

The MeeGo Multimedia Stack

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MeeGo Intro

Architecture

Development

GStreamer

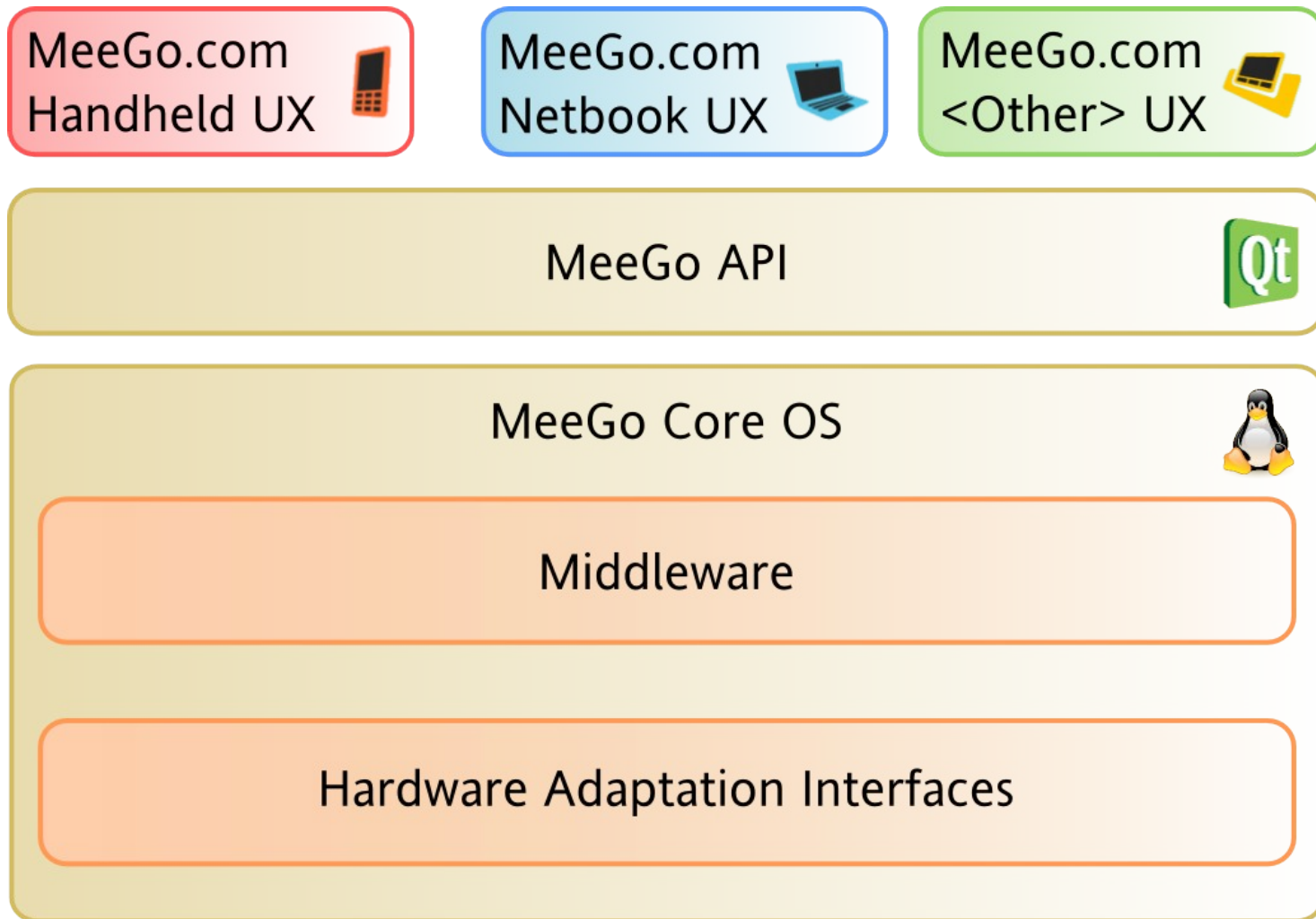
Quick MeeGo Intro

- MeeGo = Moblin + Maemo
- Linux distribution for CE devices
 - Netbook, Phone (Handset), Connected TV, In-Vehicle
- <http://meego.com>
- Linux Foundation hosted project



Architecture

<http://meego.com/developers/meego-architecture>



Architecture - Multimedia

- Kernel
 - V4l2, Alsa
- Middleware
 - GStreamer, Pulseaudio, GUPnP
- API
 - Qt, Qt Mobility Multimedia, Qt GStreamer

Development

- Hardware Adaptation
- Core OS Platform
- Applications

Development – HW Adaptation

- Linux Kernel
 - Drivers
 - user space libraries (alsa, v4l2)
- Middleware plugins
 - GStreamer plugins (Codecs, Camera, Video)

Development - Platform

- libraries from the Linux eco system
- GStreamer, GUPnP, PulseAudio, Xiph codecs, ...

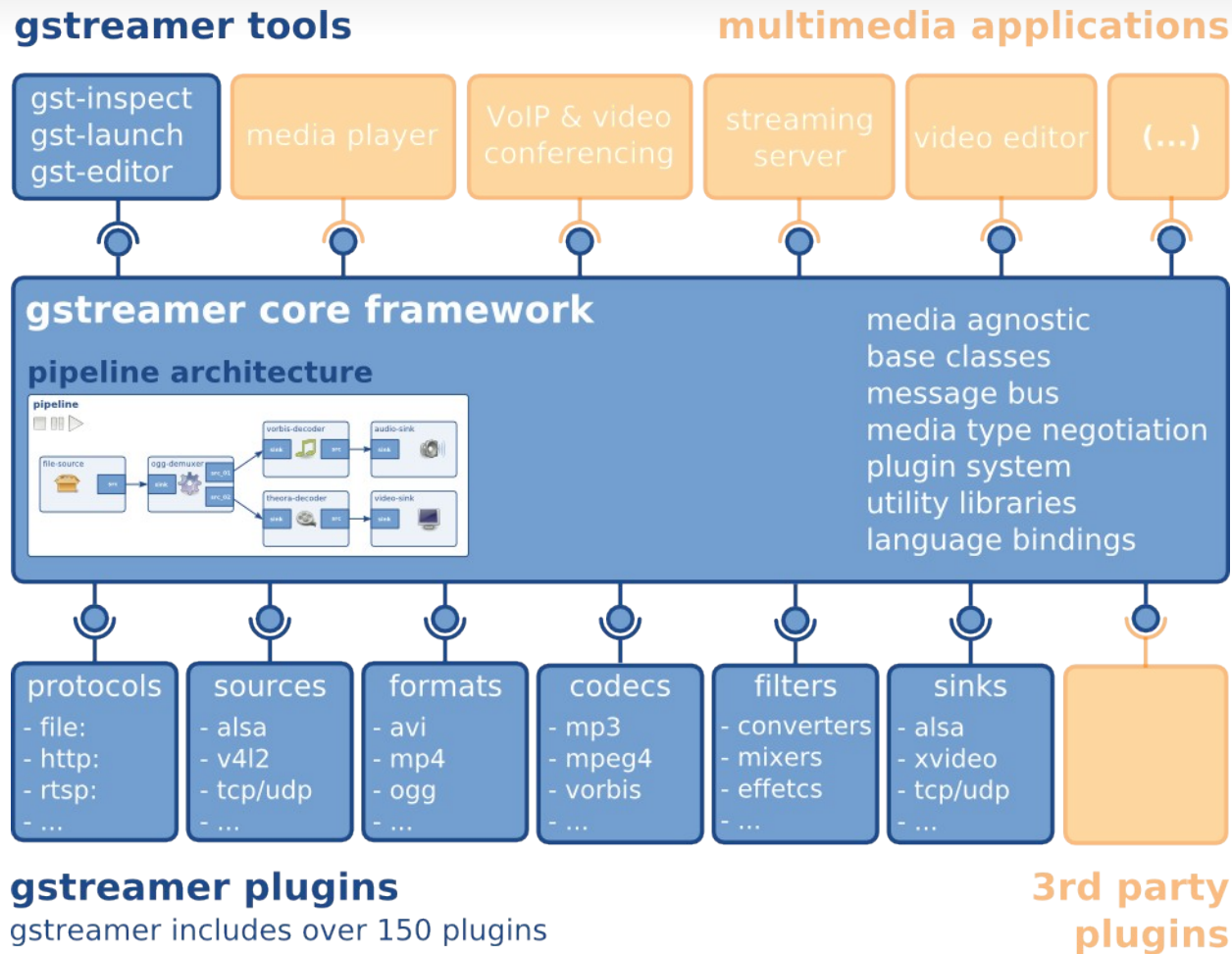
Development - Applications

- QT interfaces are the official one
- Lower level interfaces might have less stability guarantees

GStreamer – Use Cases

- Media Playback
- Voice and Video Call
- Camera Still and Video Capture
- Video Editing
- Media Transcoding
- Metadata Indexing and Thumbnailing

GStreamer - Framework



Media Playback

- MeeGo OS:
 - GStreamer playbin2
 - GStreamer components for streaming, parsing, demuxing and rendering
- Vendor specific:
 - Hw accelerated codecs



VoIP / Video Call

- MeeGo OS:
 - Telepathy
 - Lots of GStreamer components
- Vendor specific:
 - Accelerated voice and video codecs



Camera Still and Video capture

- MeeGo OS:
 - GStreamer camerabin
 - GStreamer elements for format conversion, metadata (XMP, EXIF), muxing, data routing
- Vendor specific:
 - Camera source :/
 - Accelerated video and image encoders



Video Editing

- MeeGo OS:
 - GStreamer gnonlin
 - GStreamer components for muxing, demuxing, format conversion, ...
- Vendor Specific
 - Accelerated codecs



Metadata Indexing & Thumbnailing

- MeeGo Core OS:
 - Tagreadbin (experimental)
 - GStreamer components for parsing, demuxing
- Vendor specific:
 - nothing



Hot Topics

- s/XVideoOverlays/TextureStreaming/ ?
- Bitstream passthrough
- Camera APIs
- Performance optimizations
- Accelerated Codecs & Filters
- Easy to use high level APIs

Hot Topic – Video Rendering

- Xvideo interface is getting old
 - Inherent memcpy
 - Hard to integrate with alpha in Uis
- Classic GL is not well suited either
 - Texture upload
 - Texture streaming needed

Hot Topic – Bitstream passthrough

- GStreamer normally renders RAW A/V locally
- Remote devices can also decode
 - BT Headsets, HDMI TV, SPDIF → Receiver
- Initial support in PulseAudio from Intel
- GStreamers playbin2 needs work

Hot Topic – Camera APIs

- Phone cameras != USB webcams
- V4l2 needs to abstract features better
- Lots of work on GStreamer's camerabin(2)

Hot Topic - Performance

- better performance = longer use time
 - camera recording, music/video playback, call
- locking is slow on ARM
 - overhead for audio part in calls
- low memory footprint = more stuff cached

Hot Topic – Accelerated Plugins

- Software Codecs and Filters
- GStreamer uses ORC to enable CPU SIMD use
- OpenCL would be interesting for GPU use

Hot Topic – High Level API

- Qt Mobility Multimedia
 - MediaPlayer API
 - Audiocapture API
 - Camera API
- More feedback needed

<http://doc.qt.nokia.com/qtmobility-1.0/multimedia.html>

Thanks !

Any Questions ?