Leibniz-Institut für Wissensmedien
Introducing Bebop to Samba 4

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Introduction
Bebop or bop is a style of jazz characterized by a fast tempo, instrumental virtuosity and improvisation based on the combination of harmonic structure and sometimes references to the melody. [...] This style of jazz ultimately became synonymous with modern jazz [...] 

*Source: Wikipedia*

How does that definition translate to a software?
Introduction

About my Employer

- Leibniz-Institut für Wissensmedien / Knowledge Media Research Center
- Non-profit multidisciplinary extra-faculty research institute situated in Tübingen, Germany
- Main field of research: Utilization of digital media in teaching and learning
- Founded in 2001 with about 30 employees, most of them (cognitive) psychologists.
- 2014: 185 employees, i.p. 81 scientists of multiple disciplines, 38 people in service areas, 66 student assistants
Introduction

About my Employer

*Student assistants*...

... have very short-lived work contracts

... are encouraged to try out different fields of research, thus do frequent work group hopping

→ *High fluctuation* poses challenges for both HR and IT
Introduction

About me

• Computer scientist
• First contact with Linux in 1995
• Joined the IWM in January 2004
• Hired as Python programmer, now almost full time server administrator
• Advocate of open source solutions
Outline

Development of Our Samba Domain
Development of Our Samba Domain

January 2004 - Situation

- Windows NT style domain with roaming profiles on the Linux DC based on Samba 2

- **Disjunct** user databases for almost every machine/service
Development of Our Samba Domain

January 2004 - Assessment

- Substantially outdated Samba version
- Various username / password combinations per user
- No unified user or group management
Development of Our Samba Domain

End of 2004 – Situation Changes

- Windows NT style domain based on **Samba 3, OpenLDAP, and MIT Krb5**
- POSIX groups in **OpenLDAP**
- **Unified** Windows / Linux **authentication** utilizing Samba, pam_idap, nss_idap, and pam_krb5
- **Several** services still utilizing **isolated** user databases
- Samba **user management** with **smb-ldap-tools**
Development of Our Samba Domain

End of 2004 - Assessment

➔ **Up-to-date** Samba version

➔ **Fewer** username / password combinations per user

➔ **Partly unified** user / group management, not usable by laymen*

*layman pl.: laymen = non-geek
Development of Our Samba Domain

2008 – Situation Changes

- **Some** (non LDAP-aware) services still utilizing **isolated** user databases

- Samba **user** / Posix **group management** with **Bebop**
Development of Our Samba Domain

2008 - Assessment

- Samba 3 still up-to-date, but growing demand for AD

- Mostly unified user / group management, usable by laymen
Development of Our Samba Domain

Summer 2014 – Situation Changes

• NT style domain upgraded to Active Directory based on Samba 4.0.18

• Unified Windows /Linux authentication based on Samba AD, nslcd, and pam_krb5

• Most services utilizing AD user / group database

• But: Samba AD user / group management with samba-tool and bash scripts
Development of Our Samba Domain

Summer 2014 - Assessment

➔ *Up-to-date* Samba version

➔ *Mostly unified* user / group management,
  again *not* usable by laymen
Development of Our Samba Domain

2015 – Situation Changes

• **Active Directory domain** upgraded to **Samba 4.1.x**

• **RODC** in DMZ, based on **Samba 4.1.x**, to enable domain authentication for DMZ / external services

• **AD user / group management** with **Bebop**
Development of Our Samba Domain

2015 - Assessment

➔ **Up-to-date** Samba version

➔ **Unified** user / group management, **usable** by laymen
Development of our Samba Domain

Future Plans

• Let **all** services utilize AD user / group database!

→ *Exactly one* username / password per user (SSO?)
Outline

A Short History of Bebop and its Predecessor(s)
A Short History of Bebop and its Predecessor(s)

2002-2007 - VisualGroup

*Group-aware, document-centered collaboration utility*

- Written in **Python2.1**, based on the **Zope2** web framework
- Presented documents in a **folder view**
- Supported **user logins, ACLs**, and **versioning** of all content, but **user database** entirely **isolated**
- All content was being held in the **Zope object database**
- **All operations** done **server side**, i.e. no Javascript
- Used to store **publications** and internal **documents**
- Sorry, no screenshot survived :-(

SambaXP 2015 INTRODUCING BEBOP TO SAMBA 4
## A Short History of Bebop and its Predecessor(s)

### 2002-2007 - VisualGroup

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intuitive</strong> web interface to manage documents</td>
<td><strong>Intuition</strong> = programmer's <strong>intention</strong>, difficult to apply to a large group of people</td>
</tr>
<tr>
<td>+ Trans <strong>n</strong>eversioning of all content</td>
<td>- With more and more content, the user interface became increasingly slower</td>
</tr>
<tr>
<td>+ Transactional <strong>o</strong>perations</td>
<td>- <strong>Internal user database</strong> and login scheme → limited interconnection possibilities</td>
</tr>
<tr>
<td>+ <strong>Wide variety</strong> of supported platforms/browsers</td>
<td>- Based on <strong>obsolete</strong> versions of Python and Zope</td>
</tr>
</tbody>
</table>
A Short History of Bebop and its Predecessor(s)

2006-Today – Bebop 1.0

*Group-aware, collaboration-centered document and content management utility*

- Written in **Python2.4**, based on an early development snapshot of the **Zope3** framework
- Supports **different views** on the **same content**, e.g. Wiki, Blog, folder structure → "content improvisation"
- **AJAX** interface including **WYSIWYG editor**
- Highly **configurable** → most features can be enabled or disabled on demand
- All content is being held in the **Zope object database**
- Supports **LDAP** user **authentication**, recently adapted to Active Directory
A Short History of Bebop and its Predecessor(s)

2006-Today – Bebop 1.0

Screenshot of Blog view

Viel Erfolg Sebastian Staendecke 9. February 2006 00:18
An alle Mitstudenten: viel Erfolg bei der heutigen Klausur!

Frage: Massenkommunikation Anton Siegordner 7. February 2006 15:58
Die Kriterien der Massenkommunikation: indirekt, einseitig, öffentlich, an ein disperses Publikum. Wie könnte das Medium TV mit seinen umfangreichen Spezialangeboten, wie z.B. eine Liveshow, bei der Telefonanrufe (aus dem dispersen Publikum angenommen und beantwortet werden) hier klassifiziert werden? --> Rollenwechsel von Aussagendem und Aufnehmenden. Den das Medium TV ist doch zweifelsohne ein Massenmedium?!? Gib More...
A Short History of Bebop and its Predecessor(s)

2006-Today – Bebop 1.0

Screenshot of Wiki view

Index Page

Abstimmung Sonja-Michael
Hochschulen / Unis / Weiterbildung
Dokumentation Studie 1 (Fallarbeit)
Anleitungen Second Life
Kurzhilfe_Bebop-Wiki_gekürzt.pdf
Konzeptentwicklung Experiment 1

[Bereich des Wissens]

Bildungsinstitutionen + Ansprechpartner

SambaXP 2015 INTRODUCING BEBOP TO SAMBA 4
A Short History of Bebop and its Predecessor(s)

2006-Today – Bebop 1.0

Screenshot of Folder view

With the "Move" commands you can determine the order in which the folders are shown in the "Topics" menu to the left.
# A Short History of Bebop and its Predecessor(s)

## 2006-Today – Bebop 1.0

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| + **Flexible** web interface, based on user feedback and demands | - **Flexibility** = complexity  
We noticed that most users like it plain and simple (or began using Google docs) |
| + Client side technologies for faster response times | - Content stored in object database → **large** and **slow** |
| + Still very **popular** with our scientists | - Based on development snapshots and **obsolete** Python version → difficult to maintain |
| + Allows **LDAP / AD authentication** | - Does **not** allow **manipulation** of LDAP / AD objects |
A Short History of Bebop and its Predecessor(s)

Late 2007-Today – Bebop 2.0

*Group-aware, collaboration-centered document and content management utility*

- Written in **Python2.7**, based on release 3.5 of the **Zope3** framework
- **Combines** different views on the same content, based on the questions "where", "when", and "who"
- **Responsive** client side **ExtJS** interface
- Highly **configurable**
- Easily **extendable** by plugins
- **Large objects** stored in the **filesystem**
- Supports **LDAP** user authentication **and** (since 2008) **manipulation**, recently adapted to Active Directory
A Short History of Bebop and its Predecessor(s)

Late 2007-Today – Bebop 2.0

Screenshot of Main Window
A Short History of Bebop and its Predecessor(s)

Late 2007-Today – Bebop 2.0

Screenshot of Persons Directory
# A Short History of Bebop and its Predecessor(s)

## Late 2007-Today – Bebop 2.0

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Web interface based on combination of <strong>folders</strong> and <strong>logical</strong> / &quot;contextual&quot; <strong>views</strong> &quot;where&quot;, &quot;when&quot;, &quot;who&quot;</td>
<td>- Based on now <strong>obsolete</strong> versions of Python and Zope3 → will soon become difficult to maintain</td>
</tr>
<tr>
<td>+ <strong>Large content</strong> objects stored in <strong>filesystem</strong>, database holds <strong>references</strong> only</td>
<td>- <strong>Not always</strong> very <strong>responsive</strong> → <strong>faster</strong> speed probably achievable by optimization</td>
</tr>
<tr>
<td>+ <strong>Highly configurable</strong> in many areas</td>
<td>- Larger <strong>customizations</strong> require Python <strong>programming</strong> skills</td>
</tr>
<tr>
<td>+ Supports <strong>LDAP / AD auth</strong> and <strong>manipulation</strong></td>
<td>- Has to keep the Zope database in <strong>sync</strong> with the AD</td>
</tr>
</tbody>
</table>
Outline

Why Manage AD Users and Groups with Bebop?
Why Manage Your AD with Bebop?

Because...

... it's easy
... it's open source
... it's flexible, without being too complex
... it helps ensure proper formatting of AD fields
... it can help reduce redundancies
... it reduces the workload of both HR and IT
... it reduces type errors
... it provides you with a nice web-based view of your user / employee database
...
Why Manage AD with Bebop?

Because...

› Allow me to **demonstrate**
Outline

Live Demo
Outline

Other Use Cases of Bebop
Other Use Cases of Bebop

Examples

• Collection and management of publications and other intellectual products

• Management of libraries

• Management and display of website(s)

• Management of (technical) resources

→ With all of the above in one place, accessible through a single interface, exportable in open standard formats
Outline

Conclusion
Conclusion

Current State of Affairs

- Bebop 2.0 in active use for more than 7 years
- Integral part of our workflows
- Accepted by both HR and IT to manage employee / user data

- But: Code base outdated, hard to maintain
- But: Several shortcomings and errors surfacing in daily use

→ Would be nice to have a successor...
Conclusion

(Uncertain) Future Goals – Bebop 3.0?

• **Upgrade** code base to **Python 3.x**, recent versions of Zope3 (now **BlueBream**) and ExtJS (now **sencha**)

• Improve code **optimization** for faster response times

• Make it easier to **customize**

• Use **external** data sources (like AD) **directly** instead of synchronizing them to the Zope database

• Improve **testing** and test coverage

→ **Unfortunately (too?) much effort** for three programmers
Conclusion

In Case You Want to Try out Bebop Yourself

*It's easy*

Check it out via subversion:

```
svn co http://svn.kmrc.de/projects/buildouts/bebop.minimal
```

Follow `README_AD.txt` to create a Bebop site and connect your Active Directory

For questions and suggestions, get in touch:

```
mailto:t.kurbad@iwm-tuebingen.de
```
Conclusion

Thank you for your attention!