NASA Electronic Health Initiative Update

NASA 2005 Safety and Health Managers' Meeting

Doubletree Hotel, Cocoa Beach, FL

1 March 2005

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Project Overview

- Conversion of current clinical procedure for documentation of health information from paper to electronic media
- Standardization of healthcare delivery
- Improved managerial oversight of OH services
- Application of occupational longitudinal health study of NASA workforce

Longitudinal Health Study

- Feasibility study identified shortcomings for achieving goal
  - Issues with data documentation
    - Media Format
    - Documentation
    - Supportive Information Resources
  - Inability to suffice as surveillance tool or data source for repeated measures

Proposed Solution

- Pursue Electronic Health Record System (EHRS)
  - Capture standardized documentation of care
  - Useable format
- Enable Employee Longitudinal Health Assessment Capability (ELHAC)
  - Repeated Measures of health outcomes on selected exposure populations

EHRS/ELHAC

- Added Incentive:
  - Standardization of services provided
  - Alignment of contractual obligations
  - QC of adherence to Federal requirements
  - Access to medical information anytime, anywhere
  - Control over medical surveillance participation
  - PITAC, NCHIT, HHS-NHII, IOM, AHRQ, AMOHAC, NASA HCF supported
- Benefit
  - Improved healthcare delivery, reduced injury/illness

Pursuit of the Solution

- Developed baseline understanding of NASA OH clinic status
  - How information is collected, documented, utilized
- Appointed a Task Force to represent OH clinics on EHRS requirements development
- Created a universal workflow process and identified support mechanisms that would enable EHRS

Pursuit of the Solution

- Thorough market analysis of COTS EHRS vendors
- Complexity of NASA Occupational Health prevented “good fit” with OTS model
- Rules of engagement (procurement) eliminated many “able” vendors

Since the Last H&S Meeting

- 2004 marked the year of the EHRS in the Federal Government
- President Bush – ’04 budget proposed doubling to $100 Million toward HIT
- HHS – Tommy Thompson convened HIT summit
- Executive Order – Established NCHIT
  - Dr. David Brailer appointed

Federal Involvement in HIT

- Federal Government to serve as example/accelerant of HIT
  - eGov Initiative
  - Facilitate sharing of EHRS technologies
  - Leverage Federal HIT investments
  - Demonstrate standardized interoperable systems

Pursuit of the Solution

- NASA reviewed Federal EHRS solutions
  - VA, DoD, IHS
- IHS EHRS provided best baseline functionality and performance based on identified requirements

IHS EHRS

- Pedigree of VA CPRS
  - Designed to meet ambulatory care and disease case management needs
- Open source FOIA product
- Essential output functionality for GPRA reporting
- Reliable database structure, middle-tier rules management, user-friendly GUI
- Flexible architecture for multiple deployment scenarios

IHS EHRS

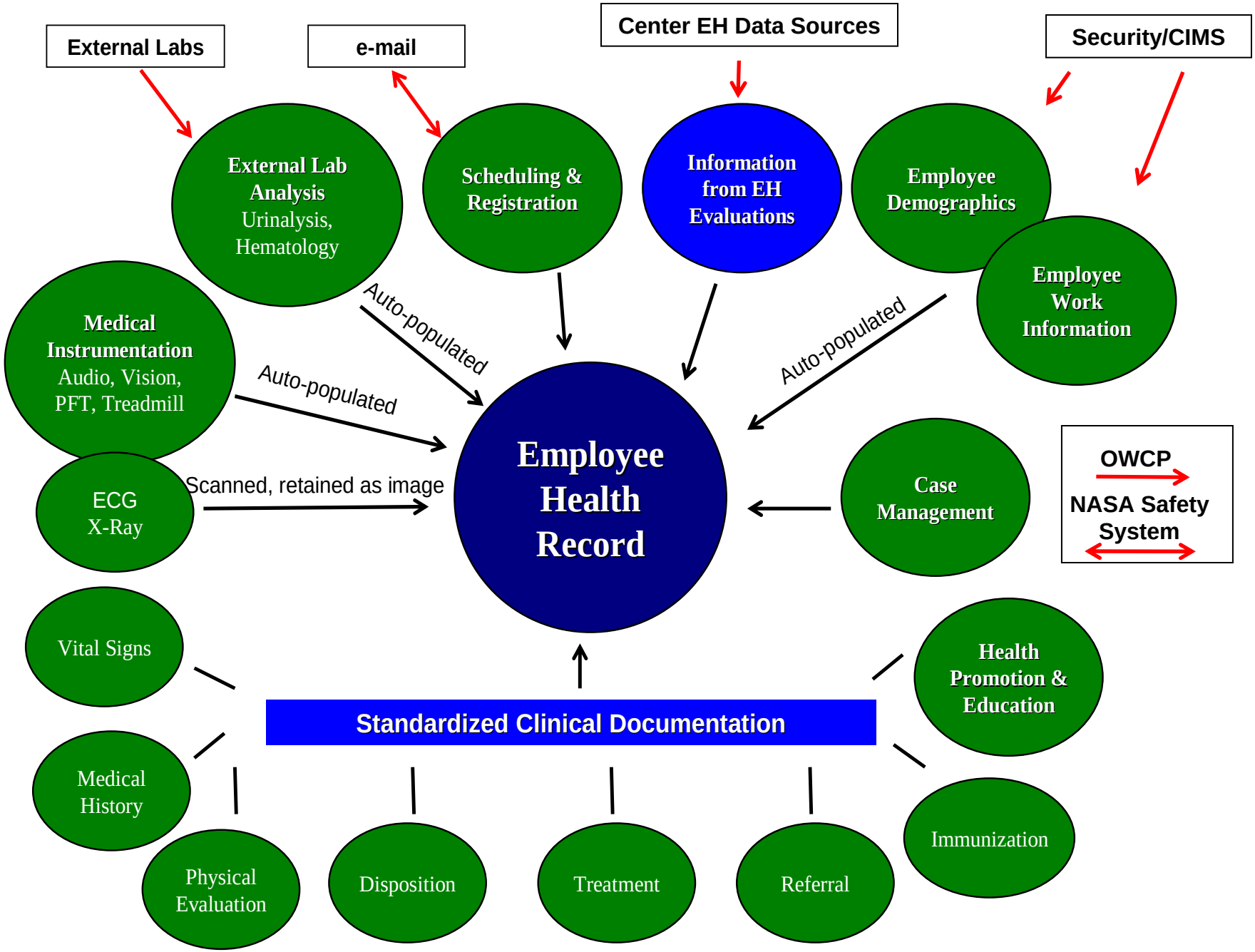
- Supports Federal government initiatives
- Avoids stringent procurement rules
- Demonstrates system stability/longevity
- Demonstrates ELHAC capability
- Demonstrates case management of select patients or populations based on health status
- Lacks Occupational Health functionality

Present Project Status

- System Selection Complete
- Three major initiatives concurrently in progress
  - Development of OH Functionality
  - Development of System IT Security Plan
  - Deployment of infrastructure to support System Architecture

OH Functionality

- Identify changes/modifications to match workflow process
- Automate information capture into patient record
- Develop standard terminologies and templates for textual information capture


External Labs
e-mail
Center EH Data Sources
Security/CIMS
External Lab Analysis
Urinalysis, Hematology
Scheduling & Registration
Information from EH Evaluations
Employee Demographics
Employee Work Information
Medical Instrumentation
Audio, Vision, PFT, Treadmill
ECG
X-Ray
Auto-populated
Auto-populated
Auto-populated
Scanned, retained as image
Employee Health Record
Case Management
OWCP
NASA Safety System
Vital Signs
Medical History
Physical Evaluation
Disposition
Treatment
Referral
Immunization
Health Promotion & Education
Standardized Clinical Documentation

System IT Security Plan

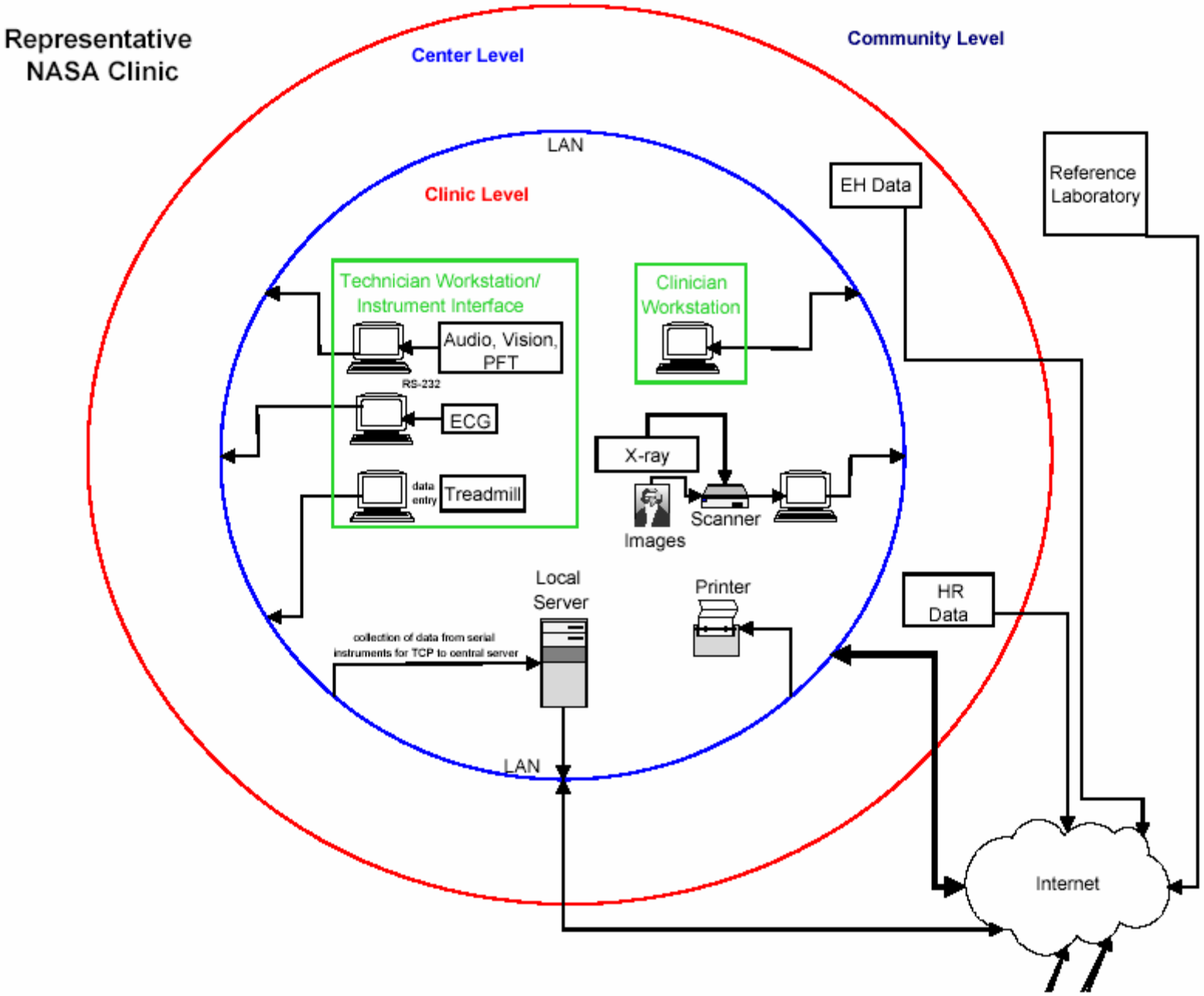
- EHRS Project Staff working closely with NASA CIO to assure the system will meet Agency requirements
- Draft IT Security plan includes review/use of IHS Security Plan and NASA MEME IT Plan in use at JSC
- Will use NIST 800 documentation to assure compliance with HIPAA and FISMA

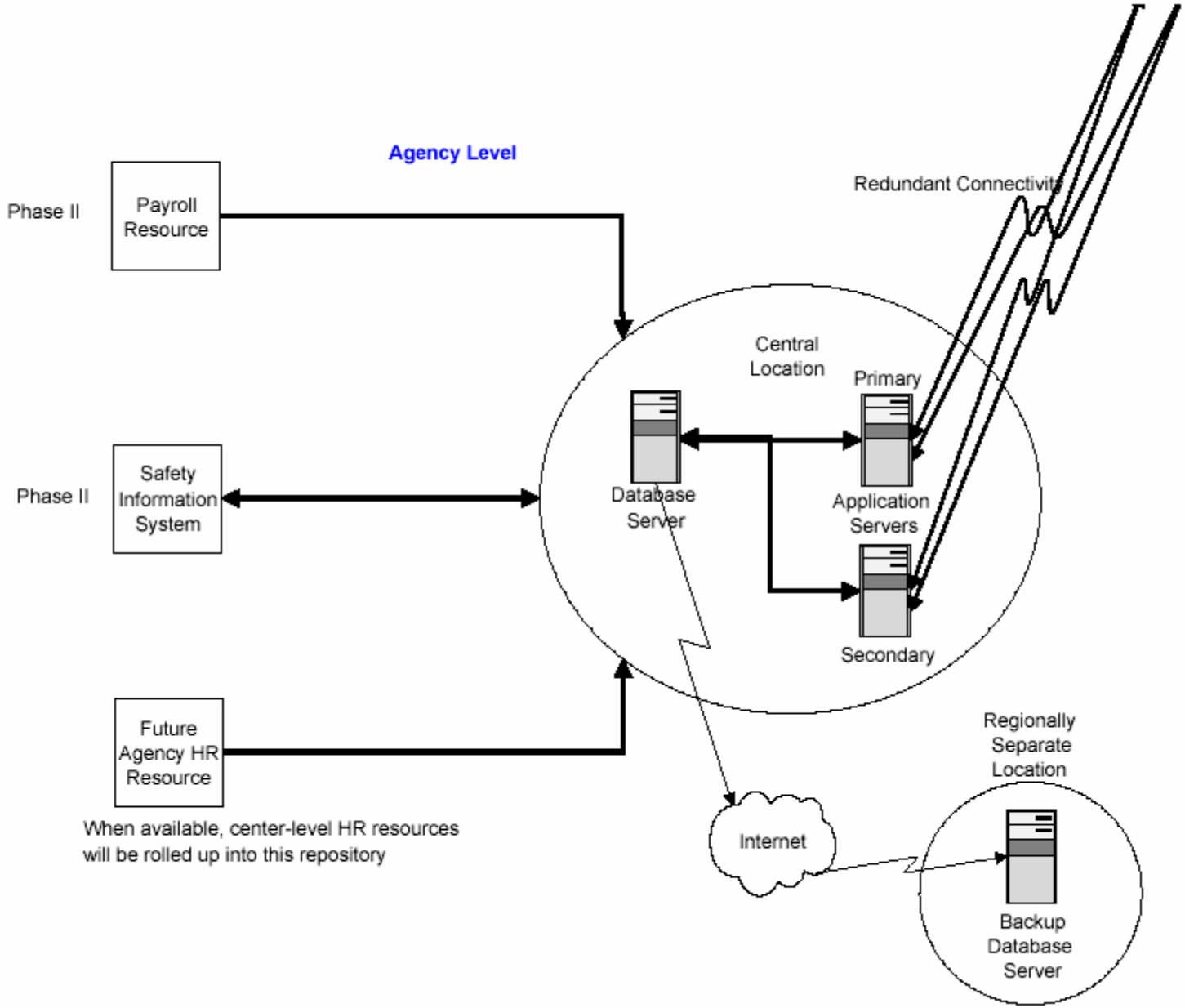
System Architecture

- Design to provide:
  - Assured privacy/security
  - Rapid accessibility of clinical data
  - Patient protected population-level database
  - Centralized back-up/update/troubleshoot capability

System Architecture

- Centralized Application/Database
  - Minimize IT support
  - Maximize OCHMO control/management of application
  - Utilize NASA connectivity infrastructure
- Locally utilize LAN connectivity with web-based technology
  - Behind Firewall
  - VPN


Representative
NASA Clinic
Center Level
Community Level
LAN
Clinic Level
Technician Workstation/
Instrument Interface
Audio, Vision,
PFT
RS-232
ECG
data
entry
Treadmill
Clinician
Workstation
X-ray
Scanner
Images
Local
Server
Printer
collection of data from serial
instruments for TCP to central server
LAN
EH Data
Reference
Laboratory
HR
Data
Internet


Agency Level
Phase II
Payroll Resource
Phase II
Safety Information System
Future Agency HR Resource
When available, center-level HR resources will be rolled up into this repository
Central Location
Database Server
Primary
Application Servers
Secondary
Redundant Connectivity
Internet
Regionally Separate Location
Backup Database Server

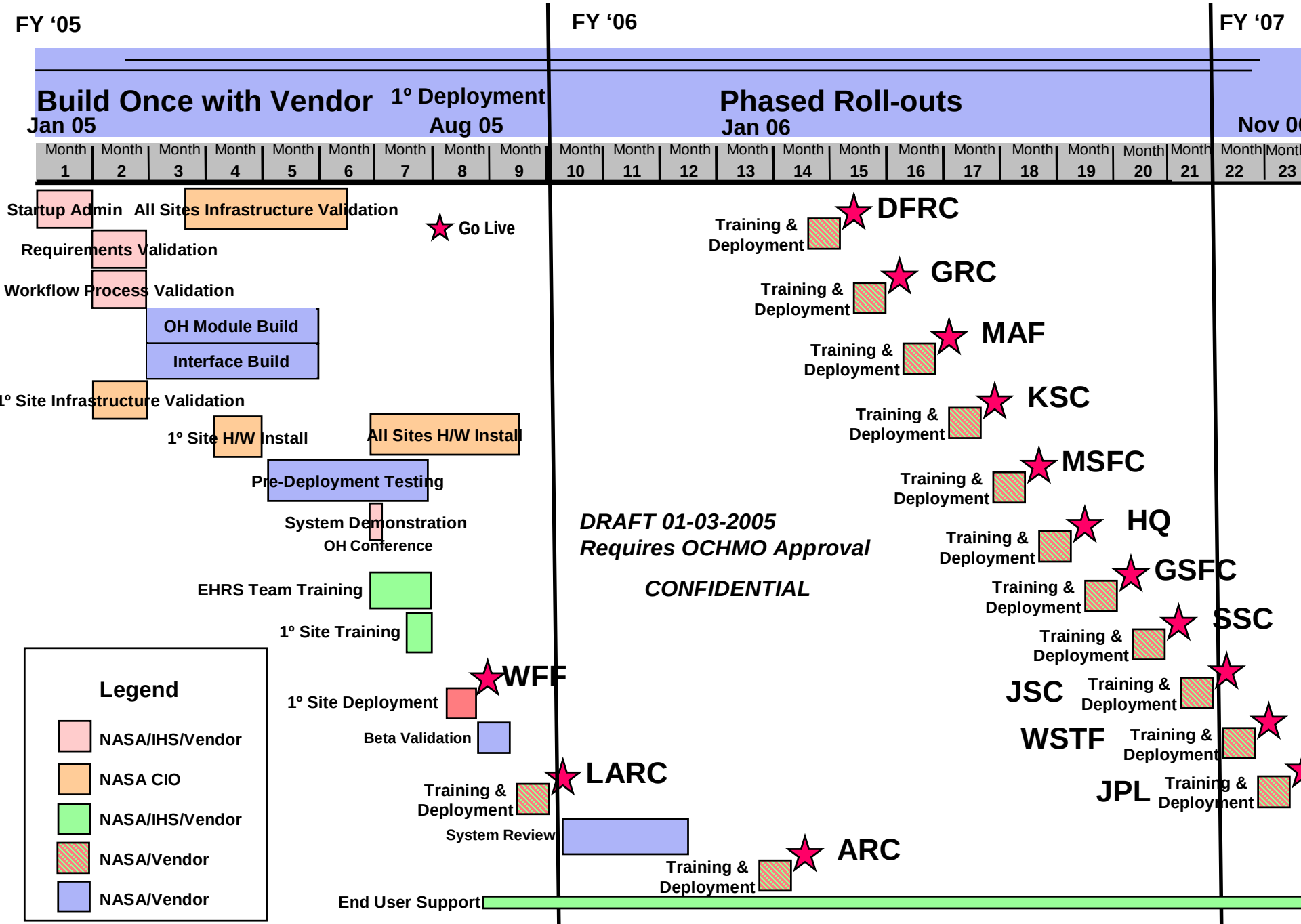
System Architecture

- IT Security Plan will address measures to minimize risks based on architecture
- Requires Master Patient Index (MPI)
- Improves future interoperability among Agency data repositories

Essential FY'05 Actions

- Vendor contract to
  - Develop OH functionality
  - Deploy full system complement
  - Train staff
- Modification of ODIN contract to support system HW locally
- Development of OH standard terminologies and documentation

NASA EHRS Development/Deployment Schedule



What Will We Update Next Year?

- Functional NASA EHRS
- Successful Deployment at Two Facilities

3-Year Plan
Deployment/Functional Assessment

- Full deployment FY ’07
- Population Surveillance capability FY ‘07
- ELHAC primary functional review late FY ’07
  - Observational study design
- Enhancement of AHEDS capability late FY ‘07

3-Year Plan Enhancement

- Initiate EH data incorporation FY ‘08
- Initiate Agency interoperability project FY ’08
  - Includes Safety, HR, Security

5-Year Plan and Beyond

- OH marketability to other Federal Agencies
- Clinician remote access
  - Out of the office
  - Out of the country
- Incorporation of EHRS and LSAH information in data warehouse