LUXOFT

ENGINEERING BUSINESS PERFORMANCE

iviLink

Automotive Connectivity Framework

Overview

Monolithic system VS applications

ivilink

Head Unit / Dashboard

- Long development cycles
- Proprietary tools & platforms
- Software distribution is difficult
- Reliability requirements are very high
- Few options
- Mid/Entry level cars?
- Expensive

Smart Devices

- Vibrant development community
- Proven distribution infrastructure
- Lot’s of media content
- Wide selection of hardware
- Connectivity
- Affordable
- Short life-cycle

Apps Connectivity Technologies

MirrorLink

Too many x-link technologies
We need a standard!

Livio Connect API

AppLink

Pioneer

webinos

Application sharing

Android application which controls climate control in the car remotely

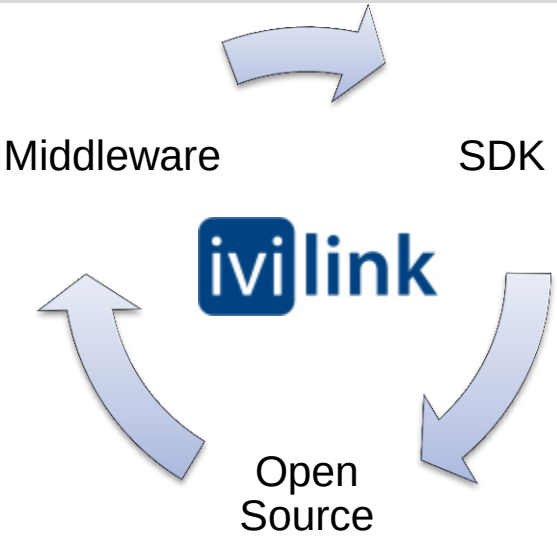
iviLink

Native climate control application on Head Unit

- Head Unit and mobile device are different
  - User interface concept
  - Usability principles
  - Software architecture

- We don’t need to run phone applications on Head Unit. They're designed for a device which is in your hands but not in front of you
- We need a convenient mechanism to connect native applications on Head Unit and mobile device

What is iviLink



Middleware

- iviLink is not the App itself
- Applications on mobile device and Head Unit are using iviLink to connect with each other
- iviLink is located below in the system architecture

SDK

- We're providing an SDK to connect Head Unit and applications via iviLink
- Just add Profile lib to you code and use it's API
- iviLink will make all the rest connectivity for you

Open Source

- iviLink is Open Source
- You can download Core Stack and SDK from Github repository
- SDK for Android and Linux are available
- Support of iOS, QNX and other systems is on the way

Example Use Cases

Driver

Passenger

Commercial Telematics

Features where iviLink is needed

Diagnosis and car settings

iviLink allows to see and control car's Climate control, Seat position and other settings from a Mobile Device. You can even get diagnosis data (e.g. ODB) from vehicle and display it on a phone/tablet

Screen sharing

User is able to see and control whole screen of his Mobile Device from Head Unit

Social media

Know all news from your social network on the go. When car is in motion driver can only listen to them via TTS not to be distracted from the road situation

Features where iviLink is needed

Headless units and RSE

- iviLINK allows touch screen devices to be used as external screens to screenless vehicle modules
- Plug a tablet to the headrest and you will get Rear Seat Entertainment which is connected to the Head Unit via iviLink

Features where iviLink is needed

Remote Car Control

- iviLink lets control vehicle from mobile device. It makes your phone/tablet a ‘light’ version of the Head Unit
- Whether you have the Head Unit installed or not

Features where iviLink is needed

No media repackaging

- iviLink supports native media streaming
- No decoding-encoding required on server side
- No MIPS and memory spent for screen capturing, no media codecs on streaming side, true video resolution and FPS supported by design

Scalability

Profiles and services

- Technology is Profile based
- Profile is a connection point between application and iviLink
- To add new App for HU developer just have to write new Profile

Adding new Profiles

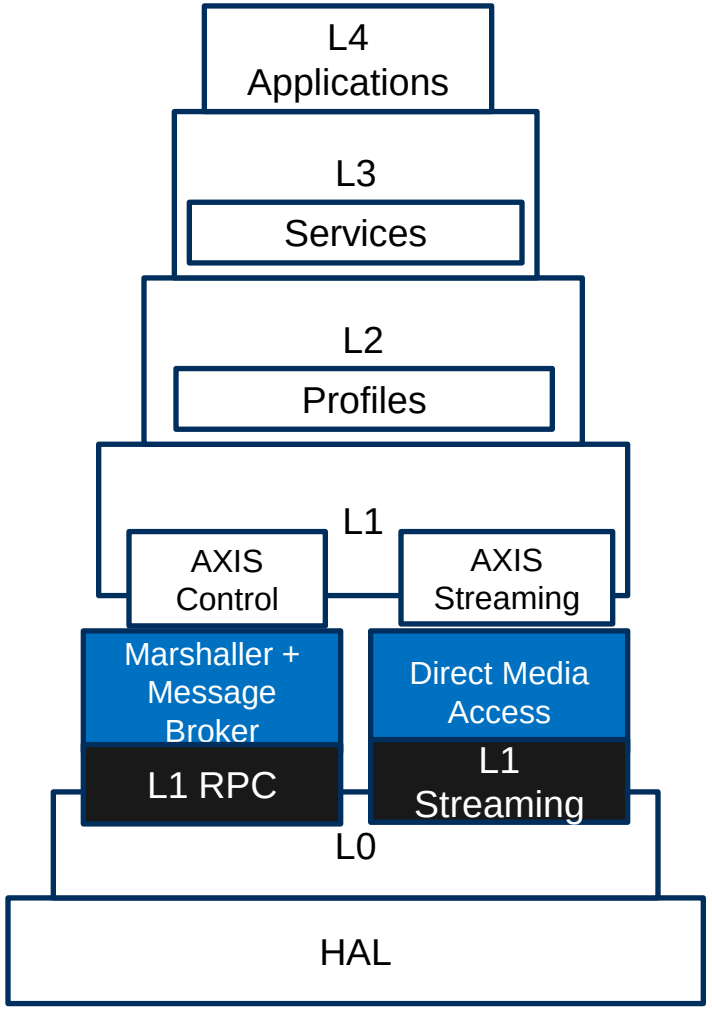
- Profiles can be added to the system on the fly
- New Profile is installed on Mobile Device
- HU side will recognize new entry and copy it
- Functionality is extended without necessity to flash the whole system

Hardware Agnostic

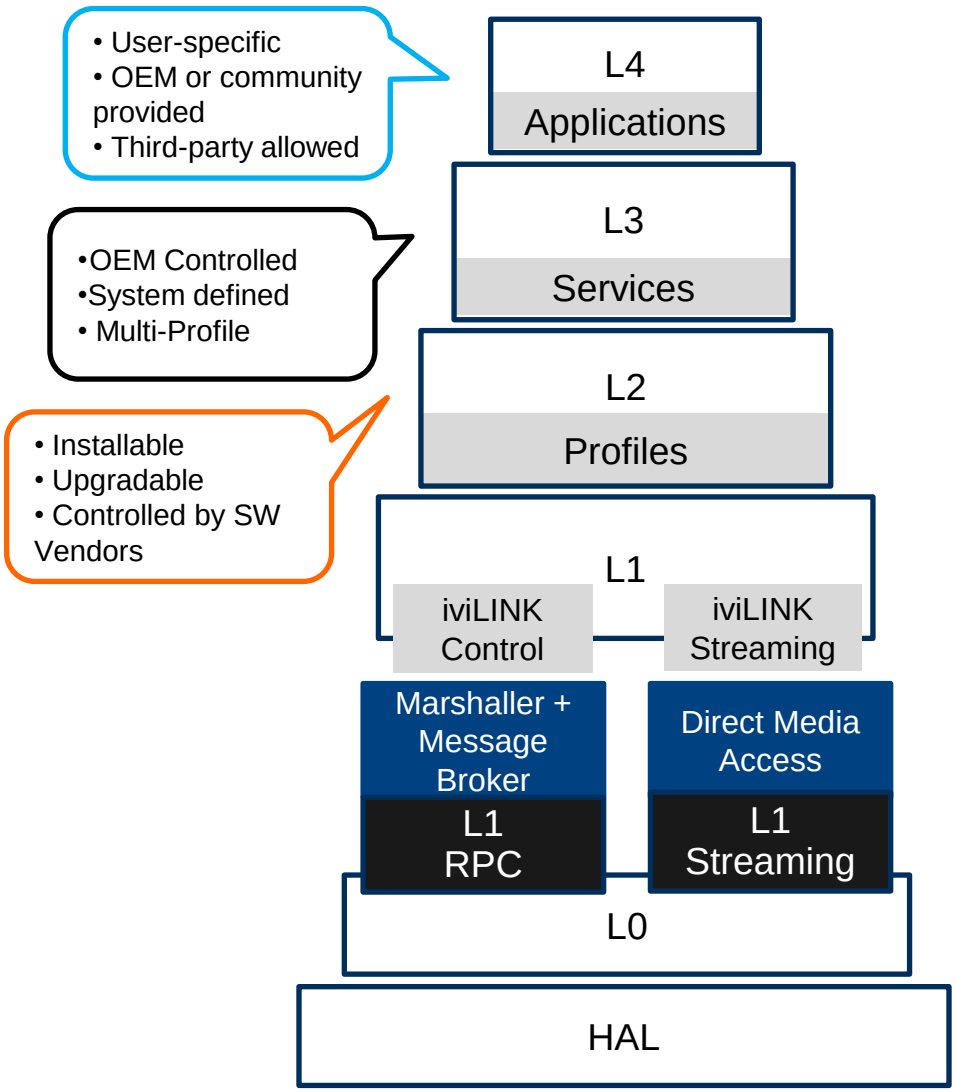
- iviLink is capable to operate over any serial link like Bluetooth, WiFi or USB
- But it doesn’t use tunneling for existing data and media transfer protocols

iviLink architecture

- L2 and L3 is a connection point between iviLink core stack and user's applications
- In other words - Profile is an API that applications use to access iviLink
- Service is a group of Profiles. If App needs access to several Profiles it can use Service which group these Profiles
- OEM-specific requirements will be programmed within Profile code
- Profile can even embed the whole technology inside. Any X-Link can be integrated to iviLink within dedicated Profiles
- Profiles APIs for Applications are very easy and high level



iviLink architecture



Well Designed

- iviLINK is architected with a lot of care to cover needs of end users, device and vehicle manufacturers.
- And it is easy in use: everybody controls its own area.

Full control and flexibility

- iviLINK has ‘by layer’ controllability
- Each level is controlled by its owner, it makes the technology fully manageable by OEM, without sacrificing community-driven applications development
- OEM selects the functionality and allows applications and Profiles use

Security

Embedded security mechanism

- RSA driven pairing mechanism for device authentication and identification
- DRM and “no catch / no store” approach available for streaming Profiles
- Signature-based Profiles approval

Thank you!