Plan B: An Operating System for Ubiquitous Computing

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Roadmap

- Problems
- Ideas
- Examples
- Issues & Lessons
Problems

Services and Tools for Perv. Comp.:

• Adding new services
• Combining old and new services
• Building new tools
• Using old tools for new things
The target environment
What do we try to do?

Provide the mechanism

What do we NOT try to do? (yet)

Provide the policies
Antecedents

Plan 9

- (Almost) everything is a file
- Network file system protocol (9P)
- Per–process name spaces
Our approach

Plan B

- Everything is a file
- Abstract interfaces for resources
- Dynamic import of files
System architecture

A system built out of dynamic vols.
Computing Environment

Machine #1

Mouse
Kbd
Screen
x10

Machine #2

Exec
Home

Machine #n

Kbd
Screen
Voice
Computing Environment

How?

```
mount -V /devs/voice!L136!Unemo /voice
mount -a -V /devs/voice!L136 /voice
```
Example: The Plan B player

```plaintext
01. Donde-esta-el-pais-de-las-hadas.mp3
02. Este-chico-es-una-joya.mp3
03. La-bola-de-cristal.mp3
04. El-amante-de-fuego.mp3
05. Madrid.mp3
06. Barco-a-Venus.mp3
07. La-fiesta-nacional.mp3
08. Un-pecho-loco.mp3
09. No-aguante-mas.mp3
10. Focas.mp3
11. El-balon.mp3
12. El-ladron-de-discos.mp3
```

Nobody goes to the theatre unless suffering from acute bronchitis.
```plaintext
assert(mp3)
```

Play Big Brother Print Put Get Choc Undo

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Example: The Plan B player
Example: The Plan B player

• Audio device:
  /devs/audio/audio
  /devs/audio/output

• User interface:
  /devs/xxxui/.../col:player/
  etc.

• Music files:
  /n/music/

• Displaying poster for CD:
  /mnt/plumb/poster
Example: tell

The Plan B intercom

```bash
location=`{cat /who/nemo/where}
mount -V /devs/voice!L$location
echo hi there! >/devs/voice/out
```
Example: visitors

Automating the environment

```bash
if (grep yes /where/$location/visits)
    echo 50 >/devs/audio/volume
    mkdir /devs/wallui/row:guest
    chown guest /devs/wallui/row:guest
    echo welcome >/devs/voice/out
```
Example: Zip’ing a room

- Store room UIs, lights, volume

  mount -V /devs/ui!L$location
  mount -V /devs/x10!L$location
  mount -V /devs/voice!L$location
  cd /devs
  tar c *ui x10 voice >/tmp/room.tar

- Unzip’ing a room

  tar xf /tmp/room.tar
Complexity

Tools and services get easy:

- hxfs: 734 lines of C
- voicefs: 387 lines of C
- clock: 98 lines of C
- player: 482 lines of C
- tell: 26 lines of shell
- setvol: 38 lines of shell
Issues

Aliens, mostly.

- Need a Plan B to adapt
- Low-level interfaces
Questions?

More information via our httpd

http://lsub.org

...we call our logo “The fish”