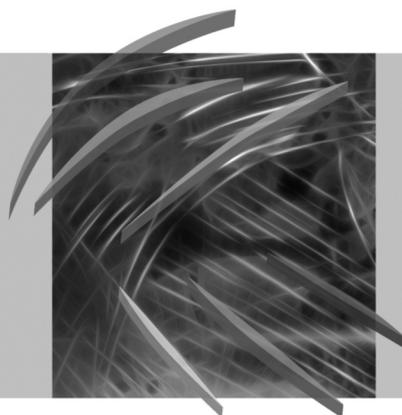# Advanced Information Technologies for Management – AITM 2011

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COLLABORATION MANAGEMENT – A VISUAL APPROACH TO MANAGING PEOPLE AND RESULTS

Abstract: Collaboration is the central element for successful projects and, indeed, successful companies. Today, two main approaches to organizing collaboration in projects exist: the structural and the procedural. While the structural approach increases the *probability* that people will communicate, e.g. by providing collaboration infrastructure, it does not at all *ensure* that people really do communicate and cooperate in a sensible way. Following the procedural approach, the collaboration between people is planned, organized and managed by directly addressing the question who needs to collaborate with whom, to produce which result, and when. To organize the procedural approach, this article discusses two components: a methodology called Business Communication Engineering to organize projects and processes around information flows, and a graphically advanced tool that allows collaboration to be drawn in a people-communication matrix called the Communigram. Through modern IT, the drawn collaboration comes to life, even in large projects.

Keywords: collaboration management, project and process management, visual approach, Business Communication Engineering, Communigram.

1. Introduction – why structures and IT are not enough

Collaboration is one of the strongest growing fields in Information Technology. Everywhere in the world, people are embracing the new possibilities technology provides in order, e.g., to work simultaneously on documents, to meet virtually, to plan meetings, and much more. However, all these new technologies do very little to help people actually organize their work between them.

Project collaboration can be organized with two main approaches: structural and procedural. The procedural approach seeks to provide various types of structures, such as office space and architecture that fosters collaboration [Allen 1984], cafeterias that provide opportunities for casual interaction, ad hoc collaboration and

coincidental meetings, videoconferencing to bridge distances, and of course a grow-ing species of communication platforms and collaboration tools enabling people to meet, work simultaneously on the same document or object, and organize their work, e.g. in to-do lists. All of these approaches have in common that they increase the probability for communication to happen, and in many cases make the communica-tion possible in the first place, e.g. by providing communication channels that did not exist previously within the organization, or by providing technical possibilities. This means that environments and situations are created that enable people to com-municate and cooperate better. However, none of these structural approaches can ensure that people really communicate and cooperate in a sensible way [Brown, Schmied 2007].

Following the procedural approach, the collaboration between people is planned, organized and managed by directly addressing the question of who needs to col-laborate with whom, to produce which result, and when. The procedural approach is highly complementary to the structural one, since the structural approach very quickly reaches its limits – how is one supposed to get a team in Wrocław to work together efficiently with another one in the US? Getting them in one physical loca-tion is usually out of the question. Setting up an organizational structure so that both teams have the same boss may be helpful, but experience shows that it is difficult to manage from a distance. Electronic means, although they can be enormously useful, are limited in their effect because people use them differently, often reluctantly, and tend to be ignored after an initial flame of enthusiasm. Indeed, all of these "good" infrastructures – befitting organizational structures, IT-infrastructures or architec-tural facilities – can only be used to their full potential once the corresponding com-munication and collaboration between people is no longer left to coincidence. For collaboration to work, it must be explicitly planned – and controlled.

This is where the methodology of Business Communication Engineering (BCE) comes into play. With this procedural approach to collaboration, the details of col-laboration between people are planned, thought out and brought to life. It does this by repeatedly answering the question of which communication is needed to produce which result. The procedural approach of BCE is complementary to the structural approach, particularly when the structural approach reaches its limits or is simply not useful. Good examples for this are distributed teams that simply cannot be moved to a common location, teams that are in the same location but are still not communicat-ing (communication probability declines exponentially with distance [Allen 1984]), organizational structures that are impossible for the project manager to change (they must be taken as a given on a "take it or leave it" basis), and most IT systems for col-laboration: experience shows that when project teams become bigger, these systems are not very successful in getting people to reliably contribute to project progress. In other words, the full potential of "good" structural efforts, be they of organizational, architectural, or IT nature, can only be exploited when the interactions between peo-ple are no longer left up to pure chance, but are explicitly planned and controlled.

The Business Communication Engineering (BCE) methodology covers these three central aspects of collaboration management:

1. The **organization of collaboration within an activity** to elaborate a concrete result. Following BCE, these pairs of activities and results are the elementary constituents of a project.

2. The communication of these results to all activities that need these results as an input, to be able to carry out the work necessary to produce their own results: these are called **supplier-client relationships**.

3. The **transversal communication** between subprojects, departments, sites, and organizations. This communication links the structural organization with the procedural organization of the project by connecting people and therefore controlling their collaboration process.

These three aspects of collaboration can be planned and controlled graphically in a tool called the Communigram. The collaboration between people not only becomes visible in this manner, but also manageable.

Latest experience in the use of the BCE methodology has shown that in practice, communication can only be planned if most of the project participants actively participate in the planning of the project [Brown et al. 2007]. This allows creating a "supplier-client" chain that ensures the elaboration of project results. It also allows people to harmonize their cognitive systems, i.e., their differing means of understanding and interpreting things, which particularly in the case of differing backgrounds (take for example the very heterogeneous cognitive systems of an engineer and a salesperson) is an enormous challenge. By defining clear handover criteria for results (these could also be termed as "protocols", in analogy to IT), time-consuming misunderstandings are to a large extent avoided while the project is still in its planning stage. Although this often means that the planning stage can be laborious and take quite some time, it is beneficial because the execution of the project can then take place very quickly. Project lead time reduction of up to 30% has been achieved in this manner.

2. How difficult collaboration is – a case study

We have recently encountered a typical example for the difficulty of collaboration in a project for the development of a combined information and entertainment system for healthcare. Throughout the world, healthcare is faced with an enormous challenge: costs must be reduced while the quality of care must be at least maintained, if not improved. Indeed, our societies are more than ever capable of prolonging life, but less than ever capable of paying for it. This challenge has created an extremely interesting market for intelligent products that can solve the problem. Of course, such intelligent products are very complex, and it therefore makes sense to bundle various specialized organizations into a "virtual organization". In turn, this means

that people of very different organizational cultures, sometimes even of different countries, need to work together sensibly.

The business model was quickly found and several very promising product ideas were swiftly defined. The implementation of the product ideas is of course organized in projects. And of course the virtual organization applied the usual project execution tactics, i.e.,

- in a kick-off meeting, the most important milestones were outlined (exhibitions, deadlines for tenders, etc.) and the objectives were defined and staffed with managers,
- a Gantt-style project plan was created and optimized, but never really used,
- numerous meetings to discuss ideas and "coordinate" work were held, followed by uncountable e-mails and phone conversations for further discussion,
- ToDo-lists were created and the people made responsible for them confirmed the deadlines which were never respected,
- in heroic efforts, meeting minutes were (sometimes) written up, but hardly read,
- nobody knew where the project was currently at, therefore further e-mails and phone calls to get information,
- the project started to run late because despite many meetings and communication efforts, many important things were not clear for everybody and were therefore not addressed early enough.

Of course, at some point somebody had the idea of setting up a collaboration platform to give the group a better overview of what was happening, and to have a central data store. The usual software vendors were contacted, several demos were organized, and the computer buffs of the group analyzed all available open-source tools. At some point, a platform was put up on the web that was supposed to support the collaboration of the virtual organization. From that point on, all documents were available in a central location, and it was even possible to create various jobs and define people and deadlines. After initial enthusiasm, it became obvious that the system was only fed with data by very few people, and as before, nobody really knew where the project was really at. Another problem was that there was now so much documentation and other information available that people had difficulties finding the right information. So people continued to spend much of their time on the phone, sending e-mails, and in meetings (which were now more and more on the web) to try to get their projects to move ahead. The collaboration platform was soon after abandoned because people found that it actually added complexity without solving the collaboration problem.

A closer analysis showed that despite the use of modern technology, the fundamental paradigm of the structural approach had never changed: structures were created (virtual organization, collaboration platform) that *favour* collaboration, but are not at all capable of ensuring or organizing it.

To solve the problem, rather than build up structures, it is necessary to organize the collaboration itself. It is necessary to describe the process of who exactly needs to collaborate with whom, to produce which (intermediate) results, and how these results are interconnected to reach the objectives of the collaboration. This process must not only be described, but also implemented vigorously. In other words, the project must be planned, executed and controlled as a network of interconnected collaboration items, also known as "supplier-client relationships".

3. Business Communication Engineering – procedural approach to project collaboration

The fundamental innovation of Business Communication Engineering (BCE) is that it provides the means of explicitly planning and controlling the collaboration and communication between people. Unlike usual project management approaches, it is not focused on the time dimension, but on the people and contents of the project or process.

When using the BCE methodology, the contents as well as the carrying out of communication and collaboration between people are defined very much in detail ("engineered") and explicitly organized ("controlled"). To achieve this, these elements are defined using the methodology and designed graphically in the so-called Communigram.

3.1. Organization of collaboration within an activity to elaborate a specific result

By principle, BCE defines results, not tasks, to plan projects. These results or "outputs" constitute the basic building blocks of the project. Since they are elaborated by people, it makes sense to show them graphically (Figure 1).

Figure 1. Collaboration within an activity. "Brown" is the Responsible

Organizing the necessary collaboration is the job of the "Responsible", defined by the large dot. The Responsible knows what result needs to be delivered and who needs to collaborate in order to produce this result. These people are shown by small dots ("Participants"), and the line connecting them depicts the communication between them. This communication can also be trans-departmental or even trans-organizational.

3.2. Supplier-client relationships

Once the result is finished, it is transferred to all those that need it to produce their own results. An arrow between Responsibles shows the handover of results. In this context, we speak of "Suppliers" and "Clients" of results or outputs. As shown in Figure 2, Clients can be in other departments, other places, and even other organizations. The idea is now to set up a "supply chain" of outputs that lead to the desired final result in such a way that important information is always available, i.e. the project is never stalled and it is never necessary to conduct urgent actions (fire brigade actions) to elaborate missing information.

The arrows in a Communigram have several meanings for collaboration. Communication does not only take place in the direction of the arrows. Indeed, information flows in both directions, e.g.

– negotiation of the agreed result (output),
– negotiation of effort and deadline,
– alerting and handling of difficulties (if applicable),
– communication of preliminary results.

The arrows open privileged communication channels between "Suppliers" and "Clients". When two actors are identified by the arrow as Supplier and Client, they can (and must) collaborate and communicate during the entire lifecycle of the result. Following the BCE methodology, only the Clients define what result needs to be elaborated, and the work is only done when the Clients have accepted the result.
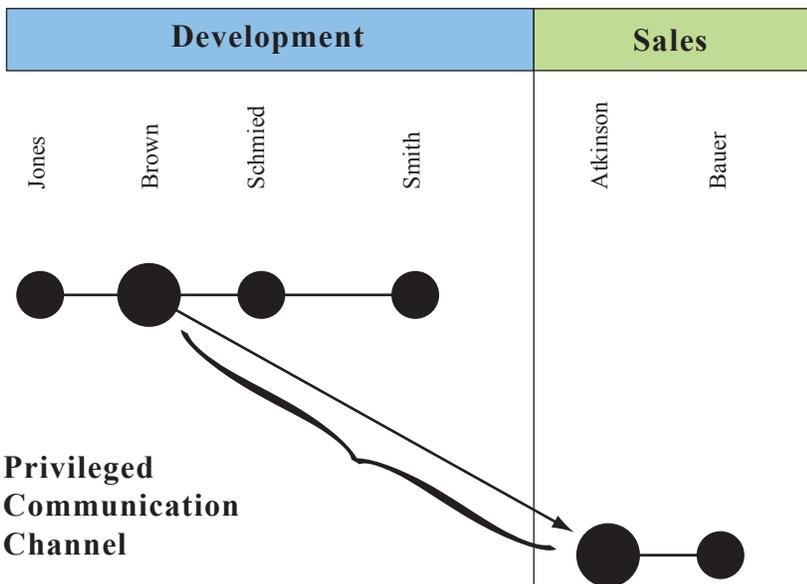
Figure 2. The Supplier-Client relationship opens a privileged communication channel

3.3. Transversal collaboration

In BCE, transversal collaboration means planning the interfaces between sub-projects, so that work can be performed jointly by independent organizational units or even organizations.
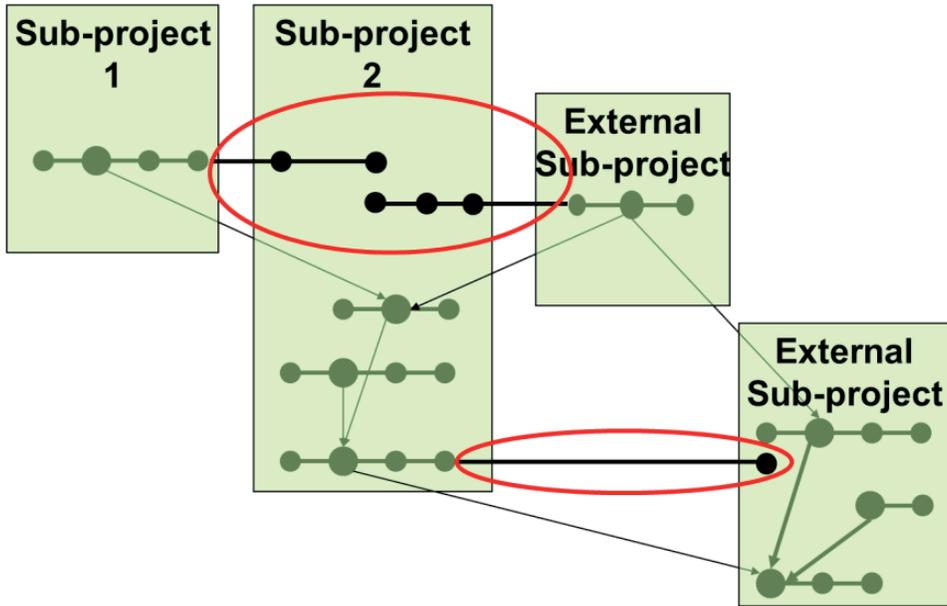
Figure 3. The principle of transversal collaboration in BCE

In the following, we describe how this approach was applied to the project using the latest advances in the Communigram IT tools, the toolset specifically designed to implement Business Communication Engineering.

4. Collaboration with 20 partners: A large-scale experiment

A total of 20 partner companies were involved in the development and integration of the various components for this innovative new product for healthcare. After the project was stalled on several occasions and inter-personal problems occurred due to lacking transparency, the project was in a dangerous situation in which everything almost fell apart. The pressure was therefore strong enough to quickly introduce the methodology of collaboration as defined by BCE.

It was decided to use the latest available version of the Communigram IT toolset to manage the project. With this tool, a Communigram can be drawn interactively. It is a full-featured rich application programmed in Java that runs in a web browser. An excerpt of the project plan is reproduced in Figure 4.

Figure 4. Initial plan for the development of an innovative product for healthcare (excerpt)

Figure 5. In this enhanced collaboration plan, not only are far more results planned (shown in red), but there are also far more transversal connections between the employees of the participating companies (same excerpt as in Figure 4)

This very graphical view of the collaboration between people made the many interconnections in this heterogeneous group transparent. People started understanding the exact role of others in the project, and in many cases also their own role became much more clear. Seeing who exactly needed their results later on in the project also had a strong effect on motivation. People felt much more part of a team when the collaboration was illustrated so comprehensibly.

One particularly interesting side effect of this transparency is identification and its impact on the quality of planning. Once each participant sees their column in the Communigram, they identify with it, look around to see who they should be interacting with, when, and why. And of course, when one participant sees that many people are going to be waiting at some point in the project for a deliverable she is supposed to produce, she will want to be sure that all input she and her team will require to produce it will be available in time. The Communigram is just the tool for that. When many people identify with their column and therefore put the collaboration around them under close scrutiny, more often than not further details concerning the deliverables around them are discovered (this means that the checklists for each deliverable are enhanced), and even additional deliverables are discovered. In our experience, 20–30% new deliverables are added once people start seeing their column in the Communigram.

In this project, the combined intelligence of the project participants yielded a particularly large number of additional deliverables, and the plan evolved into this more complete plan (Figure 5).

The participants became far more aware of the many interdependencies and were more motivated to actually achieve what had been agreed upon. In the meantime, the first prototype was shown on time at an important exhibition.

5. Collaboration planning vs. time-based planning

So does this mean that when you plan a project in a Communigram, you do not plan the time dimension at all? Quite on the contrary: once the project plan is set up in the Communigram, it is possible to use the same data and convert it into a bar chart, or "Gantt" view, which is useful for understanding the time dependencies in the project.

However, it is important to understand that a project plan created with a Communigram is quite different from one that is designed with a "normal" Gantt-based tool. This is for several reasons:

1. Planners focus very much on what they see. When using the Communigram without the Gantt view, the focus is very much on the communication and collaboration necessary to reach the project objectives. Tests with students (and also professionals in work environments) have shown that when a Gantt chart is used for planning, the time aspect of the project will be highly optimized (Critical Path, milestone planning, constraint planning, etc.). However, very important parts of the project are often completely forgotten (people are left out of the collaboration, aspects such as
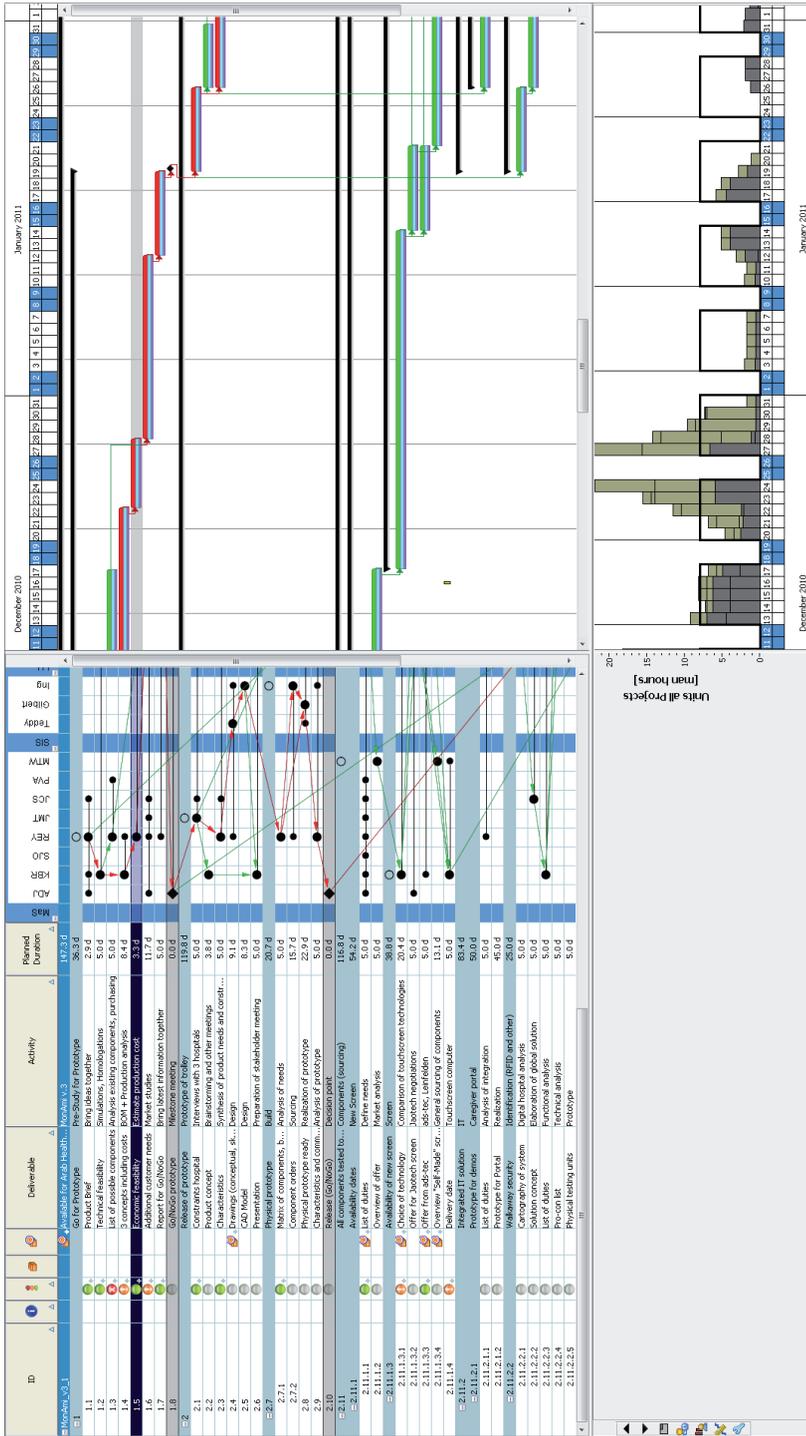
Figure 6. The combination of collaboration planning and time planning

e.g. marketing or feasibility considerations are forgotten, responsibilities are not defined, etc.). In other words, when using the Communigram, planners unconsciously focus on *how* to organize work to reach objectives, while when using a time-based diagram (Gantt-tool), planners focus on time concerns. The planning quality is therefore generally much higher using the Communigram.

2. As mentioned above, when people "see" their column in the Communigram, they identify with it, and will point out if things are missing for them to do their own job. 20–30% additional deliverables are regularly identified when people see the role they play thanks to the use of the Communigram. It is important to understand that these additional deliverables would have "existed" whether or not they are identified during the project planning process. The difference is that when they are identified early in the project, work on them can be planned, resources organized, and required inputs can be prepared. Otherwise, each of those "hidden" deliverables will inevitably emerge during the project execution. This is the project manager's nightmare. At that point, the needed resources are of course working on something else, or not available at all, so resource shifting and urgent "fire brigade" actions occur. This is extremely harmful for the success of the project.

3. Communigram allows and fosters "decentralized planning". Each person active in the project is urged to keep the collaboration links around them up to date, and whenever somebody says they did not get the output from somebody else, the first question that will be asked is whether they had made sure that this result had been planned for in the Communigram. The project plan therefore comes to life: it is constantly updated by many people – it reflects the reality of the project and is detailed as additional aspects of the project are discovered during the project execution.

We now present the technical aspects of the Communigram IT tool. To highlight but a few examples of how IT was used to translate the principles of the methodology (we classify Communigram as "Manageware"), we described what techniques were used to help users master the three types of communication mentioned above: 1) organization of collaboration within an activity, 2) supplier-client relationships, and 3) transversal communication between subprojects, departments, sites, and organizations.

6. Technical aspects of the Communigram IT toolset

The main design requirement in creating an IT toolset for Communigram was to provide a simple means of "drawing" the needed collaboration of a project in a diagram, and then using IT to make the methodology of Business Communication Engineering come to life. "Come to life" means that project managers dispose of a tool to "set it and forget it", i.e., plan the project and then have the system make sure everybody is working:
– according to plan, and
– according to the BCE methodology.

Today, the Communigram toolset indeed lets people draw the communication and collaboration of a project simply by drawing the dots and arrows in a matrix between the project structure (objectives, deliverables, tasks) and the organizational structure (companies, departments, people). In drawing the Communigram, the following automatically happens:
- each participant in the project sees who she needs to communicate and work with to make the project go ahead through a tool called "myCommunigram",
- the logic defined by the dots and arrows in the Communigram automatically configures access privileges to parts of the project and to the integrated document server (discussed below),
- the dots and arrows integrate people in specific workflows, and
- the dots and arrows open privileged communication channels that allow people to exchange information.
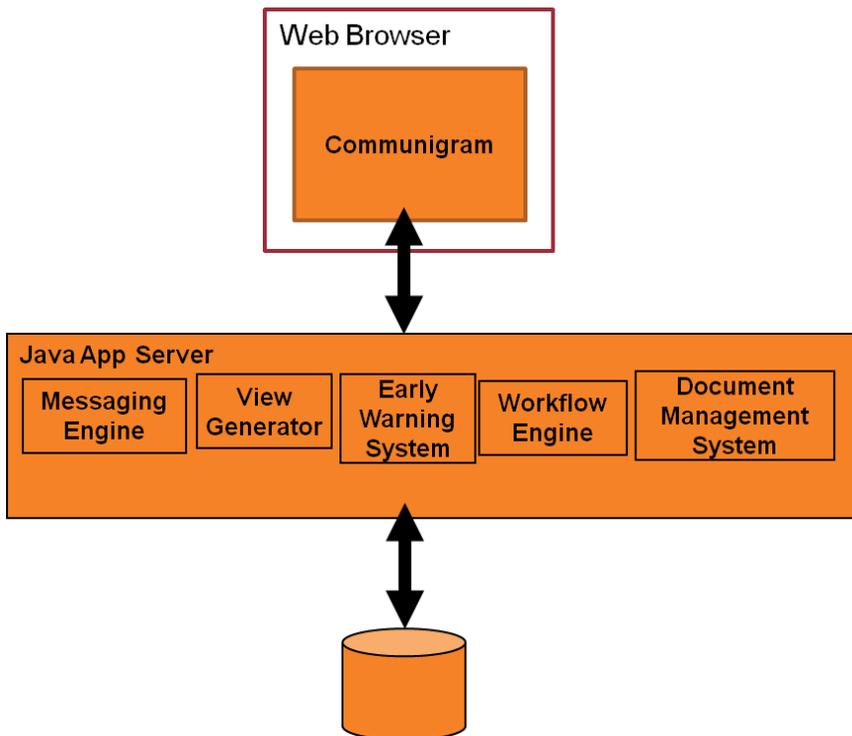

Figure 7. 3-tier architecture of Communigram

All of this happens without any further user interaction. Communigram has many features that are simply the translation of the BCE methodology into IT. The project is planned by many people through a decentralized approach in Communi-

gram. Project participants then use myCommunigram to access their part of the running projects, including access to all documents, discussions, etc.

We will explain these points more in detail below, but first let us have a look into the underlying architecture.

The Communigram IT Toolbox features a 3-tiered architecture (database, application server, client), as shown below. The application server holds much of the application logic of the application, while the rich client, realized as a Java-applet that runs in a standard browser, was built with custom components to create an interactive interface to draw and edit a Communigram simply by pointing and clicking.[1]

As Figure 7 shows, the Communigram toolset integrates various systems that are needed in handling collaboration. For instance, since projects always produce a lot of documentation and it is a real headache to keep track of all the documents and versions (as we know from the case study above), Communigram features its own document server that serves as a repository for all documents that

a) are needed to be able to produce deliverables (reference documents, lists of duties, forms to fill out, etc.),
b) are produced during the project (documentation of the deliverables).

The document server was realized using Apache Jackrabbit as a basis. This technology was chosen for its power in handling large quantities of documents, its advanced security model, and its capacity to index the contents of documents for searching purposes. When a user decides that a document is needed in a project, be it as a reference document or because it is the documentation of a deliverable that has just been produced, he selects it and attaches it to the deliverable in the Communigram. When this happens, behind the scenes:

–   the document is uploaded to the document repository,
–   the document content is read and indexed,
–   the document location (the user can define where he wishes to put the document on the server) is copied to an appropriate field so other users just need to click on the document to access it,
–   all document access privileges are set according to the dots and arrows in the Communigram.

Similar things are true for the other systems (messaging system, workflow engine, etc.) that are integrated in the toolset: depending on what is defined in the Communigram itself, the integrated systems behave accordingly. Let us now have a look in more detail what this means for the user.

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[1] The client is actually very "rich", as many important planning features are realized there, such as e.g. critical path calculation, simulation, project structuring, etc.
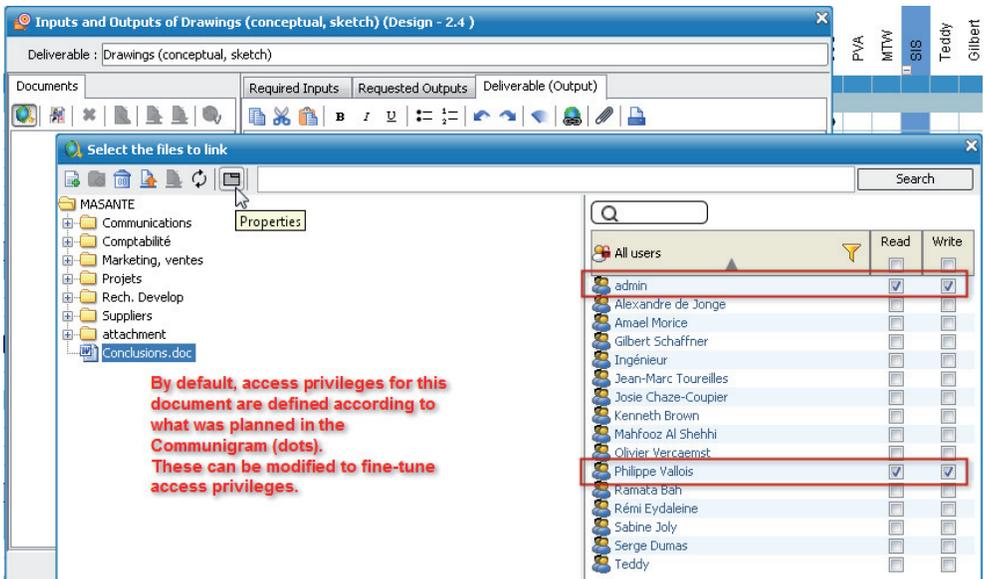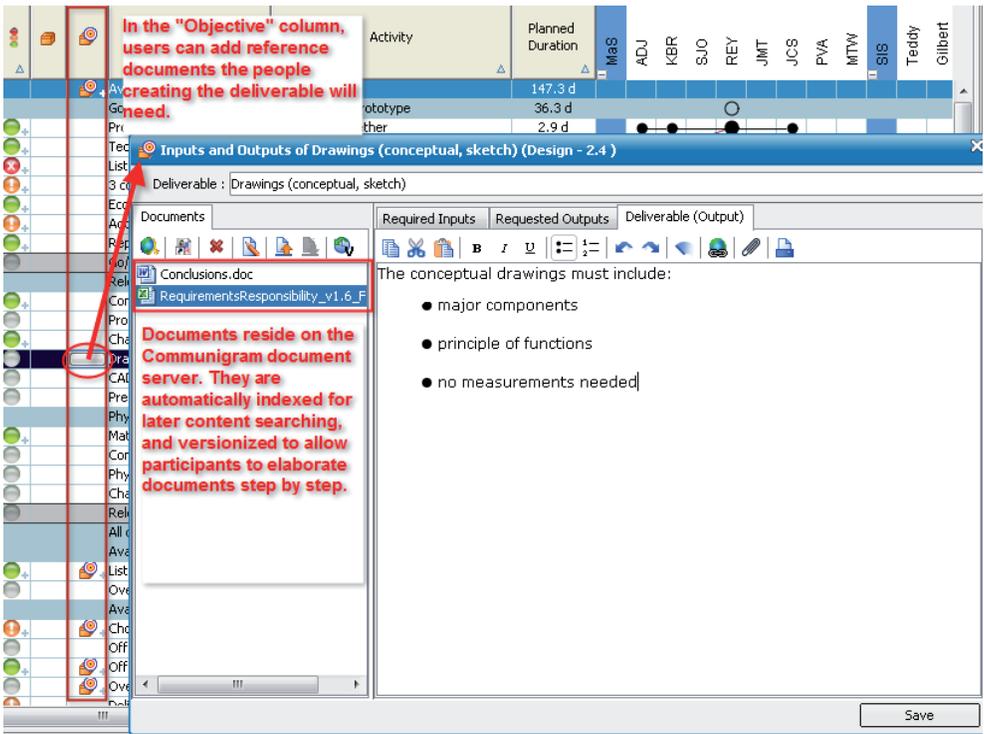
Figure 8. Adding documents to Communigram

7. How IT translates a methodology into an operational tool

7.1. Plan and distribute needed project collaboration

By filling out a Communigram, project teams inevitably do a number of things that are recommended as best practices to make projects successful, such as:[2]
– defining objectives clearly ("SMART", by filling out the objective field and adding documents),
– delegating responsibility (by defining the "large dots" and "large circles"),
– defining work teams (by defining the smaller dots),
– setting up handoffs and client-supplier relationships.
Figure 9 shows how these functionalities were realized in Communigram.

They will also unavoidably define the sequence in the project, see who is left out (columns that have no or few dots), and detect inconsistencies such as interruptions in the flow or loops.[3]

This "engineered" project collaboration is immediately implemented through myCommunigram, the personalized tool for each project participant, by providing the following:
– each user sees which deliverable they are involved in – in all currently running projects;
– they also see who they will receive deliverables from ("Suppliers") and who will be awaiting their deliverables ("Clients");
– all communication and interaction happens directly within myCommunigram
  • messaging between participants to organize work and exchange documents,
  • messaging with Clients and Suppliers while deliverables are being elaborated,
  • transmission and reception of deliverables when they are finished,
  • request and setting early warning signals (traffic lights).

All the tools needed to know what deliverables to work on and to sensibly communicate and collaborate with the other project participants are available directly in myCommunigram. In addition, numerous mechanisms such as reminders, traffic lights, messages and alerts are generated by the system and the other users and brought to the corresponding person via myCommunigram. This is the technical translation of the Business Communication Engineering methodology into useful tools. In other words, once the team sets up their project in Communigram, the system puts the users on "autopilot" by assisting them in applying the Business Communication Engineering methodology.

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[2] Most of these points can be readily found as best practices project management book, such as the PMBoK [PMBOK Guide 2004]. The trouble is implementing them consistently.

[3] Although Communigram is one of the few project management tools that actually allows the planning of loops under certain circumstances.
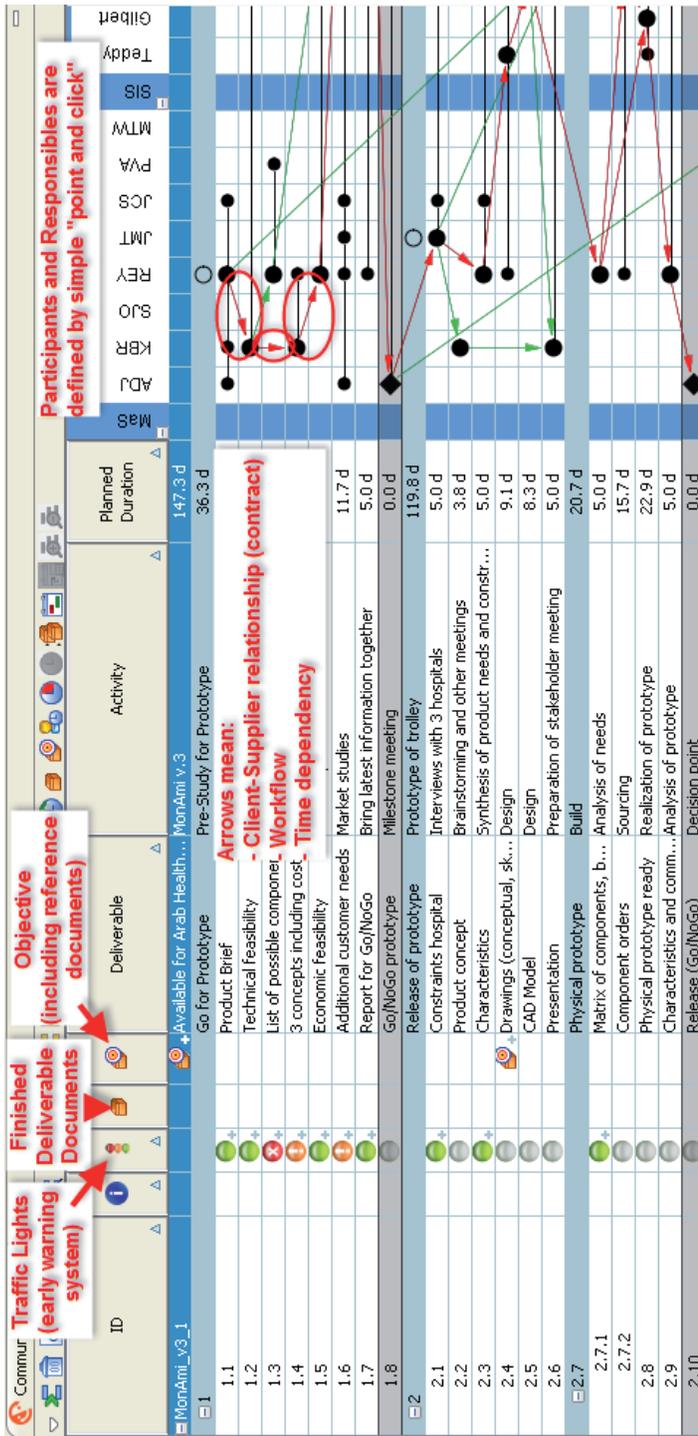
Figure 9. Defining project collaboration in Communigram

7.2. Configure access privileges

Since projects are complex endeavours, the systems used to manage them often are complex too. The Communigram toolbox includes a number of powerful systems that are as such tedious to configure. To make things easy for the users, the systems are automatically configured, following the logic defined in the Communigram by the drawn dots and arrows:
– access to documents (explained above),
– access to parts of the project (deliverable descriptions, history of messages and traffic lights, versions of documents),
– access to seeing traffic lights and setting them,
– access to input requests (possibility to ask for additional deliverables).

7.3. Integrate people in the workflow

The Communigram toolbox incorporates workflow technology to make sure people get the right information and react on it. For example, the following workflows are included:
– task duration confirmation by responsible,
– traffic light reset,
– transfer and acceptance (or refusal) of finished deliverables.

7.4. Open Communication Channels

With many people working on a project, it is difficult to assure the communication between them. It is important to bear in mind that the number of possible communication links between project participants grows exponentially with their number. E-mail is definitely not a solution, since it leads to chaotic communication between the participants without any visibility for third parties of what has already been discussed. For this reason, Communigram features internal messaging that is again configured following the logic of the dots and arrows in the Communigram.

All that needs to be done is to draw the appropriate dots and arrows using the Communigram tool: the corresponding communication channels are automatically opened. These are called "privileged" communication channels, and they respect the following logic:
– horizontal communication: Participants (large and small dots, connected with a bar) communicate to elaborate a deliverable,
– upstream-downstream communication: Responsibles can communicate with their Suppliers and Clients,
– vertical communication: Responsibles can communicate with the project (and sub-project) manager.

All of these communication channels are opened automatically, and the communication that presently takes place is tracked. This internal messaging that appears a bit like a "forum" around each deliverable, and it is possible for anybody with access
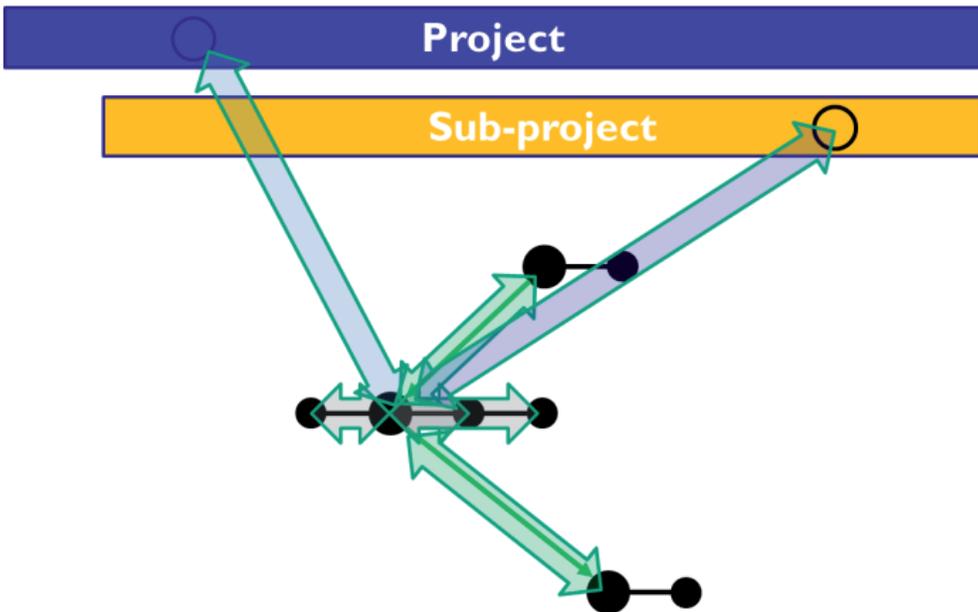
Figure 10. Privileged communication channels in Communigram

to the task to see the discussion threads around each deliverable. This "self-service" approach to find information has proven to avoid many e-mails and phone calls. Indeed, we typically observe a reduction of 80% of project-related e-mails.

Nonetheless, in some cases e-mail can come in handy: for people that do not have access to Communigram. This can happen when people are introduced to the project in an ad-hoc manner and did not yet learn to use Communigram, or when people are on the road and do not have a suitable connection or device (computer) at hand. For these scenarios, the sender of a message can choose to send a copy of the message via e-mail to the corresponding recipients. The recipient then has the choice to respond via myCommunigram, or simply reply to the e-mail: it is sent back to the Communigram server which parses the content of incoming e-mails and injects these messages back into the message threads around the deliverables. In the same manner traffic light updates and deliverable transfers can be handled via e-mail.

This means that even if participants do not constantly have access to Communigram, they can still remain part of the process. This combines the advantages of e-mail, which can be considered ubiquitous these days, without falling into its usual pitfalls. Because all replies to these e-mails are re-injected into the Communigram system, it is just as if the e-mail users had been using myCommunigram all along. In Figure 12 many of the updates to the project life were performed through e-mail.

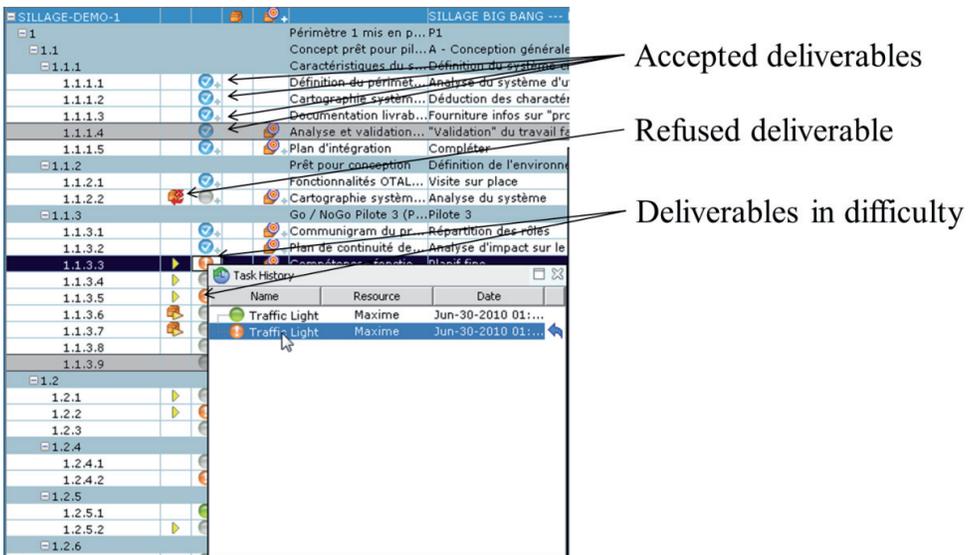Figure 11. Project communication handled via e-mail

Figure 12. Communigram pulls together all project communication in one place. Many updates were performed via e-mail

8. Conclusions

The use of modern IT allows an innovative approach to project collaboration by interactively drawing a collaboration diagram called the Communigram and bringing it to life. Numerous systems are integrated into a comprehensive solution, including document management, messaging, workflow, e-mail, indexed search, and many others. Despite this complexity, they are easy to use because the configuration is automatically performed following the collaboration logic defined in the Communigram. Various rules of the Communigram planning and management methodology called Business Communication Engineering are made operational by automating them through the use of appropriate IT.

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ZARZĄDZANIE WSPÓŁPRACĄ – WIZUALNE PODEJŚCIE DO ZARZĄDZANIA ZESPOŁEM PROJEKTOWYM I REALIZACJĄ ZADAŃ

Streszczenie: Współpraca w projekcie jest kluczowym elementem udanych przedsięwzięć, a nawet sukcesów firm. Istnieją dwa główne podejścia do organizacji współpracy w realizacji projektów: strukturalne i proceduralne. Wprawdzie w strukturalnym podejściu zwiększają się możliwości komunikacji między ludźmi, np. poprzez stworzenie infrastruktury współpracy, ale nie ma pewności, że uczestnicy projektu będą się ze sobą rzeczywiście komunikowali i efektywnie współdziałali. W podejściu proceduralnym współpraca między ludźmi jest planowana, organizowana i zarządzana poprzez bezpośrednie odpowiedzi na pytania, m.in. kto potrzebuje współpracy z kim do osiągnięcia danego rezultatu w określonym czasie. W celu usystematyzowania problematyki, w artykule omówiono dwa istotne aspekty podejścia proceduralnego: metodykę organizacji projektów i procesów związanych z przepływem informacji, zwaną Inżynierią Komunikacji Biznesowej, oraz zaawansowaną platformę graficzną, zwaną Communigramem, która sprzyja współpracy w zespole projektowym i ułatwia zarządzanie relacjami wyrażonymi w postaci matrycy integrującej uczestników projektu z informacją, komunikatami i wiedzą projektową.