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ROBERT C. BYRD HEALTH SCIENCES CENTER

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WVU HSC IT Services:

Change Control Policies, Protocols, & Procedures

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Change Control Overview

Change Control is the ongoing process of communicating, coordinating, scheduling, monitoring, and controlling changes to the entire WVU Health Sciences Center Information Technologies Services environment. Through this process, we carefully and critically analyze the impact of all proposed changes, determine if such changes should be made, and then systematically and logically coordinate the implementation of these changes.

Change control protects the production data processing environment from changes that are potentially disruptive, harmful, or have “unacceptable risk” associated with them. Additionally, it provides a centralized source of documentation for all changes to the production and testing environments. (Note: All individual workstations are exempt from this standard. This document only applies to enterprise wide applications, equipment, etc. Please see “Change Control Exception / Exemption Section” for other exemptions related to this change control document)

Our change control process will:

- Maintain the integrity of the production and testing environments.
- Govern the deployment and movement of new/upgraded modules, programs, and hardware infrastructure.
- Enable effective and appropriate version control.
- Regulate the continuous flow of changes.
- Ensure control and proper access to source / object code.
- Ensure control and proper access to hardware security.
- Identify, address, and correct potential issues before “live” system changes are made.
- Reduce unplanned / unintended system downtimes.
- Increase system uptime through efficiency and stability protocols and procedures.
- Ensure quality assurance standard is appropriately addressed and adhered to.

Please note: For the purposes of this document, “quality” is defined as the efficient and effective development, deployment, and support of defect-free products and services that meet, or exceed, the needs of the Health Sciences Center and its faculty, staff, students, researchers, patients, and vendors.

Change Control Management Approach

A Change Control Work Flow Process has been created to ensure that standardized methods and procedures are used when introducing component and traditional IT application / hardware changes into the Health Science Center computing and network environments. Additionally, this standardized method will support the efficient and prompt handling of all IT changes as well as provide accurate and timely change related information to:

- Communicate change information throughout the HSC IT Service Departments.
- The management decisions used in the support of all information technology changes.
- Enhance the visibility of all changes for all users.
- Dramatically minimize the impact of change-related problems.
- Maximize system uptime /required time for testing.

All changes that affect the production, testing, and / or development environments require a “Change Request Authorization Form” prior to any changes occurring.

The Change Request Authorization Form:

- Acts as the cover document for submitting change requests throughout the WVU Health Sciences Center. It indicates the nature of the intended change, time frame, risk assessment, and impacted user groups.
- Provides a checklist of expected deliverables associated with the introduction of change into the production environment.
- This form acts as the compliance mechanism that will ensure that all development areas have been addressed.
- Ensures that all requested changes in functionality have been properly addressed during the discussion and development period.
- Acts to identify the areas being impacted by the proposed change. The following items will be addressed:
 - Application systems that will be impacted by the change
 - Users that will be impacted by the change
 - Business dependencies that may be impacted by the change
 - Consequences of the change
 - Backup procedures
 - Disaster recovery plans and procedures

Change Control Work Flow Process

Before a new/upgraded software or hardware technology is introduced into the test or production environment, the following process must be followed:

- A “Change Control Request Form” (see attached form “A”) must be completed and electronically submitted / approved by the department head/immediate supervisor. Once this approval takes place, the form will be submitted to the Assistant Vice President for Information Technology for concept initial review and approval.
- The Assistant Vice President for Information Technology will meet with Director of Quality Assurance, all Department Heads, and (when required / necessary) the requesting party to review the request change, ask questions, determine operational impact(s), and, if formal approval is given to proceed, help formulate a plan for testing and live system integration.

- The introduction of all new/upgraded modules, software, and/or hardware infrastructures into the production and testing environments must be scheduled and documented through this process.
- The software/hardware system must be thoroughly examined by the client and Administrative personnel in order to ensure that the system performs as required and does not adversely affect other modules /hardware in the testing / production environment.
- The post-implementation support procedures must be worked out prior to the operational introduction of the new application, version of application, new hardware, and/or existing hardware infrastructure change. System users should clearly know who to call for assistance. Support may be available from local departmental personnel, online, third party contractors, or a combination of the above. If an outside contractor developed the application, but HSC IT personnel will support the new application /hardware, the contractor is required to provide in depth training to the designated support personnel.

Security and Back-up

In collaboration with Assistant Vice President for Information Technology and the Director of IT Quality Assurance, the application developer / hardware infrastructure installer along with their Department Head will assure that adequate security and back-up controls will be put in place for modification to existing systems and to the introduction of the new system. They will:

- Provide assistance to the appropriate personnel in identifying the computer resources required to operate / run the new system.
- Work with users and security administration to develop and integrate security controls into all systems from the point of system design, through testing and production implementation.
- Thoroughly test all systems for accuracy and for proper security and disaster recovery controls prior to implementation into the production /testing environment.
- Create comprehensive documentation on application design, program logic, back-up and recovery procedures, internal application security controls and interdependence on other systems /hardware.
- All enterprise systems / devices must have a working backup before being put in production.

Testing Standard

When all coding is complete, the application / infrastructure change will be presented to the Vice President for Information Technology and the Director of Quality Assurance for final review and approval. Afterward, it will be presented to the requesting client for final testing and user acceptance. This final certification testing must be comprehensive in order to ensure that the application offers quality processing, provides adequate data security and back-up, meets all published design and performance criteria, and is accompanied with adequate user and technical documentation.

The **end user must** actively participate in application testing prior to user acceptance. Department personnel should specify the test criteria and evaluate test results. The purpose of testing is to prove that

the product performs to user defined system specifications. Department Heads will determine what end users participate, the number of participants, and to what extent they will participate.

Test Script Development

Quality Assurance test scripts are designed to guide testing through various system scenarios. They serve as a step-by-step guide for certifying the functionality of modules, applications, programs, and end user functionality.

Unit testing scripts will focus on individual application modules and include all relevant information required to certify functionality. This will be done if/when appropriate. Information includes:

- System Name
- Module Name (or reference)
- Area of focus
- Release number or reference (if applicable)
- Reference numbers for each identified step
- Short description of step
- Detailed instructions and input information
- Expected result description
- Actual results (w/corresponding reference number)
- Pass/Fail status

Product Testing

Product testing scripts will focus on individual applications and include all relevant information required to certify functionality. Information includes:

- System Name
- Application name (or reference)
- Area of focus
- Release number or reference (if applicable)
- Reference numbers for each identified step
- Short description of step
- Detailed instructions and input information
- Expected result description
- Actual results (w/corresponding reference number)
- Pass/Fail status

Integration Testing

Integration test scripts must verify the functionality of multiple applications placed together to form one system. Test scripts must stress the interfaces between applications that will occur in a production environment. Information includes:

- System Name
- Release number or reference (if applicable)
- Reference numbers for each identified step
- Short description of step
- Detailed instructions and input information
- Expected result description
- Actual results (w/corresponding reference number)
- Pass/Fail status

Acceptance Testing

Acceptance testing will verify the production readiness of a system as it appears to end-users. Test scripts should replicate user-level procedures and expected results. These scripts will be scenario-based and should be scripted in very straightforward way.

- System Name
- Application Name (or reference)
- Area of focus
- Release number or reference (if applicable)
- Reference numbers for each identified step
- Short description of step
- Detailed instructions and input information
- Expected result description
- Actual results (w/corresponding reference number)
- Pass/Fail status

Documentation Standard

Documentation is a necessity for all component and application development. It provides a communication vehicle for end user involvement and a basis for a common understanding of business requirements, business opportunities, alternative solutions, and system design. Documentation is also essential to avoiding an over-dependence on the knowledge of the development team, while communicating special knowledge about the application and providing a historical record.

Creating adequate and appropriate documentation will avoid many potential problems. There is a marked tendency for computing systems to be highly personalized, with one person fully responsible for the development, testing, implementation, and operation of a set of programs. The successful use of a computer based system and the production of specialized data may depend on the continued presence of this single individual. **An adequate and appropriate level of documentation will help to mitigate this situation**

The documentation record must include:

- System objectives
- Employed methodologies
- Outputs
- Responsible staff members
- Supervisory review information
- Training material
- Accounting and system controls
- Computer operating instructions
- Testing scripts
- Post implementation performance information
- Client/user narratives on usage

Core Application Documentation:

At a minimum, documentation accompanying newly developed applications must include:

- Operating instructions covering the operation of the application, the back-up of critical files, printing, and output distribution
- Application components must be documented, including macros, modules, libraries, and any related or required files
- Data attributes and processing algorithms must be listed along with any assumptions that may have been incorporated into the logic so that users can understand its key features. This documentation facilitates future efforts to maintain or modify the program
- Program back-up procedures should be prepared for all aspects of the application. Documentation must describe back-up and restore procedures for end users and system administrators

Other Application Documentation

In order to obtain a complete documentation of an application and the environment in which it exists; it will be necessary to supplement core application documentation with additional documentation resources. This “high-level” documentation should cover the following topics:

1. Summary Documentation

- ✓ What the application does
- ✓ Who uses it
- ✓ Processing procedures and schedules

- ✓ Data security classification (Please see the Data Management Section)
- ✓ What HSC functions and other systems are dependent on the application

2. Vendor Documentation

The vendor usually maintains vendor-provided documentation for software packages. If a vendor package is supplemented with internally developed code, that portion will be documented accordingly. Thus, a complete set of the documentation for such an application will consist of the vendor's documentation plus internally developed documentation.

3. Application Development Documentation

Application Development Documentation consists of deliverables that describe application functions and data from a "logical" perspective, such as Entity Relationship Diagrams, Data Flow Diagrams, Application Process Specifications, and Functional Decomposition Diagrams. This documentation may also include application components as they operate in production such as Physical Process Models or Operating Procedures. This documentation is of interest to those who are assigned to maintain or enhance the application.

4. Shared Documentation

Shared documentation is documentation that does not belong to any particular project or application. Examples of shared documentation are Data Element Definitions, Logical Data Models, or Case Tool Repositories.

Version Control Policy

WVU HSC IT will employ a three-tier Application Change, Test, and Production environment. Version control of applications from production to change to test and back to Production environments will pursue a formalized process. Resources required to support a three-tiered environment will be allocated at the initiation of *every* system development project.

The goal of our version control policy is to achieve formal separation of application maintenance functions; minimize disruption, downtime, and processing errors in production systems; ensure the security of production systems; formalize versioning and migration metrics.

Version Control Standard

A new version rollout passes through three sequential environments: change, test, and production. Each environment stands independent of the others. The application is transferred from one environment to another through a disciplined version control process.

Ownership Transfer

Ownership Transfer is the stage of the development process in which personnel in the client department routinely begin to work with the new application. This stage must be well planned so as to produce a minimum disruption to daily operations. HSC IT Administrators, departmental managers, and other application developers/programmers need to be involved in the planning and execution of this stage.

Once an application has been developed and is ready for ownership transfer, it is important that user documentation be developed that describes its purpose and use. **It is the responsibility of the Developer to see that this documentation is completed.**

Business Application IT Impact Evaluation

In order to ensure all applications are properly evaluated during the change control process, all HSC Applications must have a "Business and IT Impact Analysis Questionnaire (Form – B) completed. This will be a collaborative effort and will take place over the next few months.

Change Control Exceptions / Exclusions

1. Change control provides a centralized source of documentation for all changes to the production and testing environments (*Page 3*)

- All SOLE development and testing environment changes will continue to follow the prior developing/testing process. However, all changes to the production environment will follow the Change Control protocols outlined in this document. (See Appendix A – Item 3)

2. All changes that affect the production, testing, and / or development environments require a "Change Request Authorization Form" prior to any changes occurring. (*Page 4*)

- Minor changes to the production, testing and/or development environments of a web application through its own intended and non-malicious use, by either the developers or end users is hereby excluded from this formal change control process. This includes content additions, spelling/grammar corrections, picture/icon changes, adding hyper links, modifying data in the database, etc.
- Any major changes to the production side (i.e. complete template change) requires a change control request form be completed and approved prior to such changes being made.
- Any change to the developer's workstation does not require a Change Request Authorization Form.

3. Before a new/upgraded software or hardware technology is introduced into the **test** or production environment, the following process must be followed... A "Change Control Request Form" must be... submitted... (*Page 4*)

- Server "hot fixes", patches, and critical system upgrades **do not require a change control form be completed prior to the work being done.** However, all such changes should be documented and be sent to the "Change Control Group" (HSC_Changecontrol@hsc.wvu.edu)

once per week. A simple list of applied patches and fixes is sufficient for documentation purposes.

4. Documentation is a necessity for all component and application development... The documentation record must include: System objectives, Employed methodologies, Outputs, Responsible staff members, Supervisory review information, Training material, Accounting and system controls *(Page 7)*

- A simpler method for documentation of website and SOLE is acceptable. Web Services will determine the level and complexity of documentation requirements for this section as it pertains to these services.

5. At a minimum, documentation accompanying newly developed applications must include: ...Application components must be documented, including macros, modules, libraries, and any related or required files *(Page 8)*

- All SOLE application, websites, and other web applications core files should be noted in developer's documentation, and the file system, backups and/or subversion repository will provide a reference for all files used.

6. It will be necessary to supplement core application documentation with additional documentation resources... Application Development Documentation consists of deliverables that describe application functions and data from a "logical" perspective, such as Entity Relationship Diagrams, Data Flow Diagrams, Application Process Specifications, and Functional Decomposition Diagrams... *(Pages 8-9)*

- A simpler method for documentation of website and SOLE is acceptable. Web Services will determine the level and complexity of documentation requirements for this section as it pertains to these services.

7. It is the responsibility of the Developer to see that this documentation is completed. *(Page 9)*

- ✓ Alternative documentation for web applications will apply. Please reference acceptable list below:
- ✓ What the application does / objectives
- ✓ Who uses it
- ✓ Responsible staff members
- ✓ Supervisory review information
- ✓ Training material (for a large-scale application)
- ✓ Person(s) responsible for bug testing (for a small-scale application)
- ✓ Bug testing procedure (for a large-scale application)
- ✓ Database relationship diagram(s) (for a medium-to-large scale application)
- ✓ Levels of access (for a large-scale application)
- ✓ Listing of sub-modules (for a large-scale application)
- ✓ Sub-module objectives and training material (for a large-scale application)

- ✓ In-line code documentation, describing functions and page layout and flow

Alternative documentation for websites:

- ✓ Where the files are located
- ✓ Responsible staff members
- ✓ Supervisory review information
- ✓ Where the username / password for the website is stored and its retrieval process

8. The current method for the creation, development, and management of websites, within the HSC, is appropriate and thus can remain unchanged by the Change Control policy. Since Deans and Directors must authorize representatives be given access to create, edit, and change their school/departmental websites, these individuals are entrusted with and directly responsible for the content and all changes made. This includes fixing typos and text updates, revising images, adding hyperlinks, modifying data in the database, minor features added to a page to a web application, a new page or section added to a website, etc. A change control request form does not need to be completed for this activity.

|

| |
|-----------------------|
| Control Number: _____ |
| Project Name: _____ |
| Project Number: _____ |

Change Control Request (Form – A)

Change Classification

Emergency Process

- Break-Fix
- Urgent

Standard Process

- Time-Sensitive
- Standard

| Change Control Request Form | | |
|--|--|----------------------------------|
| <i>Rationale for Emergency Change (If requested as Emergency Process):</i> | | |
| <i>Approval Date:</i> | <i>Approved by:</i> | <i>Signature :</i> |
| _____ _____ _____ _____ | <input type="checkbox"/> Department Head <input type="checkbox"/> Immediate Supervisor <input type="checkbox"/> Q.A. IT Director <input type="checkbox"/> Assist. VP IT | _____ _____ _____ _____ |

Detailed Description of Request

Outcome, Impact, Implication. Be very specific and include the following items:

- *Application systems that will be impacted by the change*
- *Users that will be impacted by the change*
- *Business dependencies that may be impacted by the change*
- *Consequences of the change*
- *Backup procedures*
- *Disaster recovery plans and procedures*

1. Request Submission Date _____
2. Proposed Date of Change _____

3. Requestor Name _____
4. Requestor Telephone _____
5. Server(s) or Service(s) affected _____
6. Dependent upon (upstream services) _____
7. Dependent Servers/Services _____
8. Is this Change Request Associated with
Project – Name _____
- Concept
 Design
 Production
9. Is an Outage Required to Implement the Change? Yes No
10. Have Impacted Stakeholders Been Informed of the Change?
(Attach Communication) Yes No
11. Has a Detailed Task List for the Change Been Prepared?
(Attach Documentation) Yes No
12. For New Server Installation:
Has the Server Data Sheet Been Completed?
(Attach Server Data Sheet) Yes No
13. For Server Installation into Production:
Has the Server Run Documentation Been Completed?
(Attach Completed Run Book) Yes No
14. Has a Fallback Plan Been Documented?
(Attach Documentation) Yes No

| Administrative IT Personnel Use Only | | |
|---|-----------------------------|--|
| <i>Scheduled Change Date</i> _____ | <i>Scheduled Time</i> _____ | <i>Maintenance Window?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <i>Comments, Stipulations, Recommendations:</i> | | |

Business and IT Impact Analysis Questionnaire (Form – B)

The purpose of this questionnaire is to determine the criticality of the applications used at HSC. The information provided will be used to develop an Application Inventory that can be used in the Disaster Recovery Plan that minimizes the impact of the loss of this application in the event of a disaster. **(PLEASE USE ADDITIONAL BLANK PAPER OR ATTACHMENTS WHEREVER NECESSARY)**

Facility / Business Function / Application

Name: _____

Provide a brief description/purpose – mission: _____

What are the main functions? _____

Was this developed in-house or purchased from a vendor? If purchased from a vendor, do you hold the plans, source code etc. _____

If the application is a purchased package, are there extensive modifications to this application (briefly describe modifications): _____

What programming language was used to create the application? _____

How old is this application (maturity)? _____

Who is the owner of this application (i.e. Joe Smith of Accounting)? _____

Describe the System of Internal Controls for this application: _____

- Does management (executive, senior and line) accept responsibility for control? YES NO N/A
- Does management routinely monitor controls in this application? YES NO N/A
- Does management assign responsibilities for training and monitoring controls? YES NO N/A
- Are periodic and systemic evaluations of controls conducted? YES NO N/A
- Are evaluations documented and reviewed by qualified outside parties? YES NO N/A
- Are appropriate criteria established to evaluate controls? YES NO N/A
- Are deficiencies reported to higher levels of management? YES NO N/A
- Are deficiencies corrected in a timely manner? YES NO N/A

For each question that has a no response (or N/A) explain why (use as many additional sheets as necessary):

User Environment

Provide the following information for each department that uses the application:
 Department name
 How the application is used (example: Department A inputs customer information, Department B enters billing etc.)
 Primary contact (i.e. primary user or department head name)
 Number of people in department that use the application
 What attribute best describes the users that have access to this application:
 Public
 Customers and Employees
 Groups of Employees
 Specific Employees
 Other _____

| Department Name | Purpose or Use | Primary Contact | Number of Users | User Attribute |
|-----------------|----------------|-----------------|-----------------|--|
| | | | | <input type="checkbox"/> Public <input type="checkbox"/> Customers <input type="checkbox"/> Employees <input type="checkbox"/> Groups of Employees <input type="checkbox"/> Specific Employees <input type="checkbox"/> _____ |
| | | | | <input type="checkbox"/> Public <input type="checkbox"/> Customers <input type="checkbox"/> Employees <input type="checkbox"/> Groups of Employees <input type="checkbox"/> Specific Employees <input type="checkbox"/> _____ |
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| | | | | <input type="checkbox"/> Public <input type="checkbox"/> Customers <input type="checkbox"/> Employees <input type="checkbox"/> Groups of Employees <input type="checkbox"/> Specific Employees <input type="checkbox"/> _____ |
| | | | | <input type="checkbox"/> Public <input type="checkbox"/> Customers <input type="checkbox"/> Employees <input type="checkbox"/> Groups of Employees <input type="checkbox"/> Specific Employees <input type="checkbox"/> _____ |

User Environment Continued

How would the data generated by this application be classified?

What is the estimated volume of transactions processed by this application (example: 10,000 transactions per hour)

Is this a batch, on-line real time, and/or internet application? Batch On-Line Internet

If application processes in batch mode, what is the length of processing time per batch?

Average: _____

Maximum: _____

How often is the application scheduled to run (daily, weekly, as required): _____

Does the application have a standard scheduled run-time? If so, when (i.e. 1st Saturday of the month at 3:00 p.m.):

What is the estimated run-time of the application?

What time of day must the application be available to users?

Has this application had processing problems in the last twelve months? _____

What is the frequency of these processing problems? _____

Have the processing problems lead to significant application down-time: _____

What was the impact of this down-time (example: loss of patients, delay in sending bills etc.)?

Did user departments have fall-back procedures during these down-times?

What additional resources did the departments need (example: additional temporary people to clear backlog):

How long did it take to clear the backlog?

What platform(s) does this application use (i.e. LAN, Internet, IBM Mainframe etc.)?

Platform 1 _____

Platform 2 _____

Platform 3 _____

What Operating system(s) does this application run on (i.e. Novell, VM, VSE, UNIX etc.)?

What sub-systems does the application run under (i.e. CICS, TSO, Windows, UNIX (Version) etc.)?

What applications and business functions feed this application (i.e. what provides input to this application)?

Operating Environment Continued

What applications and Business Functions use the output from this application?

What are the other applications and Business Functions impacted by the failure of this application?

What is the file structure of the data (example: SQL, Oracle, VSAM, Relational DBMS, etc.): _____

What is the communication access methodology for this application?

- Internet
- Intranet
- Public Telephone
- Network
- No Communication
- Other _____

How is the application information data stored:

- In one Database _____
- In many Databases at one location _____
- Many Databases at many locations _____
- Disk files
- Tape files
- Other _____

Are there any particular aspects of this system's operation or function that should be considered in determining the system's criticality to the organization? _____

If a disaster occurred and normal processing capability were unavailable, in which of the following categories would you classify this system:

- Category I Must be processed in normal mode, no degradation is acceptable.
- Category II Only high priority (i.e., high dollar item) transactions or critical reports would be processed.
- Category III Processed would be carried out on a "Time Availability" only basis.
- Category IV Processing would be suspended, but data collection would continue.
- Category V No processing or data collection would be carried out until normal computer capacity was re-established.

How long can application be down before having a significant business impact on the organization?

- 0 - 8 Hours 8 - 24 Hours 24 - 48 Hours
- 3 - 5 Days 5 - 10 Days Greater Than 10 Days

What would be the first major affect if system were to go down (i.e. Patients would not receive medicine)?

How long until the next impact (i.e. monthly processing could not be performed)?

Documentation

Does User Functional Documentation exist, (location?): _____

Last Reviewed by and date: _____

Does Application Documentation exist: (location?) _____

Last Reviewed by and date: _____

Does IT Operation's Documentation exist: (location?) _____

Last Reviewed by and date: _____

Security

Is there application level security? _____

Who administers this security? _____

Is there system-wide security software? _____

Who administers system-wide security? _____

Application Support and Maintenance

Which programmers or Project Groups are responsible for maintenance?

What is the average Programmer experience on this application?

What training and/or background are required by the support staff?

Resource Usage

What are the disk storage requirements?

What are the tape storage requirements?

Equipment Requirements by Department

How many workstations (A) does each department have that can access this application: _____

What is the minimum number of workstations (B) that each department will need in the event of a disaster: __

| Department Name | Business Function | Primary Contact | Number A/B | User Function |
|-----------------|-------------------|-----------------|------------|---------------|
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How often this application is Backed-Up (daily, weekly, monthly, and yearly, etc.):

- Daily Time: _____
- Weekly Day of week and Time: _____
- Monthly Day of Month and Time: _____
- Annually Day of Year and Time: _____
- Other Day of Year and Time: _____

Who performs the backup? _____

Where are the Back-ups stored (example: fire-proof vault on premises, off-site, etc.):

How and where are the non-electronic (paper) files stored?

If the function was moved what non-electronic (paper) would be required?

APPENDIX A

1. Websites

The following sites are hosted, modified, and/or developed by ITS Applications / Web Services.

- Public Websites - Comprising over 268,000 files managed by 286 different FTP accounts.
- Health Sciences Center (www.hsc.wvu.edu)
- Prevention Research Center (prc.hsc.wvu.edu)
- West Virginia United Health System (wvunitedhealthsystem.org)
- Osher Lifelong Learning Institute (www.olliatwvu.org/)
- National Center of excellence in Women's Health (wvhealthywomen.org)
- WVSeniors.org (wvseniors.org)
- Healthcare at WVU (www.health.wvu.edu)
- Future of the HSC (future.hsc.wvu.edu)
- WVU Hospitals (wvuh.com)
- Anatomy Images (anatomyresources.hsc.wvu.edu)
- Wheeling Walks (wheelingwalks.org)
- WVU Physicians of Charleston (wvupc.org)
- Anatomy Department (anatomy.hsc.wvu.edu)
- Exercise Physiology Club (wvupumpnrun.com)
- WV Summer Institute on Aging (wvsioa.org)
- West Virginia Poison Center (wvpoisoncenter.org)
- WVU Childrens Hospital (wvukids.com)
- WV Prescription Drug Abuse Quitline (wvrxabuse.org)
- HSC Intranet (intranet.hsc.wvu.edu)
- Neuroscience Research Institute (brni.org)
- End-of-Life Care information (wvendoflife.org)
- Continuing Education (ce.wvu.edu)
- Charleston Medical Center GME (camc.wvu.edu)
- WV Walks (wvwalks.org)

In addition, we host and provide support for the 4 major school websites, as well as several hundred department and section websites.

2. ITS Managed Services

- HSC Directory (directory.hsc.wvu.edu)
- SOLE (sole.hsc.wvu.edu) - Portal for online education and information
- SOLEProxy (soleproxy.hsc.wvu.edu) - Access to offsite databases via SOLE
- Video (video.hsc.wvu.edu) - Video hosting of legacy Windows Media content
- SOLEMail (mars.hsc.wvu.edu) - Web based email for selected SOLE users
- MyFiles (myfiles.wvu.edu) - Student public websites and private storage via SOLE
- SOLE at WVSOM (sole.wvsom.edu) - SOLE installation for The West Virginia School of Osteopathic Medicine
- SOLE at OMC (sole.omc.edu.om) - SOLE installation for The Oman Medical College

- WebTrends (atback.hsc.wvu.edu:1099) - Webtrends Reporting Center
- Listservs (lists.hsc.wvu.edu)
- Camtasia Relay (camtasia.hsc.wvu.edu) - Camtasia Relay media processor
- ATDB1 (atdb1.hsc.wvu.edu) - Database driven web apps
- Secure (secure.hsc.wvu.edu) - Secure database web apps

3. SOLE Development, Test and Production systems

Modules

- SOLE has 29 built-in modules, developed in-house by ITS Applications / Web Services.

Courses and Sites

- There are 605 course websites, 165 additional sites, and 20 external sites in SOLE.

Files and Code

- The core SOLE code is comprised of 6300 files with over 285,000 lines of code.

SOLE Production Systems

- Production Website (sole.hsc.wvu.edu)
- Front end web cluster (venus.hsc.wvu.edu)
- Front end web cluster (saturn.hsc.wvu.edu)
- Front end web cluster (jupiter.hsc.wvu.edu)
- Front end web cluster (pluto.hsc.wvu.edu)
- ATSQL05 - Production SQL Server 2005 system

Development

- Mercury (mercury.hsc.wvu.edu) - Nightly builds of the subversion repository
- JMOSS (jmoss.hscweb.hsc.wvu.edu) - Developer working copy of SOLE
- ECOFFMAN (ecoffman.hscweb.hsc.wvu.edu) - Developer working copy of SOLE
- EDEHAAN (edehaan.hscweb.hsc.wvu.edu) - Developer working copy of SOLE
- JZEMERICK (jzemerick.hscweb.hsc.wvu.edu) - Developer working copy of SOLE
- ATSQLDEV05 - Development SQL Server 2005 system

Testing

- SOLE Stage (solestage.hsc.wvu.edu) - Testing of latest version build - should be a match of what is on production or what is going to production within a few weeks

4. Web Applications

- Directory Administration
- SOLE Surveys
- HelpDesk
- ZapIt / Projects & Impacts (bug tracking and project tracking application)
- Website Accounts Manager
- Promotion & Tenure tracking
- Community Service tracking

- Demographic tracking (student information)
- HSC Calendar
- ITS Workshop Registration
- ITS Room Scheduler
- Forensic Drug Information (forensicdi.com)
- Mission-Based Management
- Many more small applications (Immunization records, continuing education credit forms, etc., etc.)