

The Evaluation Report

On

ePortfolio Component
(A part of the Blackboard Content System)

Management Information System
INFSCI 2810
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By

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Overview

This report summarizes and presents the result of the “ePortfolio” component evaluation as of July 19, 2005. Having used various techniques to assess the actual capabilities of the current system and its requirement achievement, we are able to conclude that:

- The current system can **fully achieve 39 of the requirements** defined by University of Pittsburgh. 20 of those requirements are critically important to the goal for an ePortfolio System while 18 of those requirements are moderately important.
- There are **3 requirements which are necessary for Blackboard.com to improve** their component abilities in order to achieve the given requirements. At this time, those requirements are not yet satisfied by current system.
- The highest functional requirement achievement of the current system is in the categories of “**Access**” and “**Other features**” which are followed in order of decreasing achievement by the “Content” category, the “Review and feedback” category, the “Reporting and Output” category, the “Usability” category, and the “Technical requirements” category.
- The lowest requirement achievement of the current system appears to be the “**Training and Support**” category.

In this report, the project goal and scope are discussed in the introduction section followed by the “ePortfolio” component analysis, in which both strategies used for gathering information about the ePortfolio components and the explanation of the evaluation methodology are described. The following section, the result of E-portfolio component analysis, is shown in detail. Also, the level of component achievement for each requirement rated by those methodologies is given. Lastly, all the rating of component achievements are gathered and interpreted. Using basic statistical analysis, charts presenting the system achievement are illustrated in order to help readers to more effortlessly understand the analysis results. Finally, the results lead to a final conclusion of “ePortfolio” component achievement according to the defined requirements and goals.

Introduction

Assigned as a group project for Management Information System class, the report of “ePortfolio” component analysis and evaluation has been created by the Gold Team’s members consisting of:

Sowmya Ragoor
Daniel Rodriguez
Kittipong Techapanichgul
Lisa Turner
Lucy Wang

This report presents the recent status of the “E-portfolio” component achievement according to the requirements defined by University of Pittsburgh as of July 19, 2005. The purposes of this report are not only to document all of our work about the project but also to give feedback gained from our experiences completing Assignment 2, which involved creating two ePortfolios and implementing them in the Blackboard Content System. We hope the information will be helpful for interested readers.

To make all team members go to the same direction, our team has defined the project goal and its scope as shown in the table below:

Project Goal	<p>The goal of this project is to evaluate how well the current “ePortfolio” component of the <i>Blackboard Content System</i> satisfies University of Pittsburgh’s needs which wants the system to:</p> <ul style="list-style-type: none">• Enable students to track, document, and reflect upon curricular and co-curricular experiences and share them with multiple audiences, including faculty, potential employers, parents, advisors, accrediting agencies, etc.• Enable alumni to continue to document subsequent educational, professional, and life experiences and share them with multiple audiences, including potential employers, accrediting agencies, etc.• Enable faculty and staff to collect and display artifacts of their professional accomplishments and professional development for purposes of professional growth, promotion and tenure reviews, facilitate research grant applications, etc.• Enable academic program administrators to evaluate programmatic learning outcomes and student achievement, to facilitate formative evaluation of program goals, to compare benchmarks from accrediting agencies, to monitor and advise, and to perform curriculum reviews based on analyses of aggregate student performance data.• Enable academic program administrators, faculty, and advisors to assess student academic progress and establish future learning goals• Enhance the ability of the University, schools, department, and faculty to fulfill its fundamental goal to educate the whole student and enable every Pitt graduate, regardless of degree earned, to leave the university with four key attributes: communication skills, a sense of motivation, a sense of responsibility, and a sense of self. <p>Another goal is to assess the 59 requirement achievements of the ePortfolio component defined by University which are separated into eight categories:</p> <table><tr><td>1) Content</td><td>2) Usability</td><td>3) Reporting and Output</td></tr><tr><td>4) Access</td><td>5) Review and Feedback</td><td>6) Trading and Support</td></tr><tr><td>7) Other Features</td><td>8) Technical Requirements</td><td></td></tr></table>	1) Content	2) Usability	3) Reporting and Output	4) Access	5) Review and Feedback	6) Trading and Support	7) Other Features	8) Technical Requirements	
1) Content	2) Usability	3) Reporting and Output								
4) Access	5) Review and Feedback	6) Trading and Support								
7) Other Features	8) Technical Requirements									
Project Scope	<p>Going along with project’s goal, the scope of the project covers all the processes in ePortfolio component analysis and evaluation. For example, the tasks may consist of finding evidences or references to support the team’s claims, creating methodologies used to measure the actual system’s performance and capabilities, analyzing system achievement by using the 59 given requirements as criteria to judge, and rating the level of those achievements.</p>									

“ePortfolio” Component Analysis

Before our team can indicate how well the current system meets the defined requirements, the strategies used by the team to accumulate information about the system need to be defined. The three common strategies our team used are:

1. Inspecting, interacting or testing the actual system.
2. Referring from documents available in two main sources that are:
 - www.blackboard.com (Company official web site) such as Blackboard Content System white paper.
 - <http://pitt.blackboard.com> (Content System at Pitt) such as tutorials, help.
3. Interviewing senior administrators.

Initially, all members used the first method because it is an easy way to assess whether the available features of the current system can achieve the requirements or not. However, it was soon apparent that half of the defined requirements cannot be evaluated by this method. As a consequence, our team had to rely on documents published by *Blackboard* (and other sources). So, the second approach will be used to help us deal with this kind of requirement. Unfortunately, a few of the requirements are not mentioned in any documents since they are very specific to university's needs. The third approach will be chosen here in an attempt to attain enough information to assess the requirement's achievement level.

After gathering some information, the team met and created a methodology used to assess the achievement of the requirements. The explanation of the methodology is described in the following section.

Evaluation Methodology

The goal of this project was to answer the question “Does the Blackboard e-Portfolio system perform its job effectively enough to be a worthy investment?” Answering that question involved a detailed evaluation according to 1) The University of Pittsburgh's stated goals for the system, and 2) the University's 59 functional requirements for the e-Portfolio system.

To start the process, we began with the functional requirements. We looked at each of them and determined how important each one was in meeting the University's stated goals. Each requirement was assigned a weight or “contribution factor” from 1 to 4, as described below.

Numeric Score	Verbal Score	Meaning
4	Critically Important	Contributes considerably to achieving stated goals
3	Moderately Important	Contributes notably to achieving stated goals
2	Somewhat Important	Contributes somewhat to achieving stated goals
1	Not Important At All	Does not contribute to achieving stated goals

Each member of the group scored all 59 functional requirements according to the preceding scale, and the scores were averaged, yielding final scores for all 59 requirements. With these in place, our next step was to evaluate each functional requirement individually. To this end, 12 requirements were assigned to each group member, and they were evaluated according to another 4 point scale.

Score	Verbal Score	Meaning
4	Fully Achieved	Requirement has been completely fulfilled
3	Moderately Achieved	Requirement has been mostly fulfilled
2	Somewhat Achieved	Requirement has been partially fulfilled
1	Not Achieved At All	Requirement has not been fulfilled at all

In order to evaluate the requirements, each group member created and managed several e-Portfolios, giving special attention to the features which were pertinent to the functional requirements. However, there were some requirements that the group were not able to directly evaluate, due to its limited access to the system. In such cases, we consulted the online manuals and white papers, such as the “Blackboard Academic Suite User Manual”, the “Blackboard Academic Suite Instructor Manual”, and the provided tutorials such as “Preparing e-Portfolios”. The specifics of each requirement’s evaluation may be found in evaluation result section.

Finally, with the scores in place, the requirements were visually evaluated by placing each in 4x4 “score matrix.” The x-axis was the contribution factor, and the y-axis was the requirement score. Using this method, the group was able to visually evaluate whether or not the e-Portfolio system meets the University’s stated goals.

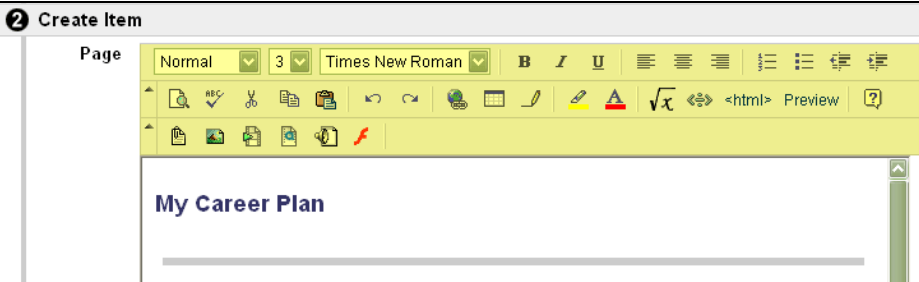
Evaluation Result

Since we created a methodology to assess the ePortfolio component of the blackboard content system in which assessment forms will be used to indicate whether the current ePortfolio component meets each of the given requirements or not, each of team members will be guided to the same standard evaluation schema which will assist team members in collaboration with each other. Besides, the assessment form contains supporting evidence and rational explanation in order to clarify how we analyzed the relationship between the current ePortfolio components’ capability and the defined requirements.

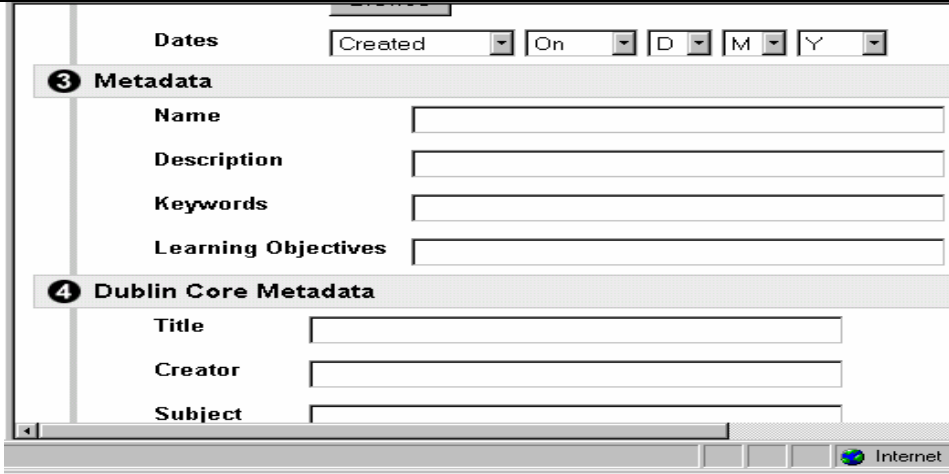
The evaluation results of the team for the 59 stated requirements are shown below.

Specific requirement analysis: No. 1

Requirement ID	1
Description	System can support embedded documents, including documents formatted as Word, Excel, PowerPoint, Acrobat (PDF), HTML, RTF, JPEG, GIF, TIFF, MOV, MPEG, AVI, MIDI, WAV, WMV, WMA, Real, plain text, etc.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All

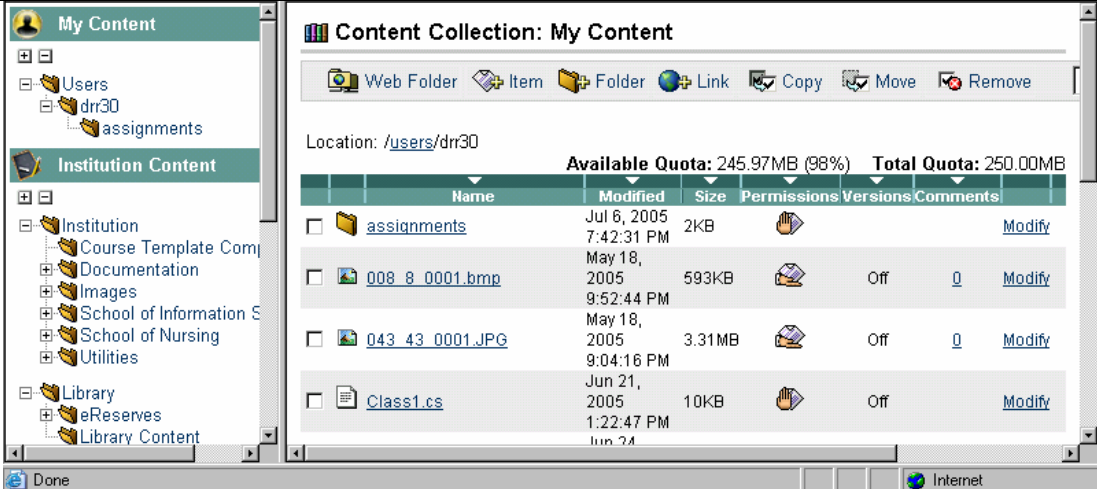
Methodology used to measure achievement	Inspecting, interacting or testing the actual system
Explanation	Having tried to embed all types of required files to a page in an E-Portfolio, we all agree that this requirement has already been achieved in the current E-Portfolio system. Besides, the toolbar provides an easy way for user to embed all file types quickly as shown in the snapshot below.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 2

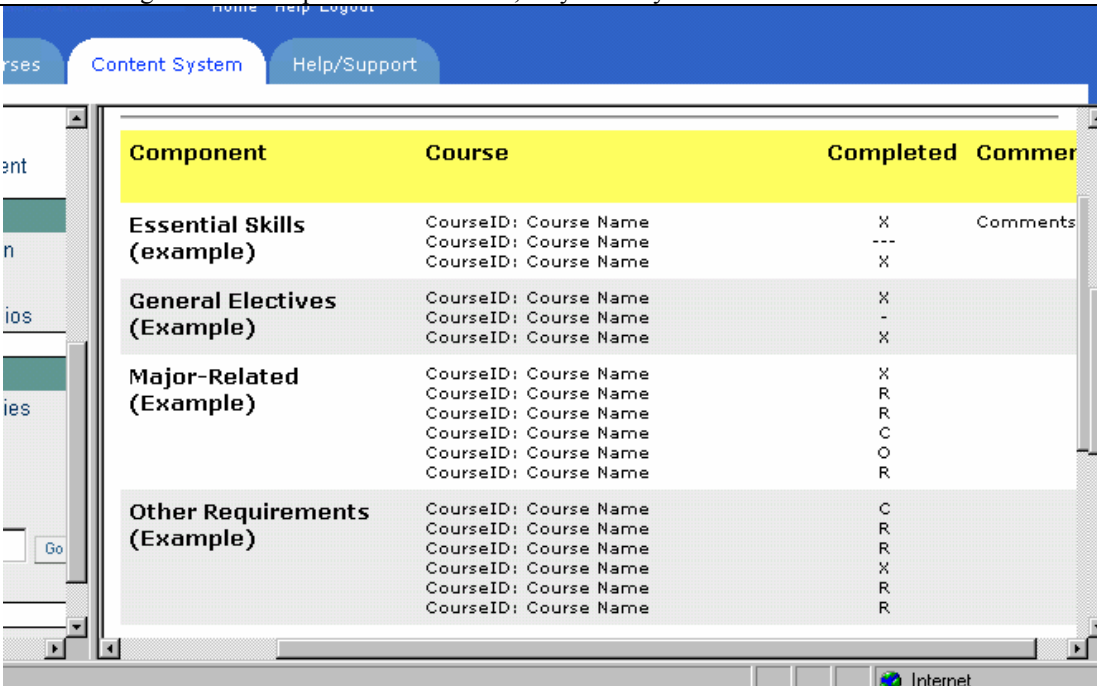
Requirement ID	2
Description	Users can tag any document with metadata; users can search the document store by metadata field
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Inspecting, interacting or testing the actual system
Explanation	We have successfully tagged numerous document types with metadata, and performed searches easily with the use of the content system's "Advanced Search" feature.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 3

Requirement ID	3
Description	Users can organize documents into a hierarchical storage structure, such as folders and subfolders.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Inspecting, interacting or testing the actual system

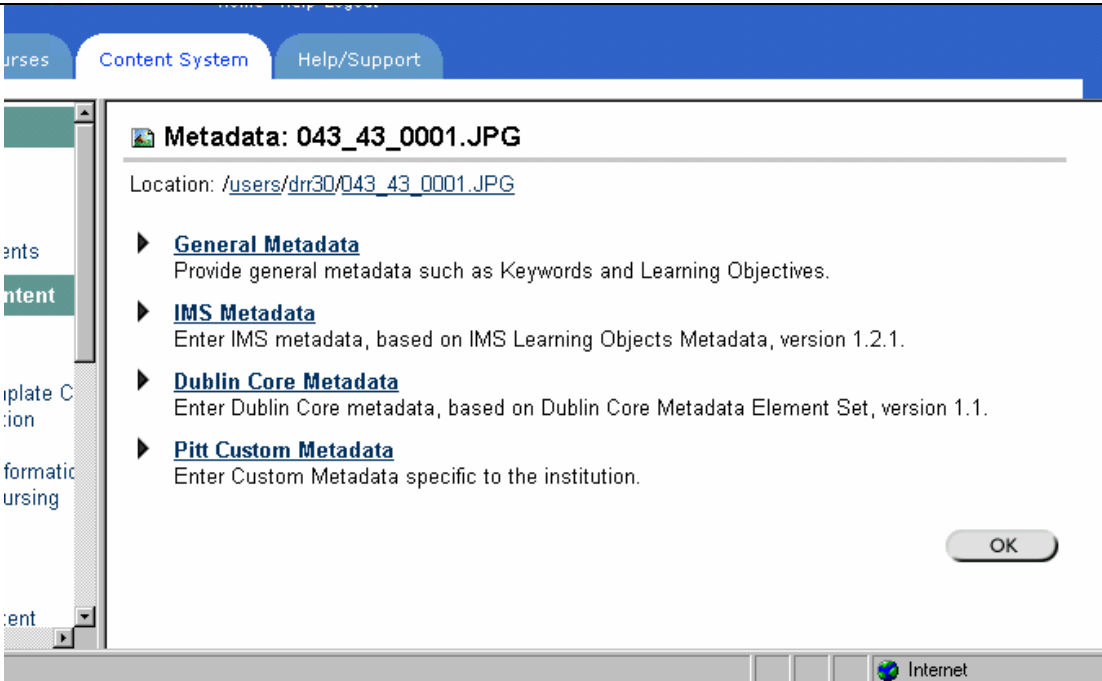
Explanation	All users in our group created subfolders and created hierarchical storage structures without any difficulties.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 4

Requirement ID	4
Description	Users can associate documents with requirements matrices.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input checked="" type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Inspecting, interacting or testing the actual system
Explanation	It is technically possible for users to do this since there are requirements matrix templates available when creating an item for a portfolio. However, they are very cumbersome to work with.
Supporting Evidence / Snapshot	

Suggestion / Comment	The matrix templates and the editor need to be redesigned to more successfully achieve this requirement. In particular, the must be able to handle expansion of the matrix. For example, if a student wants to enter more than three courses in "General Electives" the formatting becomes convoluted.
Observer / Inspector	Daniel Rodriguez

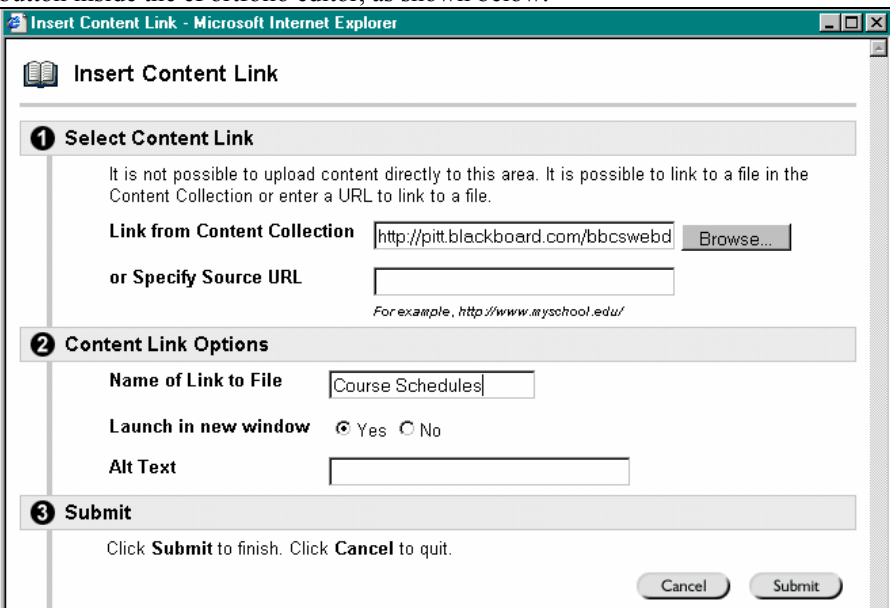
Specific requirement analysis: No. 5

Requirement ID	5
Description	System can support standard metadata schemas, such as the Dublin Core.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Inspecting, interacting or testing the actual system
Explanation	The system clearly supports the Dublin Core and other metadata schemas (General, Pitt Custom, IMS).
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 6

Requirement ID	6
Description	Users or System Administrators can import documents from ePortfolio systems hosted at other institutions (K-12 or other post-secondary institutions).
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	N/A
Explanation	N/A
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A

Specific requirement analysis: No. 7

Requirement ID	7
Description	Users can insert links to external documents (publications, etc.), tagged with appropriate metadata.
Meet the Requirement	<input checked="" type="radio"/> Yes <input type="radio"/> No
The degree of achieving requirement	<input type="radio"/> Fully Achieved <input checked="" type="radio"/> Moderately Achieved <input type="radio"/> Somewhat Achieved <input type="radio"/> Not Achieved At All
Methodology used to measure achievement	Inspecting, interacting or testing the actual system
Explanation	The user may achieve this by first creating a link in a content folder to an external document. Then the user must tag the created link with the desired metadata, and create a link to it via the “Add Item” button inside the ePortfolio editor, as shown below.
Supporting Evidence / Snapshot	
Suggestion / Comment	This is process took a while to figure out. To make the process simpler, we suggest adding metadata options to the above screen.
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 8

Requirement ID	8
Description	Application is easy to learn and easy to use for ePortfolio creators and contributors.
Meet the Requirement	<input checked="" type="radio"/> Yes <input type="radio"/> No
The degree of achieving requirement	<input checked="" type="radio"/> Fully Achieved <input type="radio"/> Moderately Achieved <input type="radio"/> Somewhat Achieved <input type="radio"/> Not Achieved At All
Methodology used to measure achievement	Inspecting, interacting or testing the actual system
Explanation	It is the general consensus of the group that the ePortfolio system is easy to use, since it is based on a web page design.
Supporting Evidence / Snapshot	N/A

Suggestion / Comment	Again, the only thing about the system that detracts from fulfilling this requirement is the template library. They can be very difficult to work with, and some of the editor controls are not self-explanatory. Also, editing using the “View HTML” option does not always work and the HTML itself is not formatted in a readable way.
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 9

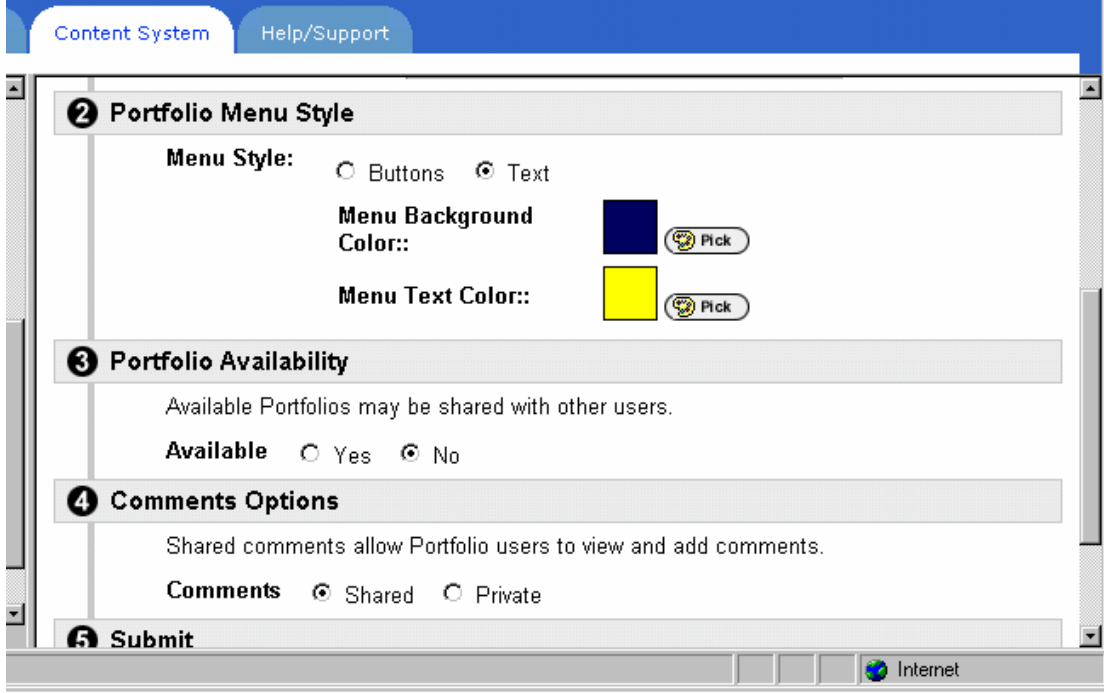
Requirement ID	9
Description	Application has zero learning curve for ePortfolio viewers.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	We emailed sample ePortfolios to a number of people and asked if they found anything confusing or less than obvious. The answer was generally no.
Explanation	Based on limited feedback from viewers, we concur that there is no learning curve for viewers.
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 10

Requirement ID	10
Description	Administrators can customize look and feel of University, school and program interface components.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	N/A
Explanation	N/A
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 11

Requirement ID	11
Description	Users can customize look and feel of individual interface components.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input checked="" type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	N/A
Explanation	In creating ePortfolios, we experimented with different looks and customizations available. In general, users are only able to customize the colors and shapes of the menu buttons in this manner.

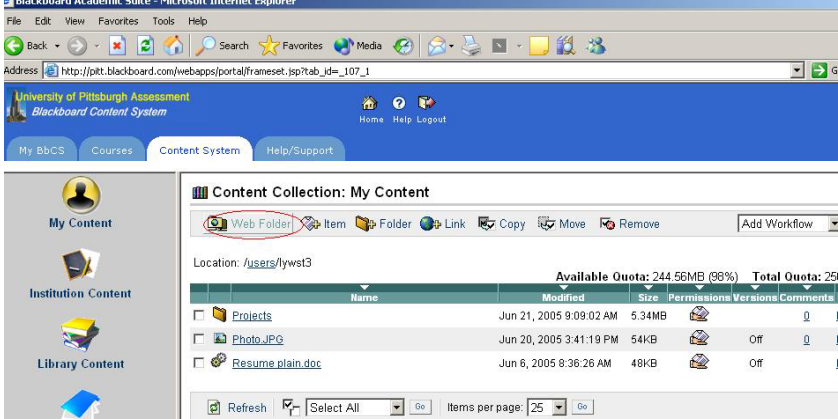
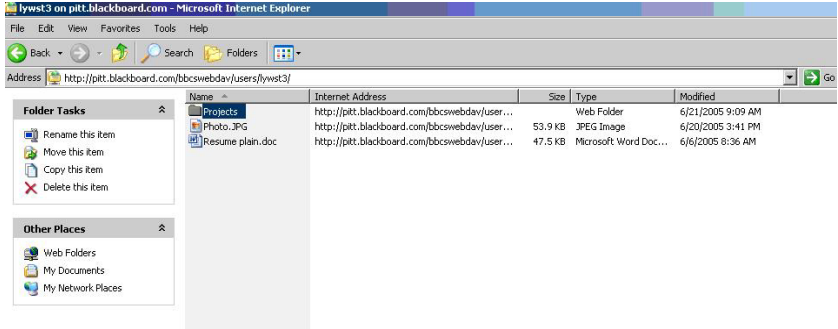
Supporting Evidence / Snapshot	 <p>The screenshot shows a web interface for a 'Content System' with a 'Help/Support' link. It contains three main sections: 1. Portfolio Menu Style: Includes 'Menu Style' with radio buttons for 'Buttons' and 'Text' (selected), 'Menu Background Color' with a blue color picker, and 'Menu Text Color' with a yellow color picker. 2. Portfolio Availability: Includes the text 'Available Portfolios may be shared with other users.' and 'Available' with radio buttons for 'Yes' and 'No' (selected). 3. Comments Options: Includes the text 'Shared comments allow Portfolio users to view and add comments.' and 'Comments' with radio buttons for 'Shared' (selected) and 'Private'. At the bottom is a 'Submit' button. The browser's address bar shows 'Internet'.</p>
Suggestion / Comment	It would be helpful to be able to customize more elements of the interface. For example, although colors and shapes can be manipulated, the current system will only allow users one possible ePortfolio layout (the buttons on the left margin with current content on the right screen). We suggest other possible layouts.
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No. 12

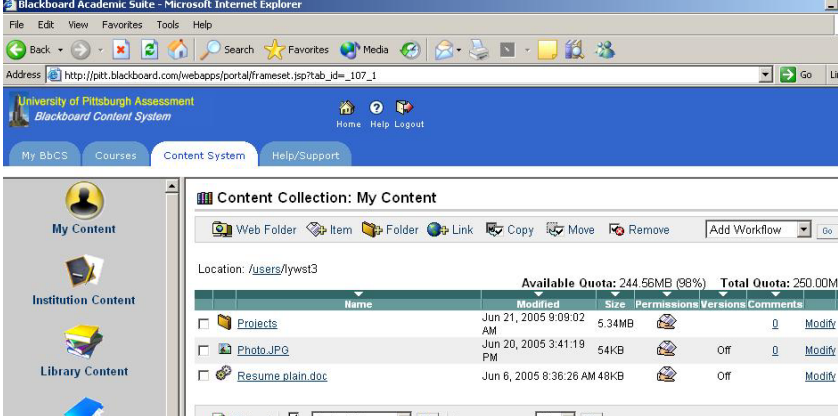
Requirement ID	12
Description	System includes a user-friendly WYSIWYG editor to create content.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input checked="" type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	N/A
Explanation	As mentioned before, the editor is less than friendly. It must be improved significantly to fully meet this requirement.
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Daniel Rodriguez

Specific requirement analysis: No.13

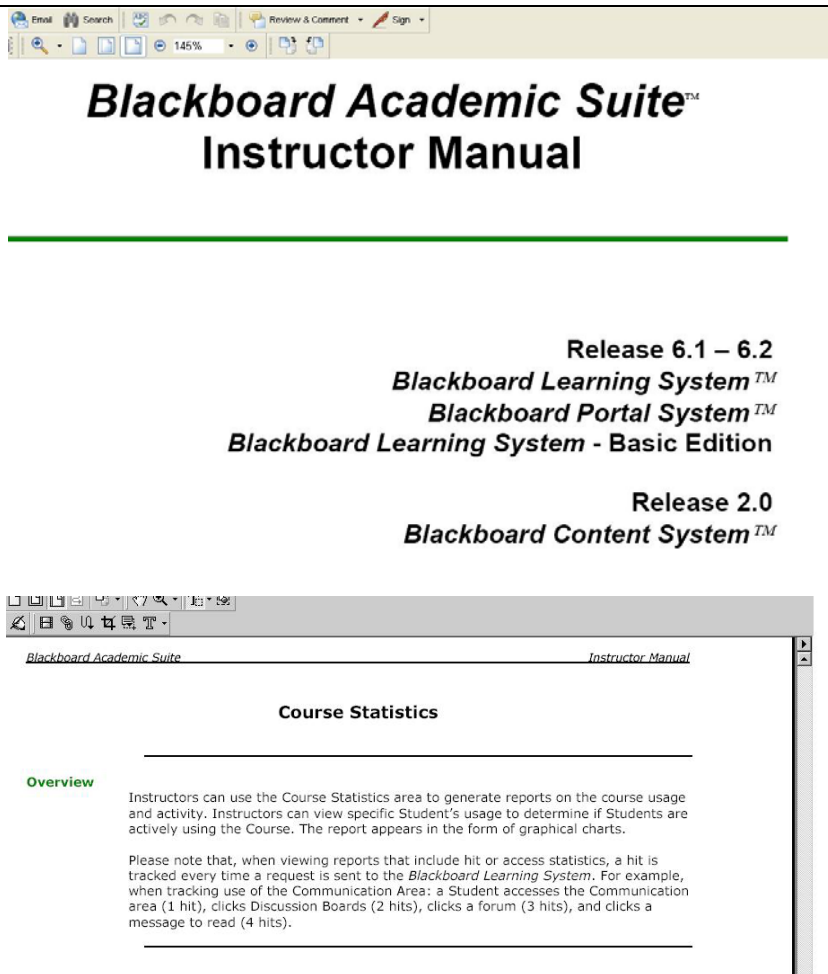
Requirement ID	13
Description	Users can upload documents using “drag-and-drop” procedure
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard’s “Blackboard Content System Product Overview White Paper” and other sales literature.
Explanation	The user clicks on Web Folder Icon under My Content Collection Menu bar which will open Internet Explorer for user to add or manage files by the standard method of “drag and drop. The graphic interface uses a standard “windows” protocol.

Supporting Evidence / Snapshot	 
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

Specific requirement analysis: No.14

Requirement ID	14
Description	System should present content, menus, options, etc, in an aesthetically-pleasing manner
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	The Icons and graphics, which accompany the content, menu and options, are presented in an aesthetically pleasing manner and used in other Windows applications.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

Specific requirement analysis: No.15

Requirement ID	15
Description	System must provide tools for monitoring and enabling accessibility
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	--According to Blackboard's "Blackboard Academic Suite Instructor Manual" page 219 instructor can monitor and track users via the course statistics page. This feature can track the number of times users access to specific page.
Supporting Evidence / Snapshot	 <p>The screenshot displays the Blackboard Academic Suite Instructor Manual. The title "Blackboard Academic Suite™ Instructor Manual" is prominently displayed at the top. Below the title, the release versions are listed: "Release 6.1 – 6.2 Blackboard Learning System™ Blackboard Portal System™ Blackboard Learning System - Basic Edition" and "Release 2.0 Blackboard Content System™". The "Course Statistics" section is highlighted, and the "Overview" text explains that instructors can use the Course Statistics area to generate reports on course usage and activity. It also includes a note about tracking hits and access statistics.</p>
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

Specific requirement analysis: No.16

Requirement ID	16
Description	Users can fill out multiple pre-defined templates to present their ePortfolio data and documents, such as resume views, etc.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All

Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	When using the Portfolio wizard, there are multiple pre-defined templates presented for user in different styles; such as resume, skills, and skill matrix in the drop down lists. It is nice feature but is not user friendly. Even a minor change on the template is time consuming. Although it includes HTML view for users, it is not easy to work on. Therefore this function was rated moderately achieved.
Supporting Evidence / Snapshot	<p>The supporting evidence consists of three screenshots from the Blackboard Content System interface. The top screenshot shows the 'Add Item' dialog box with the 'Template' dropdown menu open, displaying a list of templates including Career Plan, Certifications, Community Service, Course Plan, Cover Letter, Degree Audit, Education, Examination Committee, Experience, Grants, and Instructional Designer Matrix. The middle screenshot shows the 'Create Item' page for a 'COURSE PLAN'. It includes a form with fields for 'Your Name Here' and 'Date', and a table with columns 'Course Title', 'Hours', and 'Grade'. The bottom screenshot shows the 'Create Item' page with a table containing the text 'this is test' and an 'Error' dialog box that reads: 'A Runtime Error has occurred. Do you wish to Debug? Line: 314 Error: Unexpected call to method or property access.'</p>

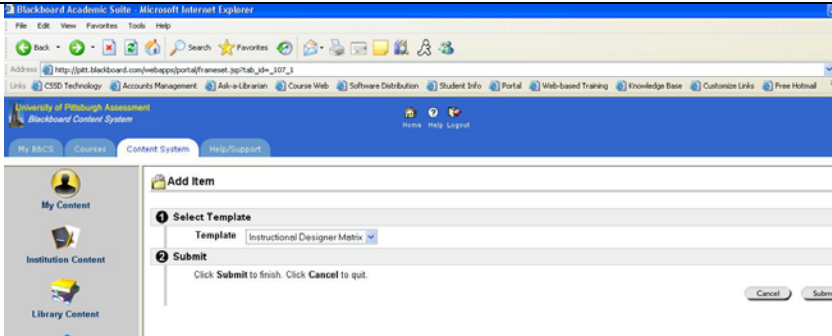
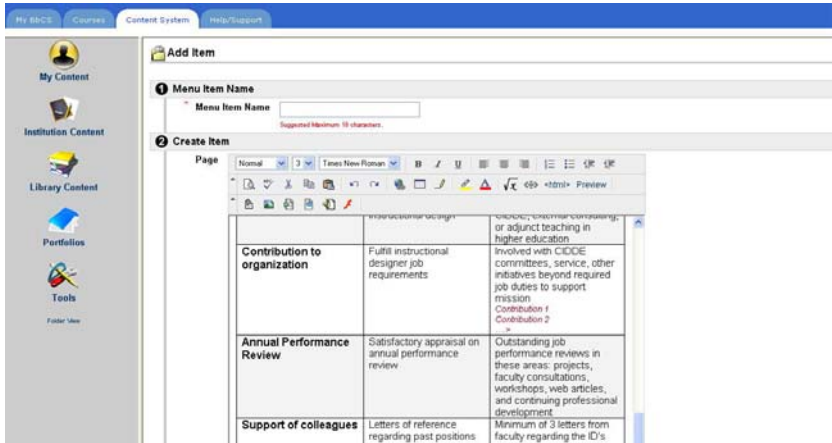
Suggestion / Comment	-- Error message often popped up after user made changes in text editor. -- Software should provide more user friendly interface for the template collection.
Observer / Inspector	Lucy Wang

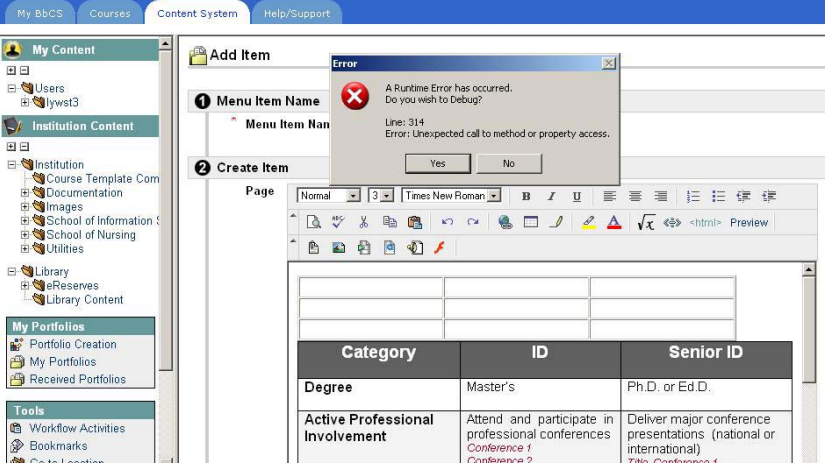
Specific requirement analysis: No.17

Requirement ID	17
Description	Users can create and fill out multiple customizable user-defined forms to present their ePortfolio data and documents
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	-- Only "Blank Item" in the template allows users to create a customizable form, this will require user to possess in advanced level of programming skill. -- If this function exists, it is not documented or easily located. Currently there is no any user instructions or help for this feature. Therefore it was rated not achieved at all.
Supporting Evidence / Snapshot	<p>The supporting evidence consists of three screenshots from the Blackboard Content System interface. The top screenshot shows the 'Portfolio: test' page with a table of items. The middle screenshot shows the 'Add Item' dialog with the 'Blank Item' template selected. The bottom screenshot shows the 'Menu Item Name' and 'Create Item' sections of the 'Add Item' dialog.</p>

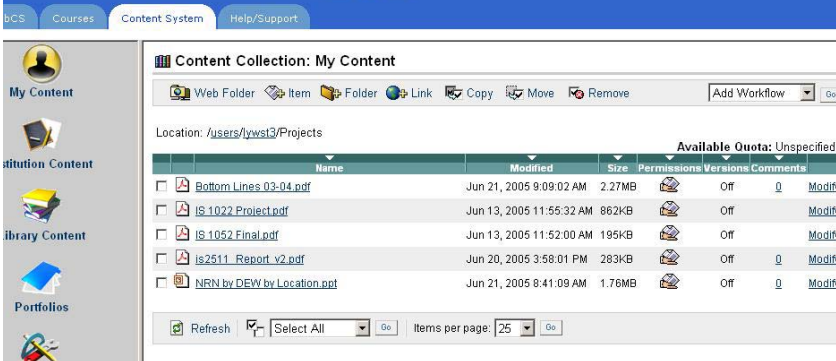
Suggestion / Comment	-- As stated in a previous comment, its interface is not user friendly. -- A better method for creating customizable user forms would have a Form Wizard similar to "Front Page." This would be helpful for the user to create a customizable form.
Observer / Inspector	Lucy Wang

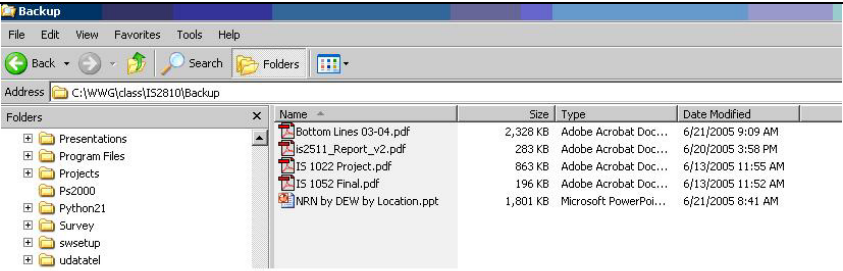
Specific requirement analysis: No.18

Requirement ID	18
Description	Users can associate content with cells in a institutionally-mandated matrix (at the school, program, or course level)
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard’s “Blackboard Content System Product Overview White Paper” and other sales literature.
Explanation	User can associate content with cells in a institutionally-mandated matrix by using the template which is provided in ePortfolio wizard. User can insert data into the matrix. If user has a need to insert another column or row, it is an impossible mission. Therefore this is rated in moderately achieved.
Supporting Evidence / Snapshot	<div></div> <div></div>

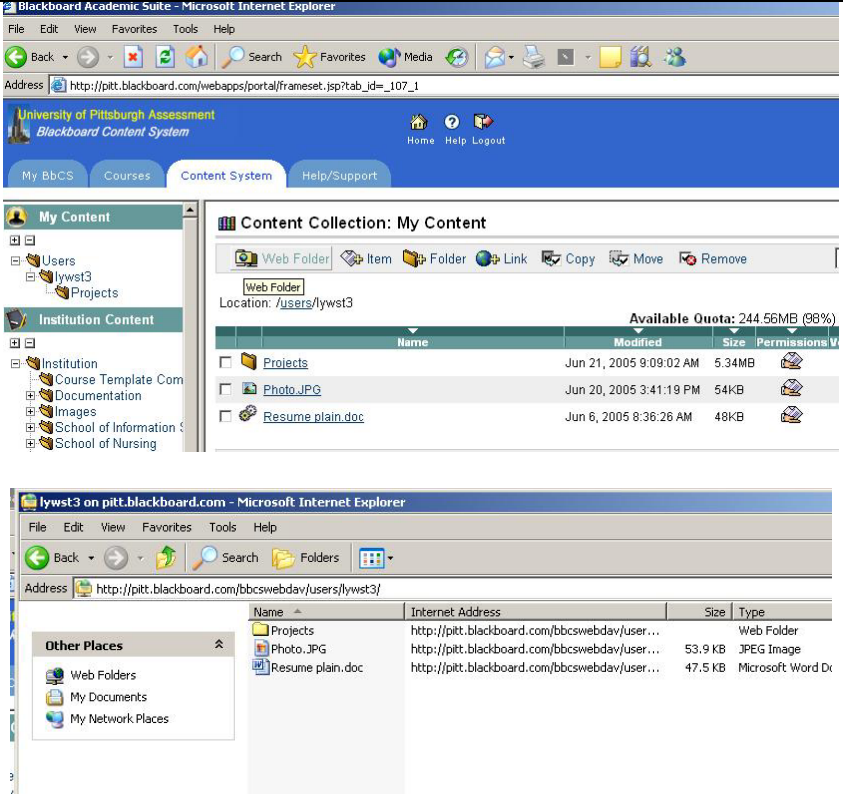
	
Suggestion / Comment	A procedure is needed for adding rows or columns.
Observer / Inspector	Lucy Wang

Specific requirement analysis: No.19

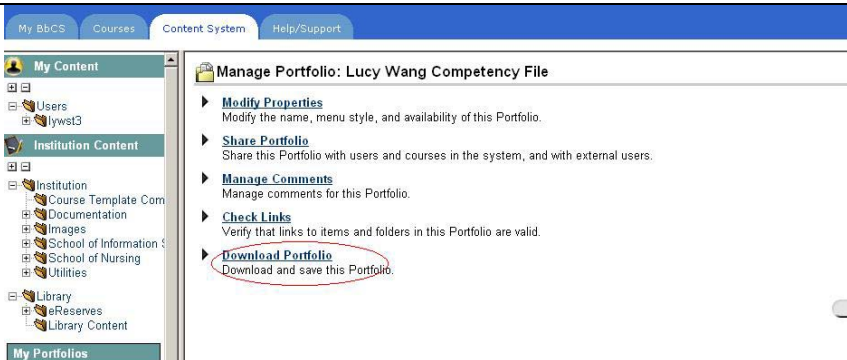

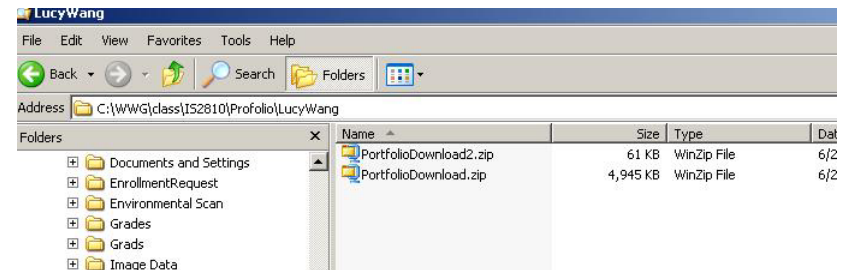
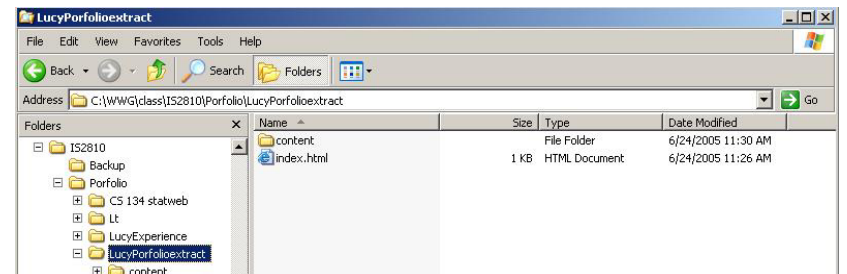
Requirement ID	19
Description	Users can backup all content to local media in non-proprietary format
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	User can back up all content to local media in its original file format. The files uploaded to the Blackboard Content System can be saved and open to a local media using standard interface procedures.
Supporting Evidence / Snapshot	

	
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

Specific requirement analysis: No.20

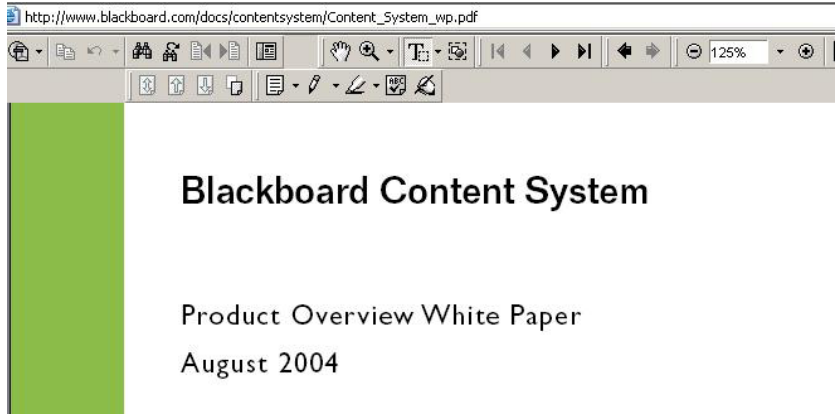
Requirement ID	20
Description	Users can archive content to local storage media
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	User can back up all content to local media in its original file format, or to a zip or other archiving formats. The files uploaded to the Blackboard Content System can be saved to a local media without extra effort to open.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

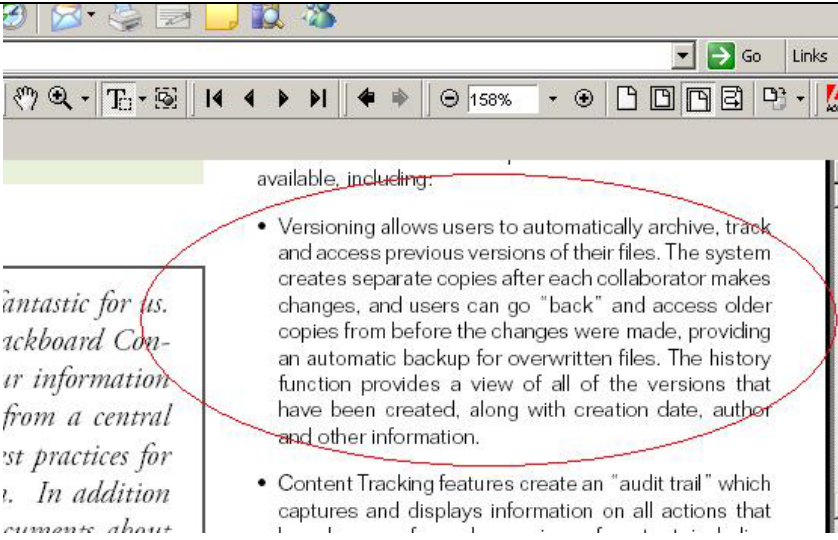
Specific requirement analysis: No.21

Requirement ID	21
Description	Users can backup all portfolios in Web page format
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	User can select specific portfolio downloaded to local storage in web page format. The portfolio will be compressed into a zip file. After extracting the zip file, the portfolio home page will become an index.html. Warning has been displayed prior to the download that if buttons were used in the Portfolio Menu, they would become text links in the downloaded Portfolio. All the links in the backup portfolios are not broken except if the link is linking back to the page in the Blackboard Content System.
Supporting Evidence / Snapshot	<div></div> <div></div> <div></div> <div></div>

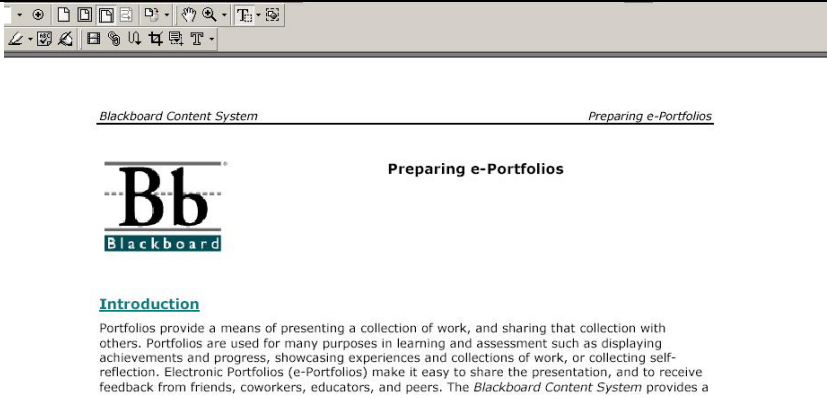
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

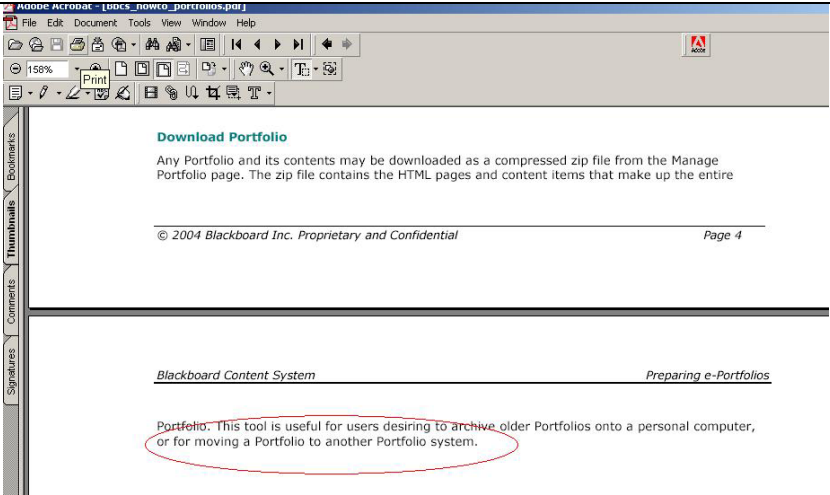
Specific requirement analysis: No.22

Requirement ID	22
Description	System administrators can archive content to back-up systems and/or to long-term storage devices; the system must allow individual portfolios to be retrieved from archive
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	According to Blackboard Content System White Paper page 5 stated, a "versioning" function exist, but we were unable to test or access this function.
Supporting Evidence / Snapshot	

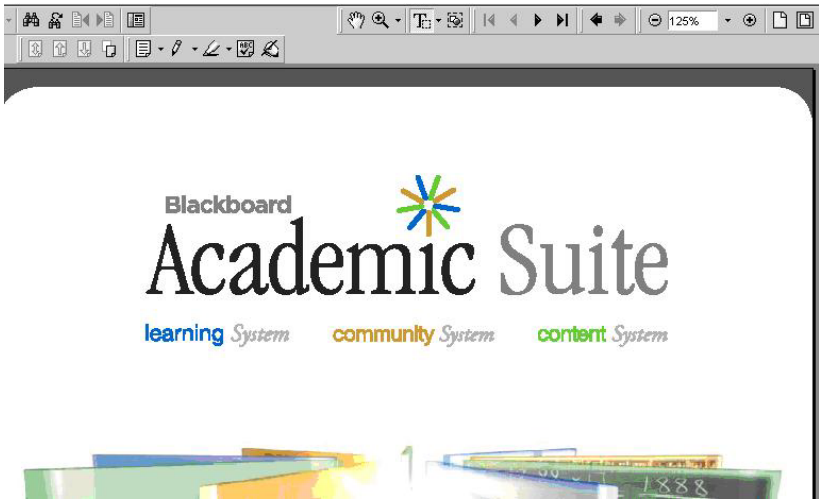
	
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

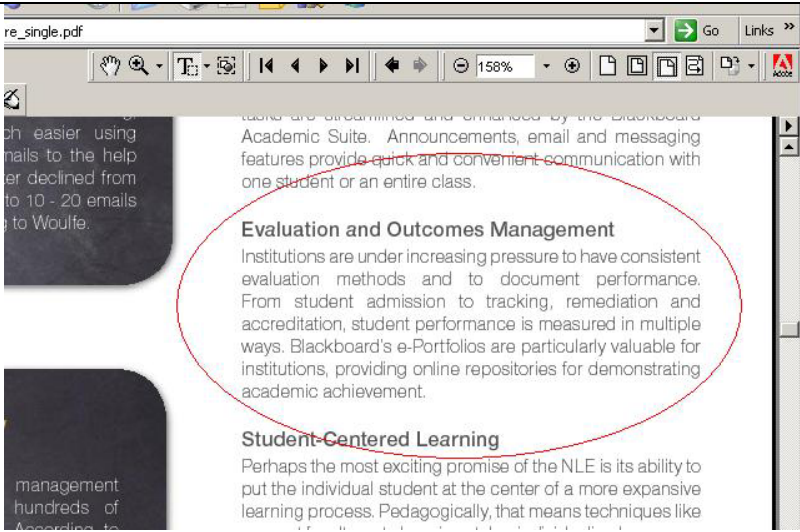
Specific requirement analysis: No.23

Requirement ID	23
Description	Users or System Administrators can export documents from the system for transfer to other ePortfolio systems, potentially hosted at other institutions; similarly, administrators can import portfolios from other systems
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	According to Blackboard Content System Tutorial, Preparing e-Portfolios page 5 mentioned that user can move portfolio to another portfolio system.
Supporting Evidence / Snapshot	

	
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

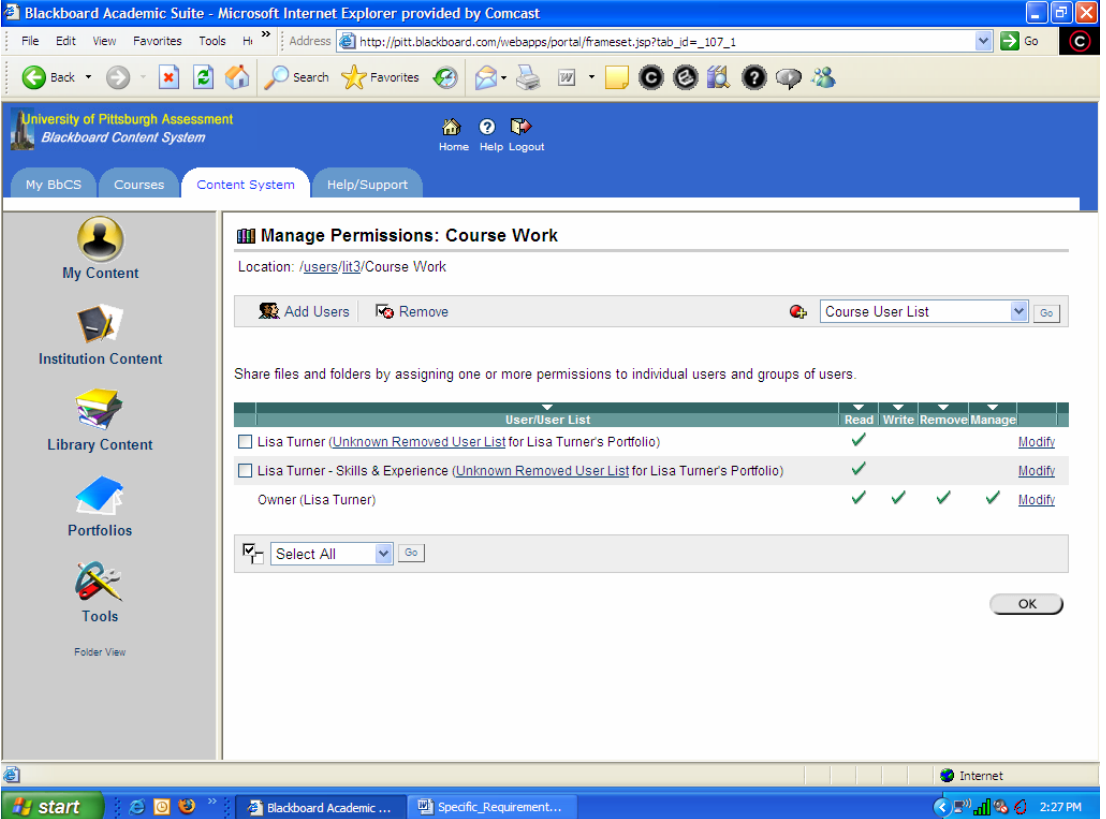
Specific requirement analysis: No.24

Requirement ID	24
Description	"Schools" can aggregate documents and metadata from multiple student stores for the purpose of analyzing requirements completion and producing reports for accreditation
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Live testing of a mock Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	According to Blackboard, institution are able to analyzing and tracking, remediation and accreditation of students
Supporting Evidence / Snapshot	

	 <p>re_single.pdf</p> <p>ch easier using mails to the help er declined from to 10 - 20 emails to Woulfe.</p> <p>management hundreds of According to</p> <p>are circumscribed and enhanced by the Blackboard Academic Suite. Announcements, email and messaging features provide quick and convenient communication with one student or an entire class.</p> <p>Evaluation and Outcomes Management Institutions are under increasing pressure to have consistent evaluation methods and to document performance. From student admission to tracking, remediation and accreditation, student performance is measured in multiple ways. Blackboard's e-Portfolios are particularly valuable for institutions, providing online repositories for demonstrating academic achievement.</p> <p>Student-Centered Learning Perhaps the most exciting promise of the NLE is its ability to put the individual student at the center of a more expansive learning process. Pedagogically, that means techniques like</p>
Suggestion / Comment	N/A
Observer / Inspector	Lucy Wang

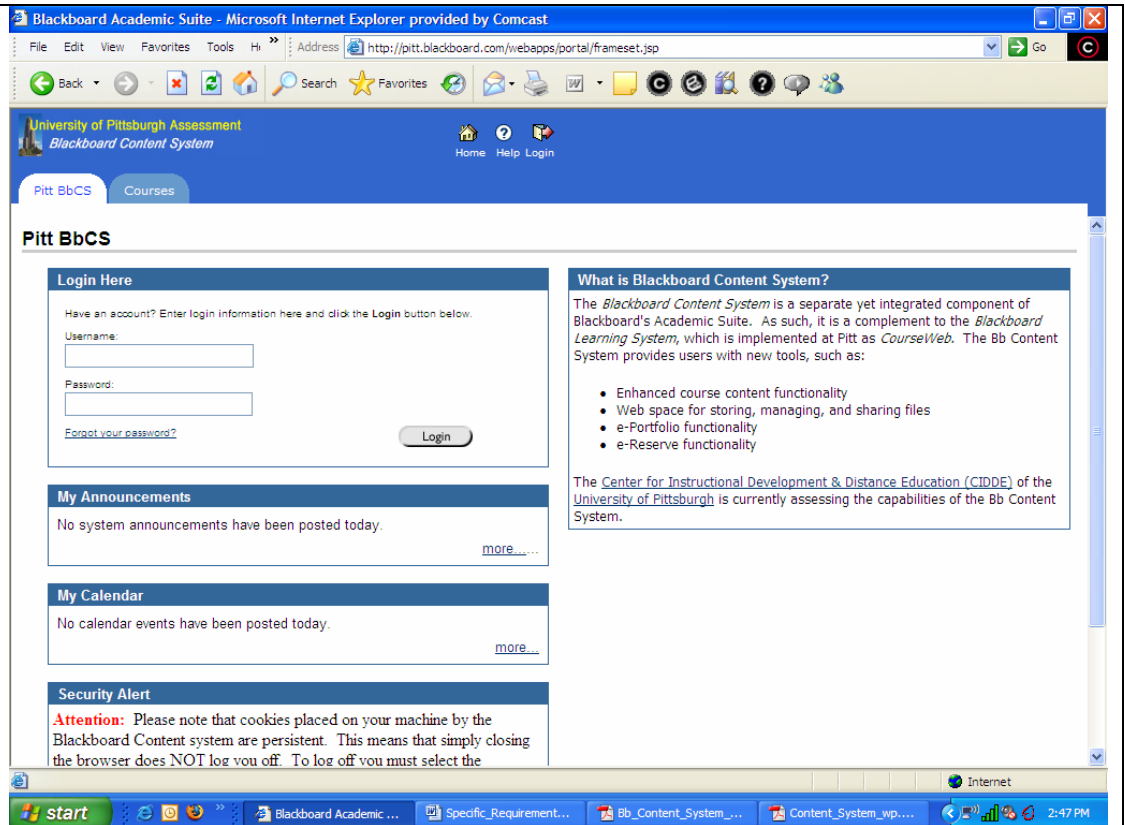
Specific requirement analysis: No.25

Requirement ID	25
Description	Users must have control over what components of their portfolios are public.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	<p>Below is a screen shot of the form where permissions for objects can be managed. Individual user's or groups can be given permission to read, write, remove or manage items in the content system.</p> <p>“• An author or owner can also grant access to a given object, folder, or to all content objects within a folder using permissions. The owner can decide what level of access to provide—read, write, remove and manage—and whether to provide that access to certain individual users, to members of courses (including specific roles such as student or instructor), to groups of users by Institution Role, to members of course or organization groups, or to all users with accounts on the system.” (Blackboard Content System — Product Overview White Paper)</p>

Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.26

Requirement ID	26
Description	Users must be able to authenticate via the University's centralized LDAP server; the system should allow local authentication of named users not in the centralized LDAP server; the system should be able to accept access credentials from an authenticated user on the University's portal.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	<p>Below is the login screen where users use their user name and password to login. The authentication would be as it is with the current blackboard system which does meet the above mentioned standards.</p> <p>"To leverage previous investments, clients implementing the Blackboard Content System can also take advantage of existing integration with identity management/authentication systems. Once a client has integrated the Blackboard platform with an external authentication system such as LDAP or Microsoft® Active Directory®, their Blackboard Content System will also be integrated." (Blackboard Content System — Product Overview White Paper)</p>

**Supporting Evidence /
Snapshot**

Suggestion / Comment

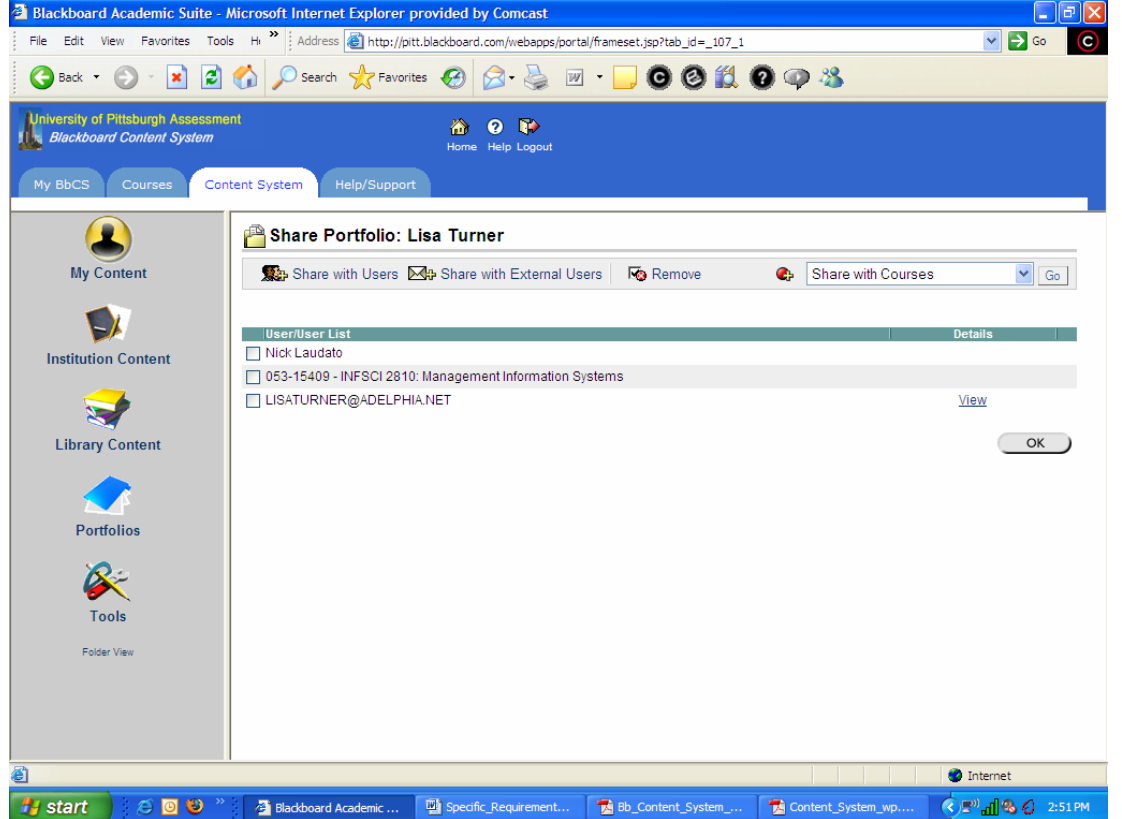
N/A

Observer / Inspector

Lisa Turner

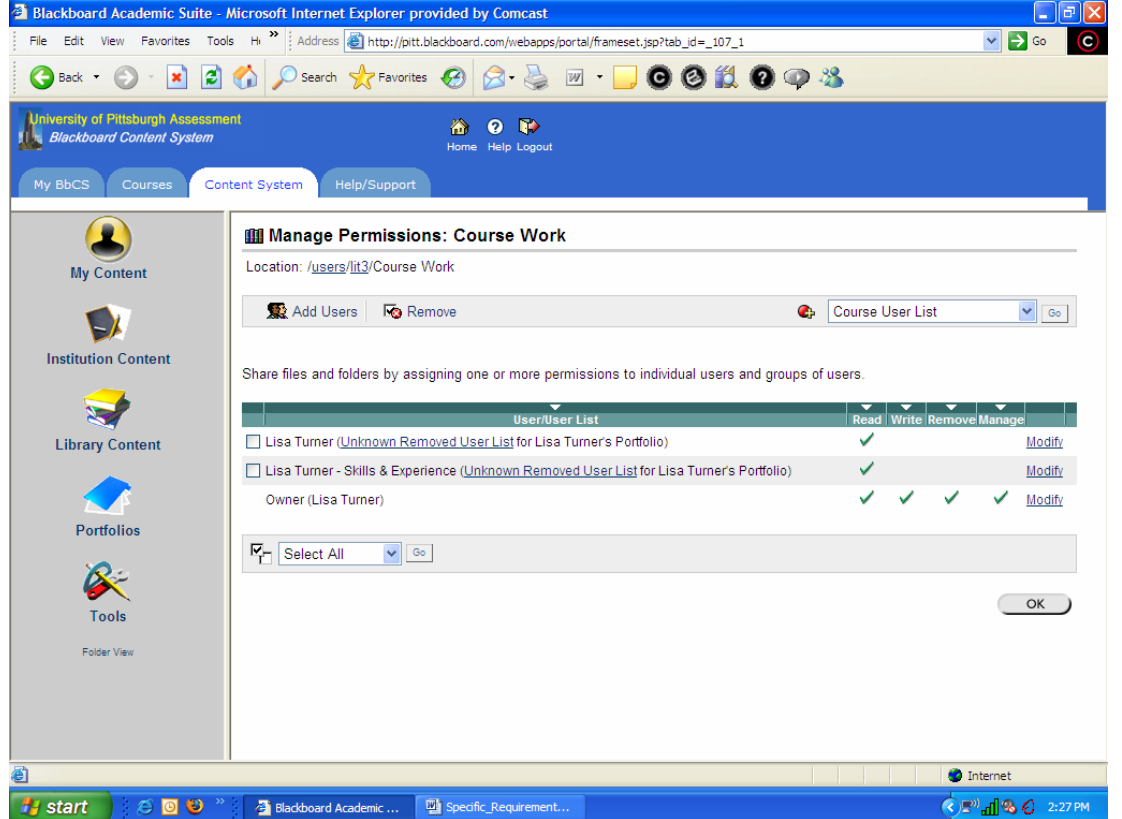
Specific requirement analysis: No.27

Requirement ID	27
Description	Users must be able to enable access (set permissions) to ePortfolio reports for external users (users not in Pitt's user database).
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	<p>The screen below shows how the ePortfolio can be shared with both internal and external users of the system. An external user can be entered via an email address which will receive a link to the ePortfolio material.</p> <p>"Once created, portfolios can be shared just like any other content hosted in the Blackboard Content System. Portfolio owners can make their portfolios available online to individual users in the system, to groups of users by course or to users outside of the institution. Portfolios can also be downloaded and burned to a CD-ROM." "Passes allow students and faculty to share their content with users outside of the university in a controlled manner. For example, a professor may be working on a research document in collaboration with colleagues at other institutions. She simply creates a pass that is valid for a specific time period and emails it to her co-authors. They receive a virtual link allowing them to work together on the document, and only that document."(Blackboard Content System — Product Overview White Paper)</p>

Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.28

Requirement ID	28
Description	Users can set access permissions to individual objects (documents and data) based on user role, group affiliation, or individual identifier; Users can set access levels (such as no access, readonly, comment, etc) on individual objects.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	“• An author or owner can also grant access to a given object, folder, or to all content objects within a folder using permissions. The owner can decide what level of access to provide—read, write, remove and manage—and whether to provide that access to certain individual users, to members of courses (including specific roles such as student or instructor), to groups of users by Institution Role, to members of course or organization groups, or to all users with accounts on the system.” (Blackboard Content System — Product Overview White Paper)

Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.29

Requirement ID	29
Description	System can designate user levels, including applicant, student, alumnus, instructor, advisor, school administrator, program administrator, course administrator, system administrator, reviewer, guest, observer, etc; individuals can be associated with multiple roles.
Meet the Requirement	<input checked="" type="radio"/> Yes <input type="radio"/> No
The degree of achieving requirement	<input checked="" type="radio"/> Fully Achieved <input type="radio"/> Moderately Achieved <input type="radio"/> Somewhat Achieved <input type="radio"/> Not Achieved At All
Explanation	“Course Roles control access to the content and tools within a course. Each user is assigned a role for each Course in which they participate. For example, a User with a role of Teaching Assistant in one Course can have a role of Student in another Course.” (Blackboard Academic Suite Instructor Manual)
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.30

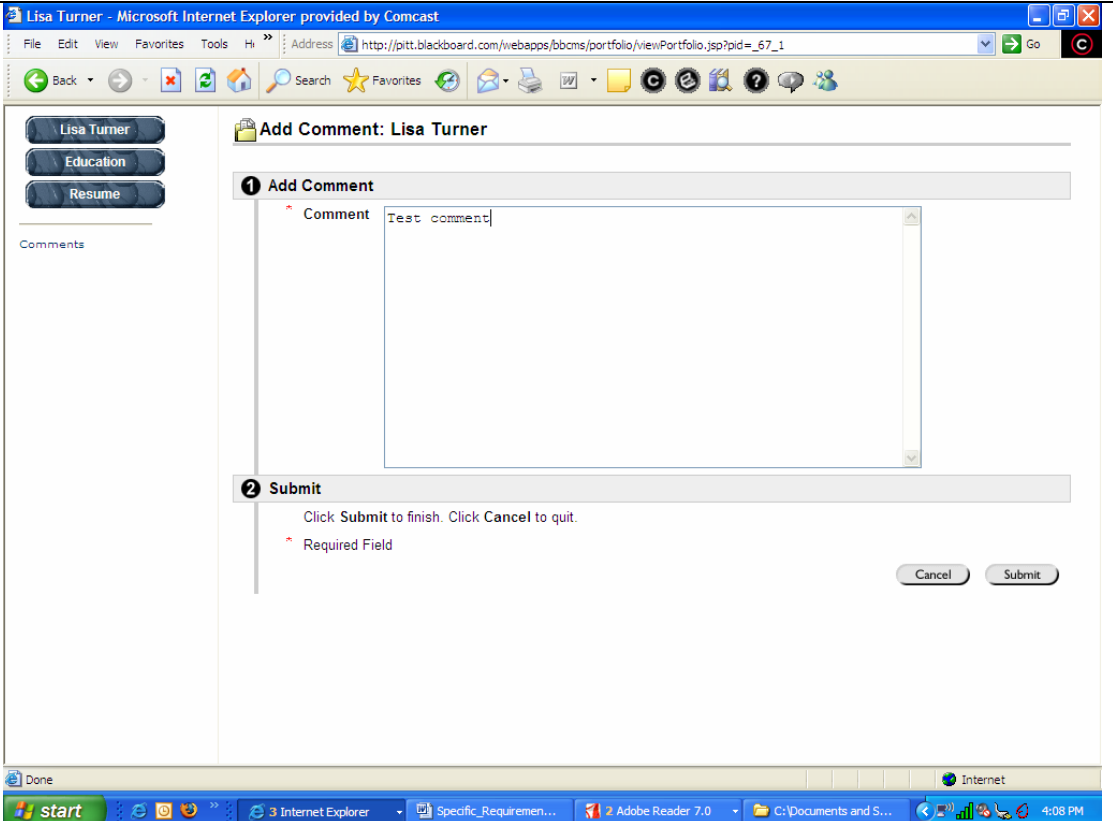
Requirement ID	30
Description	System can define user groups; individuals can be associated with multiple groups; System can recognize existing groups from the University’s portal.
Meet the Requirement	<input checked="" type="radio"/> Yes <input type="radio"/> No

The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	<p>“Authentication and Security</p> <p>In addition to providing Building Blocks integration agents for leading information systems, the Blackboard platform provides pre-configured, customizable integration for leading identity management/authentication protocols. By integrating the Blackboard environment with a standard authentication protocol, administrators reduce help-desk requests for password information and significantly reduce overall help desk overhead.</p> <p>To leverage previous investments, clients implementing the Blackboard Content System can also take advantage of existing integration with identity management/authentication systems. Once a client has integrated the Blackboard platform with an external authentication system such as LDAP or Microsoft® Active Directory®, their Blackboard Content System will also be integrated.” (Blackboard Content System — Product Overview White Paper)</p>
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

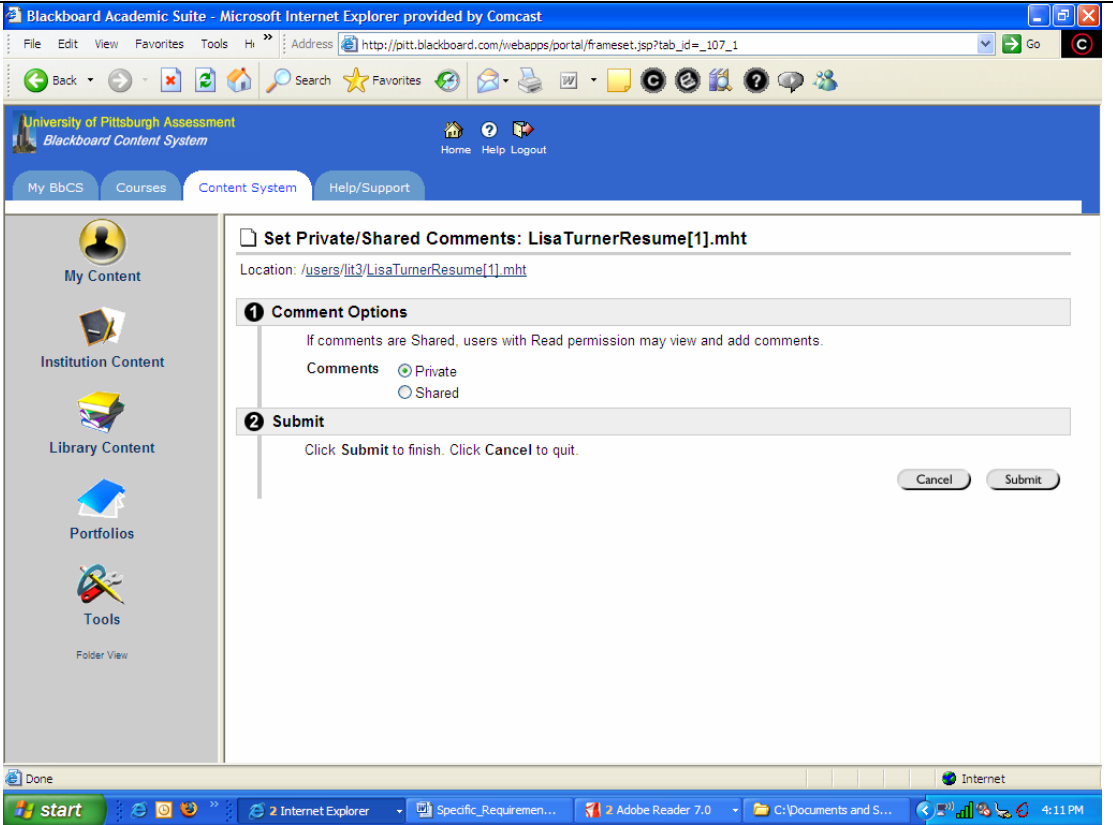
Specific requirement analysis: No.31

Requirement ID	31
Description	System can interface with (or receive data from) existing University systems (LDAP, HR, Student) to determine default permissions to directory information (e.g., recognizing the "Buckley" flag).
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	<p>“Student Information Systems</p> <p>Blackboard administrators can configure SIS integration agents according to either snapshot or event-driven criteria. With snapshot integration, administrators use a command line interface to update the Blackboard database, automatically synchronizing data and performing logic based on the desired criteria. The event-driven manager provides a collection of Java classes that programmers can use to insert, update, delete, or actively disable information based on an institution’s unique configuration specifications.</p> <p>Clients who have already integrated the Blackboard platform with their student records or human resource systems do not have to complete any additional work to ensure that their data is integrated with the Blackboard Content System, which takes advantage of the data that is already populated in the Blackboard platform.” (Blackboard Content System — Product Overview White Paper)</p>
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.32

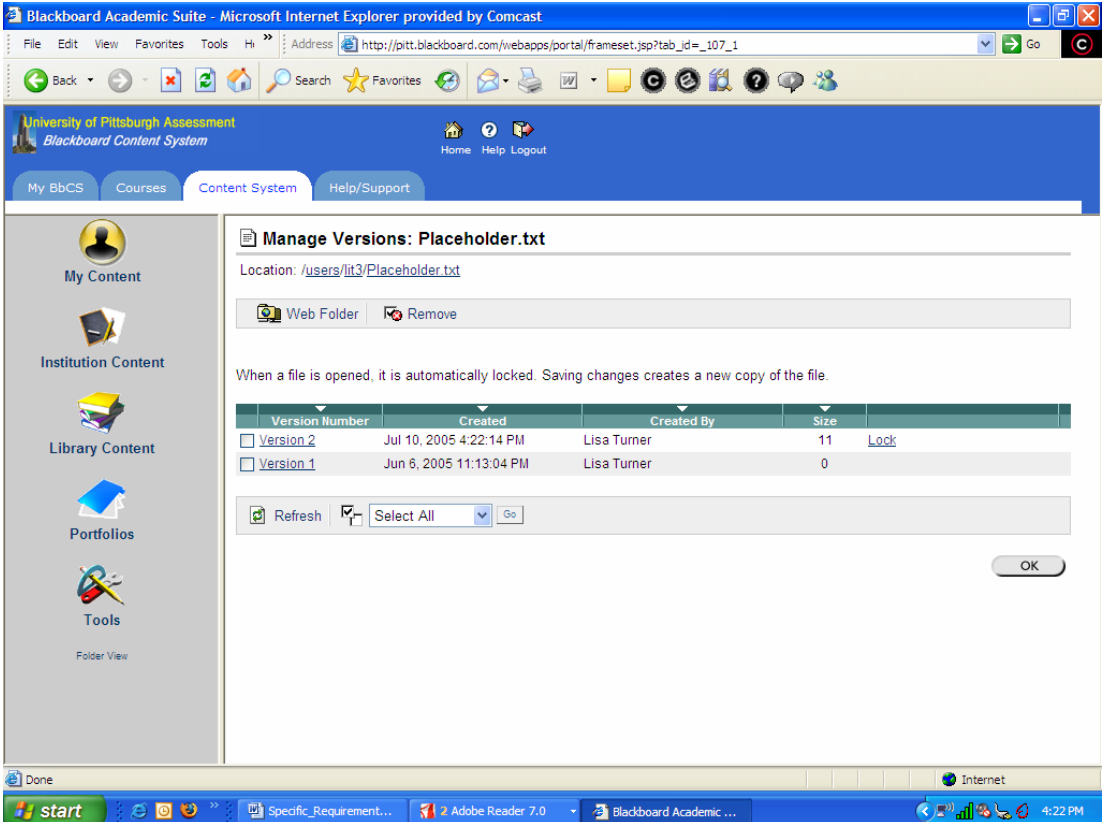
Requirement ID	32
Description	Users may insert written reflections (comments, annotations, etc.) that can be associated with existing documents.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	Comments can be added by those who have been given permission to do so.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.33

Requirement ID	33
Description	Users may invite others (both internal and external) to insert written reflections (comments, annotations, etc.) that can be associated with existing documents.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	N/A
Explanation	By giving someone read access to an item, they have the ability to add comments to the item. The screen below shows that these comments can be either shared or private.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

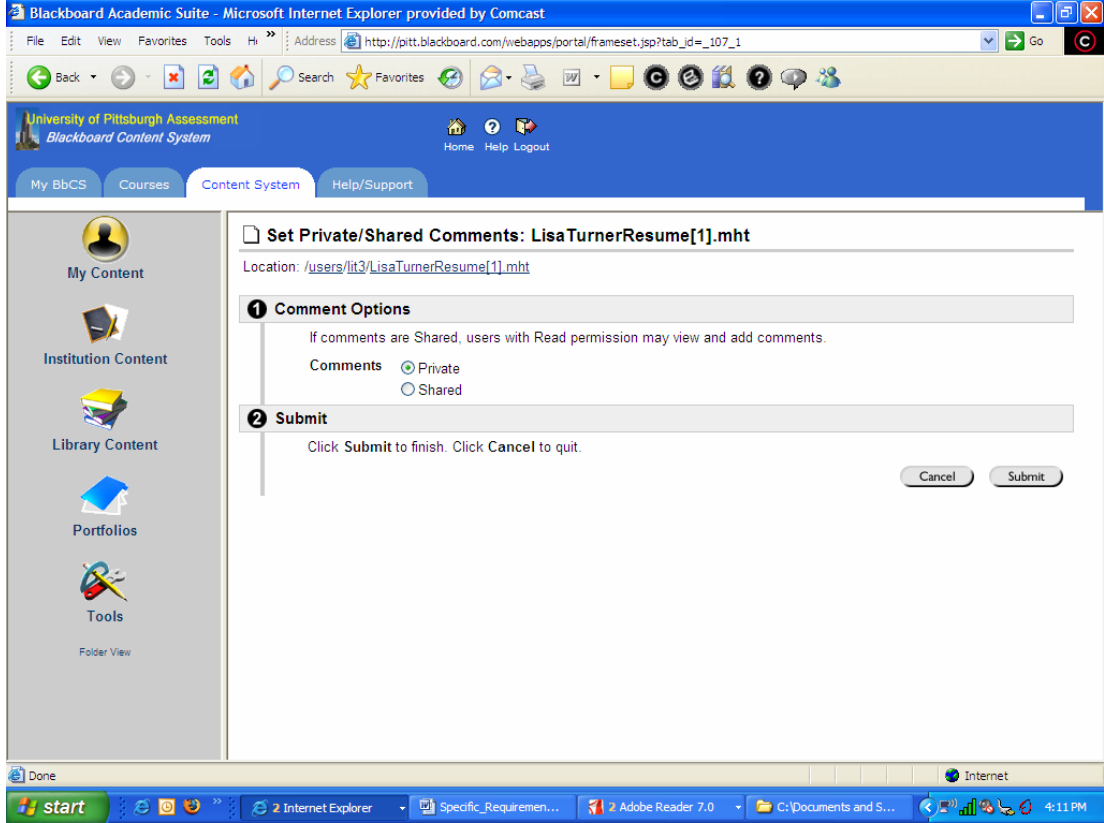
Specific requirement analysis: No.34

Requirement ID	34
Description	Authorized reviewers can change or correct documents while retaining the prior document (document versioning).
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All

Explanation	Versioning can be enabled for an item. When changes are made to the file, the changes are saved to the file but the users have the option of rolling back to previous versions of the file.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.35

Requirement ID	35
Description	Users and reviewers can designate whether their feedback is public, restricted (by group, role, individual, etc) or private.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	Comments can be made either private or shared among users.

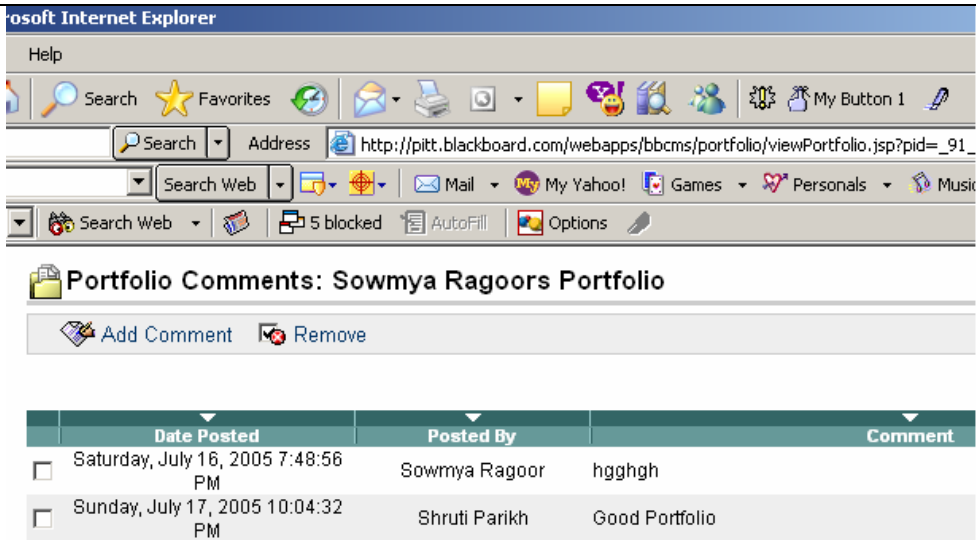
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.36

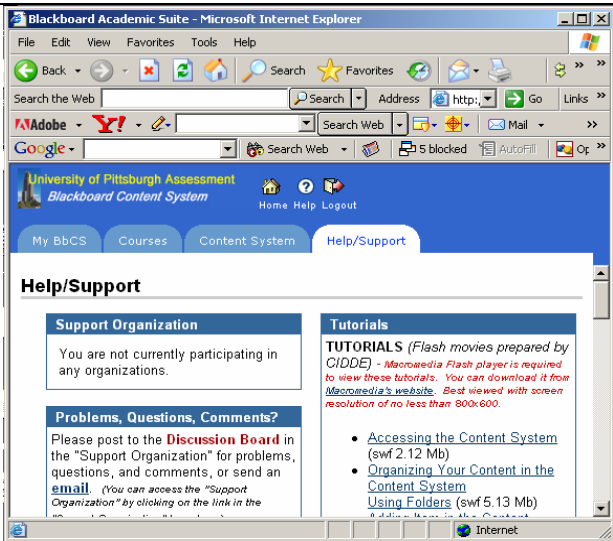
Requirement ID	36
Description	Policies governing feedback can be set at the individual, course, program, school and institution levels.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input checked="" type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Explanation	Feedback can be entered in the blackboard content system via the comment system. There are also feedback options available regarding tests and test questions that is available. It is unclear how the policies are established for these feedback mechanisms.
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Lisa Turner

Specific requirement analysis: No.37

Requirement ID	37
Description	The system can be configured to proactively alert users when feedback is posted.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	This requirement has been fully achieved. When a user posts a feedback in the e-portfolio the feedback is available in the comments section.

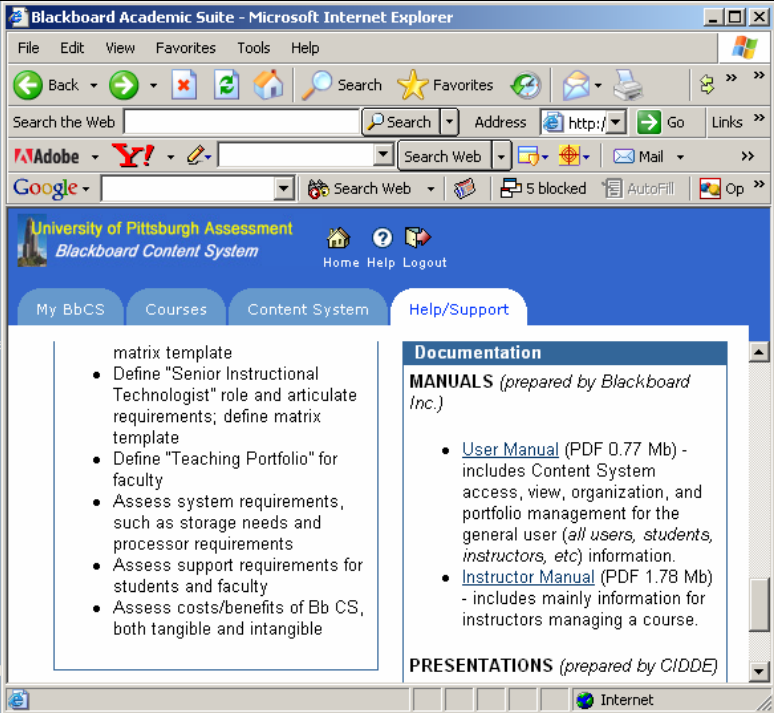
Supporting Evidence / Snapshot	
	Suggestion / Comment
	Observer / Inspector

Specific requirement analysis: No.38

Requirement ID	38
Description	The system should provide rich context-sensitive help.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	The Help/Support tab provides flash movies on how to access the content system; organizing the content in the content system etc .It also provides links to documents which explain how to set permissions etc. we all agree that this requirement has already been achieved in the current E-Portfolio system.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

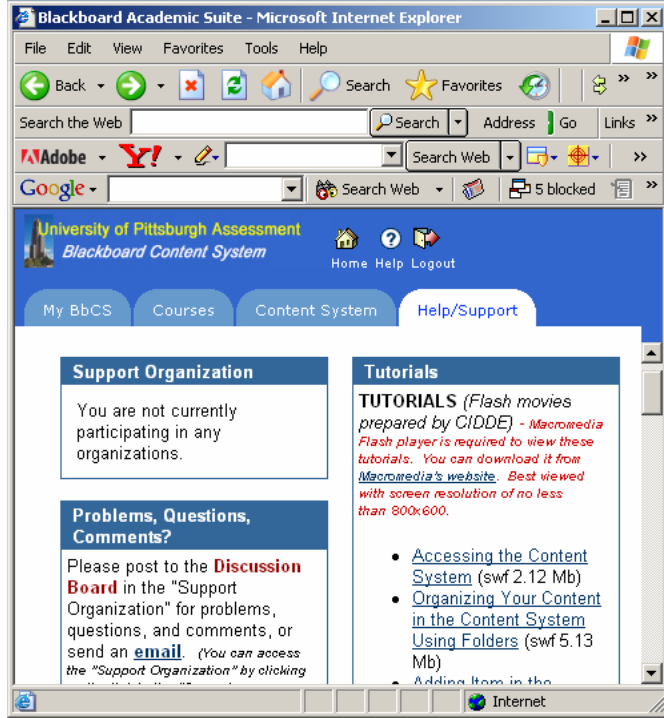
Specific requirement analysis: No.39

Requirement ID	39
Description	The system is accompanied by comprehensive, current, accurate, comprehensible documentation for users,

	administrators, and system staff.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	The System provides good documentation for users, administrators in the help tab; we all agree that this requirement has already been achieved in the current E-Portfolio system.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

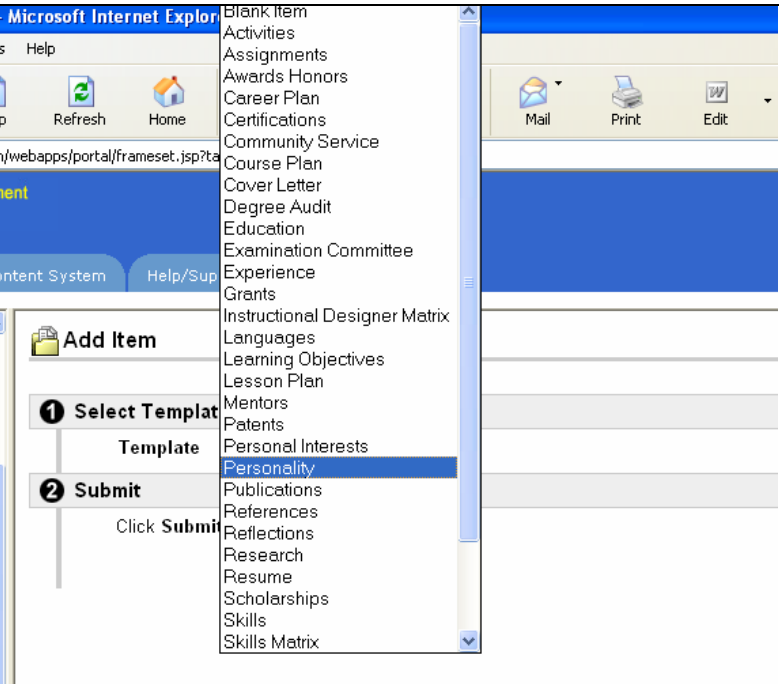
Specific requirement analysis: No.40

Requirement ID	40
Description	The system should include online mediated self-instructional training materials for all user functions.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	The System includes online mediated self-instructional material for all user functions like accessing the content system, organizing content in the content system using folders etc.; we all agree that this requirement has already been achieved in the current E-Portfolio system.

Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

Specific requirement analysis: No.41

Requirement ID	41
Description	The system should provide field completion and drop-down menus for the completion of data fields whose values can be specified in a data element dictionary.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	The system provides field completion and drop-down menus for the required data fields whose values can be specified in a data element dictionary; we all agree that this requirement has already been achieved in the current E-Portfolio system.

Supporting Evidence / Snapshot		
Suggestion / Comment	N/A	
Observer / Inspector	Sowmya Ragoor	

Specific requirement analysis: No.42

Requirement ID	42
Description	The database schema for the system should be available to enable system users to create custom queries against the database.
Meet the Requirement	<input type="radio"/> Yes <input checked="" type="radio"/> No
The degree of achieving requirement	<input checked="" type="radio"/> Fully Achieved <input type="radio"/> Moderately Achieved <input type="radio"/> Somewhat Achieved <input type="radio"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	This feature is not achieved.
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

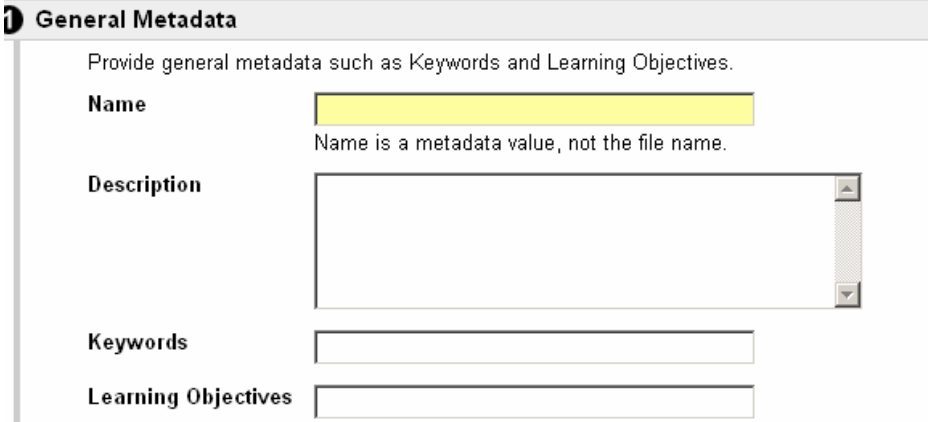
Specific requirement analysis: No.43

Requirement ID	43
Description	System users should be able to track the status of support requests and problem reports.
Meet the Requirement	<input type="radio"/> Yes <input checked="" type="radio"/> No
The degree of achieving requirement	<input checked="" type="radio"/> Fully Achieved <input type="radio"/> Moderately Achieved <input type="radio"/> Somewhat Achieved <input type="radio"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	This feature is not achieved.
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

Specific requirement analysis: No.44

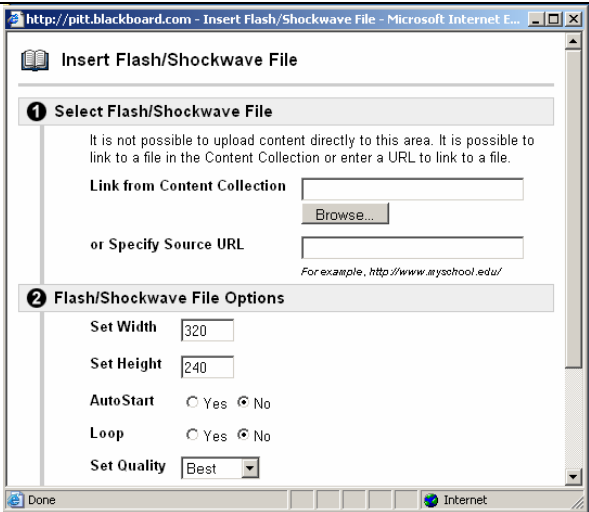
Requirement ID	44
Description	The vendor will provide 24x7 help desk support to local system staff.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	There is no way to assess this requirement.
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

Specific requirement analysis: No.45

Requirement ID	45
Description	Users can search the document store by any metadata field; the users' search domain is limited to the objects to which the user has read access.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	The system allows us to enter General metadata, IMS Metadata, Dublin Core Metadata, Pitt Custom Metadata to document, image in an E-Portfolio. It allows us to specify the name, description and keywords that can be used to search for the data when required. We all agree that this requirement has already been achieved in the current E-Portfolio system.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

Specific requirement analysis: No.46

Requirement ID	46
Description	The system can support streaming audio and video content in Windows, Real, Flash, and QuickTime formats.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.

Explanation	The system allows us to insert streaming audio and video content in Windows, Real, Flash, and Quick Time Formats. We can set the width, height. Also there are options to auto start, loop, set quality etc. we all agree that this requirement has already been achieved in the current E-Portfolio system.
Supporting Evidence / Snapshot	
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

Specific requirement analysis: No.47

Requirement ID	47
Description	The system can interface with streaming servers in Windows, Real, Flash, and QuickTime formats, preserving access rules and restrictions.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	The system allows us to insert streaming audio and video content in Windows, Real, Flash, and Quick Time Formats, preserving access rules and restrictions. We all agree that this requirement has already been achieved in the current E-Portfolio system.
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

Specific requirement analysis: No.48

Requirement ID	48
Description	The system can interface with the University's central directory service for information about users.
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Testing of Blackboard Content System with the reference to system documentation provided by Blackboard's "Blackboard Content System Product Overview White Paper" and other sales literature.
Explanation	We talked to the professor regarding this requirement and we came to a conclusion that the system can access the University's central database and store information about the users. This requirement has been fully achieved; we all agree that this requirement has already been achieved in the current E-Portfolio system.
Supporting Evidence / Snapshot	N/A
Suggestion / Comment	N/A
Observer / Inspector	Sowmya Ragoor

Specific requirement analysis: No.49

Requirement ID	49
Description	The system can interface with the University's PeopleSoft student information system for access to academic program, advisor, grade, and course information
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Doing a research on the Blackboard Content System white paper since the given requirement is hard to observe and inspect from the actual system.
Explanation	According to the Blackboard Content System white paper, Blackboard claims that systems and various software products (homegrown, open source, commercially licensed applications and system services) used in an institution can be integrated into the Blackboard Content System with Building Blocks Technology. Since Building Blocks is designed to readily allow data exchange – through the use of <i>Integration Agents</i> – among systems and various software products, we believe that the Content System tend to be able to interface with existing systems in the institution as desire. However, we only give “moderately level” to this requirement achievement because the current system still can't achieve the requirement. Besides, there is no guarantee for the integration. Also, not only may unexpected system configuration problems occur but also it might take long time to integrate between two systems.
Supporting Evidence / Snapshot	<div> <p>Overview of the Building Blocks Technology</p> <p>Stemming from a commitment to promote an open environment for Suite customization, flexibility, and interoperability, the Blackboard Building Blocks architecture provides clients with an e-Education system that can be customized to meet unique pedagogical, administrative, and transaction processing needs. Throughout the Blackboard Suite, administrators and end users may leverage Building Blocks technology to seamlessly integrate homegrown, open source, or commercially licensed applications, and system services.</p> <p>At the heart of Building Blocks is the Building Blocks Manager that exposes the core of Blackboard to enable data exchange, interoperability, and transaction processing with, technologies including:</p> </div> <div> <p>Using the Building Blocks Manager, institutions can customize their Blackboard implementation to meet institution-specific needs for teaching and learning, community building and transaction processing. Through a comprehensive developers program and a freely available Software Developers Kit (SDK), and published integration specifications, Building Blocks is designed to readily allow data exchange – through the use of <i>Integration Agents</i> – among systems and various software products and thus enhance the daily experience of administrators, students, and faculty.</p> </div> <div> <p>A part of Blackboard Content System white paper (Part 1)</p> </div> <div> <p>A part of Blackboard Content System white paper (Part 2)</p> </div>
Suggestion / Comment	Since we don't have much information about the Blackboard Content System in depth, it is hard to judge whether this requirement meet the current system or not. As a result, we can only assess the requirement achievement by using limited information given on the white paper.
Observer / Inspector	Kittipong Techapanichgul

Specific requirement analysis: No.50

Requirement ID	50
Description	The system can interface with the University's Oracle human resource system for access to personnel data
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Doing a research on the Blackboard Content System white paper since the given requirement is hard to observe and inspect from the actual system.
Explanation	According to the Blackboard Content System white paper, Blackboard claims that systems and various software products (homegrown, open source, commercially licensed applications and system services) used in an institution can be integrated into the Blackboard Content System with Building Blocks Technology. Since Building Blocks is designed to readily allow data exchange – through the use of <i>Integration Agents</i> – among systems and various software products, we believe that the Content

	System tend to be able to interface with existing systems in the institution as desire. However, we only give “moderately level” to this requirement achievement because the current system still can’t achieve the requirement. Besides, there is no guarantee for the integration. Also, not only may unexpected system configuration problems occur but also it might take long time to integrate between two systems.	
Supporting Evidence / Snapshot	<p>Overview of the Building Blocks Technology</p> <p>Stemming from a commitment to promote an open environment for Suite customization, flexibility, and interoperability, the Blackboard Building Blocks architecture provides clients with an e-Education system that can be customized to meet unique pedagogical, administrative, and transaction processing needs. Throughout the Blackboard Suite, administrators and end users may leverage Building Blocks technology to seamlessly integrate homegrown, open source, or commercially licensed applications, and system services.</p> <p>At the heart of Building Blocks is the Building Blocks Manager that exposes the core of Blackboard to enable data exchange, interoperability, and transaction processing with, technologies including:</p> <p>A part of Blackboard Content System white paper (Part 1)</p>	<p>Using the Building Blocks Manager, institutions can customize their Blackboard implementation to meet institution-specific needs for teaching and learning, community building and transaction processing. Through a comprehensive developers program and a freely available Software Developers Kit (SDK), and published integration specifications, Building Blocks is designed to readily allow data exchange – through the use of <i>Integration Agents</i> – among systems and various software products and thus enhance the daily experience of administrators, students, and faculty.</p> <p>A part of Blackboard Content System white paper (Part 2)</p>
Suggestion / Comment	Since we don’t have much information about the Blackboard Content System in depth, it is hard to judge whether this requirement meet the current system or not. As a result, we can only assess the requirement achievement by using limited information given on the white paper.	
Observer / Inspector	Kittipong Techapanichgul	

Specific requirement analysis: No.51

Requirement ID	51
Description	The system can interface with the Blackboard course management system for access to course-related data
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Doing a research on the Blackboard Content System white paper since the given requirement is hard to observe and inspect from the actual system.
Explanation	According to the Blackboard Content System white paper, Blackboard claims that systems and various software products (homegrown, open source, commercially licensed applications and system services) used in an institution can be integrated into the Blackboard Content System with Building Blocks Technology. Since Building Blocks is designed to readily allow data exchange – through the use of <i>Integration Agents</i> – among systems and various software products, we believe that the Content System tend to be able to interface with existing systems in the institution as desire. However, we only give “moderately level” to this requirement achievement because there is no guarantee for the integration. Also, not only may unexpected system configuration problems occur but also it might take long time to integrate between two systems.

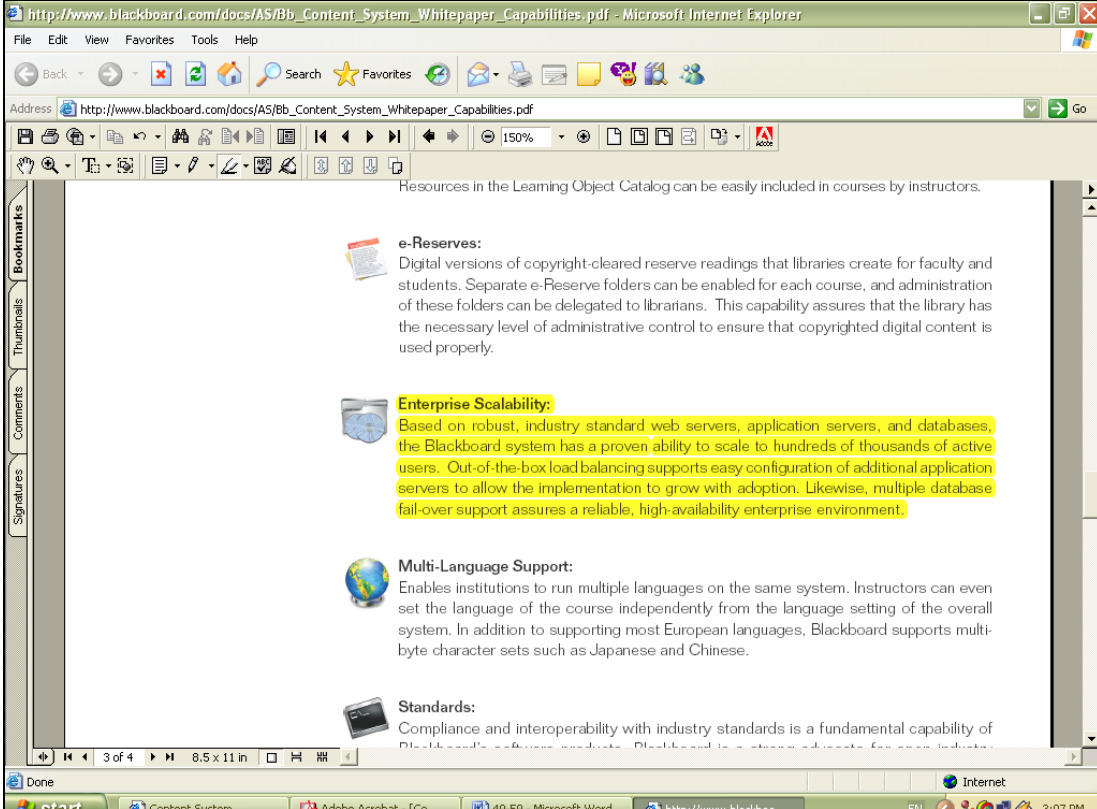
Supporting Evidence / Snapshot	<p>Overview of the Building Blocks Technology</p> <p>Stemming from a commitment to promote an open environment for Suite customization, flexibility, and interoperability, the Blackboard Building Blocks architecture provides clients with an e-Education system that can be customized to meet unique pedagogical, administrative, and transaction processing needs. Throughout the Blackboard Suite, administrators and end users may leverage Building Blocks technology to seamlessly integrate homegrown, open source, or commercially licensed applications, and system services.</p> <p>At the heart of Building Blocks is the Building Blocks Manager that exposes the core of Blackboard to enable data exchange, interoperability, and transaction processing with, technologies including:</p> <p>A part of Blackboard Content System white paper (Part 1)</p>	<p>Using the Building Blocks Manager, institutions can customize their Blackboard implementation to meet institution-specific needs for teaching and learning, community building and transaction processing. Through a comprehensive developers program and a freely available Software Developers Kit (SDK), and published integration specifications, Building Blocks is designed to readily allow data exchange – through the use of <i>Integration Agents</i> – among systems and various software products and thus enhance the daily experience of administrators, students, and faculty.</p> <p>A part of Blackboard Content System white paper (Part 2)</p>
Suggestion / Comment	Since we don't have much information about the Blackboard Content System in depth, it is hard to judge whether this requirement meet the current system or not. As a result, we can only assess the requirement achievement by using limited information given on the white paper.	
Observer / Inspector	Kittipong Techapanichgul	

Specific requirement analysis: No.52

Requirement ID	52	
Description	The system can interface with the University's alumni system for access to alumni-related data	
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All	
Methodology used to measure achievement	Doing a research on the Blackboard Content System white paper since the given requirement is hard to observe and inspect from the actual system.	
Explanation	According to the Blackboard Content System white paper, Blackboard claims that systems and various software products (homegrown, open source, commercially licensed applications and system services) used in an institution can be integrated into the Blackboard Content System with Building Blocks Technology. Since Building Blocks is designed to readily allow data exchange – through the use of <i>Integration Agents</i> – among systems and various software products, we believe that the Content System tend to be able to interface with existing systems in the institution as desire. However, we only give “moderately level” to this requirement achievement because there is no guarantee for the integration. Also, not only may unexpected system configuration problems occur but also it might take long time to integrate between two systems.	
Supporting Evidence / Snapshot	<p>Overview of the Building Blocks Technology</p> <p>Stemming from a commitment to promote an open environment for Suite customization, flexibility, and interoperability, the Blackboard Building Blocks architecture provides clients with an e-Education system that can be customized to meet unique pedagogical, administrative, and transaction processing needs. Throughout the Blackboard Suite, administrators and end users may leverage Building Blocks technology to seamlessly integrate homegrown, open source, or commercially licensed applications, and system services.</p> <p>At the heart of Building Blocks is the Building Blocks Manager that exposes the core of Blackboard to enable data exchange, interoperability, and transaction processing with, technologies including:</p> <p>A part of Blackboard Content System white paper (Part 1)</p>	<p>Using the Building Blocks Manager, institutions can customize their Blackboard implementation to meet institution-specific needs for teaching and learning, community building and transaction processing. Through a comprehensive developers program and a freely available Software Developers Kit (SDK), and published integration specifications, Building Blocks is designed to readily allow data exchange – through the use of <i>Integration Agents</i> – among systems and various software products and thus enhance the daily experience of administrators, students, and faculty.</p> <p>A part of Blackboard Content System white paper (Part 2)</p>

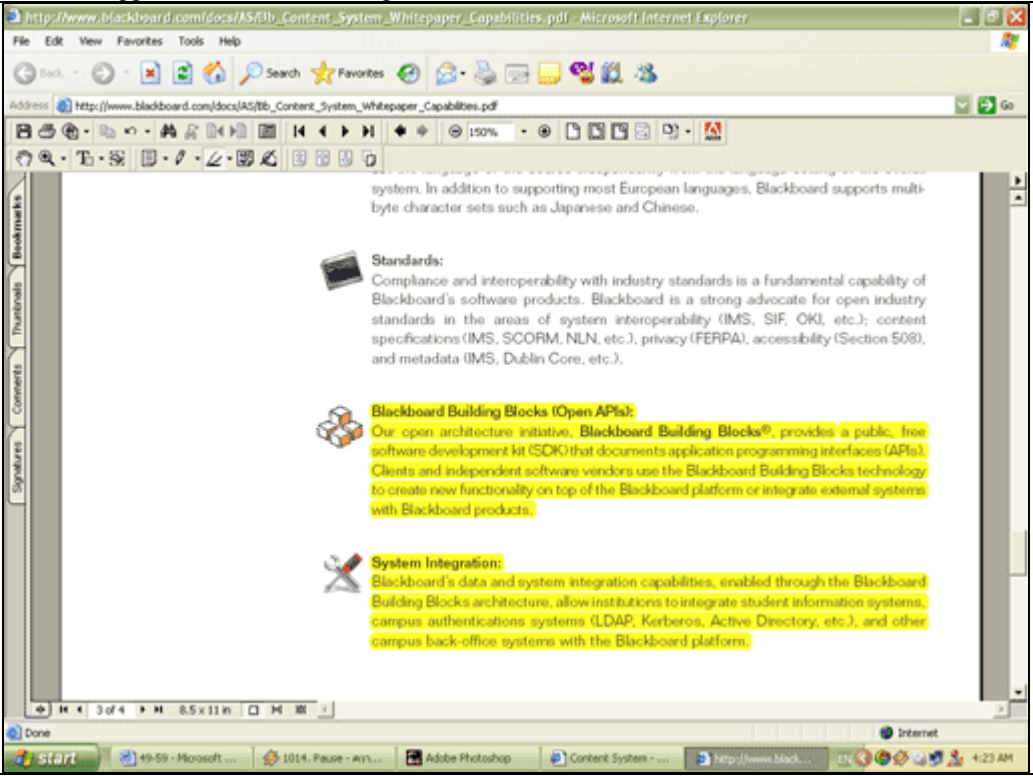
Suggestion / Comment	Since we don't have much information about the Blackboard Content System in depth, it is hard to judge whether this requirement meet the current system or not. As a result, we can only assess the requirement achievement by using limited information given on the white paper.
Observer / Inspector	Kittipong Techapanichgul

Specific requirement analysis: No.53

Requirement ID	53
Description	The system is scalable, allowing users and resources to be added while maintaining system performance without diminishing returns (adding servers, memory, disk, etc)
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Doing a research on the Blackboard Content System Capabilities since the given requirement is hard to observe and inspect from the actual system.
Explanation	Having been written in the Blackboard Content System Capabilities , system scalability can be achieved easily by system configuration. Also, the system is being developed by latest technologies such as Java and XML which can be benefit in long run. Moreover, the system is able to support not only thousands of active users but also additional application servers. We decided to give "Fully level" to the requirement achievement.
Supporting Evidence / Snapshot	 <p>The screenshot shows a web browser displaying a PDF document titled 'Blackboard Content System Capabilities'. The document lists several key features: e-Reserves, Enterprise Scalability (highlighted in yellow), Multi-Language Support, and Standards. The Enterprise Scalability section states: 'Based on robust, industry standard web servers, application servers, and databases, the Blackboard system has a proven ability to scale to hundreds of thousands of active users. Out-of-the-box load balancing supports easy configuration of additional application servers to allow the implementation to grow with adoption. Likewise, multiple database fail-over support assures a reliable, high-availability enterprise environment.'</p>
Suggestion / Comment	Having experienced problems from broken content's links during system upgrade period, we are not sure whether the system users and web servers (as well as memory, disk, etc) can be added while maintaining system performance without diminishing returns or not. However, the issue is not big concern because those problems should be corrected by proper system configuration.
Observer / Inspector	Kittipong Techapanichgul

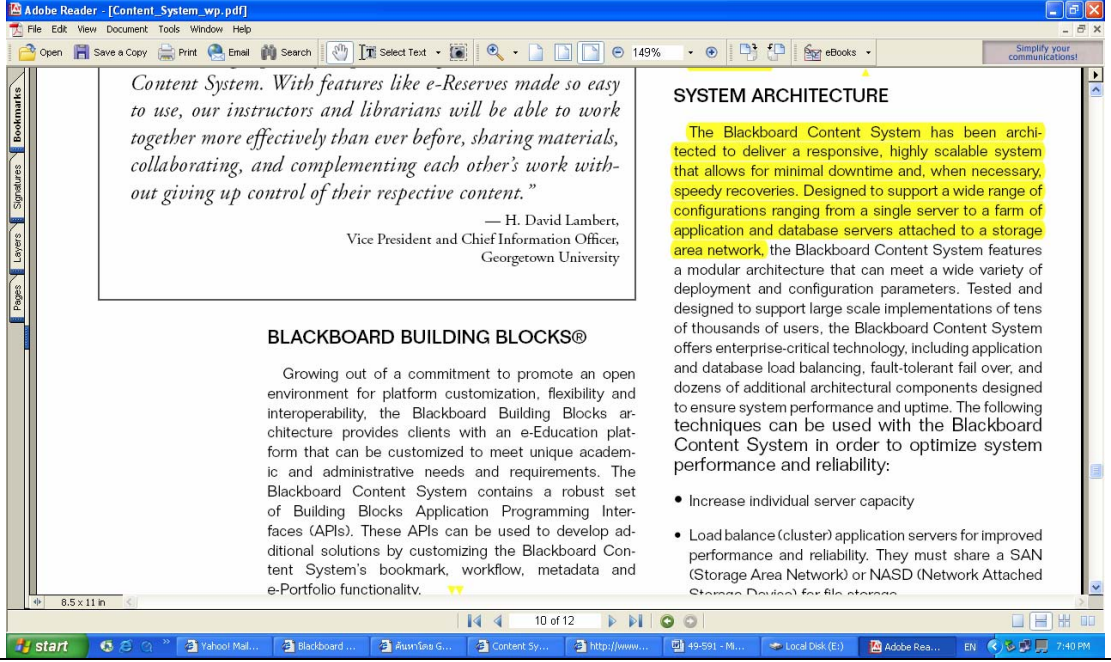
Specific requirement analysis: No.54

Requirement ID	54
Description	The system is reliable and capable of being implemented in a highly-available, 24x7 environment
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Doing a research on the Blackboard Content System white paper since the given requirement is hard to observe and inspect from the actual system.
Explanation	For the system reliability, we believe that the current system now satisfies the given requirement at a proper level because we have not encountered any major system problem since the first time we started using the content system. However, we are highly confident that the system is capable of being implemented. According to the Blackboard Content System white paper (and also the Blackboard Content System Capabilities), Blackboard provides a public software development kit (SDK) which allow users create their new functionality on top of the Blackboard platform. Thus, the system already possesses the capabilities of being implemented in a highly-available, 24x 7 environments. With Blackboard support, we can ask for help from call center in case we need it.
Supporting Evidence / Snapshot	
Suggestion / Comment	Because our team has no chance to implement a new functionality on top of the Blackboard platform, we can't guarantee that the system is capable of being implemented in a highly-available, 24x 7 environments. However, it is high possibility for system developers to implement a new functionality without a problem.
Observer / Inspector	Kittipong Techapanichgul

Specific requirement analysis: No.55

Requirement ID	55
Description	All data and metadata in the system is accessible via SQL-compliant query tools
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input checked="" type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Interviewing people working on the system and understand about the system capabilities in back-end as well as researching on information available in the white paper.
Explanation	Having talked with people who understand the system backbone about this requirement, we are positive to conclude that the system can be access via SQL-compliant query tools; Also, the white paper mentions about working with various database servers which make us believe that this requirement has already been achieved by the current E-Portfolio system.

Supporting Evidence / Snapshot	 <p><i>Content System. With features like e-Reserves made so easy to use, our instructors and librarians will be able to work together more effectively than ever before, sharing materials, collaborating, and complementing each other's work without giving up control of their respective content.</i></p> <p>— H. David Lambert, Vice President and Chief Information Officer, Georgetown University</p> <p>BLACKBOARD BUILDING BLOCKS®</p> <p>Growing out of a commitment to promote an open environment for platform customization, flexibility and interoperability, the Blackboard Building Blocks architecture provides clients with an e-Education platform that can be customized to meet unique academic and administrative needs and requirements. The Blackboard Content System contains a robust set of Building Blocks Application Programming Interfaces (APIs). These APIs can be used to develop additional solutions by customizing the Blackboard Content System's bookmark, workflow, metadata and e-Portfolio functionality.</p> <p>SYSTEM ARCHITECTURE</p> <p>The Blackboard Content System has been architected to deliver a responsive, highly scalable system that allows for minimal downtime and, when necessary, speedy recoveries. Designed to support a wide range of configurations ranging from a single server to a farm of application and database servers attached to a storage area network, the Blackboard Content System features a modular architecture that can meet a wide variety of deployment and configuration parameters. Tested and designed to support large scale implementations of tens of thousands of users, the Blackboard Content System offers enterprise-critical technology, including application and database load balancing, fault-tolerant fail over, and dozens of additional architectural components designed to ensure system performance and uptime. The following techniques can be used with the Blackboard Content System in order to optimize system performance and reliability:</p> <ul style="list-style-type: none"> • Increase individual server capacity • Load balance (cluster) application servers for improved performance and reliability. They must share a SAN (Storage Area Network) or NASD (Network Attached Storage Device) for file storage.
Suggestion / Comment	Although we are not able to inspect the current system in detail, we can believe in interviewee's claim. As a result, we give "moderately level" to this requirement achievement.
Observer / Inspector	Kittipong Techapanichgul

Specific requirement analysis: No.56

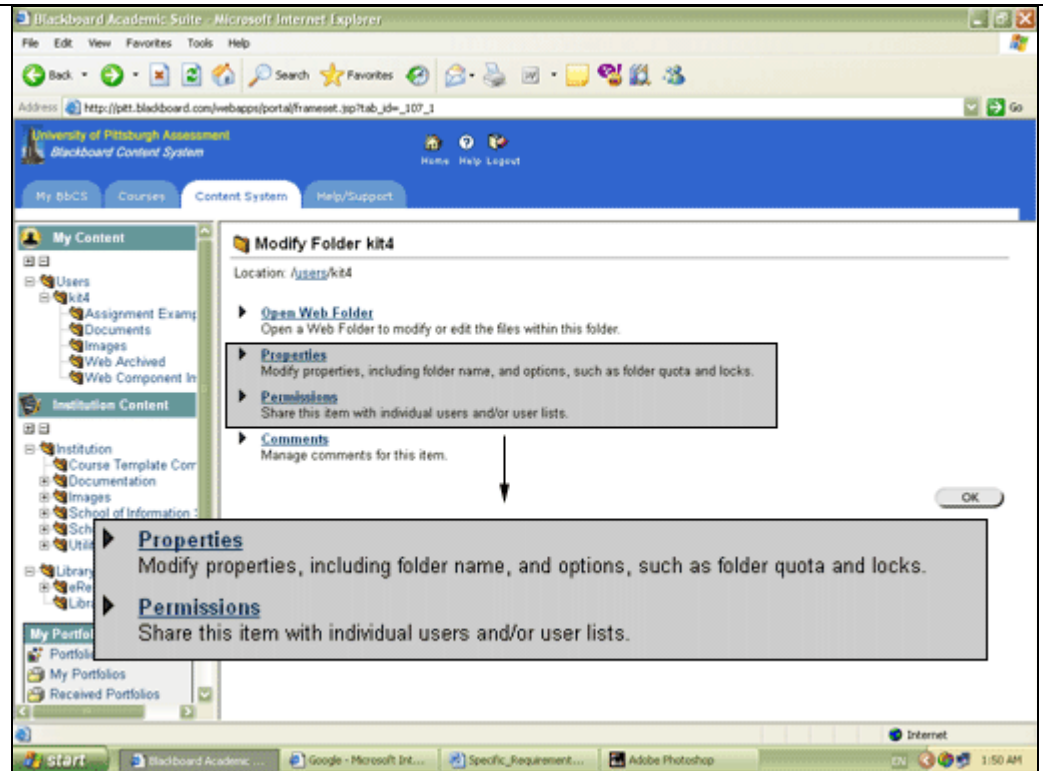
Requirement ID	56
Description	The system can allow for the backup and restoration of individual document stores and portfolios
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input type="checkbox"/> Moderately Achieved <input checked="" type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Inspecting and testing with the real system. The requirement indicated two defined features that are document store & portfolio backup and restoration but the current system supports only portfolio backup. Thus, we rate "somewhat degree" for the requirement achievement.
Explanation	Having successfully backup my portfolio to prove possibility of portfolio backup, we believe that the current system already provides those kinds of features to users. However, since we have not seen any feature which allows users to restore their individual portfolio, we am not positive whether the portfolio restoration is available in the current system or not. As a consequence, we would give "somewhat degree" to this requirement achievement.

Supporting Evidence / Snapshot	<p>This feature is provided under portfolio manager (Click “manage” of the portfolio)</p>
Suggestion / Comment	<p>If the current system already provided the portfolio restoration, the link of this feature supposes to be next to the “Download Portfolio” link in order to allow users easily figure out that there is portfolio restoration available in the system.</p>
Observer / Inspector	<p>Kittipong Techapanichgul</p>

Specific requirement analysis: No.57

Requirement ID	57
Description	The system provides automated tools for managing user accounts, privileges, quotas, etc.
Meet the Requirement	<input checked="" type="radio"/> Yes <input type="radio"/> No
The degree of achieving requirement	<input type="radio"/> Fully Achieved <input checked="" type="radio"/> Moderately Achieved <input type="radio"/> Somewhat Achieved <input type="radio"/> Not Achieved At All
Methodology used to measure achievement	Inspecting and testing with the real system.
Explanation	The system provides a tool for regular users to assign permission for any other user which can regard as managing user account and privilege. Also, users are able to manage the folder quotas and locks by configuring the folder properties. As a consequence, we decided to give “moderately degree” for the requirement achievement.

Supporting Evidence / Snapshot



This feature is provided under "My Content"

Modify Permissions: kit4

Location: /users/kit4

- Modify Permissions**
Owner (Kittipong Techapanichgul)
- Set Permissions**

Permissions	
<input checked="" type="checkbox"/> Read	
<input checked="" type="checkbox"/> Write	
<input checked="" type="checkbox"/> Remove	
<input checked="" type="checkbox"/> Manage	
- Advanced Folder Options**

Blackboard Content System™

A part of permission modification page

Properties Assignment Example

Location: /users/kit4/Assignment Example

- Folder Information**

Renaming the folder will break any links to the folder, as well as any links to items and subfolders within the folder.

Folder Name	Assignment Example
URL	http://pitt.blackboard.com/bbcswebdav/users/kit4/Assignment%20Example
Owner	Kittipong Techapanichgul
Created By	Kittipong Techapanichgul
Created On	Tuesday, June 21, 2005 1:17:12 AM
Last Modified By	Kittipong Techapanichgul
Last Modified	Tuesday, June 21, 2005 4:16:21 PM
- Quota Information**

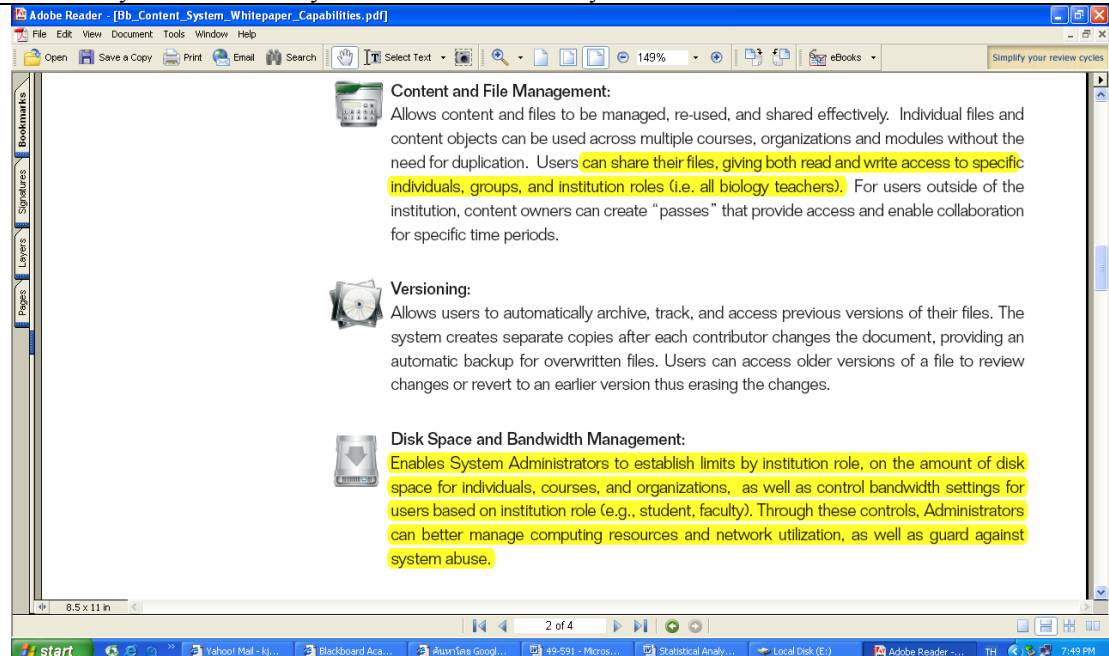
The quota limits the size of the folder's contents. This quota cannot be larger than the quota for the parent folder. If unspecified, the folder will inherit the same quota as the parent folder.

Size	1.34M
Quota in megabytes (MB)	20
Available Quota:	18.65M

A user can arbitrarily assign the size of the quotas

Suggestion / Comment	Since we can only perceive from the regular users' capabilities, we are not sure about the capabilities of special kinds of users such as system administrators. Because of limited information obtained from the system and its white paper, we cannot fully claim that these features meet the given requirements. So, we decided to give "moderately degree" for the requirement achievement.
Observer / Inspector	Kittipong Techapanichgul

Specific requirement analysis: No.58

Requirement ID	58
Description	The system can allow application-administrative responsibilities to be separated from system administrative responsibilities; Application responsibilities can be delegated to multiple units (schools/departments)
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Interviewing people working on the system and understand about the system capabilities in back-end because there is no information provided in documents published Blackboard.com to use as a reference.
Explanation	Having talked with people who understand the system backbone about this requirement, we are positive to conclude that the system can separately be administrated; we all agree that this requirement has already been achieved by the current E-Portfolio system.
Supporting Evidence / Snapshot	 <p>The screenshot shows a PDF document titled '[Bb_Content_System_Whitepaper_Capabilities.pdf]' in Adobe Reader. The document contains three main sections: 'Content and File Management', 'Versioning', and 'Disk Space and Bandwidth Management'. The 'Content and File Management' section describes how content can be shared across multiple courses and modules. The 'Versioning' section explains how the system tracks and manages multiple versions of files. The 'Disk Space and Bandwidth Management' section discusses how system administrators can control disk space and bandwidth based on user roles.</p>
Suggestion / Comment	Although we don't have permission to inspect the current system in detail, we can believe in interviewee's claim. As a result, we give "moderately level" to this requirement achievement.
Observer / Inspector	Kittipong Techapanichgul

Specific requirement analysis: No.59

Requirement ID	59
Description	The system can accept batch data feeds
Meet the Requirement	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The degree of achieving requirement	<input type="checkbox"/> Fully Achieved <input checked="" type="checkbox"/> Moderately Achieved <input type="checkbox"/> Somewhat Achieved <input type="checkbox"/> Not Achieved At All
Methodology used to measure achievement	Interviewing people working on the system and understand about the system capabilities in back-end because there is no information provided in documents published Blackboard.com to use as a reference.
Explanation	Having talked with people who understand the system backbone about this requirement, we are positive to conclude that the system can accept batch data feeds. We all agree that this requirement has already been achieved by the current E-Portfolio system.

Supporting Evidence / Snapshot	N/A
Suggestion / Comment	Although we don't have permission to inspect the current system in detail, we can believe in interviewee's claim. As a result, we give "moderately level" to this requirement achievement.
Observer / Inspector	Kittipong Techapanichgul

The specific requirement analysis can provide detailed information on how the requirement is achieved as well as the level of achievement. However, the specific analysis above does not instantly provide the overall level of achievement of the ePortfolio component. As a result, in the next section, our team has gathered all results of the requirement achievement analysis and presents these using charts and graphs in order to assist readers in assessing the overall achievement. Also, the statistical calculations, allow readers to easily understand many aspects of ePortfolio component such as strengths and weaknesses of the system, as well as the achievement level of each category.

Result and Statistical Analysis

From the specific requirement analysis, our team has creatively developed four ways to present the overall achievement allowing readers with different perspectives to see various aspects about the ePortfolio component. The four methods of presentation of overall achievement are comprised of the following:

1. **Matrix:** Shows the relationship between the importance and degree of achievement of the 59 requirements.
2. **Radar chart:** Used to graphically show strengths and weaknesses of the Blackboard Content System in each functional requirement category. The corresponding data tables provide the amount of difference between achievement and importance.
3. **Achievement average table:** Lists the average achievement of the functional requirements. The calculation of average achievement is done as follows:

$$\text{Average Achievement} = \frac{\text{Sum (Importance Mean * Achievement Mean)}}{\text{Sum (Importance Mean)}}$$

4. **Achievement percentage table:** Provides readers the percentage of requirement achievement grouped by category and overall achievement. Comparing to an ideal component which receives maximum score for requirement achievements, the calculation of the achievement percentage is done as follows:

$$\text{Achievement Percentage} = \frac{\text{Sum(Achievement score for requirements in a category)}}{\text{Maximum achievement score for the requirement category}}$$

Matrix

Critically Important 4 Moderately Important 3 Somewhat Important 2 Not Important At All 1	42	12, 56	7, 18, 43, 51, 55, 57, 58	1, 8, 9, 19, 20, 21, 22, 23, 25, 26, 28, 29, 30, 31, 34, 39, 40, 48, 53, 54
	17, 43	11, 36, 44	16, 50, 52	2, 3, 5, 6, 10, 13, 14, 15, 24, 27, 32, 35, 37, 38, 41, 45, 46, 47
		4		33
	1	2	3	4
	Not Achieved at All	Somewhat Achieved	Moderately Achieved	Fully Achieved

** The numbers in the matrix are exactly the same numbers as the requirement identification

Note that: ■ Risky Zone ■ Warning zone ■ Acceptable zone ■ Safe zone

As you can see from the matrix above, the current “ePortfolio” component can achieve most of the given requirements (39 requirements are in green zone) while there are only a few requirements that fall into an undesired zone (8 requirements are in red and orange zones). The eight requirements falling into the red and orange zones need to be improved if stakeholders want to see the system completely meet the university’s goals. Although requirements in the yellow zone are met by the current system, it would be more apparent if they completely meet the requirement, if “ePortfolio” component administrators periodically informed users about current system capabilities, since most of the requirements in this zone cannot be directly assessed by our team. The lack of information needed in order to evaluate the items in this zone affected their respective achievement results. The lack of information and system access led to the use of other less trustable strategies to evaluate the requirements such as referring from documents or interviewing system administrators instead of inspecting or testing the actual system the group.

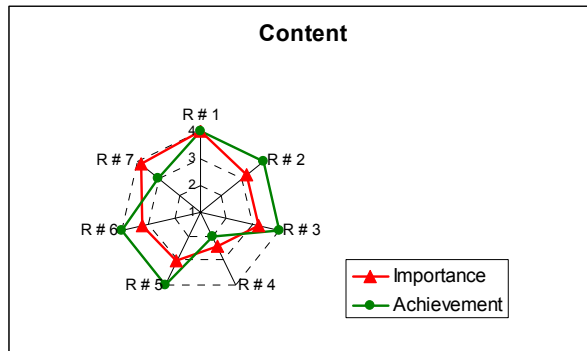
Radar Chart and Data Table

The scale for the radar chart is from 1 to 4. The points closer to the center indicate a low value, while points near the edge indicate a high value. Each axis represents a separate functional requirement.

The data tables provide an important comparison between the degree of achievement and the degree of importance. For instance, if a requirement has an importance score of 4, but an achievement score of 2, its gap value will be negative. Conversely, if a

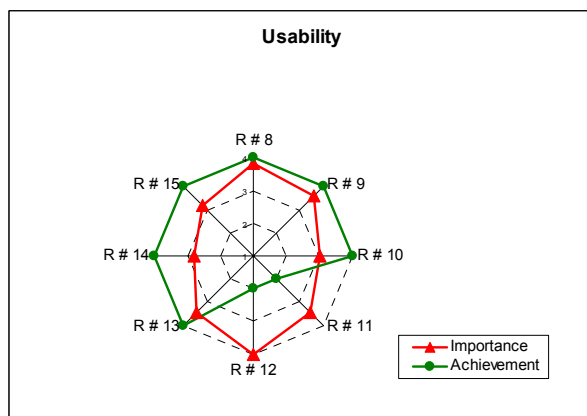
requirement receives an importance score of 2, but an achievement score of 4, its gap value will be positive. The goal is a gap value of 0 or greater.

Radar Chart

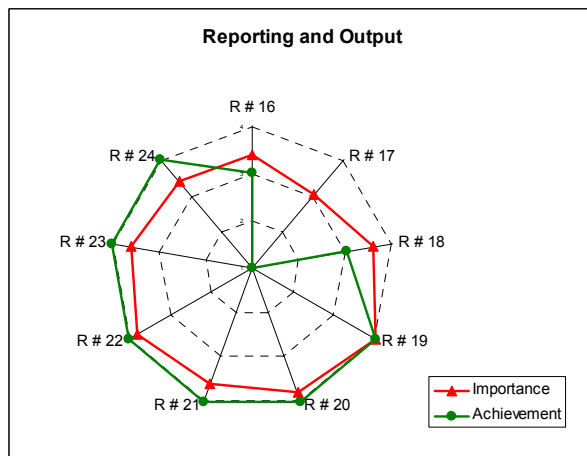


Data Table

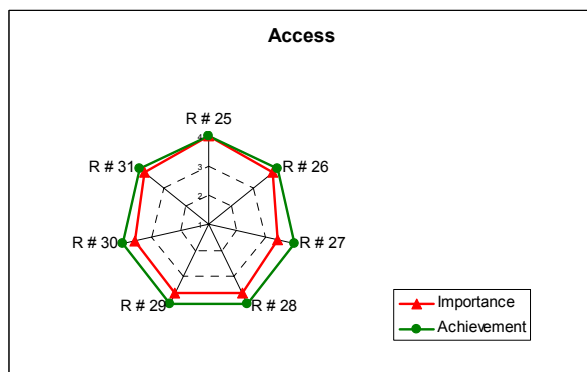
Content	Importance mean	Achievement Mean	Gap
R #1	4	4	0
R #2	3.2	4	0.8
R #3	3.2	4	0.8
R #4	2.4	2	-0.4
R #5	3	4	1
R #6	3.2	4	0.8
R #7	3.8	3	-0.8



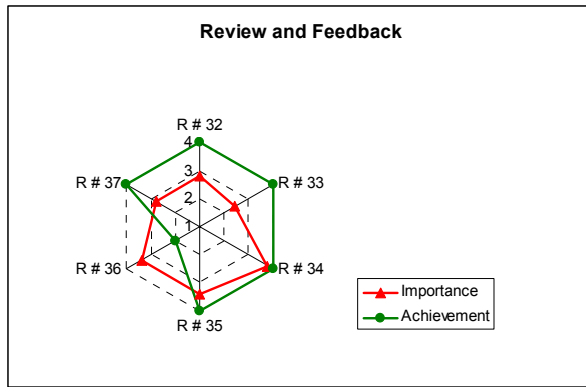
Usability	Importance mean	Achievement Mean	Gap
R #8	3.8	4	0.2
R #9	3.6	4	0.4
R #10	3	4	1
R #11	3.4	2	-1.4
R #12	4	2	-2
R #13	3.4	4	0.6
R #14	2.8	4	1.2
R #15	3.2	4	0.8



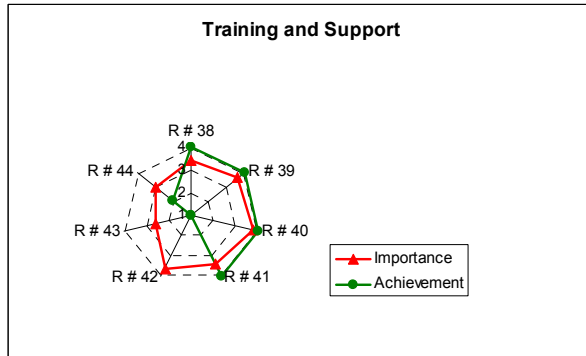
Reporting and Output	Importance mean	Achievement Mean	Gap
R #16	3.4	3	-0.4
R #17	3	1	-2
R #18	3.6	3	-0.6
R #19	4	4	0
R #20	3.8	4	0.2
R #21	3.6	4	0.4
R #22	3.8	4	0.2
R #23	3.6	4	0.4
R #24	3.4	4	0.6



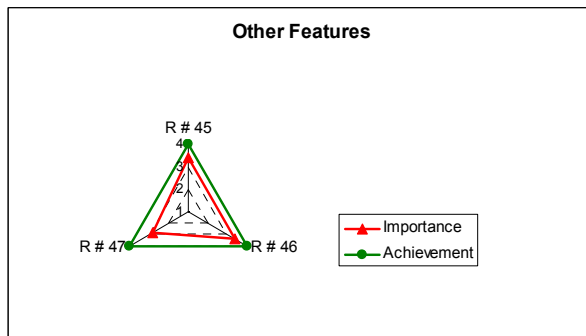
Access	Importance mean	Achievement Mean	Gap
R #25	4	4	0
R #26	3.8	4	0.2
R #27	3.4	4	0.6
R #28	3.6	4	0.4
R #29	3.6	4	0.4
R #30	3.6	4	0.4
R #31	3.8	4	0.2



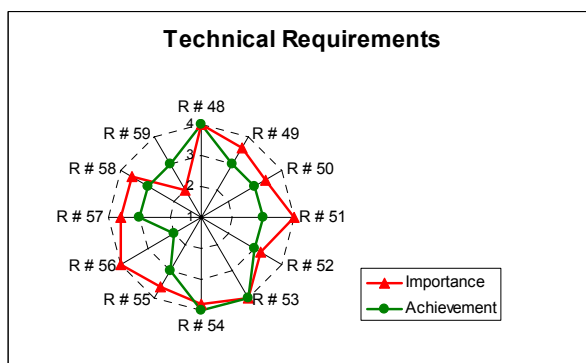
Review and Feedback	Importance mean	Achievement Mean	Gap
R #32	2.8	4	1.2
R #33	2.4	4	1.6
R #34	3.8	4	0.2
R #35	3.4	4	0.6
R #36	3.4	2	-1.4
R #37	2.8	4	1.2



Training and Support	Importance mean	Achievement Mean	Gap
R #38	3.4	4	0.6
R #39	3.6	4	0.4
R #40	3.8	4	0.2
R #41	3.4	4	0.6
R #42	3.6	1	-2.6
R #43	2.6	1	-1.6
R #44	3	2	-1



Other Features	Importance mean	Achievement Mean	Gap
R #45	3.4	4	0.6
R #46	3.4	4	0.6
R #47	2.8	4	1.2



Technical Requirements	Importance mean	Achievement Mean	Gap
R #48	4	4	0
R #49	3.6	3	-0.6
R #50	3.4	3	-0.4
R #51	4	3	-1
R #52	3.2	3	-0.2
R #53	4	4	0
R #54	3.8	4	0.2
R #55	3.6	3	-0.6
R #56	4	2	-2
R #57	3.6	3	-0.6
R #58	3.6	3	-0.6
R #59	2	3	1

The red points show the requirement importance to the university goals while the green points present the requirement achievement. If green points are further from the center than red points, then the requirements are more achieved and not a concern. In contrast, if green points are closer than red points from the center, the requirements

need to receive focus and need improvement in some way to fully achieve the requirement.

According to the radar charts above, “Training and Support” is a category that needs facts and real cases in order to assess correctly. Customer service, as you might know, is very difficult to measure clear achievement because in this instance it is an intangible item unlike other categories. Also, many users have not experienced major system problems which would have created the opportunity for the user to request assistance from customer service. Thus, we rated this category based on the limited experiences we have. In addition, “Technical Requirements” is also an issue here because these requirements can be directly investigated and evaluated by team members. As a result, evaluators are not sure that the achievement levels they rated are at the right level or not. However, for the rest of the categories, we are positive that the rating of those categories is acceptable and components in these areas are ready for a variety of uses and there are only a few requirements in the categories are not fully achieved yet.

Achievement Average Table

Functional Requirement	Achievement Average
Access	4.0
Other Features	4.0
Content	3.6
Review and Feedback	3.6
Reporting and Output	3.5
Usability	3.5
Technical Requirements	3.2
Training and Support	2.9
Overall Average	3.5

*Note: The numbers of the achievement are bias for only one person weighting each functional requirement.

As you can see from the table above, both “Access” and “Other features” categories got the highest achievement values while “Training and Support” got the lowest rank. For the “Technical Requirements”, this category is under the overall achievement average value and may need component developers to enhance the system in this area. Three categories at the bottom must receive focus and improvement, and inspected meticulously again once the system has been updated. The rest of the categories which comprise “Content”, “Review and Feedbacks”, “Reporting and Output” and “Usability” seem to be adequate in achieving the University’s goals..

Achievement percentage table

Requirement Category	Requirement Achievement Percentage
Access	100%
Other features	100%
Review and Feedback	91.67%
Content	89.29%
Usability	87.5%
Reporting and Output	86.11%
Technical Requirements	79.17%
Training and Support	71.43

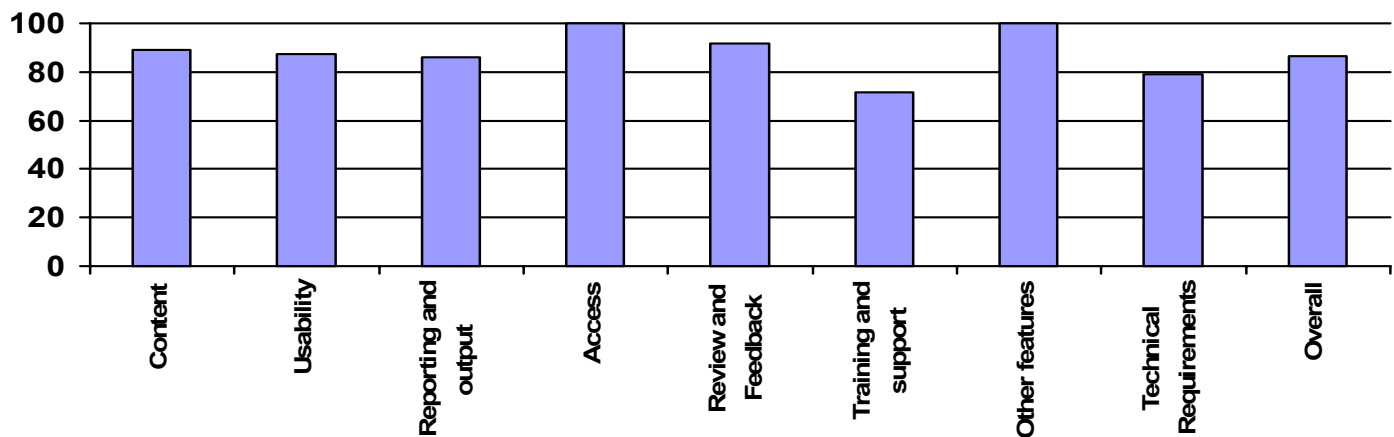
Overall Achievement	86.44%
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*Note: The numbers of the achievement are bias for only one person weighting each functional requirement.

In the table above which is similar to the achievement average table, both “Access” and “Other features” category possess the highest percentage of requirement achievement, while “Training and Support” got the lowest percentage. This table indicates that the current component is working well and satisfies requirements appropriately. The overall achievement of the “ePortfolio” component is approximately 87%, which is quite high percentage value.

From the table above, the bar graph below was created to provide a visual presentation of these results.

Achievement Percentage



Problems Encountered

While team members were assessing the achievement of some requirements, difficulties in evaluation were encountered. Since our group comprised of only system users, who have no administrative role, some of the requirements cannot be assessed directly by our team (i.e., in order to evaluate some system features the user needs to login as an administrator). The accuracy of evaluating those aspects of the system accurately was affected by the lack of access of the team members. This lead to the use of information available in documents within the Content System, documents provided by Blackboard.com, or professional assertion to guarantee the actual performance and capabilities of E-Portfolio component. As a result and due to this problem, the team admits that some the evaluation results may be bias because of limited supporting evidences.

Conclusion

All in all, the concept of the “Content System” benefits all the university’s stakeholders because it can reduce unnecessary workload of students, faculty and university personnel whenever required documentation needs to be created. Also, once the system can be integrated into the existing university information systems such as student information system and personnel information system, various reports can be created and updated easily. This will lead to improved data integrity and security throughout the entire university information system. Also, whenever the data changes, all the documents referring to this data sources will be updated

automatically. Therefore, it contributes to increasing overall efficiency of university's operations as well as satisfying the university's needs.

However, when we focus on the requirements of the ePortfolio component, it turns out that although the analysis results of "ePortfolio" Component indicated that the current system meets most of the system requirements and university goals, the current component has still not achieved some of the defined requirements in an appropriate level. For instance, the requirements in "Technical Requirements" and "Training and Support" are still not completely met by the component and should be reviewed for improvements since it results in reducing overall achievement of the component. Also, all requirements should be assessed by other groups of people which would consist of more diverse member who would represent university employees, faculty, and alumni, for example. The input of these groups would provide for a more thorough and well rounded evaluation of the system as it pertains to use throughout the University. **Relying on the information and facts we have found to this point, we would assert that the current "ePortfolio" performance and its capabilities is acceptable because of the percentage of overall requirement achievement (which is equal to 86.44%).**

In brief, we all agree that the "ePortfolio" component matches the concept mentioned above which will be useful for all university stakeholders in the future. The implementation of this concept through the Blackboard Content System has reached our expectation based on university goals.

At this point, time is needed for the system to be properly configured and integrated just as it would be in order to fully support the University's application of the system and goals. Full system functionality could then be evaluated more completely. Finally, an important task that the system implementers will need direct attention to is motivating users to buy into the system and use it in achieving their goals.

References

Digital Resources

- http://www.blackboard.com/docs/contentsystem/Content_System_wp.pdf
- http://www.blackboard.com/docs/AS/Bb_Content_System_Whitepaper_Capabilities.pdf
- http://www.blackboard.com/common/docs/White_Paper_2003.pdf
- http://pitt.blackboard.com/bbcswebdav/institution/Documentation/Blackboard%20Manuals%20from%20Blackboard%2C%20Inc./User_Manual.pdf
- http://pitt.blackboard.com/bbcswebdav/institution/Documentation/Blackboard%20Manuals%20from%20Blackboard%2C%20Inc./Instructor_Manual.pdf
- http://pitt.blackboard.com/bbcswebdav/institution/Documentation/Tutorials/Flash%20Help%20Tutorials/AddingContent_WebDAV800by600.swf

Appendix A: Contribution Factors rated by team members

Requirement ID	Contribution Factor					Average	Round
	Sowmya	Dan	Lucy	Lisa	Kit		
1	4	4	4	4	4	4	4
2	3	3	3	4	3	3.2	3
3	3	3	4	3	3	3.2	3
4	2	2	2	4	2	2.4	2
5	3	3	4	2	3	3	3
6	3	3	3	3	4	3.2	3
7	4	4	4	3	4	3.8	4
8	4	4	4	4	3	3.8	4
9	4	4	4	4	2	3.6	4
10	3	3	4	3	2	3	3
11	4	4	4	3	2	3.4	3
12	4	4	4	4	4	4	4
13	4	3	4	4	2	3.4	3
14	3	4	3	1	3	2.8	3
15	2	4	4	4	2	3.2	3
16	4	3	4	2	4	3.4	3
17	3	3	3	2	4	3	3
18	4	2	4	4	4	3.6	4
19	4	4	4	4	4	4	4
20	4	4	4	3	4	3.8	4
21	4	3	4	3	4	3.6	4
22	4	3	4	4	4	3.8	4
23	3	4	4	3	4	3.6	4
24	3	4	4	2	4	3.25	3
25	4	4	4	4	4	4	4
26	4	4	4	4	3	3.8	4
27	3	2	4	4	4	3.4	3
28	3	3	4	4	4	3.6	4
29	3	3	4	4	4	3.6	4
30	3	3	4	4	4	3.6	4
31	3	4	4	4	4	3.8	4
32	2	3	3	4	2	2.8	3
33	3	2	2	3	2	2.4	2
34	4	3	4	4	4	3.8	4
35	4	2	3	4	4	3.4	3
36	3	2	4	4	4	3.4	3
37	2	2	3	4	3	2.8	3
38	4	3	4	4	2	3.4	3
39	3	4	4	4	3	3.6	4
40	4	4	4	4	3	3.8	4
41	3	3	4	3	4	3.4	3
42	4	3	4	3	4	3.6	4
43	2	2	3	3	3	2.6	3
44	3	3	3	4	2	3	3
45	3	3	4	4	3	3.4	3
46	4	2	4	3	4	3.4	3
47	3	2	3	3	3	2.8	3

48	4	4	4	4	4	4	4
49	3	4	3	4	4	3.6	4
50	3	3	3	4	4	3.4	3
51	4	4	4	4	4	4	4
52	2	4	2	4	4	3.2	3
53	4	4	4	4	4	4	4
54	4	4	4	4	3	3.8	4
55	3	3	4	4	4	3.6	4
56	4	4	4	4	4	4	4
57	4	3	4	4	3	3.6	4
58	3	4	4	3	4	3.6	4
59	2	2	3	1	2	2	2

Note that:

Contribution Factor

4
3
2
1

Verbal Score

Critically Important
Moderately Important
Somewhat Important
Not Important At All

Meaning

Contributes considerably to achieving stated goals
Contributes notably to achieving stated goals
Contributes somewhat to achieving stated goals
Does not contribute to achieving stated goals

Appendix B: Summary of Requirement Importance (to the university goals) and its Achievement

Requirement ID	Contribution Factors	Achievement Score
1	4	4
2	3	4
3	3	4
4	2	2
5	3	4
6	3	4
7	4	3
8	4	4
9	4	4
10	3	4
11	3	2
12	4	2
13	3	4
14	3	4
15	3	4
16	3	3
17	3	1
18	4	3
19	4	4
20	4	4
21	4	4
22	4	4
23	4	4
24	3	4
25	4	4
26	4	4
27	3	4
28	4	4
29	4	4
30	4	4
31	4	4
32	3	4
33	2	4
34	4	4
35	3	4
36	3	2
37	3	4
38	3	4
39	4	4
40	4	4
41	3	4
42	4	1
43	3	1
44	3	2
45	3	4
46	3	4
47	3	4
48	4	4

49	4	3
50	3	3
51	4	3
52	3	3
53	4	4
54	4	4
55	4	3
56	4	2
57	4	3
58	4	3
59	2	3

Note that:

For contribution factor

Contribution Factor	Verbal Score	Meaning
4	Critically Important	Contributes considerably to achieving stated goals
3	Moderately Important	Contributes notably to achieving stated goals
2	Somewhat Important	Contributes somewhat to achieving stated goals
1	Not Important At All	Does not contribute to achieving stated goals

For achievement score

Achievement Score	Verbal Score	Meaning
4	Fully Achieved	Requirement has been completely fulfilled
3	Moderately Achieved	Requirement has been mostly fulfilled
2	Somewhat Achieved	Requirement has been partially fulfilled
1	Not Achieved At All	Requirement has not been fulfilled at all