



CE Linux Forum

CELF Project and Conference Information

Tim Bird

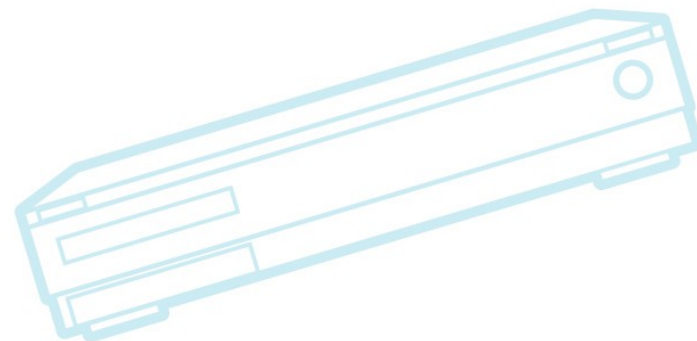
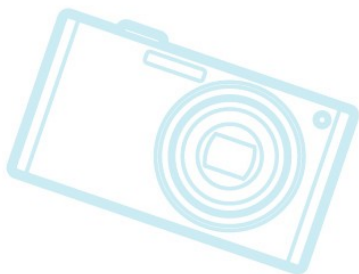
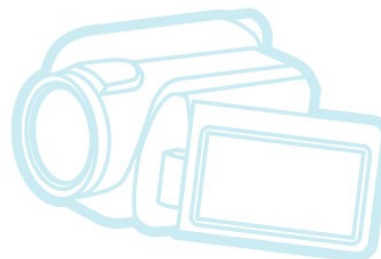
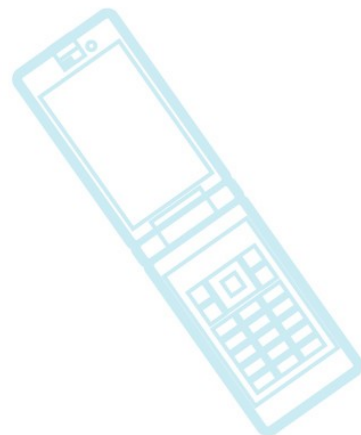
CELF Architecture Group Chair



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Agenda

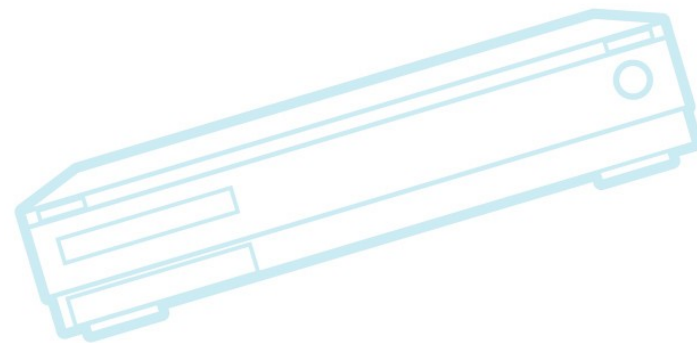
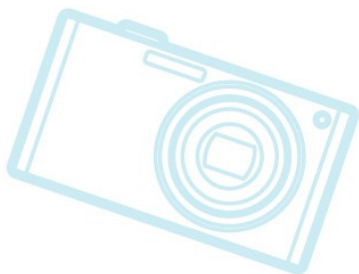
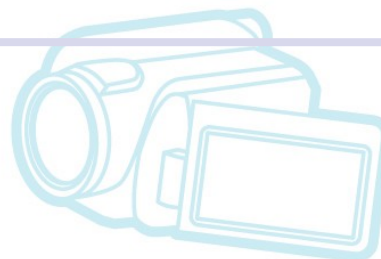
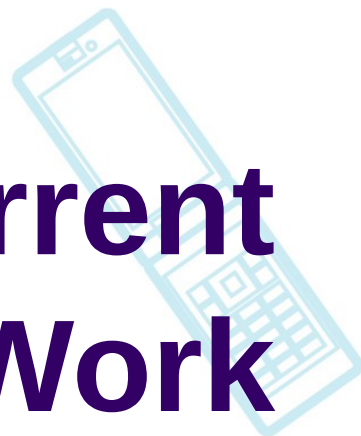
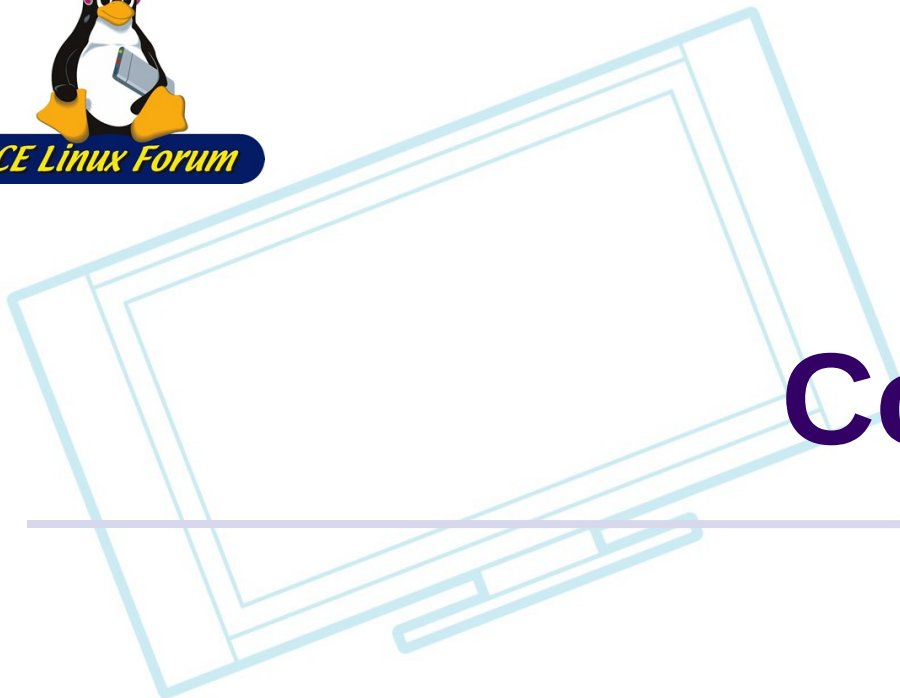
- Contract work update
- Open Project Proposals
- Conferences





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Current Contract Work

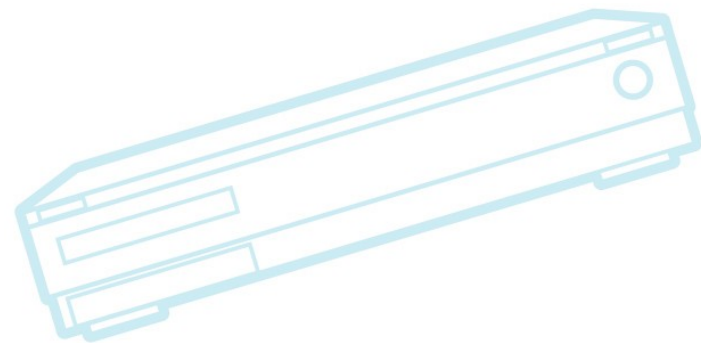
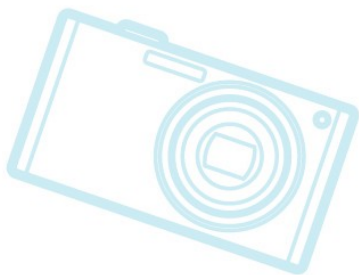




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Recent Contract Work

- Device Tree support for ARM
- Function-sections work (size)
- Cache effects of small data size
- Matt Mackall – embedded maintainership

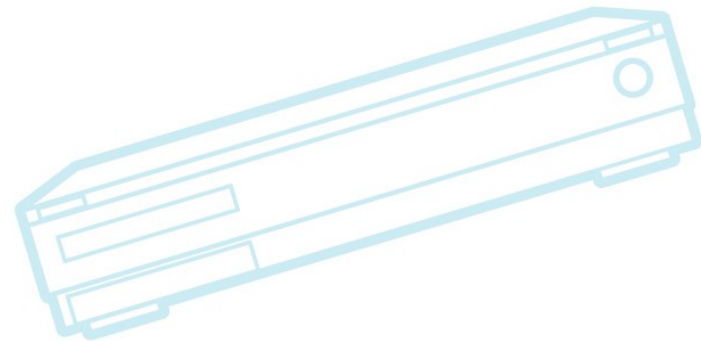
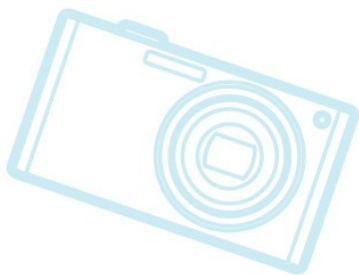
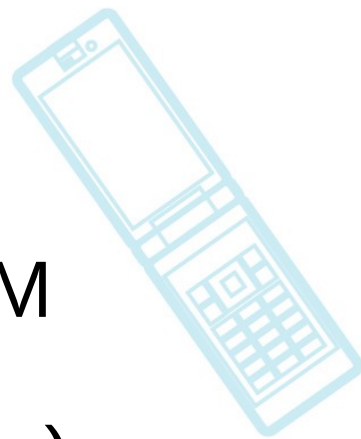




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Device Tree for ARM

- Add support for “device tree” for ARM platforms
- Contractor: Secret Labs (Grant Likely)
 - Grant is now maintainer of DT code for all architectures





Device Tree work status

- All the infrastructure is up and running, and the mechanism is in place to pass a device tree to the kernel at boot
 - Device tree support is ported to ARM and running on multiple OMAP platforms (Overo and BeagleBoard)
 - Can boot two different ARM boards with same base kernel (with statically linked device tree)
- Grant is working to complete automatic registration of devices and patching the device drivers to work with the new data
- Next milestone is to write the documentation and final report



Device Tree mainline status

- Most of the needed code is already merged, or is queued up for the next merge window.
 - Latest merge of device tree changes in Linus' tree:
<http://git.kernel.org/?p=linux/kernel/git/torvalds/linux-2.6.git;a=commit;h=6ebdc661b608671e9ca572af8bb42d58108cc008>
 - More stuff is ready at: <http://git.secretlab.ca/?p=linux-2.6.git;a=summary>
- Core ARM device tree patches have been posted, but haven't received any comments yet



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Function-sections

- Add support for compiler flag `-ffunction-sections` to Linux kernel
- Contractor: Denys Vlasenko
- Main work: Rename existing linker sections to avoid possible collision with function-sections
- Purpose: shrink the size of the Linux kernel image by up to 10%



Function-sections purpose

- -ffunction-sections puts each function in its own linker section
- Allows eliminating more code by the linker
 - Which results in space savings
- Also, could support code re-ordering for bootup time reduction or improved cache utilization:
 - See http://www.celinux.org/elc08_presentations/DDLink%20FunctionReorder%2008%2004.pdf



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Cache effects of small data size

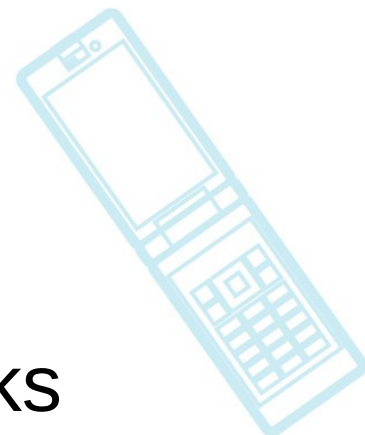
- Investigate performance effects of using small data elements in kernel data structures
- Contractor: Denys Vlasenko
- Investigate whether use of small integers (1-byte) has positive or negative performance impact
- Sony research indicates that cache effects are a big deal, for real-time performance
- Interesting article on compressing kernel data structures:
 - <http://www.cs.arizona.edu/~debray/Publications/linux-dynamic-data-compress.pdf>



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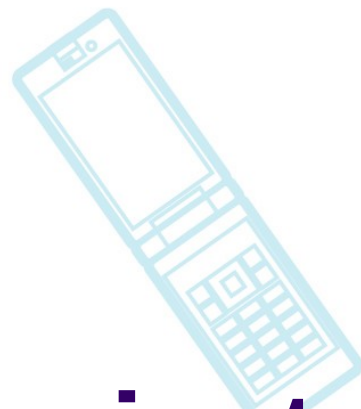
Matt Mackall

- CELF sponsor's Matt to do general “embedded Linux” maintenance tasks
 - CELF pay him part time to work on task of general interest for embedded Linux
- Status:
 - Not much activity in last 2 months
 - Has worked to resolve name conflicts in MTD code

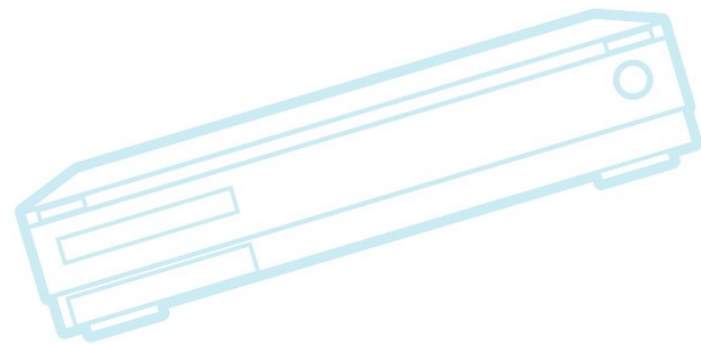
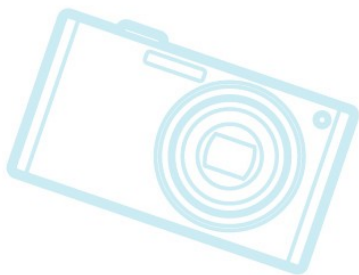




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Open Project Proposals

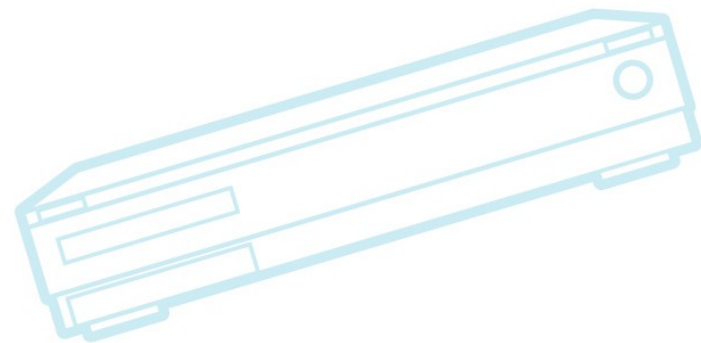




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Contract Project Planning

- CELF is using an open process for 2010 project planning
- Public can propose a project to be worked on
 - CELF will decide which ones to work on, up to our annual contractor budget
- See http://elinux.org/CELF_Open_Project_Proposal_2010



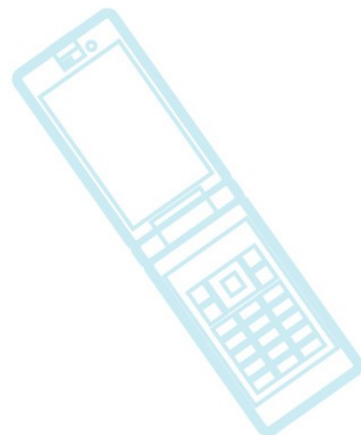


Contract Project Status

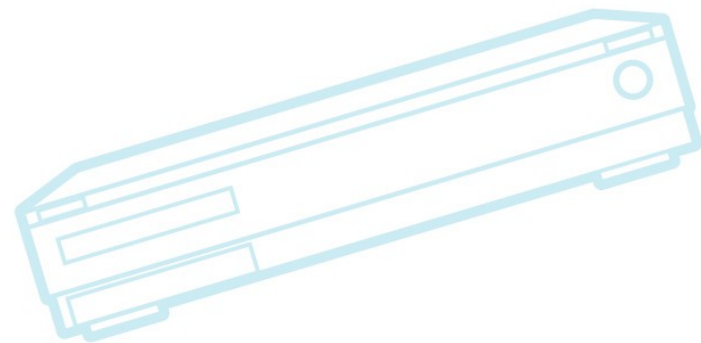
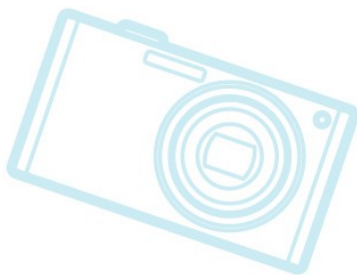
- Have received many bids and now need to prioritize projects
 - Haven't had time to prepare materials for AG vote
- Total projects: 28
- Total bids received so far: 14
- Percent of budget used, if all current bids accepted: 88%
- AG vote on 2010 projects should occur in March
 - With follow-on discussion in April after ELC



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Conferences

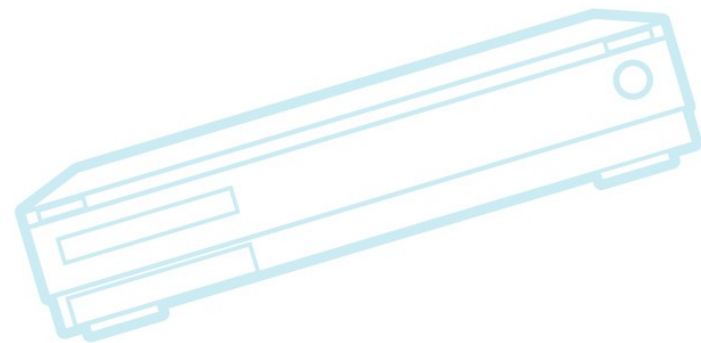
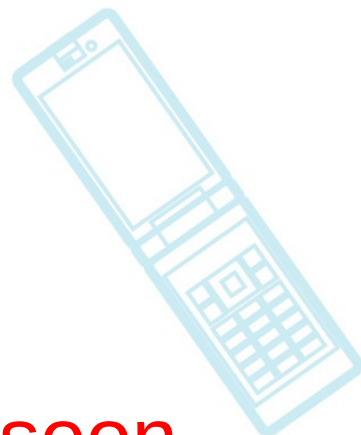
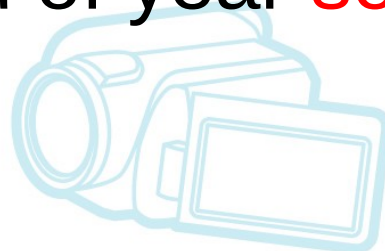
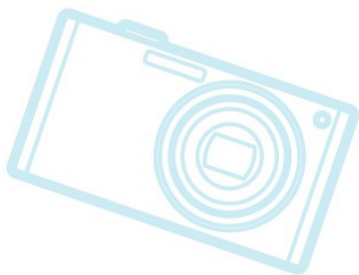




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Past Conferences

- ELC Europe 2009
 - Videos available by end of year **soon**
- Japan Linux Symposium
 - Videos available at:
<http://video.linuxfoundation.org/>





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Conferences coming up...

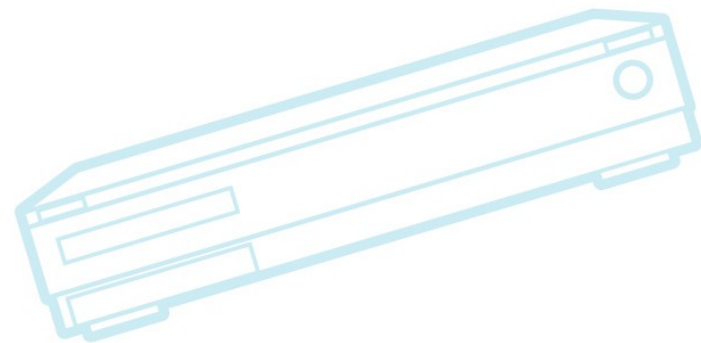
- ELC 2010 – April 12-14, San Francisco
- LinuxCon (US) – August 10-12, Boston
- ELC Europe 2010 – Fall, Cambridge, UK
- LinuxCon Japan – September, 27-29, Tokyo
- Kernel Summit – November 1-2, Cambridge, Massachusetts



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Embedded Linux Conference

- See <http://www.embeddedlinuxconference.com/>
- Sessions are now online
- Schedule almost done – hopefully posted in next 2 days





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ELC Highlights

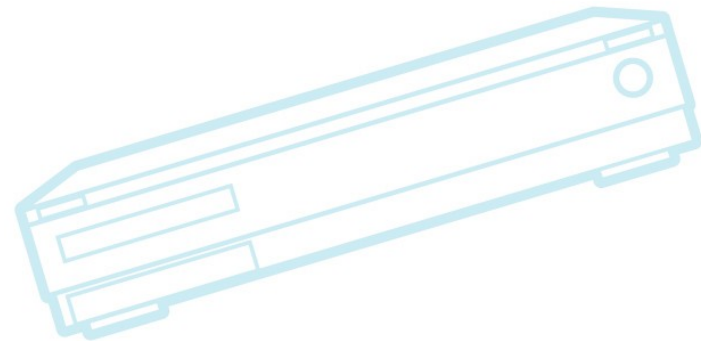
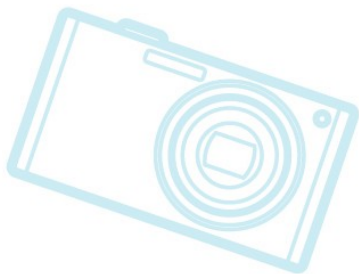
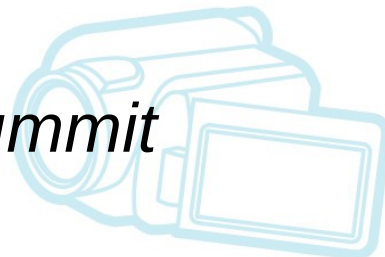
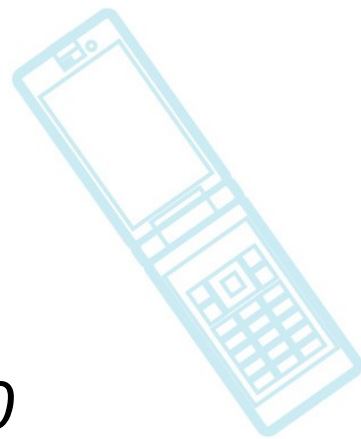
- Keynotes
 - Greg Kroah-Hartman – Kernel maintainer
 - Matt Asay – new COO of Canonical, former executive at Lineo
- Topics
 - Real-time, power management, security, porting, tracing, SMP, graphics and multi-media, development tools, bootloaders, kernel performance, file system issues,
 - Platforms (moblin, maemo, android)
 - Kernel developer tutorials (jtag, threaded interrupts, using emulators, LTTng)
- Collaboration Summit
 - Kernel Panel, Meego keynote, State of Linux, breakout sessions



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ELC Europe 2010

- Fall, Cambridge, UK
 - *Tentative dates: September 9, 10*
- *Tentative joint events*
 - *Open Source DLNA summit*
 - *Gstreamer conference*
 - *Xenomai conference (very tentative)*

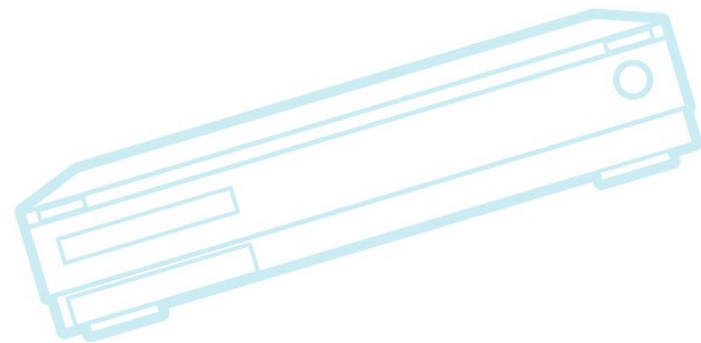
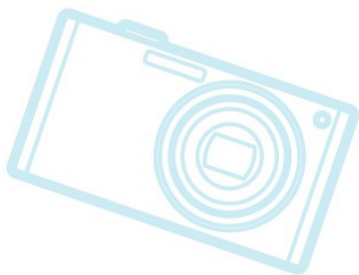




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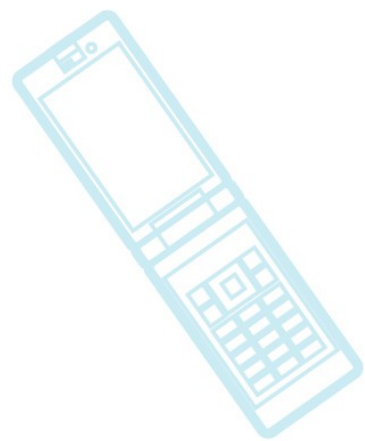
LinuxCon Japan

- September 27-29 in Tokyo, Japan
 - In Roppongi Hills
- CELF will help organize an embedded track
- Embedded Linux Summit planned for same time





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Questions & Answers!

