Report of the RACL / WebCT Working Group

Recommendations for a USG Solution for Integration of Library Resources in USG WebCT / VISTA Environments

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Overview

It is imperative that the USG vision for the integrated learning environment leverage the campus and System (GALILEO and GIL) investments in library resources, particularly for presentation within the WebCT VISTA online course management system that is in the process of a system-wide implementation. Increasingly, online course management systems and campus portals are shaping the students' view of their learning environment and the content resources available to them. In addition, students (and busy faculty too) expect convenience, ease of use, and seamlessness in all aspects of their lives. The majority of the subscription-based online library content in which institutions invest for support of learning is not as simple to access as Google, requiring authentication and additional searching in multiple interfaces. Students are relying instead on Internet-based content that may not be reputable or of appropriate quality. USG libraries must explore ways to establish service points within this virtual campus in order to ensure that appropriate materials and resources are easily accessible, recognized, and utilized by students in their learning and research.

This document addresses the features and products necessary to ensure seamless access to library resources and services from within WebCT Vista courseware and campus portals, including immediate measures as well as requirements for future technical architecture. These needs must be addressed if the USG is to become a major provider of quality online courses with a truly integrated learning environment serving an ever-increasing enrollment.

Background

Today's students expect that they will sign into a **personalized learning environment** that seamlessly integrates all services to which they have rights, including everything from registration, to email, and to courses themselves. They also expect to be able to customize that environment with their own preferences in presentation, organization, and content management. Underlying **systems must be standardized and interoperable** in order to produce such user-centered systems. Although exceptions exist at the campus level, the University System of Georgia has adopted several standard software platforms for the majority of student and campus services, including student information (SCT's Banner), payroll and financials (PeopleSoft), library services (GALILEO and GIL), and learning services (WebCT VISTA). Various efforts are underway to ensure that these systems are interoperable or at least relatable. Campus portals, enabled by products such as SCT's *Luminis* product, the open source *UPortal* product, and Novell's *exteNd Director* portal product, are seen as the way to provide a gateway to all student and campus services.

The guiding vision is that based on the implementation at the campus-level, a student will **sign-in once** to the campus portal (or course management system in the interim) in order **to have access to services, including library services**. Due to the unique potential of interlinking library resources within online courseware, a key relationship that must be explored is that between the learning system WebCT VISTA and the library services, including both the centrally-managed GALILEO and GIL systems as well as the locally-managed campus library resources and services.

Increasingly, **online course management systems and campus portals are shaping the students' view of their learning environment and the content resources available to them.** In addition, students (and busy faculty too) expect convenience, ease of use, and seamlessness in all aspects of their lives. The majority of the **subscription-based online library content in which institutions invest for support of learning is not as simple to access as Google, requiring authentication and additional searching in multiple interfaces**. Students are

relying instead on Internet-based content that may not be reputable or of appropriate quality. For this reason, it is essential that USG libraries explore ways to establish service points within this virtual campus.

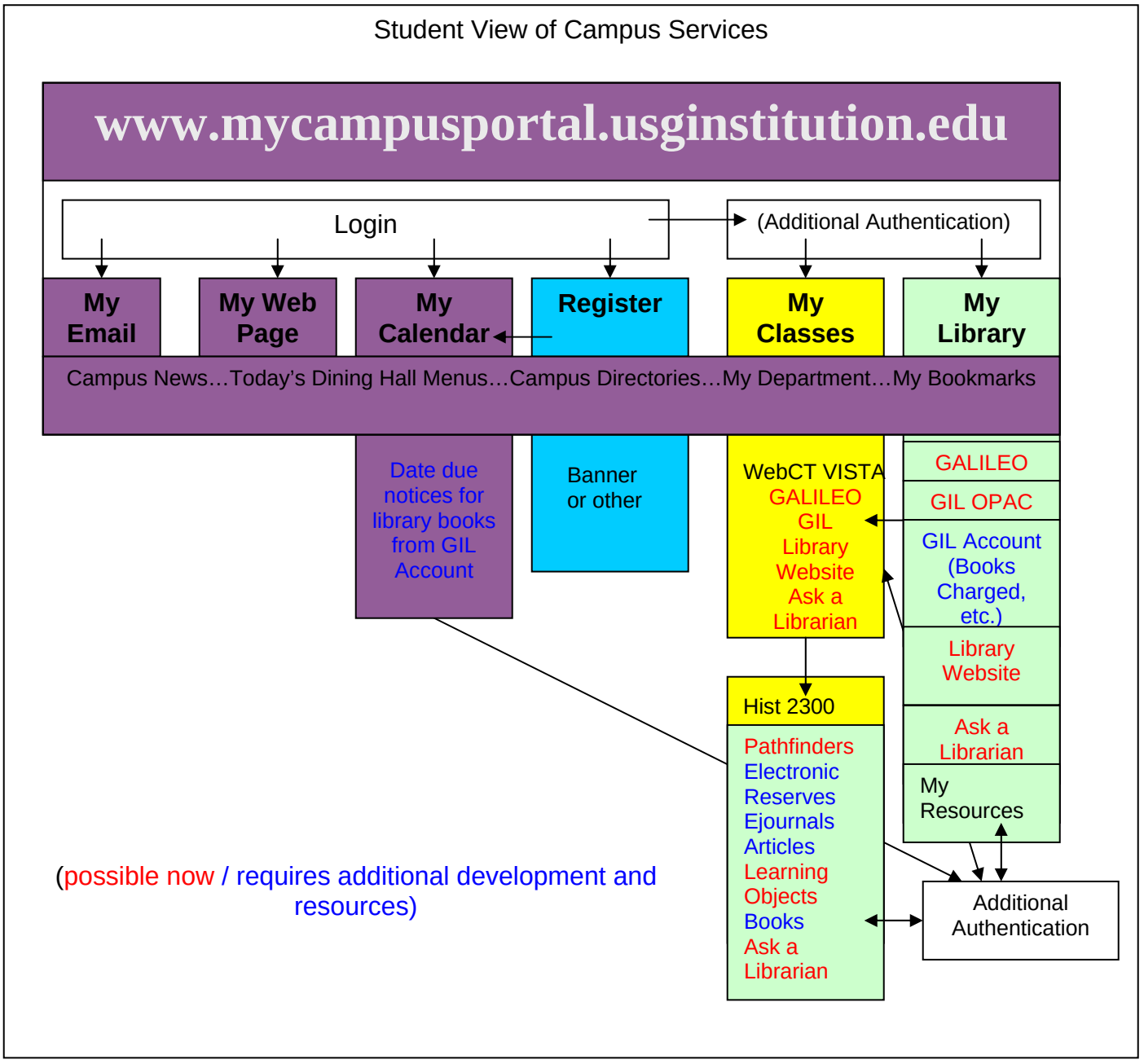
In recognition of the need to identify new processes and technologies for libraries to better assist faculty and students within the WebCT VISTA environment, a group of USG librarians has reviewed products and trends in this arena in order to make recommendations regarding how to best integrate library resources and services into USG campus courseware environments. The **emphasis is on seamlessness, ease, and adding value to the course through utilization of high quality electronic and print materials already identified and purchased on behalf of the institution**. Such materials provide essential, verified, and scholarly content that would be most optimally presented for selection by faculty within the course design workspace and for presentation within the context of the student courseware.

While barriers exist currently to successful implementation of this emerging vision for online access to content and service, short and longer-term strategies and methods identified now can be built into the planning and development process for immediate and future implementation. **These needs must be addressed if the USG is to become a major provider of quality online courses**.

The initial funding which established GALILEO and GIL also established the benchmark of system-wide standardization and equity of access that is inherent in the USG vision for an integrated learning environment. It is important at this juncture to note that **funding for library resources has not increased since the inception of GALILEO and GIL, while costs and enrollments are increasing and new technologies are creating additional demands**. The result is that access to core materials for all institutions has been reduced and equity of access to library resources for all institutions is threatened. The vision must also ensure the continuing support for these shared resources.

University System of Georgia Integrated Learning Environment

Student View of Campus Services



Key Needs

The key needs for integration of library resources into WebCT online courseware environments include:

- Features and functions for **students**
- Features and functions for **librarians**
- Features and functions for **faculty**
- Facilitation of **user authentication and single sign-on**
- Facilitation of **electronic reserves**
- Facilitation of **durable link creation and maintenance**
- Facilitation of **collaboration and use**

Features and Functions for Students

Students should have the following features and functions in order to use library resources effectively within their courseware environments. Three levels of access are addressed with different strategies for each: homepage/portal, course, and assignment.

- **Homepage/portal: General links to library services should be available at the homepage of the student's courseware environment** (e.g., My WebCT). Recommended links (or link to a webpage with these sublinks) and features that should appear at this level include:
  - **GALILEO** (including library's locally-purchased resources via GALILEO Local Resource Integration (GLRI)
  - Institution's **GIL** Library Catalog
  - Institution's **library website**
  - **Online Library Learning Center Tutorial**
  - **Citation style guide**
  - Ability to request virtual (**ask a librarian**) or in-person (r**esearch conference**) assistance from library staff
  - Ability to create **personal resource and reading lists**
  - Ability to manage **personal bibliographies** and citation information through **bibliographic management software** such as *EndNote*, *RefWorks*, or *WriteNote*
  - Ability to establish **alerts** for availability of new content of interest
  - Ability to embed **durable links** within collaborative

work and discussion space.

- **Courseware: Links to materials related to each course should be available**, such as:
  - Articles on **electronic reserve** for the course, including status information about availability
  - **Bibliographies with links to books and articles**
  - Subject **search results** in OPAC (predefined searches with dynamic results)
  - Subject guides with **pathfinders** to related subject content on websites, ejournals, online databases, physical and digital primary source materials
  - Subject **metasearch** results from multiple resources (predefined searches with dynamic results)
  - **Learning objects** such as simulations and tutorials
  - Ability to request virtual (**ask a librarian)** or in-person (**research conference**) assistance from library staff

- **Assignments: Links to specific materials related to specific assignments should be available**, such as:
  - **Articles**, **websites, ejournals, electronic reserves, tests, online databases**
  - **Books** in OPAC or online
  - **Learning objects** such as simulations and tutorials, videos, mp3's
  - Ability to embed durable links to materials cited in assignments in order to **support faculty verification of source and appropriate use (plagiarism review)**. Open URL resolvers such as *SFX* provide such durable linking capabilities.

Features and Functions for Librarians

Librarians should have the following features and functions in the WebCT course designer environment in order to assist faculty in using library resources effectively within the course environments that they design. Three levels of access are addressed: course management system, course, and course section.

- **Course management system: Librarians should be able to establish resource collections at a central level that can be adopted by faculty** for use either aggregately (subject/discipline) or individually (ejournal, article, book, learning object).
    - **Reporting:** Librarians should be able to report on resource utilization across all courses so that they can **plan and perform collection management** (e.g., provision of additional copies of key reserve items, analyzing use of electronic resources within instruction to determine new or ongoing materials for collection, and clearing copyright issues.)
- **Course / Course Section: Librarians should be able to establish resource collections for all sections of a particular course number that can be adopted by multiple faculty** for use either aggregately (subject/discipline) or individually (ejournal, article, book, learning object) in individual sections/section numbers of the course.
    - **Electronic Reserves:** In addition to identifying collections of content that is licensed institution-wide, librarians need capabilities for managing and providing access through an electronic reserves system to materials that may require **controlled access or unique licensing under copyright / fairuse**. Recent developments in the publishing industry related to copyright enforcement suggest that campuses will need to start becoming more vigilant about instructional use of copyrighted materials in online forums. Electronic reserves

systems provide a mechanism for **managing copyright permissions across the institution**, including in some products the ability to arrange for payments to the Copyright Clearance Center.

- **Linking:** Links to materials should be modifiable in a single location for universal update. **Links should seamlessly and dynamically create the correct syntax and strategy to link to materials** so that the need for hard-coded links to specific content is minimized and **faculty do not need to concern themselves with constructing links correctly**. Open URL resolvers such as *SFX* provide such durable linking capabilities.

- **Collaboration:** Librarians should be available to faculty to **consult and identify resources** for inclusion on a per section or per assignment basis, to **participate in the class as a resource or to provide bibliographic instruction**, including use of screen sharing /co-browsing reference/meeting software (*WebEx, QuestionPoint/Convey, HorizonLive*, etc.) to **provide virtual real-time or archived point of need demonstrations and services**. Facilitation should be provided through a link in the course designer environment to library services via chat or online request forms.

Features and Functions for Faculty

Faculty should have the following features and functions in the course designer environment in order to use library resources effectively within the course environments that they design.

- **Selection:** Faculty should be able to **browse, adopt, and easily incorporate durable links to materials that have been identified as appropriate for their discipline**, including specific articles, ejournals, and books. Software products such as *Sentient* provide the integration between library resources and course management software that makes this possible.

- **Linking:** Faculty should be able to **embed durable links to materials** based on the citation/metadata of the item rather than on hardcoded links to the temporal location of the item. Updates to links should not require manual changes to courseware but be modified once in a single location for universal update. Students should be able to supply durable links for citations in their assignments to **support verification of source and appropriate use (plagiarism review)**. Open URL resolvers such as *SFX* provide such durable linking capabilities.

- **Learning Object Repositories:** Faculty should be able to **archive, manage, and share learning objects from within courseware environments**. Collaborative repository implementations among library, faculty, and IT staff would ensure in best practices for design and retrieval.

- **Reporting:** Faculty should be able to report on resource utilization across all courses so that they **measure student performance as well as assess resource selection**.

- **Collaboration: Librarians should be available to faculty to consult and identify resources for inclusion on a per-section or per-assignment basis**. Facilitation should be provided through a link in the course designer environment to library services via chat or online request forms.

Examples of such services include:

- **Instruction Requests** — for a librarian to come to the class (either in person, though online courseware, or through use of screen sharing /co-browsing reference/meeting software (*WebEx, QuestionPoint/Convey, HorizonLive*, etc.) to provide **virtual real-time or archived point of need demonstrations and services**, or to host a bibliographic instruction session at the library

- **Assignment Design Help** — to get help creating **meaningful library research assignments**

- **Linking and Electronic Reserve Assistance** — to get help identifying content that can be linked into courses as well as place particular copyrighted materials on electronic reserve for use for a particular course section. The library could **facilitate provision of copyright clearance services** through these mechanisms.

- **Creation of Pathfinders and Bibliographies**

Facilitation of Authentication and Single Sign-on

A major issue for integration of library resources within the campus WebCT VISTA courseware environment is the facilitation of single sign-on for the user. While campuses are making some headway providing real or apparent single sign-on access to campus portals, WebCT, email, and student information, the **library systems and resources need additional collaboration and consideration in order to also provide real or apparent single sign-on access within those environments**. The current environment can require users to re-authenticate one or more times using different sets of credentials in order to access library content links.

Library content links include a variety of resources that may be licensed by GALILEO or by the campus library. **Access to most licensed library content links relies on IP authentication**. Many libraries are relying on local proxies such as *EZProxy* for this purpose.

- Campus library, portal, and courseware technology owners need to **consult and collaborate on solutions** for the appearance of a single sign-on solution.

- Campus support for IP authentication solutions such as *EZProxy* helps **ensure off-campus access to library content to which their students and faculty have rights**. A system-wide adoption of a low-cost campus software solution such as *EZProxy* would dissolve the greatest barrier between library resources and users.

- Strategies for **linking seamlessly without re-authenticating** between WebCT and solutions such as *EZProxy* need to be identified, developed, and supported by all institutional partners.

- Future use of **metadirectories for system-wide and library resource vendor authentication** should be explored, including participation in the international metadirectory project for end-user authentication, *Shibboleth*.

Facilitation of Electronic Reserves

- Software products are now available that provide **easy management for electronic reserves**, including self-service for faculty, easy integration into websites and online courseware, integration into library OPAC's, and capabilities for copyright clearance and oversight.

- While some USG campuses have homegrown solutions and others are selecting products such as *ERes*, no standard level of service is in place. Standardization would ensure parity across the system and **strengthen the ability of faculty to use copyrighted materials within online course environments**.

- Libraries could play an essential role in **copyright compliance throughout the University System** if a standard electronic reserves capability were available to each institution.

Facilitation of Durable Link Creation and Maintenance

- Open URL has become the standard for creation of durable links to library resource content for embedding in webpages and courseware. Such links resolve via a third party "resolver" that maintains knowledge about appropriate copies of content as described by Open URLs. Software for Open URL resolution (such as the *SFX* product by Ex Libris) provides a key methodology for embedding links to library resources within campus courseware environments. A system-wide expansion of the GALILEO pilot implementation of the *SFX* software would **ensure that all campuses have an equal opportunity to implement and maintain content linking within campus courseware environments**.

- MetaSearch products (such as *MetaLib* by Ex Libris) **provide powerful cross-searching capabilities to disparate library resources residing in different**

technological and licensed environments. Such products can be utilized to create pre-defined searches to embed as durable links within courseware environments and to establish alerting mechanisms for current content of interest.

- Learning Object Repositories can be created and managed through the use of digital asset software such as *Digitool*, *ENCompass for Digital Collections*, or open source repositories such as *DSpace*. Such management systems **provide capabilities for embedding links to learning objects as well as creation of virtual collections of learning objects**. Faculty should be able to archive, manage, and share learning objects from within courseware environments. Collaborative repository implementations among library, faculty, and IT staff would ensure in best practices for design and retrieval.

- Additional products (*Sentient, ENCompass Course Content Integrator,* etc.) are emerging that provide many of the features identified as needs for librarians and faculty to best implement linking to materials within campus courseware environments. Such products make it easy for librarians to compile resource lists for disciplines, courses, course sections, and assignments, as well as **make it easy for faculty to include links to the resources within courses and assignments**. Dovetailing with Open URL capabilities, one of these products should also be considered for system-wide implementation within campus courseware environments.

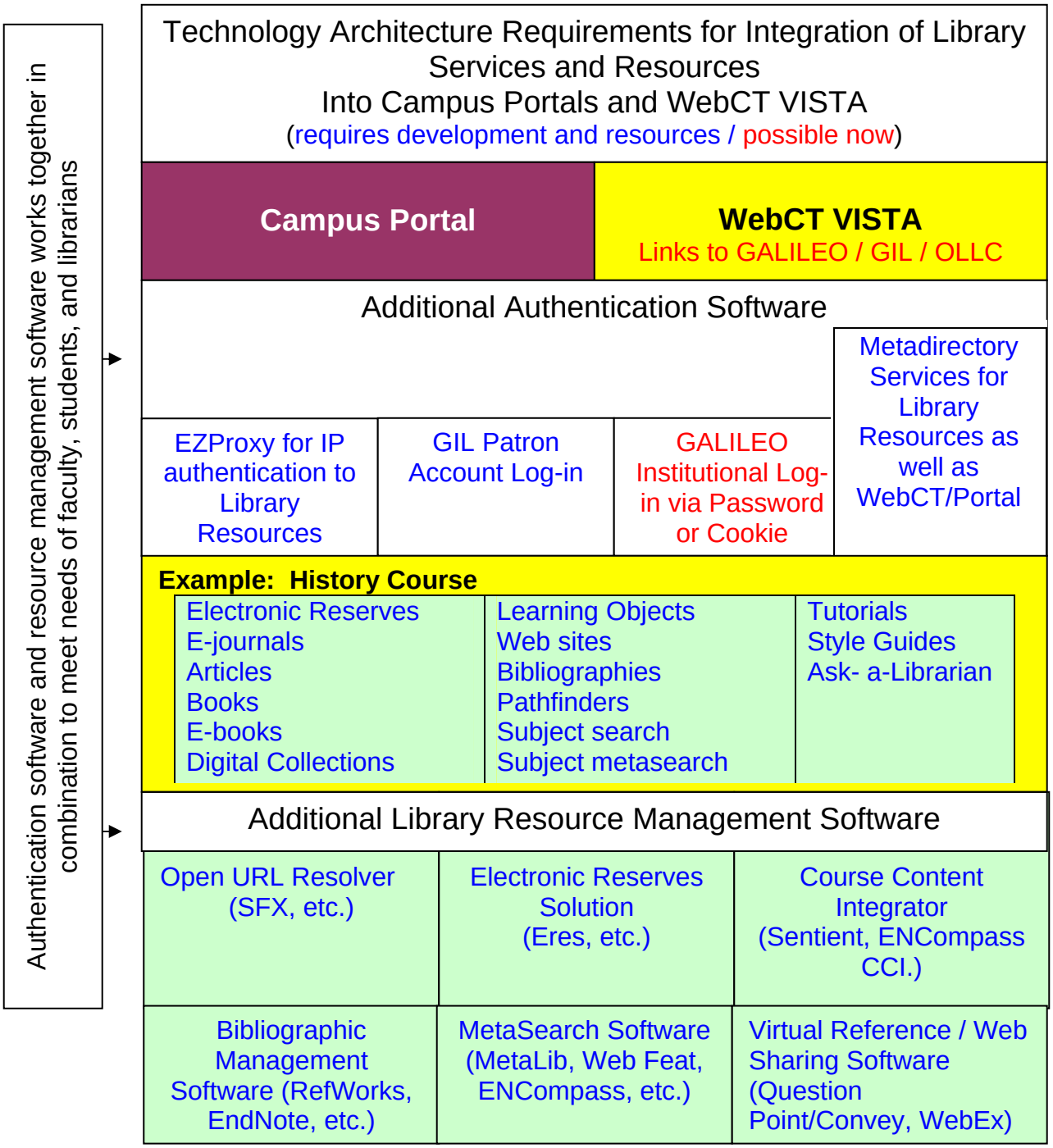
Facilitation of Collaboration and Use

While much of the challenge facing the integration of library resources into the online courseware environment involves the linking and authentication issues, additional software products **enhance the usability of the resources and potential for collaboration among librarians, students, and faculty**.

- Virtual reference services within online courseware environments can be supported through the use of **virtual reference** or web meeting software that allows for **co-browsing, live web demonstrations, chat, bulletin boards, and archiving for later point-of-need replay**. Some products such as *Convey*, which is the basis of the national virtual reference initiative *QuestionPoint*, have been tailored with features specifically designed for Virtual Reference. However, the features that are needed may also be available through web meeting products such as *WebEx* or *MicroSoft Live Meeting*, or virtual classroom environments such as *HorizonLive* (synchronous) and WebCT (asynchronous).

- Bibliographic citation management software such as *EndNote*, *RefWorks*, and *WriteNote*, allows students and faculty to **create custom bibliographies, easily output citation information in various formats, and deepen their understanding of research** related to their disciplines.

Technology Architecture Requirements



Summary of Recommendations

Recommendation	Status/Requirements
The following recommendations should be immediately pursued:	
Libraries should be included in the implementation of campus portals and course management solutions.	This can be done now and should be pursued by each USG campus.
Links to GALILEO, GIL, the library website, Ask a Librarian, the Online Library Learning Center tutorial, and a citation style guide should be placed at the My WebCT level for each student at every campus.	This can be done now and should be pursued by each USG library.
Libraries should ensure that designated librarians are training in use of the WebCT VISTA course designer tools and are familiar with both the student and faculty views and tools in order to be of assistance to all.	This can be done now and should be pursued by each USG Library.
Librarians should ensure that they are available through outreach, advertising, and service offerings to collaborate with faculty in the development of their online courses.	Many things can be done now to provide pathfinders, bibliographies, electronic reserves, and other resources to assist faculty in creating rich environments for learning.
The following recommendations require additional resources and development:	
EZProxy should be available to each USG library to ensure IP authenticated access to library resources.	Many libraries already have *EZProxy*; pursue for all USG libraries
Metadirectory services for cross-vendor and cross-system authentication should be explored.	GSU has a pilot implementation of the *Shibboleth* handle service. *WebCT, SFX, EZProxy*, and many of the GALILEO database vendors are already in compliance or are working towards compliance with *Shibboleth*. In order to take advantage of this direction, a campus handle service is necessary.
GALILEO should investigate *Shibboleth* compliance.	GALILEO should work with the GSU pilot implementation to evaluate how compliance could be achieved.
Electronic Reserve management software should be available to every USG library.	Some USG libraries are already using homegrown or vendor solutions. Standardization through the use of a product such as *ERes* would ensure parity across the system.
An OpenURL resolver such as *SFX* should be available for every USG library and campus.	Some USG libraries are already using *SFX* (in a GALILEO pilot) or other products. Standardization through the use of a product such as *SFX* would ensure parity across the system.

Course content integration software should be part of the WebCT environment for every USG campus.	The group has received vendor demonstrations of the *Sentient* and *ENCompass CC*I products. A pilot/trial of the *Sentient* software should be pursued to determine whether it would be the best way to facilitate content integration. Standardization through the use of a product such as Sentient would ensure parity and ease across the System.
MetaSearch Software	Metasearch software would enhance the usability of GALILEO as well as provide enhanced linking capabilities within other systems. GALILEO has been conducting an ongoing review of MetaSearch products with System librarians. The products continue to evolve and it appears that one will soon be appropriate for use in the GALILEO environment. A pilot similar to the SFX pilot might be pursued as a next step in a possible System-wide implementation.
Digital Repository Software for Digital Asset Management with Cross-Repository Retrieval Capabilities	As each campus and sectors of each campus begin developing mechanisms for managing digital assets such as learning objects, faculty-created content, and other institutional documents, standardization is essential to ensure ease of access and use of content, as well as scalability and parity in implementation. Software products such as *Digitool, DSpace, ENCompass for Digital Collections*, and locally created and open source products are evolving methods to manage digital rights, metadata, retrieval, and effective presentation within learning environments. Solutions should be identified that would meet these needs and provide interoperability within the integrated learning environment.
Virtual Reference Software	Many features are already available via existing software, including virtual reference software *QuestionPoint/Convey* (already purchased by some libraries), web meeting products such as *WebEx* or *MicroSoft Live Meeting*, or virtual classroom environments such as *HorizonLive* (synchronous) and WebCT (asynchronous). In addition to purchasing or identifying availability, these tools require training, campus collaboration, and System-wide utilization for greatest effect.
Bibliographic Citation Management Software	Most of these products are designed for individual use. A System-wide license should be pursued under which each campus could distribute to their users. Georgia Tech and other campuses are pursuing campus-wide licenses for *EndNote*. Their experience should be evaluated.

Conclusion

- Many pieces of the campus technology infrastructure are beginning to converge in support of a vision in which students, faculty, and staff sign-on once to one place to receive access to all campus content and services to which they are entitled. It is imperative that the vision also includes how best to **leverage the campus and System investment in library resources**. Timely planning and discussion can contribute in great ways to the success of the enterprise. The features, functions, policies, and processes that are needed are within reach and require advocacy at both the System and the campus level.

- Emphasis should be on ease of use for students and faculty, and **traditional distinctions between campus service points should be re-imagined**. No single solution or service can do this alone anymore and collaboration is essential for interoperable and easily accessed services.

- Coordinated implementation of the recommendations for a common solution for integration of library resources into campus courseware environments will **ensure parity of access for all students in the system whether on campus or at a distance, contribute to the overall quality and integrity of the instruction, and leverage the extensive system and campus investments in library resource**s to achieve greatest educational returns.

- Most importantly, **libraries need to be included in the implementation of campus portals and course management solutions (WebCT VISTA)** so that campus processes and policies support the inclusion of the librarian into the appropriate access points within the courseware designer environment and technical solutions are developed that work across service areas. In order to accomplish these aims, the **IT, library, and academic policy sectors of the campus need to establish mutual priorities, avenues of communication, and collaborative implementations**, with ongoing dialog with vendors to ensure that standards and strategies are addressed for interoperability.

Resources for More Information

ENCompass http://encompass.endinfosys.com/

EndNote http://www.endnote.com/

ERes http://www.docutek.com/products/eres/

EZProxy http://www.usefulutilities.com/support/overview.html

GeorgiaView: The USG WebCT VISTA implementation
http://alt.usg.edu/gaview/

"Interoperability between Library Information Services and Learning Environments - Bridging the Gaps"
http://www.imsglobal.org/digitalrepositories/CNIandIMS_2004.pdf

"Libraries and the Enhancement of E-learning"
http://www.oclc.org/index/elearning/default.htm

MetaLib http://www.exlibrisgroup.com/metalib.htm

QuestionPoint http://www.questionpoint.org/

RefWorks http://www.refworks.com/

Sentient
http://www.sentientlearning.com/home/Solutions/Sentient+DISCOVER/

SFX http://www.exlibris-usa.com/sfx.htm

Shibboleth http://shibboleth.internet2.edu/