

Report of a CNI Executive Roundtable:

Multiple Devices and Platforms: Institutional Strategies April 2, 2012

Background

The faculty, staff, and students in our institutions continue to use laptops and desktop computers but now also bring a variety of mobile devices – notably smartphones and tablets – to campus. They have increasing expectations for the seamless use of a variety of devices to access all types of content and services. With the growing popularity of platform-specific apps and proprietary formats for some types of information resources, we may be moving away, at least temporarily, from the gains achieved by the focus on interoperability that marked the earlier years of the development of networked information.

At the same time, the urgency in addressing these developments seems greater today, as we see serious movement towards e-textbooks (again, with a wide variety of platform strategies underpinning them); greater integration of mobile devices and applications into course and classroom experiences, possibly leading to specific platform requirements for specific classes; new vendor offerings to allow faculty and students to author for new mobile platforms, but again with exclusivity or lock-in provisions; availability of content that is now platform-specific; and better-developed expectations about issues related to accommodating students with disabilities.

Institutions are grappling with policies related to devices, platforms, mobility, content, and services. The *Horizon Report* has identified mobile computing as a key near-term technology for the past two years. However, a 2009 study from the EDUCAUSE Center for Applied Research (ECAR) found that many institutions have not yet begun planning for institution-wide mobile services. It is clear from the roundtable that developing institutional strategies in this quickly evolving environment continues to be challenging.

A discussion of these and other issues took place at the Coalition for Networked Information (CNI) Executive Roundtable in Baltimore, Maryland on April 2, 2012.* Teams from 11 higher education institutions described their experiences, concerns, strategies, and future plans.

Institutional Perspectives

Some key perspectives from institutional participants included these observations:

- Only a minority of institutions represented at the roundtable had an overall institutional strategy for mobile devices, platforms, and content. While some campuses desire a consistent look and feel for information on mobile devices, few have achieved this goal. Some campuses have an institutional app, that includes a number of features, but this is available alongside many separate departmental or functional mobile offerings, which may be available as apps or may be available on a mobile-compatible website. In many cases, individual units, programs or schools (especially professional schools) embark on a specific mobile path because they have a particular sense of urgency related to their program, and this may precede readiness by other parts of the institution. It is also interesting to note that, for many

colleges and universities today, the “front page” of the campus website is managed or coordinated by a communications/public relations group. These groups are often eager to see high quality applications developed for a range of platforms that replicate or substitute for the institutional website and extend the “brand”.

- There was a strong trend – particularly within IT and library organizations – towards focusing local mobile development efforts on HTML5-based web strategies and website customization for mobile users and *not* on creating apps for various devices. (Several institutions noted that earlier investments in content management systems and related processes to back-end websites were now producing dividends in building mobile specific sites.). App development across the range of platforms is considered too expensive both in terms of programming and ongoing support. However, some participants suggested that there are cases when the advantages of an app may genuinely matter in delivering the intended experience, and they stated that they are being pressured to develop apps for the institution. Some participants described their concerns with developing apps as a matter of scaling solutions intended for consumer use to an institutional environment.
- For existing software vendors in relatively mature markets – for example enterprise management systems or integrated library systems – the creation and marketing of add-on mobile software for various platforms offers a very welcome new revenue source. Campuses are trying to sort out how important these mobile versions of existing services are to their user communities, and are frequently finding out these users believe such mobile versions are *not very important*. For example, several roundtable participants argued very cogently that the point of delivering library services to mobile devices is *not* to re-create the OPAC or the ILS but really primarily about a new and different set of services. Examples included geo-location-aware mapping services for finding books in the stacks, locations of public workstations that are currently available, quick searching of catalogs and other information interfaces, tours of the library, geo-referenced campus tours and reference services (“what is this building, and why is it named what it is?”) linked to digitized archival materials in the library, booking group study rooms, and access to text-a-librarian services.
- While the provision of historical information about campus buildings, artifacts (statues, paintings, display cases, architectural details) and activities was viewed as a very powerful and promising area of development when combined with geo-location, mobile devices, and digital cameras, most libraries and university archives do not have a mobile strategy for the archival materials they have digitized locally. Some extremely interesting experiments have been developed (i.e. WolfWalk, a photographic guide to the history of North Carolina State University optimized for mobile devices), and they are now serving as models for other institutions to explore the possibilities.
- The proliferation of mobile devices leads to an increased need for wireless access infrastructure – at least one roundtable participant characterized this demand as “insatiable”. Students frequently use 2-3 devices at a time, each wanting some type of wireless connection. Simply provisioning the necessary wireless connectivity is becoming financially challenging through institutions, and extremely challenging at a

technical level in terms of frequency management and reuse, device address management, authentication, and related matters in the most densely populated areas. Campuses that have outsourced applications to network-based software (e.g. Google Apps) are also facing growing bandwidth demands. Planning for wireless provisioning of new spaces is particularly challenging – it is unclear whether to assume continued, and perhaps increased, proliferation of devices, with a single individual needing an ever-larger number of connections, or to look to convergence to a smaller number of communications devices per person in the near to medium future. It is also not clear how to factor in common carrier-provided 3G/4G services and strategies that try to roam devices onto wireless networks when they are available to reduce load on the common carrier networks (and common carrier costs).

- Wireless devices create a range of other infrastructure demands. Students are increasingly plugging their small mobile devices into large display screens in libraries and computing labs. They also want to have access to convenient public printing facilities from their mobile devices. Electrical outlets for recharging devices (or plugging in laptops) are in great demand and, often, short supply.
- Campuses need to evolve cost models for wireless network access. Historically, many campus network funding models have focused on re-charging for hard-wired ports, with all ports being equal (100 base T, for example). Now, there are questions not only about how to fund wireless access to support mobile devices, but about what the right mix of wireless and hard-wired ports should be, especially given the assumption that, for the foreseeable future, most really high performance connections will be “wired” (or fiber) rather than wireless.
- Given the excitement and growing expectations about geospatially aware applications and services, a really striking issue that emerged was the need for new enabling institutional infrastructure and resource management in the form of high-resolution, high-quality and up-to-date geospatial databases that map campuses, buildings, and within-building details, and link them to GPS coordinates. These databases need to be maintained in such a way that they can easily integrate with a wide range of applications. Ideally, these should also incorporate or link imaging and *in situ* real-time sensors (video cameras, network-connected washers and dryers in dorms, vending machines, public workstations and printers, traffic congestion sensors, etc). In many institutions, the locus of responsibility for such resources is unclear, or is distributed across multiple departments in an ad hoc fashion based on historical accident; certainly, most institutions do not recognize it as a critical institutional asset that demands a strategy and ongoing investment.
- Authentication and security in the mobile environment bring new and complex challenges. One participant spoke of the multi-device mobile environment as a “restart” for identity management. One campus is preparing a request for proposals for mobile device security, including personal devices on campus, and they expect this undertaking to be controversial. Some institutions raised a concern about employees having institutional information on their personal devices, and two institutions stated that they are currently developing policies related to that issue.

Another campus noted that it needs more programmers to help deal with mobile device security and authentication challenges; this is one of the major development bottlenecks. Another important issue here is the need to support visitors (students, faculty and others) who want – and increasingly expect – to roam onto campus networks, ideally with little or no administrative intervention; there are a number of both policy and technical issues here. Interestingly, the growing ubiquity of mobile devices does offer help with some long-standing authentication issues; for example, smart phones are being pressed into service as part of two-factor authentication schemes.

- A consistent underlying theme in much of the discussion was the mismatch between not only devices but also an entire support ecosystem for these devices that was designed for the consumer market on one side and institutional needs on the other. To cite just two examples, many roundtable participants wanted to provide materials through mechanisms like iTunes, which serve as very natural content distribution channels for a large group of devices, but were stymied by legal terms and conditions they felt were inconsistent with institutional needs and concerns. A second example was the ever-increasing reliance (now moving to the point of *exclusive* reliance) on “app stores” for various platforms; this is a horrible fit with typical university accounting, funds management, auditing, and procurement.
- There are many complexities related to the multiple platforms for e-books and e-textbooks. Faculty look to information professionals for help in understanding and making choices related to these platforms. The Internet2 textbook initiative is pushing standardization of e-book formats. Some participants expressed the belief that e-books in general will encourage schools to innovate and the new Apple publishing interface, iBook, will transform texts. It is unclear at this point what this will mean for platform-specific e-readers. There are also concerns about proprietary content tied to specific mobile devices; this is largely seen as detrimental to the interests of the higher education community. Academic libraries usually make a very large number of e-books available to their community, and scholarly publishers generally provide library contracts and terms that are commensurate with those of the print world; in contrast, publishers of popular literature have cut off access to e-book subscriptions to public libraries or have instituted very restrictive licensing terms.
- Institutions are contemplating what it means to have a mobile device-ready classroom strategy. This can include the campus-wide availability of wireless, a consistent “clicker” (personal response system) strategy, perhaps implemented as an app, interfaces to projectors or large screens, and faculty access to equipment, such as tablet devices.
- Accessibility compliance is important and can require a large infusion of resources. Institutions ignore this issue at their peril, and it needs to be considered early in the planning and experimental stages of projects, not solely when scaling up for production deployments.

- It was interesting that we did not hear much discussion about emerging demands and challenges related to the management of *multiple* devices (i.e. a single user with a smart phone, a tablet, a laptop, perhaps a music player) who is concerned about synchronization, backup, identity management, and software and configuration management across the group of devices. This is clearly a growing issue in consumer marketplaces at present, and we think it can be expected to emerge into the higher education environment soon. In addition, we heard little about backup services targeted at platforms other than full-scale computers; this may be an area of developing vulnerability as other devices find important roles in academic processes.

Concluding Thoughts

While we intended to focus this roundtable on the growing number of different and incompatible platforms that are emerging after a decade or more dominated by a small number of increasingly convergent platforms, and we did cover these issues, we also spent a great deal of time on challenges related to managing very large numbers of mobile devices, almost all of them developed for the consumer marketplace and then brought into university environments.

As members of our community use their constellations of devices for an increasing number of functionalities in their personal lives, they expect more from their university. Developing a cohesive strategy that provides a seamless environment for members and sub-groups of an institution is proving elusive on most campuses. However, many institutions are providing many information services for users of mobile devices and a wide array of content. The uptake of mobile devices and the desire for content puts increased demands on resources, from adequate wireless infrastructure both inside and outside buildings to adequate security measures to protect the campus network, to easy access to content configured for mobile devices. Higher education has often been an innovator in the use of IT, but here we see many institutions are finding it difficult to keep up with the constantly changing environment and ever-increasing demands. Further, various units within institutions are struggling with questions about how important it is to provide various kinds of services across the diversity of new platforms, and what priority this should receive in the allocation of limited resources.

***CNI Executive Roundtables**, held at CNI's semi-annual membership meetings, bring together a group of campus partners, usually senior library and information technology leaders, to discuss a key digital information topic and its strategic implications. The Roundtables build on the theme of collaboration that is at the foundation of the Coalition; they serve as a forum for frank, unattributed intra and inter-institutional dialogue on digital information issues and their organizational and strategic implications. In addition, CNI uses Roundtable discussions to inform our ongoing program planning process.

The Coalition for Networked Information (CNI) is a joint program of the Association of Research Libraries (ARL) and EDUCAUSE that promotes the use of information technology to advance scholarship and education. Some 200 institutions representing higher education, publishing, information technology, scholarly and professional organizations, foundations, and libraries and library organizations, make up CNI's members. Learn more at www.cni.org.