

Using Freeware to Generate Planning Artifacts during Project Development

Penelope M. Lyman
University of North Georgia
plyman@ung.edu

ABSTRACT

This paper explores the advantages and disadvantages of using freeware and open-source applications to generate some planning phase artifacts for the Online Course Development Tracker, a software development project for the Office of Online Learning at a southeastern university. A team of students in a graduate business class used Astah (free), Bizagi (free), and BlueworksLive (30-day free trial) to create the artifacts illustrated in this paper.

INTRODUCTION

Free and/or open-source (OS) applications constitute a special category of software, perfect for small businesses or educational offices that do not need or want to buy expensive project management software packages (Margea and Margea, p. 196). A team of graduate students took advantage of these open-source applications to generate some of the artifacts they needed during the analysis and planning phases of the Online Course Development Tracker, a software development project for the Office of Online Learning at a southeastern university. The team used free project management software, Astah, Bizagi, and BlueworksLive (30-day free trial), to create these artifacts.

This paper examines the advantages and disadvantages of each freeware package employed by the team, including ease of site navigation, downloading and installation, ease of interface with PCs or Macs, availability of instructional tutorials and videos, and the presence of online forums and communities. The paper also includes illustrations of four of the artifacts the team generated when planning the development of their project:

1. Use Case Diagrams
2. Class Diagrams
3. Business Process Model and Notation (BPMN) diagrams
4. Business Process Modeling

ONLINE COURSE DEVELOPMENT PROJECT DESCRIPTION

Each year, the number of online classes offered at colleges and universities increases. The instructors developing these online courses need rubrics to promote consistency across delivered sections. In response to this need, most universities have an Office of Online Learning staffed by instructional designers who help instructors develop their classes and maximize uniformity of online course delivery. To achieve these goals,

instructors must participate in various activities (e.g., online learning workshops) that provide course development and documentation training. At the same time, instructional designers must be able to track the progress of instructors as they develop their online courses.

PROPOSED SYSTEM CAPABILITIES

In order to support efforts of the Office of Online Learning to track instructor progress throughout the course development process, a student project development team at a major university proposed an application that would give each designer the following abilities:

- Login (authentication)
- Add faculty members, courses, and development tasks
- Check off tasks as they are completed
- Sort data quickly and add notes or comments

FINDINGS

Use Case Diagrams and Class Diagrams. The first steps during any project development include identifying the problem and planning the project (Satzinger, Jackson, and Burd, p. 6). In order to accomplish these steps, project developers must become familiar with the system, its stakeholders, and the project requirements. Use case and class diagrams are high-level modeling tools used to facilitate the collection of this information.

A use case is a list of steps between a user (actor) and the system to achieve a goal (“Use case”). The use case diagram uses Unified Modeling Language (UML) to illustrate this list of steps graphically. A class diagram in UML is a structure used to show object classes in a system and includes class attributes, operations, and relationships among objects (“Class diagram”). This diagram looks like an entity-relationship (ER) model for tables in a database and may be used to construct code with an object-oriented language. However, the team found the class diagram most useful as an attribute identifier and when trying to visualize a fixed view of a system.

The use case and class diagrams for the Online Course Development Tracker project were developed by the team using Astah. Astah was originally called JUDE, which was developed in 1996 and offered as free software in 1999. JUDE was renamed Astah in September 2009.

Astah’s site navigation was user-friendly, and the team was able to download and install the Astah Community (freeware) version of the software on both Apple and PC computers without any complications. The site provided online tutorials and videos to demonstrate Astah’s features, and additional tutorial videos were available on YouTube. Also available was an Astah Users Community Forum, where users could post questions and receive assistance. Generating the use case and class diagrams for the project took little time and, as shown in Figures 1 and 2, produced project development artifacts that looked professional and were easy to understand.

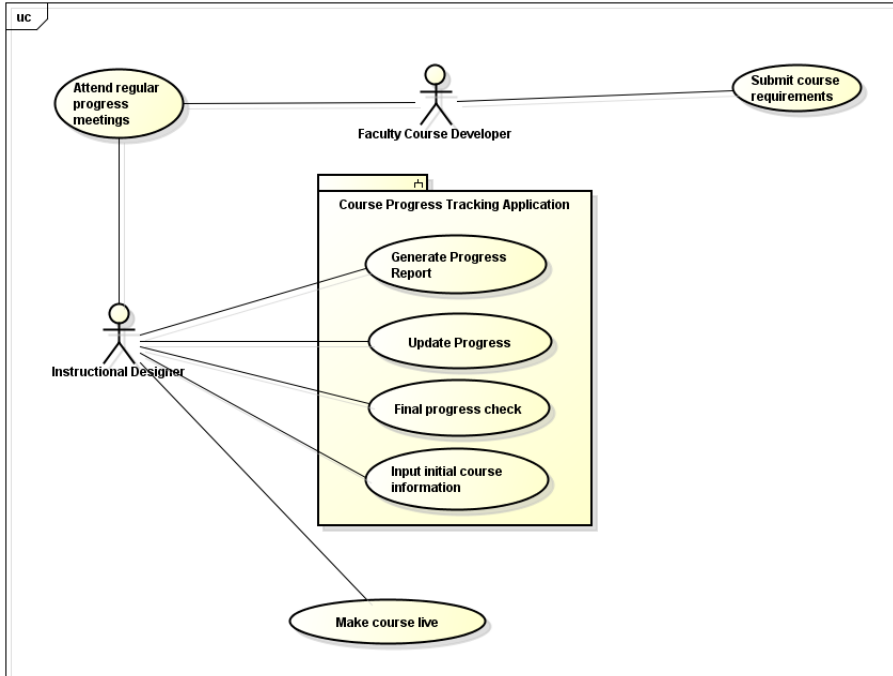


Figure 1. "Use Case" Diagram.

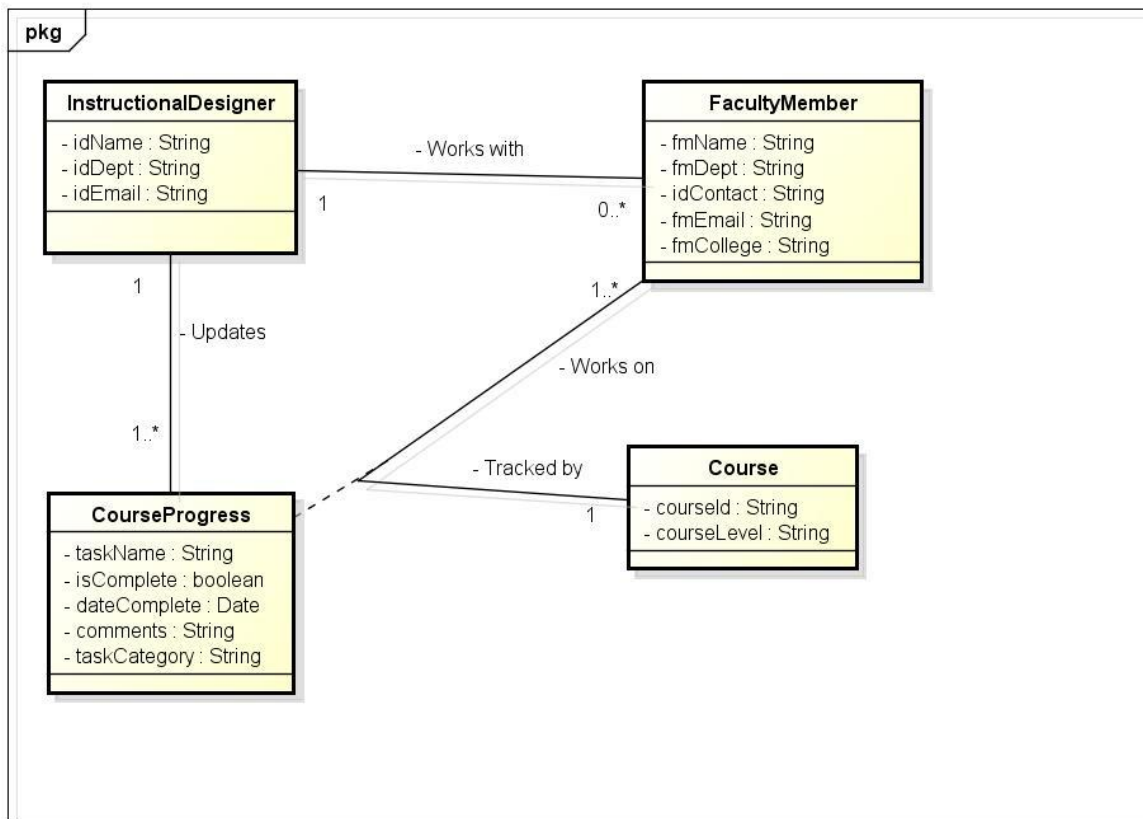


Figure 2. Class Diagram.

BPMN Diagrams and Business Process Modelling. Another requirement during systems development is to understand and map the processes of the new system. BPMN is a standard for business process modeling and is similar to flowcharting. However, unlike a flowchart, a BPMN diagram includes time as part of the flow of information through the system.

The team used Bizagi to create BPMN diagrams that graphically displayed the Online Course Development Tracker processes. A privately-owned company, Bizagi offers their Process Modeler as a free component of the Bizagi BPM Suite.

Like Astah, Bizagi site navigation was user-friendly, and the team did not encounter problems downloading and installing the Bizagi Modeler software on PC computers. However, the software could not be installed on Apple computers using a Mac operating system. Team members using Macs found a workaround for this shortcoming by using a VM (Virtual Machine) platform that created a Windows environment. The Bizagi site offered a free, comprehensive Bizagi Modeler *User Guide*, a Modeler Forum where users could ask questions and share ideas, and video tutorials to help users master the Modeler software features. Bizagi Modeler video tutorials were also available on YouTube. Additionally, the site offered access to a free library of previously created process maps.

Learning to use the Bizagi Modeler software was uncomplicated, and the team was quickly able to create professional-looking BPMN diagrams. Figure 3 shows one of the BPMN project development artifacts the team used to define and sequence the tasks involved in the “Course Setup Process” of the Online Course Development Tracker project.

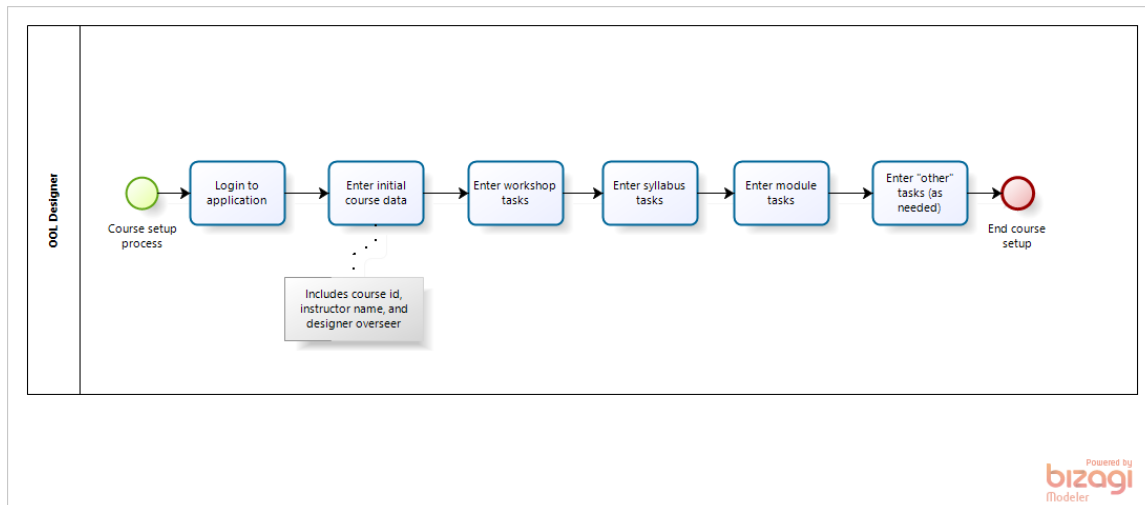


Figure 3. Bizagi BPMN diagram of the “Course Setup Process” in the Online Course Development Tracker project.

Another tool used to document business processes is the process modeler. This tool is designed to help organizations capture and communicate their business processes and to document process changes for subsequent project updates.

To document the processes of the Online Course Development Tracker, the team used the discovery map portion of IBM BlueworksLive, a process discovery and

documentation tool that contains the milestones and activities of a process. This software comes with a 30-day free trial, which grants users access to the full version of BlueworksLive Professional. After the 30-day free trial period, if the user does not “go pro,” the account is downgraded to the Limited Free edition, which only grants access to “Processes.” Alternatively, the Bizagi Process Modeler (freeware) could have been used to create a high-level process project map similar to the one shown in Figure 4. However, Blueworks Live delivered a more polished end product, making it the team’s preferred software for project mapping.

BlueworksLive site navigation required users to register in order to gain access to the 30-day free trial software. There was no need to download any software; once registered for the 30-day free trial, users could login to gain access to software via their browsers. For a visual overview of how to use the mapping software, registered users logged in and clicked on “Help” in the top navigation bar. Video tutorials were available for registered users from the “Help” screen. Video tutorials were also available on YouTube and on the BlueworksLive Homepage, for unregistered users. A weekly demo available from the BlueworksLive Homepage allowed users to ask questions via live chat and learn tips for using the BlueworksLive product more effectively.

Using the software was very intuitive, rather like using sticky notes on a wall. Figure 4 is an example of the artifact the team created while documenting the processes for the “Initializing a Course” phase of the Online Course Development Tracker project.

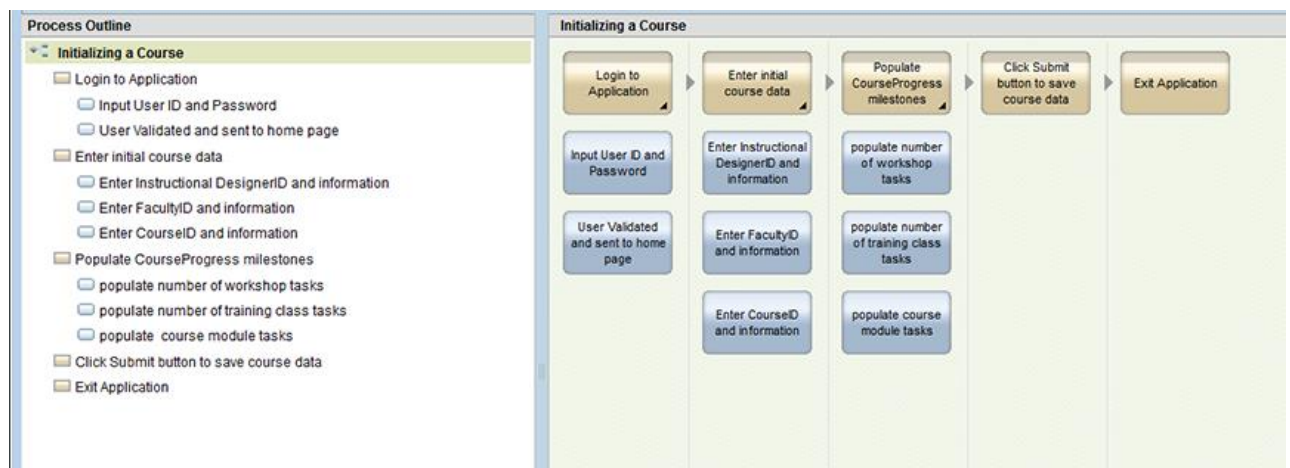


Figure 4. BlueworksLive Process Outline of “Initializing a Course” phase in the Online Course Development Tracker project.

Alternate software, both freeware and fee-based, could have been used to generate the artifacts used by the team during the Online Course Development Tracker project. For example, cloud-based Lucidchart (freeware) and fee-based Microsoft Visual Studio or Microsoft Visio could have been used to generate the use case, class, and BPMN diagrams. In addition to the business process model shown in Figure 4, BlueworksLive could have been used to generate the BPMN diagrams created during the project.

Likewise, there are more artifacts that could have been generated during the planning phase of this project. For example, most project teams create a work schedule that includes start and finish dates of planned activities during project development. Though

not required for this project by the course instructor, a work schedule could have been created using a Gantt chart (a bar chart showing activities on a horizontal line) using Gantter, a cloud-based freeware application that allows users to import and export fee-based Microsoft Project files directly.

This article focuses specifically on the actual software used and the artifacts generated by the team during the planning phase of the Online Course Development Tracker project. The team was able to leverage these artifacts during the implementation phase using the freeware version of Salesforce.

CONCLUSION

The university team used freeware-based graphical modeling techniques to gather information about the Online Course Development Tracker system, its stakeholders, and its process requirements. The use of graphical models allowed the team and the Office of Online Learning to understand complex relationships that might otherwise have been opaque if described using only a narrative. Easy Internet access to the freeware helped the team deliver professional results in a timely manner.

As shown in Figure 5, using freeware to generate the graphical artifacts the team needed during the planning phase of their project was both simple and inexpensive.

Summary of Freeware Characteristics			
	Astah	Bizagi	BlueworksLive
Free software	✓	✓	90 days
PC Compatible	✓	✓	Browser
Apple Compatible	✓		Browser
User-friendly site navigation	✓	✓	✓
Free user learning tools	✓	✓	✓
Professional artifact output	✓	✓	✓
Registration required			✓

Figure 5. Summary of Astah, Bizagi, and BlueworksLive Characteristics.

Astah, Bizagi, and BlueworksLive, the freeware used in the Online Course Development Tracker project, are available to businesses that might not wish to invest in expensive project management software suites but still need to generate artifacts similar to the ones used by the team in this project. The freeware options described in this paper are readily obtainable, easy to learn, and a practical alternative for businesses with scarce resources.

REFERENCES

“Class diagram.” *Wikipedia*. Wikimedia Foundation, 2014. Web. 28 Dec 2013.

Margea, Romeo and Camelia Margea. “Open Source Approach to Project Management Tools.” *Informatica Economică* 15.1 (2011): 196-207. Print.

Satzinger, John W., Robert B. Jackson, and Stephen D. Burd. *Systems Analysis and Design in a Changing World*. 6th ed. Boston: Course Technology, Cengage Learning, 2012. Print.

“Use case.” *Wikipedia*. Wikimedia Foundation, 2014. Web. 28 Dec 2013.