

Agile Development at the Czech National Library of Technology (NTK): A Case Study in the Launch of a Robust Online Research & Communications Tool

This article discusses the utilization of agile development techniques in relation to a specific case, the planning and launch of the Czech National Library of Technology's redesigned website, created to be a robust online research and communications vehicle designed around usability and to be fully mobile-compatible from the outset.

Design

As a case study, the article provides an overview of the theoretical concept of agile development and then shows the application of theory to practice in a specific example, NTK's new website designed and launched within a one-year period (March 2013 to February 2014).

Findings

Project management methods commonly used in the commercial world can be applied to academic library software development, although expertise in methods may be lacking because library managers are not necessarily aware of current management theory and trends. NTK's experience shows that agile development can be successfully implemented in academic library web redesigns if an organization is able to foster a supportive environment for the flexibility such approaches require with a project manager experienced and comfortable with agile techniques. Staff involved in an agile process must also be open to flexible approaches, and senior management must additionally be supportive of any such effort in order for success in terms of on-time delivery and deployment—if traditional project management and organizational bureaucracies are forced upon an agile team, an entire project can be stalled or indefinitely delayed because of mundane political/organizational issues taking precedence over product delivery. In the NTK case, senior management and external stakeholders from the Institute of Chemical Technology Prague gave the project team freedom to work beyond the boundaries of an organizational structure which was being transformed in order to emphasize the library's core business: serving its academic users; this licence provided the necessary framework in which the project could flourish and deliver results on time and within a very strict budget. The NTK case additionally illustrates how the agile methodology is particularly suitable to managing teams comprised primarily of Millennials (staff born after 1980) who are entering the academic library workforce.

Originality

Being a case study of NTK's website—one of the region's only library sites conceived and implemented with Czech and international users both in mind—this article offers a unique perspective on the use of agile techniques in the academic library environment.

Introduction

The Czech National Library of Technology is located in the heart of the Czech Technical University/Institute of Chemical Technology campus in the municipal quarter of Prague-Dejvice. Almost five years after moving into a new building and the launch of a website reflecting design elements of the building itself, the evolution of academic discovery tools (Levine-Clark, et al., 2013) and the increased use of smart mobile devices by patrons (Bridges, et al., 2010) necessitated an updated website—a robust online academic research and discovery tool designed around the needs of its users and its primary academic partners, the Institute of Chemical Technology Prague and the Czech Academy of Sciences Institute of Organic Chemistry and Biochemistry.

Beginning in March 2013, NTK's Communications, Services, Reference, and Technology teams embarked on an agile approach to the web re-design project; previous efforts managed using more traditional project management techniques having not led to completion of an end product. The goal of this new, agile project: to launch a redesigned website re-using the existing infrastructural framework and custom content management tools (designed and coded by NTK's technology team), with the aim of launching as quickly as possible and at minimal cost.

Agility: Broadly Defined in the Spirit of the Agile Manifesto

The term "agility" is often used in conjunction with project management and software/web development. There are specific methods for agile software development, such as SCRUM and eXtreme Programming (XP), and their impact upon specific software development has been well documented in business and software development literature (Pikkarainen, et al., 2008). According to the literature search we conducted for this case study, agile development has not yet been broadly implemented or discussed in the global academic library context, although some evidence of agile management approaches exist (Wells, 2014) (Kim, 2013).

A unifying feature of agile approaches, whether in terms of software/web development or project management, is their invocation of the spirit of the 2001 Agile Manifesto, which our project team embraced without strictly following any one agile method—although XP's pair programming technique was utilized by our programmers during the development process (Lui & Chan, 2008). The bracketed numbers inserted into the quote below are for easy reference back to the Agile Manifesto later in this article.

Agile Manifesto

*We are uncovering better ways of developing software by doing it and helping others do it.
Through this work we have come to value:*

Individuals and interactions over processes and tools [1]

Working software over comprehensive documentation [2]

Customer collaboration over contract negotiation [3]

Responding to change over following a plan [4]

That is, while there is value in the items on the right, we value the items on the left more (Alliance, 2001).

Agile approaches, generally speaking, offer an alternative to the traditional waterfall software development and project management approaches, which can overemphasize, as the writers of the Manifesto state, documentation and paperwork and other bureaucratic deliverables as a project—and the organization in which its work is being conducted—evolve. In a rapidly changing external information environment, agile approaches, so-called “lightweight processes” (Krill, 2011), can offer the flexibility creative and inspired project teams need to get their work done, because the emphasis is placed upon producing an excellent final product instead of upon serving organizational bureaucracy. Agile methods are particularly suited to online networked academic environments, which are inherently dynamic and fluid (Skenderija, 2008)—agile approaches are similarly adaptable.

Case Study: Agile Development at NTK

Origins

In March 2013, NTK’s strategy director issued a call for employee volunteers for the project, using the mechanism of an internal email to all employees (rather than naming a formal project team). The new project, christened “3eb” (“third web”), was divided into three primary working groups: external web/content, search/discovery, and intranet. This article will focus only on the efforts of the external web and search/discovery working groups (the intranet working group did not implement the same agile methodology as did the other two groups).

The external web/content and search/discovery working groups worked in close conjunction with one another throughout the one-year development and production process, their efforts being united at the end of the project when the search/discovery tools were joined to a new web interface.

From the outset, the NTK 3eb external web/content and search/discovery working groups embraced agility, although many team members had not previously been exposed to agile practices. The following sections will highlight notable agile management and development approaches utilized during the 3eb project. The working groups are referred to jointly in some cases as “the team.”

Team Empowerment

The NTK Director gave the 3eb working groups full empowerment for the course of this project, and was only involved in the process while reviewing actual graphic designs (Wells, 2009). This was essential for agility, because it meant the team could work without having to provide documentation or getting senior management approval for each and every step (Agile Manifesto, line [2]) while focusing on the end goal, delivery of the new website.

Instead of project documentation, the project manager—who was not officially named because the working groups had no official hierarchies or formalized structures—sent email updates about each meeting to all team members and stakeholders (including the Institute of Chemical Technology) so that they could virtually review and comment upon team progress.

Team notes, instead of being transcribed and written into “official” documents distributed in print format to managers within a hierarchy, were shared with each other primarily as smartphone images or simple text, and occasionally tools such as GoogleDocs or Dropbox.

In the final stages of the project, the project manager implemented use of Freedcamp, a rapid collaborative project management tool, in which final project goals and milestones could be assigned to team members and tracked without excessive documentation (Anon., 2014).



Sample Meeting Notes (image distributed via email to team members)

the team space failed to become a real start-up lounge (team members did not end up using the space for extensive collaboration and working during non-meeting hours), it did serve as a “home base” for the working groups as well as for user testing throughout the course of the project.

The lounge was equipped with pens, paper, tape for placing concepts on the walls, a screen (for use with the library’s portable projector), and a coffee machine.

Team members were encouraged to use the entire space for thinking through problems, including the meeting room walls, upon which paper notes or printouts were often posted, replaced by new notes or printouts as the project developed over time.



Team Lounge



Paper Sketches + “Best Practices” Examples Displayed in Team Lounge

When in-person meetings were necessary, working group members involved with a particular issue were included in the discussion; working group members without specific issue involvement were not required to attend meetings which did not relate to their area of expertise or interest. The project manager informed colleagues over email if their attendance was required or not; sometimes meetings covered a variety of topics, and team members were in these cases also excused from some discussion if it did not directly involve them.

For in-person meetings, the project manager designated an NTK team study room as a working space, attempting to create a start-up like lounge for project team members (Mathews, 2012). While

the team space failed to become a real start-up lounge (team members did not end up using the space for extensive collaboration and working during non-meeting hours), it did serve as a “home base” for the working groups as well as for user testing throughout the course of the project.

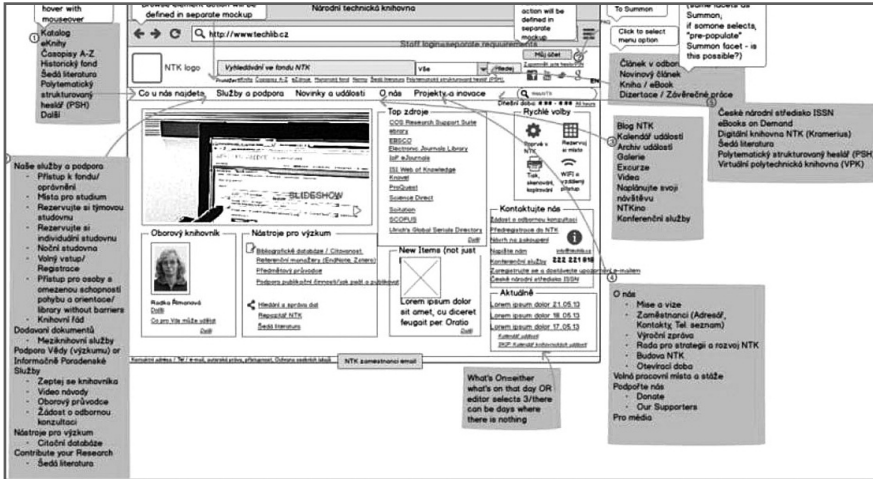
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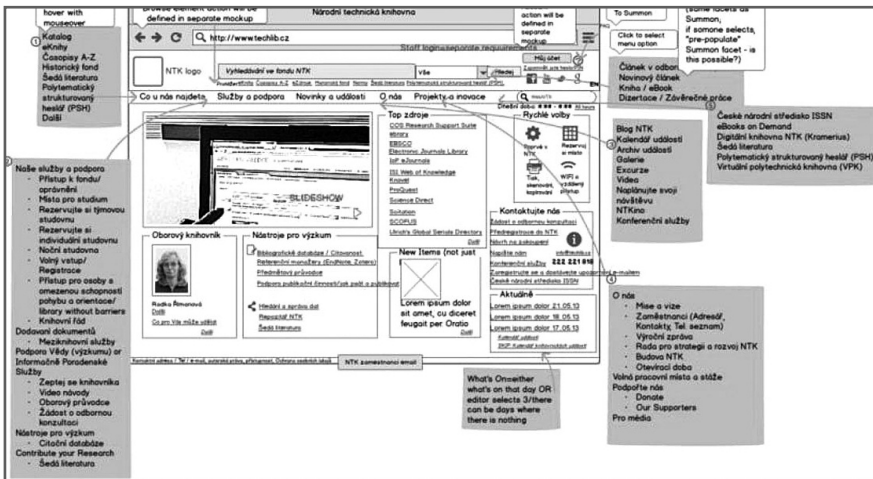
The official team language was English, the native language of the project manager. Team members, most of whom were under the age of thirty (part of the so-called Millennial generation; see *Results* for discussion of agility in conjunction with generational difference), welcomed this language choice as a way for them to improve their English and to gain experience in working on an international team (experience they could add to their CVs).

Rapid Prototyping

Rapid prototyping in the context of web engineering evolved from rapid prototyping in manufacturing, wherein 3D models are utilized to streamline time from product conception to delivery (Grimm, 2004).

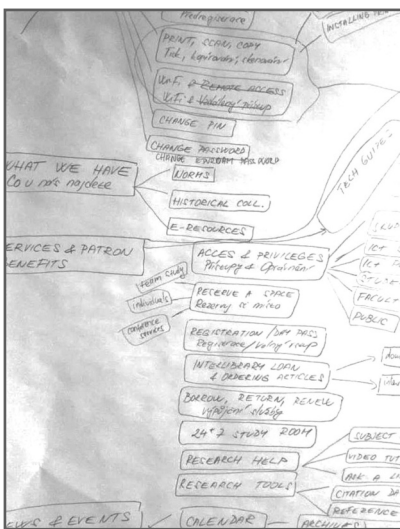


Balsamiq Information Architecture Sketch in Czech: NTK Launch Page



Balsamiq Information Architecture Sketch in Czech: NTK Launch Page

Our designer selected the mobile-ready framework Twitter Bootstrap 3 (Bootstrap, n.d.) for delivering templates and communicating requirements to us; the framework itself was designed with agility in mind, for “faster and easier web development (Stanek, 2013).” The designer



Information Architecture: Paper Sketch

Page name (cz)		Page name (en)	Content	Note	Page Templates	Components
1	Úvodní strana	Homepage	Slider, Top Sources (list of links), Tools (list of links), Quick		Homepage	large slider, small slider, box (g
2	Co u nás najdete	What we have			Only title	
3	Katalog	Catalog			n/a	
4	odkazy	Links	REMOVE FOR NOW		n/a	
5	Recepty A-Z	Recipes A-Z	LINKS ONLY: SFR aka Milan Janacek which links to use		n/a	
6	Doplňková knihovna	NTK Digital Library	Link to: http://tk.tchic.cz/servlet/Link.en		n/a	
7	Seda literatura	Grey Literature	http://www.msl.cz, en: http://www.msl.cz/?lang=en		n/a	
8	Tematické hesla	Topic Subject Headings	cz: http://phs.reflex.cis.cornell.ac/; en: http://phs.reflex.cis.cornell.ac		n/a	
9	Služby a podpora	Support & Patron Benefits			Only title	
10	Služby mládeži	Places to Study	Building "sideways", future libraries list (NOT FOR THIS		2nd level page	
11	Rezervace týmových studií	Reserve a Team Room	Test description-link to reservation system		2nd level page	
12	Rezervace individuálních studií	Reserve a Study Carrel	Test description-link to reservation system		2nd level page	
13	Národní studium	After Hours Study Room	Test description-n/a		2nd level page	
14	Volný přístup / Register	Free Pass / Register	Test Description-link to pre-registration form (CZ: Test+nage		2nd level page	
15	Přístup pro osoby s omezenou	Access for People with Disabilities	Test Description-link to pre-registration form (CZ: Test+nage		2nd level page	
16	Mezinárodní databáze a mezinárodní	International Archives & Interlibrary	Test-link to VPK, domestic ILL and international ILL forms		2nd level page	
17	Mezinárodní služba a Mezinárodní	International Loan Services	REMOVE FOR NOW		n/a	
18	Pomoc při výzkumu	Research Help	Info page with subject experts list/description of services		2nd level page	
19	Práce se zveřejněním	Ask a Librarian	Info page, Subject form (not for now)		2nd level page	
20	Video noviny	Video Tutorials	Link to NTK video channel		n/a	
21	Tematické průvodce	Subject Guides	Info page with links to guide pages		2nd level page	
22	Žádost o rezervaci konferenčního	Request a Research Appointment	REMOVE FOR NOW		n/a	
23	Nástin pro výzkum	Research Tools			Only title	
24	Citlivé databáze	Critical Databases	Info page		2nd level page	
25	Seda literatura	Grey Literature	REMOVE FOR NOW		n/a	
26	Noviny a události	News & Events			2nd level page	
27	Blog NTK	NTK Blog	BLOG LAUNCH PAGE		2nd level page	
28	Kalendář událostí	Events Calendar	Calendar shown in https://www.tchic.cz/events/calendar/		2nd level page	
29	Archiv událostí	Events Archive	List to old Events		2nd level page	
30	Galerie	Gallery	Link to gallery ntk.cz-mm standalone site		at 1st if we need 2nd level page	
31	Exkurze	Tours	Info pages: possible sign up form		2nd level page	
32	Video	Videos	Link to NTK video channel		n/a	
33	Náplavové úpravy návlavů	Plan your visit	Info page		2nd level page	
34	NTKino	NTKino	Info page		2nd level page	
35	Konferenční služby	Event and Conference Services	Info page		2nd level page	
36	O nás	Who we are	Info page		Only title	
37	Mise a vize	Mission & Vision	Info page		2nd level page	
38	Zaměstnanci	Staff Directory	Link to staff directory (public version), cz: http://www.tchic.cz/cz/189-telefon-sazum/		2nd level page	
39	Výroční zpráva	Annual report	Info page		2nd level page	

Information Architecture: Electronic File (note Czech/English parallel architecture)

created specific NTK components and styles from the out-of-the-box Bootstrap ones, again saving time and money for implementation.

The designer additionally used another agile review tool, InVision (InVision, 2014), which allowed all team members and internal and external stakeholders to review and discuss design directions virtually without lengthy in-person meetings or paper documentation.

Finally, the rapid prototyping methods enabled our programmers to work independently (using XP pair techniques, which will be discussed later in this article) over several months without meetings and relatively few disturbances while matching the design templates to the custom NTK content management system—the programmers had all the requirements they needed for their work from the previous architecture/design process; any final questions were handled with individual questions (in-person or via email) instead of requiring some modification to bureaucratic project documents or official stakeholder approval at every step.

End User/Customer Collaboration

The end user perspective and collaboration with customers were essential throughout the entire development process, with all project aspects—including design, architecture, programming requirements—adjusted accordingly (illustration of the Agile Manifesto, [3] and [4]). The following sections describe end user/customer collaboration as manifested through use cases, a social media survey, a focus group, and usability testing.

Use Cases

The team, in conjunction with the Institute of Chemical Technology Prague, considered specific Use Cases and conducted usability testing with these end users, adjusting design and architecture to their comments. Use cases (see Appendix Two for full details) included:

- Student
- Teacher/Scientist/Researcher
- International Student
- International Teacher/Scientist/Researcher

These user cases reflected “real” users perspectives, and allowed the team to ensure their core needs would be met from the very beginning of the project.

Social Media Survey

The team also conducted a web and social media usage survey over Facebook early in the design process (during summer 2013; see Appendix One for specific survey questions) and with this gathered valuable structured and unstructured feedback about direction for the new website.

Focus Group

One focus group session was also conducted, but attendance was almost non-existent (one user attended the session), despite extensive marketing over social media and distribution of printed posters throughout the library as well as a significant prize for participation, use of an individual study carrel for one semester (value: 2000 CZK), which the focus group attendee did not utilize.

Usability Testing

The project manager wrote two usability test scripts (defined according to the aforementioned use cases, see Appendix Three) and conducted observations of each type of user performing tests in an early working version of the website. A professor at the Institute of Chemical Technology assisted in the recruitment of usability testers.

NTK employees were also encouraged to test the site using the test scripts with reference librarians doing observations of their usage via email, but in the end, no employees volunteered to participate in user testing.

Usability test scripts and well as results were shared with the working group members via email instead of being transcribed into an official report.

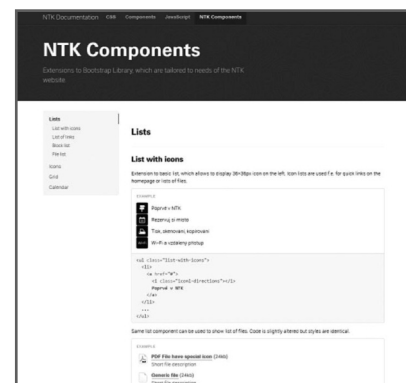
Pair Programming/XP

The team’s technology group utilized an agile programming method, Extreme Programming’s Pair Programming approach (Gupta, et al., 2013) in which two programmers work side-by-side on a particular programming task (Wikipedia, 2014).

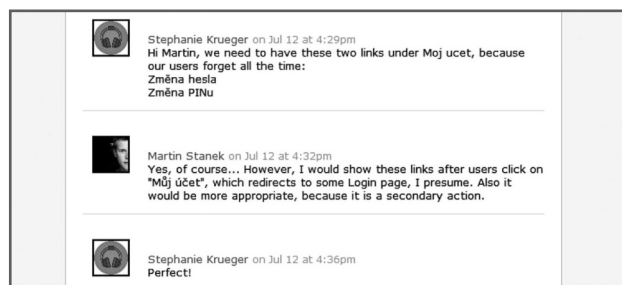
This method allows one programmer of the pair to write code while the other observes and monitors the concepts the other programmer in real-time, with the aim of writing better code that works than either programmer might on their own, without overly time-consuming documentation and rapid change in correcting conceptual direction (instead of costly re-working later; illustration of Agile Manifesto [1], [2], [3], [4]). Programmers tracked and resolved issues using Redmine (Lang, 2014).

Search/Discovery Decision Making

The project’s search/discovery working group also embraced agility, focusing on a working, excellent discovery tool instead of extensive documentation (Agile Manifesto [2]).



NTK Components (“Lists”) on NTK 2 Bootstrap



Sample Design Discussion via InVision



Facebook posting linking to Google Docs survey, June 7, 2013



Focus Group Poster



Image selected by NTK's programmers to illustrate pair programming

The search/discovery working group evaluated two options for comprehensive search/discovery of all the various resources available to NTK users (primarily catalog data, eJournals, norms, digitized documents, and grey literature): utilization of the open source tool VuFind versus the commercial Summon tool, ultimately selecting aggregate search powered by Summon with a modified custom index, with the VuFind interface being placed over the Aleph library system.

The working group exhibited agility by having a limited number of meetings in which they verbally defined next steps and decisions; this gave NTK's system librarians maximum flexibility in implementing agreed-upon solutions without having to file paperwork or requirements at every step.

The working group also implemented customer collaboration (Agile Manifesto [3]) by "soft-launching" (Anon., 2014) VuFind and Summon in July 2013—placing VuFind's interface over Aleph's as the NTK catalog, and linking to Summon as an article/topical search tool (the latter had previously been referred to as an experimental project). This allowed the team to test and modify their implementation for a full six months prior to the redesigned web launch with real user data.

NTK Main Page, with Discovery Search Box and Catalog Links Implemented

Overall Project Timetable

The project manager monitored and reinforced the overall project timetable, adjusting it over time according to delivery of work in each activity stream. The only "hard" milestone date was the actual redesigned website launch on February 16, 2014—the hard date was necessary in order to coordinate the final integrations of the redesigned interface to search/discovery tools and movement of the replacement of the redesigned interface to the main NTK domain (www.techlib.cz; the old interface and web content were concurrently moved to an archival location in their entirety).

Because this article focuses on the agile aspects of the project and does not describe every activity stream in detail, the following table only summarizes how activity streams relate to agility. Future articles about this project will describe activities in detail.

Month	Activity Stream	Agility Exemplified - Highlights
March 2013	Project launch	Volunteers solicited via email; no formal project hierarchies and team empowered by NTK Director and Institute of Chemical Technology stakeholders
April, May 2013	Focus Group, Requirements gathering, Benchmarking against other library websites, First search/discovery team meeting	Volunteers decided on their own to which activity streams/working groups they would contribute; Rapid prototyping – paper and Balsamiq interface mockups; Customer collaboration with focus group
May, June 2013	Information architecture, design mockups review	Rapid prototyping- Balsamiq interface mockups provided to designer, InVision mockups and discussions with designer and stakeholders
June to September 2013	Social media user survey, Design review and development, Search/discovery launches VuFind over catalog and Summon as discovery tool (i.e., link provided to users)	Customer collaboration with user survey and "soft launch" of VuFind and Summon; Rapid prototyping continues via InVision mockups
September to December 2013	Programming (content management system integrating new templates), Content writing and review; Initial content into updated content management system	Pair programming/XP agile method employed; Content working group communicates and holds meetings in agile manner primarily over email and Freedcamp
January to February 2014	Programming, Content updating, Integration of discovery interfaces to site, Usability testing with users identified in use cases	Pair programming; Customer collaboration – refinement based on usability testing; New site moved to production server running RedHat Linux 6.5/launch February 16, 2014

Findings

Agile Project Management Education & Expertise is Essential for Project Success

This case study shows agile methods can be successfully implemented in academic library settings—the project manager utilized them leading to product launch.

However, the project manager (the author of this article) was the only person in addition to the programming staff who had had theoretical and practical experience in agile methods prior to this project. If library managers do not have training in current project management theory and trends, including agile methods, they may find it difficult to implement such methods successfully because they require flexibility and constant re-evaluation of project activity streams during the process duration—minimally a project manager must be actively engaged in this process to ensure that all activity streams “flow” into the final product. This means the project manager must be able to consider, define and re-think approaches, project goals and deliverables and communicate them with all project participants in a distributed manner. Traditional library and/or information education may not provide the necessary management training required for embarking on an agile project; academic libraries considering such a project must ensure the project manager(s) has/have the necessary training needed—agile methods might frustrate personnel accustomed to traditional hierarchical/bureaucratic approaches.

Supportive Environment with Highest-Level Senior Management Support is Necessary



NTK Content and Search/Discovery Working Groups, February 2014 (Five Millennials, Three Generation Xs)

NTK's experience shows that agile development can be successfully implemented in academic library web redesigns if the organization is able to foster a supportive environment for the flexibility such approaches require. In this case, the NTK Director and primary stakeholder, the Institute for Chemical Technology Prague, empowered the project team to conduct its activities without typical organizational/bureaucratic hurdles, such as detailed requirements documents and senior management review of each step in the project.

If traditional project management and organizational bureaucracies are forced upon an agile team, an entire project can be stalled or indefinitely delayed because of mundane political/organizational issues taking precedence over product delivery. In the NTK case, senior management and external stakeholders from the Institute of Chemical Technology Prague gave the project team freedom to work beyond the boundaries of an organizational structure which was being transformed in order to emphasize the library's core business: serving its academic users; this licence provided the necessary framework in which the project could flourish and deliver results on time and within a very strict budget.

Suitability of Agile Approach for Working with Millennial Generation Colleagues

The NTK case additionally illustrates how the agile methodology is particularly suitable to managing teams comprised primarily of Millennials, or staff born after 1980 who are now entering the academic library workforce.

Literature about managing Millennials often refers to the need for flexibility, challenge, and unorthodox/non-traditional non-hierarchical management approaches (Behrens, 2009). The NTK case illustrates how agile methods are well-suited to teams comprised primarily of Millennials—in this case, team members eagerly embraced the flexible agile methods and new approaches, including use of new collaboration and project management tools and methods (including Freedcamp, InVision as well as English as the official team language). The project provided them with a continuous challenge; the project manager made sure to consider this in order to inspire them to reach the end project goal: product launch.



NTK's Programmers Selected this Image to Illustrate Pair Programming (nooses hanging in their office)

Pair Programming Requires Patient Programmers

"Pair programming can lead to dead bodies." —NTK programmer

NTK successfully implemented pair programming and benefited from it because it led to, in the opinion of the Technology Director (Koch, 2014), “better code.” However, pair programming requires the individuals involved working literally over each other's shoulders, and even the best colleagues can become annoyed with one another under such conditions (Koch, 2014).

Those considering utilizing pair programming methods should both be familiar with the methodology and theory of such methods and determine if a particular project team is able to deploy programming pairs.

Conclusion

As illustrated in this case study of agile approaches to managing web redesign at NTK, such approaches can be successfully implemented in academic library settings and are particularly well-suited to technology projects involving team members born after 1980.

Academic library managers, many of them who are not themselves Millennials or who have not been trained in management theory and/or agile methodologies, can benefit from familiarizing themselves with such techniques if they are embarking on similar projects with cross-generational teams.

NTK's project members additionally found agile approaches particularly useful in keeping the overall cost of the project low and the ability to react to user/customer needs optimally high.

Additional articles about this project will discuss project activity streams in more detail and provide an overview of the site's information architecture, which were beyond the scope of this particular case study.

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Appendix One: June 2013 User Survey Questions

Who are you?

- Student > where?
- Teacher > where?
- Library staff > what do you do?
- Other > could you tell us more about what you are doing?

How often do you come to work at NTK?

- Never
- It happens
- Quite often
- Often
- You are always there!

Are you well-informed about the following NTK activities?

- Services
- Practical information
- Events

Do you often use our website to find information about the library?

- No, just for the catalog and databases
- Yes
 - ▷ Is there some information missing that you would like to find on it?

Do you know the NTK Facebook page?

- Yes
 - ▷ Are you following it?
 - ▶ Yes
 - ⇒ Do you often read our news?
 - ⇒ Is the news useful to you?
 - ⇒ What kind of missing information would you like to find there?
 - ⇒ Would you be interested to know more about the life inside the library
 - ⇒ Would you enjoy having something more fun (quizzes, photographs, etc.)?
 - ▶ No > could you tell us why?
 - ⇒ It's not useful
 - What would be useful for you?
 - ⇒ you don't use Facebook for this kind of thing
 - ⇒ other
- No
 - ▷ Would you be interested to follow us?
 - ▶ No
 - ⇒ Why (see above for details)
 - ▶ Yes
 - ⇒ What kind of information would you like to find there?
 - ⇒ Would you be interested to know more about the life inside the library?
 - ⇒ Would you be interested to interact with us? (quizzes, etc.)
- Which other social media outlets do you use?
 - ▷ Twitter
 - ▷ Google +
 - ▷ YouTube
 - ▷ Flickr
 - ▷ Foursquare
 - ▷ LinkedIn
 - ▷ Other:
 - ▷ You don't use any other social media outlets

Appendix Two: ChemTK Use Cases

(Authors: Institute of Chemical Technology Prague's ChemTK team)

Role: Student

A1 Borrow learning materials

A2 Find, reserve, and borrow a book (print, electronic or eReader)

A3 Access to eJournals (from ICT, NTK, and home)

A4 Access to databases (chemical and natural science—Reaxys, Web of Knowledge, SciFinder—from ICT, NTK, and home)

A5 Onsite services: self-copy, WiFi, scan, rent a team room, self-study room

Role: Teacher/Scientist/Researcher

B1: Access to eJournals (from ICT, NTK, and home)

B1.1 A-Z list

B1.2 Search by article title, journal name, DOI within one search box

B1.3 Most frequented journals on top

B2: Access to databases (chemical and natural science—Reaxys, Web of Knowledge, SciFinder—from ICT, NTK, and home)

B3: Acquisition (for personal use in ICT building and acquisition for library)

B4: MVS, MMVS (national and international library loan)

B5: NTK Account management (registration, prolong, services the user is entitled to use)

Role: International Student (one or two semester ERASMUS or bilateral program/international student studying the whole program at ICT Prague)

A1 – A6 with exceptions due to NTK lending rules

C1 Night study room

Role: International Teacher/Scientist/Researcher

B1-B5 with exceptions due to NTK lending rules

Minor Use Cases

- New, events
- "Recherche"/Research assistance
- Borrow theses

Appendix Three: Usability Test Scripts

Professor User Script

User Test One

Your colleague emailed you about an article on **plasmon resonance spectroscopy** by **Yap Wing Fen** and some other author (he couldn't remember the other author's name). He couldn't remember where the review was, but said you should check it out before you meet for lunch next week.

1. Where is the article?
2. Does NTK have the full-text?
3. Where would you go to get the full-text?

User Test Two

You want to browse the latest issue of *Nature* online.

Does NTK have the latest issue?

User Test Three

Your need your teaching assistant to rent a team study room once a week for the next three weeks at NTK.

Where can your teaching assistant find information about renting a room?

Student User Script

User Test One

Your professor has asked you to read this book:

Spectroscopy: the key to the stars: reading the lines in stellar spectra

by Robinson, Keith

Go to the new NTK website.

Find this book and describe how you found it.

Where is this book in the library?

Where do you find information about how to borrow a book? Does the information you find provide enough information on what to do to borrow a book? Why or why not?

User Test Two

Your professor would like you to find **three full-text articles** in scholarly journals about **robotic surgery**.

Please list the articles you find and how you found them. What was confusing or what was helpful as you located the articles?

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* pozn. redakcie – slovenský preklad článku prinášame v e-verzii časopisu – <http://itlib.cvtisr.sk/>