

Presentation: **How to join eComStation development**

Speaker: **Eugene Gorbunoff**

DeW  2006

How to join eComStation development



eComStation is the successor of IBM OS/2 Warp operating system

- You can fix a driver or application
- **Join extension of existing component or subsystem**
- **Join with own application to eComStation**

What is more important? Technologies or applicatons?

- People select OS by applications available
- No big corporations on eComStation market
- SSI brings technologies by itself; There are many ports
- IBM withdrew applications. There are many technologies
- Futher development requires money

Let's discuss how to extend existing applications:

- Power management - - 1/2 of users purchase notebooks
- Radio support - - the cheapest source of entertainment
- Synchronization with mobile devices - - to survive
- Support of USB peripheral devices

ACPI (Advanced Configuration and Power Interface)

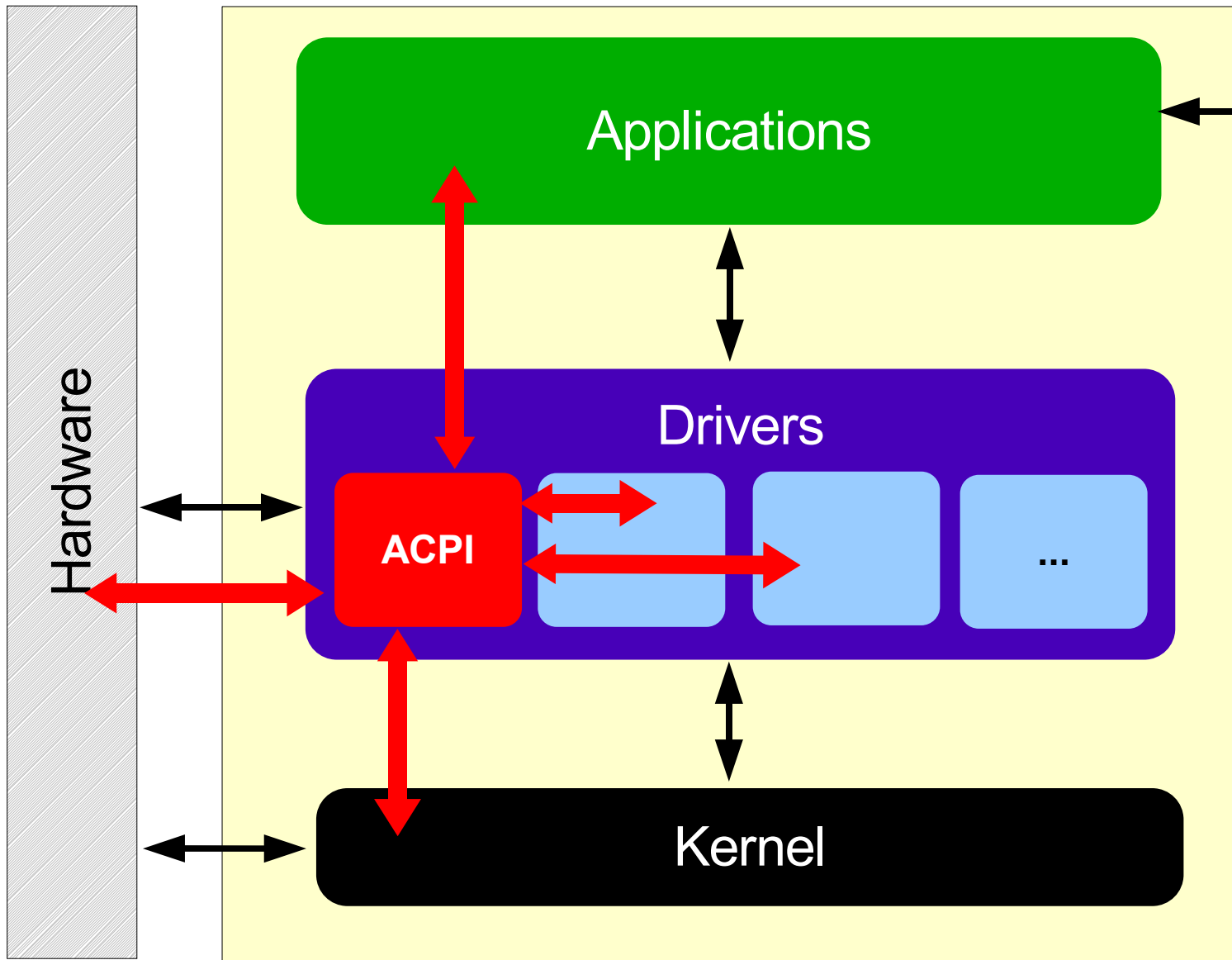
It's an open industry specification co-developed by Hewlett-Packard, Intel, Microsoft, Phoenix and Toshiba



Interfaces for OS-directed configuration and power management:

- Power management (APM)
- Plug and play (PnP)
- Multiprocessor specification (MPS)

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Which developers require ACPI?

Control of power consumption (developers of device drivers)

- Pay attention to APM events
- Join to discussion of power consumption politics

Control of device configuration (developers of device drivers)

- Use acpica.add via IDC or IOCTL
- Connect to ACPI.PSD driver (and follow Intel CA)

Power management timer (Sci-tech lab)

(3.5 Mhz < > 1.19 Mhz IRQ0 Hi-res timer DosTmrQueryTime)

ACPI 2006 - Power management



Most energy demanding devices

- Display (manual control)
- CPU
- Harddisk (Daniela Engert)
- Video-adapter (SciTech Software Inc.)

ACPI 2006 – CPU control

CPU idle power states

- CPU enters different idle states (C0 = normal ... C5 = doing no work)

CPU Frequency management (Speedstep)

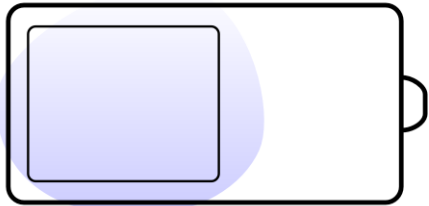
- Run the CPU at lower frequency (Px states)

CPU throttling

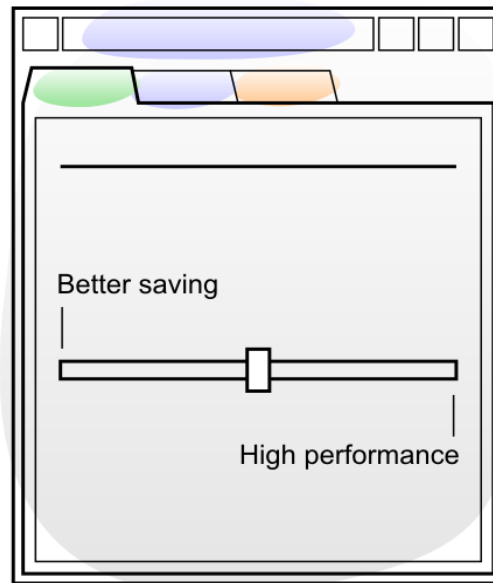
- Force the CPU to be idle a fixed percentage of its cycles per second

ACPI 2006 – New utilities

Battery widget



Configuration of energy politics



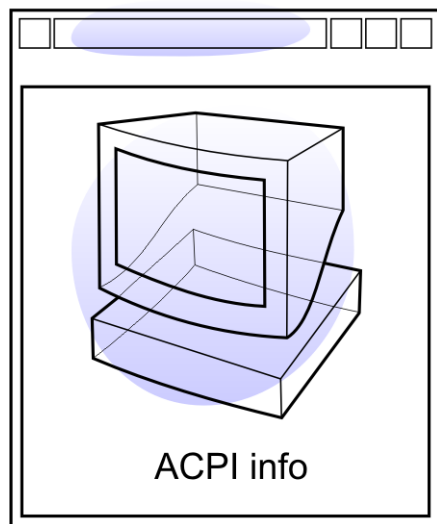
Popup window



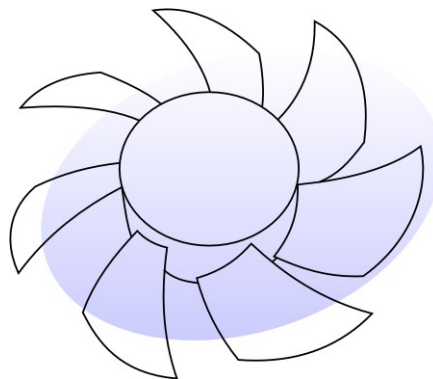
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Help us to create new utilities!

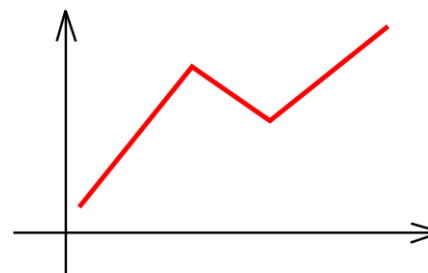
ACPI Info



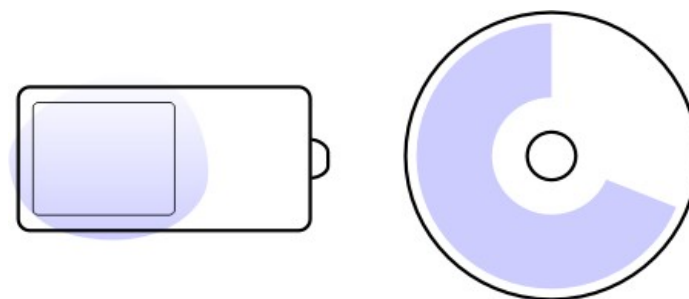
Cooler widget



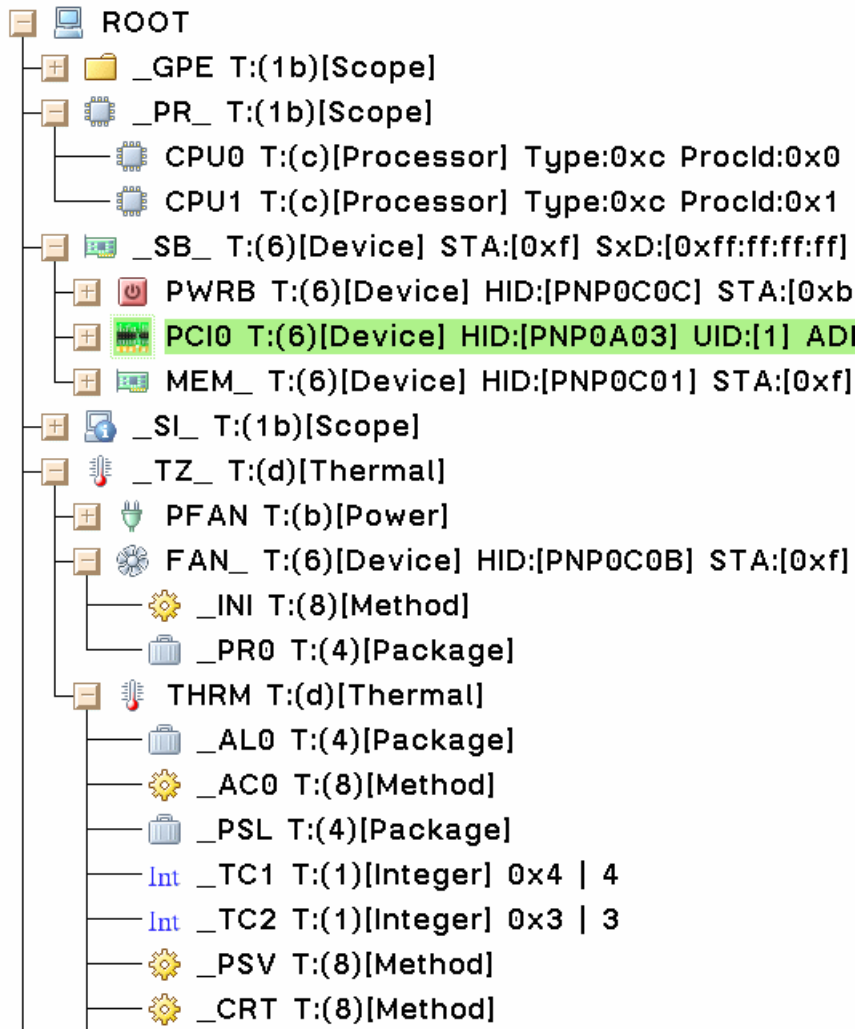
Batteries measuring



More batteries widgets



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How to learn ACPI?

- ACPI standard
- Intel ACPI-CA
- ACPI Toolkit

Welcome to:
<http://ecomstation.ru/acpitools>

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CoolFM

- FM-tuners embedded to TV-tuners
- Misc USB FM-tuners



Emperoar TV

- WinTV PVR 150, 250, 350

FM-tuner is a simple device:

- Initialization
- Frequency change
- Mute, Volume
- Query Signal

You should know:

- how to control PCI/USB
- Vendor specific protocol of the device

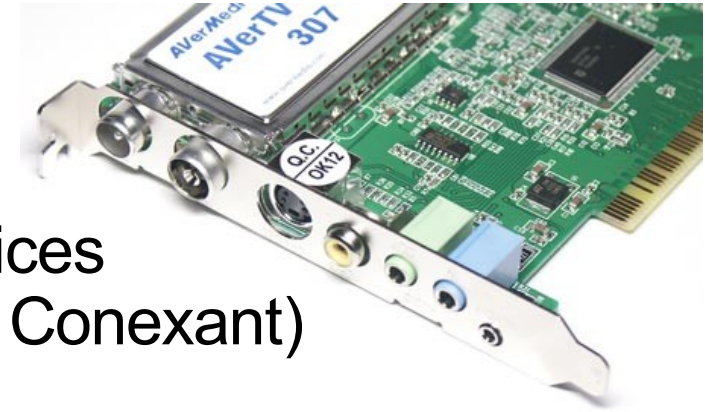
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CardBus PCMCIA tuners
(AverTV CardBus)



(Veit Kannegieser)

PCI devices
(Philips, Conexant)



USB sound devices
(radio Shark)



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FM-radio is a good **start point** if you are going:

- learn PCMCIA/USB/PCI development
- create TV-tuner applications
- extend tools for sound broadcasting

More fun:

- FM transmitters



RocketFM

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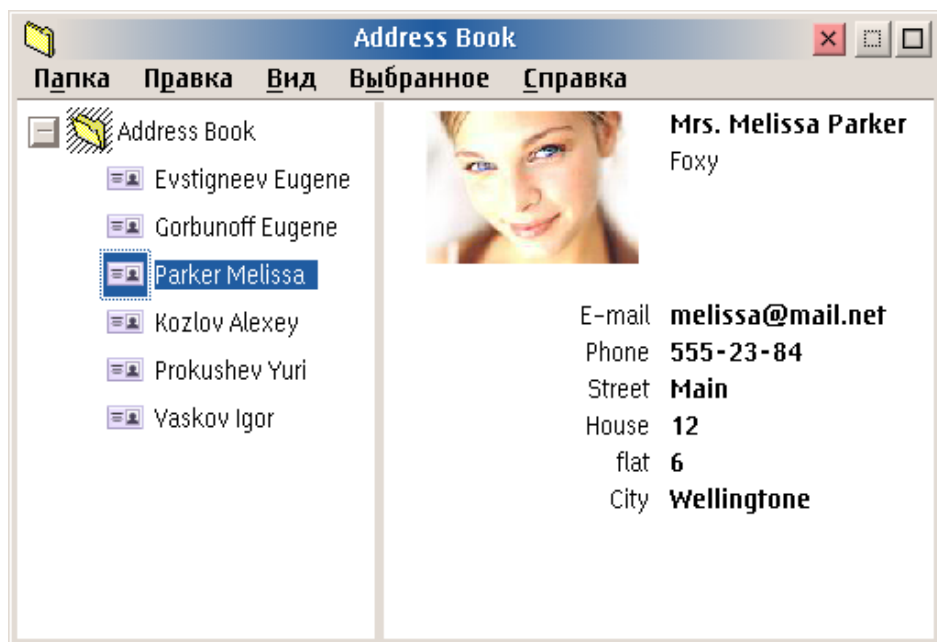
Importance of Synchronization:

- Field for dosenz of new applicatons
- It's important condition for users coming from Windows
- This prolongs the life of OS/2 Warp platform



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Personal Cards Manager



Current state of PCM:

- Functionality of personal card is implemented
- Preview (Folder)
- Sync module prototype

Futher development during the spring:


- Release of API
- Visualization improvement
- Extend API of base classes
- Improve Sync

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Requirements for synchronization

```
<?xml version="1.0" encoding="CP-866"?>
<notebook>
  <page name="General">
    <group name="Photo" x="9" y="86" width="230">
      <picture id="photo" x="15" y="92" width="56">
        <static name="Drop image object into the" x="15" y="92" width="56" height="56">
          <static name="box in left part of window" x="15" y="92" width="56" height="56">
            <static name="First name" target="x-n-given" x="15" y="63" width="50" height="8" />
          </static>
        </static>
      </picture>
    </group>
    <group name="Personal data" x="9" y="16" width="230">
      <static name="First name" target="x-n-given" x="15" y="63" width="50" height="8" />
      <static name="Surname" target="x-n-given" x="15" y="63" width="50" height="8" />
      <static name="Last name" target="x-n-given" x="15" y="63" width="50" height="8" />
      <static name="Title" target="x-n-given" x="15" y="63" width="50" height="8" />
      <static name="Nickname" target="x-n-given" x="15" y="63" width="50" height="8" />
    </group>
  </page>
</notebook>
```

PHOTO



Drop image object into the box in left part of window

Personal data

First name

Surname

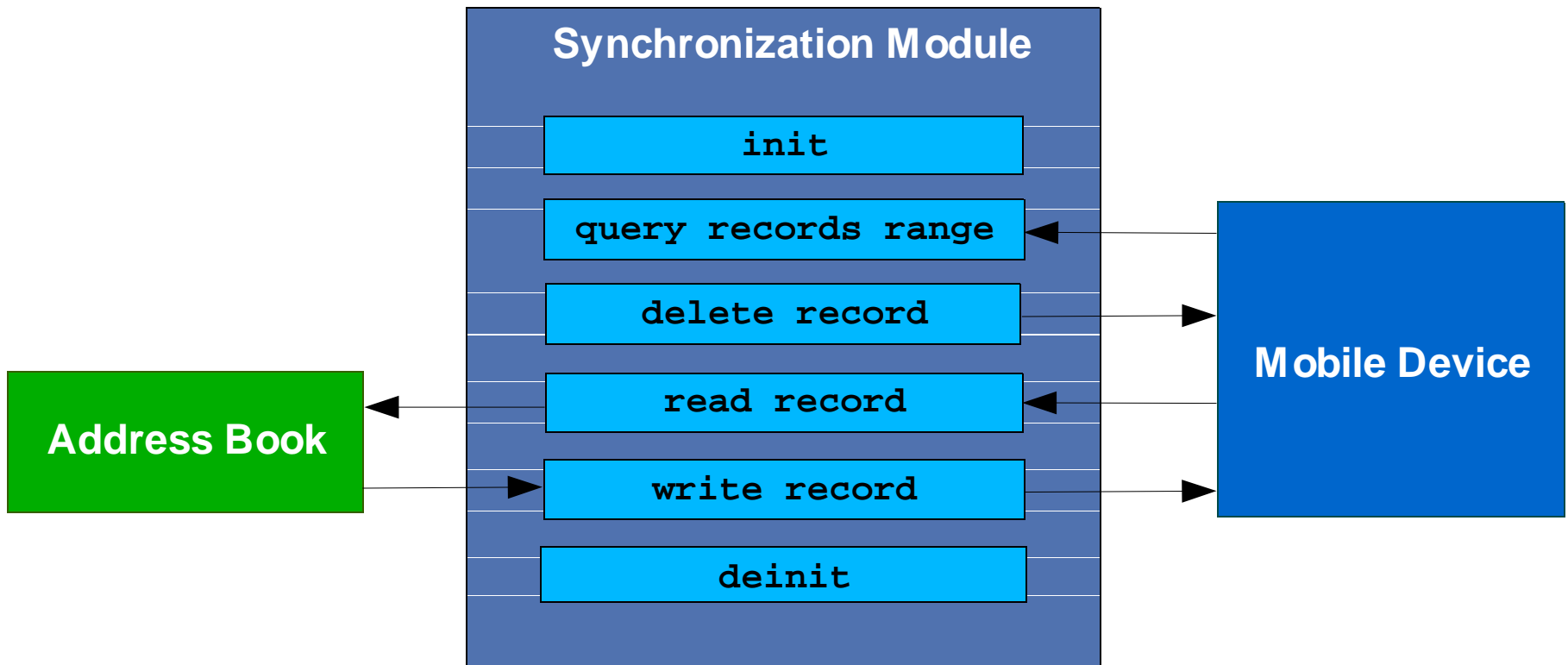
Last name

Title

Nickname

An arrow points from the highlighted XML code block to the 'First name' input field.

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How to join Personal Cards Manager project:

- Sync with PDA/GPS devices
- Integration with Mozilla browsers
- Translate the interface / cards template to your language
- Extension of PCM for mobile phones (SMS)
- Support other formats of personal cards
- Backup utilities

Open PCM interfaces:

- *wpGetPersonAttr*
- *wpGetPersonBinAttr*
- *wpSetPersonAttr*
- *wpSetPersonBinAttr*
- *wpQueryNextAttrName*

USBCalls library

USBCalls is a library which allows applications access USB devices

- Create ring3 applications, not drivers
- Supports any USB controller (USBD.SYS)

Who is creating USBCalls?

Markus Montkowski (Netlabs)

Frolov Dmitry (independent ranger)

Exigen Latvia

Martin Kiewitz

Demand on USB

Why USB library is so important today?

- Serial port, Firewire, SCSI devices migrated to USB
- Modern computers are equipped with USB ports only

Attention: USB doesn't replace Firewire!

- Firewire 1.0: 400 Mbps < > USB 1.0: 12 Mbps
- Firewire 2.0: 3200 Mbps < > USB 2.0: 480 Mbps



USBCalls is working!

USBCalls is used in many applications:

- USB Resource manager
- Gphoto/2 (USB)
- PTPPro
- Sane (Paul Smedley)
- Coolfm
- Utility to control special keys on USB keyboards
- USBMSD detect utility
- Web-cameras
- Palm (Yuri Dario)

Features of USBCalls library

USBCalls provides end-points:

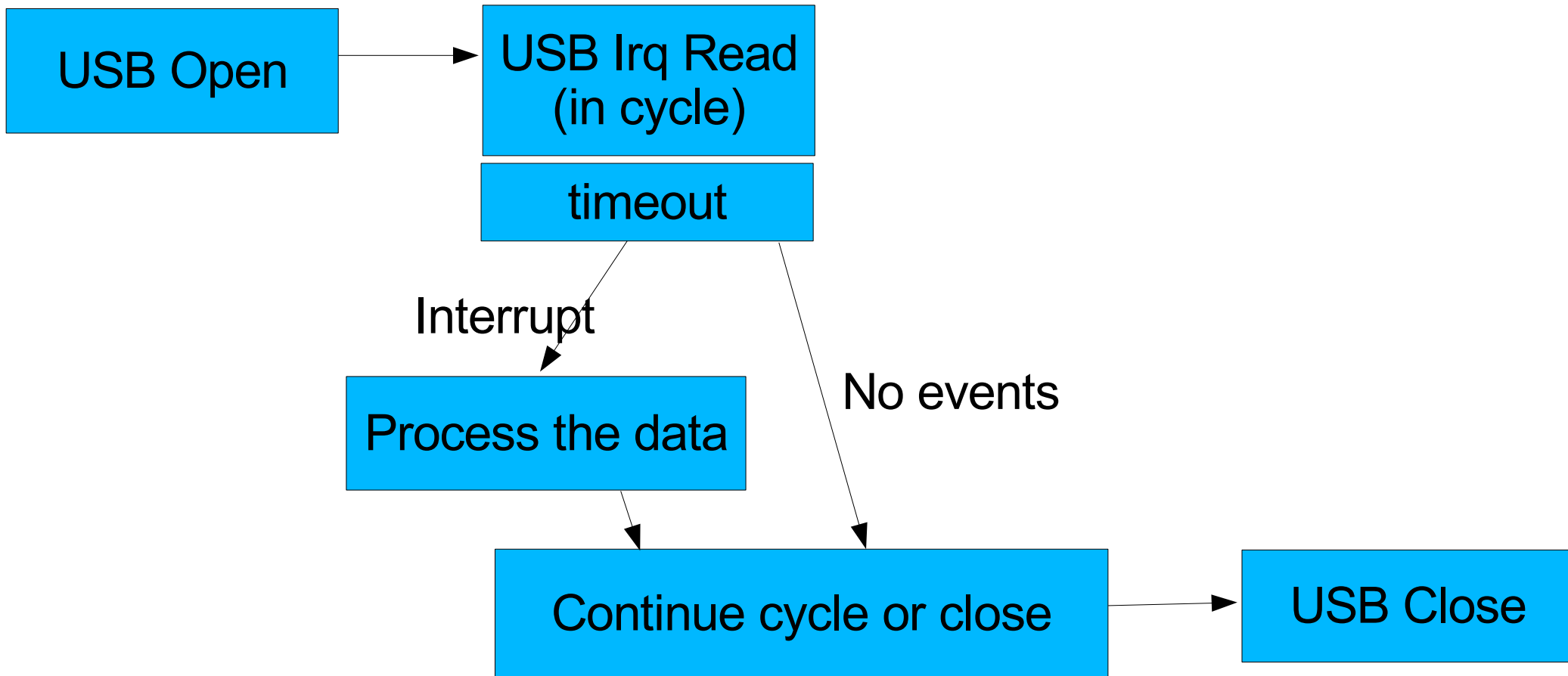
- Ctrl transfer – standard device requests
- Bulk transfer – mp3, flash, scanners, digicams
- Irq transfer – devices notify the host about events
- Iso transfer – transfer of video (web-cameras) and audio (usb sound)

USBCalls allows:

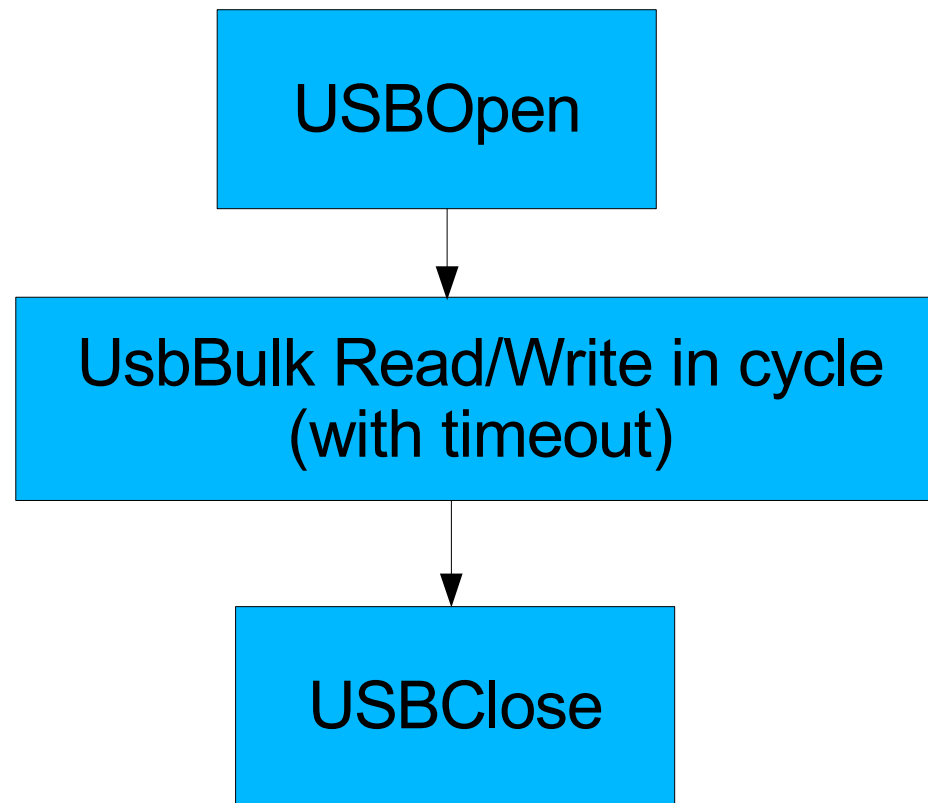
- Change configuration
- Build tree of devices
- Catch notifications

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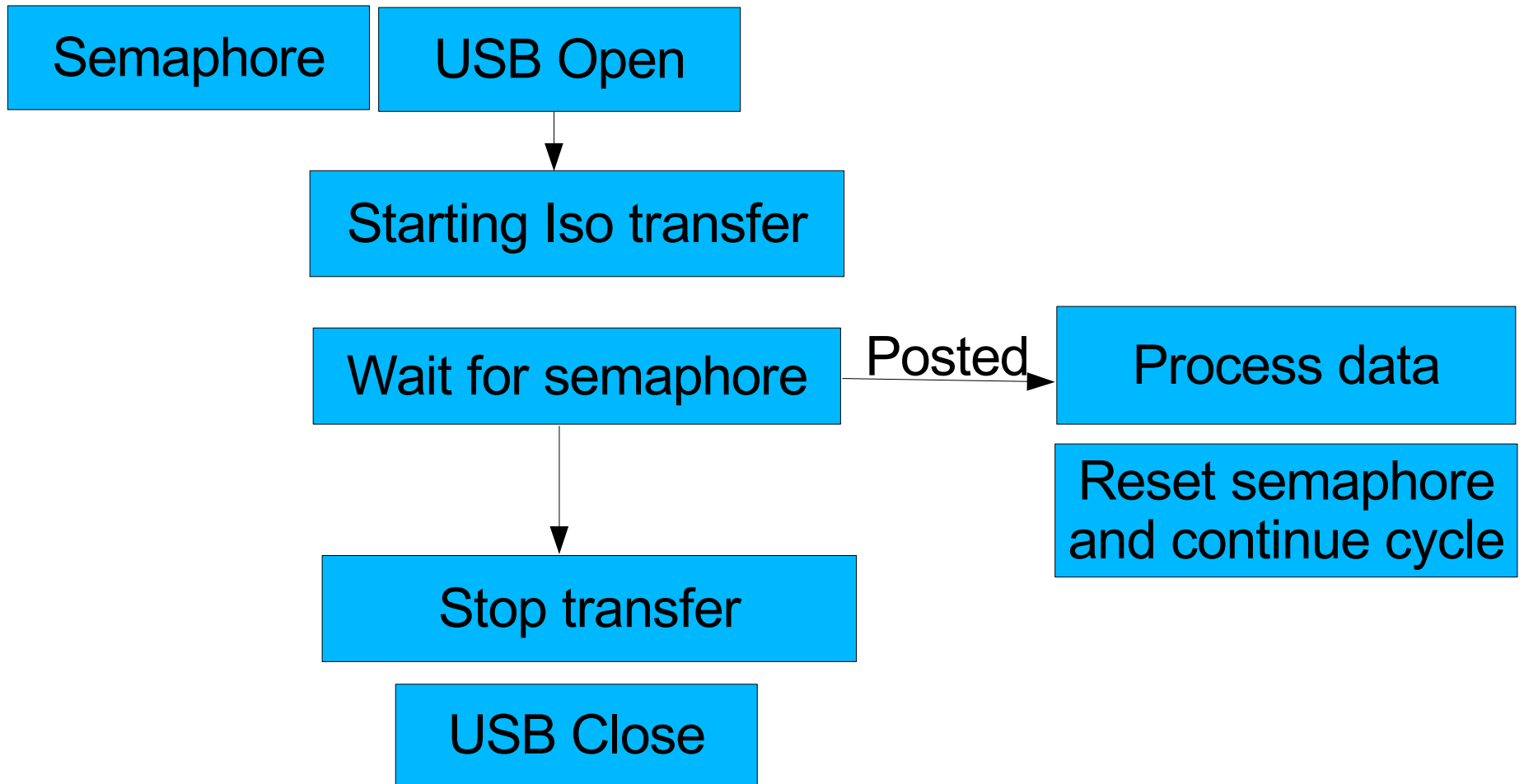
USBCalls library – interrupt end-point



USBCalls library - bulk end-point



USBCalls library - Isochronous end-point



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USBCalls library – it's easy! Let's animate the toys!



Conculsion: **Let's strengthen existing applications**

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