Lockheed Missiles and Space Company
Medical Information Systems Division
25 Standards for Development of MIS
4/1/68 Bill W. Childs

1. The system must respond to users at "Think Speed" to be defined as less than one second response-time from request to answer.
2. Criteria for inputting notes, orders and results will be primarily from selectable choices coded on Matrix screens. Typing will be limited to less than 5% of all input to the system. This will also limit edits do to all selectable items being 100% correct.
3. The system must save all users time at their jobs. Careful analysis will be done to replace manual functions. Processes such as standard Departmental and Personal order sets when entered by physicians or nurses as agents for the physicians will proceed directly to their intended departments. Orders that have time events associated with them will be held and released as needed. An example will be Electrolytes x7 will be released daily for 7 days.
4. When a user signs on to the system the predetermined tables in the system will recognize their location, the time, their title and job description, and any specialty or sub specialty they may have. We will provide ordering and charting screens and capability by specialty so that as an example pediatricians will be presented with their most common drugs and doses and pediatric nurses will be presented with their most common charting information.
5. All user screens will be designed for graphic presentation and ease in finding needed information. We will have intuitive flow of the selection process for ordering, charting and recording of information.
6. There can be no instant where a user is stymied or stumped or lost for a selection of a test, drug, dose, route

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or frequency, or an order, or the recording of an observation. There will be type in capability when items cannot be found.

7. The system will have a time generated event scheduler that will print scheduled meds for nursing units and departments. The scheduler will time generate tasks such as (medications due, care plans, cardx, and mars). It will also generate specimen collection documents for the laboratory and detail schedules for other departments such as the pharmacy, radiology and other ancillary departments.
8. The system shall be entirely table driven to insure ease in changing dynamic information.
9. The system must have a consistent look, touch, and feel for all departments and functions. There will be standard convention for all reports and screens.
10. The goal of the system will be to achieve a 100% electronic medical record. We realize that this might not be possible at this time due to technology limitations, however we expect an 80% electronic record with the first ten installations. We expect that imaging and interactive voice will be our final technology barriers to achieving a 100% electronic record.
11. We expect 100% physician order entry because they want to use the system because it saves them time and insures significantly greater accuracy. By the time we reach phase II of the system we will handle complex orders such as hyper alimentation, conditional orders, piggyback drug orders, tapering doses and schedules, variable doses and schedules, special IV drip rate changes and other complex medical procedures.
12. The system will be designed to provide a two-way online real-time interface to all departmental systems that now currently "stand alone". We believe that as information systems become more common in hospitals that dedicated

systems will proliferate into all ancillary departments to assist in departmental efforts only.

13. We will store all financial and clinical records online until 45 days after discharge. They will then be electronically archived for future reference and loading back into the system for continued updates and research of a clinical database.
14. The system must be totally reliable and take full responsibility for all actions within the system. We will build two levels of recovery in the system; one for individual errors and one for total system failure. Both will take full responsibility for medical content and notify the system administrator of the specific problem and data that was lost or garbled. We expect system up time to be above 99% and eventually achieve 100% when technology catches up with our needs and plans.
15. We will provide an identical training and test system so that training can proceed without interfering with the operational system. Also all new code, tables and screen changes will be tested in the test system before loaded into the operational system.
16. We will provide 24 X 7 training for all users until they are comfortable with the system. This is especially true for physicians. We will meet them where they are.
17. What ever is stored in the system must be retrievable via reporting and screen retrieval. The system will sort information according to users needs. This includes orders and results in reverse chronological order and by department and other information by departments and or bed order with in nursing units. It also includes patients in any order necessary to make the care process easier. (by physician, by service, by ward by specimen pickup order).
18. We will provide a highly efficient relational and hierarchal data base storage and retrieval system to store and retrieve data as necessary.

19. All reporting and screen changes can be completed with online real time programming simplified ability.
20. The major problem in a hospital today is accuracy of information as it passes between multiple caregivers and ancillary servers. The design of this system automates the communication between all hospital disciplines and departments eliminating all communications errors. It totally eliminates the middleman in the communication process. The Medical Information System takes responsibility for the integrity of all information in the system.
21. In the future we see this Medical Information System (MIS) as an extension of the physician and other caregivers mind.
22. In the future we see this system as extending into the physicians office and eventually into their home.
23. We believe in access to the system at any time, and any where by those with authorization and a need to know.
24. We understand that this system will work if we endeavor to replace manual functions and eliminate the significant opportunities to error in care giving environments. We must be continually aware of the users needs and abilities.
25. We believe that if MIS is properly designed, built, implemented, maintained and upgraded with new technology and state of the art medical procedures the system will return at least two fold in labor savings and error reduction over the life of the system.

Provenance note:

This document was linked in:
HIStalk webpage dated April 13, 2016,
https://histalk2.com/2016/04/12/news-41316/
With the following comment:

From Diametric: "Re: Bill Childs. He published this document in April 1968 when he was at Lockheed. I've always kept this document to remind me what's important. While the technology has changed, I think this can still serve as a supplemental guide for rational development. I have interacted with perhaps 200 vendors over the years and found those that held close to this philosophy made the best partners." I set up the document for downloading here. It's a remarkable manifesto written nearly 50 years ago that spells out the still-valid requirements for hospital clinical systems. Bill started at Lockheed doing missile programming, then in 1968 moved over to the company's new project of building a hospital information system. He later joined Technicon Data Systems. Not only was he a healthcare IT technology pioneer, he then started what became Healthcare Informatics magazine and ran that from 1980 to 1995 before getting back into the vendor world. Somehow he hasn't yet won the HIStalk Lifetime Achievement Award despite being amply qualified. Thanks for sending over the document – it made my day.