

Thomas Fischer (fischer@unix-ag.uni-kl.de)
Desktop Summit 2011 – 7 August 2011 – Humboldt University of Berlin

KParts Browser Plugin

Bringing KDE Components to All Browsers



About Myself

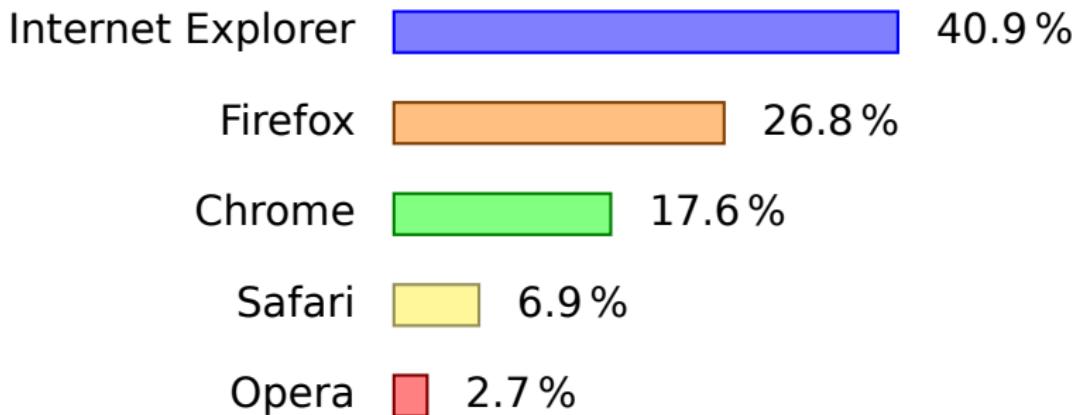
- **Thomas Fischer**
- Background in **computer science**
 - **MSc** in Darmstadt, Germany
 - **PhD** in Kaiserslautern, Germany
- **Lecturer** at the **University of Skövde**, Sweden
- Using **KDE** since **late 2001**
- **Translator** English → German ~ 2002 to ~ 2005
- Started **KBibTeX** in 2005
- Started **KParts Plugin** in 2009



What is Your Favorite Browser?



What is Your Favorite Browser?



Wikipedia: Median values over several browser usage statistics for June 2011



What is the KParts Plugin?

- It is a **Netscape-compatible browser plugin** as you know from Flash or Acrobat Reader
- It uses KParts to present **embedded documents**
 - PDF, PostScript, ...
 - Office documents
 - Audio and video files
- **330 supported mimetypes** on my laptop



Some Screenshots

The image displays two side-by-side screenshots of the "The KDE Partition Manager Handbook" PDF document. Both screenshots show the same content, including a table of contents, the title page, and a footer logo.

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Title Page:

The KDE Partition Manager
Handbook
Volker Lanz

Footer Logo:



Bottom Right Logo:



Bottom Text:

Desktop summit

Live Demonstration

```
1 <html><head><title>Plugin Test</title></head>
2 <body><h1>Plugin Test</h1>
3 <p><object type="application/vnd.oasis.opendocument.presentation" data="http://blog.freifunk.net/files/freifunk-mitmachen.odp" width="900" height="600">Plugin not available?</object><br/>Same file as a <a href="http://blog.freifunk.net/files/freifunk-mitmachen.odp">link</a>. </p>
4 <p><object type="application/pdf" data="http://www.bvg.de/index.php/de/binaries/asset/download/20909/file/1-1" width="800" height="700">Plugin not available?</object><br/>Same file as a <a href="http://www.bvg.de/index.php/de/binaries/asset/download/20909/file/1-1">link</a>. </p>
5 </body></html>
```



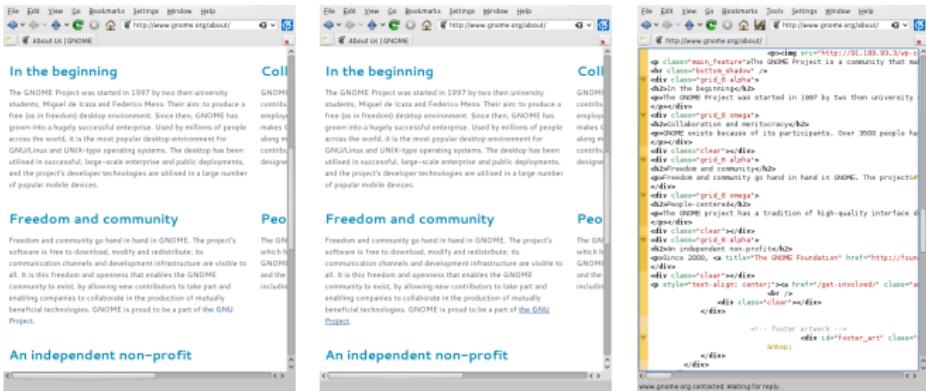
Advantages using the KParts Plugin

- Brings your **favorite applications** to your **favorite browsers**
- Brings browser plugins to **architectures where not alternatives exist**
- **Open-source browser plugin** instead of binary-only, closed-source browser plugins
- **Save to file** for later use
- **Open in external application**
which does not need to be KDE-based



KParts for Gnome Users

- **Component framework** (like Bonobo?)
- **Example** Konqueror uses a **KHTML** part to view web pages or a **Kate** editor component for text



KParts - Everywhere in KDE

- **Okular** is only a shell around the Okular plugin
- Same holds for **Kate, Dolphin, KOffice, ...**

The Computational Complexity Column
by
Lutz PFANNSCHMIDT
Department of Computer Science
University of Chicago
1100 East 58th St., Chicago, IL 60637 USA
<http://www.cs.uchicago.edu/~lps/>

I have come back to the University of Chicago and so has the webpage for the column. See also the new URL and contact information.
There are still some minor differences between (and optimized) column and whether the P = NP question is independent of the usual axioms system. But if you
P = NP question is independent of the usual axioms system. If you are interested in reading or even
I am grateful to my colleagues for their support.

Is P Versus NP Finally Independent?
Scott Aaronson
Computer Science Dept.
University of Texas at Austin
Austin, Texas 78712 USA
<http://www.cs.utexas.edu/~aaronson/>

Abstract
This is a review about the title question, for people who (like the author) are tired
of fighting, reading, and rereading the same old sources. Beginning with a basic overview
of the P vs. NP problem, it then surveys the literature on the question, from the first
attempts to prove P = NP to the latest developments, and shows that despite a lack of progress in
settling the question, the situation is not as dire as one might fear. It ends with a brief
outline of what would be needed to settle the question, and a final note that even if we
can't settle the question, we can still learn a lot about computation along the way.

1 Introduction

The P vs. NP problem has been called "one of the most important problems in contemporary mathematics and computer science". This is no understatement. Not only is P vs. NP the defining question of our field, it's one of the deepest questions ever asked for which we have no idea how to approach it. In this survey, we will try to explain why this is so, and
why the P vs. NP problem is likely to remain unsolved for a long time to come. We will also
see that the problem is closely related to many other fundamental questions in computer
science, such as the PSPACE vs. EXP question, the PCP conjecture, and the like.

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Netscape Plugin API

- **Plugin architecture** supported by most browsers
- Small API between browser and plugin:
~ **15 functions**

Source: Wikipedia

1. At start, **browser scans for plugins**
2. Plugins notify browser about supported **mime types**
3. Browser encounters request for plugin while surfing,
locates **plugin matching mime type**
4. Browser initializes plugin, sends **mime type**,
raw data, and **space to show data in**
5. Plugin uses **X11 protocol magic**
to embed itself



Writing Plugins with Qt

- **Wrapper code** between NPAPI and a QWidget
BSD-licensed code by Nokia, not part of Qt tar ball
 - Support for X11/Netscape browser plugins dates back to **Qt 3.1** (~ 2003)
1. Let your object **inherit** QWidget and QtNPBindable
 2. **Implement virtual functions** of QtNPBindable
e.g. to read raw data from QIODevice
 3. Create a **helper object** for plugin initialization
 4. Implement your QWidget **as you like**
(e.g. load KParts)

Source: Qt/Nokia



Code: KParts Plugin's Public Interface

```
1 class KPartsPlugin : public QWidget, public ↵
  QtNPBindable
2 {
3     Q_OBJECT
4
5     public:
6         KPartsPlugin(QWidget *parent = NULL);
7
8         bool readData(QIODevice *source, const QString & ↵
9             format);
10 }
```



Code: Plugin Initialization

```
1 class QtNPClassList : public QtNPFactory {
2 public:
3     QtNPClassList() {
4         initAllMimeTypes();
5     }
6     QObject *createObject(const QString &) const {
7         return new KPartsPlugin();
8     }
9     QStringList mimeTypes() const {
10        return allMimeTypes;
11    }
12 };
14 QtNPFactory *qtns_instantiate() {
15     return new QtNPClassList;
16 }
```



Code: Supported Mime Types

```
1 static void initAllMimeTypes() {
2     KMimeType::List mtL = KMimeType::allMimeTypes();
3
4     foreach (const KSharedPtr<KMimeType> &mtP, mtL) {
5         QString mimetype = mtP->name();
6         QString ext = mtP->mainExtension().mid(1);
7         QString descr = mtP->comment();
8
9         KService::List list = KMimeTypeTrader::self()->
10            query(mimetype, "KParts/ReadOnlyPart");
11         if (!list.isEmpty())
12             allMimeTypes.append(QString("%1:%2:%3").arg(
13                 mimetype).arg(ext).arg(descr));
14     }
15 }
```



Firefox Lists Supported Mime Types

File Edit View History Bookmarks Tools Help

about:plugins Google

About Plugins

KParts Plugin

File: libkpartsplugin.so
Version:
File viewer using KDE's KParts technology (2011-07-30)

MIME Type	Description	Suffixes	Enabled
application/atom+xml	Atom syndication feed	atom	Yes
application/base64	Base64 encoded data	base64	Yes
application/btoa	Btoa Encoded File	b2a	Yes
application/docbook+xml	DocBook document	docbook	Yes
application/ecmascript	ECMAScript program	es	Yes
application/epub+zip	electronic book document	epub	Yes
application/javascript	JavaScript program	js	Yes
application/mathematica	Mathematica Notebook	nb	Yes
application/mathml+xml	MathML document	mml	Yes
application/mbox	mailbox file	mbox	Yes
application/metalink+xml	Metalink download	metalink	Yes
application/msword	Word document	doc	Yes
application/msword-template	Word template	dot	Yes
application/ogg	Ogg multimedia file	ogx	Yes
application/oxps	XPS document	oxps	Yes
application/pdf	PDF document	pdf	Yes



Code: Creating the KPart

```
1 bool KPartsPlugin::readData(QIODevice *source, const QString &format) {
2     KTemporaryFile tempFile
3     copyIODevice(source, &tempFile);
4
5     KService::Ptr service = KMimeTypeTrader::self()->
6         preferredService(format, "KParts/ReadOnlyPart");
7     KParts::ReadOnlyPart *part = service->createInstance(
8         <KParts::ReadOnlyPart>((QWidget*)this, (QObject*)this);
9
10    QWidget *partWidget = part->widget();
11    m_gridLayout->addWidget(partWidget, 1, 0, 2, 4);
12
13    part->openUrl(KUrl(tempFile.fileName()));
14
15    return true;
16 }
```



Source Lines of Code

Total Physical Source Lines of Code (SLOC)	377
Development Effort Estimate, Person-Years (Basic COCOMO model, Person-Months = $2.4 \times \text{KSLOC}^{1.05}$)	0.07
Schedule Estimate, Years (Basic COCOMO model, Months = $2.5 \times \text{person-months}^{0.38}$)	0.20
Estimated Average Number of Developers (Effort/Schedule)	0.36
Total Estimated Cost to Develop (average salary = US\$ 56 286/year, overhead = 2.40)	US\$ 9701 6850€

generated using David A. Wheeler's 'SLOCCount'



Code Not Shown Here

- **Error Handling**
- **Save** as File and **Open** in External Program
- **Selection Dialog** if multiple KParts available
- **Black-listing** of mime types
- **Enabling/disabling** of mime types
- Graphical user interface (**GUI**)



Where to get it

- Check your **distribution**
(Gentoo, Ubuntu, Debian, Fedora, openSUSE, ...)
- Fetch the **sources** at
<http://www.t-fischer.net/kpartsplugin/>
- **Compile** it

```
1 tar -xvf kpartsplugin-20110806.tar.bz2
2 mkdir b ; cd b
3 cmake ../kpartsplugin-20110806
4 make
5 sudo make install
```

- You may need to install **development packages** for KDE and Qt



... and Gnome?

- **Epiphany** supports KParts Plugin out of the box
(if you have a minimum KDE installation and parts installed)
- How to make it **Gnome-aware**
 - (a) **Rewrite** KParts Plugin in C using Gnome libraries,
loading Gnome components
 - (b) Write KPart **wrapper** around Gnome components
- **Share** configuration files
- **Reuse** code?

Unlikely, too much code is Qt/KDE-specific



Future Extensions

- **Internationalization**
(so far, KLocale insists on en-US)
- Integration of KPart's **Shortcuts**, **Menu** and **Toolbars**
- More advanced browser plugin features
(scripting, printing, ...)
- Port to **Windows and Mac**
using the KDE framework
- **ActiveX** support (QtBrowserPlugin supports this)



Thomas Fischer (fischer@unix-ag.uni-kl.de)
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Thank you for your attention

Questions?

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