

Blogs, Wikis, Webcasts: Utilization of State-of-the-Art Communication Instruments for Project Management

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Introduction

As information technology is evolving communication behaviour is changing. Today, project communication is based on tools like e-mail, shared document folders or project management software. Thereby the internet is a crucial source for information gathering as well as for information exchange. Web 2.0 marks a new internet generation where applications are easy to use, accessible for anybody and covering nearly every information area. Its technologies and services influence and change private and business communication. The paper analyses impacts on and opportunities for the special area of project communication.

Web 2.0

Paradigm Shift

Web 2.0 is used for a new paradigm of web applications. Whereas Web 1.0 focused on information distribution mainly driven by universities, research institutes, and more or less large companies, Web 2.0 improved accessibility and easiness of use so that communication and collaboration are core value. O'Reilly who designed the phrase in 2004 lists design patterns which explain the paradigm change (O'Reilly, 2005).

An example can be shown in the field of e-commerce. A classical web shop is driven by a central seller; and he lists his products with prices. Added Web 2.0 functionality is well-known from E-Bay.com or Amazon.com. On E-Bay, everybody can be a seller; each web user can buy something from another. Very different and individual items - often interesting only for few people - are handled which normally can be found only in highly specialised shops. E-Bay's whole recipe for success is based on Web 2.0 paradigms. Amazon's customer review possibility or its "customer who bought that also bought that" functionality illustrates Web 2.0 capabilities.

Already five O'Reilly paradigms have a direct or indirect reference to communication. Communication technologies play an important role in Web 2.0. Based on this understanding we will develop dedicated communication paradigms for project management communication.

Examples for Web 2.0 Communication Technologies

Web 2.0 communication technologies are characterized by ease of use and a high degree of participation, i.e. involving partners to respond on statements or creating common results. The following table lists such technologies, explains them in short and shows an analogy from the real world.

Web 2.0 Technology	Explanation	Analogy
Weblog	Weblog (or blog) is a website with chronological statements from a person or a group of persons. These postings can typically be commented by other persons. Typically hyperlinks are included in the individual postings.	Diary
Wiki	A wiki is a website where content is created and edited by different users. As a result content pieces are written collaboratively. One of the largest wikis in the internet is Wikipedia.	Blackboard

Web 2.0 Technology	Explanation	Analogy
Podcast	Podcasts are audio files added with information about the content. This information makes it possible to subscribe regularly to posted podcasts and receive them automatically.	Radio
Videocast	A videocast is a podcast with video files instead of audio files.	Television
Web Conference	Web conferences are a type of electronic synchronous communication which enable adhoc presentation and collaboration via the internet. Products are e.g. Vitero, VidConference, WebEx or Microsoft Office Live Meeting.	Meeting

Exhibit 1 – Web 2.0 Communication Technologies

Success Factors in context of the Communication Process of Project Management

We all know that proper communication is crucial for ensuring predefined project results. An outstanding part of the work of project managers belongs to communication and has consequently an enormous importance. Supporting communication efforts and making them more efficient saves a lot of time and money. From our experience as project managers we could conclude that informal communication (emails, telephone conferences) is predominant. The Project Management Institute (PMI) is self-aware of the importance of appropriate communication in the project work and has dedicated this topic an own Knowledge Area.

PMI Communication process

The PMBOK® *Guide* defines the Project Communication Management process as follows:
“Project Communications Management is the Knowledge Area that employs the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval and ultimate disposition of project information.” (PMI, 2004, p221)

The following processes belonging to Knowledge Area Communication Management are defined by the PMBOK® *Guide* (PMI, 2004, p221):

1. Communications Planning
2. Information Distribution
3. Performance Reporting
4. Manage Stakeholders

Requirements in different communication management processes

By reflecting the four communication processes we found that every process uses tools and techniques which could be supported by communication technology and every communication management process has requirements for its appropriate implementation.

Typical requirements and the following success factors have been identified:

- Stakeholders get the information when and in the form it is needed.
 - o Rules for communication (e.g. communication forms and methods, communication media)
 - o Real-time and non-real time communication
 - o Access to the project communication tools according to the experience and expertise of the project participants (PMI, 2004, p227)
- Use of standardized templates
- Minimisation of Noise (PMI, 2004, p224))
- Long term availability of applied communication technology (PMI, 2004, p227)
- Appropriate support of virtual distributed teams (PMI, 2004, p227)
- Schedule and reminder capabilities
- Support of escalation resolution (workflow support)
- Glossary of common terminology (PMI, 2004, p227)
- Differentiated channels for defined communication groups

Today there is already a wide variety of common communication tools to support the communication process, e.g. schedules, databases, project portals to collect and manage project documents, e-mail, e-meeting (telephone conferences, video conferences, web conferences), project management software (MS Project, Workbench), office software (MS Office, Star Office), implementation of access rights systems.

All this communication technologies support the communication management processes. But do they really involve all stakeholders appropriately? Do they contribute to an effective communication between stakeholders? Do they facilitate partnership to stakeholders? Let us show some real life examples.

Example applications of Web 2.0 technologies

The use of a Wiki for communication and documentation in a project programme

The software development team responsible for several software projects that are part of a larger program were in need of an easy to use and flexible information sharing platform that would cope with the technological complexity and the scope of these projects. One requirement was that the developers would have to edit much well structured documentation in joint effort. After a short evaluation period Wikimedia system was selected.



Exhibit 2 – The ComIn Project Wiki

An example project homepage is shown below. The main navigation on the left shows general pages as well as a project list. The wiki mainly comprises project management information, e.g. team directory, project schedule, task lists, status reports as well as a knowledge base with core documentation on the technology used and the product. Further, hyperlinks to the development and production server systems help the developers to access their working tools quickly. Furthermore, the main webbased configuration management and quality control applications for the software development process were integrated as well as a link to the official file store so that the wiki could serve as the main entrance for the project team. All team members were allowed to edit any content without restriction.

The wiki turned out to be an irreplaceable tool for the team. All team members were using the communication platform. However, the number of frequent authors was lower than the total user number. Also, the wiki was mainly edited by the team. The project managers hardly contributed to the contents. The reason probably was that the rather technical editing tool may have deterred them from writing articles. However, the project managers used the wiki to get informed on the project progress especially through the status reports and meeting minutes documented by the team. The latter were prepared before the meeting started containing the listing of open issues. After (or even during) the meeting decisions concerning these issues were documented. This method made meetings more efficient than in the past. Some users applied RSS feeds provided by the wikimedia system to stay up to date on the project progress and also as personal task list. The global write access granted to all team members did not lead to any disorder. Through the use of versioning and authentication features of the wiki it was possible to retrieve earlier versions to correct any problems and conflicts that had occurred. Especially the possibility to create structured hypertext collaboratively made the wiki the main tool for the creation of a knowledgebase on the technological issues arising in the project. The wiki is still being used vividly for the ongoing of the projects within the programme.

The use of Weblogs as project diary

In this project software engineers formed the development team of the first release of a new software product that had to use interfaces to other systems that had interface components that also were to be developed in this project. The project manager usually serves as central information hub between the different subteams to ensure that development runs smoothly and could be completed before the fixed target date.

To ensure that the necessary information is distributed quickly within the team it was common that team members were writing a vast amount of email messages to keep everybody informed. Forwarding of messages even worsens the information overload. An alternative solution was found to improve communications for this project.

In this case a weblog software tool was selected to serve as diary and internal communication platform for the project. Instead of writing numerous email messages team members were urged by the project manager to post status reports to the weblog. The reason behind this was to create a live project log file that documents the activities that have taken place during the course of the project. The categorisation feature was used to structure the weblog content based on the project's work breakdown structure (WBS).



Exhibit 3 – Project diary weblog

The weblog proved to be a valuable communication tool. It took some time to convince the team to stick to using the weblog instead of the usual email messages to inform others about the ongoing activities. After a start-up period of about 10 days most team members got used to the paradigms of the weblog although until the end it appeared that most articles were posted by a small group of active users.

Some used RSS feeds to keep themselves informed on the projects. After complaints from team members the project manager had to ensure that all articles would be categorised according to the work breakdown structure. The latter had been chosen to serve as a categorisation scheme to prevent the project blog from becoming confusing. Towards the end of the first phase, the project manager decided to publish also the major deliverables (e. g. specification documents) to the weblog. Through this they were accessible to the team – much quicker than via the common file and messaging system, e. g. through full-text search. However, this also meant that the documents had to be archived redundantly in the file system and in the weblog. Further, the weblog diary was an unvaluable source for the project review and evaluation of lessons learned during the projects closing phase. A further problem appeared towards the end of the project when the weblog content was supposed to be archived in a form that could be easily accessed for future reference. This happened to be unsolvable for the specific tool that had been selected. As a temporary and insufficient solution this weblog will have to be kept online to ensure its accessibility.

Project Information Portals for distributed R&D projects

The challenge for project communication within the TRUST project was that the team members of this public funded research & development activity came from a consortium with eight different companies and research institutions that were geographically dispersed over Germany. The team needed a stable, secure and moderated collaboration platform that could be used via the internet.

To meet these requirements the project management decided to use a webbased project information portal based on Communardo's ProductivityNet Portal Technology. This platform provided the required content management, document management, collaboration and security functionalities. The platform was mainly used to disseminate project news, to publish and archive project deliverables for future reference for the team members and to communicate asynchronously via a bulletin board. One of the key features was the hierarchical categorisation system in combination with the fine granular access control that allowed the project manager to assign read and write access for the specific content areas to different team members. The full text search engine of ProductivityNet helped users to find the required information quickly, including the indexing of the attached project files in Microsoft office and PDF formats. One key lesson from using this portal as project communication platform was that there has to be a critical mass of content in the portal to make it interesting for the team. Once this was achieved through some initial effort by the project office, the entire team started to use the portal. Second, very brief trainings were conducted with the team members during the on-site face-to-face meetings.

Through these sessions the team members got used to the tool and the usage increased. Third, several face-to-face meetings have benefited from the use of the portal within during the course of the meeting when



Exhibit 4 – TRUST project portal

documentation of results were written directly into the portal. This also reduced the follow-up effort. Although project information portals have not been classified as pure Web 2.0 technologies this platform offered a combination of news publishing and document management functionalities that have been used very similar to the first two examples on weblogs and wikis. It was the combination of these features that proved to be beneficial for the project team.

Critical evaluation of Web 2.0 technologies

In this chapter the web 2.0 technologies described above are being evaluated. The first part analyses the use of these tools for project communication methods by the different generic stakeholder groups. Later, the advantages and disadvantages of these tools are being listed.

Application area of Web 2.0 technologies in project communication

The following table tries to show which communication methods can benefit from the use of web 2.0 technologies. Communication always needs a sender and a recipient. In the table, the tools are shown in the column that represents the sender when using a communication tool, e.g. project managers and sponsors producing web casts.

			Before Web2.0	new Web 2.0 technologies					
				Project Manager	Customer	Sponsor	Team	Contractor	End users/ Society
Communication methods	Informal written	memos	word processing software	Weblog Wiki			Weblog Wiki	Weblog Wiki	Weblog
		notes	E-Mail						
	Formal written	project plans	time planning software						
		complex problems	word processing software drawing software	Wiki			Wiki	Wiki	
informal verbal	meetings	video conference	Web conference Desktop sharing	Web conference Desktop Sharing	Web conference	Web conference Desktop Sharing	Web conference Desktop Sharing		
	Conversations	conference calls bulletin boards							
formal verbal	Presentations	presentation software	Web conference Webcast		Web conference Webcast				
	speeches		Podcast		Podcast				

Exhibit 5 – Web 2.0 in project communication

As a summary it can be stated that weblogs and wikis are mainly useful for performing stakeholders, especially the project team, contractors and the project manager. Synchronous communication tools, e.g. web conferencing and desktop sharing are also used by these stakeholders and in addition by customers and sponsors. The production of webcasts and podcasts can be done especially for formal communications by sponsors and project managers for a large audience.

Advantages and Disadvantages of Web 2.0 technologies

The practical examples that were reported earlier clearly show the benefits that can be achieved through the use of Web 2.0 tool. The following table lists pros and cons for each of these:

Technology	Pros	Cons
Weblog	<ul style="list-style-type: none"> - Effective publishing method for large stakeholder groups - Easy to use, easy access for all participants - Availability of historical data - Integrated feedback mechanism 	<ul style="list-style-type: none"> - Restricted mechanisms for structuring of content - Chronological structure in some cases not feasible
Wiki	<ul style="list-style-type: none"> - Decentral creation of results - Simple security model: Write access for all users - Availability of all historical versions enforces group discipline - Hypertext supports description of complex problems 	<ul style="list-style-type: none"> - Quality and policy assurance necessary - Detailed content structure requires additional effort
Podcast	<ul style="list-style-type: none"> - Higher grade of “personal communication” via voice of the speaker instead of text - Use of travel time for listening - Easy content creation 	<ul style="list-style-type: none"> - Requires new kind of communication competence
Videocast	<ul style="list-style-type: none"> - Complete visualisation capabilities increases attention - Asynchronous and multipliable 	<ul style="list-style-type: none"> - Higher effort for content creation
Web Conference	<ul style="list-style-type: none"> - Highly interactive communication method for distributed teams - Ad-hoc initiation - Integration of all kind of media channels 	<ul style="list-style-type: none"> - Technological entry barriers - Bandwidth required - Still usability issues

Exhibit 6 – Web 2.0 pros and cons

Conclusion and Recommendation

As the previous chapters show the Web 2.0 technology wave also brings new communication technologies and tools to the table. In general, we already see these technologies are changing the way people communicate. Just for that reason, earlier or later, project managers will have to adapt their communication management strategies and tool set in order to comply with the emerging Web 2.0 communication culture.

But this would be just a reactive approach. Our analysis shows Web 2.0 communication technologies give the project not only additional tools and methods but support certain communication paradigms. These paradigms support a positive project culture far better than existing alternatives and therefore should be chosen and used proactively by the project manager in order to support his communication management objectives. He should utilize the advantages in this regard and actively minimize the existing disadvantages.

Paradigm 1 “From being informed to participate”

Former communication technologies didn’t explicitly support an active involvement of all different stakeholders. Stakeholders were primary a sink for information. Web 2.0 technologies enforce a participative culture by nature - comparable to community concepts. They even empower stakeholders to influence actively the distributed information by delegating creation and editing rights. Therefore, the communication culture of small highly interactive project teams gets transferable to large project teams. A large number of different

stakeholders can be integrated much better than before. Used wisely, this paradigm shift enables the project manager to utilize the combined knowledge force of distributed team members and all other stakeholders more efficiently in large project organisations due to all stakeholders feeling more involved.

A typical capability of all Web 2.0 tools is the feedback channel that allows the receiver of an information to give the sender instant feedback. This enables an enhanced feedback culture between all participants of a communication network and introduces the advantages of proper feedback mechanisms known from personal face to face communication into digital communication tools. It seems obvious that the right usage of feedback mechanisms leads to simply better understanding each other and therefore not only avoids communication conflicts but furthermore project conflicts that arise from communication conflicts.

Paradigm 2 “Structured information push”

One of the specific Web 2.0 features is RSS. RSS stands for “really simple syndication” and is a family of web feed formats, a method for allowing Internet users to automatically obtain up-to-date information from their favourite sources. A program known as a feed reader or aggregator can check a list of feeds on behalf of a user and display any updated articles that it finds.

Based on this principle the project communication can be organized in different purpose channels in order to structure the content to be communicated. The responsibility to obtain the information shifts to the recipient. However, via RSS stakeholders don’t have to check anymore the relevant project publications on a regular base but the important information is pushed directly to each subscribed receiver.

Paradigm 3 “Easy to setup, easy to use”

Web 2.0 communication technologies profit of the “webification” trend regarding installation and usability of tools and applications. Web technologies standardize user behaviour and build up a common usage experience. Due to the web service architecture there is almost no set up effort and users don’t have to learn new application interfaces.

Also the integration of a large number of state-of-the-art devices brings advantages in ease of use. Project team members and other stakeholders don’t need special devices or software to participate in the communication structure. Rather they are able to use different devices which they have just at hand and use anyway for daily work. This especially helps to bring stakeholders without connection to the core project infrastructure much closer together with the project team.

And last but not least, the content creation gets easier. Never before such a large number of users were able to create distributable audio and video content with such a small investment in equipment. Which leads to:

Paradigm 4 “Rich user experience”

Due to the above mentioned fact of easy content creation and media utilization in synchronous and asynchronous ways a whole range of new communication options are available to address information receivers in an attractive and intriguing way without being attendant at the same time or at the same place but still communicating personally and strong. The rich user experience facilitated by Web 2.0 communication technologies can overcome the well known restrictions of distributed or asynchronous communication scenarios and make communication more effective.

Overall, for the time being these paradigms improve especially informal project communication for large projects, for multi-project management, for program managers, in all projects that have to deal with a complex stakeholder structure (think of public projects). Distributed teams and highly mobile team members will profit regarding quality and effectiveness of their informal communication.

There is still a barrier regarding formal project communication due to missing security, trust, identity and archiving features. But the authors of this paper are sure that these features will appear and evolve over time and we will see soon appropriate Web 2.0 tools also for formal project communication.

Project managers who want to stay effective in communication management should be and can be early adaptors of Web 2.0 communication technologies.

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