E-Book Application System Integration (E.A.S.I.)

Software Plan

Prepared By: **Tyler Carpenter-Rivers, Document Analyst**
Kevin Mango, Development Director
Lauren Mathews, Team Leader
Nicholas Roth, Database Manager
Daniel Street, Web Master

9/19/2014

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Introduction

The purpose of this document is to formally define the clients', Ms. J'aimé Pfeiffer and Ms. Jen Cannell problem and offer a solution. This document serves to ensure that both *Seraphim* and the clients understand and agree to the problem and solution encompassed in this document.

This document is intended for the use of Dr. Meg Fryling, Dr. Darren Lim, students of the '15 Software Engineering class, and members of the *Seraphim* development team.

System Definition

Problem Definition

Libraries are long past being hosts to dozens of dusty volumes sitting on shelves – many now have pods of computers, scanners and printers available. With this push of technology, e-books have become popular within both households and schools alike, from fantasy novels to science textbooks. Having digital books allows for an administrator to buy a book and distribute it to every student in the classroom. Currently, librarians request vendors for e-books, but it often occurs that a single vendor does not possess all e-books that the library requires. As they use multiple vendors, users – the students – now must access many multiple websites in order to find the book they're looking for. This system poses several problems and issues for those whom follow this process. Our clients have requested a single program for children to access all their library's e-books in one place, without the need to login directly to the vendor's websites.

System Justification

Our clients are seeking an easier way for students to access one central location where they'll find all e-books available for their school's district. The current system has each vendor hosting their own website with only their e-books, requiring either students to login to many site location or for librarians to restrict their e-book acquisition to 1-2 vendors. This is due to the singular fact that the librarians are offering e-books to younger students, whom have found it difficult to locate the books they're looking for across multiple websites, all of which offer differing layouts and services. Creating an online e-book library will eliminate these problems, providing a singular place for students to check out e-books and for librarians to purchase the e-books they'll need.

Project & System Goals

The goal for our project is to develop a web-based system that allows users, or students, to locate and access online books from their school. The software must allow for administrators to maintain the system once the software is deemed complete. The software system must be able to access the library's district's vendor site and gather the e-books' information automatically.

The team goals include increasing our knowledge of varying computer science fields, working in collaboration with team members and other management, and gaining insight on how to work through a large scale project. We hope to successfully develop a product that will satisfy our clients' aspirations.

Project & System Constraints

The software will be a web-based application where *Seraphim* will provide a secure method for user access and retrieving vendor information. Constraints include young students having difficulty navigating a new program and as the system is web-based, we must take into consideration the reliability problems involving internet connection, especially in relation to school's ability to provide consistent internet. A possible constraint that the team must keep in mind are those programming languages that will be best accessible by the all the school districts. *Seraphim* will be doing their best to ensure that the software system is completed by the deadline for the project, which is April 2015.

Project Functions

Seraphim will be making the following functions for the project:

- A login screen for all users
- Three user groups for students, teachers and administrators
- Administrators and teachers be able to manage student accounts
- Administrators to add/remove vendors
- Software automatically checks the library's vendors for new e-book purchases
- Users able to acquire the e-books available for their school's district
- Administrators to maintain the system

User Characteristics

There will be three user groups for the software: Administrators, Teachers, and Students:

- Administrators will be each Library's System Director, who will assume the responsibilities of adding/removing vendors and providing e-book access to students and teachers.
- Teacher will be each subject's main instructor, who will assist the students in accessing e-books, help manage student vendor accounts, and gain access to teacher book online libraries.
- Students will be the primary user base, making up the students of each school's district; they will be using the system to gather the e-books they require for their classes.

Environments

Seraphim will be using the following environments to create, test and complete the project.

Development Environment

The development environment listed below is the hardware and the software that *Seraphim* plans to use to producing the project:

Software Engineering Lab – Computer #1:

- Operating System: Windows 7 Enterprise (x64)
- Memory: 6100 MB
- Disk Space: 499.78 GB
- Processor: 3.20 GHz Intel Core i5-3470
- Relevant Software: Adobe, Google, Microsoft Office programs, Mozilla Firefox, Oracle, Audacity, SmartDraw, Eclipse

Software Engineering Lab – Computer #2:

- Operating System: Mac OS 10.7.5
- Processor: Intel Core i5
- Memory: 4 GB Ram
- Speed: 2.5 GHz
- Relevant Software: iMovie, iPhoto, Photo Booth, Safari

Server:

- Operating System: CentOS 5.2, Kernal 2.6.18-92e15
- Server Name: oraserv.cs.siena.edu
- CPU Type: Intel Xeon 2.66 GHz
- Memory: 8GB Memory

Ms. Mathews' Development Environment:

- Operating System: Microsoft Windows 7 Home Premium
- Processor: Intel® Core™ i7-3610QM CPU @ 2.30Hz 2.30 GHz
- Memory: 8.00 GM
- Relevant Software: Adobe Reader X, BlueJ, caliber, Eclipse, GIMP, Git Bash, Google Chrome, Google Drive, HTML-Kit, Mozilla Firefox, Notepad++, Putty, Skype, SQL Server Management Studio, WinSCP

Mr. Mango's Development Environment:

- Operating System: MS Windows 7 Home Premium 64-bit SP1
- Processor: Intel Core i7 720QM
- Speed: 1.60GHz
- Memory: 8.0GB Dual-Channel DDR3 @ 659MHz
- Audio: NVIDIA High Definition Audio
- Monitor: Vizio 42" Internet TV
- Relevant Software: Aptana, Eclipse, GIMP, Audacity, Notepad++, Google Chrome, Mozilla Firefox, Opera web browser, Android 4.4.2 on Samsung galaxy s3

Mr. Street's Development Environment:

- Operating System: Windows 7 Home Premium 64-bit
- Processor: Intel(R) Core(TM) i7-2600 CPU @ 3.40 GHz
- Memory: 8192 MB RAM
- Display: NVIDIA GeForce GTX 550 Ti
- Audio: Dual Speakers IDT High Definition Audio
- Monitor: 23" Cross Width High Definition Video
- Relevant Software: Eclipse

Mr. Roth's Development Environment:

- Operating System: MS Windows 7 Home Premium 64-bit SP1
- Processor: Intel Core i7 2675QM
- Speed: 2.20GHz
- Memory: 8.0GB RAM

- Audio: Intel ® Display Audio
- Relevant Software: Audacity, Notepad++, Google Chrome, Mozilla Firefox, Microsoft Office 2007, Adobe Reader, PageBreeze 5

Mr. Carpenter-River's Development Environment:

- Operating System: Windows 7 Home Premium Service Pack 1
- Processor: Intel i5-3317U - 20 GB SSD in cache
- Memory: 6 GB
- Speed: 1.70 GHz
- Audio: Dolby Home Theater v4
- Monitor: Generic PnP Monitor - Intel(R) HD Graphics 4000
- Relevant Software: Eclipse, Notepad++, Google Chrome, Firefox, Skype

Operating Environment

The operating environment for this software will be any Mac, PC or smartphone that has internet capability and access our server.

Maintenance Environment

The maintenance environment will consist of all hardware and software used to create our software.

Solution Strategy

Seraphim will be using the following solution strategy to complete the project by the designated deadline. This will consist in using a hybrid of the Waterfall and Spiral Models, which contain the following phases:

- Requirement Analysis
- System Design
- Implementation
- Testing
- Deployment
- Maintenance

Software Plan: Defines the problem presented to *Seraphim* by our clients, Ms. J'aimé Pfeiffer and Ms. Jen Cannell, and goes through the goals of the clients. The required information will be gathered by *Seraphim* through various client and team meetings, where the complete software system will be designed.

Requirement Specification: Combines all functionality and requirements for the software system from the clients. This will become clearer as the team meets with the clients over the course of the year.

Preliminary Design: Serves as a rough draft solution to the problem, and will be based off the Requirement Specification and the Software Plan to create a first glimpse into the final product.

Detailed Design: Once a full overview of the project has been designed, *Seraphim* will then start to develop a full proposal and model of the application.

Development and Testing: Implementation of the project, through various programming languages, will then start, along with debugging and testing issues as they arise.

Acceptance Test: Becomes the final product, to be presented to the clients by the proposed deadline. There will be a full demonstration of the system that was developed, along with full documentation provided in order for the clients to maintain the system.

System Priorities

An essential part of the software system is to provide a central system for users to purchase e-books. The site will require further system security and restricted access for three distinct groups, students, teachers, and administrators. Administrators will require access to different vendor details, having the ability to control the different types of vendors available for the sub users. Teachers will require the ability to manage the student accounts and guide their students through the acquisition of e-books. Students will require access to gaining e-books through a simple user interface.

With this in mind, *Seraphim*'s first step will be creating a user login system with different accessibility based on login credentials. This information will be provided through a primary login site with user aid services for login information.

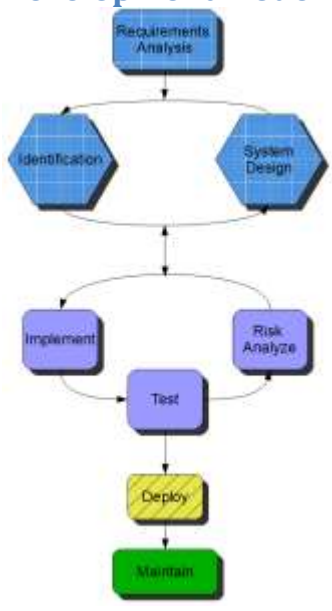
System Acceptance Criteria

The project will include, but not necessarily be limited to, the following features:

- Users to be able to view e-books
- Gathering e-book information from 1-10 vendors
- Handles 85,000 students

Project Plan

Development Model



Organizational Structure

Seraphim consists of five members:

Last Name	First Name	E-mail	Phone #
Carpenter-Rivers	Tyler	tt26carp@siena.edu	(518) 491-0260
Mango	Kevin	k05mang@siena.edu	(518) 779-8707
Mathews	Lauren	li08math@siena.edu	(781) 244-9487
Roth	Nicholas	na04roth@siena.edu	(908) 472-5152
Street	Daniel	dw01stre@siena.edu	(518) 269-6131

Seraphim supports the following positons:

Lauren Mathews, *Team Leader*
The team leader is responsible for coordinating both client and team meetings, and is the main team contact for the supervisor, Dr. Fryling. They are required to attend a weekly meeting with Dr. Fryling to keep her updated on *Seraphim*'s progress. They are responsible for ensuring that deliverables deadlines are completed and that the schedule is being followed.

Kevin Mango, *Development Director*
The Development Director is responsible for ensuring the design and eventual implementation of any software required for the completion of the project, and guaranteeing that the system is finished in an efficient manner. The job requires that the director supervises the programming development and final project design.

Daniel Street, *Web Master*
The Web Master is responsible for creating and preserving *Seraphim*'s website. They are responsible for ensuring that all team documents are uploaded for the right extensions, that the timeline is up-to-date, and making sure that *Seraphim* represents the right data. They will be working with the document analyst to create a flow chart representation of the website.

Nicholas Roth, *Database Manager*
The Database Manager is responsible for overseeing the creation of a well-designed database for the software system. The manager will work closely with the document analyst in the creation of diagrams and schemas for the description of the database, as well as working with the web master to ensure that the website is able to retrieve data in an appropriate and timely manner.

Tyler Carpenter-Rivers, *Document Analyst*
The Document Analyst is responsible for organizing, collecting and distributing information to all team members, the supervisor, and the clients. They will be using their intuition to analyze and help team members provide the best solution. They will work with the database manager in the creation of diagrams and schemas for the description of the database, as well as working with the web master for flow charts for the description of the website.

Staffing & Resource Requirements

Seraphim will be working together in a group of five developers in order to design, implement and present a final software system. They will be in constant contact with the supervisor, Dr.

Fryling, along with the clients, Ms. J'aimé Pfeiffer and Ms. Jen Cannell, in order to develop a finished product. Each of the five members of *Seraphim* will use the materials that are available in the Software Engineering Lab (Roger Bacon 348), which includes their own personal computer pod, as well as using their laptops for the development process. *Seraphim* will be using the information of which was learned from previous classes and experiences.

Development Schedule

Task	Duration	Start	Finish
Establish Team	2	9/3	9/4
Software Plan	8	9/11	9/19
Software Plan Presentation	3	9/20	9/23
Team Website Creation	6	9/24	9/30
Requirements Specification	23	10/1	10/24
Requirements Specification Presentation	3	10/25	10/28
Data Dictionary	12	10/29	11/10
Unit Tests	15	10/29	11/13
UML Diagrams	19	10/29	11/17
Preliminary Design	10	11/18	11/28
Preliminary Design Presentation	6	11/29	12/4
Client Meetings	~ 20	9/11	12/2
Team Meetings	~ 20	9/10	12/4

Project Monitoring

Seraphim, in order to ensure the efficient and timely presentation of a final software system, will be having team and client meetings at least twice a week to discuss the design and implementation of the system. All team members will be in communication with each other – either through either email or smartphone technology – to make sure deliverable deadlines stay on track, and the client will be notified of the progression of the project. The supervisor, Dr. Fryling, will be meeting with *Seraphim*'s team leader on a weekly basis and will be in contact to ensure that the project is meeting design specifications.

Tools & Techniques

Seraphim will be using Adobe Photoshop, Oracle SQL Server, Aptana and Eclipse for designing software, from both a web design and database perspective. Google Drive/Calendar, Notepad++, Smart Draw and various Microsoft Office software will be used for designing and describing the system. Each team member will be using experience gained from courses as well as personal experience to design and implement the system. The server, oraserv.cs.siena.edu, is provided for software engineering students and will be used to host *Seraphim*'s team website and the software system created.

Programming Languages

Seraphim will be using, but are not limited to, the following programming languages in order to develop the software system: HTML, CSS, PHP, JavaScript, SQL, Java and Jquery.

Testing Requirements

Seraphim will be meticulously testing all methods of implementation through the development phase to ensure the completion of the project. Testing will include debugging issues as they arise, creating test cases for the system and certifying that younger users are able to circumnavigate the system with ease. By the end of the year, a final test will be conducted by *Seraphim* to ensure the software meets all client requirements.

Supporting Documents

Over the course of the creation of the project, there will be various documents written to help describe, design and implement the software system. These documents will be available to the supervisor, Dr. Fryling, and the clients, Dr. J'aimé Pfeiffer and Dr. Jen Cannell, as soon as they become available in order to provide all involved with the best perspective of what the project entails. These documents include: Software Plan, Requirements Specification, Preliminary Design, Detailed Design, and an Acceptance Test.

Demonstration & Delivery

There will be a number of presentations at various stages to present the design and implementation of the project. Dates of the presentations and the delivery of documents are as follows:

Event	Date of Delivery	Date of Presentation
Software Plan	9/19/2014	9/23/2014
Requirement Specification	10/24/2014	10/28/2014 – 10/30/2014
Preliminary Design	11/26/2014	12/2/2014 – 12/4/2014

Sources of Information

The primary source for the design of the project will come from the clients, Ms. J'aimé Pfeiffer and Ms. Jen Cannell, as well as previous Software Engineering teams' projects and documents. The supervisor, Dr. Fryling, will be providing extra information in class, while our lab technician, Dr. Lim, will be helping in software-related issues. Our own knowledge, experiences and skills will be used for the implementation of the software system. Useful searching sites, such as www.google.com, become useful as we encounter problems.

Appendices

Team Members' Resumes

The order of the resumes are as follows:

I. Tyler Carpenter-Rivers
II. Kevin Mango
III. Lauren Mathews
IV. Daniel Street

Tyler Carpenter-Rivers

PO Box 425 • 552 Old Loudon Rd • Newtonville, NY 12128
tt26carp@siena.edu | (518) 491-0260

Education

Siena College, *515 Loudon Rd, Albany, NY 12211*
B.S. Computer Science – May 2015

Hudson Valley Community College, *80 Vandenburgh Ave, Troy, NY 12180*
A.S. Computer Science – December 2012

Technical Skills

Proficiency in: Java, C++, SQL, MySQL, PHP, HTML, HTML5, CSS
Familiar with: PHP, JavaScript, jQuery, AJAX, Python

Academic Experience

Software Engineering Senior Project, Siena College
Document Analyst *September 2014- Dec 2014*

- Organize, collect, and distribute information to team members, supervisors and clients
- Synthesize collaboration between the database manager and web master to help integrate the implementation of their systems

Leadership Experience

Siena College Residential Life – 2013 to present
Resident Assistant

Siena College Outing Club Treasurer – 2014 to present

- Responsible for allocation of $9,000 budget across trips and events

Additional Experience

Lifeguard, Rudy A. Ciccotti Recreation Center, Colonie, NY – 2007 to 2010
Childcare Counselor, Colonie Youth Bureau, Colonie, NY – 2010 to 2012
Schuyler Meadows Country Club – 2012 to 2013
Licensed Insurance Agent, State Farm Insurance, *Latham, NY* – 2014 to present

Community Service

Regional Food Bank

- Organize and package mass donations from local vendors for distribution to shelters

Kinderhook Farm

- Assist full-time agricultural employees in the harvesting and sorting of product for later distribution to local shelters

Kevin Mango

4 Cornelia Lane
Charlton, New York, 12019
Cell: 518-779-8707
Email: kmango2015@ gmail.com

Education:

Siena College, Loudonville, New York
BS in Computer Science, Minor in Math, anticipated May 2015
Computer Science GPA: 3.8, Overall GPA: 3.24

Projects:

Virtual Computer Science Dept. Web App, Siena College, Loudonville, NY, fall 2014-spring 2015

- Developed web application using WebGL to render interactive 3D application
- Used database to store 3D assets, including models, textures, and spatial data

E-book Application, Siena College, Loudonville, NY, fall 2014-spring 2015

- Developed multi-user e-book application for use by Albany BOCES
- Development Director for team of 5 working on project
- Integrated multiple e-book vendors through a single website, allowing a central user location for interacting with different vendors

NBA Web Application, Siena College, Loudonville, NY, spring 2014

- Dynamic web application which interacted with a database
- Updated database with information generated by web application

Ticket To Ride Project, Siena College, Loudonville, NY, spring 2013

- Created 2D graphical version of the board game Ticket To Ride
- Worked with a team of three other students

Relevant Course Work:

-Computer Graphics
-Advanced Graphics Programming
-Algorithms for Computer Graphics-fall 2014
-Software Engineering I-fall 2014
-Object Oriented Programming
-Data Structures
-Algorithm Analysis
-Data Base Management
-WebGL Web Applications-fall 2014
-Web Application Development
-Linear Algebra
-Calculus I, II, and III
-Android Applications Development
-Robotics
-Discrete Math I and II
- Assembly Language
-Introduction to Java Programming

Technical Skills:

- Java, C++, C, GLSL, PHP, JavaScript, CSS, HTML
- Eclipse, Blender, GIMP, Aptana, NetBeans
- OpenGL, Light Weight Java Game Library, JOGL, Java2D

Achievements:

- National Computer Science Honor Society, Upsilon Pi Epsilon-May 2014
- Dean's List - Fall 2013, Spring 2014 and President’s List - Fall 2013
- Adobe Certified Associate in Visual Communication -May 2010

SERAPHIM
Lauren I. Mathews
Siena College, SPOB 2303, 515 Loudon Road, Loudonville, New York
(781) 244-9487 | li08math@siena.edu

SUMMARY OF QUALIFICATIONS

- Adept in Java: Created a full-scale Ticket to Ride game
- Familiar with C, HTML/CSS, PHP, JavaScript, Eclipse, GitHub (Git), ASP: Updates Animal Crossing Community, a large user-base website for the Animal Crossing video game series
- Effective verbal & written communication skills: Worked in developer teams, both within school projects and in the work place.

EDUCATION

Siena College, Loudonville, NY
Bachelor of Science in Computer Science, Minor in Philosophy (Anticipated Graduation: May 2015)
Cumulative GPA: 3.49/4.0 Major GPA: 3.79/4.0

RELEVANT COURSES

Object-Oriented Design and Prog., Robotics, Artificial Intelligence Res., Computer Graphics, Database Management Systems, Software Engineering I & II

RELEVANT WORK/VOLUNTEER EXPERIENCE

Developer, Animal Crossing Community (Website): November 2012 – Present

- Assist in the development of an online community website based around the Animal Crossing video game series
- Create new features for the users to use: buddy system, changing usernames, a friend code system.
- Worked in teams of 2-5 developers
- http://www.animalcrossingcommunity.com

Software Engineer Team Lead, Siena College, Loudonville, NY: September 2014 – Present

- Assist in the development of an eBooks System for a school's library, for use by students in grades K-12
- Working in a team of 4 developers
- http://oraserv.cs.siena.edu/~perm_seraphim/

RESEARCH & PUBLICATIONS

Lead Programmer, REU Grant, Siena College, Loudonville, NY: June 2014 – August 2014

- Continued research on Siena's Twitter Information Retrieval System (STIRS), from 2012 research
- Will be publishing and presenting our research at Text REtrieval Conference (TREC) in November 2014 in Gaithersburg, Maryland

Lead Researcher, Summer Scholars Research, Siena College, Loudonville, NY: May 2013 – July 2013

- Distributed an international survey to examine whether video game cyberbullying had negative psychological effects
- Set up a series of observations with gamers to observe the video game culture
- Published and will be presenting our research at the CONISAR Conference in November 2014

Programmer, Summer Scholars Research, Siena College, Loudonville, NY: May 2012 – August 2012

- Collaborated with a colleague, improving Siena's Twitter Information Retrieval System (STIRS) for the 2012 TREC Microblog track
- Built a system which accepted topics and outputted tweets in order of relevance to that topic
- Published and presented our research at Text REtrieval Conference (TREC) in November 2012 in Gaithersburg, Maryland

Daniel Street

Cell: (518)-269-6131
Dw01stre@siena.edu

22 Pico Road
Clifton Park, NY 12065

OVERVIEW

- Enjoy solving problems
- Able to work independently and in team environments, with or without explicit directions
- Experienced in multiple programming languages and technologies

EDUCATION

Siena College – Loudonville, New York
B.S. Computer Science GPA 3.2, May 2015

Community College of the Air Force
Associates: Electronic Systems Technology, Oct 2015

RELATED COURSEWORK

Object Oriented Design, Compiler Theory, Computer Architecture, Algorithm Design, Web Design, Database Systems, Software Engineering

TECHNICAL SKILLS

Languages: Java, Python, C, SQL, JavaScript, HTML, CSS, PHP
Technology Experiences, Phones, TV, Radio, Networks, Mobile Devices

RELATED EXPERIENCE

Radio Transmissions Technician – Air National Guard, June 2010 – Present

- Provide and maintain communications systems (including secure and non-secure versions of voice, data, video, and fax) at all times anywhere in the world.
- Build and maintaining squadron SharePoint
- Train and educate incoming members on squadron practices and career field requirements
- **Recipient of Air Mobility Command Inspector General recognition** for Operation Raven Dew Team operations in Greenland
- Hold a government Secret clearance

ITS Consultant – Siena College, Aug 2012 – May 2014

- Provided Tier 1 support to Siena College students
- Working Knowledge of the JIRA ticketing system

Familiar with common technologies

Glossary

Adobe Photoshop: Graphic editing application, which will be used for creating visual effects for the software.

Aptana: Web Design environment, designed to look like Eclipse. Will be used for creating the Software Team website and E.A.S.I.

CSS: Cascading Style Sheets, language used for stylizing web pages.

Database: Organizes data, typically through a computer, so that the data is easily accessible.

E.A.S.I: Our system name for the project, which stands for E-Book Application System Integration.

Eclipse: Programming environment developed by the Eclipse Foundation.

Google Drive- A cloud storage and synchronization service provided by Google, which will be used to hold all client meeting notes.

HTML: Hypertext Markup Language, one of the main languages for creating web pages.

Java: Object-oriented programming language developed by and maintained by the Oracle Corporation.

JavaScript: Computer programming language used primarily in web browsers for based client-side scripts.

Mac: a type of computer made by Apple that runs on the operating system Mac OS.

Microsoft Office: An office suite of desktop applications, such as PowerPoint, Documents, Publisher, etc.

Mozilla Firefox: Web browser designed by Mozilla Foundation and the Mozilla Corporation.

Notepad++: A text/source code editor for Windows. Used for programming and scripting languages.

Oracle SQL Server- a database management system used to store and retrieve information from databases.

PHP: Hypertext Preprocessor, a programming language used for developing client-side scripts for web browsers.

Smart Draw: a visual processor used to create flowcharts, organization charts, mind maps, project charts, and other visuals

Spiral Model: A software development process combining which elements of both design and prototyping-in-stages, in an effort to combine advantages of top-down and bottom-up concepts.

SQL: Structured Query Language, language used to develop databases.

User Interface: Space where a user can interact with a computer through inputs and outputs.

Waterfall Model: Software development process where each phase flows down into the next. This process makes it difficult to go back up to a previous phase.

XML (Extensible Markup Language): A set of rules for encoding documents in machine-readable form. To create a tagging scheme that allows elements of a document to be marked according to their content rather than their format.

Annotated Bibliography

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