The Future of Collaboration

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Executive Summary

The key to efficient teamwork lies in the use of open file formats and standards. They are only way to ensured the long-term use of information in electronic form. Only through open formats and standard can you be sure that you will be able to link your data today and in the future with new devices and applications, i.e., to technologies that make life simpler and work more productive for you and your respective organization. And the high road to the implementation of open formats and standards is and will remain: Open Source software.

Today, the management of personal information stored locally on a computer is a major challenge. Add to that the flood of information that is now available via the web and email, all in real time, and you have a situation wherein data is surging through the network into the brains of knowledge workers everywhere. Unfortunately, this data is unstructured and difficult to convert into useful information.

And the only way to control this flood of data and transform these loose-ends into a coherent, integrated, global collaboration platform for knowledge workers is to adopt open software and open standards related to document formats, web services, social networking, groupware and the provision of "software as a service".

In the following comments, I will present the current situation including the key issues and limitations that need to be overcome. I will describe the informational eco-system of the future, and how we can escape from our current informational dungeon through the consistent utilization of open source software, open standards and "software as a service". Towards the end, I will talk about Open-Xchange and how it can help you accomplish these goals.

The Information Deluge

In the good old days – read, ten years ago -- it was polite to answer a letter in a matter of days, perhaps even weeks. Today, social etiquette requires that an email receive an answer within 24 hours. In the emerging "Crack-berry" and instant message subcultures, an answer is expected in real time.

We can thank the first generation Open Source projects like Linux, Free/OpenBSD, Sendmail and BIND for the spread of email. These projects made both the infrastructure affordable and cheap Internet access possible. And today, it is not only the speed of communication that is astonishing, but also the quantity and the depth of the communication that barrages the user on a daily basis. Even considering the inconvenience of sorting through spam, either manually or with an open source program like SpamAssassin, few people complain that they are getting too few emails.

Email, however, is only one component of information that must constantly be digested and worked upon. Today, it is taken for granted that each speech or presentation is updated on a daily basis. It is no longer acceptable to ask a customer basic questions about his or her business, where it is located -- even if they moved within the last week – or about recent developments. One is expected to know that information beforehand, up-to-the-minute and regardless of whether you are coming from the office, off vacation or from another customer visit.

Services such as Google (which has roughly 500,000 Linux machines) make this possible by putting a petabyte of information at your fingertips. News sites and RSS feeds deliver the news in real time, specialized Blogs distribute the gossip -- even absurd gossip about the latest iPod -- while social networks serve up restaurant recommendations. All due to open source technology projects such as Perl, PHP, Phyton, Ruby, Apache, Javascript and so on.

Pools of Data

In the good old days, we had only pools of data, perhaps a large enterprise lake of data. Information was laying around in little pockets – on a laptop with a non-removable disk drive, on a remote server, perhaps on a secretary's desktop computer or inside a mobile phone. Even worse, everyone had his or her own personal style of filing data. Fortunately, though very slowly, open data standards have been established to help us solve this problem, particularly in the office environment where the Open Document

format took root. Anyone who has tried to transfer a 10-year old Freelance presentation to Powerpoint knows how important this is.

What is wrong with email?

Email has a lot of advantages, but mainly for the "Sender". In contrast to a phone call, with email, the sender is not responsible for the delivery of the message. Once the "Send" button is pressed - the responsibility transfers to the Receiver – at least until they hit Send and become the Sender. That is the central issue with email – it is too easy to create, to easy to send and to easy to broadcast. Will better spam filters and email clients make the situation any better? Probably not.

To that point, Open-Xchange conducted a web survey and learned that everyone uses the web from time-to-time to access email, but that only 8% of users ONLY access their email using a browser. The remainder use rich clients such as MS Outlook, Thunderbird, Apple Mail or the various Linux Clients.

As we have already learned with spam, one can fight viral problems only at the source. So the real answer is fewer emails. Think of email as similar to a notification tool like SMS and not a transport vehicle for megabyte-sized documents delivered in proprietary data formats. And I hope with the wide adoption of smart phone, the latest of which is the innovative iPhones from Apple, we will finally see an end to the way email is currently used and a transition to a more sensible mode of communicating.

Webaratur

How did we actually function before the web was invented? Because today the Internet defines, in fact it dictates, the daily routine of the knowledge worker. We now have 'web chores' that we have to cycle through everyday, whether we like it or not. Reading email and blogs are becoming perpetual chores. While web research is clearly an improvement over the library, we weren't expected to go to the library every day. And there is no end in sight. Web site technology keeps getting better. The technology juggernaut called AJAX (which stands for asynchronous Javascript and XML) not only improves the functionality of web sites, but through web services it gives them a programming interface. And now that a programming interface is available the pre-condition data integration has arrived.

Hosted Services - "software as a service "

The enormous spread of Internet service providers ("ISP") was also made possible by availability of free, open source infrastructure software. These technologies enabled ISP's to offer affordable domains (DNS/BIND), packet routing (IP stack), firewalls (IP-Tables…), web services (Apache, Tomcat…), email (Sendmail, Postfix, Exim…), data base services (MySQL, PostgeSQL…) on hundreds of thousand of cheap PC servers based on standards. The telcos jumped on board to the supply „of the last mile "and broadband connections. They completed the infrastructure that made hosted services possible and paved the way for companies such as Yahoo, Google, United Internet (1&1, GMX, Web.de), Verisign and thousands of Internet infrastructure providers to emerge who could offer services at disruptive pricing or based on advertising revenue or in some cases for free.

As the Internet exploded, the cost of software became a rounding error as its relative cost trended towards zero in comparison to the enormous numbers of users. The pools started to connected directly with the ocean, with the unintended consequence that the sharks invaded the pools.

Information Jail

If you look more closely at a data pool, you will come to realize that it is, in fact, a moat around a medieval castle. Embedded in the castle wall, you will find the various spots where information is stored: isolated, non-removable disk drives with individual file structures full of documents in different formats, email accounts, email repositories, address lists in different devices and clients, and, as if that is not enough, in the data center, web servers, application servers and data base servers that house mountains of information. The entire knowledge of the enterprise is incredibly distributed, it is hard to find a piece of information, and if the information is found it is nearly impossible to know if it is the most current version. And each of us know that we rarely even look for an old email or document, because it is so much easier to just email the author and ask for a new copy.

To continue our analogy, the interior wall of the castle represents the proprietary file formats and servers that further isolate and fragment data. Anyone who has been around long enough will have changed his or her favorite office suite and email client at least once. And I ask you, how will you access your Domino server ten years from now, if you no longer own a Notes client. What are we supposed to do with Freelance presentations if we only have Open Office or a Corel Draw picture with Gimp. But not only historical

data are a problem, how will you get your Skype directory on to your mobile phone and for that matter, how do I know what Blackberry is doing with the emails that I put in their servers or Google for that matter.

The Open Source Jail Break

The 'next wave' of Open Source and Open Standards movement will have an affect similar to the spread of the Internet. Open standards for documents, instant messaging, VoIP and file transmission protocols, open standards for data formats of calendar entries, addresses etc. make it possible to create modern open source groupware systems. In fact, some already exist. These solutions combined open source software and infrastructure services (email, web server, registry server…) with open standards to create an integration platform for the entire information eco-system.

Here web services will expand the integration of the moat into the ocean. Some pre-Web 2.0 pioneers like Prodigy, Amazon and eBay already made the connection. But with the boom of AJAX based Web 2.0 sites this trend has become a tidal wave. AJAX has effected this sea change by employing a simple trick; it separates the user interface (which are short-lived and individual) from the data that brings the interface to life. Then as needed, AJAX calls this data from the web site, so that the AJAX GUI can perform its miracles. This new data structure will integrate the emerging information eco-system in such a way to "liberate" data so that it can link to the global ocean of knowledge. For example, these technologies make it possible to link addresses - in the end, we will only maintain our own addresses and identities -- and interlace them with others to build a kind of "global Xing/LinkedIn". These capabilities will also enable us to master spam, because identity management would be able to spread throughout the global network.

User acceptance

In order to realize these miracles the user has to be won over, because users don't have the time or desire to wean themselves from their familiar office automation tools. Why should a user be eager to abandon his or her overburdened Microsoft Word or Open Office Calc or Mind Manager. As sweet as the new AJAX suites are, they offer a completely different way of working. Some say that only 10% of the functionality of the individual programs is really used, and this is probably correct, but everyone uses a different 10%. Also with the mobile phones it is easy to see that they offer enormous advantages and increase productivity, but only if you are willing to work at

understanding how to use them. We should not underestimate how much learning and practice is needed to perfect the use of these programs and devices. A smart open source groupware solution that wants to be an integration platform must work with and seamlessly support these proprietary wonders of the technology (remember only 8% exclusively use the web to access email), in order for them to be accepted by all the users. So in addition to the integration of the open infrastructure services and the support of open data formats and protocols there is also the third large challenge that the integration platform must meet: it must also convert real time information and integrate with proprietary programs and devices.

Let's look at an example from the package delivery industry. There, like in many other industries, it is an established fact that most orders still arrive by fax and are manually confirmed. Therefore, any collaboration solution should have a fax integration. Second, the drivers work off of delivery routes that are constantly being changed by SMS messages; preferably SMS messages that can go directly into a GPS system and alter the route. Therefore the collaboration solution should have an SMS interface as a means of updating the drivers. Third, orders and delivery data go through the ERP system. Thus the collaboration solution also has to talk to the ERP system. The standardized address information also needs to be processed by an onboard open standards-based navigation system directly.

Technologies such as AJAX are suitable to repair some the potholes on the information superhighway but the world needs something more. Open Source groupware is ideally positioned and, in fact, it is indispensable to the emergence of an integration platform from which all information is accessible. Only through the use of an information integration platform will information workers make the next evolutionary step.

Seven requirements for the new information ecological system

1. Everything, everywhere, at any time.

   Knowledge workers need to be connect to information all the time, on any device and on any software: whether it be via mobile telephone, laptop, personal computer, home computer, Internet Café - and the desired information must be in real time and constantly available. Unfortunately, AJAX does not solve this problem. With AJAX, you will still come

up short from time to time because you won't have the correct user interface on a mobile phone as you rush into a meeting or seat through a meeting. Luckily, the pre-conditions for such a world are already present in the form of open data standards that facilitate the simple exchange of documents (like open document format, Oasis).

2. Email is not a document cannon

Documents should not be exchanged, as they are today, by email. The idea of sending a fifty-page American English contract by email attachment to 10 recipients - each of whom will store it into his or her little data pool, file it according to his or her own idiosyncratic system, then make some corrections and re-send the revised document back to the aforementioned 10 recipients – just doesn't make sense. Such a process will result in 10 different mark-ups that some poor soul will have to somehow consolidate into a new draft of a now 60 page American English legal contract. And just image that the contract is confidential and that one of the 10 recipients loses his or her laptop. Email is incredibly inefficient and fraught with security issues.

3. "Once and done"

It would be much more sensible to store a document in a central repository under version control. There is would be accessible at any time from any device, show the changes from the last version and be available for editing. You could also see who made the last correction, what version it is and could rollback to an earlier version, if need be. The same would be useful with addresses, appointment and tasks, where there would be 'owners', 'subscribers' who could control the chaos by cycling up and down versioning lists.

4. Safe only exists for things that are no more

Laptop computers with non-removable disk drives should only be regarded as temporary storage devices. It is too dangerous to save data on them. If you stop thinking about laptops as data pools, then backing up data will become unimportant. The secret will be to seamlessly connect the data pool to the wider data ocean and let the ocean handle the data preservation task. Hence the counterintuitive idea, that data is safest when it is no longer there, meaning stored locally on your laptop disk drive.

5. Open, open and open

The documents should be stored in open data formats. Thus everyone can work of them using their favorite software - Microsoft Office, Open Office, AJAX Office, Nokia S60 Office. Access must be made available through open protocols such as WebDAV, so that they can be retrieved using open standards like HTTP and get through the most common fire-walls.

6. Integrative and Linkable

The integration imperative goes further. Most of us have already encountered the problem using Instant Messaging and VoIP. Each advertising contaminated client or device uses its own address book. But there are alternative open source protocols and programs like Jabber that make seamless integration with the information eco-system possible. In addition, proprietary tools, like Outlook or Skype, have to be part of the picture for mass adaption to take place. Further, this integration must be able to extent beyond the boundaries of the individual organization and needs to operate within a web services infrastructure, so that it can also be provided as a cost effective service.

6. Usefulness produces co-operation

In this way, the knowledge of the entire company and/or project and/or individual can be available to everyone – who has the necessary entitlements – to find, view and change. The user must be able to decide which emails, documents, addresses, appointments, chat threads are available to whom and which are private and available to no one. And this setting of permissions or privacy levels must be intuitive and easy to do. Because ease-to-use will ensure adoption.

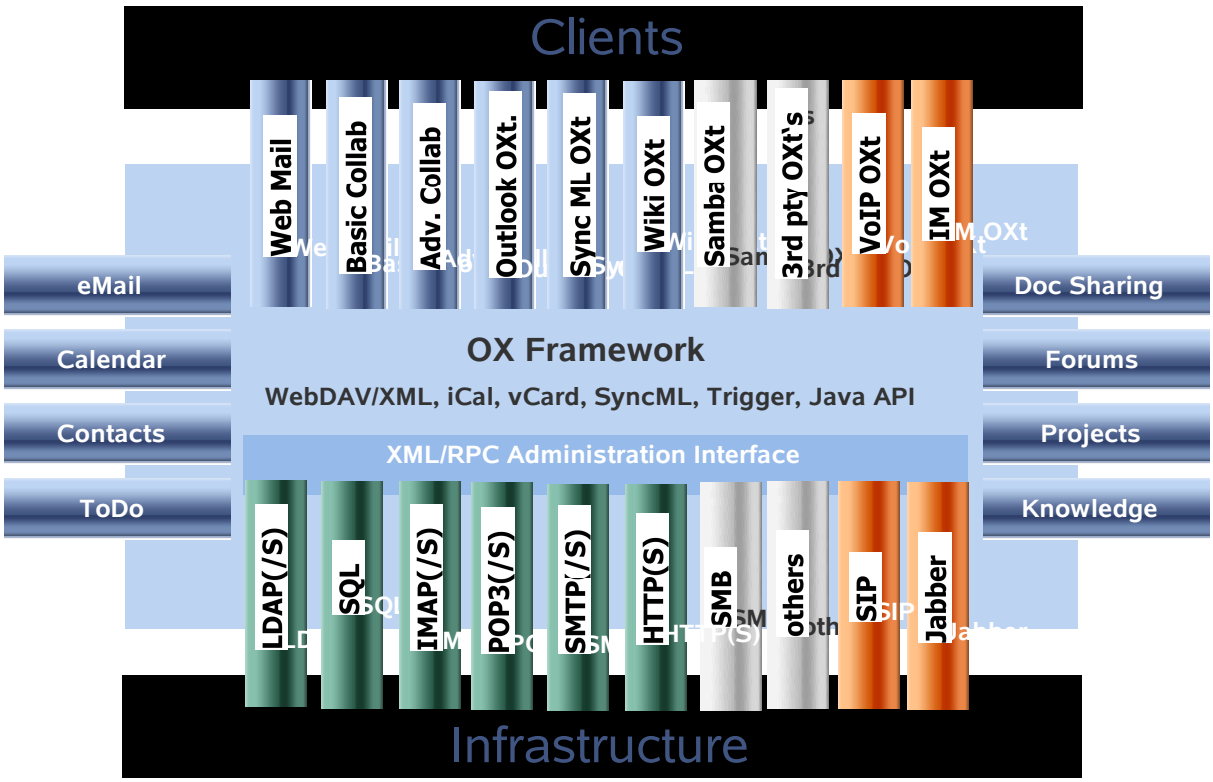
Smart Collaboration: Open Xchange

Smart open source groupware needs to be far more than just email, calendar and contacts. It must also be a repository for all desired data and offer advanced functionality. Further, it must manage the integration of the unconnected single solutions (“point solution”) on as manay devices as possible and rely as much as possible on open standards, protocols and data formats. Finally, it must be architected so that it can serve as

an expandable integration platform into which existing and new solutions can be merged over time. It should offer more than one way of combining something and offer several integration paths for each application, for example the sharing of a text editor in an instant message window.

And it should be "software as a service" ready which means it needs multi-tenant and multi-domain capabilities, has be highly scalable both vertically and horizontally, must enforce strict modularity rules and integrate or embed into existing infrastructures related to authentication, provisioning, billing and support.

Open Xchange integration platform



The "Information Sources" for an integration platform are comprised of standardized open source services as shown at the bottom of the picture labeled Infrastructure. And these standardized services have been used millions of times and are hardened applications or code. So email is really just an SMTP service – it could be Postfix or Sendmail or some other service, or for that matter, one of the homegrown systems that web hosters have developed, as long as it is strictly compliant with open

standards and protocols. The same concept applies to the data store whether it be MySQL or PostgreSQL etc, …) or the data feed from an instant messaging solution (if it is based on the Jabber protocol) or registry services. Then the concept can be expanded to include interchangeable anti-spam and anti-virus solutions, Failover, Backup etc. - here the circle keeps expanding because things don't have to be reinvented -- existing investments can snap into the platform. This is why an open source software developer doesn't need an army of programmers because it can build upon existing, proven, best-of-breed components, solutions or tools.

These services merge into the Platform and are made available for actual Groupware applications and Community extensions through the use of open interfaces such as XML/RPC. In addition, to the baseline groupware functions of email, calendars, contacts and tasks, the Open-Xchange Sever implements a set of advanced collaboration features such as document sharing, projects, knowledge data bases and wikis. Since all functions are based on standard data formats as shown in the middle of the picture, Open-Xchange can ensure interoperability between the services. Beyond that there is a rich Java API, through which the platform can be extended and let's you can get at everything in the system. This allows for rapid platform extensions through the community.

Functions, which open Xchange server does not make available directly, can be made available through open API's and data formats. So for example "the Samba OXtender" was developed by a partner in France, Idealix. It is a way to extend the functionality of Open-Xchange Server into the management of user lists and file repositories in the Windows environment. And if that is not enough, you can work with entire Java source code and with an active Community.

Reuse the new way

The user also needs alternatives. The web interface (which will be based on AJAX in the next version of the Open-Xchange Server) must offer all the functionality through a standard browser. Currently, everyone occasionally uses a web interface, but most of us prefer to use our longstanding "Mail and Groupware Client. Not to worry, these will continue to integrate seamlessly and effortlessly. This becomes still more important when considering the Smart Collaboration features that let you store existing or new, private or public, version controlled, linked and serarchable

documents. Here the requirement cannot be to force the user to switch to a new office suite – you might be able to get some of your employees to use it – with a lot of cohesion and retraining – but you will never get your suppliers to use it, God forbid the lawyers and bankers.

But there is a smarter way to get this done. Implement the open standards that have existed in for the office arena for quite some time such as the open document format. A Smart Collaboration solution will embrace such standards and use them as the native format for storage of complex documents.

So users can continue to work with existing document and presentations by storing then in a central repository like Open-Xchange Server where they can be subjected to version control – in fact version rollback like a Wiki – where the user can set permissions or privacy settings related to who can see, write or delete them, they can be linked to all other collaboration objects, like appointments, contacts or forums or simply to other documents. The user can access the documents directly through a browser, without having to download the data to the desktop, and work on the document in the browser from anywhere in the world and on any type of browser-compatible device. And as utility increases viral adoption ensues because the famous network effect kicks in, like it did with fax machines and online auctions with ebay.

The Hosting Channel

Open-Xchange is architected to work in a "Software as a service" or "Web Hosting" or "Application Service Provider" infrastructure. That is because Open-Xchange is highly integrative. And it is based on open services and standards. Hence it fits into the existing infrastructure of the service provider, for example at the mail engine, data base or control panel levels.

With Smart Collaboration, hosters can also offer functionality to their customers that heretofore was not available or affordable. All the way to an enterprise data store on shared or dedicated servers.

Open-Xchange has been architected to optimize CPU and disk usage so that the service provider can maximize profitability through the load balancing of CPU and storage devices. Users benefit by avoiding the time

and expense of acquiring and installing infrastructure. They simply grow in line with their needs and buy capacity on an on-demand basis.

The Partner Channel

The Partner Channel benefits from Open Xchange by having a "drop in" solution in form of a virtual image (VMware, Xen), or one that installs directly with a Linux distribution. In more complex environments, it runs on Enterprise Linux distributions. An Open-Xchange based solution can be used "as is" by a customer (no or little professional services required), or part of the value-added bundle provided by a partner including hard-ware, storage, and systems integration services. Open-Xchange works for 5 users and for 5 million.

Roadmap

In April 2005, the Open-Xchange Server 5 for RHEL and SLES was intro-duced. In the first quarter 2007, the next version of Open-Xchange with new AJAX GUI and strongly extended Hosting/SaaS abilities will be re-leased.

Conclusion

The key to efficient teamwork lies in the use of open file formats and standards. They are only way to ensured the long-term use of informa-tion in electronic form. Only through open formats and standard can you be sure that you will be able to link your data today and in the future with new devices and applications, i.e., to technologies that make life simpler and work more productive for you and your respective organiza-tion. Open-Xchange makes Smart Collaboration available today.