Porting Tizen:Common to open source hardware devices

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Agenda

• Definitions
  – Tizen:Common
  – Open Source Hardware
• Case #1: Tizen-sunxi
• Case #2: Tizen-rockchip
• Case #3: Minnowboard max
• Q&A
Definitions
Tizen:Common

- Profile Agnostic
  - Ie: Tizen:IVI is based on it (90%)
  - Other public profiles are based on it (OBS)

- Features
  - Long term support (Linux 3.14)
    - Security using SMACK
  - Cross arch: x86, x86_64, armv7l, aarch64
  - Cross display: Wayland or X11
    - Accelerated graphics
  - Application framework (native or web apps)
  - Inclusive platform: EFL, Qt, Contribs...
Open Source Hardware

• What?
  – Same as FLOSS but different
    • Licenses: Open Source Hardware Association
    • Need accessible tools
  – Examples: Arduino, OLimuXIno

• Why?
  – Customization
    • Focus on your features, innovate!
  – Community
    • Feedback, experiences, improvement
  – System integrity: FLOSS
Show case #1: Tizen-sunxi
Tizen-sunxi

Community open-source port of Tizen with Linux-sunxi kernel for devices with Allwinner SoC.

https://github.com/leon-anavi/tizen-sunxi
Compatible Sunxi Devices

- A1X – A10-OLinuXino-LIME, A10S-OLinuXino-MICRO
- A20 – A20-OlinuXino-MICRO, A20-OlinuXino-LIME/LIME2
- A33 – work in progress
- A80T – work in progress
- A83T – work in progress
Building Tizen-sunxi image from scratch

- Build Das U-Boot
- Build Linux-sunxi kernel
- Get Tizen:Common source code using Git
- Build RPM packages using Git Build System (GBS)
- Prepare kickstarter file and create Tizen platform image
- Create bootable microSD card with a FAT and an ext4 partition
DIY Tizen Laptop & Tablet
Show case #2: Tizen-rockchip
Tizen-rockchip

Community open-source port of Tizen with Linux-rockchip kernel for devices with Rockchip RK3188 and RK3288 SoC. Compatible devices: Radxa Rock, Firefly-RK3288

https://github.com/leon-anavi/tizen-rockchip
Building Tizen-rockchip image from scratch

- Obtain **proprietary** bootloader (alternatively Das U-Boot)
- Build **Linux-rockchip** kernel
- Get **Tizen:Common** source code using Git
- Build RPM packages using Git Build System (GBS)
- Prepare kickstarter file and create Tizen platform image
- Create bootable microSD card
Show case #3: MinnowBoard Max
MinnowMax: Hardware

- Created by CircuitCo Tx USA
- Copyleft: CC-BY-SA

- X86_64: BayTrail Atom E38xx
  - GPU: Intel HD Graphics

- IO: USB3, Ethernet, HDMI, SD, GPIO...

- Expansion cards called Lures
  - Display, Audio, SATA
  - CAN, ADC, PCIE, Gb Ethernet ...
MinnowMax: Software

- UEFI Firmware or CoreBoot
- Mainline Linux Kernel 3.14+ LTS w/ GPU support
  - Linux Distros: Mint, Fedora, Debian, Ubuntu, RHEL
- Tizen:Common
  - Uses Minnowboard Max as reference target along NUC
  - Download EFI images (gummiboot):
    - tizen-common_*_common-wayland-efi-x86_64-sda
  - Build Tizen-Yocto ones (meta-intel layer and GRUB-EFI)
More...
What's going on? Join us!

• Involving communities:
  – elinux.org (minnowmax)
  – Yocto project (Tizen-yocto)
  – IOC Integration (IoTivity)
  – Hackers and Makers welcome!

• Challenges:
  – Port Tizen: Common to more devices:
    • OMAP, I.MX, Galileo2 and yours?
  – GPU driver supports (wayland)
  – More peripheral support (Touch screen, IoT… )
Tizen Cookbook

30% discount codes until 28/02/2015:

• Book: tcbd30
• eBook: tceb30

https://www.packtpub.com/application-development/tizen-cookbook
Resources

- Open Hardware
  - http://p2pfoundation.net/Open_Source_Hardware
- Tizen
  - https://wiki.tizen.org/wiki/Common
  - https://wiki.tizen.org/wiki/ARM
- Tizen-sunxi
  - http://linux-sunxi.org/Tizen
- Tizen-rockchip
- MinnowBoard Max
  - http://www.elinux.org/Minnowboard:MinnowMax
Thanks

- FOSDEM team
- Linux Foundation
- Tizen Association
- Allwinner
- Rockchip
- Intel
- Circuit Co
- Olimex
- Tom Cubie
- T-firefly
Questions?

http://wiki.tizen.org/wiki/OSHW