KDE MultiMedia Meeting 2006

Final Report

May 26-28, 2006

The Netherlands

www.kde.org
www.kde.nl

Foreword

Aaron Seigo

It has been observed that low cost computing combined with global communication via the Internet created the perfect environment for Free software development to come of age and explode in size and complexity.

The KDE project has been a beneficiary of this "perfect storm". Over the last 10 years the bulk of KDE development has been coordinated via the Internet by participants on six continents from the comfort of their homes and offices using affordable computers.

However, we discovered that there are certain times when it is more effective to gather in face-to-face meetings, particularly when it comes time to make difficult large-scale decisions and implement keystone technologies upon which the rest of the project rests. Therefore we have augmented our Internet-centric efforts with regular in-person meetings. A good example is the KDE3 meeting which preceded the KDE 3.0 release and resulted in thousands of source code and art related commits in the span of just one week.

Just as importantly, these meetings allow contributors to spend social time with each other in person. This helps strengthen the shared sense of community and teamwork. This has long lasting, positive effects when it comes to clearer communication and a more energized creative effort.

Most recently, thanks to the organizational efforts of KDE-NL, KDE e.V. and many of our partner sponsors,

nearly 20 individuals from four continents travelled to the Netherlands to work without distraction on the multimedia needs of KDE4. They called the event "K3M": the KDE MultiMedia Meeting.

As with other such meetings in the past terrific progress was made. Not only did several of our individual multimedia communities come together and forge a more unified, stronger whole but technical progress was made on several fronts. This included improvements on the KDE4 multimedia framework Phonon (improved robustness and a more accurate reflection of real-world use cases) and the stand-out multimedia application Amarok (dramatically improved start up times as well as an initial port to KDE4).

It is undeniable that the investment in time, effort and finances required to make K3M a reality has already been exceeded by the results. All involved deserve congratulations. But we're not stopping here: building on the success of K3M as well as the recent Krita, KDE4 artwork and Akonadi groupware meetings, we look forward to the KDE Four Core library development hot-house in July, the KOffice2 drive in the fall and many other such meetings over the next 12 months.

We invite our partner organizations as well as everyone in the broad and thriving KDE community to join us in helping make KDE4 the unqualified success we all envision it to be by continuing to support these creative events.

Sincerely,

Aaron Seigo
KDE Software Architect and Developer
KDE e.V. Board

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Semprix

open source it

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Note on the naming

On Friday May 26th the KDE 4 Multimedia Meeting saw its official kick-off. During the early preparations we wanted to redo the 2005 KDE-PIM developer meeting and coined the name 'K3M' to reflect the three M's in 'KDE MultiMedia Meeting'. Just days before the event, however, several more small-scale KDE developer meetings were announced, all focusing on the upcoming fourth generation of KDE, but on other areas than multimedia.

With all these KDE-4-themed events scheduled we wanted to have a common branding, and all events will start their name with 'KDE Four'. The name K3M for the multimedia meeting was accidentally transformed to 'K4M' by some authors. As this happened only two days before the meeting we already had logos and everything using the name 'K3M'. In this Final Report we use K3M, but some articles on the web may refer to the same event as 'K4M'. Both expressions stand for the meeting that took place from May 26th to May 28th, 2006.

The K3M Organisation Team

Het
landgoed   Wallsteijn
bevindt zich op ongeveer 20 km
ten zuidwesten van Breda. Het ligt
temidden van enkele andere landgoederen
zoals o.a. de Oude Buissche Heide, De Moeren,
De Reten en Lange Maten, waar ook beroemdheden
als Vincent van Gogh en Henriette Roland-Holst hun in-
spiratie vonden. De Annahoeve, waarin het vergader- en
cursuscentrum is gevestigd, is een van de oorspronkelijke
aanhorigheden van het landgoed Wallsteijn.

Dear Reader,

Claire Lotion

Right now you are reading the Final Report of the KDE Four MultiMedia Meeting (K3M). The meeting took place from May 26th to May 28th 2006 in the Netherlands. This report looks back at the event and highlights various exciting things that happened during those three days. The achievements made, would have taken several weeks, if not months, if the developers would not have had this unique opportunity to meet each other in person. K3M was made possible by the generous sponsors who helped us finance the meeting, from travel cost to lodging, and even assisted us with everything else involved with an event like this.

Many of the organization people from KDE-Netherlands have previously attended similar contributor meetings. With this experience in mind we took on the role of organization team to host a meeting for the KDE multimedia developers. It is always a bit hard to predict the outcome of developer meetings beforehand, so we based our expectations on our own experiences. Yet, we could not have been more modest. The multimedia developers exceeded our expectations by far and got so much work done that this meeting will be remembered as one of the most productive KDE developer meetings to date.

Organizing the K3M has been a very nice experience. As with everything that involves lots of coordination and arranging there were moments of stress and frustration, but these were quickly forgotten after we saw

all those people happily hacking together and highlight after highlight started to pour in.

This meeting has also been the first KDE event that was organized in cooperation with the KDE Marketing Working Group. The Marketing Working Group was set up after the international KDE aKademy conference in the summer of 2005 and is streamlining and professionalizing KDE's promotion effort. During the event we collected lots of ideas for procedures and we have written a lot of documentation, so the marketing team has also reached its goals for K3M.

We hope that you will have as much fun reading about K3M as we had to make it happen. Moreover, we hope that this report and the meeting itself will provide people with inspiration. Inspiration for the multimedia developers to continue writing the world's best computer software, but also inspiration for everyone who assisted us financially or otherwise to join forces again in the future.

Our thanks fly out to everyone who made K3M the success it has been: the people from KDE-NL, the sponsors, the participants and all other people who were involved in one way or another. Without you the meeting would not have been as exciting and without you there would not be the booklet you're reading now!

Cheers,
On behalf of the K3M Organization Team,
Claire Lotion
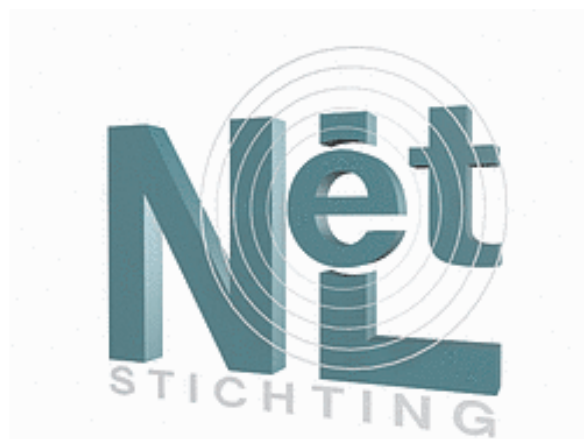
Stichting NLnet

Stichting NLnet is a non-profit organisa-
tion. The mission is to advance network
technology. The philosophy is Open Source.

NLnet supports a wide range of projects and
activities, varying from software development
and scientific research to information dissemina-
tion in the form of workshops, conferences and ex-
change programs.

All results of research and development sup-
ported my NLnet, such as software, publica-
tions and experience, are made available
under open source software licenses
for further development, deploy-
ment and distribution.

The Meeting

Martijn Klingens

May 26th, 2006. In the south of the Netherlands, only a few kilometers from the Belgian border, the KDE MultiMedia Meeting officially opened.
Assembled were 15 of the most talented programmers of audiovisual (multimedia) applications, as well as experts on making user-friendly computer software (usability) and the organization team from KDE-Netherlands.

Everyone at work.
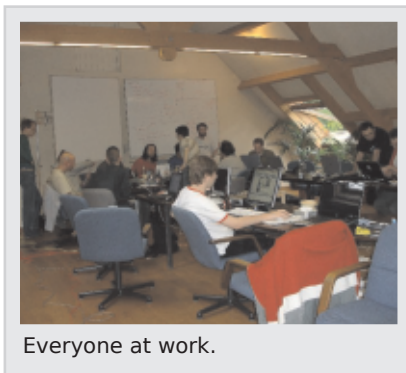
Developer meetings for open source software projects are relatively rare, with many developers meeting each other at most once or twice a year. Most of the KDE Multimedia people had never met before.
While the popularity and quality of free software have shown that people from all around the globe can write excellent software without meeting eachother face-to-face, there is no denying that 'real' meetings can lead to a lot of inspiration and accelerate development tremendously.

The KDE MultiMedia Meeting was no different. Besides all the discussions about long-term plans that will prove invaluable for several months to come there were also very tangible results during the meeting itself.
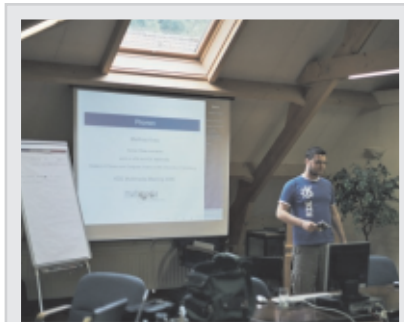
Looking back at K3M the meeting exceeded the wildest expectations of the organization team and the developers involved.

Friday:
Meeting kick-off
The meeting officially started at noon, but the organization team,

Official event kick-off by Sebas.

the usability people and four of the developers were already at the meeting venue, the Annahoeve, since the early morning.

Things were up and running rather quickly and some smalltalk went on. The afternoon started with a brief keynote, followed by presentations about Phonon and Amarok.

Phonon
Matthias Kretz talked about the basic design goals of Phonon. It should provide the multi-media support that 80% of the applications need in a simple way; the other 20% are simply not its focus. For example, if an application needs precise control at sample level, it is better off talking to a media framework directly. Generally speaking, most applications just need some basic things like playing or streaming video and audio.

Matthias further explained how effects worked, what to consider when building a back-end and demonstrated some some code examples.

> **Phonon should provide the multimedia support that 80% of the applications need in a simple way**

Amarok 2

Max Howell talked about moving to Amarok 2 and the Windows port that will come with that. The developers are excited about Amarok 2 and they really want to move on and work on it.

A core redesign is needed to prevent regressions from coming up in new releases. This weekend will be used to plan large parts of this redesign.

Ssshhhh... KDE hacker at work! Sebas is clearly an experienced couch hacker. :)

Max also pointed out some issues with packaging, mostly due to packagers making weird choices when building Amarok packages like depending on MySQL. These things should be solved by making packaging Amarok easier and by more communication with the packagers.

> The developers are excited about Amarok 2 and they really want to move on and work on it.

Other topics were Last.fm and Audioscrobbler integration. Last.fm offers more services that Amarok doesn't yet make use of, such as tagging songs with meta data, sharing this additional data and other information about songs -- the Amarok developers want to add support for this.

Last.fm also offers personal radio streams, with for example your favorite music, or music listened to by people with a similar taste. Integration in Amarok will allow you to skip songs in the stream, and Last.fm

even learns from your listening preferences, improving your music profile.

Usability

Usability has always been an important focus in Amarok, but it's hard to get consensus about certain issues. Being able to meet face to face is especially important for usability discussions. With the help of the experts

> **it's hard to get consensus about certain issues.**

from OpenUsability available at the multimedia meeting several discussions about the user interface for Amarok 2 took place.

After a great dinner the hacking continued. Lively discussions and silent hacking were intermingled, until everyone was brought back to the hotel shortly after midnight.

Saturday:
Highlights All Over the Place

The Saturday started as rainy as the Friday had been. The weather did not stop the developers though, and the multimedia meeting was definitely up to speed.

Talk, talk, talk. Sometimes more serious topics, sometimes less.

The morning started off quickly, with several people already busy at 9. It was filled with hacking sessions and small get-togethers.

Amarok

Shortly after lunch the developers discussed their results so far. These were impressive, to say the least, consid-

ering that the meeting was only halfway.

Christian Mühlhäuser and Seb Ruiz had been working on optimizating Amarok's startup time. They gave the context browser a speedup of aproximately 50% and the playlist browser now loads 40-60% faster, resulting in Am-

The local peacock tried to impress the K3M team.

arok now starting up roughly twice as fast as it did before.

Meanwhile, Bart Cerneels was working on the Podcasts. They sometimes have very long names, with a lot of redundancy. He tried to build some code to shorten them, without having to throw away information.

Martin Aumüller made it possible to drag and drop files from any KDE application into Amarok, which will then add them to the database, in a location based on the tags in the file.

Phonon

On the Phonon front, Matthias Kretz redesigned large parts of Phonon completely after a talk with Thomas Zander (of KOffice fame). Matthias decided to start experimenting with a few internals, which had to lead to a more flexible system. The current, almost-finished, backend API will not be affected, though.

Talks with the Amarok people also prompted him to enhance the communication between applications and Phonon.

KMix

Christian Esken has been working on KMix. In cooperation with Matthias and usability expert Florian Graessle they decided on the implementation of several features, based on use cases Florian provided. Integration of the "Solid" framework went into KMix, so hotplugging will work in future versions of KMix.

Florian also teamed up with Mark Kretschmann to enhance the usability of the script control in Amarok. Amarok's "own" usability expert, Dan Leinir Jensen Turthra, worked with several other Amarok developers to create the next-generation Amarok.

KIO file seeking

Allan Sandfield Jensen had been working on KIO file seeking (as part of his Google Summer of Code project), and his announcement of a more-or-less working proof-of-concept implementation was recieved by a big applause from the other attending hackers.

The value of his work will be clear to anyone who wants to use files over a network, because the new seeking support for example makes it possible to skip forward and backwards in a song or video that is stored on a remote machine at the other end of the internet.

Three fifth of the organisation - getting everyone to work... even themselves.

Allan's work will have great impact on other applications as well, making it possible to retrieve only parts of the information of a certain file. This takes away the single most important problem when us-

ing KIO and its network transparency for all kinds of tasks and makes KIO as a way of retrieving data much more useful.

Amarok

Ian Monroe and Max Howell had been working on better error messages for the users if

Porting Amarok to KDE 4.

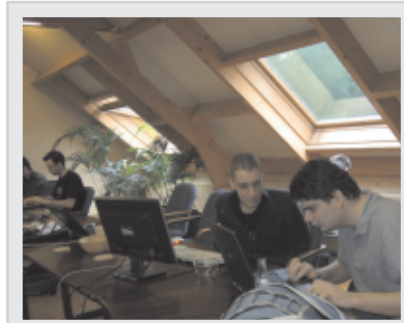the distribution they use has no mp3 support (which often is the case for legal reasons).

The distribution will have to provide a script for Amarok so it can offer the user to automatically install the necessary components. Cooperation has already been promised by Jonathan Riddell from Kubuntu.

A few hours after lunch, the Amarok developers spent considerable time whiteboarding and discussing the basic design of our favorite audio player. This time they went really in-depth, and there was a heavy discussion going on.

Thomas had been working with the Amarok developers during the day on several design and usability issues, and was also involved in the whiteboarding of Amarok 2. An important goal was to design Amarok to become smaller, and thus faster and easier to maintain.

By improving Amarok's design, they hope to make it easier to develop things like extensive plugin support. But design-wise this is hard to do and there are serious security-related issues. Aside from the basic design, things like quality control, usability and the "target user" for Amarok have been discussed.

Meanwhile, the developers not involved with the dis-

cussion generally used earphones to avoid the discussion and continued to hack away, or talked in small groups.

Gábor and Alexandre have been busy porting Amarok to Qt 4, and they got close to getting it to compile.

After the excellent dinner everybody went upstairs

again to continue their work or implement some of the stuff that had been discussed, until everyone went back to the hotel again during the early hours after midnight.

Sunday:
More Achievements Before Returning Home
Because of the long Saturday people started a bit later on Sunday. Nevertheless, Amarok saw more improvements, like 'inotify' support, which notifies the application on changes in the filesystem.

If you change something to your music files, like moving or renaming, Amarok will now automatically get updated without having to actively poll for changes anymore.

Everybody admires the Amarok port to KDE 4.

Even more impressive was the port of Amarok to the KDE 4 platform. Gábor and Alexandre got their port actually working on Sunday, resulting in lots of compliments from the other developers.

"I accomplished as much in two days, as

OMG - so much more to do...

otherwise would probably have taken two weeks," Gábor said, which clearly shows the productive environment in Achtmaal.

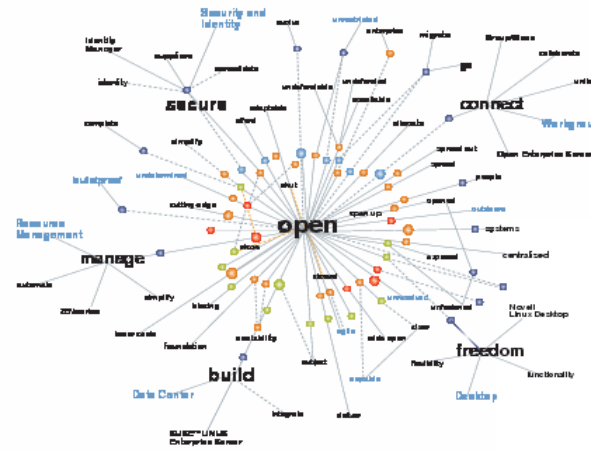Phonon got introspection support. For application developers like the Amarok team this will be very useful for debugging, like finding out what is going on 'under the hood' at any time. It will certainly make troubleshooting for application developers building on top of Phonon a lot easier, leading to even higher quality software and faster development in the future.

Much more in-progress work was taken home, as well as countless ideas, design decisions and other forms of inspiration.If the success of a meeting can be measured in tangible results then surely K3M qualifies as a very successful meeting.
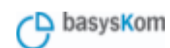

Everyone say Keeeyboard!

IT-SYSTEMS ARE LIKE A BIOTOPE.

ONLY WHEN THEY ARE BALANCED AND

ORGANISED, THEY BUILD A HABITAT.

basysKom

Phonon at K3M

Matthias Krez

Phonon was one of the central topics for K3M even if only two developers at the meeting were actively working on the code. With the presentation of Phonon three topics came up: "gap-less playback", "meta information/tags" and "seeking in KIO". Also Thomas Zander and I had spoken about the internal design of Phonon at LinuxTag and had scheduled to continue the discussion at K3M.

MediaQueue

The MediaQueue class is an idea that was born right at the discussion following the talk about Phonon. Modern media players want to be able to have exactly no gap between two audio streams. In order for a back-end implementation to achieve that it has to know which two audio streams have to follow each

> The meeting was very productive and exceeded my expectations.

other. Therefore the MediaQueue class was born to define what media streams have to follow each other and how to do the transition, which can be an arbitrary gap or a cross-fade.

Meta-Information/Tags

Phonon currently does not include any means to handle meta information. The problem here is that I am not familiar enough with the topic to define the requirements - somebody would have to step up and write them. But there's also the possibility of putting

some of the meta information extraction into KIO as Allan Sandfeld Jensen noted.

Seeking in KIO
Allan mostly worked on how to make seeking possible in KIO. Till now KDE can only stream data from start to end. For Phonon it is important to be able to seek back and forward in a stream so that seeking can be implemented also for media data at arbitrary KIO URLs. The work was mostly a proof-of-concept to identify possible problems with the addition of seeking to KIO.

Dynamic back-end interfaces
The most interesting change for me was the complete removal of all back-end interface classes that resulted from a discussion with Thomas. Till then the back-end functionality had been defined using abstract classes that had to be implemented by the back-end. This is of course a hard requirement on binary compatibility as no virtual functions can be added or removed later on. An even bigger problem was the class hierarchy that got complicated to manage internally because of multiple inheritance and the inability to use QObject for the interface classes.

> ... back-ends are not forced to provide any functionality anymore

At K3M I made all front-end classes call their back-end counterparts using QObject::invokeMethod which is Qt's dynamic way to calling methods on an arbitrary QObject. This change resulted in less code (and less code duplication) and a simpler design.

Since now back-ends are not forced to provide any functionality anymore I wrote a script that creates tests for the back-end to check for the existence of necessary and optional methods. Those tests already expased a lot of problems that were either caused by a bug in moc, old bugs in the Phonon code or simply by typos I made when adapting Phonon to the new dynamic interfaces.

Conclusion

All of these changes were the results of face to face discussions that are not possible in this manner without meetings like K3M. The meeting was very productive and exceeded my expectations. Also the possibility to make contact with most of the Amarok crowd (and see them in action) was very important.

Phonon hacker at work.

KDE
OpenUsability

Florian Graessle

When KDE-NL asked OpenUsability to participate in the KDE MultiMedia Meeting in Achtmaal, one thing became obvious: usability inside KDE is now part of the actual development process. As much as usability work is about investigating the users' needs, it is equally important to have a good relationship with the developers. That's why face-to-face meetings like K3M are so important to us usability specialists. Usability is a delicate matter, but the results of KDE MultiMedia Meeting show that KDE developers and usability specialists have both learned to listen to one another and work closely together:

From my previous experiences with the Amarok developers I already knew that they are paying a lot of attention to the usability of their product. So the

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Usability

Usability is a term used to denote the ease with which people can employ a particular tool or other human-made object in order to achieve a particular goal.

In human-computer interaction and computer science, usability usually refers to the elegance and clarity with which the user interface of a computer program or a web site is designed.

source: Wikipedia

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discussions about the amarok user interface took place on a high level - and were in fact productive. In the end the amarok developers came up with a re-design that is both visually appealing and in comparison with the previous one more usable for the tasks users generally accomplish with amarok.

Usability inside KDE is now part of the actual development process.

Regarding KDE Multimedia on a broader range I was pleased to discuss with both the Phonon and the KMix maintainer how application and system volume settings interact with one another. One of several possible usage scenarios: A user is listening to her favorite music selection with Amarok when suddenly a voice-over-IP call is coming in. What is supposed to happen regarding the volume levels? Mute the media player until the call is done? Pause Amarok? And what happens when the user hangs up? What's the best way to present the user with the various options to interact? And which ones should it be?

These are all exciting questions that need further investigation and research for which the talks and discussions at the KDE Multimedia Meeting laid the foundation.

OpenUsability

Amarok at K3M

Seb Ruiz

The KDE MultiMedia Meeting was an invaluable asset to the Amarok development team. It provided us with an optimal environment for meeting each other, having fun and developing effective roadmaps and understanding of the directions which we will take in the future.

Allowing the development squad to meet in a central location for a continuous amount of time was excellent. This has without a doubt strengthened our bond as co-developers, and fuelled great enthusiasm and motivation to work on the project.

Some of the technical achievements which occured include:

- Substantial optimisations in the context, playlist and media browsers
- Usage of iNotify technology
- Script manager UI changes
- Beginnings of a port to the new Qt4 API
- Major user interface redesigns
- Brainstorming of future, cutting edge technologies

> **This has without a doubt strengthened our bond as co-developers**

These achievements would not have been possible in such a short period of time without the ability to discuss changes with those developers sitting beside each other. It was possible to sketch inter-

faces, create algorithm designs and decide upon appropriate design patterns in group meetings and each developer was able to provide personal opinions and feedback.

One of the highlights of the meeting was a substantial and thorough hour long discussion about the direction which we, as developers, should take. This forum included past experiences, future developments (Amarok 2.0, and general design methodologies), licensing, plugins, bugs, quality management and a host of further topics.

This meeting no doubt exceeded anybody's expectations. Smoothly run, hassle free and productive - surely there could be no better way to create an effective environment for programming!

The Amarok team and its analog roots!

Links

 amarok.kde.org

 phonon.kde.org

 www.openusability.org

 www.kde.nl/agenda/2006-05-k3m/

 www.kde.org

 www.kde.nl

Een leuke (bij)baan in de IT?

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