Tizen IVI Architecture New features

Dominig ar Foll, Intel Open Source

TIZEN™ DEVELOPER CONFERENCE 2014 SAN FRANCISCO

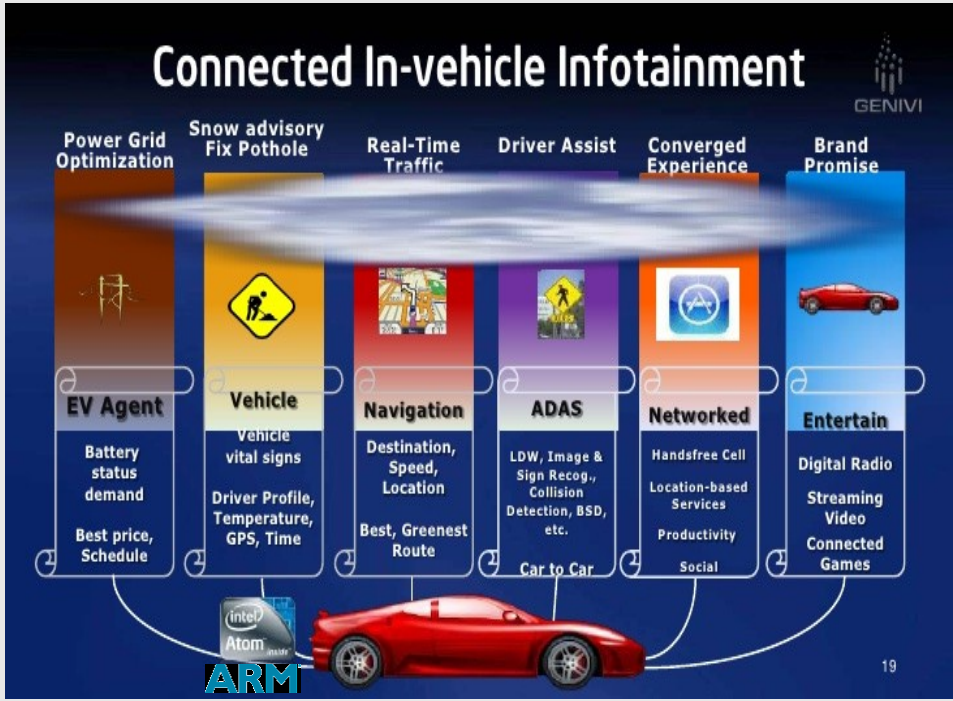
Agenda

- What is Tizen IVI
- How to join the project
- Our road map
- Architecture
- New Features

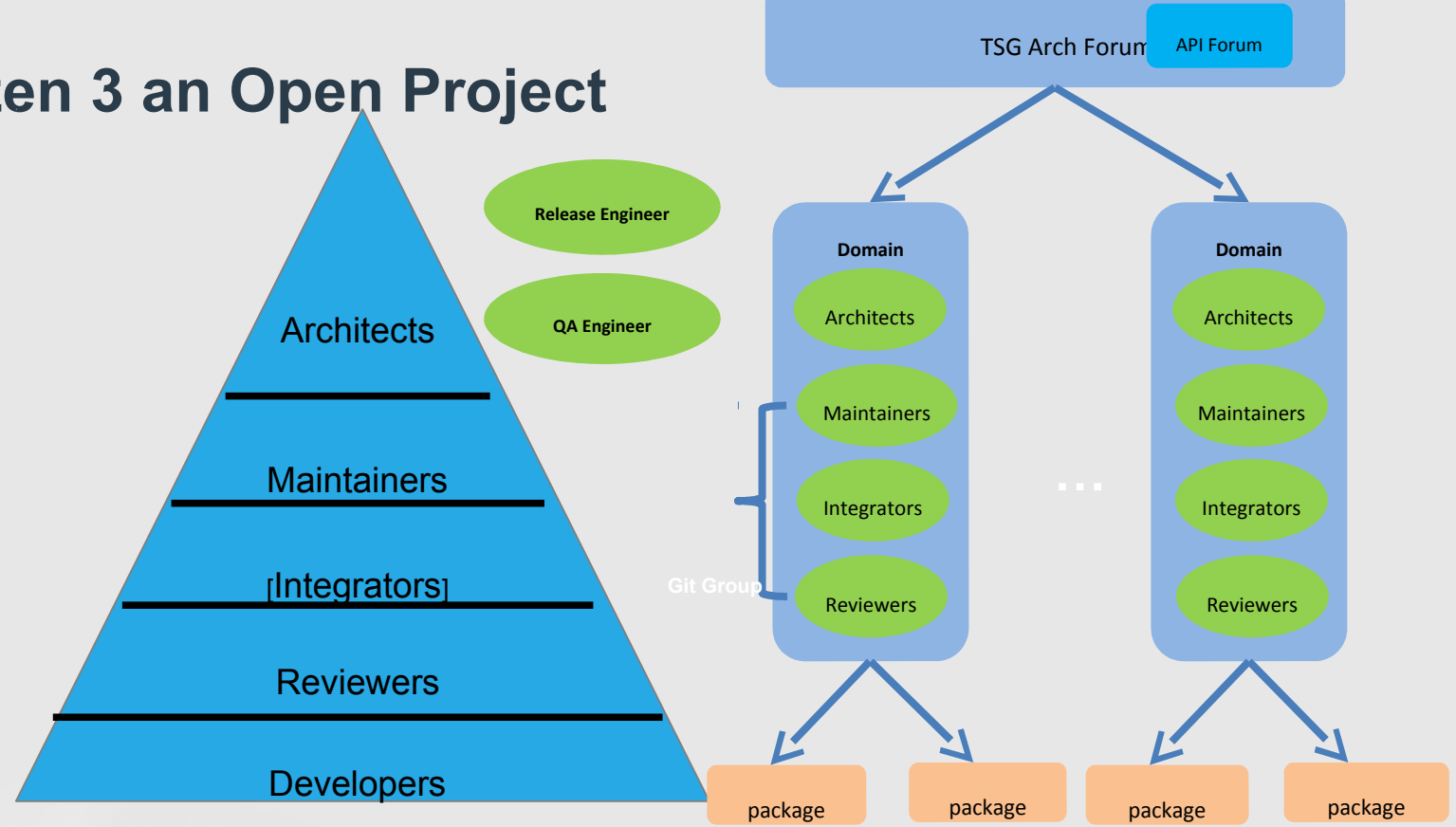
What is Tizen IVI

Tizen IVI

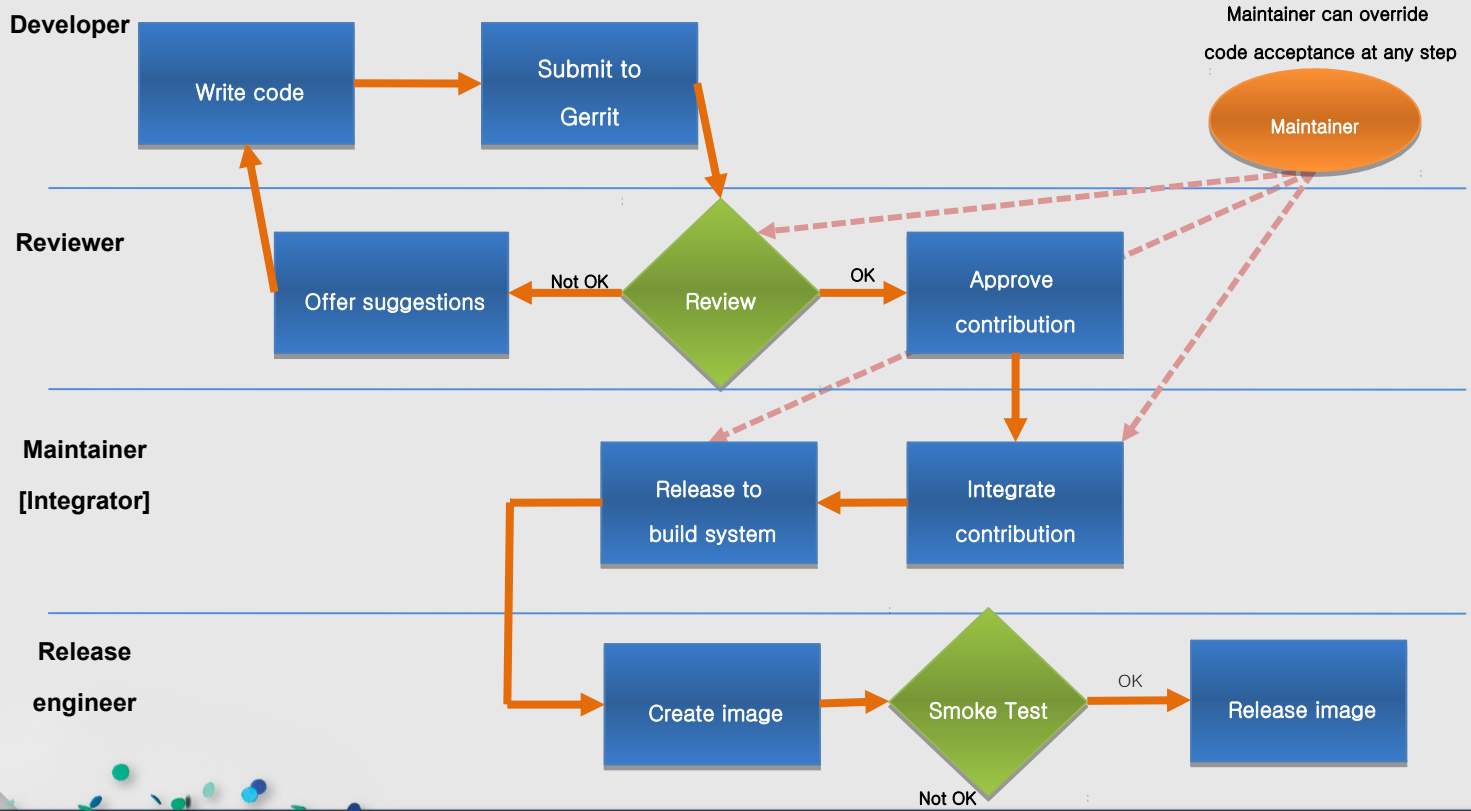
- Support Intel and ARM
- Secured Linux embedded distro
- Fast boot
- Advanced connectivity
- Wayland multi-tool kit
- HTML5 ready
- IVI middleware
  - Media
  - Car Can-Bus
  - Phone and messages
- Compliant with IVI standards
  - Genivi
  - AGL



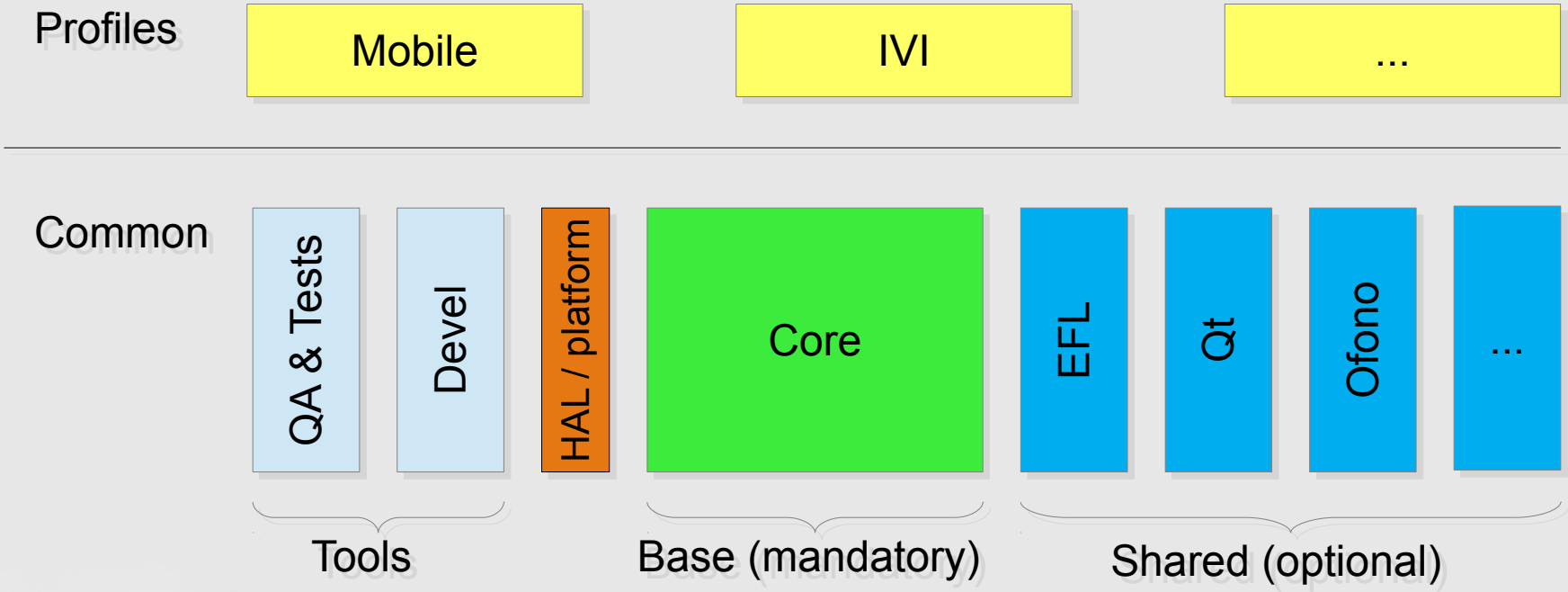
Tizen 3 an Open Project



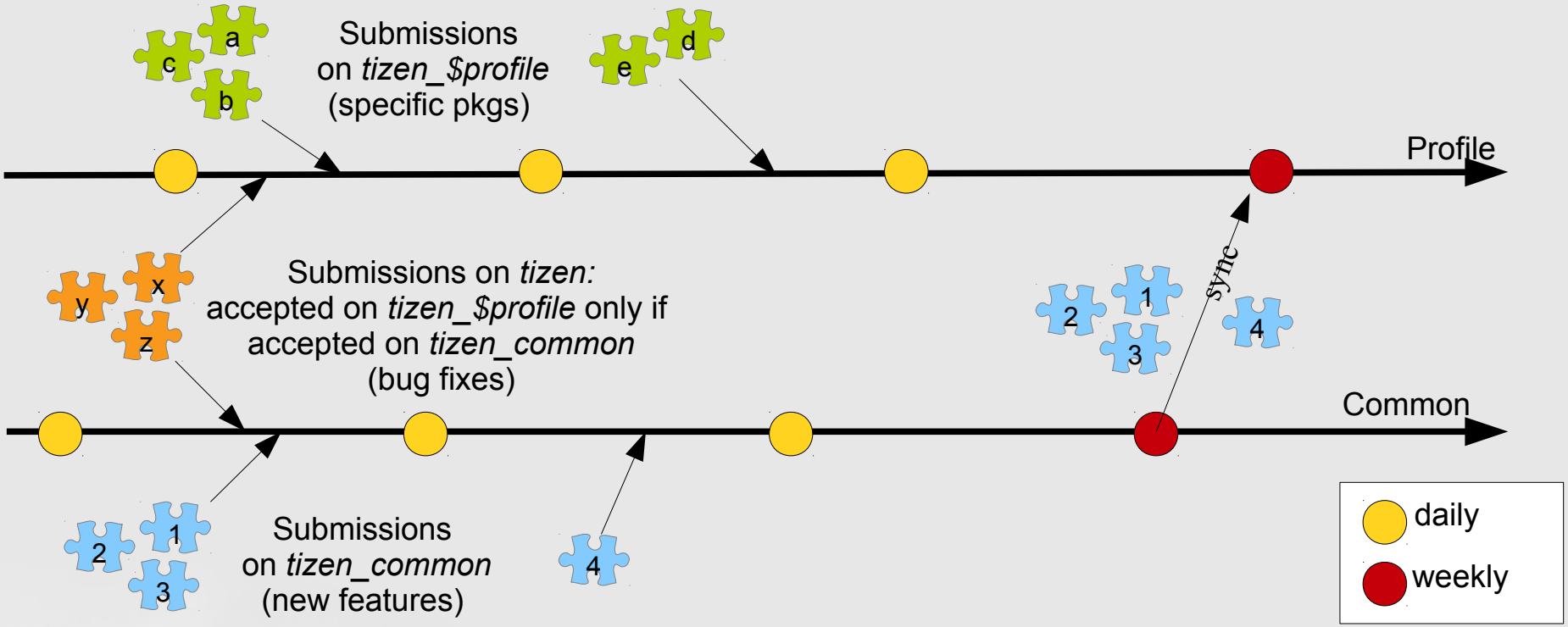
Code contribution Flow



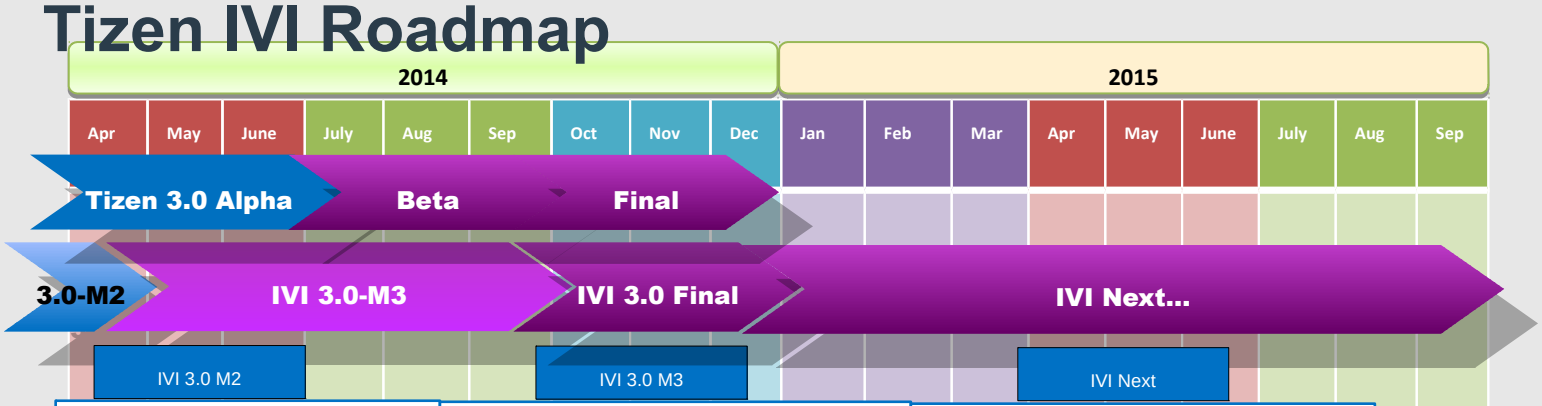
How to Create a New Tizen Profile



Keeping Synced with Tizen:Common



Tizen IVI Roadmap



POR

In Planning

Functional Features

- BT - Serial Port Profile 1.1, AVRCP, A2DP, HFP 1.6, MAP
- Web APIs (Vehicle Info, DLNA DMS, Speech)
- Smack 3 domain model
- Apps2App Comms
- DLNA
- Media Player w/BT and DLNA
- Dialer App w/BT HFP
- WebGL, Video and CSS HW accel
- HW accel of Video streams
- Genivi Layer Manager
- Genivi Audio Manager
- Diagnostic Log and Trace
- Tizen IVI SDK

Functional Features

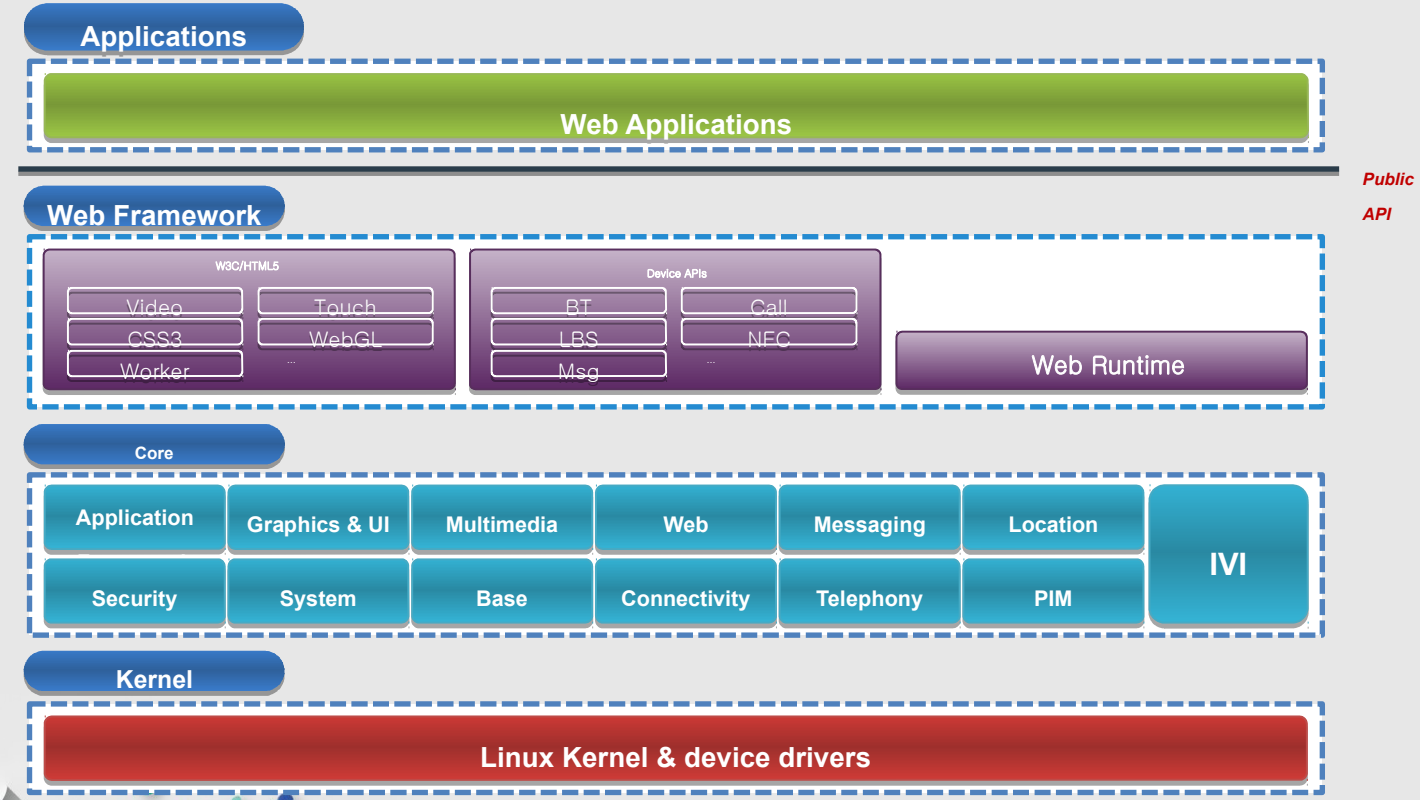
- GENIVI Compliance w/ 6.0
- AGL incremental requirements as defined by AGL and OEM/Tier1 customers
- Crosswalk replaces webkit-efl
- Smack 3 domain model w/ Crosswalk
- Sequential Multi-User
- PIM w/ Cloud sync
- ICO sample UI w/ GENIVI Layer Manager
- Modello sample HMI
- Fast boot to camera
- WiFi Direct support

Functional Features

- Vendor defined Smack domains
- Yocto Build Support
- Simultaneous Multi-User
- Integrated Browser
- Additional AMB, Web APIs
- Additional AGL Component Integration
- Murphy w/ GENIVI Audio Manager
- *Miracast*
- *Qt5*
- *SDK Enhancements*
- *Additional Tools*

*** IVI 3.o Final will be focused on bug fixes and stabilization of all features in previous Tizen IVI 3.0 releases**

Architecture



Multi-User

Tizen IVI Multi-user system

Tizen Multi-user requirement

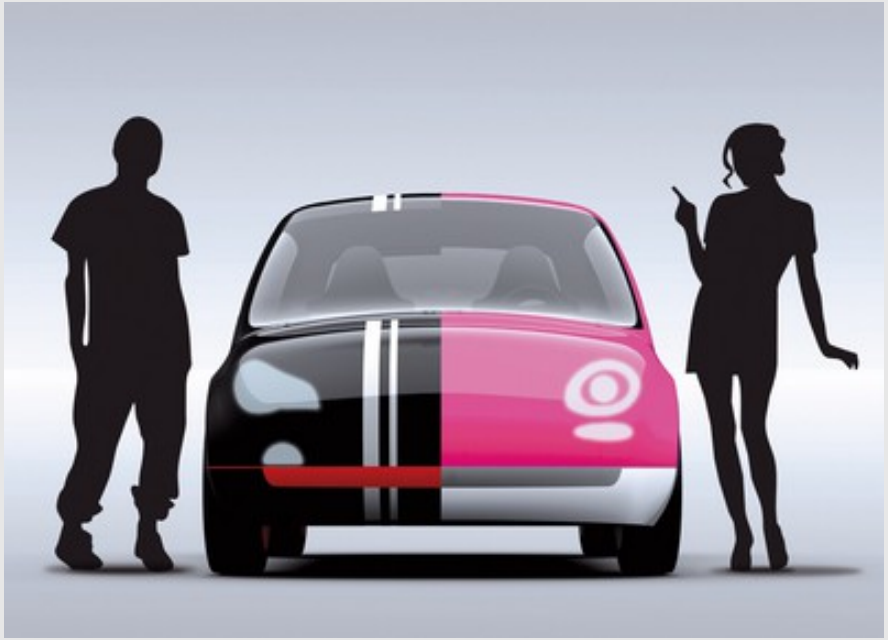
- **Guest log in by default**
  - Start Generic Application
  - (e.g. rear cam, radio, ...)
- **User logging in shall not stop running applications**
  - ID user is added on top of Guest.
  - Multiple user can share the same Display
  - (e.g. passenger and drivers)
  - Users can exchange seats
  - (and so Display)
- **Security must protect the user data and the system data.**

Dissociate Seat and User

- **General Linux**
  - Before Login → No use
  - Seat = Display
- **IVI**
  - Before Login → Guest
  - Login → add user to a seat
  - User can change seat

What needs to change

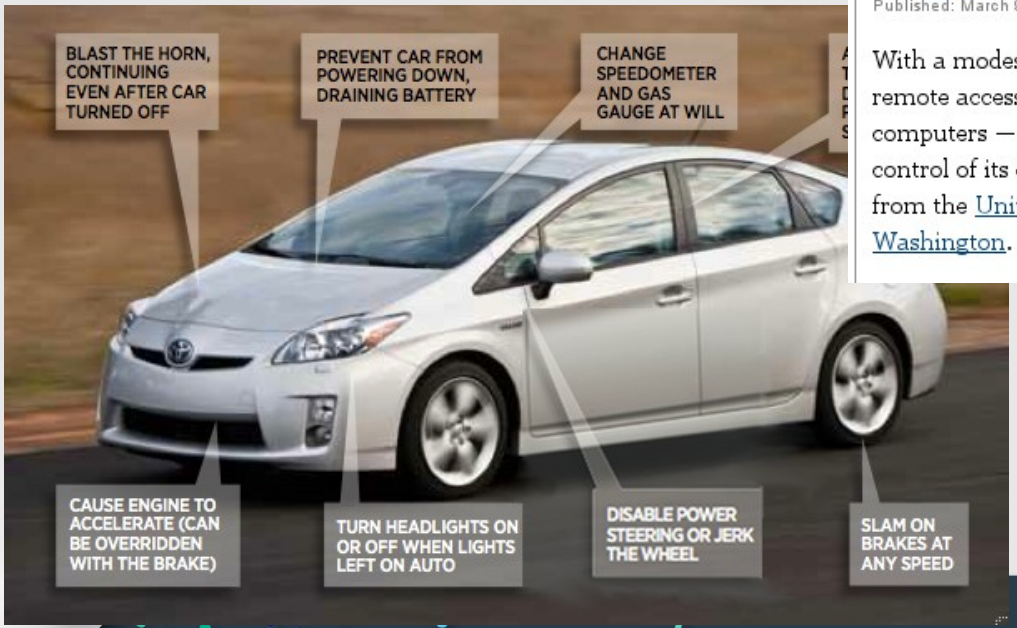
- Application Frame work
-
- Login Manager
-
- Startup procedure
-
- Sécurity model



To know more : join the session on Multiuser

Security

¿ Security in a Car ?



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Researchers Show How a Car's Electronics Can Be Taken Over Remotely

By JOHN MARKOFF
Published: March 9, 2011

With a modest amount of expertise, computer hackers could gain remote access to someone's car — just as they do to people's personal computers — and take over the vehicle's basic functions, including control of its engine, according to a report by computer scientists from the University of California, San Diego and the University of Washington.

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Tizen an integrated security

- **Application isolation with controlled sharing**
  - No access to system privileges
  - No undeclared data sharing
  - No direct launch in session
- **Per Application control over privileged resources**
  - Extensive control of system resources
  - Fine grain control of the ressource
  - HTML5 and Native Applications
- **Multiple users on a device**
  - Application available for all or individual user
  - No data contamination of uncontrolled sharing.

Three Domains Model

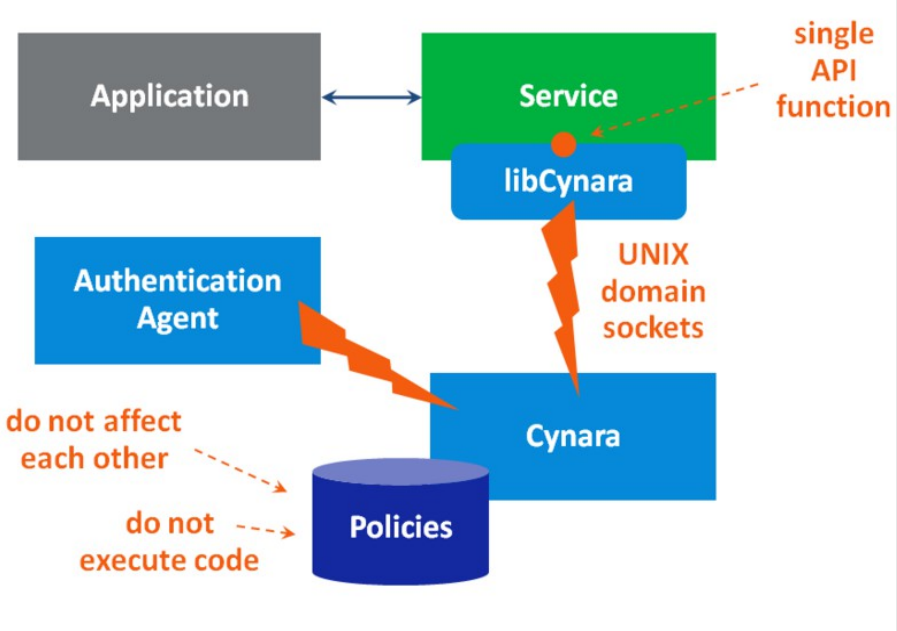
A new simplified model for more efficiency in Tizen 3

- "User" : user domain for user processes and data,
- "System" : system domain for system processes and their private data
- "_" : floor domain for static public data.
- Peers domains are used for

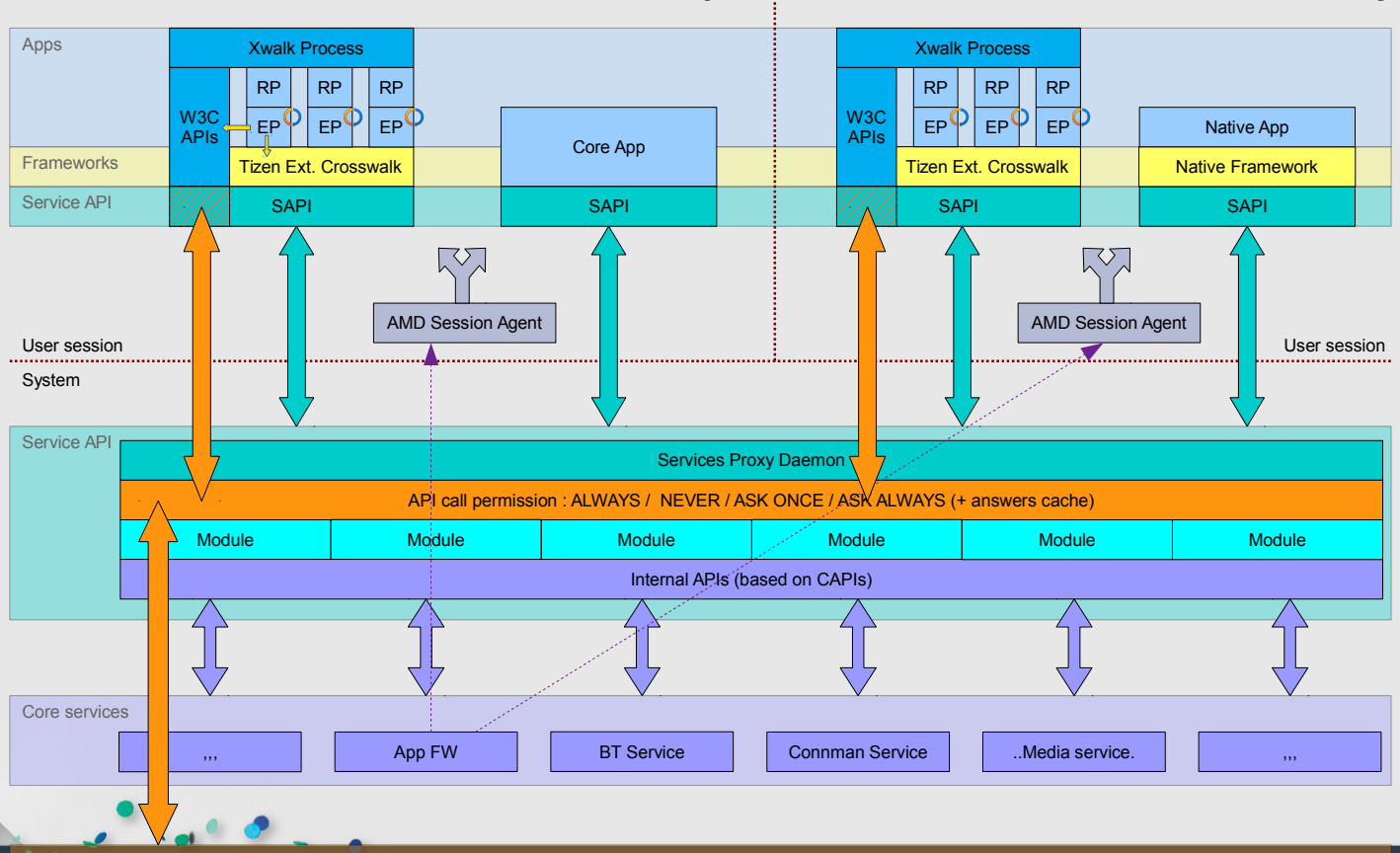
- System process change ID whenever possible
- Each User has a unique UID
- Each Application has a unique Smack label.

Per Application Manifest

- **Manifest are fined grained**
  e.g. Bluetooth
  - bluetoothmanager
  - bluetooth.spp *(Serial Port Profile)*
  - bluetooth.opp *(Object Push Profile)*
  - bluetooth.health (Health Device Profile)
  - bluetooth.gap *(Generic Access Profile)*
  - bluetooth.admin

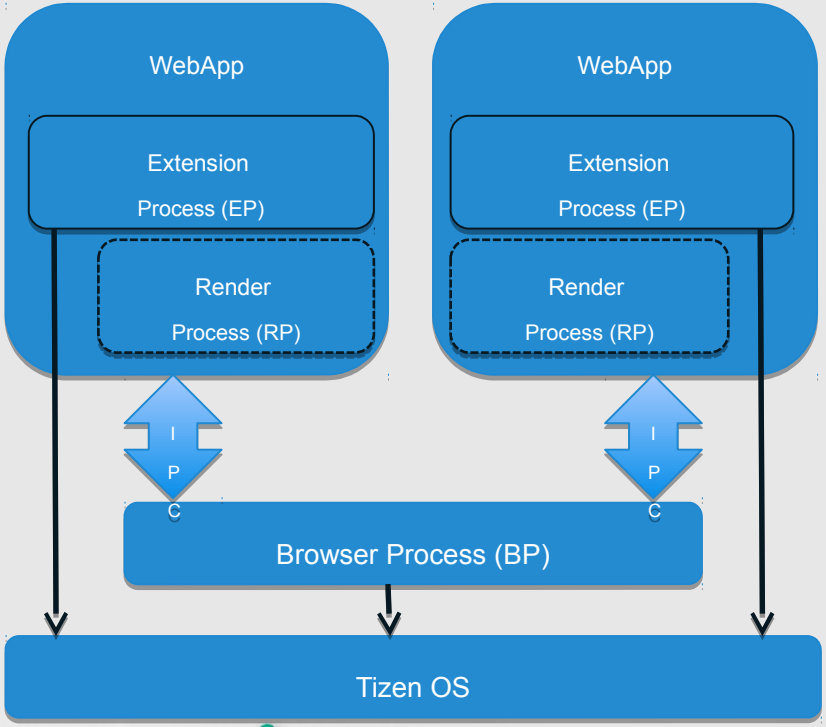


Manifest enforcement SAPI *(evolution from Tizen 2.x CAPI)*



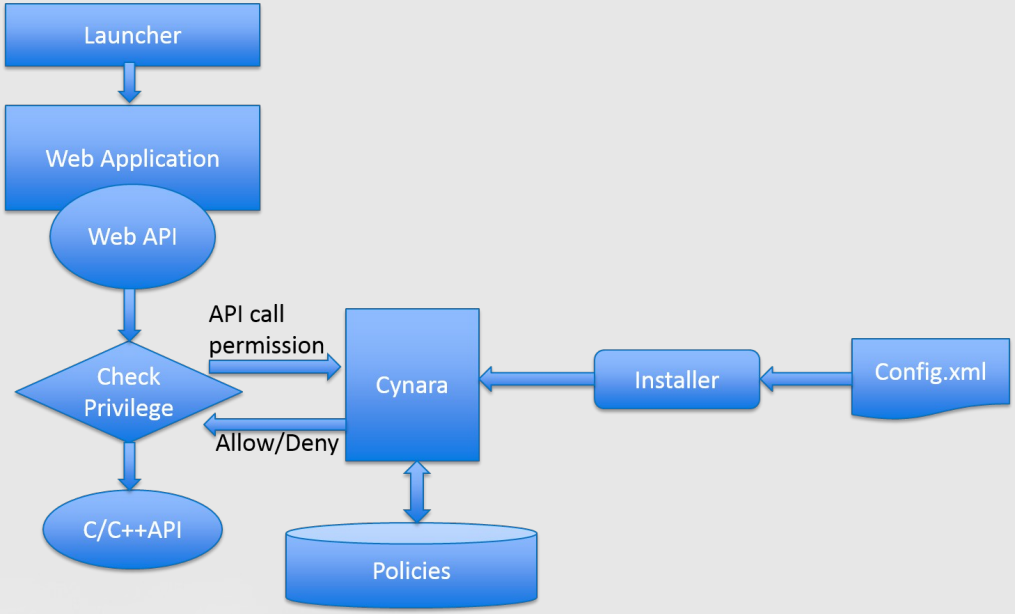
Web Run Time

CrossWalk Architecture



- Shared process model
- BP is shared with all WebApps
- WebApp contains EP and RP
- RP is sandboxed and can't do OS calls
- RP delegates OS calls to BP via IPC
- EP is not sandboxed and can do OS calls

CrossWalk Security



- Policy is created during WebApp installation
- API permission is checked against the policy during runtime
- Policy contains <application context>, <privilege> tuple
- Permission check has simple answer: ALLOW, DENY or ASK USER

Modello HTML5 UI

- **HTML5 UI**
  - Proof of concept
  - Reference
  - Open Source Option
  - Fully functional

Nice add-on

Tizen Goodies

- **Graphic**
  - Weston 1.5 with XDG and Layers
  - EFL 1.9
  - QT 5.3
  - Ozone
  - Gstreamer 1.2
- **Automotive Middleware**
  - Automotive Message Broker
  - Murphy resource management
- **DLNA, WiFi P2P, DNLA, NFC, ...**
- **Build Systems**
  - OBS
  - Yocto
  - Eclipse SDK
- **Architecture**
  - IA 64 bits
  - IA 32 bits
  - ARM 32 bits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