**Information Systems/Info 5100/ Dr. Bugrara**

**Medical Device Inventory Management for A Medical Establishment Network of Service Providers**

**Due date (4/28/2011)**

Partners HealthCare System, Inc. (PHS) was founded in 1994 by Brigham and Women's Hospital and Massachusetts General Hospital.  Partners is an integrated health care system that offers patients a continuum of coordinated high-quality care. Focused on patient care, teaching, and research, the system includes primary care and specialty physicians, community hospitals, the two founding academic medical centers, specialty facilities, community health centers, and other health-related entities.

Medical devices and equipments represent tools that clinicians use to deliver patient care. Many medical devices are extremely complex and expensive to buy and expensive to maintain but they are crucial to patient safety. PHS is interested in an effective way of utilizing their expensive medical equipments. They want to share expensive equipments across its network of service providers (e.g., hospitals). Thus, eliminate the need to stock expensive equipments that won’t be used often. In addition, good management of device utilization has impact on the clinical operations such as surgeries which have heavy dependence on the availability of medical devices. In other words, good management of device inventory means efficient utilization of the operating rooms as well as efficient use of clinician time and staff time.

Clearly the efficient management of medical devices has a fundamental impact on a medical establishment ability to operate efficiently, safely and effectively (i.e., eliminate an unnecessary work). Your project is to build an inventory system for managing medical devices for the Partners HealthCare network of service providers in Mass.

You system must support the following features

* Acquisition of new medical devices from a network of approved suppliers
* Inventory management, visibility, and share of device utilization across the network
* Warehouse management which keeps track of the movement of medical devices between operation rooms and storage space
* The dynamic configuration of the network of hospitals through easy to use interfaces
* Devices must be reserved way ahead of time. The system must allow for scheduling the use of the medical devices. Medical devices must be reserved for clinical operations (surgical procedures) and not operating rooms
* Operating rooms must be reserved for clinical operations. So operating must have schedules that allow for the scheduling of clinical procedures
* Operating procedures must have a care team to perform the prescribed operations. The network has a staff made up of persons. A care team has a leader and team members.

**Base deliverables: (B level)**

1. A detailed definition of medical devices (minimum 10 attributes)
2. Multi-role support,
3. One hospital (no sharing is required)
4. Supplier management, order of equipment, and billing (accounting) and payment (treasury)
5. Inventory management of equipment
6. Device and room scheduling
7. Report on usage of device inventory
8. Database support (db4 database)
9. Must use static methods, inheritance, and abstract classes or methods
10. An example of a factory class pattern and a factory method pattern

**Features (B+-A-)**

1. All of the above
2. A network of hospitals
3. Room and surgery scheduling
4. Maintenance management and including keep track of the history of problems and fixes. A device must include a maintenance schedule (date last maintained, next maintenance date, etc.) Alerts should be issued, in the case where the device is not maintained as prescribed. Be careful of what attributes go on the device and those that must be part of the device inventory.

**Creativity (A-A+ with special future reference recommendation)**

* Failure forecasting, usage trends, safety issues, etc.