One step ahead - 3D engines with J2ME

Keynote speach
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Dipl.-Inf. René Stöckel
http://www.bytonic.de
rst@bytonic.de
Intention

Help to clear up questions like:

- Where is the future of mobile gaming going?
- What are the prospects for Java & Brew?
- Should we continuously try to support all handsets?
- Transferring PC games to mobiles, does this ever work?
Do you know bytonic?
A view back to 2003 on the PC

Open Questions:
- can classic PC games be written in java?
- how would the language features work out in practice?
- is it fast enough or even comparable?
- how about 3D shooters?

Common Suggestion:
- java would be too slow and technically unfeasible
Project Jake2 as proof of concept

- skilled bytonic engineers tried to really answer the questions by just doing it
- port of existing quake2 was chosen
- open source project jake2
- jake2 was under the top 50 of 110000 world wide projects
- General Public License
Demo...
# Benchmarks

<table>
<thead>
<tr>
<th>System</th>
<th>Original C Code</th>
<th>Jake2-0.9.1 JRE1.5 jogl</th>
<th>Jake2-0.9.2 JRE1.5 fastjogl</th>
<th>Jake2-0.9.3 JRE1.5 fastjogl</th>
<th>Jake2-0.9.4 JRE1.5 fastjogl/lwjgl</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMD Athlon XP 2400 Geforce4 MX Windows 2000 800x600 window</td>
<td>245 fps</td>
<td>172 fps</td>
<td>213 fps</td>
<td>241 fps</td>
<td>260/250 fps</td>
</tr>
<tr>
<td>AMD Athlon XP 2400 Geforce4 MX Windows 2000 800x600 fullscreen</td>
<td>315 fps</td>
<td>not supported</td>
<td>225 fps</td>
<td>235 fps</td>
<td>250/282 fps</td>
</tr>
<tr>
<td>AMD Athlon XP 2400 Geforce4 MX Linux 800x600 window</td>
<td>262 fps</td>
<td>141 fps</td>
<td>212 fps</td>
<td>215 fps</td>
<td>228/240 fps</td>
</tr>
<tr>
<td>AMD K6-2 350 Geforce2 MX Windows 2000 800x600 window</td>
<td>56 fps</td>
<td>21 fps</td>
<td>31 fps</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusions

We could master technical problems on java by proper engineering:
- memory utilization
- garbage collector thread
- speed, real time scheduling
- hardware binding

Java VM improved much over time
Drivers improved much over time
85% to 100% of C engine performance is possible
One program file for all platforms (Linux, Mac, Windows)
!the limits were in the heads only!
Conclusions

In 2004 it was absolutely clear for us that 3D engines based on J2ME is the future and would be reality
PC and mobiles, an analogy:

PC: 1975 1985 1995
Mobiles: 2000 2003 2005

today most PC titles are 3D based and will be on mobiles too
Situation 2006 today

- mobile games are everywhere
- 3D technology hype and demand
- big diversity of devices → „porting industry“

J2ME would:
- decrease development effort, because of the high level character of the java language
- decrease porting effort to a minimum
- thus decrease time to market
- increase number of titles to be produced with same investment
J2ME engines

- just a small number tried to move to 3D with J2ME → and are „one step ahead“
- german company fishlabs.de made the dream true

- deal with Sony Ericsson
- Success story! Good job!
- fishlabs.de is one of the technology leaders today
- question is now how to compete!
How to make use of 3D for J2ME

buy it
- results in dependencies:
- risc: brand is acquired, but engine license is denied

create it on your own
- probably not easy to compete with 2 years of research
- complexity of game software raises rapidly
- complexity can not easily be mastered by newcomers or small studios
open source as alternative for technology funding?

- Alternative:
  - commercial open source
    → share technology
    → renaissance of the linux idea transferred from PC to mobile devices

- advantages:
  → reduces risc of investition into research and development
  → free access to bleeding edge technology
  → producers can focus on design, branding and style
  → quality of newcomer titles can be increased
  → product chains can be ensured as the community platform evolves
  → commercial vendors are motivated to move on quickly, as seen on PC
  → enduser gets maximum quality and will increase business and turns into a repeat-customer
bytonics vision

- establish an open source platform
- bring mobile software developers together
- support user / developer community
bytonic will start as a pioneer the first innovative open source project in the mobile entertainment eco system:

J2ME 3D engine based on experiences with Jake2
technology sharing

First sponsors:

- SHC, Germany
- BPS, Germany
- More to come...

Contribute and share!
outlook into the future

- an open source J2ME game platform could be just the beginning
- merge with free operating systemes for mobiles

→ Renaissance of the Linux Idea moved to the mobile business
→ Think of the future possibilities
→ Lets start right now!

mail to mobile@bytonic.de
Thank you for your attention!