Collaborative IT at CU Boulder

Larry Levine AVC for IT
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The success of the University of Colorado missions in part depends on how well we plan for, use, and support information technology. IT is a strategic investment underlying all the work of CU Boulder.

In a spring 2012 meeting of the Administrative IT Advisory Committee, members discussed how a collaborative IT environment might function, in which their area's IT needs would be served by a comprehensive IT infrastructure which they might augment, when needed, with their own IT staff. Such a strategy is advantageous across academic (teaching and research) and administrative areas. Many IT needs can be fulfilled through core resources that benefit all areas, creating advantages of scale and interoperability. As an area's IT needs become more specific and specialized, additional IT resources that build on core resources may be needed.

It is critical then that those who head the various areas that employ IT professionals, IT professionals across campus, and OIT work together to create a continuum of IT resources. A continuum of resources can provide an excellent base of core services that IT staff in various areas can depend on to provide services specific to their areas and avoids duplication of resources best provided via the base environment. The purpose of this document is to describe that continuum and to serve as a statement of a core strategy for IT at CU Boulder.

The IT hierarchical continuum of resources:

CU Boulder is a large teaching and research university with an expansive and complex IT environment comprising many different but interdependent resources and people. Today, faculty, students, and staff increasingly provide their own IT resources as devices and networking become increasingly sophisticated, ubiquitous, and affordable. IT professionals across campus, including OIT, become more purveyors, for instance by purveying outsourced and "cloud" services, and less creators, that is less actually running servers and developing programs, of the CU Boulder IT environment. As purveyors of IT resources, CU Boulder's IT staff can work in collaboration with each other to construct an IT environment for stakeholders that optimizes funding and maximizes value and resource sustainability.

To achieve this, consider that IT Resources array themselves along a hierarchical continuum (the IT Continuum) that ranges from the broadly inclusive and large scale (Pervasive), to the local, unique, and specific (Localized). Pervasive Resources require campus or system level staff, infrastructure, and funding and form a baseline environment. Localized Resources are rooted in and supported by academic and administrative units and depend on the baseline environment.

Typically IT Resources at different points on the IT Continuum are combined, e.g. an A&S department website on www.colorado.edu: the www.colorado.edu site is a Pervasive Resource; the department's content is a Localized Resource; and perhaps the site was built by A&S's ASSETT program, a Resource toward the middle of the IT Continuum.

Examples of resources along the IT Continuum:

Pervasive Resources: campus network (data, voice, video and the supporting physical infrastructure); robust and redundant data centers and hosting facilities, including standard server hardware and software platforms and private "cloud" services; campus-wide email and calendaring; learning management system and other instructional technologies; large-scale research computing; name directory systems (for example, IdentiKey); the campus web environment (www.colorado.edu and the overall web environment most campus sites exist within); administrative systems, purveyed by both UIS and UCB (student, finance, HR, sponsored activity); campus help-desk and support; class-room and IT–lab technology; campus-wide digital signage; and security.

Localized Resources: research groups using, for instance, instrumentation for experiments and specimen analysis, specialized labs, field-based data, and IT used with human subjects. Specialized IT used in specific instances of teaching and teaching labs. These resources may provide their own hardware/facilities environments when academic pursuits or the physical nature of the work demands physical locality. Otherwise, the base environment may be used to provide resources through the level of server operating systems and storage.

Resources toward the middle of the continuum: IT teams in functional business offices (HR, Finance, Student Services, HDS, sponsored activity, etc.) and IT teams in academic/research areas. These teams typically have one foot in a functional administrative or academic area, their other foot in IT, and typically create resources specific to their functional areas (verses resources that scale to the entire campus or all of CU) that are dependent on the underlying baseline environment.

Any of these services may now or in the future be outsourced or "purveyed" in a variety of ways, a choice driven by maximizing value.

Why the IT Continuum approach is important:

A collaboration of IT professionals will want to make the baseline environment as comprehensive as possible to avoid duplication of resources and to free functional area IT staff, who then do not have to provide a local baseline environment, to concentrate on resources that provide value specifically to their areas. All IT staff and those to whom they report are stakeholders in a strong baseline environment. If a baseline environment is lacking then mechanisms are needed to identify and resolve the deficits rather than campus IT professionals and the offices they serve avoiding use of the baseline environment, as has occurred in the past. Those purveying the baseline environment are responsible to propose and satisfactorily provide, per evaluation by faculty, students, and staff, resources, standards, and processes that are shaped to optimally provide for the core IT needs of all. The baseline environment is not intended to provide for all the IT needs of everyone. Those building their IT resources on the baseline environment are responsible to evaluate existing and proposed resources, standards, and processes, consider shaping their IT needs to take advantage of the baseline environment, and avoid solutions that cause them to recreate elements of the baseline environment in duplicative but unique ways. Where a resource falls on the continuum has no absolutes, varies per functional area, and will change over time as technology evolves and as the configuration of IT professionals at Boulder and CU changes. Ongoing open multi-directional communications are essential to an optimized hierarchical continuum.

Conclusion:

The "business" of CU Boulder is service, through teaching and research. Teaching and research generates and imparts useful knowledge and is an economic engine for Colorado and beyond. Research also informs what is taught, keeping transmitted knowledge relevant and fruitful. Teaching benefits research, and research benefits teaching, hence this symbiotic relationship is one of the major strengths of a research university. Teaching generates learning for CU Boulder's students, who become contributive citizens and help to advance human society. IT is an expensive and complex resource that underlies teaching and research. It is incumbent on faculty, students, and staff to collaborate in the provision and governance of IT resources. The notion of a hierarchical continuum of IT resources provides a strategy on which to do so.