



The Printer Working Group

PWG May 2018 Face-to-Face Plenary Session

Smith Kennedy, PWG Chair
May 15, 2018



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)
 - Mopria
 - ASTM
 - AMSC
- Next Meetings

Administrivia



- Welcome and Introductions
- Confirm Minutes Taker
- Review PWG Patent Policy
- Agenda for the Week
- Future PWG Meeting Schedule
- 2018 Membership
- PWG Officers

PWG IP Policy



- "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 Pacific Daylight Time)

Tuesday, May 15

9:00 – 10:15	PWG Plenary
10:15 – 10:30	Break
10:30 – 12:00	IPP WG : 3D Printing Topics · IPP 3D v1.1 · PWG Safe G-Code
12:00 – 1:00	Lunch
1:00 – 1:30	OpenPrinting: Plenary
1:30 – 2:30	OpenPrinting: Status of Ghostscript/MuPDF
2:30 – 2:45	Break
2:45 – 3:45	OpenPrinting: CUPS Plenary
3:45 – 4:30	OpenPrinting: cups-filters
4:30 – 5:15	OpenPrinting: Google Summer of Code 2018

Agenda Overview – Day 2



(All times Pacific Daylight Time)

Wednesday, May 16

9:00 – 10:30	IPP WG: Status and Sample Code Demo
10:30 – 10:45	Break
10:45 – 12:00	IPP WG: System Service
12:00 – 1:00	Lunch
1:00 – 2:30	IPP WG: Encrypted Jobs and Documents
2:30 – 2:45	Break
2:45 – 3:15	IPP WG: Job Reprint Password
3:15 – 5:00	IPP WG: IPP Everywhere v1.1

Agenda Overview – Day 3



(All times Pacific Daylight Time)

Thursday, May 17

9:00 – 12:00	IDS WG: Status and Discussion
12:00 – 1:00	Lunch
1:00 – 2:00	IPP WG: How to Use the Internet Printing Protocol
2:00 – 3:00	IPP WG: IPP Authentication Methods
3:00 – 3:30	IPP WG: Next Steps



Future PWG Meeting Schedule

- 2018 (Tentative Dates)

- August 22-23 : TBD – physical or virtual
- November 14-15 : TBD – physical or virtual

← Alternatives?

- 2019

- February 12-14 : Virtual (?)
- May 14-16: Sunnyvale?

Contact chair@pwg.org if you are interested in hosting

2018 Membership



27 Members (26 Voting, 1 Non-Voting)

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



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 2
→ Current certification toolset available on PWG website
- 206 printers now certified!
 - <https://www.pwg.org/dynamo/eveprinters.php>
 - More on the way
- More to come
 - IPP Everywhere™ Self Certification 1.0 Update 3 - Q2/Q3 2018
 - IPP Everywhere™ v1.1 – Q4 2018
 - IPP Everywhere™ Self Certification 1.1 – Q2 2019



PWG Projects on Github

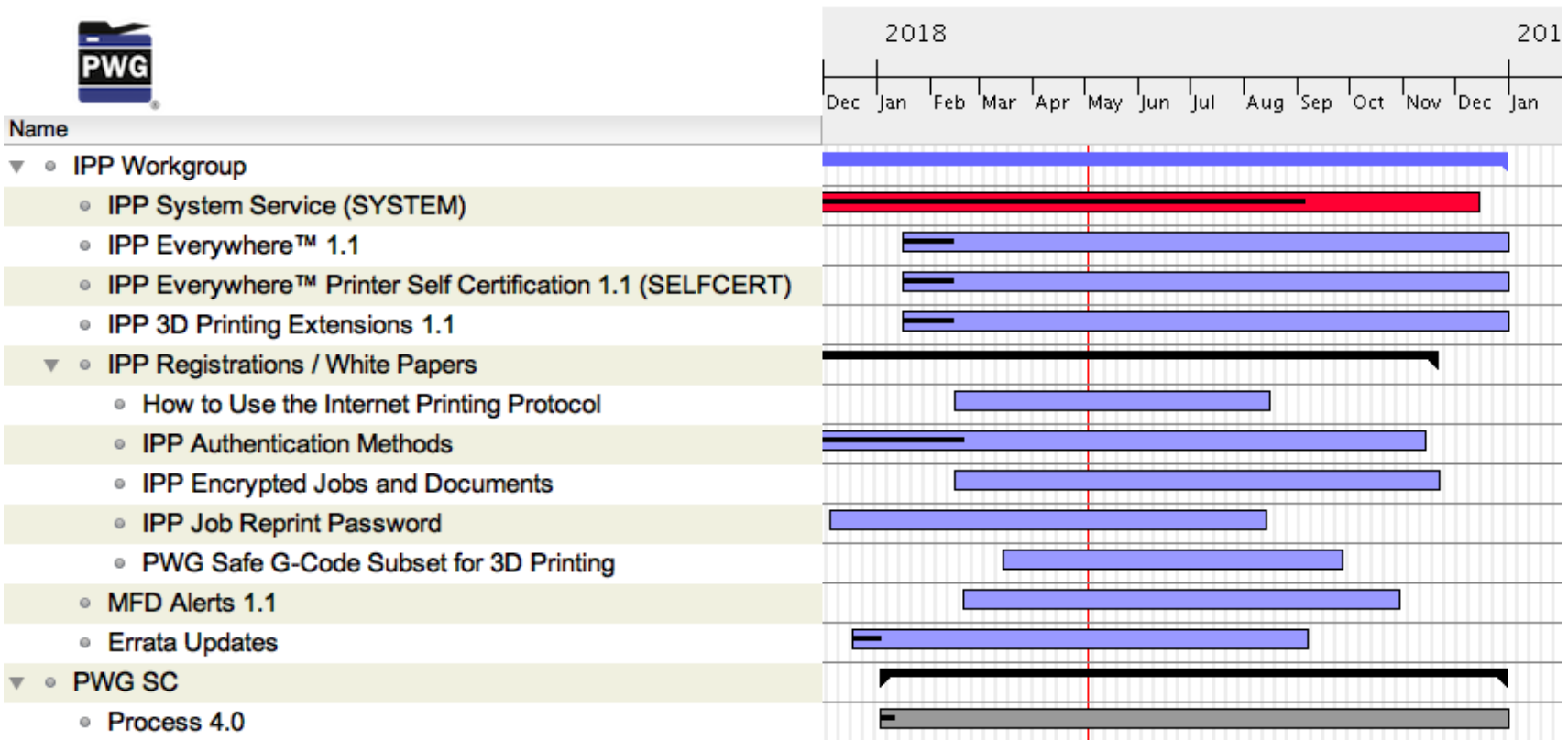
- PWG on Github:
 - <https://github.com/istopwg>
- IPP Sample
 - <https://github.com/istopwg/ippsample>
- IPP Everywhere Self Certification Tools
 - <https://github.com/istopwg/ippeveselfcert>
- IPP Registry
 - <https://github.com/istopwg/ipregistry>
- PWG Books:
 - <https://github.com/istopwg/pwg-books>



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: 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.
 - Need to determine other applicable standards bodies that IDS WG could/should outreach with
 - HCD Technical Committee (TC) Meetings:
 - IDS Teleconference held April 5th to help prepare for the Apr 25th HCD TC Face-to-Face Meeting
 - HCD TC Face-to-Face Meeting held Apr 25th as part of the Apr 24-26 CCUF Workshop in Trondheim Norway
 - HCD TC Meeting held May 8th in conjunction with ICMC in Ottawa

The results from the IDS Teleconference and the two HCD TC meetings will be discussed at the IDS WG Session on Thursday, May 17th



The Printer Working Group

IPP Workgroup Status

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



IPP WG: Charter

- Current charter:
 - <https://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
 - Michael Sweet (Apple) – How to Use the Internet Printing Protocol, IPP 3D Printing Extensions v1.1, IPP Encrypted Jobs and Documents, IPP Everywhere v1.1, IPP Everywhere Printer Self-Certification Manual v1.1, IPP System Service, PWG Safe G-Code
 - Smith Kennedy (HP Inc.) – How to Use the Internet Printing Protocol, IPP Encrypted Jobs and Documents, IPP Job Reprint Password
 - Peter Zehler (Xerox) - How to Use the Internet Printing Protocol



IPP WG: Status Summary

- 3D Printing:
 - IPP 3D Printing Extensions v1.1
 - PWG Safe G-Code Subset for 3D Printing
- IPP Everywhere™:
 - IPP Everywhere™ v1.1
 - IPP Everywhere™ Printer Self-Certification Manual v1.1
- Service binding:
 - IPP System Service v1.0
- Other informational documents:
 - IPP Authentication Methods, IPP Encrypted Jobs and Documents, IPP Job Reprint Password, How to Use the Internet Printing Protocol



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 weekly phone conferences announced on the IPP mailing list
 - Next conference calls Thursday, June 7 and 21, 2018 at 3pm ET



The Printer Working Group

Liaison Status



Trusted Computing Group (TCG)

- **Next TCG Members Meetings**

- 18-22 June 2018 – San Diego, CA – Ira can't call (conflict w/ ESCAR)
- 15-19 October 2018 – Lisbon, Portugal – Ira to call in

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

- Scope: mobile phones, telecom networks, enterprise/financial BYOD
- Formal liaisons – ATIS (in progress), ETSI (NFV), Global Platform (TEE and SE), OMA (device mgmt), Mobey Forum (mobile banking)
- Informal liaisons – 3GPP, ITU-T, SAE, IETF TLS, IETF SACM, US NIST
- *TCG TMS Use Cases v2 – published in May 2018*

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

- Scope: mobile phones, PDAs, eBook readers, etc.
- Formal liaisons – Global Platform (TEE), Mobey Forum (banking)
- Mobile Runtime Integrity Preservation – public review in Q2 2018
- *TCG/GP collaboration – Integrating GP and TCG Security Technologies*

- **Recent Specifications**

- <http://www.trustedcomputinggroup.org/resources>
- TCG SNMP MIB for TPM-based Attestation – public review May 2018
- TCG Device Identifier Composition Engine – published March 2018
- TCG Protection Profile PC Client TPM v1.1 – public review March 2018
- TCG Guidance Securing Network Equipment – published January 2018



Internet Engineering Task Force (IETF)

- **Next IETF Members Meetings**

- IETF 102 - 14-20 July 2018 – Montreal, Canada – Ira to call in
- IETF 103 – 3-9 November 2018 – Bangkok, Thailand – Ira to call in

- **Transport Layer Security (TLS)**

- TLS/1.3 – RFC Editor's Queue – IETF LC completed – draft-28 – March 2018
<https://datatracker.ietf.org/doc/draft-ietf-tls-tls13/>

- **Security Automation and Continuous Monitoring (SACM)**

- S/W Inventory Message & Attributes for PA-TNC – draft-05 – April 2018
<https://datatracker.ietf.org/doc/draft-ietf-sacm-nea-swima-patnc/>
- Concise Software Identifiers – draft-05 – March 2018
<https://datatracker.ietf.org/doc/draft-ietf-sacm-coswid/>

- **Concise Binary Object Representation (CBOR)**

- Concise Binary Object Representation (CBOR) – draft-02 – March 2018
<https://datatracker.ietf.org/doc/draft-ietf-cbor-7049bis/>
- Concise Data Definition Language (CDDL) – draft-02 – February 2018
<https://datatracker.ietf.org/doc/draft-ietf-cbor-cddl> - JSON/CBOR schema

- **Constrained RESTful Environments (CORE)**

- CBOR Encoding of Data Modeled with YANG – draft-06 – February 2018
<https://datatracker.ietf.org/doc/draft-ietf-core-yang-cbor/>

- **IRTF Crypto Forum Research Group (CFRG)** – future algorithms

- Extended Hash-Based Signatures – RFC Editor's Queue – April 2018
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-xmss-hash-based-signatures/>

- Jeremy Reitz (Xerox) is the newly appointed Mopria liaison to the PWG
 - Smith and Jeremy spoke on May 14 (yesterday) and have set up some time to discuss next steps for collaboration
- Partnership Opportunities
 - Test tools?
 - IPP Everywhere v1.1 and Mopria?
 - IPP Extensions?
- PWG : “The Internet Printing Protocol in 2017: An Overview”
 - Presented to Mopria Technical Working Group via GoToMeeting July 26 during their F2F meeting session
 - <https://ftp.pwg.org/pub/pwg/general/presentations/PWG-2017-IPP-Overview-20170725.pdf>
 - Update for 2018?

America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC)



- **America Makes – Quoted From their web site:**

- *"Established in 2012 and based in Youngstown, Ohio, America Makes is the flagship Institute for Manufacturing USA, the National Network for Manufacturing Innovation, infrastructure of up to 45 Institutes to follow and is driven by the [National Center for Defense Manufacturing and Machining \(NCDMM\)](#)."*
- America Makes is a membership driven public – private partnership. While it collaborates with SDO's (Standards Developing Organizations), it does not develop standards itself. Much of the information created as part of different America Makes sponsored projects is only made available to paying members.
- **America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC) –**
https://www.ansi.org/standards_activities/standards_boards_panel_s/amsc/Default?menuid=3. The IEEE-ISTO Printer Working Group is participating in the AMSC initiative.
- **The AMSC Version 2.0 Work Effort is scheduled to conclude in June 2018 with the publication of the updated 2.0 AMSC roadmap**



- **SME profiled the work of AMSC via a Forum on Tuesday April 24th, 2018 from 2:15 to 4:15 pm**
 - PWG was represented by Paul Tykodi at RAPID on April 24th, 2018
 - Mr. Tykodi was invited to present on the topic "*IEEE-ISTO PWG IPP Working Group: Process-Declaring Workflow Intent and Querying Device Capabilities*"
- **SME unveiled their new ITEAM Concept at the RAPID + TCT Conference. Introductory meeting held Mon April 23rd, 2018**
 - *"The group agreed on the need and that SME is uniquely positioned to serve as the unbiased, trusted 3rd party in the AM community. To further that effort, SME will stand up the Additive Manufacturing Consortium for the Independent Technical Evaluation of Additive Manufacturing (ITEAM). This consortium will include industry thought leaders from various industries. ITEAM, with the support of the Florida Institute of Technology (FIT), will create a platform to enable inquiry and analysis, education, community forums, and training. This provides an unbiased assessment of AM technology, materials, processes and equipment for AM users and adopters."*



- **32nd Meeting of ISO/IEC JTC 1, 2-6 October 2017 in Vladivostok, Russia**
 - ***"Resolution 11 – Establishment of JTC 1/WG 12 on 3D Printing and Scanning Contingent upon approval of a relevant NWIP, JTC 1 establishes JTC 1 Working Group 12 on 3D Printing and Scanning with the following Terms of Reference:***
 - 1. Serve as a focus of and proponent for JTC 1's standardization program on 3D Printing and Scanning.
 - 2. Develop ICT related foundational standards for 3D Printing and Scanning upon which other standards can be developed.
 - 3. Develop other 3D Printing and Scanning standards that are built upon the foundational standards when relevant ISO and IEC committees that could address these standards do not exist or are unable to develop them.
 - 4. Identify gaps and opportunities in 3D Printing and Scanning standardization.
 - 5. Develop and maintain liaisons with all relevant ISO and IEC committees as well as with external organizations that have interests in 3D Printing and Scanning.
 - 6. Engage with 3D Printing and Scanning communities to raise awareness of JTC 1 standardization efforts and provide an open platform for discussion and further cooperation.
 - 7. Develop and maintain a list of existing 3D Printing and Scanning standards produced and standards development projects underway in ISO TCs, IEC TCs and JTC 1."



- **32nd Meeting of ISO/IEC JTC 1, 2-6 October 2017 in Vladivostok, Russia - continued**
 - "JTC 1 appoints Byoung Nam Lee to serve as Convenor of JTC 1 Working Group 12 on 3D Printing and Scanning.
 - To continue to progress the topic of 3D Printing and Scanning in a timely manner, the Study Group on 3D Printing and Scanning will remain in place, with Byoung Nam Lee as Convenor, pending the approval of an NWIP. Once an NWIP has been approved, the Study Group on 3D Printing and Scanning is disbanded and the JTC 1 Working Group 12 Convenor will work with ITTF to formally establish Working Group 12 within the ISO system."

Possible Collaboration with ISO TC171 SC2 regarding Common Metadata for PDF's with 3D Content



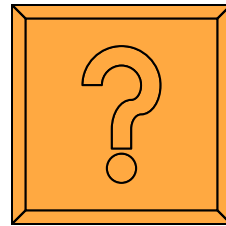
- **Possible Opportunity to work with TC171 SC 2 in collaboration with 3DPDF Consortium, ISO/IEC JTC 1 SG3, TC130 WG 2 TF 5, AMSC, ASME 14.41.1 work group, and US DoD/Supplier committee currently defining a Technical Data Package (TDP) Specification for interchange of files with 3D content**
 - Met with Martin Bailey (convenor of TC130 WG 2 TF 5 effort) in June 2017 to discuss possible opportunity for collaboration and to share PWG 3D Print Ticket draft standard information
 - JDFMAP provides possible roadmap for future collaboration



Possible Collaboration with IEEE P3030

- **Possible Opportunity to work with IEEE P3030 Project (3D Consumer Printer Standardization Effort Sponsored by IEEE Consumer Electronics Society - <https://cesoc.ieee.org/>)**
 - IEEE CES is a completely different organization from the CES that sponsors the Consumer Electronics Show each year in Las Vegas
 - PWG participated remotely in first P3030 F2F meeting in early January 2018

Other Questions / Comments





Next PWG Meeting

- August 22-23 : TBD
- ???

Monitor pwg-announce@pwg.org or the [PWG meeting page](#) for more info.

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.