Foundation Technical Agenda

Jeff Brown, TSC Chair
IBM/OpenPOWER Foundation
Technical Agenda

**Open Development**
open software, open hardware

**Collaboration of thought leaders**
simultaneous innovation, multiple disciplines

**Performance of POWER architecture**
amplified capability

**Open Specifications**
- Available for use
- Enhanced by members

**Encourage Innovation**
- Reference Designs
- Design guides and IO enablement

**Engage community**
- What is missing or incomplete?

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Technical Agenda Update

- What are Foundation Workgroups
- Operations and getting involved
- Principal Workgroups
- Work Product Roadmap

- Application Solution Sets – Randall Ross
- Compliance Workgroup – Sandy Woodward
- IO Workgroup – Rakesh Sharma

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Workgroup Formation

TSC Response: “w/in OPF Scope”

Member Discussion List

BOD Simple Majority

TSC OPF Eval → Proposer Group → TSC Review (Full Majority)

3+ Eligible Members → WG Proposal
Scope
Confidentiality

WG Charter
Scope
WorkProduct
Projects
Confidentiality
IPR Policy
OSS Communities

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Primary Workgroups

Compliance WG
- System SW WG
- HW Arch WG
- System I/O WG
- Accelerator WG
- Partner Devices

Memory WG
- Memory Interface Control
- DMI

Built for Open Innovation

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OpenPOWER Work Group Roadmap

--- | --- | --- | ---
Developer Platform | Charter | P8 SP010 Data | P8 2U2S Reference | P8+ 1U1S Reference | P8+ 2U2S Reference
HW Architecture | Charter | OpenPOWER ISA Profile V1 | IO Device Architecture V2 | Coherent Accel Intf Arch | OpenPOWER ISA Profile V2 | IO Device Architecture V3 | Coherent Accel Intf Arch
System SW | Charter | Charter | Compliance Specification | Draft Review WG Spec | Comp STD
Compliance | Charter | Compliance Specification | Draft Review WG Spec | Comp STD
Accelerator | Charter | Charter | CAPI AFU Inf Spec V1 | OpenCL SDK | CAPI AFU Inf Spec V2
25g IO Compatibility | Charter | Charter | 25g IO Spec
Memory | Charter | Charter | OPMB Inf. Spec V1
OpenPOWER I/O | Charter | Charter | Sys I/O Enablement Guide
Proposed Work Groups | Charter | FSI Spec | Integrated Solutions | Pers Med

Proposed Roadmap - Subject to Change
Join the conversation at #OpenPOWERSummit
Looking Forward

- Execute Roadmap
- End-to-end solutions
- Rich solution sets using SW and HW
- Work well together
Enabling Solution Set Development

Randall Ross
Canonical
Our Strengths

- Awareness of OpenPOWER is growing
- Fantastic list of members (a veritable “Who’s who”)
- Strong Hardware Story
- Good Foundation and Fundamentals in Place
Big Opportunities

- Bootstrap a strong community around solutions
- Build solutions across the full stack, from hardware to applications
- Solutions built from community diversity will be stronger than a monoculture
- Solutions optimized to harness the unique capabilities of OpenPOWER

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We've Done This Before

- Ubuntu's long history of community development
- A very popular, very diverse, and very open system
- It's that way for a reason!
- OpenPOWER has a lot of the same 'feel'

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Where Are We?

- Integrated Solutions charter subcommittee has been formed
- We have nearly 20 parties signed up already, very diverse
- We are writing and shaping the working group charter
- We are identifying areas of immediate focus
Solution Domains

- Currently:
  - E-commerce
  - Big Data
  - Genomics/Bioinformatics

- These are only the beginning...

- Can you think of more? Would they benefit from POWER?

- Tell us! Join us!
Vision

- A healthy ecosystem of Solution Sets that leverage OpenPOWER’s key strengths and differentiators
- A strong story around OpenPOWER being a fully realized stack, from hardware to solutions (and everything in between)
- A place for not yet anticipated Solution Sets to emerge
Compliance

*Sandy Woodward*
IBM/OpenPOWER Compliance WG Chair
IBM Academy of Technology Member
## OpenPOWER Compliance

| **Objective** | Consistent approach to compliance  
|• From OpenPOWER Compliance Work Group |
|**Input** | Input to Compliance Work Group  
|• Many OpenPOWER Specifications from other OpenPOWER Work Groups |
|**Work Products** | Compliance Work Group Work Products  
|• OpenPOWER Architecture Compliance Definition Specification  
|• Many OpenPOWER Compliance Test Harness and Test Suite Specifications |
OpenPOWER Compliance Areas

- OpenPOWER ISA Profile Compliance
- OpenPOWER FPGA-based Accelerator Compliance
- OpenPOWER IODA2 Compliance
- OpenPOWER LE ABI Compliance
- OpenPOWER Firmware Interface Compliance
- OpenPOWER 25G Mode Compliance
- OpenPOWER Memory Bus Compliance
- OpenPOWER IO Requirements Compliance

Will add more Compliance areas
• As more OpenPOWER Work Groups develop specifications
• That need to be addressed by Compliance Work Group

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Architecture Compliance Definition Spec

- **Documents the input OpenPOWER Specifications**
  - Provided by other OpenPOWER Work Groups

- **Provides overview of Compliance Test Harness and Test Suite (TH/TS) Specifications**
  - Developed in Compliance Sub-committees

- **Describes procedures on how to measure and document compliance**
  - Where to submit report for compliance
OpenPOWER Compliance Process Example

- Provided by Hardware Architecture Work Group
  - Define OpenPOWER ISA Profile architectural features, interfaces and facilities
  - Define required and optional elements for compliance
OpenPOWER Compliance Process Example

- Developed by Compliance Work Group
  - Describe test harness to execute the test suite
  - Describe tests required to be in the test suite
  - Describe successful execution of the test suite
  - Describe what it means for an optional feature to fail

Input

OpenPOWER Instruction Set Architecture (ISA) Profile Spec

OpenPOWER ISA Profile Compliance TH/TS Spec

Demonstrate OpenPOWER ISA Profile Compliance

OpenPOWER member or non-member
OpenPOWER Compliance Process Example

- **Input**
  - OpenPOWER Instruction Set Architecture (ISA) Profile Spec

- **OpenPOWER ISA Profile Compliance TH/TS Spec**

- **Demonstrate OpenPOWER ISA Profile Compliance**

  - OpenPOWER member or non-member

- **Demonstrating OpenPOWER Compliance**
  - Generate test to be executed in test suite
  - Run the test suite and analyze the results
  - Fix test case errors, fix design and repeat
  - Document and submit Compliance Report
OpenPOWER Architecture Compliance

- Enables OpenPOWER hardware and software interoperability in the OpenPOWER Eco System
- Opportunity for OpenPOWER members and non-members to demonstrate compliance
- Looking forward to your participation!

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Developing and Integrating OpenPOWER IO Solutions

Rakesh Sharma

IBM / OpenPOWER IO WG Chair
OPIO-WG Introduction

- I/O plays critical role in any system or solution
  - Network Connectivity
  - Data Storage / Access
  - System/solution Acceleration

- Increasingly being used as differentiation
  - High throughput low-latency networking
  - Software Defined / Virtualized I/O for fast provisioning and optimizing utilization to lower cost
  - High performance and large capacity storage

- I/O is experiencing very dynamic landscape, exciting new technologies and business focus

- OPIO-WG is chartered to be a catalyst for growth of rich and vibrant OpenPOWER I/O eco-system

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The goal of OPIO-WG is to drive collaboration to create rich I/O portfolio to serve the evolving needs of customers.

- **Enablement**
  - Porting Guides & Tools
  - I/O SW and Tests

- **Compliance**
  - Requirements
  - Specifications and Checklists

- **Information Hub**
  - OP I/O Portal
  - Public I/O List and Information Links

- **Collaboration**
  - I/O+System Integration
  - I/O Projects

- **Innovation**
  - OpenPOWER Differentiation
  - Bleeding edge I/O

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## OPIO-WG Work Products / Projects

<table>
<thead>
<tr>
<th>Projects</th>
<th>Work Products</th>
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</thead>
<tbody>
<tr>
<td>OPIO Enablement Assets</td>
<td>Documentation and information covering porting and tools</td>
</tr>
<tr>
<td>OPIO Information Hub</td>
<td>Public portal containing list of compliant I/O and links to product docs, specifications and business information</td>
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<tr>
<td>Compliance</td>
<td>Requirements Specifications and Checklists.</td>
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<tr>
<td>Advanced I/O Stacks</td>
<td>Enablement guide covering key technologies including I/O virtualization, virtual switches, NFV/SDN/Overlay Networking, RAID, SW Defined Storage, Flash and NVMe etc.</td>
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OpenPOWER I/O Workgroup

- Enables growth of OpenPOWER I/O Eco-System
- Opportunity for Systems, I/O and Solutions owners
- Looking forward to your participation!
Getting Involved

- Thank you!

- Foundation success needs your active participation
- Join, participate, contribute

- Email us at tsc@openpowerfoundation.org