

**Mercy Hospital of Pittsburgh**  
**Department of Emergency Medicine**  
**Computerization Work Group**

Tracking System: Functional Requirements **with Mercy's Ratings for Importance**  
 Revised November 20, 1997

**Vendor Instructions**

In reviewing each item in this questionnaire, vendors were asked to indicate the availability of the feature in their system. Please place a check-mark (and where appropriate, date and dollar figure) in the appropriate column to indicate the status of the feature. Each status is defined below. Please refer to each item at the lowest level of detail provided.

N.B. some of the terms in the **Interface** section are neologisms defined in the book *About Face: Essentials of User Interface Design* by Alan Cooper. (Items with an asterisk \* were added after the work group ratings process.)

<b>Standard</b>	The item is a standard feature in your system, available without modifying the source code. (Setting table parameters is not considered as a modification to source code.) The item must be in operation at more than one location.
<b>With Modification</b>	The feature is available with minor modifications to the software. List any additional costs incurred by this modification, and include with your bid prices.
<b>Planned Date</b>	The feature is not presently installed but you plan to make it available in the future. Please indicate by quarter of year (e.g., second quarter 1997).
<b>Comments</b>	Any special requirements or considerations associated with the feature.
<b>Not Available</b>	The feature is not available in your system.

**Computer Work Group Ratings:**

In the first column (#) members of the Mercy DEM Computer Work Group rated each feature 1, 2, 3 or 4, using this rating system:

<b>4. Essential</b>	The feature is required; we should not consider systems without it.
<b>3. Very Important</b>	The feature will make a <b>major</b> difference in how the system's usefulness.
<b>2. Important</b>	The feature will make a significant difference in the system's usefulness.
<b>1. Nice, but . . .</b>	The feature will be of some minor use, or none at all.

The numbers represent the averaged ratings of the Work Group, rounded to the nearest whole number.

#	Feature	Standard	With Modification	Planned Date	Not Available	Comments
	<b>Basic Patient Tracking Functions</b>					
4	- move patient to new location					
4	- accept and verify “after the fact” logging of patient moves and other actions					
4	- apply nurse to patient					
4	- apply same nurse to multiple patients in single step					
4	- apply doctor to patient					
4	- apply same doctor to multiple patients in single step					
3	- anonymous login for infrequent users					
3	- electronic signature available for validation					
	<b>Status Board Displays</b>					
4	- geographic metaphor representation of patients’ locations					
4	- color-coding to signify individual patient status					
3	- shape-coding to signify individual patient status					
3	- color-coding to signify overall department status (may be from gestalt of individual patient colors)					
2	- sound-coding to signify individual patient status					
3	- can select sub-views of ED					
3	- sub-views offer graphical indication of number of patients in various color-coded categories in other parts of ED.					
3	- can have different default sub-views for specific PCs					
3	- can have tracking board as “screen blanker” after set time period					
4	- “comments” field available and visible on status board display					
3	- optional cascading windows or similar device for more than one in a room; available for every room					
3	- patients can retain visible “memory” of the rooms they used to be in					

#	Feature	Standard	With Modification	Planned Date	Not Available	Comments
4	- can use hallway positions as "rooms"					
4	- indicators for "out-of-department" patients available for all tracking screens.					
4	- "out-of-department" indicators allow access to full patient display on request					
3	- continuously-incremented length-of-stay indicator available					
4	- "quick lookup" when someone calls about a patient: by name; shows patient status (perhaps by highlighting the icon on a status board display, perhaps by just displaying status)					
4	- displays flag when all pending actions are completed (i.e., patient ready for disposition).					
4	- flags abnormal vital signs in an obvious way					
	<b>Admission Functions</b>					
*	- quick admit function					
*	- log insurance type					
*	- log primary care physician					
*	- admit on "John Doe" patients					
	<b>Chart Management</b>					
3	- printout of all logged activity for printed chart					
3	- patient records available in on-line (e.g., hard disk) storage for up to 6 months					
	<b>Data Table Management</b>					
3	- physician and nurse address and phone number data tables					
3	- physician and nurse address and phone update by individual physician or nurse (or others) with later system administrator validation					
3	- facility for keeping Workers Compensation and managed care plan panels, tied to physician lists					
3	- storage and recall of hospital Clinical Pathways					

#	Feature	Standard	With Modification	Planned Date	Not Available	Comments
2	- users able to log suggested corrections to any data table for later review/approval by system administrator					
2	- above logging generates email message to system administrator					
	<b>Interface to Other Systems</b>					
	- can serve as "front end" (serve as one-touch menu to, and feed patient identification to):					
4	+ Kurzweil Clinical Reporter or other computer-based charting systems					
4	+ Logicare Level I for discharge instructions					
3	+ Hospital's own lab-ordering system					
3	+ Hospital's own reporting and chart-element retrieval system					
2	- can feed lab reports to Kurzweil VoiceEM for commentary					
	- available visual analog indications of:					
4	+ how many patients are in the waiting room waiting to be brought to a room					
4	+ how many patients are in a room waiting to be seen by a physician					
4	+ how many patients have been seen by a physician but are awaiting completion of nursing tasks					
4	- system can monitor return of patients from ancillary studies, and visually flag patients who are gone more than a table-specified time					
4	- system can monitor return of lab tests, and visually flag lab results that are delayed more than a table-specified time					
2	- "one-touch" buttons for consulting/paging (via phone modem DTMF tones) with easily-updated daily on-call table					
4	- can order "panels" of labs via lab-ordering features					

#	Feature	Standard	With Modification	Planned Date	Not Available	Comments
3	- can accept lab ordering input and transfer to Mercy's Action 2000 system					
3	- can be set to automatically fax or email information to follow-up doctors or clinics on patient disposition: + notice to integrated delivery service doctors by email + generate correspondence to other doctors					
*	- can track charges for equipment, drugs, and hospital/physician services, and base on acuity					
	<b>Time Capture</b>					
4	- arrival					
4	- registration					
4	- to room					
4	- seen by physician					
4	- of orders					
4	- labs drawn and sent					
3	- labs expected back (based on user-customizable data table)					
4	- labs back					
4	- patient went to x-ray, etc.					
4	- patient back from x-ray, etc.					
4	- EKG shown to attending physician					
4	- phone consult ordered (and name or service)					
4	- consultants paged					
4	- consultants answered					
4	- IV starts, drugs administered, other treatments					
3	- disposition decision made					
3	- patient disposition completed					
4	- request for in-ED consultation (e.g., medical resident for admission)					
3	- seen by admitting resident					
	<b>Triage</b>					
3	- automated vital signs input (direct from automated					

#	Feature	Standard	With Modification	Planned Date	Not Available	Comments
	monitors) with validation/correction					
3	- Data-table algorithms for triage and ordering of labs and x-rays by triage nurse					
2	- triage algorithms can be branching based on user choices					
2	- triage algorithms can display graphical elements (e.g., picture of ankle and foot to explain Ottawa criteria).					
4	- JCAHO-acceptable log					
3	- automated entry of common complaints					
3	- automated entry of common medications/dosages					
3	- automated entry of common past medical history					
*	- can assign triage priority at triage and change from other locations					
*	- can log telephone contacts with patients or potential patients both in triage and at other locations					
3	- entry of textual data for uncommon complaints					
	- methods available for textual entry:					
4	+ keyboard					
3	+ handwriting recognition					
3	+ voice					
3	- method for postponing detailed triage notes in disaster situations					
3	- label-printing for lab samples					
4	- allows entry of "see and call" and similar messages from referring physicians and flags patient icon/entry to show this status					
4	- allows above even for patients not known to system yet, but can still "attach" to patient record once patient arrives					
4	- allows triage or other nurses to assign rooms ahead of ambulance arrival, and monitor in entrance can direct prehospital personnel to correct room (e.g., shows "Pgh Medic 8" over "Room 11" on geographic display).					
	<b>QI Features</b>					

#	Feature	Standard	With Modification	Planned Date	Not Available	Comments
4	- number of patients in ED by hour, shift, day, week, month, year					
4	- numbers and percentages of patients in different ED areas					
3	- type of discharge					
3	- acuity					
3	- type of diagnosis					
3	- answer "what are the names of all patients with chest pain from last month?"					
3	- answer "how many patients did Dr. X see last month?"					
3	- answer "which patients returned within seven days of a Emergency Department visit and were admitted to the hospital?"					
3	- above questions can be asked of system without special training					
2	- QBE (query by example)					
2	- English input for queries					
	- X-ray readings:					
4	+ accepts x-ray interpretations by emergency physician (EP) in ED or at ED x-ray board in x-ray area					
4	+ transfers EP x-ray interpretation to electronic charting (Kurzweil and data repository)					
3	+ allows radiologists to flag significant discrepancies on-screen and alert on-duty ED personnel					
3	+ for flagged discrepancies, will seek out and input radiology reading from radiology transcription system					
3	- accepts lab data input from ED personnel (urinalyses, urine pregnancy tests, rapid strep tests) and can track separately from patient record for QI purposes					
4	- can be set to require a reading on any EKG prior to patient leaving the ED					
	<b>User Interface</b>					

#	Feature	Standard	With Modification	Planned Date	Not Available	Comments
	- Direct-manipulation immediate vector for common actions, e.g., drag-and-drop for:					
4	+ moving patients					
4	+ applying nurses to patients					
4	+ applying physicians to patients					
4	+ changing patient status					
4	+ entering orders					
3	- modal option for drag-and-drop (i.e., can pick up once and drop multiple times, e.g., for applying nurse to multiple patients)					
3	- other option for batch reassignment of patients to a new nurse or physician					
3	- system knows which nurse is assigned to which area, and offers to change nurse to new area nurse when patient transferred from one area to another					
3	- charged cursor for drag-and-drop operations					
3	- chord-click and ESC cancel for drag-and-drop with visual stamp of cancellation					
3	- free cursor hinting to indicate pliancy, or active visual hinting					
4	- Pedagogic vector for all actions					
4	- keyboard vector for all actions					
4	- Pedagogic vector has teaching link to: direct manipulation, keyboard and button shortcuts					
4	- popup help ("tooltips") for all screen items					
3	- indexed context-sensitive hypertext help					
3	- help system includes tutorial with screen shots of major screens.					
2	- help system has "stay on top" option for at least selected dialog boxes					
4	- data-entry dialog boxes offer "memory" of recent entries					
3	- monoline grouping of pedagogic vector (i.e., no menus					

#	Feature	Standard	With Modification	Planned Date	Not Available	Comments
	more than 2 deep)					
3	- interface totally avoids dialog boxes with meta-questions					
4	- vendor commits to removing excise tasks found by users					
3	- status bar with hints					
2	- uses standard Windows95 button icons for standard functions					
4	- alphabetical find-by-typing/arrow-key selection for long lists					
4	- one-touch (one-click) access to common secondary programs					
*	- can recognize signature for JCAHO standards and for generation of prescriptions					
*	- can generate prescriptions					
*	- security features to protect patient confidentiality (e.g., VIPs, gang-related violence)					
*	- ability to keep chart open until all required items entered					
	<b>Disasters</b>					
2	- MTBF (mean time between failures) in past implementations					time:
2	- support days/hours:					days/ times:
4	- method for rapid recovery from software crashes (explain separately)					
2	- method for handling disasters (e.g., 100 patients in one hour) (explain separately)					