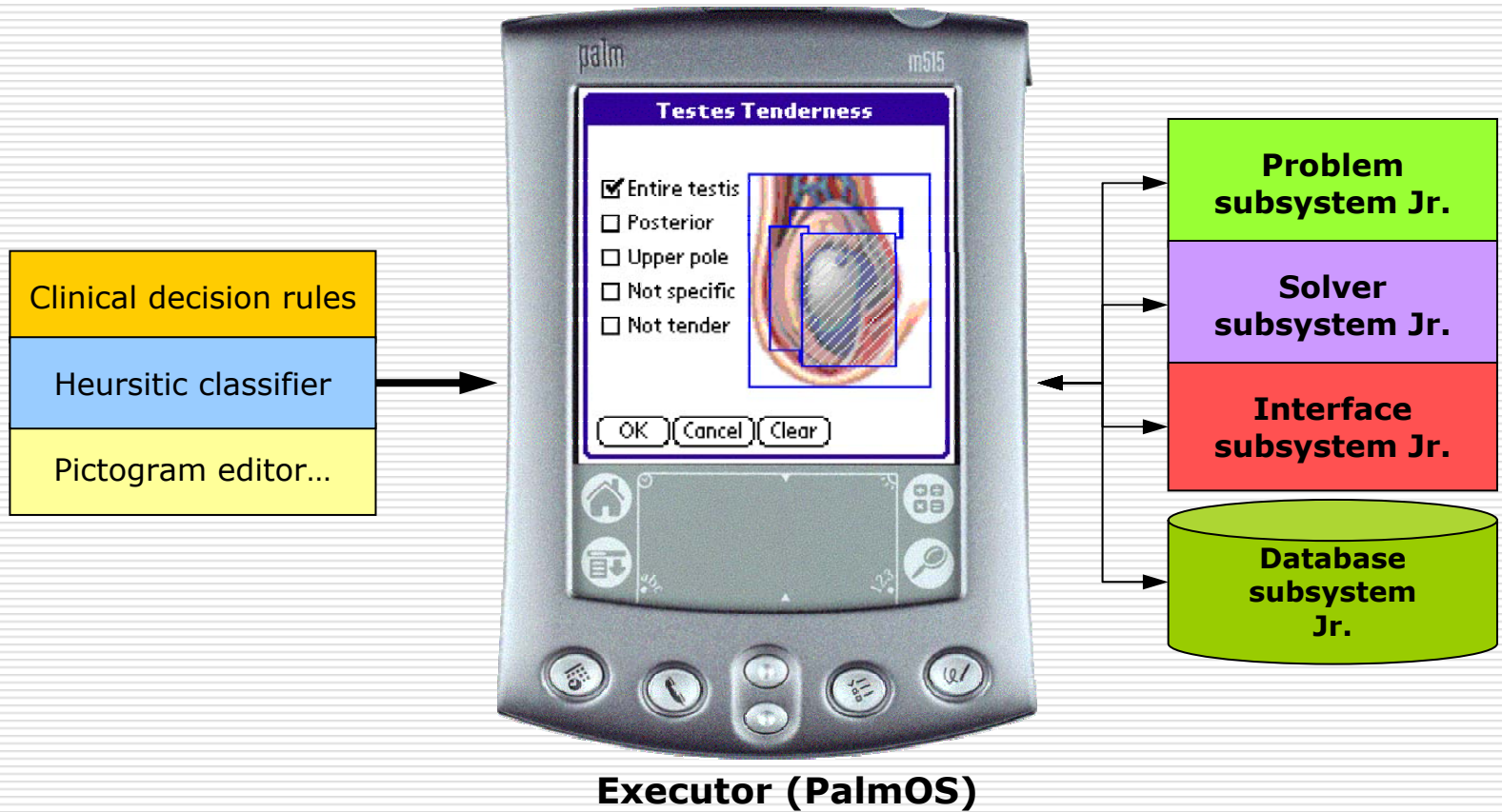


MET Client – Cell Phone



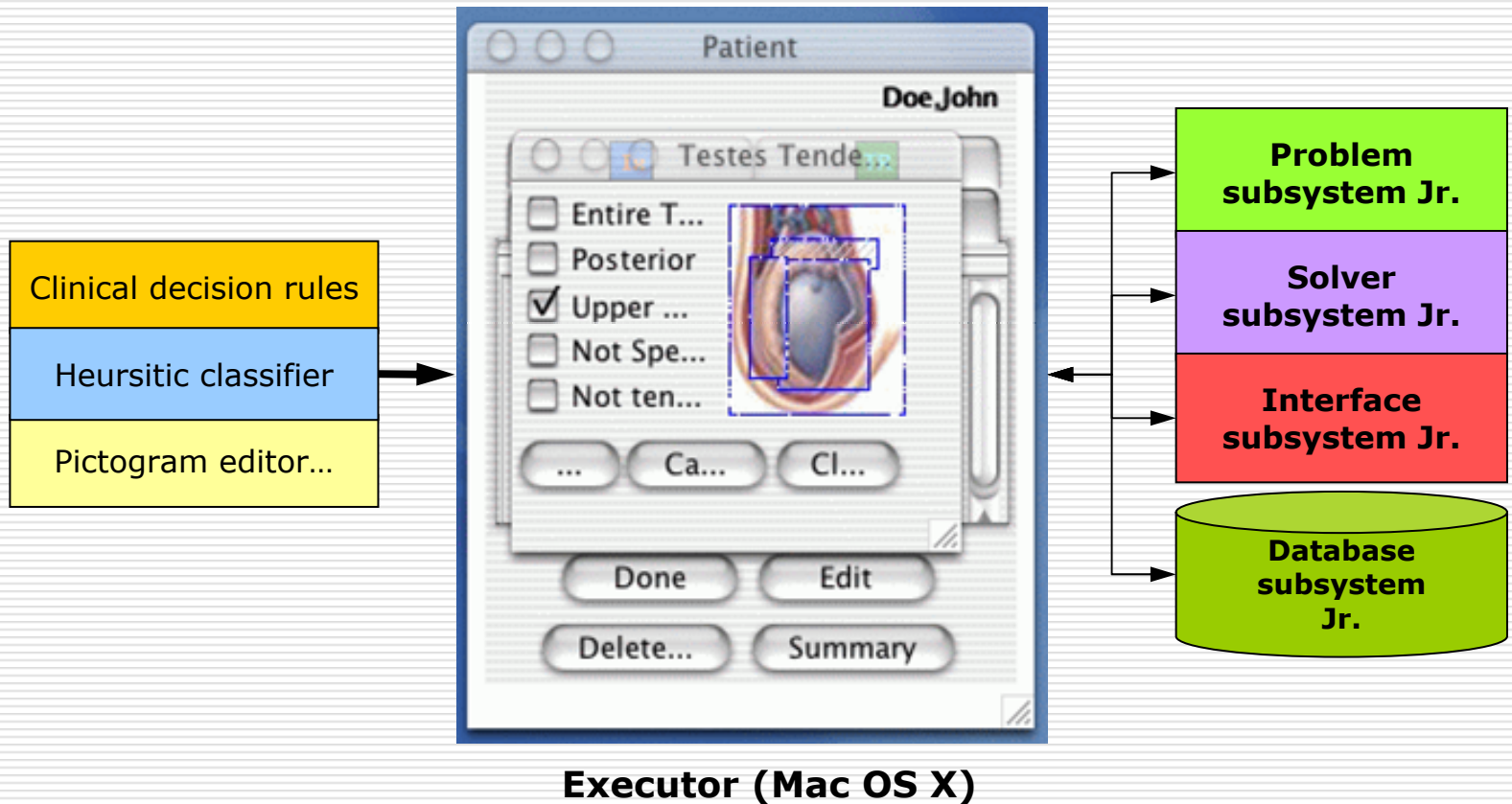


MET Client – Handheld





MET Client – Desktop





Discussion

- ❑ Possibility to develop a versatile DSS (clinical system for complete patient management from triage to discharge)
- ❑ Flexibility in receiving decision support (irrespective of a decision situation and a decision environment)
- ❑ Ability to develop new theoretical model of the DSS design (to support wide range of clinical problems of varying complexity)
- ❑ Ability to deliver cross-platform DSS implementation (system "learns" about a platform and performs self-adjustment to its specifications)



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