# The Printer Working Group

## PWG November 2018 Face-to-Face Plenary Session

Smith Kennedy, PWG Chair

November 14, 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)
  - Linux Foundation OpenPrinting
  - Mopria
  - 3D Printing / Additive Manufacturing Liaisons
- Next Meetings

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# Administrivia

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

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# 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)

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# 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.

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# 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.

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# 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.

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# 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

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# In Memoriam – Peter Zehler (Xerox)

- Pete was a long time contributor to the PWG and many in the PWG knew him and worked with him
- Pete passed away on August 18, 2018
- Pete, you will be greatly missed!

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# Agenda Overview – Day 1

(All times Mountain Standard Time)

## Wednesday, November 14

| | |
|---|---|
| 9:00 – 10:15 | PWG Plenary · Mopria Alliance 2018 Overview |
| 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 |

** Note the last minute schedule change

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# Agenda Overview – Day 2

(All times Mountain Standard Time)

## Thursday, November 15

| | |
|---|---|
| 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 |

** Note the last minute schedule change

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# Future PWG Meeting Schedule

- 2019 (Tentative Dates and Sites)
  - February 13-14 : Virtual
  - April 30 - May 2: Lexington, KY – Hosted by Lexmark, Inc.
  - August 28-29: Virtual
  - November 13-14 : Virtual

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

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# 2018 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 |

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# PWG Officers (2017-2019 Term)

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

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# 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

- ~~353~~ 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

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# 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/ippregistry
- PWG Books:
  - https://github.com/istopwg/pwg-books

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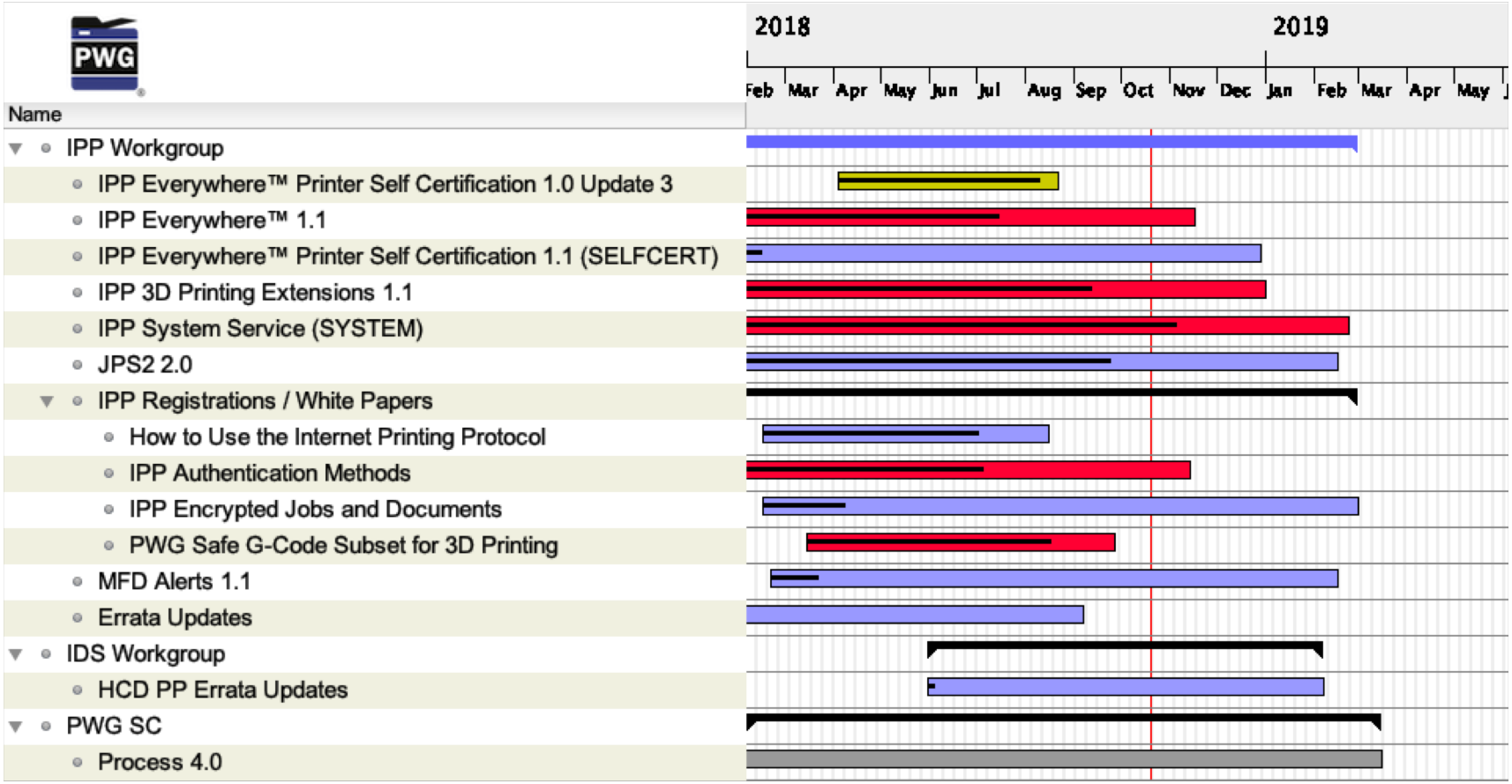
# The Printer Working Group

## PWG Workgroup Status

# Work In Progress




**Planned** **Interim** **Prototype** **Prototyped** **Stable**

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# 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

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# 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

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# 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:
    - HCD TC Face-to-Face Meeting held on Oct 29th as part of the Fall 2018 CCUF Workshop in Amsterdam Holland
    - Status of HCD TC and HCD PP Version 1.1 to be discussed at the IDS WG Session on Thursday, Nov 15th

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# 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

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# 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) – How to Use the Internet Printing Protocol, 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)
  - Peter Zehler (Xerox) - How to Use the Internet Printing Protocol

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# IPP WG: Status (1/2)

- PWG Specifications in development:
  - IPP 3D Printing Extensions v1.1 - Prototype Draft
  - IPP Document Object v1.1 - Interim Draft
  - IPP Everywhere v1.1 - Prototype 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 - Interim Draft
  - IPP Encrypted Jobs and Documents - Interim Draft
  - PWG Safe G-Code Subset for 3D Printing - Stable Draft
- IPP Book in development:
  - How to Use the Internet Printing Protocol - Interim Draft

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# 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 ippfind, ippproxy, ippserver, ipptool, ipptransform, and ipptransform3d

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# 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 call scheduled for Thursday, December 6, 2018 at 3pm ET

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# 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
- **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), Global Platform (TEE and SE), OMA (mgmt)
  - ATIS/TCG MoU – completed in July 2018 – major collaboration plans
  - 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), Mobey Forum (banking)
  - *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 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
  - *TCG Establishing Network Equipment Security – published August 2018*
  - TCG EK Credential Profile for TPM v2.1 – public review August 2018
  - TCG SNMP MIB for TPM-based Attestation – public review July 2018

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# Internet Engineering Task Force (IETF)

- **Next IETF Members Meetings**
  - IETF 104 – 23-29 March 2019 – Prague, Czech Republic – Ira to call in
  - 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 - in TLS WG Last Call
    https://datatracker.ietf.org/doc/draft-ietf-tls-dtls13/
- **Security Automation and Continuous Monitoring (SACM)**
  - Concise Software Identifiers – draft-07 – October 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-04 – October 2018
    https://datatracker.ietf.org/doc/draft-ietf-cbor-7049bis/
  - Concise Data Definition Danguage (CDDL) – draft-05 – August 2018 – in IESG review
    https://datatracker.ietf.org/doc/draft-ietf-cbor-cddl - JSON/CBOR schema
- **Constrained RESTful Environments (CORE)**
  - CBOR Encoding of Data Modeled with YANG – draft-07 – September 2018
    https://datatracker.ietf.org/doc/draft-ietf-core-yang-cbor/
- **IRTF Crypto Forum Research Group (CFRG)** – future algorithms
  - Randomness Improvements for Security Protocols – draft-03 – October 2018 – fundamental
    https://datatracker.ietf.org/doc/draft-irtf-cfrg-randomness-improvements/
  - Hash to Curve – draft-02 – October 2018 – hash arbitrary strings to points on Elliptic Curves
    https://datatracker.ietf.org/doc/draft-irtf-cfrg-hash-to-curve/
  - Hash-Based Signatures – draft-13 – September 2018 – complementary to XMSS
    https://datatracker.ietf.org/doc/draft-mcgrew-hash-sigs/
  - Extended Hash-Based Signatures (XMSS) – RFC 8391 – May 2018
    https://datatracker.ietf.org/doc/rfc8391/

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# 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 Website Renovation – ongoing
  - Aveek and Till found six GSoC 2017/2018 students to do the work
  - Weekly meetings on OP website design and development
  - Changed from WordPress to Jekyll (used by Mike for years)
  - Driverless Printing page will describe IPP Everywhere™ and display the PWG IPP Everywhere™ logo
- Linux Foundation OP Google Summer of Code 2019 – ideas
  - 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)

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# Mopria

- 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

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# 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

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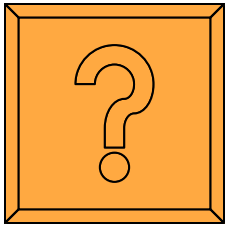
# Other Questions / Comments



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# Next PWG Face-to-Face Meeting

February 13-14, 2019 : Virtual

Monitor pwg-announce@pwg.org or the PWG meeting page for more info.

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

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# 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.)

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# PWG Process v4.0

- 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.

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