



# **Demand for Linux eco-system for the future challenges**

Tsugikazu SHIBATA, NEC

4, June 2015

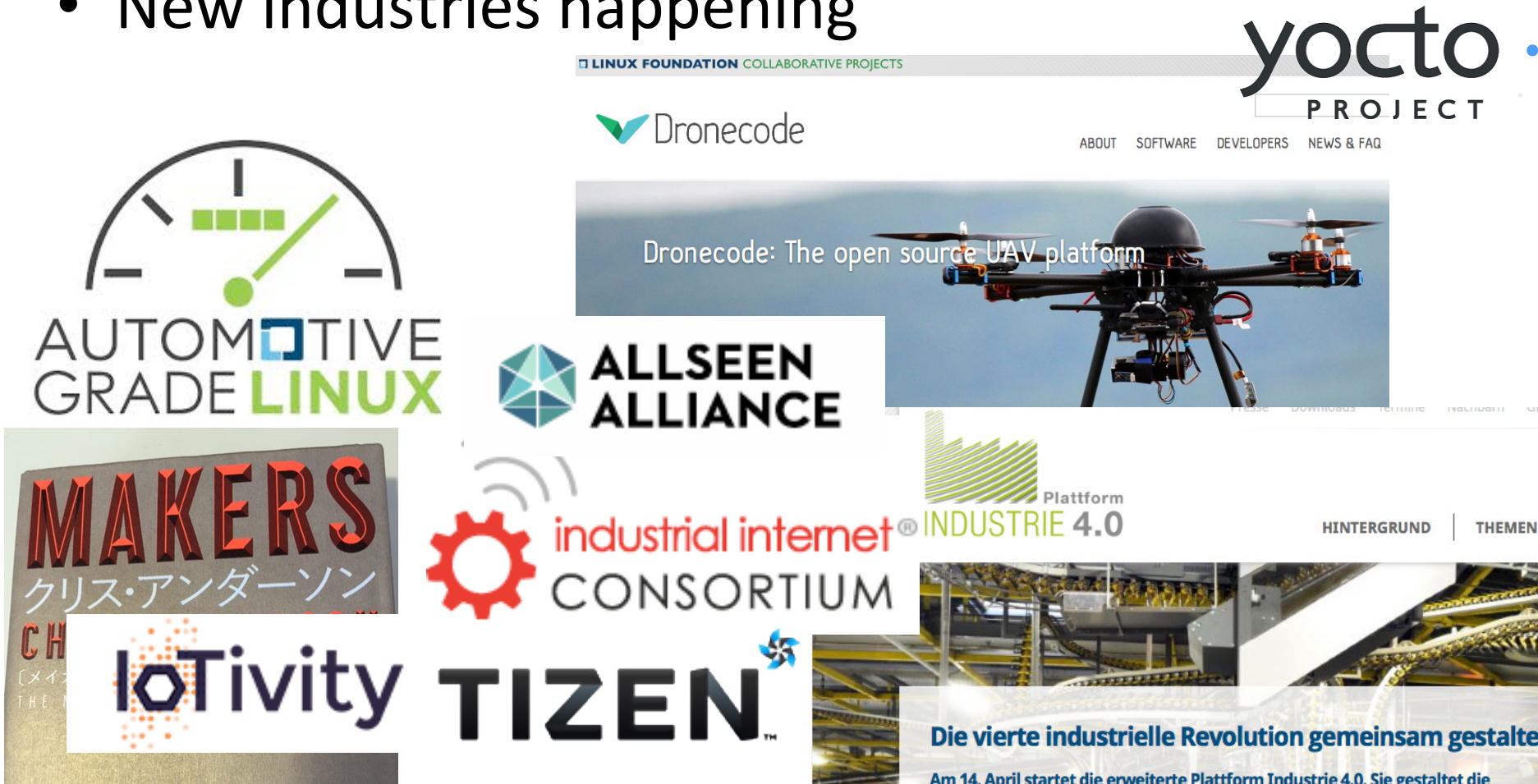
LinuxCon Japan@ Chinzain-sou

# Agenda

- Current pipeline of using Open Source for new industries
- Case of IT industry
- Why LTSI

# Pipeline of using Open Source

- New industries happening



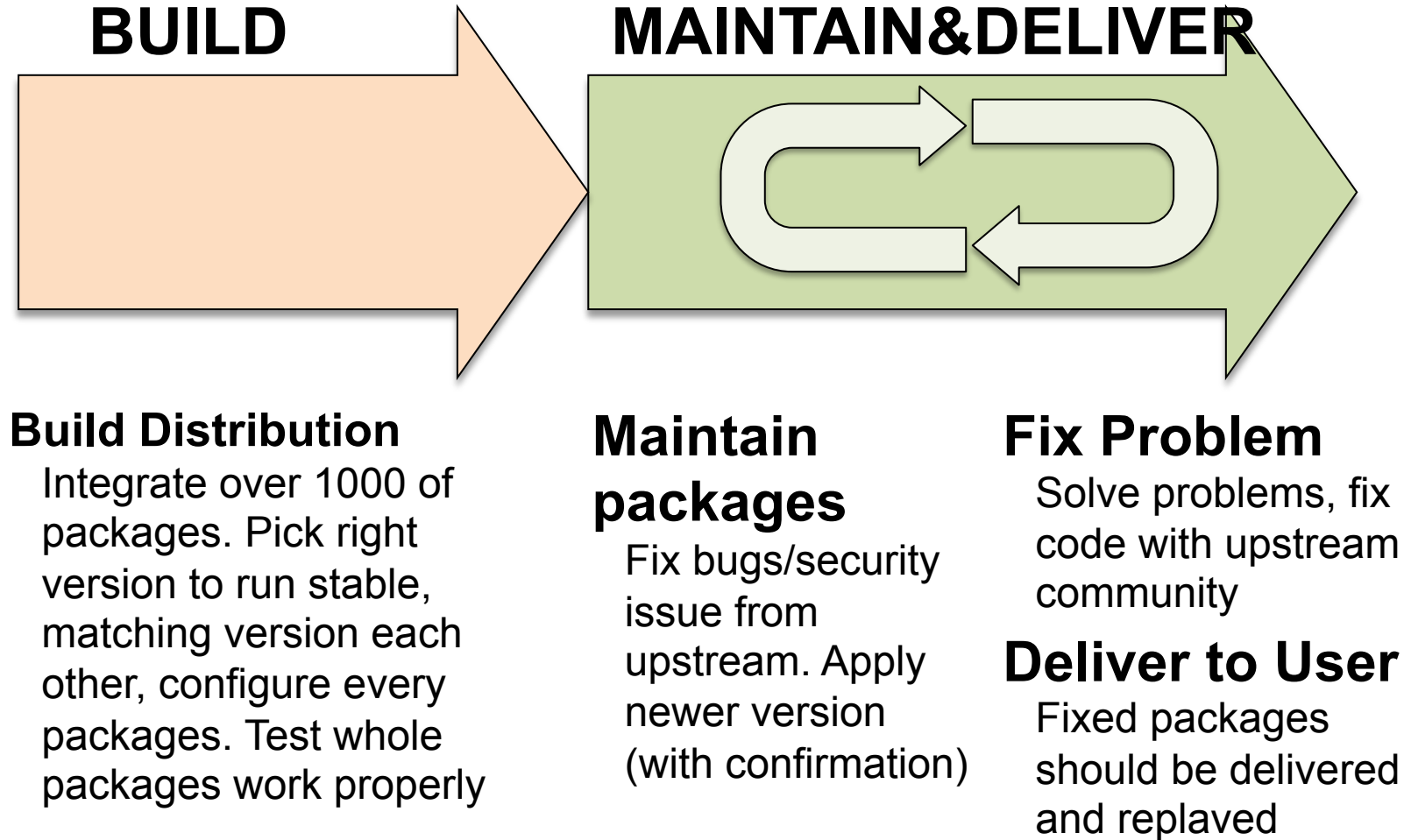
# Why Open Source?

- Open Source is
  - Easy to start
  - Quickly to build
  - No initial cost
  - Including wide range of drivers as reference
  - Many of experienced engineers
- From experimental use to industry use

# Case of IT industry

- Linux server business in IT industry is on going by Linux distributions
  - RedHat
  - SUSE
  - Ubuntu
  - CentOS
  - Fedora
  - OpenSUSE

# Role of Distribution

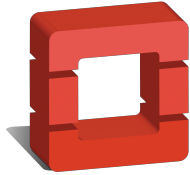


**There is no specific distro in my new industry.**

**What is the choice?**

# Self Service is one of choice

- Build own distribution by themselves



openstack®

**Cloud Computing**



**Mobile device**

Many other case is ongoing



**Self Service**  
**=**  
**Own the role of**  
**Distribution**

NOTE: Build eco system to foster distribution business is also important as long term view point

# Linux kernel is one of important piece

- Kernel is most basic part of distribution
  - Drivers
  - File System
  - Network
  - Processor architecture
  - Memory usage
  - Power management
  - ...

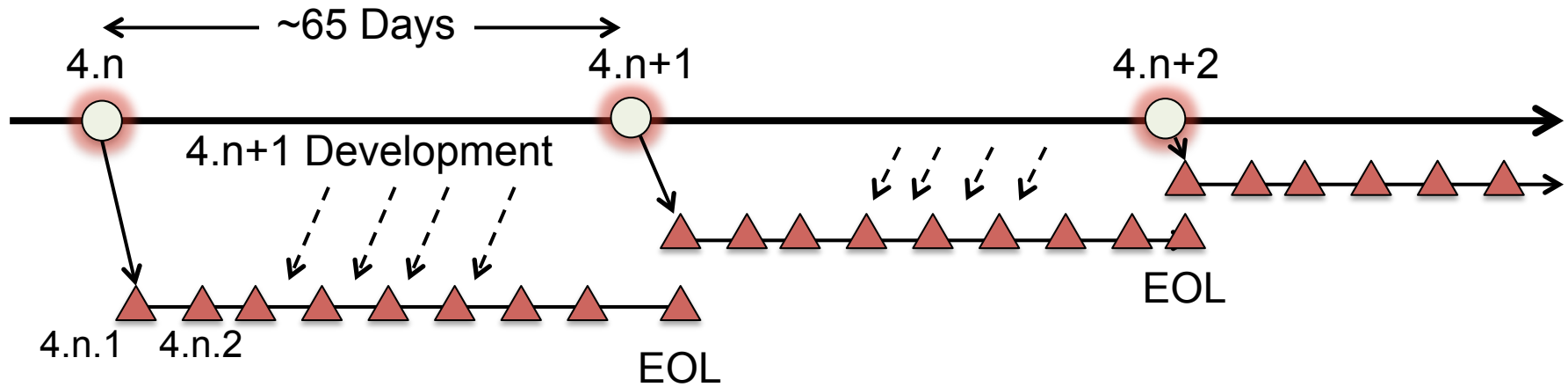
# LTSI is recommended choice

- Major items of LTSI
  1. Keep release of LTS
  2. Vender required additional patches
  3. Testing Kernel
  4. Share information

# 1. Keep release of LTS

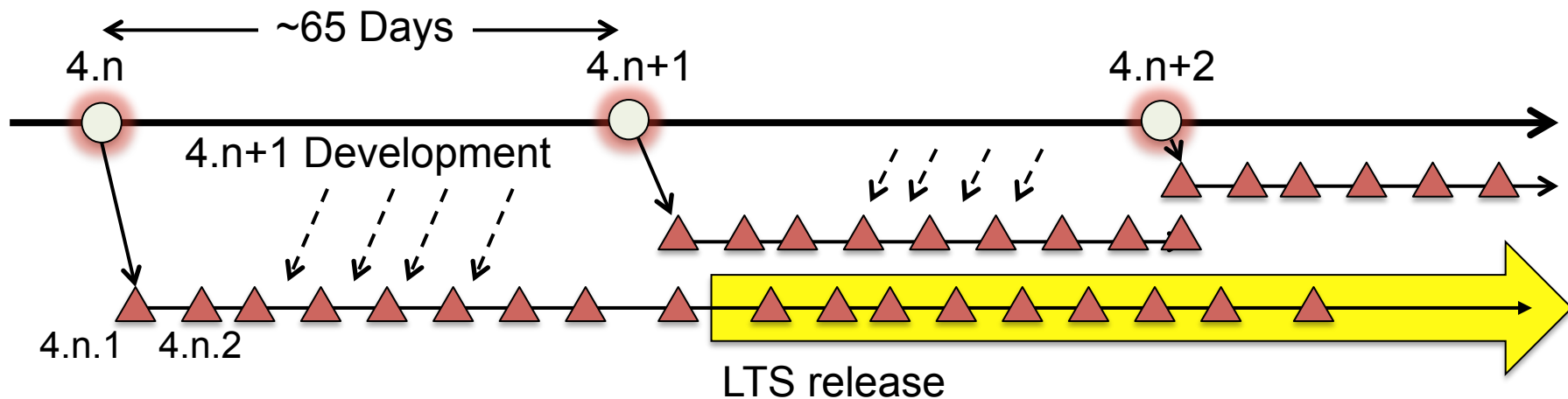
- LTS (long term supported) kernel is keep releasing by Greg KH
- Decide a version per year and maintain two years
- Back port bug and security fixes from upstream
- Greg is part of LTSI tem and find most reasonable version for industry use yearly basis

# Stable kernel release



- Recommended branch for users who want the most recent stable kernel
- 3 part version like 4.n.m
- Back ported critical bug and security fixes found in a latest development version
- Becomes “End Of Life” when next stable kernel were released

# LTS (Long Term Stable) release



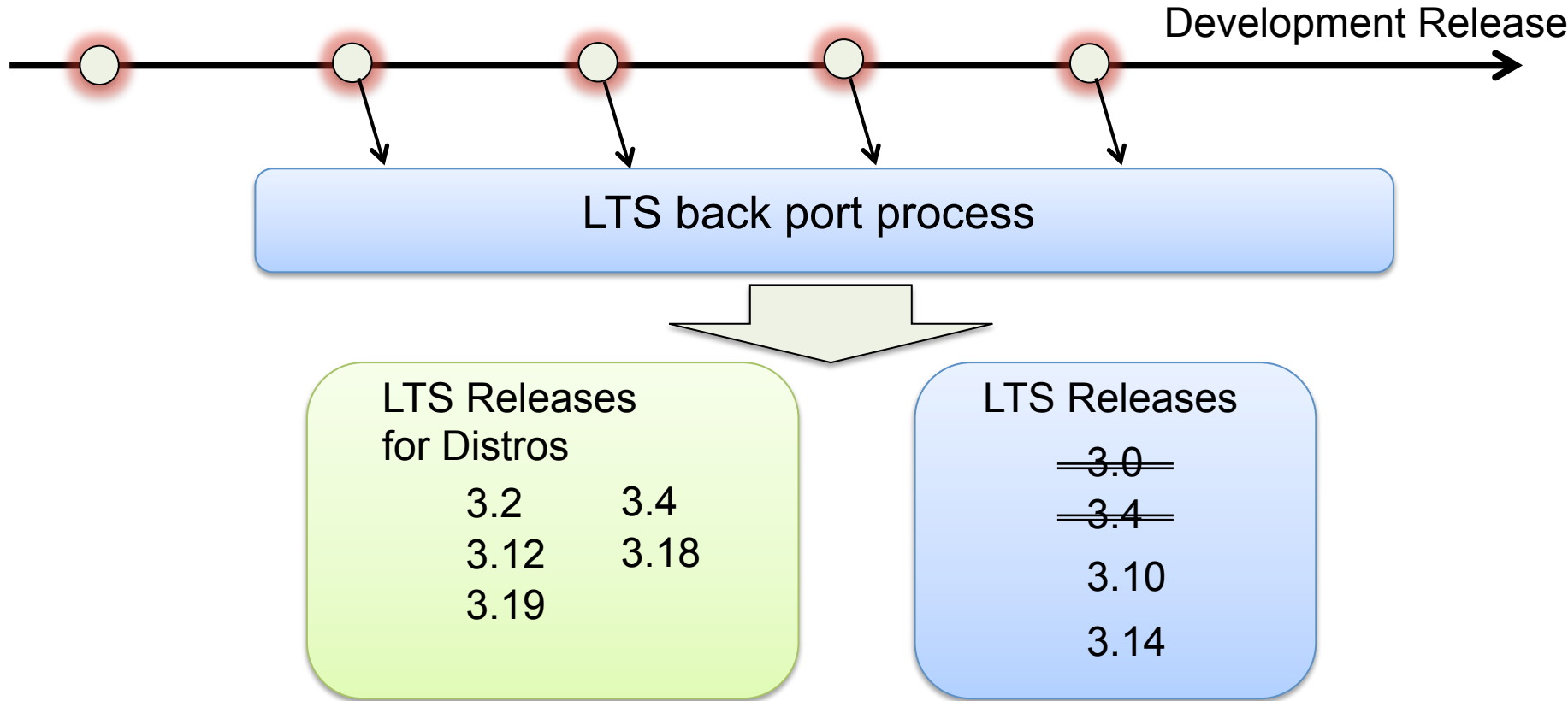
- Extended maintenance period for stable kernel
- Pick one version per year and maintain 2 years
- Bug and security fixes found in latest version are continued to back ported

# Current LTS versions

Version	Maintainer	Released	Projected EOL
3.19	Kamal Mostafa	announced	July, 2016
3.18	Sasha Levin	2014-12-07	Jan, 2017
3.14	Greg Kroah-Hartman	2014-3-30	Aug, 2016
3.12	Jiri Slaby	2013-11-3	2016
3.10	Greg Kroah-Hartman	2013-6-30	Sep, 2015
3.4	Li Zefan (Greg KH)	2012-5-20 (2014-9-4)	Sep, 2016
3.2	Ben Hutchings	2012-1-4	2016
2.6.32	Willy Tarreau	2009-12-3	Mid-2015

<https://www.kernel.org/category/releases.html>

# LTS back port process



**LTS back port process is engine of Long Term kernel**



# LTS includes large number of fixes

- 600 – 700 fixes included in a Stable release
- LTS include fixes multi number of stable releases

As of 2015/5/26

Version		# of commits
From	To	
3.0	3.0.101	3953 (EOL)
3.1	3.1.10	695 (EOL)
3.2	3.2.69	6049
3.3	3.3.8	698 (EOL)
3.4	3.4.107	5210
3.5	3.5.7	816 (EOL)
3.6	3.6.11	757 (EOL)
3.7	3.7.10	718 (EOL)
3.8	3.8.13	996 (EOL)
3.9	3.9.11	746 (EOL)

Version		# of commits
From	To	
<b>3.10</b>	<b>3.10.79</b>	<b>4564</b>
3.11	3.11.10	677 (EOL)
3.12	3.12.43	4885
3.13	3.13.11	903 (EOL)
<b>3.14</b>	<b>3.14.43</b>	<b>3354</b>
3.15	3.15.10	703 (EOL)
3.16	3.16.7	871 (EOL)
3.17	3.17.8	884 (EOL)
3.18	3.18.14	1444
3.19	3.19.8	873

# Number of yearly commits on LTS

LTS Version	2012	2013	2014	2015	Total
3.4	1636	1769	1233	359	5210
3.10		1724	2060	588	4564
3.14			2401	876	3354

As of 2015/5/26

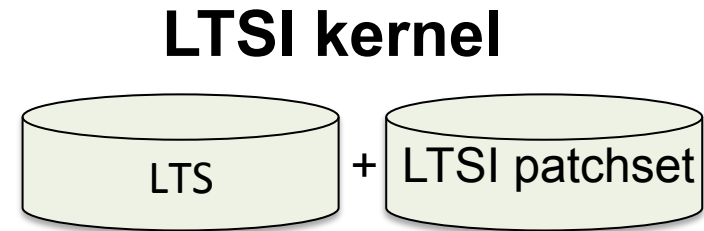
1700 ~ 2000 of commits were back ported from latest upstream version into LTS.

# Taking over after “End Of Life”

- In case of 3.4, Li Zefan took over LTS when EOL
- How to take over LTS when EOL:
  - Maintainer have experience to work on Linux Community
  - He have trusted relationship among maintainers

# Vendor required additional patches

- LTSI tree is set of vendor required patches
- LTSI have another development process to gather patches on top of LTS
- This will be able to share additional patches among the industries
  - SoC additional drivers
  - Kernel Tools



# 3.14 LTSI kernel history

Items	Date
kernel 3.14 merge window open kernel	2014.1.20
3.14 merge window close	2014.2.2
kernel 3.14 release	2014.3.30
3.14 becomes LTS (=3.16 release)	2014.8.3
Announce of 2014 LTSI kernel version	2014.8.4
LTSI-3.14 merge window open	2014.8.28
patch collection period	78 days
LTSI-3.14-rc1 (=merge window close)	2014.11.14
validation period	56 days
LTSI-3.14 release	2015.1.9

# Achievements for LTSI 3.14

- Common:
  - ktap 0.4, a lightweight script-based dynamic tracing tool
- x86:
  - Intel Low Power Sub-system (LPSS) PWM, found in Intel Baytrail & Braswell SoC.
  - I2C/SMBus i801, added PCI Device ID for Intel Baytrail, Braswell & Intel Wildcat Point (PCH).
  - supports PCI enumeration for Intel Braswell SoC and Intel 9 Series PCH
  - iTCO v3 support for Intel Avoton SoC.
  - GPIO support for Intel Avoton SoC, Panther Point PCH and NM10 chipset
- ARM:
  - Renesas R-CarH2 Lager Board and R-CarM2 Koelsch board

# **This year's LTS kernel ?**

**Linux 4.1  
is  
LTS version of 2015!!**



# Testing kernel

- LTSI patch set is tested by contributors and result will be shared in the mailing list
- Providing Automated test frame work
  - Fully automated execution using Jenkins
  - Web based GUI to see what's happend
  - 28 bench marks and 33 major test packages included
  - Now implementation of CI is on going

# LTSI Auto Test Framework

The screenshot shows the Bitbucket web interface for the repository `cogentembedded/jta-public`. The top navigation bar includes the Bitbucket logo, links for Features and Pricing, a search bar with the text `owner/repository`, and buttons for Sign up and Log in. The left sidebar contains a list of navigation links: Overview (selected), Source, Commits, Branches, Pull requests, Issues, Wiki, and Downloads. The main content area is titled "Overview" and displays repository statistics: Last updated (2014-07-31), Language (—), Access level (Read), 9 Branches, 0 Tags, 0 Forks, and 1 Watcher. Below the statistics, there is a section for "Jenkins-based Test Automation" with a table of contents showing sections 0. Software requirements, 1. Installing, and 2. Usage. The right sidebar features a promotional banner for unlimited private and public hosted repositories, a "Recent activity" section showing 2 commits and 1 commit, and a "Sign up for free" button.

Atlassian  
Bitbucket Features Pricing owner/repository ? English Sign up Log in

cogentembedded  
jta-public

ACTIONS

- Clone
- Compare
- Fork

NAVIGATION

- Overview
- Source
- Commits
- Branches
- Pull requests
- Issues
- Wiki
- Downloads

## Overview

Last updated	2014-07-31	9	0
Language	—	Branches	Tags
Access level	Read	0	1
		Forks	Watcher

Jenkins-based Test Automation

- 0. Software requirements
  - Debian Wheezy 64-bit.
- 1. Installing
  - run `./debian_install.sh` under root, asnwer simple questions.
  - It will install all the needed packages.
  - Install toolchains for needed platforms to `/home/jenkins/tools` and add them to tools.
  - See `jta-guide.pdf` for details.
- 2. Usage

HTTPS `https://bitbucket.org/cogentembedd`

Unlimited private and public hosted repositories. Free for small teams!

Sign up for free

Recent activity

- 2 commits
  - Pushed to cogentembedded/jta-public
    - 7cfe53 jobs: FE: add renesas jobs for te...
    - 38e2fef tests: add renesas tests (backend)
  - 4da · 2014-08-01
- 1 commit
  - Pushed to cogentembedded/jta-public
    - 828393b tests: exit 1 -> build error for buil...
  - 4da · 2014-07-26
- 1 commit
  - Pushed to cogentembedded/jta-public
    - 1074c60 scripts: add build\_failed function ...

<https://bitbucket.org/cogentembedded/jta-public/>

# Share information

- LTSI have mailing list and wiki for usual communication
- F2F meeting at Linux Foundation event
  - A wide variety of discussion happened among companies at workshop
    - Requirements , use case and issues, In-house patch versus upstream
- Help developers to upstream their code

# Conclusion

- Many of new industry is growing and trying to use Open Source
- Open Source is best fit for experimental use
  - At later phase, stable and secure version of Open Source will be required
- Self service is a challenge
  - Build own distribution = Own the Role of Distributor
- LTSI is useful choice of stable kernel
- Please prepare if you have additional patches to LTSI

# You can participate LTSI

- Follow on Twitter account:

@LinuxLTSI



**LinuxLTSI**

@LinuxLTSI

*LTSI stands for Long-Term Support Initiative. A group of CE Working Group of the Linux Foundation to provide Long-Term and stable Linux for Industry*

- Web:

<http://ltsi.linuxfoundation.org>

- Mailing list:

<https://lists.linuxfoundation.org/mailman/listinfo/ltsi-dev>

- Git tree :

<http://git.linuxfoundation.org/?p=ltsi-ernel.git;a=summary>

# THANK YOU

