Organizational Change:
Challenges in shipping open source firmware

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Change is inevitable.

IBM is big.

IBM is really big.

(I mean, you may think it's a long way down the street to the chemist but that pales in comparison to how big IBM is.)

It's twice the size of Hobart.

"If you could get all the people in an organization rowing in the same direction, you could dominate any industry, in any market, against any competition, at any time"

- **The Five Dysfunctions of a Team: A Leadership Fable**
by Patrick M. Lencioni

"If we express our needs, we have a better chance of getting them met."

  - **Nonviolent Communication: A language of Life**
    Marshall B. Rosenberg and Arun Gandhi
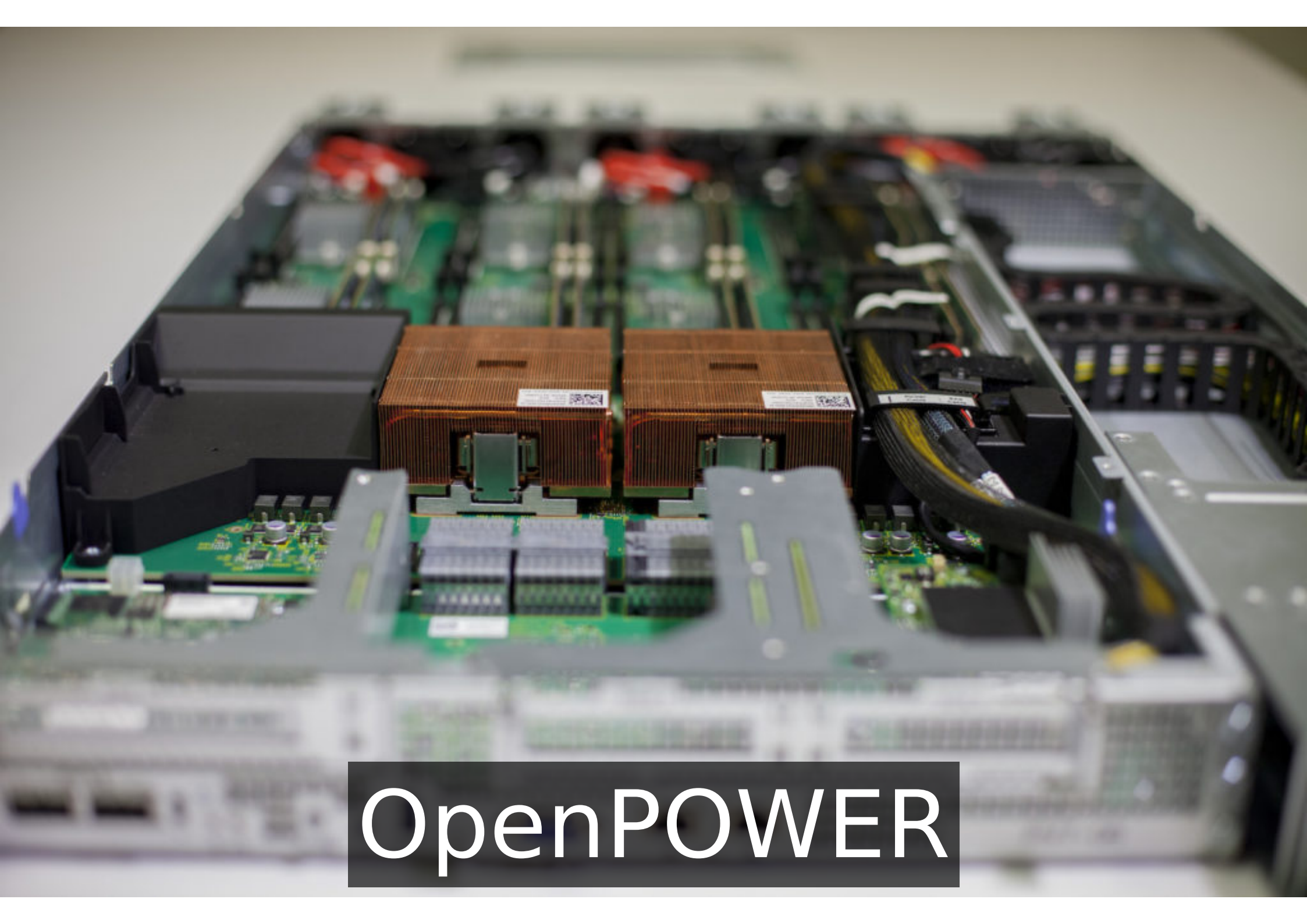
Why talk about organizational change?

OpenPOWER

KVM on POWER

OpenPOWER™

OpenPOWER

Strategy != Tactic

☑ Ship it.

☑ Release Source Code

git push

Hostboot: ~400,000 LoC
OCC: ~70,000 LoC
skiboot: ~70,000 LoC

plus buildroot, linux, busybox, petitboot.....

Open Sourced BIOS Helps Power8 Compete With X86

July 15, 2014 by Timothy Prickett Morgan

IBM is deadly serious about fostering an open ecosystem around the Power8 processor and its follow-ons, and has taken the next step in advancing its OpenPower cause by open sourcing the microcode that manages the boot sequence on the Power8 chips.
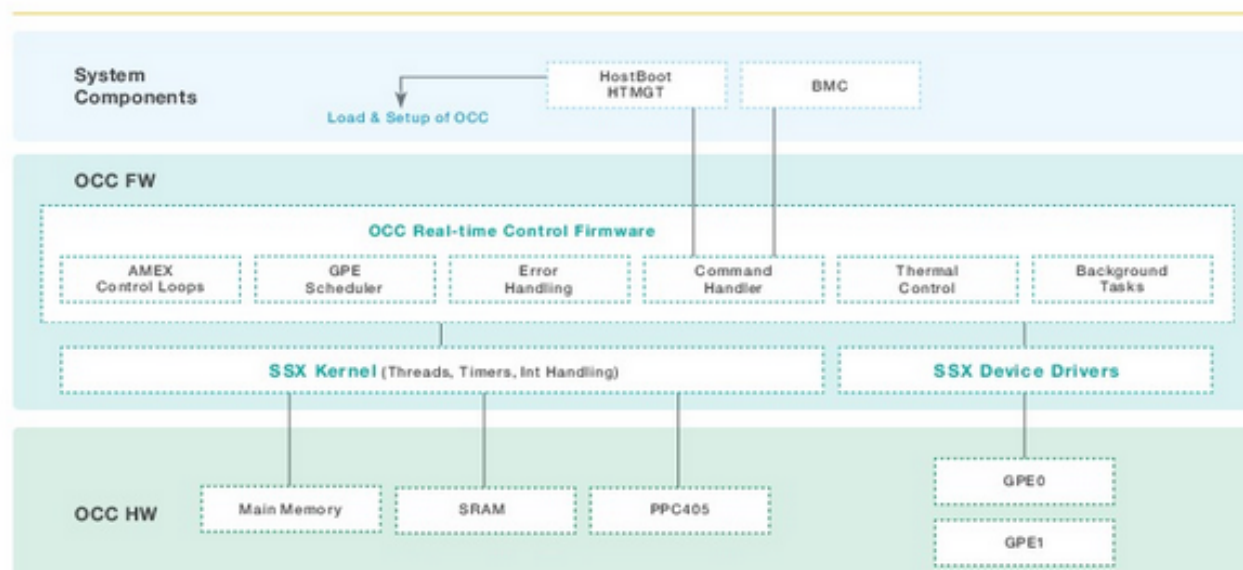
This may sound like a small thing, but it has important ramifications for IBM and the OpenPower Foundation partners who are making motherboards based on the Power8 processor. At the moment, this includes a single-socket board made by Tyan aimed at software developers and early system builders and a two-socket board made by Google for its own internal testing. Google has been testing IBM and homegrown Power8 systems since earlier this year, and both companies were showing off their Power8 boards at IBM's Impact2014 conference back in April. In February, *EnterpriseTech* reported that Google was testing homegrown Power8 systems and that the

OCC Firmware Code is Now Open Source

by Todd Rosedahl, Chief Energy Management Engineer on POWER

Today, IBM has released another key piece of infrastructure to the OpenPOWER community. The firmware that runs on the On Chip Controller (OCC), along with the host code that loads and initializes it, has been open sourced. The OCC provides access to detailed chip temperature, power, and utilization data, as well as complete control of processor frequency, voltage, and memory bandwidth. This enables customization for performance and energy management, or for maintaining system reliability and availability. Partners now have the flexibility to create innovative power, thermal, and performance solutions on POWER systems.

Latest Posts

OpenPOWER Academic Group Carries 2016 Momentum to New Year

By Ganesan Narayanasamy, Leader…

9 hours ago

Bringing OpenPOWER Outside of the Data Center

By Timothy Pearson, Raptor Engineering…

1 month ago

Expanding Ecuador's Supercomputing Future with Yachay and OpenPOWER

By Alejandra Gando, Director…

2 months ago

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System Components — Load & Setup of OCC — HostBoot HTMGT — BMC

OCC FW

OCC Real-time Control Firmware

AMEX Control Loops | GPE Scheduler | Error Handling | Command Handler | Thermal Control | Background Tasks

SSX Kernel (Threads, Timers, Int Handling)   SSX Device Drivers

OCC HW   Main Memory   SRAM   PPC405   GPE0   GPE1

Press Releases

American Megatrends Joins OpenPOWER Foundation, Brings Expertise on Server and Data Center Management to COMPUTEX TAIPEI

Tuesday: June 2, 2015

⚙ MegaRAC SP-X for POWER8 launched in support of TYAN's introduction of the world's first non-IBM branded OpenPOWER commercial server

⚙ Demonstrations of MegaRAC SP-X and MegaRAC XMS, a complete management solution for collaborative management of network attached devices, will be showcased at COMPUTEX TAIPEI June 2-6 in booth M1209A

NORCROSS, GA, USA - American Megatrends, Inc. (AMI), a leader in robust and reliable IT solutions for centralized and collaborative management within enterprise infrastructures, today announced it has joined the OpenPOWER Foundation, an open development community based on the POWER microprocessor architecture.

AMI joins a growing roster of technology organizations working collaboratively to build advanced server, networking, storage and acceleration technology as well as industry-leading open source software aimed at delivering more choice, control and flexibility to developers of next-generation, hyperscale and cloud data centers. The group makes POWER hardware and software available to open development for the first time, as well as making POWER intellectual property licensable to others, greatly expanding the ecosystem of innovators on the platform.

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THE FOUR HUNDRED
iSeries and AS/400 Insight

Tyan Preps $2,753 OpenPower Reference Server

Published: October 13, 2014

by Alex Woodie

Ever since IBM founded the OpenPower Foundation and announced it was opening up its Power processing architecture to the world, we've been waiting for the first non-IBM Power-based server to become available. That day will arrive soon thanks to Taiwanese motherboard and system maker Tyan.

Last week Tyan announced that, at the end of the month, it will begin delivery of the GN70-BP010. Codenamed "Palmetto," it's the first OpenPower customer reference system to become available to the general public.

GN70-BP010 is a 2U system that contains a single chip module (SCM) Power8 processor, codenamed "Turismo," running on a single-socket, ATX-style motherboard. Tyan and its partner Google, both of whom are founding OpenPower Foundation members (along with IBM, Nvidia, Mellanox Technologies) revealed this motherboard, dubbed SP010GM2NR, back in April.

The GN70-BP010 comes with four 4 GB DDR3 main sticks, a single 500 GB hard drive, four SATA 3.0 ports running at 6 Gb/sec (implemented using a Marvell's controller) and two Ethernet ports running at 1 Gb/sec, implemented using Broadcom's controller. As you can see from the graphic below, Tyan is selling the unit for USD $2,753 FOB HK. This just includes the hardware, not the operating system (Tyan recommends Ubuntu 14.10). The buyer is responsible for all shipping, insurance, and import taxes (which is what "Free on Board Hong Kong," or "FOB HK" means).

Printer Friendly Version

Tyan showcases its first commercialized POWER8 Based System at OpenPOWER Summit 2015

Tags: Tyan (2315.TW), Mitac, NVIDIA (NASDAQ:NVDA), IBM (NYSE:IBM)
Quick Link: HEXUS.net/qacp4n

Add to My Vault:

PRESS RELEASE

More Cutting-Edge Platforms to Be Displayed at NVIDIA 2015 GPU Technology Conference

TYAN OpenPOWER Product Information: http://www.tyan.com/solutions/tyan_openpower_system.html
Related OPF Summit 2015 Information: http://openpowerfoundation.org/2015-summit/
Related GTC 2015 Information: http://www.gputechconf.com/

San Jose, California, USA - March 19, 2015 –TYAN, an industry-leading server platform design manufacturer and subsidiary of MITAC Computing Technology Corporation, will demonstrate the TYAN TN71-BP012, the first commercialized POWER8 based solution at TYAN's booth (#1112) during the OpenPOWER Summit 2015. Other cutting-edge platforms will be displayed at its booth (#831) during GTC 2015 as well.

The OpenPOWER Summit 2015 takes place March 17-19 at the McEnery Convention Center in San Jose, California. The TYAN TN71-BP012 platform is the first commercialized OpenPOWER-based hardware system and is designed around the concept of innovation and collaboration. As the first commercialized hardware system collaborated by the OpenPOWER community, TYAN's TN71-BP012 is an POWER8 processor-based solution that reveals the spirit of the OpenPOWER Foundation –resources and innovation are notlimited to the community but are open to the world.

IT experts can adopt TYAN's TN71-BP012 as well other technical resources shared from the OpenPOWER community to build their customized IT infrastructure and manage it in a flexible way. Visitors can experience TYAN's extraordinary and innovative POWER8 supported platform and meet TYAN's team during the OPF summit 2015.

"TYAN aims to provide reliable, flexible and high-performance hardware platforms that help customers achieve their goals as well as drive their business," said Albert Mu, Vice President of MITAC Computing Technology Corporation's TYAN Business Unit. "As a founding member, TYAN collaborates with the technical partners among the OpenPOWER

Timeline:
- June 2014:   Initial POWER8 system
- October 2014:   Tyan Reference POWER8 system
- December 2014:   All code up on GitHub
- March 2015:   op-build v1.0 tagged
- April 2015:   Tyan shows commercial POWER8 system
- October 2015:   IBM ships first OpenPOWER systems

Eight Steps:

1. Establish Urgency
2. Create Guiding Coalition
3. Develop Vision and Strategy
4. Communicate Change Vision
5. Empower Employees for Broad-Based Action
6. Generate Short Term Wins
7. Consolidate Gains and produce more change
8. Anchoring new approaches in culture

- from **Leading Change** *by John P. Kotter*

The Five Dysfunctions of a team:

1. Absence of Trust
2. Fear of Conflict
3. Lack of Commitment
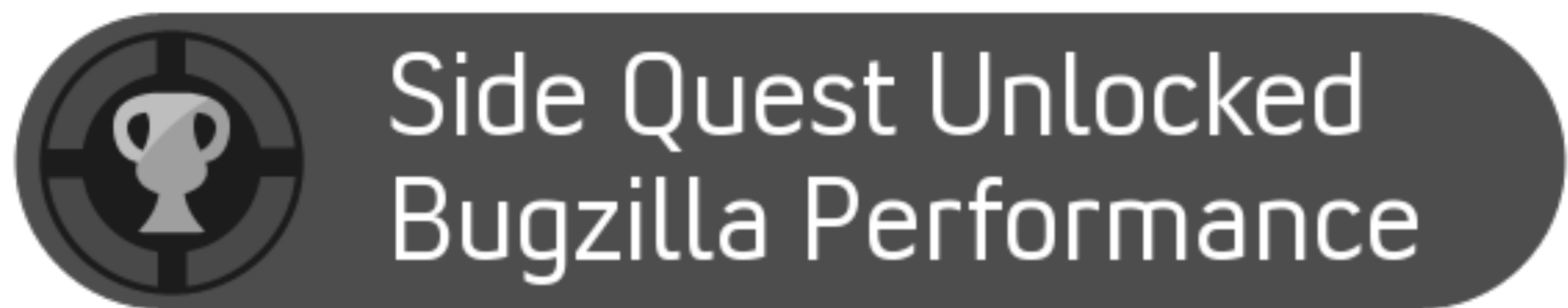4. Avoidance of Accountability
5. Inattention to Results.

- **The Five Dysfunctions of a Team: A Leadership Fable**
  by *Patrick M. Lencioni*

ing is only the start

☑ Ship it again!

☑ Have other people ship it.

☑ Healthy development community

☑ …

☑ Profit!

Bug Trackers

Side Quest Unlocked
Bugzilla Performance

♥ your bug tracker

Side Quest Unlocked
Bug Bridges

There's no substitute for knowing what the 🚒 is going on.

Putting together a team for change

You need:
1. Position Power
2. Expertise
3. Credibility
4. Leadership

Leadership != Management

On non-ideal people.....

Upstream vs Product

Vision:

- Upstream first.
- Upstream always works.
- Good Open Source Citizens
- Release at any time.
- Short lived forks for releases.
- IBM no different than others.

CI and Testing

Communicate

Empower Employees for broad-based action

Want a short term win?

Tag a release!

Consolidate Gains and produce more change

Drive more change

Anchoring New Approaches in Culture

Things that aren't fixed:
- FOSS focused development everywhere
- Being **really** good at regular upstream releases
- Bug tracking software that doesn't suck.
- RFC Compliant email
- Adequate Documentation/Testing resources
- Conformance testing & specification

In summary...

Software problems are easy.

Hardware problems are "easy".

Human problems are hard.

Be pragmatic

Real, fundamental change takes time.

Real, fundamental change takes time.

(but is totally worth it)

Questions?

Reading List:

- **The Five Dysfunctions of a Team: A Leadership Fable**
  Patrick M. Lencioni
- **Leading Change**
  John P. Kotter
- **Who Says Elephants Can't Dance?**
  Louis V. Gerstner Jr.
- **Nonviolent Communication: A language of Life**
  Marshall B. Rosenberg and Arun Gandhi

Thank you.