COUNTY OF SAN MATEO

INTER-DEPARTMENTAL CORRESPONDENCE

DATE: January 10, 2001
HEARING DATE: January 23, 2001

TO: Honorable Board of Supervisors

FROM: Luther Perry, Director Information Services

SUBJECT: Technology Direction for Health Services Department

RECOMMENDATION
Accept Information Services Director's report regarding the information technology (IT) direction of the Health Services Department.

Background

Your Board approved at Budget Hearings the transfer of technology responsibility for the Health Services Department to the Information Services Department (ISD) with a direction to evaluate the overall information technology(IT) direction adopted by the Health Services Information Services Strategic Plan (ISSP) in 1996 The key policy directions set in this plan were

1) A new applications environment based on an integrated core system.
2) Replacement data infrastructure with a current-technology standards-based network, expanded desktop PC's to most staff, and broadly used standard office automation software.
3) Centralize IT support staff to insure consistent, integrated systems in Health Services.

The ISSP analysis noted that the average spending level for IT in the health services industry is some 3% of total budget Health Services increased IT spending from an average of 1 6% during 1994--1997 to some 3 3% during 1998--(mid)2000 The 2000-01 budget is 2 3%, about 2/3 the industry average

The primary IT direction is set by the application environment, and it utilizes most of the IT budget Creating a new integrated health-services automation system would have been impractical in both time and budget There are less than a half dozen available large-scale integrated health-services applications suitable for large county use Consequently setting the IT direction resolves to choosing one of these applications, or staying with uncoordinated decentralized records and accounting.

Health Services rejected the decentralized approach, in large part due to a need for a centralized patient data base and medical records and the increasingly impossible task of keeping up with federal and State mandated record keeping, accounting and reporting All comparable counties with hospitals, including the nearby Bay Area counties, have taken this same approach.

Health Services selected the SMS integrated core system through an open, competitive RFP process in 1996-97 The full system could not be implemented on the original, optimistic schedule, in part due to the impact of critical Y2K remediation in all divisions of Health Services Partial implementation by December 2000 was required for Y2K, but many compromises had to be made and the implementation rushed ,without sufficient integrated testing, most prominently in the invoicing/billing/receivables area Health Services was successful in the difficult job of addressing all of their Y2K requirements

Discussion

The primary focus of the ISD review of the Health Services IT direction was the SMS system and its implementation, Exhibit A summarizes the current status The other major policy directions listed above are generally consistent with the IT direction of other County departments and are recommended by ISD Health Services encountered significant execution problems in these areas, and frequent turn over in SMS staff and managers was a serious issue These problems have been improved over the past six months and will be substantially corrected by the first quarter of 2001-02.

Exhibit D provides a summary of results and plans in the desktop/server, network, and data center areas The non-application IT staff have been fully integrated into ISD, and the unified staff approach provides cross-training, depth in specialties, and staff development that Health Services cannot achieve alone The health applications staff have remained organized as a group, and ISD has provided technical support and a technical management environment that fosters stronger project control and steady progress ISD recommends continuation of the current technology direction and the new ISD role in these areas

Application Strategic Direction

ISD has concluded that SMS remains the best choice available, although some non-hospital functions will be better addressed by separate best-of-breed applications The reasons for this conclusion are summarized below and discussed in Exhibit B ISD has solicited peer review of this analysis and conclusions by a Santa Clara County consultant, and he concurs

Most comparable counties that have hospitals use SMS, as do the Stanford and University of California hospitals It has solid clinical applications, good patient and general accounting, sound ancillary support, and good application integration The SMS integration architecture together with new technology developments and recent federal data interchange standards provide a framework that should enable the SMS central patient records to be coordinated with external applications in other Health Service divisions

Two aspects of SMS implementation will be modified: (a) Health Services contracted to modify SMS software in situations where internal business re-engineering was the proper choice, Health Services has now begun re-engineering internal business practices to take best advantage of the automation, and (b) contract administration has been beefed up to insure continuity and effectiveness of SMS-staffed tasks

ISD has concluded that it is not practical in any event to change to another application vendor now or in the next few years All of the competing vendors have significantly greater product and/or integration problems Conducting an effective RFP process is very staff intensive and would effectively freeze automation progress and problem remediation for a year or more.

Next Application Steps

The ISD Health Applications section has made major strides to stabilizing the staff and attaining consistent progress There is a well-reviewed list of changes, refinements and back-logged requests including

the Phase II items shown in Exhibit C ISD recommends that this work continue, subject to ongoing funding decisions

Health Services has assertively tackled the critical job of re-engineering A specific re-engineering effort that includes contract assistance from the Strategic Systems Group (SSG) of SMS is now in progress and with planned completion at the end of April 2001 During this same time period two other key activities are planned (a) the Health-Services Infotech committees are meeting to structure application plans for late 2000-01 and all of 2001-02, and (b) the remaining routine system administration tasks, such as code table updates and daily processing, will be transferred to the appropriate Health Services division staff

The outcome of these three efforts are critical indicators of whether the modernizing and integrated system applications approach can be successful ISD recommends returning to your Board on May 22, 2001 with a progress report on these items and projections for 2001-02

Fiscal Impact

Budget projections as of December 2000 indicate that the non-applications directions can be addressed in 2001-02 within existing budgetary parameters and current ISD procedures It should be noted that costs for the current 2000-01 fiscal year will exceed the budget, in part due to costs rolled forward from 1999-2000 This situation has been anticipated and is being addressed.

The funding for applications support is variable, as it is with other departments Health Services and ISD will work together to develop application plans that match the available resources Exhibit E shows details of SMS Phase II objectives that are pending or under consideration, contingent on financing

A final note on IT funding for Health Services the current funding parameters represent about 2% of the Health Services budget This is below the 3% average level for the health industry. Much good work and important progress can still be made at this reduced funding level, but automation in Health will continue to lag significantly behind industry norms It is not possible to attain average levels of automation and IT leverage with 2/3 of the average funding

cc County Manager
    Health Services

Attachments
    Exhibit A — Phase I Status Summary
    Exhibit B — Application Strategic Alternatives
    Exhibit C — Phase II Application Objectives
    Exhibit D — Desktop/server, Network, and Data Center Status and Plan
    Exhibit E — Detailed Status and Plans for SMS Major Functions

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STATUS SUMMARY

Health Information Technology

I.   What was accomplished in Phase I --Applications

1. SMS Invision Patient Accounting and Patient Management

a) Y2K replacement of Synergy system with SMS Invision Patient Management and Patient Accounting
b) Conversion of patient demographics and patient balance from Synergy system.
c) Mental Health System programmed fro Y2K compliance

2. SMS Laboratory and Lab Orders

a) Y2K, replacement of Modulus system, interfaces with lab instruments, on-line order entry from outlying clinic
b) Additional requirements for Phase I clean-up and operational efficiency. Complete instrument interfaces

3. SMS Enterprise Access Directory (EAD) – Common Patient Information

a) All patient information and interfaces within Hospitals & Clinics completed.
b) Additional requirements for Phase I clean-up and operational efficiency. Development of policies and procedures to support use.

4. Softmed Medical Records

a) Late notices to doctors, coding and abstracting for patient records, reporting. Interface patient diagnosis and procedures to SMS Core System, dictated reports interfaced to Lifetime Clinical Record (LCR)

5. SMS Resource Scheduling

a) Rollout of patient appointment scheduling and maintenance functionality for main hospital and outlying clinics, including integration with outpatient registration

6. SMS OPENLink Interfaces

a) Integration of patient demographic, charge and results information with supporting ancillary, patient management and patient accounting systems (See attached diagram)

7. Emergency Room SpaceLab

a) Emergency department discharge instructions, Y2K update, interface to patient demographics.

8. Autros Pharmacy

a) Implemented of interfaced inpatient pharmacy system

9. SMS Radiology

a) Implementation of interfaced Radiology on-line order entry to SMS Radiology Version 24 with dictated results

10. SMS LCR –Lifetime Clinical Record

a) Results available to all care providers throughout Health Services for Lab, Radiology and electronic dictated results.

11. Aging & Adult Services

a) Conversion of Computrust
b) Vax Terminals to PC's

12. Development and refinement of report-writer capabilities

a) Monarch

Strategic Alternatives

A. Stay with original ISSP and SMS. This alternative has been foregone, because the actual implementation was different from the plan Staging was adjusted to address Y2K priorities; the pharmacy package was not adequate for SMGH needs, SMS was unable to provide the necessary Mental Health or Public Health functionality as required in proposal.   In each case alternatives were developed to meet patient care and financial requirements

B. Modify original plan, stay with SMS, but separate specific functions   (The preferred alternative). Hospital staff continue to work to re-engineer operations in support of the data system design. Outside consultants were retained to make recommend changes in procedures, those changes will make operations more efficient and will more fully utilize the software packages. Analysis is being done to assess the best software alternatives for current year projects, and although SMS products will be considered, they will compete with other services available in market. We would expect alternative will be interfaced with the Core system to provide a unified patient record. It is expected that there will be some applications, such as the Mental Health system and the Public Health system replacement, that SMS will simply not be suitable.

C. Replace SMS with a different core system. Analysis to replace the SMS products is being deferred until there is sufficient work done to allow the SMS system to work satisfactorily This work to be done requires a change in procedures and policies to take full advantage of the SMS products. Any plan to replace SMS with another core system would require a multi-year effort at systems analysis, selection and development. That lead-time requires Health Services to make the SMS system work adequately for some period of time, so efforts spent now are not wasted efforts, but would be required in any case. SMS was recently acquired by Siemen's and any long-term decisions will need to include consideration for Siemen's on-going support or replacement of specific applications.

D. Drop Core system concept and estimate things separately. The Health Services Agency still believes that it is best for patient care that there be some sort of client database so that the treatment any patient receives in a Health Services facility is done with the knowledge that the patient may already known, and with consideration for that care history.

EXHIBIT C

II   **Phase II – Applications –Accomplished when funding is available**

1 Laboratory – Anatomical Pathology, blood bank/transfusion system; move of public health lab to new system; reference lab integration.

2. EAD (Enterprise Access Directory)– Expand to other parts of the agency to ensure a common data base of all agency clients

3. Lifetime Clinical Record (LCR) - expand to Mental Health

4. Pharmacy expansion to outpatient

5. Expand resource scheduling to other agency divisions as appropriate

6. Installation of new materials management system

7. Mental Health System development (Accounts Receivables system; replacement of managed care system).

8. Development of mammography system

9. Update systems for utilization review, quality assurance, case management system.

10. Need for ongoing updates, regular reviews and re-evaluations (e.g., laboratory system)

11. Data Repository

12. On-line reporting capabilities

13. Health Insurance Portability and Accountability Act (HIPAA)

Exhibit C   1

EXHIBIT D

Desktop \ Server

Done:

Implemented staffing model that efficiently supports the Health Services environment while promoting staff development

Implemented "blended" Help-Desk system including 12 hrs. of senior Help-Desk staff during busiest portions of workday

Moved Health Services from Microsoft Exchange to GroupWise email and upgraded all Groupwise 4 0 users to Groupwise 5 5 (the county standard email package), resulting in 1 county address book.

Work in progress, done over next 90 – 120 days:

Implemented imaging for homogenized desktops Standardized on 3 images (down from 7), all supporting remote updating and remote controls (RC).

Standardizing on shared Help-Desk S\W with the ability for customers to look up statuses of Help-Desk tickets, using just a browser.

Determine current state-of-readiness for HIPAA compliance

Longer term work, done over next 6-12 months:

Alpha to Intel migration Moving all Alpha based server to Intel based servers (leveraging Compaq's "purchase credits" plan).

Evaluate current desktop H\W with recommendations for replacement. Develop every-4-year PC replacement plan.

Develop \ maintain effective communication between APPS \ T.S. via bi-weekly meetings

Develop joint S\W purchasing venture between H S.A. and Health Services.

Continue to work to support HIPAA based compliance measures.

Network

Done:

Removed 35, non-fire walled modem connections and replaced them with secure dial-shelf appliance

Finished (corrected, using logical workgroups) V-LAN strategy, reducing flat network from 1 shared broadcast domain to 20, individual domains.

Documented entire Health Services local and wide area network (now we can begin to support it while we plan to repair \ replace it)

Have developed network appliance deployment strategy to remove \ replace most of the existing network electronics within the Health Services environment.

Provided multiple network based presentation in an effort to establish executive support (seems to be working. Have received funding support for multiple projects).

Work in progress, done over next 90 – 120 days:

Replace Health Services core (Data Center) appliances following county model for recommended hardware.

Deployed telemedicine initiatives to Correctional Health, clinics

Install robust (Oc3C) wide area network connecting RWC, Harbor and Hospital main campus. This new wide area connectivity will support many new technology initiatives including (additional) centralized backups, telemedicine, imaging and remote physician access.

Install new network appliances in D&T bldg., using county model for recommended hardware.

Determine current state-of-readiness for HIPAA compliance.

Longer term work, done over next 6-12 months:

Continue to work to support HIPAA based compliance measures

Deploy all new (90% replacement required to support existing needs and new technology initiatives) network electronics within the Health Services environment.

Data Center

Done:

Implemented staffing model that efficiently supports the Health Services environment while promoting staff development.

Implemented reliable (centralized) backups on 9 of Health Services most mission critical file servers

Longer term work, done over next 6-12 months:

Implement "dark" environment for Health Services data center on weekends.

Look to reduce core system costs by moving print queue processing in house

Explore automated report distribution (email based) to further reduce core systems costs.

Implement centralized backups on all Health Services file servers

ALL

Continue to support Info-Tech meetings. This model of shared communication between ISD and Health can work with the right participation and format.

Phase I   Additional information
Phase II Pending funding and resources.

SMS Patient Accounting & Patient Management

SMCHS had an assessment focused on the performance of the SMS Invision Patient Accounting and Patient Management systems and Health Information Services in conjunction with operational practices within SMCHS
The purpose of the assessment was to identify opportunities to enhance organizational productivity through full use of the INVISION Patient Management, Patient Accounting, and Health Information Services applications. A major emphasis was placed on identifying manual processing, system workarounds and other practices that reduce automation, increase costs, and diminish potential positive outcomes.

A summary of the finding and opportunities was that SMCHS staff expends significant manual effort due to under use of the INVISION system. Staff do not use all automated systems that are available and lack of knowledge concerning system functions and reports. The assessment identified several common trends that the SMCHS experiences on a regular basis.

The findings provide the basis for SMS belief that operational modifications in concert with system and profile changes would enable SMCHS to meet its unique operational needs. By updating and reengineering the internal operational policies, SMCHS has many opportunities to improve and enhance its financial outcomes.

As a result of the revenue performance evaluation SMCHS has engaged SMS Strategic Services Group (SSG) and Advanced Receivables Strategy, Inc. (ARS) for six months. During that period ARS will work on the accounts receivable backlog. SSG will work with the Business Services and Health Information Services on workflows and system settings. SSG engagement is scheduled to be complete April 2001.

SMS Enterprise Access Directory (EAD)/Patient Management

Phase I

- Successful back load of the Synergy patient base into EAD
  Patient Data electronically transferred from the Synergy System directly into EAD
  With the exception of the inpatients as of November 1, 1999 all patient demographics and visit information had been pre-loaded into the EAD system
  In-house patients were manually loaded
- As of November 1, 1999 EAD/Patient Management has been installed throughout the Hospital Based Clinics and Satellites.
  North County Clinics were the first to go-live on the INVISION system. By November 1, 1999, the hospital, its clinics and outlying satellites were also live on INVISION.
- EAD/Patient Management Interface is up and running
  Daily Errors are monitored by Health Information Technology (HIT) staff
  Interface transactions are monitored by operations

Phase II

- Transfer of knowledge of system workings from SMS to County personnel-ongoing
- Continue to monitor EAD/Patient Management for errors and troubleshoot database functionality
- Develop Policy and Procedure within the hospital system, which supports the usage and functionality of EAD/Patient Management
- Streamline data input systems (Pathways) to ease user workload
- Upgrade to EAD/LCR version 24
- Advance in technology to open direct queries into EAD from foreign systems (i.e. CJIS, Mental Health)
- Report directly from EAD
- Conversion/Integration of foreign systems. (Global, Mental Health) as the County directs
- Correctional Health, Public Health, CCS, Field Nursing to INVISION
- On-going regulatory reporting

SMS Resource Scheduling

Phase I

- Patient appointments for main Hospital followed by outlying Clinics.

- Maintenance Functions – Display version so non-maintenance staff can view without access to changes.

Phase II

- Analysis to determine functionality for Public Health, Mental Health, Aging & Adult, Correctional Health

SMS OPENLab/ Laboratory

Phase I
- Y2K
- Modulus Phase out
- Beta for OPENLink ver 23
- Analysis of PHL (Public Health Lab) implementation
- Analysis of Anatomical Pathology implementation
- OPENLab development of LAN 150, IPX network for OS2
- Hardware deployment
- 7 Servers
- 1 remote server manager
- 18 OS2 Workstations
- 10 Printers (Document and Bar code Label)
- Database development: Test Built 1,035 Modulus (approx 600 tests)
- Integration: Build components in old for interfacing thru OPENLink
- INVISION: lab CDM (Charge Description Master), Service Master, Order Entry
- OPENLab database development
- LCR· CVE (Common Vocabulary Engine) built for online test results
- 6 Laboratory instruments
- Online order entry from outlying clinics
- Develop Cell-counter for Hematology
- Customized order entry for Microbiology
- Online archiving of test results
- Develop Print Document Routing
- Develop security matrix
- Develop training and competency material
- Develop INVISION Profiles (Services, Doctor, Room & Bed, Clinic, Financial in OPENLab
- Develop Back-up and recovery plans
- Lab staff (33) training
- Unit testing

SMS OPENLab/ Laboratory

Phase II

Implementation and Integration/Interface
- Replace OPENLab, select product for PH Lab, use OPENLab for everything
- Anatomical pathology system
- Blood Bank/Transfusion system
- ISTAT
- Public Health Lab (move from Global?)
- Public Health Lab Instruments
- Future Clinical lab instrument interface and upgrade (i.e. Coagulation analyzer)
- Celldyne 4000 interface
- Reference lab test integration to   Approx 250 individual tests
- Quest
- Unilab
- Axysm Host query functionality
- OPENLab Software upgrade
- Off-line archiving of test results
- Complete reference lab tests build
- Redesign lab result chart copy reports
- Lab Management Reports
- Lab Analyst training
- Database programmer to create reports
- Printing labels outside Lab (functionality not available with OS2)
- Epidemiologist report for microbiology
- On-line Quality control
- Utilize Transport functionality

SMS Radiology

Phase I:
- SMS Radiology Version 24 live November 1999
- 8 Workstations
- 7 Printers (Document and Bar Code labels)

Phase II:
- Server enhancements ... Larger Drive or new Server
- VMU (Vendor maintenance upgrade) Upgrade to be installed January 2001
- Move Radiology Department into new Hospital location
- Increase number of Workstations and Printers (Analysis on total number still being done).
- Enhance existing reports generated by Radiology
- Develop new reports requested by Radiology Department
- Develop new procedure numbers and link to LCR.
- Upgrade to Version 25 1 with Mammography.
- Develop interface with Tamtron Pathology component
- Ongoing maintenance/modifications.
- Ongoing Training of staff.

EXHIBIT E

ER Space Lab

Phase I
- Live June 16, 1998. The Emergency department uses this application to print discharge instructions
- Y2K update
- Interface live March 28, 2000
- Live March 28, 2000 with Space Lab Triage, Locator and QA Modules.

Phase II
- Space Lab is working on the update transaction from the INVISION system to Space Lab. Space Lab is testing. This will enable all revisions and updates in INVISION to cross to Space Lab.

Vista Care

Phase I
- Electronic Transmission to the State
- Y2K update
- Clinical Module from DOS to Windows

Phase II
- Set up and use of the report writer function

Materials Management

Phase I
- The current vendor for SMCHS is Simon. SMCHS is in the process of looking for another Material Management System. There have been demonstrations from three vendors. Global, ESI and Lawson. At this time we are reviewing the proposals.

Phase II
- Installation of new Material Management system

Softmed...Medical Records

Phase I
- ClinTrack
  Currently looking at either updating the current MID system or purchase a new ClinTrack UP and Physician Credential system. A demo and several meetings have taken place. The cost to upgrade MIDS or purchase Softmed is about the same. A final decision will be made soon
- ChartFact
  This module is used to track charts in Medical Records and also create late notices to the doctors.
  Upgrade ChartFact from DOS to Windows
- ChartLink
  Live November 1999 This is the interface between INVISION and Softmed.
  Data from ChartLink interfaces to ChartStat.
- ChartStat
  Live November 1999 Medical Records use this module for coding and abstracting in patient records
  Y2K update
  Reporting electronic regulatory information for LTC (Long Term Care)

Phase II
- Installation of ClinTract (if Purchased)
- Installation of APC pro (if purchased)
- ChartStat reporting for IP (In-Patient) December 2000
- ChartStat upgrade to platform 6
- Convert data from the VAX into Softmed.
- ChartFact...Interface patient demographics from INVISION

3M Encoder

Phase I
- Encoding reimbursement system that works along with ChartStat. Coding, grouping, editing and analyzing are done thru 3M

Phase II
- Installation of 3M APC (Ambulatory Payment Classifications) software (if purchased)

MENTAL HEALTH

PHASE I:
- Y2K upgrades to the Mental Health and Managed Care Systems have been completed.

PHASE II:
- Develop or purchase an Accounts Receivables System.
- Develop/purchase a system for clinicians to be able to do Client Treatment/Recovery Plans and Progress Notes. Mental Health staff has been to two demonstrations to date – the Caminar System and a system that was written internally by Dr Steve Cummings.
- Two-way interface between Mental Health and EAD.
- Consideration of replacing the current Managed Care System.
- Clinicians have been set up to have access to EAD/LCR and training will be scheduled soon
- Ongoing maintenance/modifications.

Aging & Adult Services

Phase I
- Conversion of CompuTrust from the VAX to NT

Phase II
- Upgrade CompuTrust to the GUI (Graphic User Interface) version
- EAD/LCR/Scheduling
- Legal Forms Software
- Public Administration Software
- NAPIS.... National Aging Program Information system

SMS OPENLink

PHASE I
SERVER INSTALL

- Analyzed server requirements and recommended upgrade to NT from VAX platform
  Analyses with SMS to change schedule I for new hardware delivery
- Analysis with SMCHS Tech to support schedule I hardware platform
- Installed several releases of Openlink V22 2 . V23 6 to address bugs and unstable
  environment problems some related to the beta for OPENlab.

INTERFACES INSTALLED

LAB
- LAB ADT (Admissions, Discharge, Transfer)
  - Built, installed and tested ADT/orders/OSU (Order Status Update) Interfaces
- LAB Misc Charges
  - Built, installed and tested Misc Charges interface using FT1 transactions from
    Openlab and feeding to the OSU (Order Status Update) link on INVISION.
- LAB Instruments
  - Built, installed and tested Celldyn4000 interfaces
  - Supported Celldyn3500 interfaces
  - Supported Vitros950 interfaces
  - Supported Vitros250 interfaces
  - Supported Clinitec200 interfaces
  - Identified memory errors caused by the Microscan interfaces and supported the
    migration and elimination of User-Exit code by SMS, which provided a stable
    environment
  - Identified and corrected problems related to the Axsym interfaces, which were
    causing Openlink server reboots Defaults setups by SMS were improperly done

SOFTMED
- Softmed ADT
  - Built, installed and tested Softmed ADT interface.
- Softmed Diagnosis Updates
  - Built, installed and tested Softmed Diagnosis interface

MEDICAL RECORDS (DDI)
- DDI ADT
  - Built, installed and tested DDI ADT interface
- DDI Transcription
  - Built, installed and tested DDI Transcription interface

PACS OUTPATIENT PHARMACY
- PACS Billing
  - Built, installed and tested PACS Billing interface

PHARMACY BENEFITS MGMT (PBM)
- PBM Eligibility
  - Built, installed and tested PBM Eligibility interface

SPACELAB ER CHART
- Spacelab ADT
  - Built, installed and tested Spacelab ADT interface

AUTROS INPATIENT PHARMACY
- Autros ADT
  - Built, installed and tested Autros ADT interface.
- Autros Billing
  - Built, installed and tested Autros Billing interfaces, because Autros was unable to provide transactions in a SMS CARD format individual batches (1charge/batch) are being generated from Autros HL7 FT1 online batches At present RX is reporting that some charges from Suremed are bouncing in Autros and not making it back to OBF and is being addressed

DSG
- DSG Claims
  - Built, installed and tested DSG Claims interface

RADIOLOGY
- Openrad ADT
  - Built, installed and tested Openrad ADT interface
- Openrad Billing
  - Built, installed and tested Openrad Billing interface which currently is using OBF to post to the back end, Phase II will be charging thru the front end (INVISION) vis OSU functionality

EMERGENCY ROOM LOG
- ERLOG ADT
  - Built, installed and tested ERLOG ADT interface, first with a file output which required manual movement of the file to allow for processing and later changed to FTP functionality which automated this process and will be used for others like it

SMS OPENLink

PHASE II
DBA/REPORTING

- <u>Data Repository</u> to address reporting needs both present and future, much analysis is still required to determine the actual deliverables although a conceptual design can/will be put on paper shortly.
- <u>Print workstation automation</u> that will provide seamless data feeds from the ADHOCS to feed the Data Repository Some technical analysis/work was done by KSM without good results but some information supplied by Todd (SMS consultant onsite) showed promise by directing reports to a Novell/NT print queues which is directed to disk (net drive)

LABORATORY

- <u>Anatomical Pathology</u> system, analysis is required
- <u>Blood Bank/Transfusion</u> system, analysis is required.
- <u>ISTAT integration</u> of move off of Openlab platform, analysis is required.
- <u>Public Health LAB</u> moves from Global, analysis is required
- <u>Public Health Lab Instruments</u> integration, analysis is required.
- <u>Reference Lab</u> integration to 'Quest' and 'Unilab', analysis is required
- <u>Axysm host query</u> functionality, analysis is required
- <u>Openlab software upgrade or migration</u> to new product/platform, analysis required

RADIOLOGY

- <u>Order Entry on INVISION,</u> this will require a new Orders interface and replacement of the current FTP/OBF (File Transfer Protocol/Online Batch Facility) charges interface with an OSU interface
- <u>Mammography upgrade</u> may require new report layout etc

MENTAL HEALTH

- <u>Replace/integrate Mental health,</u> interfaces will be effected, analysis is required

NURSING

- <u>Midas upgrade or replace</u> will require ADT interface

EXHIBIT E

PATIENT MANAGEMENT

- <u>ORF (outside referrals) database</u>, ADT interface requires query/response type functionality and this project is currently underway awaiting details from SMS regarding EAD (Enterprise Access Directory) interface functionality. further analysis is required

SERVER/HARDWARE ISSUES

- <u>SVOPENLINK1</u> requires to be setup as a 'Hot Fail Over', either, a) by utilizing IP's server to server protocol to keep both boxes in sync which also requires Openlink to be reinstalled with this option and also reactivate the spare box
- <u>SVOPENLINK1</u> requires more disk space, we are currently at 4 gig and are using between 3 5 and 3 74 gig on a daily basis

OUTSIDE REFERRALS DATABASE

- Design and discussions are underway to implement this functionality and the interface of choice is an EAD Query/Response interface because the scope of patients is unknown as to determine an ADT feed. SMS will give up technical specs on V24 of EAD and whether or not we need SMS IDE (Interactive Data Exchange) to perform this task Many other interfaces will benefit from this approach[1] Analysis is required

INVISION SUPEREC TO GRV3

- Change the current ADT feed TIF (Transaction Interface Facility) from INVISION 'Generic Superec' to INVISION HL7 'GRV3'(Generic Record Version 3 0) This change will potentially, a) add more fields to the ADT, b) make new ADT interface easier to code, c) put us on SMS's migration path Analysis is required
- Convert current ADT interfaces to 'GRV3' after a model interface is built

OTHER INTERFACES

- Other interfaces that are required and may not yet be identified by the various groups.