





European Games Developer Federation

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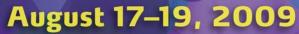












Game Developers Conference® Europe Cologne Congress Center East Cologne, Germany







Mobile Impossible?

Development, In-House Porting and Distribution with a Small Team

- Matthias Hellmund
- head of mobile development
- exozet games, berlin



TOC

- Intro
- Mobile Impossible?
- Development
- Porting
- Distribution
- Q&A



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The exozet group



game development studio



agency for digital communication



studio for visual effects



exozet games

- Founded 2004
- 40 employees
- PC, Wii, NDS, Xbox 360, iPhone, Mobile Java +BlackBerry +Android
- Original IP, Co-Productions, For-Hire, Marketing Games, +Distribution Services



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Mobile Heaven

- 320x480
- Finger multi-touch
- Accelerometer
- (OS 2..3, Processor speed, RAM size, GPS, OpenGL ES version, ...)
- 4 1 distribution channel



Back in 2004...









Mobile Hell

- Various Java flavors + vendors
- 480 x 118 px .. 480 x 800 px
- Num/QWERTY keys, finger/stylus/no touch
- (+all kinds of firmware bugs)
- Hundreds of distribution channels with individual requirements



A "big player" solution

- Lead studios
- Porting studios
- QA testing studios
- Marketing and distribution teams



A "small player" solution

- Drop Mobile Java
- Go iPhone!



Thanks.

END OF PRESENTATION



But...

- What about all those folks, who don't have an iPhone / iPod Touch?
- What about those billion mobile Java phone users out there?
- What about all those Android devices? (which become more and more sexy +are pushed by MNOs)



They'll eventually buy a used iPhone on ebay.

END OF PRESENTATION 2.0



A "small team" solution

- Integrated Development + Porting
- In-House QA testing
- Integrated Marketing + Distribution + Tool Development
- Cooperations with partners



Why not the "big player" solution?

- Only viable for larger head counts
- Less "master control" of portings
- Different time zones and cultures, increased communication, delayed responses
- The others will fix it...



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Toolchain

- Device Database
- Source + Resource Trees
- Target Device Groups
- Configuration for Device Groups
- ♣ => build all



Device Database

- Device = Lead Device per Group
- ...Lowest Common Denominator
- Specs + Known bugs
- Worst case (memory, .jar size)
- Best case (highest screen resolution + scale ranges)



Device Database Example

```
<api>
    <cldc10>true</cldc10>
    <midp20>true</midp20>
    <mmapi>true</mmapi>
    <wma11>true</wma11>
</api>
<!-- capabilities (e.g. for settings screen) -->
<capabilities>
    <music>true</music>
    dight>true</light>
    <vibration>true</vibration>
</capabilities>
        <noCreateImageOffset>true</noCreateImageOffset><!-- Image.createImage(byte[] da
        <noPlatformRequestTel>true</noPlatformRequestTel><!-- nothing happens -->
        <noPlatformRequestHttp>true</noPlatformRequestHttp><!-- throws exception -->
        <noGameActionsOnNumberKeys>true</noGameActionsOnNumberKeys><!-- now uses defaul
        <gameActionsOnSoftKeys>true</gameActionsOnSoftKeys><!-- softkeys actions are GA
        <noTrueAlpha>true</noTrueAlpha>
    </bug>
        <width>176</width>
        <height>206</height>
    </canvas>
    <deploy/>
    <hint>
        <supportsJPEG>true</supportsJPEG>
    </hint>
    <key>
        <LeftSoftKey>-202</LeftSoftKey>
```

<MiddleSoftKey>998</MiddleSoftKey>
<RightSoftKey>-203</RightSoftKey>

<ClearKey>-204</ClearKey>

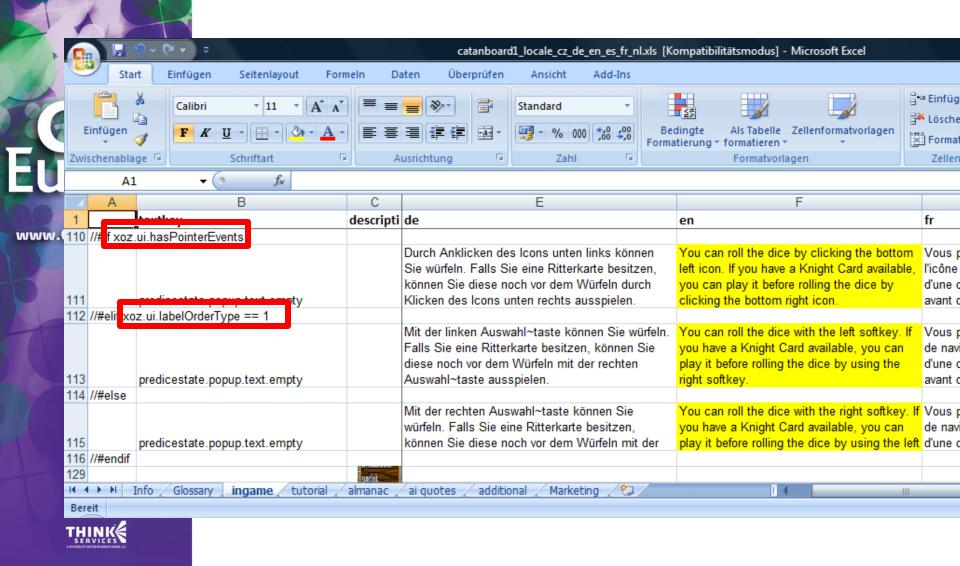




Source and Res Trees

- Text Preprocessor
- Sourcecode Preprocessor
- Compile Sources
- Compile and Compress Assets per Device Build
- Ostprocessing / Packaging / Signing / Optimizing

Text Preprocssing





Source Preprocessing

```
public static final int
                                NUM OF MUSIC INGAME = 3;
/** number of music tracks */
public st
                                NUM OF MUSIC =
   //#if no soundlib
   //# 0;
   //#elif only menu music
   //# 2;
   //#else
   5:
   //#endif
/** number of sound effects */
public static final int
                               NUM OF SFX =
   //#if no sfx
   //# 0;
   //#else
   6;
   //#endif
/** sound index for building a settlement */
```



Libraries, Frameworks

- Preprocessor-loaded Classes for Generic Features to minimize handset specifics
- Sound Handling
- Input Manager
- Base/Canvas class



Resource Management

- Resolution Groups
- A Reduction Levels
- Image Grouping with Loading/Unloading in Mind
- Leverage fixed width



Resolution Grouping

- objects_128x1
 objects_176x200
 - objects_240x256
 - objects_352x1
- 🝌 objects_352x416
- 🔊 objectswidth_128x146
- objectswidth_176x200_176x220
- 🙀 objectswidth_208x208
- 🟂 objectswidth_220x176
- objectswidth_240x240
- objectswidth_240x256_240x260
- b objectswidth_240x268_240x300
- 🟂 objectswidth_240x320
- objectswidth_320x220_320x240
- objectswidth_320x320
- objectswidth 352x416
- objectswidth 360x360
- b objectswidth_480x320_480x415
- objectswidth_480x416_480x640

- .svn
- 嬎 active_anims_no24bit_xpak
- 虜 active_anims_xpak
- 嬎 animals_xpak
- dice_xpak
- 嬎 game_icons_xpak
- 🟂 gui_card_xpak
- 虜 gui_menu_xpak
- 嬎 gui_playerframes_xpak
- <u>aui tou</u>chscreenicons_xpak
- o locale
- menu_icons_xpak
- 궔 ov_fields_xpak
- 嬎 ov_harbors_xpak
- 嬎 ov_tokens_glow_xpak
- 🐒 ov_tokens_xpak

- 🖟 portraits_xpak
- 🟂 zoom_fields_xpak
- 嬎 zoom_harbors_xpak
- 虜 zoom_tokens_glow_xpak
- 🟂 zoom_tokens_xpak
- 🎠 cloud.png
- 🌺 digits.png
- digits.xfont
- easy.png
- 🏂 font.png
- font.xfont
- 🌺 medidigits.png
- medidigits.xfont
- minidigits.png
- minidigits.xfont

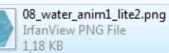


Res Lite Levels



00_water.png IrfanView PNG File 1,17 KB



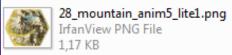






20_farmland_anim1_lite1.png IrfanView PNG File 1,12 KB

24_mountain_anim1_lite1.png
IrfanView PNG File
1.17 KB





01_desert.png IrfanView PNG File 1,13 KB



05_grassland.png IrfanView PNG File 1.01 KB



09_water_anim2_lite2.png IrfanView PNG File 1,17 KB



13_grassland_anim3_lite1.png IrfanView PNG File 1.23 KB



17_wood_anim1_lite1.png IrfanView PNG File 1,18 KB



21_farmland_anim2_lite1.png IrfanView PNG File 1.13 KB



25_mountain_anim2_lite1.png IrfanView PNG File 1.17 KB



29_robber_anim1_lite2.png IrfanView PNG File 434 Bytes



02_wood.png IrfanView PNG File 1,17 KB



06_hill.png IrfanView PNG File 1,06 KB



10_water_anim3_lite2.png IrfanView PNG File 1,17 KB



14_grassland_anim4_lite1.png IrfanView PNG File 1,22 KB



18_wood_anim2_lite1.png IrfanView PNG File 1.19 KB



22_farmland_anim3_lite1.png IrfanView PNG File 1.13 KB



26_mountain_anim3_lite1.png IrfanView PNG File 1.17 KB



30_robber_anim2_lite2.png IrfanView PNG File 436 Bytes



03_mountain.png IrfanView PNG File 1,17 KB



07_robber.png IrfanView PNG File 434 Bytes



11_grassland_anim1_lite1.png IrfanView PNG File 1,24 KB



15_desert_anim1_lite1.png IrfanView PNG File 1,42 KB



19_wood_anim3_lite1.png IrfanView PNG File 1,17 KB



23_farmland_anim4_lite1.png
IrfanView PNG File
1.12 KB



27_mountain_anim4_lite1.png IrfanView PNG File 1.18 KB



31_robber_anim3_lite2.png IrfanView PNG File 437 Bytes











THE FIRST ISLAND



Group Configuration

```
KG800 anim alphatokens off # style (noTrueAlpha)
KG800_anim_overlay_off  # to minimize jar size
KG800_anim_tiles_off  # to minimize jar size
#KG800_gfx_font_reduced  # try bitmap font - system font is very slow... see even during intro
KG800_gfx_angry_off # to minimize jar size
KG800 gfx devcardimages off # to minimize jar size
KG800 gfx menugfx off # jar limit
KG800_sound reduced # no midi sounds
KG800 ML zoom off
                       # jar limit
KG800 ML sound off # jar limit
KG800 ML font reduced # jar limit
KG800 ML gfx intro off # jar limit
                          # !!! NOTE: still too big for virtual vodafone DE size - only do more :
KG800 kzip
#KU580
# - no entries -
#KU990
# - no entries -
#U8120
U8120 anim alphatokens off # heap problem
U8120 anim intro reduced  # graphics bug while fading, characters look like green zombies
```



In-House Development with Porting in mind

- Know your target device groups
- Prepare for reduction from start
- Go from master to critical
- Pick min-max cases from Width groups for initial testing



Recommended Tools

- Antenna (Ant Build Tasks)
- Apache POI (Office doc/xls Access)
- ImageMagick (Gfx Manipulation)
- J2ME Polish (Preprocessor)
- PNGOUT and KZIP (Compression)
- ProGuard (Optimizer, Obfuscator)
- SonyEricsson, BlackBerry and Android development tools



∰+ +35... **3**

H+ +35... O

₩+ +35... **3**

H+ +35... @

#+0--0# -

±+ +35... **⊙**

±- +35... **⊙**

15:42

Testing

- >600 supported handsets
- In-house QA + partners
- Worst-Case devices

- Remote device testing (Bluetooth?)
- Mob4hire.com



Random Hell WHYs

- Why have different key codes for the same handset in DE + CZ?
- Transparency Color Bug
- Keycode firmware bug
- Volume crash bug
- Thread control weird bug



Device Databases

- Jbenchmark.com (paid, focused on benchmark)
- J2mepolish
- Mobilezoo.biz
- Few commercial offers usually tied into proprietary production systems and not focused on games



ExozetDeviceUberTester

Automatic profiling app (download)

Tests game-specific features (and possible bugs) of new handsets

Speed benchmark testing

Sends results to server / by email





ExozetDeviceUberTester





Tool, Data + TestCases

- Handset Knowledge Sharing
- Open Database + Extensible Tool
- New Test Cases
- For and from a game developer's perspective – let's share!
- => please get in touch!



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Distribution

Delivery of your Game to those distribution channels...





Distribution Format

- Binary Files
- Compatibility Mapping
- . Marketing Texts
- Marketing Images



Distribution Format Differences

- Get-More-Games, Rich GMG
- Online features
- Individual XML, XLS, TXT flavors
- Individual file naming and directory structures
- Very individual asset requirements





Typical Emails

- These are our new top handsets requesting backfills immediately
- Our download platform has changed, we now need the following banners + screenshots
- We've changed our submission format and from now on we only accept ...



Our Toolchain

- Proprietary in-house Distribution and packaging tools
- Verification tool to identify missing marketing assets
- Asset adaptation (scaling, compressing)
- Auto-Backfill



Our Toolchain

Binary + marketing master

XLS/XML/DOC & co.



Things a good distribution partner should have...

- Relevant channels
- Good relations with those channels
- OnSite Marketing
- Solid reporting
- One submission format
- Standardized Backfill Process
- Auto Device Compatibility



Summary

- Yes, it's possible
- © Critical: Device Database + Build Process
- Share handset knowledge
- Talk with other developers
- Pick good distribution partner(s)







Q&A

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- XING/LinkedIn/...