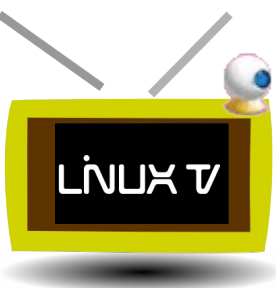# DVB Round Table

Eng. Mauro Carvalho Chehab, MSc, CISSP

mchehab@infradead.org

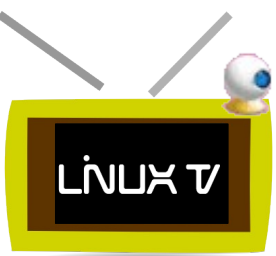mchehab@redhat.com

http://linuxtv.org

Miniconf Program

- Video Input Status Quo (this presentation)

- Extending V4L2 to support complex media streaming devices

- V4L2 Library

- The video4linux user-space: libv4l2, applications and a server

- Discussion/Round Table: Support for missing digital standards: DVB-H, ISDB, etc
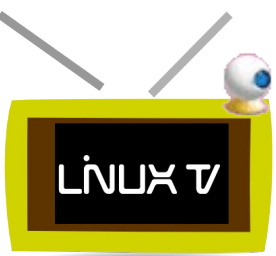
- Next Steps

Digital TV
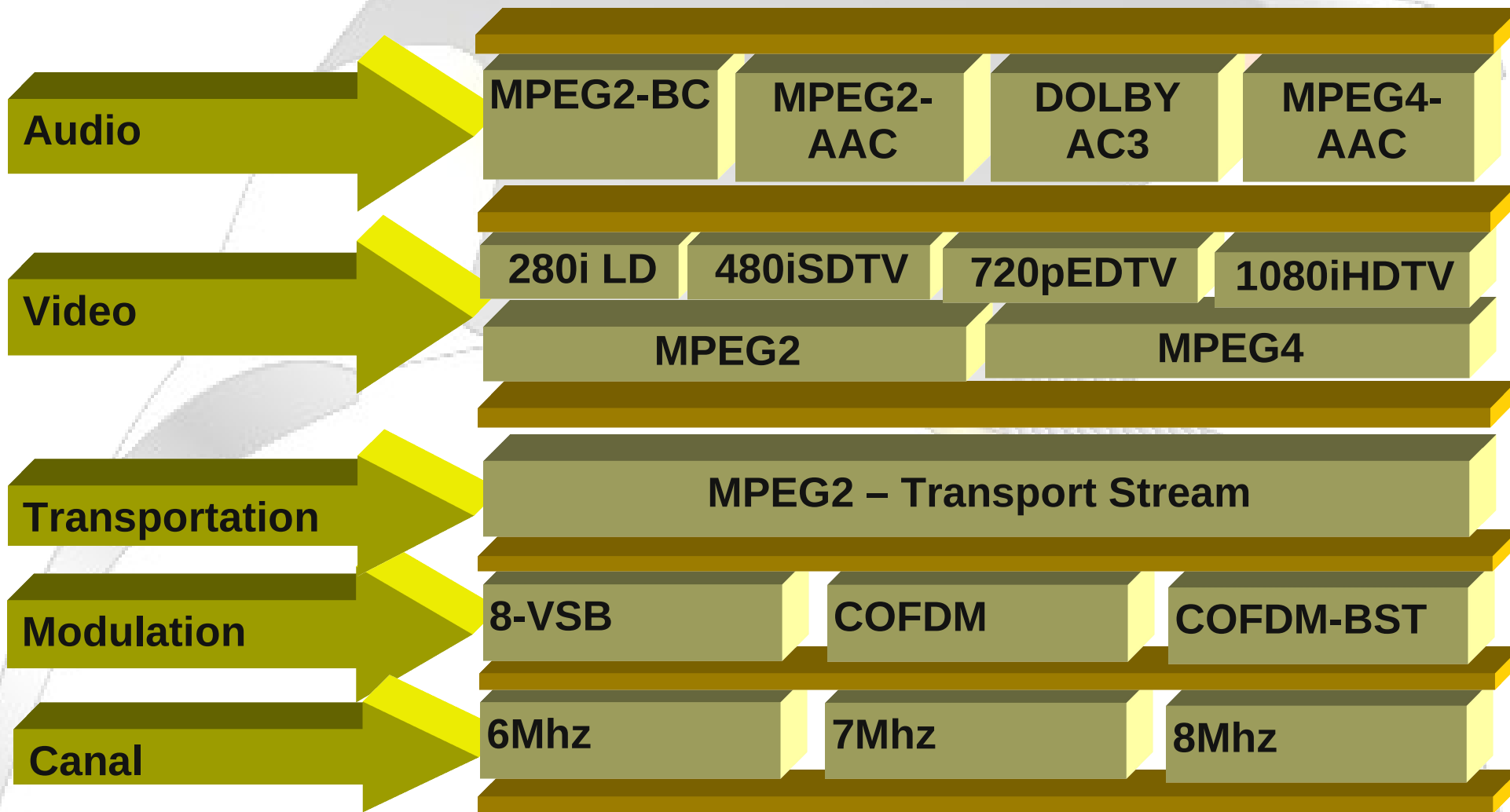
- Digital TV reception on Linux
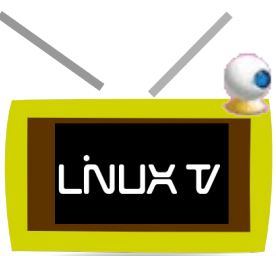
Digital TV Standards (1)

- **DVB** Standard – *Digital Video Broadcast*
  - Terrestrial (DVB-T), Cable (DVB-C), Satellite (DVB-S, DVB-S2), mobile (DVB-H)
  - Started in Europe – Worldwide used
- **ATSC** Standard - *Advanced Television Systems Committee*
  - Used on EUA, Canada, Mexico, Taiwan, South Korea
- **ISDB** Standard - *Integrated Services Digital Broadcasting*
  - ISDB-S (satellite), ISDB-T (terrestrial), ISDB-Tsb (mobile), ISDB-C (cable)
  - Used only in Japan
  - Brazil's choiced ISDB-T for terrestrial transmissions;
    - For satellite and cable, DVB is used;
    - mobile ? Government wants also ISDB-T. Would this be viable?
- **DMB-T/H** standard (GB 20600 – 2006)
  - recently announced by China for terrestrial/mobile

Digital TV Standards (2)

Audio	MPEG2-BC	MPEG2-AAC	DOLBY AC3	MPEG4-AAC

Video	280i LD	480iSDTV	720pEDTV	1080iHDTV
	MPEG2		MPEG4	

Transportation	MPEG2 – Transport Stream

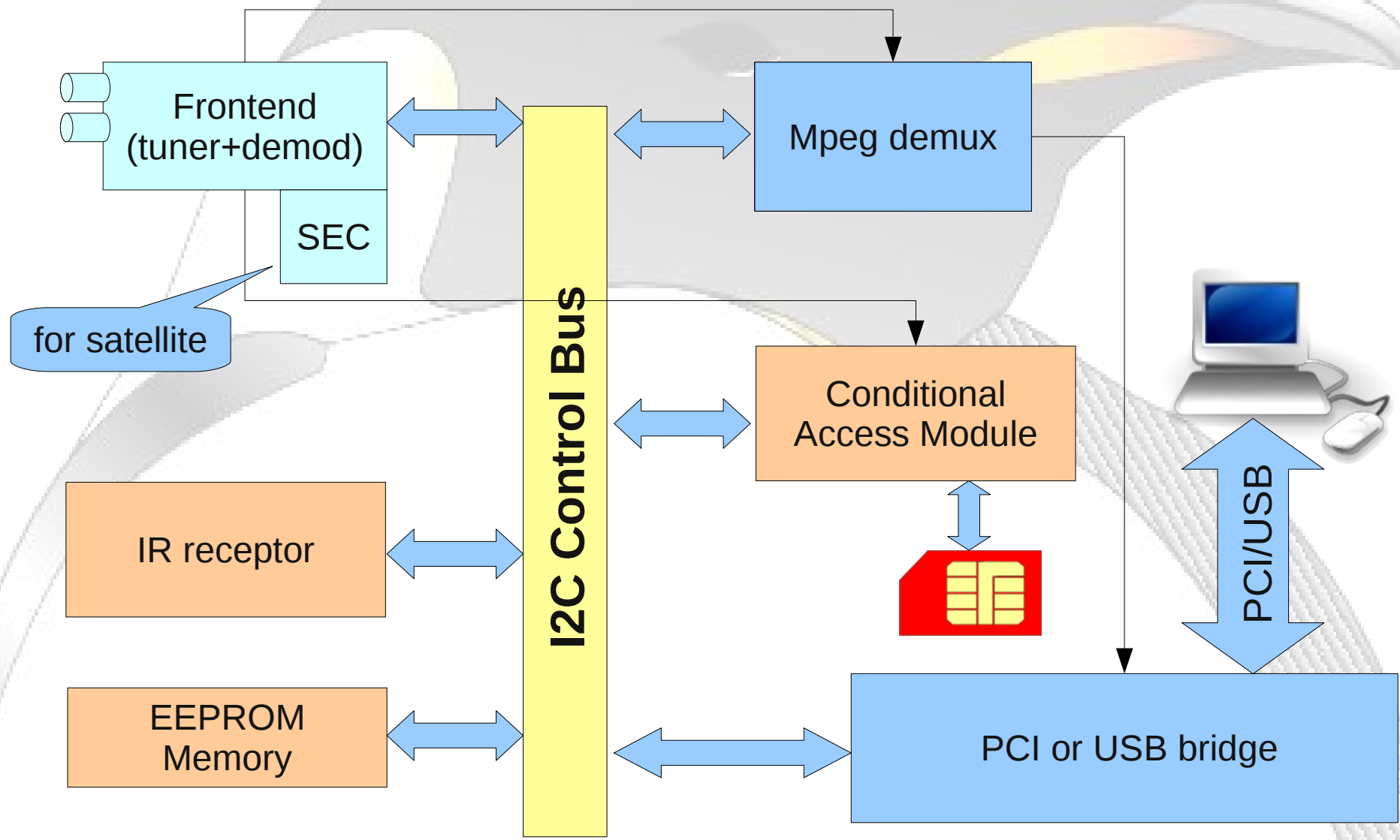| Modulation	8-VSB	COFDM	COFDM-BST

Canal	6Mhz	7Mhz	8Mhz

The basic difference between the standards, from kernel POV, is at modulation, implemented at frontend driver

A typical Digital TV device

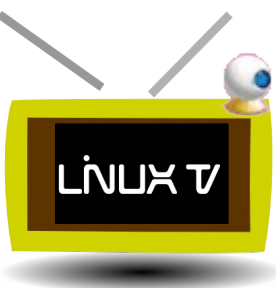**LINUX TV**

Frontend (tuner+demod)

SEC

for satellite

Mpeg demux

I2C Control Bus

Conditional Access Module

IR receptor

EEPROM Memory

PCI or USB bridge

PCI/USB

Digital TV design example

Frontend

Boot EEPROM

2-Wire Bus

Tuner

Secondary 2-Wire Bit

A/D and COFDM Demodulator

Intel® CE 6230 80-Pin QFP

I2C Control Bus

MPEG TS

2-Wire Serial Bus

I2C Control Bus

PID Filter 64 Deep x 13 Bit

PID Table

Mpeg demux

FIFO

8051 Controller (48MHz)

GPIO

Personal Computer

USB I/F

USB 2.0 Slave

I/R Input

USB Bridge

Source: http://www.intel.com/design/celect/demodulators/ce6230.htm
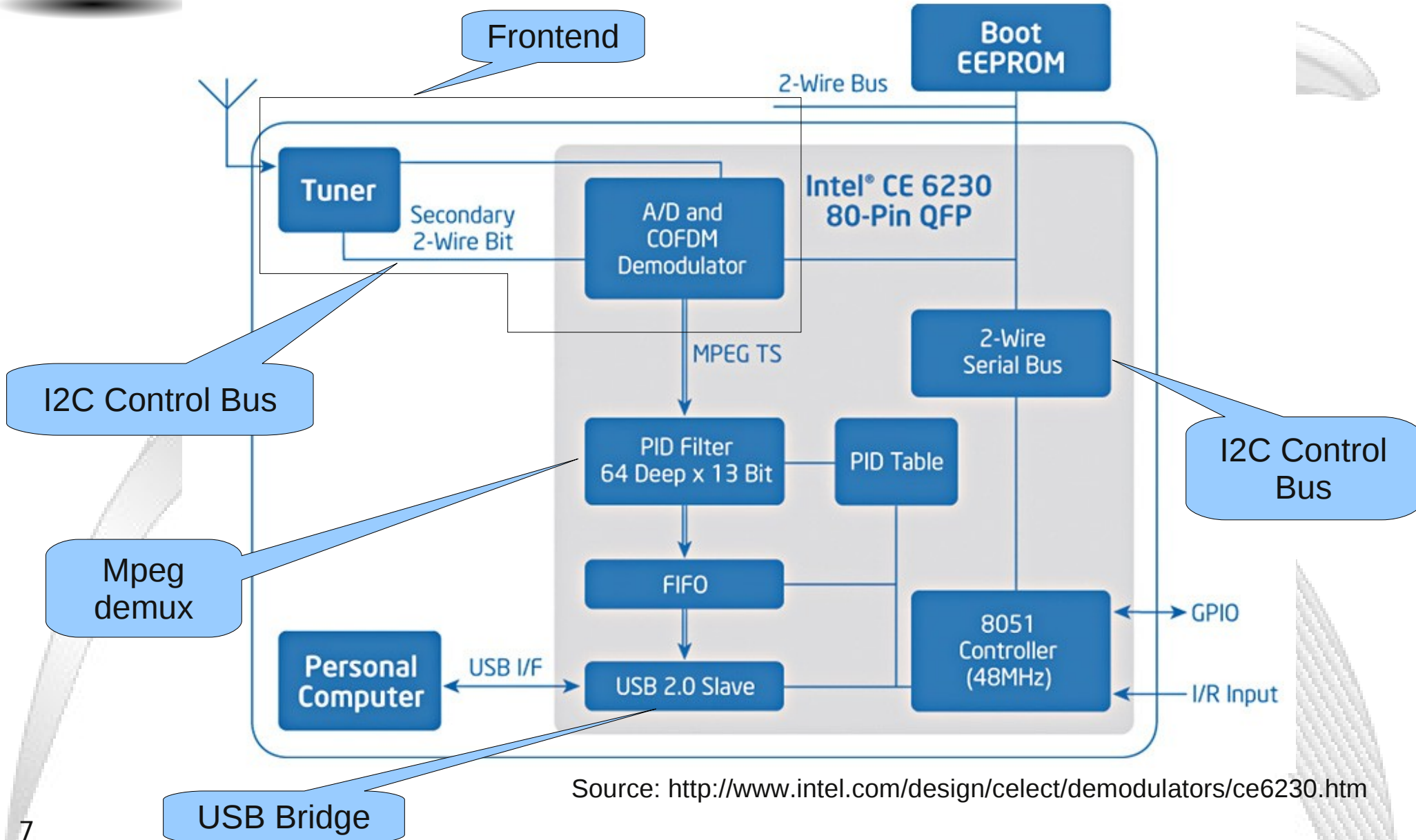
Digital TV Support already at the Subsystem

- ATSC supported;

- DVB main standards (DVB-T, DVB-S and DVB-C) supported;

- Conditional Access Module (CAM) supported.