



The Printer Working Group

PWG February 2019 Face-to-Face Plenary Session

Smith Kennedy, PWG Chair
February 13, 2019



Plenary Agenda

- Administrivia
- PWG Steering Committee Updates
- PWG Workgroup Status [WG Chairs]
 - Imaging Device Security (IDS)
 - Internet Printing Protocol (IPP)
- Liaison Status
 - Trusted Computing Group (TCG)
 - Internet Engineering Task Force (IETF)
 - Linux Foundation OpenPrinting
 - Mopria
 - 3D Printing / Additive Manufacturing Liaisons
- Next Meetings

Administrivia



- Welcome and Introductions
- Confirm Minutes Taker
- Review PWG Patent Policy
- Agenda for the Week
- Future PWG Meeting Schedule
- 2019 Membership
- PWG Officers



- "This meeting is being held in accordance with the PWG Intellectual Property Policy"
 - https://www.pwg.org/chair/membership_docs/pwg-ip-policy.pdf
- TL;DR: Anything you say in a PWG meeting or email to a PWG address can be used in a PWG standard
 - (but please do read the IP policy above if you haven't done so)



PWG Patent Statement

PWG standards may include the known use of essential patents and patent applications provided the PWG Chair receives assurance from the patent holder or applicant with respect to patents whose infringement is, or in the case of patent applications, potential future infringement the applicant asserts will be, unavoidable in a compliant implementation of either mandatory or optional portions of the standard. This assurance shall be provided without coercion.

PWG Patent Statement



This assurance shall be either:

- A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement either mandatory or optional portions of the proposed PWG standard against any person or entity complying with the standard; or
- A statement that a license for such implementation will be made available without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination.



PWG Patent Statement

The PWG is not in a position to give authoritative or comprehensive information about evidence, validity or scope of patents or similar rights, but it is desirable that any available information should be disclosed. Therefore, all PWG members shall, from the outset, draw PWG's attention to any relevant patents either their own or of other organizations including their Affiliates that are known to the PWG members or any of their Affiliates, although PWG is unable to verify the validity of any such information.

Inappropriate Topics for PWG Working Group Meetings



Do Not Discuss:

- The validity/essentiality of patents/patent claims
- The cost of specific patent use
- Licensing terms or conditions
- Product pricing, territorial restrictions, or market share
- Don't discuss ongoing litigation or threatened litigation

DO raise an objection if inappropriate topics are discussed



Agenda Overview – Day 1

(All times Mountain Standard Time)

Wednesday, February 13

9:00 – 10:15	PWG Plenary
10:15 – 10:30	IPP WG : Status
10:30 – 11:00	IPP WG : IPP Everywhere™ v1.1 · IPP Everywhere™ Self Certification Manual v1.1
11:00 – 11:30	Break / Lunch
11:30 – 12:15	IPP WG: PWG 3D Liaison Discussion
12:15 – 1:00	IPP WG: IPP 3D v1.1 · PWG Safe G-Code
1:00 – 1:15	Break
1:15 – 2:00	IPP WG: System Service
2:00 – 3:00	IPP WG: IPP Authentication Methods

Agenda Overview – Day 2



(All times Mountain Standard Time)

Thursday, February 14

9:00 – 11:00	IDS WG: Status and Discussion
11:00 – 11:30	Break / Lunch
11:30 – 1:00	IPP WG: JPS2 v2.0
1:00 – 1:15	Break
1:15 – 1:45	IPP WG: MFD Alerts v1.1
1:45 – 2:30	IPP WG: IPP Document Object v1.1
2:30 – 3:00	IPP WG: Next Steps



Future PWG Meeting Schedule

- 2019
 - April 16 – April 18: Lexington, KY (Hosted by Lexmark)
→ **Dates changed!**
 - August 28-29: Virtual
 - November 13-14 : Virtual

Contact chair@pwg.org if you are interested in hosting a PWG F2F event

2019 Membership



24 Members (23 Voting, 1 Non-Voting)

 Apple Inc.	 Fuji Xerox	 Lexmark	 Ricoh
 Brother Industries, Ltd.	 High North Inc.	 Meteor Network	Technical Interface Consulting (N-V)
 Canon	 HP Inc.	 Microsoft	 Toshiba America Business Solutions
 Conexant Systems	 Intel	 MPI Tech	 Tykodi Consulting Services LLC
Danny Brennan	 Konica Minolta	 Oki Data	 Xerox
 Epson	 Kyocera Document Solutions Inc.	 Qualcomm	YSoft



PWG Officers (2017-2019 Term)

- PWG Chair: Smith Kennedy, HP Inc.
- PWG Vice-Chair: Alan Sukert, Xerox
- PWG Secretary: Ira McDonald, High North



IPP Everywhere™ Certified Printers

- <https://www.pwg.org/ipp/everywhere.html>
- IPP Everywhere™ Self Certification 1.0 Update 3
 - Current certification toolset available on PWG website
 - Released November 2018
- 355 printers now certified!
 - <https://www.pwg.org/dynamo/eveprinters.php>
 - More on the way
- More to come
 - IPP Everywhere™ v1.1 – Q1 2019
 - IPP Everywhere™ Self Certification 1.1 – Q2 2019



PWG Projects on GitHub

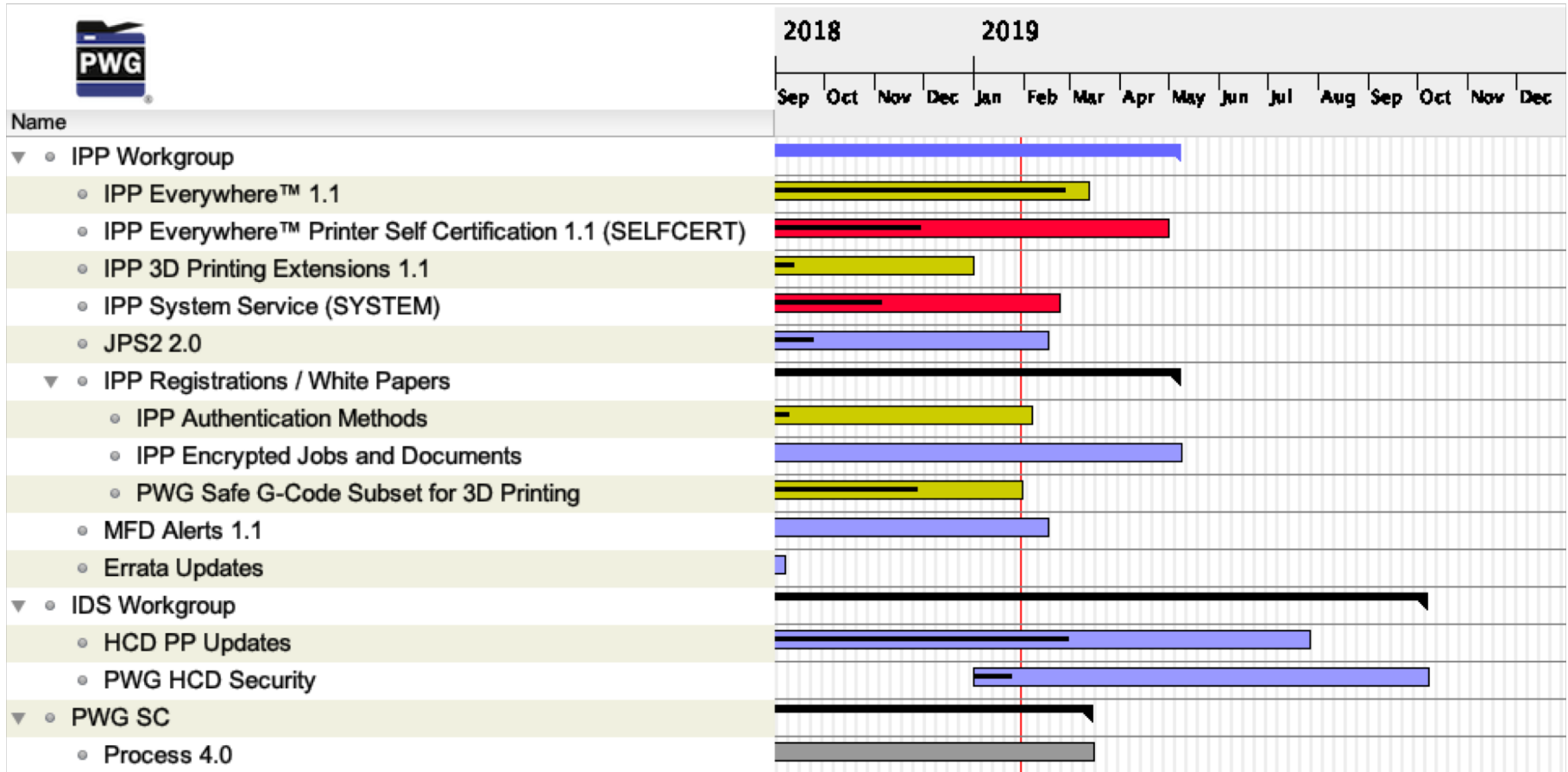
- PWG on GitHub:
 - <https://github.com/istopwg>
- IPP Sample
 - <https://github.com/istopwg/ippsample>
- IPP Everywhere Self Certification Tools
 - <https://github.com/istopwg/ippeveselfcert>
- IPP Registry
 - <https://github.com/istopwg/ipregistry>
- PWG Books:
 - <https://github.com/istopwg/pwg-books>



The Printer Working Group

PWG Workgroup Status

Work In Progress



Planned

Interim

Prototype

Prototyped

Stable



The Printer Working Group

IDS Workgroup Status

Alan Sukert (Xerox)



IDS: Original Charter

- Investigate and define standards for addressing general security attributes for imaging devices and services. Our general goals are to:
 - Define standard metrics and protocol bindings to assess the health of Hardcopy Devices to gauge if they should be granted access to a network.
 - Define a set of standard security and policy attributes and values for authorizing Hard Copy Devices, their services and users in a global workspace
 - Provide a general security model for other PWG standards to reference
- Provide a path for vendors to review and contribute to the definition of Common Criteria HCD Protection Profiles



IDS WG: Officers

- **IDS WG Chair:**
 - Alan Sukert (Xerox)
- **IDS WG Vice-Chair**
 - Brian Smithson (Ricoh)
- **IDS WG Secretary:**
 - Alan Sukert (Xerox)
- **IDS WG Document Editors:**
 - None at the moment given our new charter



IDS: Current Status

- Focus now is on Common Criteria HCD Protection Profiles
 - IDS Charter updated to focus the IDS WG on outreach with other standards bodies involved in HCD security issues.
 - Looking at initiating interface with TCG Joint Work Group
 - HCD Technical Committee (TC) Meetings:
 - Started having monthly HCD TC Conference Calls; first such calls held on 1/10/19 and 2/11/19
 - Status of HCD TC, HCD PP Version 1.1 and effort to form an HCD international TC (iTTC) will be discussed at the IDS WG Session on Thursday, Feb 14th
 - Also looking into establishing possible liaison with TCG and with ISO JTC 1/SC 28 to follow additional standards efforts related to the security of image devices



The Printer Working Group

IPP Workgroup Status

Paul Tykodi (TCS), Ira McDonald (High North)

IPP WG: Charter



- Current charter:
 - <http://ftp.pwg.org/pub/pwg/ipp/charter/ch-ipp-charter-20170615.pdf>
- The Internet Printing Protocol (IPP) workgroup is chartered with the maintenance of IPP, the IETF IPP registry, and support for new clients, network architectures (Cloud, SDN), service bindings for MFDs and Imaging Systems, and emerging technologies such as 3D Printing
- In addition, we maintain the IETF Finisher MIB, Job MIB, and Printer MIB registries, and handle synchronization with changes in IPP

IPP WG: Officers



- IPP WG Co-Chairs:
 - Paul Tykodi (TCS)
 - Ira McDonald (High North)
- IPP WG Secretary:
 - Michael Sweet (Apple)
- IPP WG Document Editors:
 - Ira McDonald (High North) – IPP System Service, MFD Alerts v1.1
 - Michael Sweet (Apple) – IPP 3D Printing Extensions v1.1, IPP Document Object v1.1, IPP Encrypted Jobs and Documents, IPP Everywhere v1.1, IPP Everywhere Printer Self-Certification Manual v1.1, IPP Job Extensions v1.1, IPP System Service, PWG Safe G-Code
 - Smith Kennedy (HP Inc.) – IPP Authentication Methods, IPP Encrypted Jobs and Documents, IPP Job and Printer Extensions - Set 2 v2.0 (JPS2)

IPP WG: Status (1/2)



- **PWG Specifications in development:**

- IPP 3D Printing Extensions v1.1 - Stable Draft
- IPP Document Object v1.1 - Interim Draft
- IPP Everywhere v1.1 - Stable Draft
- IPP Everywhere Printer Self-Certification Manual v1.1 - Prototype Draft
- IPP Job Extensions v1.1 - Interim Draft
- IPP Job and Printer Extensions - Set 2 v2.0 - Initial Draft
- IPP System Service v1.0 - Prototype Draft
- MFD Alerts v1.1 - Initial Draft

- **IPP Best Practices in development:**

- IPP Authentication Methods - Stable Draft
- IPP Encrypted Jobs and Documents - Interim Draft
- PWG Safe G-Code Subset for 3D Printing - Stable Draft



IPP WG: Status (2/2)

- Up-to-date pending IANA registrations online:
 - <http://www.pwg.org/ipp/ipp-registrations.xml>
 - Continue to maintain this in parallel for new specifications
 - Github repository: <https://github.com/istopwg/ippregistry>
- IPP Everywhere Printer Self-Certifications:
 - <https://www.pwg.org/printers>
 - 355 printers currently listed (tripled since August 2017)
 - Second 1.0 self-certification tools update released in October 2017
 - Third 1.0 self-certification tools update released in November 2018
- IPP Sample Code:
 - Github repository:
 - <https://github.com/istopwg/ippsample>
 - Fork of CUPS code includes ipppfind, ippproxy, ipppserver, ippptool, ippptransform, and ippptransform3d



IPP WG: More Information

- We welcome participation from all interested parties
- IPP Working Group web page
 - <https://www.pwg.org/ipp/index.html>
- Subscribe to the IPP mailing list
 - <https://www.pwg.org/mailman/listinfo/ipp>
- IPP WG holds bi-weekly phone conferences announced on the IPP mailing list
 - Next conference calls scheduled for Thursday, February 28, 2018 and March 14, 2019 at 3pm ET



The Printer Working Group

Liaison Status



Trusted Computing Group (TCG)

- **Next TCG Members Meetings**

- 25-28 February 2019 – Seoul, South Korea – Ira to call in
- 10-13 June 2019 – Warsaw, Poland – Ira to call in – conflicts w/ ESCAR USA 12-13 June 2019

- **Trusted Mobility Solutions (TMS)** – Ira is co-chair and co-editor

- Scope: mobile phones, telecom networks, enterprise/financial BYOD
- Formal liaisons – [ATIS](#) (5G Security), ETSI (NFV and MEC), Global Platform (TEE and SE)
- [ATIS/TCG – joint work on 5G security and runtime integrity](#)
- [GP/TCG – joint work on remote attestation, GP/TCG security mgmt, and runtime integrity](#)
- Informal liaisons – [GSMA](#), 3GPP, ITU-T, SAE, IETF TLS, IETF SACM, US NIST
- [TCG TMS Use Cases v2 – published September 2018](#)

- **Mobile Platform (MPWG)** – Ira is co-editor

- Scope: mobile phones, PDAs, eBook readers, etc.
- Formal liaisons – [ATIS](#) (5G Security), Global Platform (TEE)
- [TCG Mobile Runtime Integrity Preservation – public review in Q1 2019](#)
- [TCG/GP collaboration – Integrating GP and TCG Security Technologies](#)

- **Recent Specifications**

- <http://www.trustedcomputinggroup.org/resources>
- [TCG Trusted Platform Module 2.0 r1.50 – public review January 2019](#)
- [TCG Storage Opal Test Cases v1.0 r1.14 – public review January 2019](#)
- [TCG Architect's Guide Portable Device Security Using TNC – published November 2018](#)
- [TCG EK Credential Profile for TPM v2.0 – publication approved November 2018](#)
- [TCG PC Client Platform Firmware Profile r1.04 – public review November 2018](#)
- [TCG Storage Security Subsystem Class: Ruby v1.0 – public review November 2018](#)
- [TCG TMS Use Cases v2 – published September 2018](#)
- [TCG Trusted Network Communications for Mobile Platforms – published September 2018](#)
- [TCG Protection Profile Automotive-Thin TPM/2.0 – public review September 2018](#)



Internet Engineering Task Force (IETF)

- **Next IETF Members Meetings**
 - IETF 104 – 23-29 March 2019 – Prague, Czech Republic – Ira to call in – conflicts w/ Detroit Auto Cyber 28-29 March 2019
 - IETF 105 – 20-26 July 2019 – Montreal, Canada – Ira to call in
- **Transport Layer Security (TLS)**
 - TLS/1.3 – RFC 8446 – August 2018
<https://tools.ietf.org/html/rfc8446>
 - DTLS/1.3 – draft-30 – November 2018 – revision needed from TLS WG Last Call
<https://datatracker.ietf.org/doc/draft-ietf-tls-dtls13/>
- **Security Automation and Continuous Monitoring (SACM)**
 - SACM Terminology – draft-16 – December 2018
<https://datatracker.ietf.org/doc/draft-ietf-sacm-terminology/>
 - Concise Software Identifiers – draft-08 – November 2018
<https://datatracker.ietf.org/doc/draft-ietf-sacm-coswid/>
 - SACM Endpoint Posture Collection Profile – draft-03 – September 2018
<https://datatracker.ietf.org/doc/draft-ietf-sacm-ecp/>
- **Concise Binary Object Representation (CBOR)**
 - Concise Binary Object Representation (CBOR) – draft-05 – January 2019
<https://datatracker.ietf.org/doc/draft-ietf-cbor-7049bis/>
 - Concise Data Definition Language (CDDL) – draft-06 – November 2018 – completed IETF Last Call
<https://datatracker.ietf.org/doc/draft-ietf-cbor-cddl> - JSON/CBOR schema
- **IRTF Crypto Forum Research Group (CFRG) – future algorithms**
 - Pairing Friendly Curves – draft-00 – January 2019 – addresses the BN_256 weakness (only 100-bit security)
<https://datatracker.ietf.org/doc/draft-yonezawa-pairing-friendly-curves/>
 - Hash-Based Signatures – draft-15 – January 2019 – complementary to XMSS (RFC 8391)
<https://datatracker.ietf.org/doc/draft-mcgrew-hash-sigs/>
 - Re-keying Mechanisms for Symmetric Keys – draft-14 – December 2018
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-re-keying/>
 - Memory-hard Argon2 password hash and proof-of-work – draft-04 – November 2018
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-argon2/>
 - Randomness Improvements for Security Protocols – draft-03 – October 2018 – fundamental
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-randomness-improvements/>
 - Extended Hash-Based Signatures (XMSS) – RFC 8391 – May 2018
<https://datatracker.ietf.org/doc/rfc8391/>



Linux Foundation OpenPrinting

- Linux Foundation OP Google Summer of Code 2018
 - Lots of good work and contributions to PWG's GitHub projects
 - Close reading of a number of PWG specs revealed additional errata – now in progress for several PWG specs
 - Thanks to Linux OpenPrinting coordinators, mentors, and all the students for your hard work and contributions!
- Linux Foundation OP Google Summer of Code 2019
 - Generic Framework: Printer Application from Legacy Driver
 - Printer Applications from Foomatic, Gutenprint, HPLIP, etc.
 - Printer Application from SANE scanner (via IPP Scan Service)
 - Linux GUI app for MFD system admin (via IPP System Service)
 - ipptool scripts for IPP System Service and IPP Errata updates
- Linux Foundation OP Website Renovation – ongoing
 - Aveek and Till found GSoC 2017/2018 students to do the work
 - New OP website is almost complete!
 - Development in Jekyll/GitHub (used by Mike Sweet for years)
 - About Us page will describe collaboration w/ IEEE-ISTO PWG
 - Driverless Printing page will describe IPP Everywhere™ and display the PWG IPP Everywhere™ logo



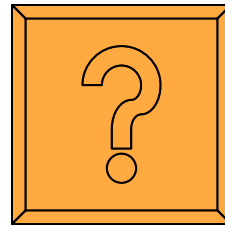
- Mopria liaison to the PWG : Jeremy Reitz (Xerox)
- Mopria Alliance 2018 Overview Presentation
 - <https://ftp.pwg.org/pub/pwg/liaison/mopria/Mopria-Alliance-October-2018.pdf>
- No updates since November 2018



3D / Additive Manufacturing Liaisons

- America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC) -
 - www.ansi.org/standards_activities/standards_boards_panels/amsc/Default?menuid=3. The IEEE-ISTO Printer Working Group is participating in the AMSC initiative.
- ISO/IEC JTC 1 WG 12 3D Printing and Scanning eCommittee
 - <https://isotc.iso.org/livelink/livelink?func=ll&objId=19905763&objAction=browse&viewType=1> The IEEE-ISTO Printer Working Group is participating in the ISO initiative via the INCITS Ad Hoc.
- Society of Manufacturing Engineers (ITEAM)
 - www.sme.org/iteam/
- 3D PDF Consortium
 - www.3dpdfconsortium.org
- 3MF Consortium
 - 3mf.io

Other Questions / Comments





Next PWG Face-to-Face Meeting

April 16 – 18, 2019 : Lexington, KY (Lexmark)

Monitor pwg-announce@pwg.org or the [PWG meeting page](#) for current plans and meeting information.

Any companies willing to host, please contact chair@pwg.org



The Printer Working Group

Backup



PWG Design Principles Whitepaper

- Purpose:
 - A document that describes the PWG's core tenets and design principles that guide the design and creation of its IPP, Semantic Model, MIBs, and other technologies
- Scope / Topics to be Covered:
 - IPP
 - Late binding principle
 - Intent vs. process for Job fidelity
 - Value of separating Job attributes from Document content
 - IPP attribute types and design patterns
 - Printer Status vs. Printer Description
 - xxx / xxx-supported / xxx-default vs. xxx / xxx-configured / xxx-supported
 - Collections vs. textual encoding of MIB sequences ("printer-finisher")
 - Semantic Model
 - Creates comprehensible view of the elements in an Imaging System, allowing better communication with other standards organizations dealing with related matters.
 - Presents the basic features necessary in communicating with imaging services, independent of the protocols used in that communication
 - Allows exploitation of the inherent parallelism between different types of imaging services (Print, Scan, Fax, etc.)



- Original notion: Update existing Process 3.0 to merge in subsequently published PWG process documents
 - [pwg-policy-call-for-obj-last-call-formal-vote-draft-2.txt](#) (draft)
 - [ipp-registry-policy.txt](#)
 - [pwg-billing-policy-20141001.txt](#)
 - [pwg-white-policy-20140505.txt](#)
 - [pwg-charter-policy-20140407.txt](#)
 - [pwg-prototype-policy-20121029.txt](#)
 - [pwg-namespace-policy-20160820.txt](#) (new updated draft)
- Revised notion: Refactor the Process document to describe the processes of the PWG to make them simple and obvious to the uninitiated reader:
 - Proposing new work to the PWG
 - Approving new work and assigning to a PWG work group
 - PWG approval for various document types
 - whitepaper
 - standard
 - etc.