The Printer Working Group

PWG February 2025 Face-to-Face
Plenary Session

Jeremy Leber, PWG Chair
February 4, 2025

Plenary Agenda

- **Please Note: This PWG Meeting is Being Recorded**

- Administrivia

- PWG Steering Committee Updates

- PWG Workgroup Status [WG Chairs]

- Liaison Status

- Questions / Next Meeting / Any Other Business

Administrivia

- Welcome and Introductions
- Confirm Minutes Taker
- Review PWG Antitrust Policy, PWG IP Policy and Inappropriate Topics
- Agenda

PWG Antitrust Policy

- "This meeting is being held in accordance with the PWG Antitrust Policy"
  - https://www.pwg.org/chair/membership_docs/pwg-antitrust-policy.pdf

- The IEEE-ISTO Printer Working Group ("PWG") will not become involved in the business decisions of its Members. The PWG strictly complies with applicable antitrust laws. Every PWG Member shall comply with this policy. The PWG Officers and PWG Workgroup Officers are responsible to ensure that this policy is adhered to in all PWG activities.

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.

Do Not Discuss:

- Validity or essentiality of patents or patent claims
- Cost of specific patent use
- Licensing terms or conditions
- Product pricing, territorial restrictions, or market share
- Ongoing litigation or threatened litigation

<u>DO raise an objection</u> if inappropriate topics are discussed

Agenda Overview – PWG Day 1

(All times Eastern Standard Time)

Tuesday, February 4

10:00 – 11:30	PWG Plenary
11:30 – 12:00	IPP WG: Status / IPP WG Last Calls of Infra and System
12:00 – 12:45	Break / Lunch
12:45 – 2:00	IPP WG: IPP Everywhere v2.0 (EVE) / IPP Everywhere Self-Certification Manual v2.0 (EVESELFCERT)

(All times Eastern Standard Time)

Wednesday, February 5

10:00 – 10:30	IPP WG: Envelope Sizes
10:30 – 11:15	IPP WG: IPP Console Extensions v1.0 (CONSOLE)
11:15 – 12:00	IPP WG: IPP Firmware Update Extensions v1.0
12:00 – 12:45	Break / Lunch
12:45 – 1:45	IPP WG: 3D Printing Liaisons: Status & Guidance
1:45 – 2:00	IPP WG: Next Steps

The Printer Working Group

Steering Committee Updates

Officers (2023-2025 Term)

- PWG Chair: Jeremy Leber, Lexmark

- PWG Vice Chair: Smith Kennedy, HP Inc.

- PWG Secretary: Ira McDonald, High North

2025 is an election year. Nominations start in late August!

Those interested in serving in PWG Officer roles should contact chair@pwg.org.

2025 Membership

29 Members

Alan Sukert	**EPSON** Epson	**hp** HP Inc.	**Microsoft** Microsoft	**Synaptics** Synaptics
Apple Inc.	**fiery** Fiery, LLC	**KONICA MINOLTA** Konica Minolta	**OKI PRINTING SOLUTIONS** Oki Electric Industry Co., Ltd	Technical Interface Consulting
brother at your side Brother Industries, Ltd.	**FUJIFILM** FUJIFILM Business Innovation Corp.	**KYOCERA** Kyocera	**PaperCut** PaperCut Software	**TOSHIBA** Leading Innovation >>> Toshiba Business Solutions
Canon Canon	**Google** Google	Lakeside Robotics Lakeside Robotics	**PrinterLogic** a VASION solution PrinterLogic	**TCS** Tykodi Consulting Services LLC. Tykodi Consulting Services LLC
Danny Brennan	Guy Tucker	**Lexmark** Lexmark	**Qualcomm** Qualcomm	**xerox** Xerox
DIGITAL CHECK Digital Check Corp	**High North Inc** High North, Inc.	**meteor network** Meteor Network	**RICOH** Ricoh	

Welcome new member, Guy Tucker!

As of February 3, we had 5 unpaid members!

2025 PWG membership fees were due on January 31. If you have not yet paid, please do so soon.

If you have not received your renewal notification from IEEE-ISTO, please contact us as soon as possible.

Thank You For Participating!

Thanks to all of you for contributing your time and efforts to the PWG!

Future Meeting Schedule

2025

- May 5-7 – Joint w/OP - Virtual

    - https://www.surveymonkey.com/r/FVFGTR5

- August 12-14 – Virtual

- November 11-13 – Virtual

2026

- February 10-11 – Virtual

- May 5-7 – Virtual? In-person?

- August 18-20 – Virtual

- November 10-12 - Virtual

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

IPP Everywhere™ Certified Printers

- https://www.pwg.org/ipp/everywhere.html

- **1471** printers now certified!
  - https://www.pwg.org/printers/
  - New printers from Canon, Digital Check, OKI, HP, Lexmark, Ricoh, and Samsung
  - **More on the way!**

- IPP Everywhere™ Self Certification 1.1 Update 4
  - → Announced Sept. 2, 2022
  - → **IPP Everywhere v1.0 Certifications no longer accepted**

IPP Everywhere™ Certified Printers
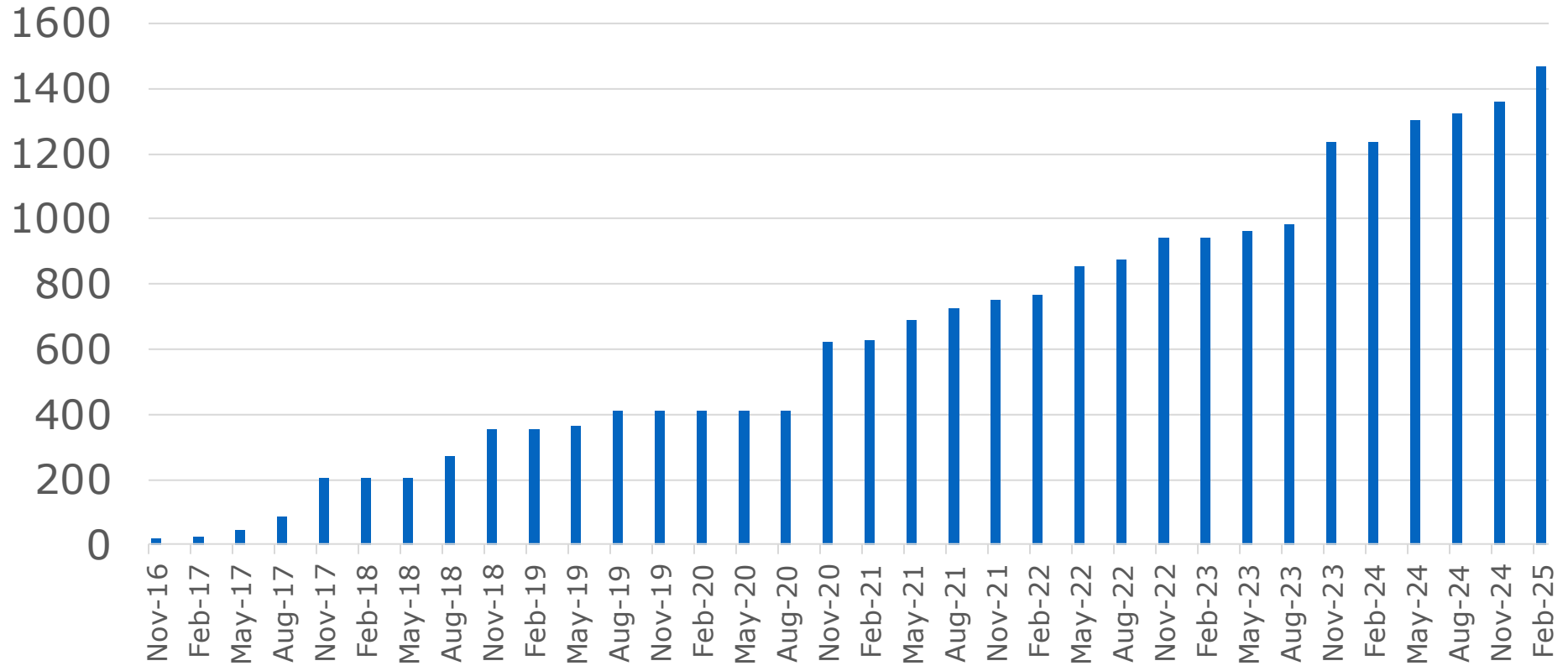
First IPP Everywhere certified printer: September 22, 2016!
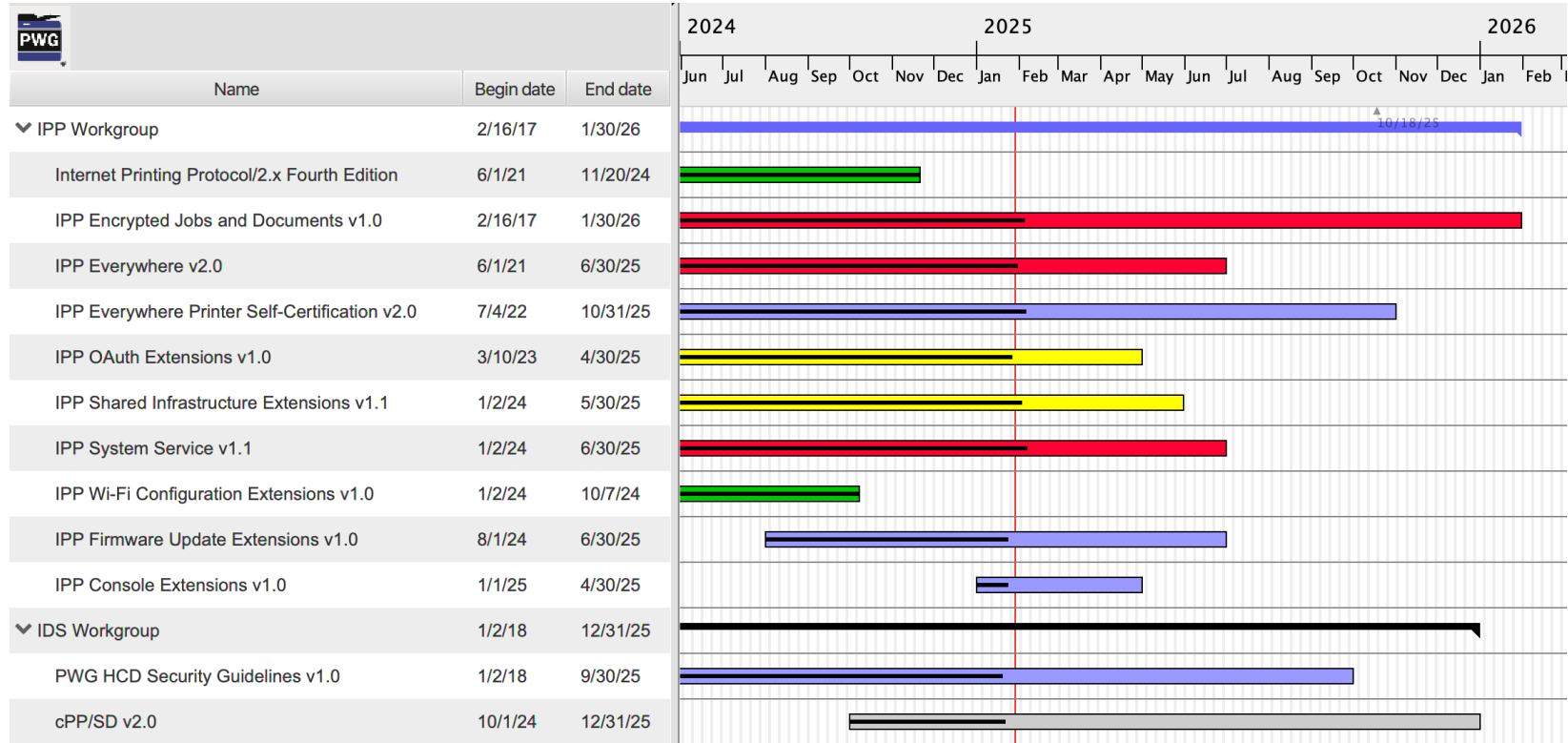
Projects on GitHub

- PWG on GitHub:
  - https://github.com/istopwg

- IPP Sample Code
  - 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

The Printer Working Group

Workgroup Status

Work in Progress

Name	Begin date	End date
∨ IPP Workgroup	2/16/17	1/30/26
Internet Printing Protocol/2.x Fourth Edition	6/1/21	11/20/24
IPP Encrypted Jobs and Documents v1.0	2/16/17	1/30/26
IPP Everywhere v2.0	6/1/21	6/30/25
IPP Everywhere Printer Self-Certification v2.0	7/4/22	10/31/25
IPP OAuth Extensions v1.0	3/10/23	4/30/25
IPP Shared Infrastructure Extensions v1.1	1/2/24	5/30/25
IPP System Service v1.1	1/2/24	6/30/25
IPP Wi-Fi Configuration Extensions v1.0	1/2/24	10/7/24
IPP Firmware Update Extensions v1.0	8/1/24	6/30/25
IPP Console Extensions v1.0	1/1/25	4/30/25
∨ IDS Workgroup	1/2/18	12/31/25
PWG HCD Security Guidelines v1.0	1/2/18	9/30/25
cPP/SD v2.0	10/1/24	12/31/25

Planned **Interim** **Prototype** **Stable** **Approved**

IDS Workgroup Status

Alan Sukert

- IDS WG Chair:
  - Alan Sukert
- IDS WG Vice-Chair
  - TBD
- IDS WG Secretary:
  - Alan Sukert
- IDS WG Document Editors:
  - Ira – HCD Security Guidelines

IDS: Current Status

- IDS activities include:
  - Updating PWG members on activities related to:
    - Common Criteria Hard Copy Device (HCD) Protection Profiles (PPs) and the HCD international Technical Community (iTC)
    - Security Developments affecting Hard Copy Devices and Services in other organizations including the Trusted Computing Group (TCG) and Internet Engineering Task Force (IETF),
  - Developing HCD Security Guidelines to provide guidance on current HCD security technology and security issues
- Individual IDS Working Group Sessions are currently only meeting as part of PWG Face-to-Face Meetings.
- There will be no separate IDS Session at this Face-to-Face Meeting

HCD ITC / HCD Interpretation Team (HIT) Status

Errata to HCD cPP v1.0 and HCD SD v1.0 (v1.0e)

- The Errata – HCD cPP v1.0e and HCD SD v1.0e – were published on Mar 4th, 2024
- Endorsements have been obtained from the Canadian and Korean Schemes, NIAP and JISEC (the Japanese Scheme); JISEC's endorsement was posted as part of an updated Position Statement
- HCD cPP v1.0e and HCD SD v1.0e have both now been officially certified by the Canadian Scheme via the completion of the first HCD certification against the HCD cPP/SD v1.0e

HCD international Technical Community (iTC) Status

- Since publishing the HCD cPP v1.0 and HCD SD v1.0 in Oct 2022 the HCD iTC has gone to monthly meetings
- Current focus is now on:
  - Developing a release plan for future versions of the HCD cPP and HCD SD
  - Determining content of and then implementing the next HCD cPP / HCD SD release (v2.0)
  - Addressing issues against HCD cPP / SD v1.0e

HIT Status

- Because of the use of GitHub and changes made to the documented HIT process because we did much of the infrastructure and actual implementations "on the fly", a Technical Decision (D) is being created by the HIT to update the HIT Procedures to reflect what we are actually doing

- Published Technical Recommendation (TR) and associated Technical Decision (TD) for Issue #25:

Issue #	Issue Summary	Status
HCD-IT #25	This issue deals with two issues associated with SFR FPT_SBT_EXT.1 – (1) definitions of immutable code or HW-based write-protection and (2) guidance on the level of assurance the evaluator shall take into consideration to confirm a compliant Root of Trust protection mechanism	Agreed on definition of immutability from NIST SP 800-193

HIT Status

- Focus right now is on following issues:

Issue #	Issue Summary	Status
HCD-IT-#27	For FCS_COP.1/CMAC, it's difficult to remove the dependency on key generation for CMAC even if CMAC is used in Secure Boot.	Issue affects an ongoing JISEC certification, so it needs to be resolved by EOY. The originator of this issue provided multiple solutions for this issue which are being reviewed by the HIT
HCD-IT-Template #361	The issue is whether it would be acceptable to have multiple immutable roots of trust, any one of which could be used to verify firmware integrity?	No priority has been assigned, but the issue has been discussed at multiple HIT meetings; are close to a consensus as to a resolution
HCD-IT #28	The issue that for SFR FCS_TLS*_EXT.1 in the HCD cPP v1.0e include FCS_CKM.1/SKG in the listed dependencies are incorrect	No priority has been assigned, but this should be an easy issue to address
HCD-IT #29	The issue is that in the Application Note for SFR FPT_KYP_EXT.1 in HCD cPP v1.0e clarification of which selection should be chosen for the case of the start point of a key chain that is protected by TPM like device.	Working on the wording for the Application Note. At the request of JBMIA this issue has been put on hold so as to not impact an on-going HCD certification against HCD/SD v1.0e

- Looked at differences between SFRs on CC:2022 and corresponding SFRs in HCD cPP v1.0e

  - Are considering recommendation to replace several SFRs currently in HCD cPP with corresponding SFRs from CC:2022. Examples include:

    - FAU_STG_EXT.1 External Audit Trail Storage (HCD cPP) → FAU_STG.1 Audit Storage Data Location (CC:2022)

    - FCS_RBG_EXT.1 Cryptographic Operation (Random Bit Generation) (HCD cPP) → FCS_RBG.1 Random Bit Generation (CC:2022)

    - FCS_CKM.4 Cryptographic key destruction (HCD cPP) → FCS_CKM.6 Timing and event of cryptographic key destruction (CC:2022)

    - FDP_DSK_EXT.1 Protection of data on disk (HCD cPP) → FDP_SDC.1 Stored data confidentiality (CC:2022)

HCD iTC
CC:2022 Subgroup Status

- Did a comparison of dependencies between SFRs on CC:2022 and corresponding SFRs in HCD cPP v1.0e. Found differences between CC:2022 and HCD cPP v1.0e for the following SFRs:

  - FAU_STG.1 Audit Storage Data Location
  - FTA_SSL.3 TSF-initiated termination
  - FTP_TRP.1 Trusted Path

- The Canadian Scheme developed a list of SFRs changed between CC v3.1R5 and CC:2022
- The Subgroup reviewed progress-to-date at its Feb 3rd meeting
- Next Steps:

  - Look at CC:2022 Assurance Requirements
  - Look at applicability of CC:2022 Parts 3 and 4 to HCD cPP and HCD SD

HCD iTC
Issues Post-Version 1.0e – 2025 Priorities

For now, the 2025 HCD iTC priorities, in priority order from top to bottom, remain the same as they did in 2024:

1. Syncing with Network Device cPP/SD v3.0
2. Syncing with the output from the CCDB Crypto Working Group – SFR Catalog

   - Release is still expected some time in 1AQ 2025

3. Implementing HIT Technical Decisions
4. Implementing AVA_VAN requirements to sync with EUCC
5. NIAP PQC Requirements (CNSA 2.0) – currently on hold by NIAP
6. Parking Lot Issues
7. Any New Issues

HCD iTC
Post-Version 1.0e Release Plan

Based on current information, the HCD iTC is still planning two Post-Version 1.0e Releases:

- V2.0 – 2026:
  - Will contain everything in v1.0e, syncing with ND cPP/SD v3.0, results from the CCDB Crypto WG's SFR Catalog as they pertain to what is currently in the HCD cPP, results from the CC:2022 subgroup and any other subgroups as applicable, and implemented new TDs from resolved HIT issues
  - May include initial CNSA 2.0 components such as elimination of SHA-1 and CNSA 2.0 algorithms for digital signatures if NIAP provides necessary direction in time
- V3.0 - 2027 – 2028:
  - Will likely contain applicable CNSA 2.0 components and content from the other priorities

HCD iTC Status
Key Next Steps

- Continue HIT activities for maintaining HCD cPP/SD v1.0e and issue the necessary TDs/TRs to address all documented RfIs once they are released

- Determine the content for and then create the next HCD cPP/SD version after HCD cPP/SD v1.0e

- Fully engage the HCD iTC to work on the next update to the HCD cPP and HCD SD

- Engage in long-range planning to determine what content will be needed in the HCD cPP/SD in the 3-5 year range and beyond

IDS WG: More Information

- We welcome participation from all interested parties
- IDS Working Group web page
  - https://www.pwg.org/ids/
- Subscribe to the IDS mailing list
  - https://www.pwg.org/mailman/listinfo/ids
- IDS WG holds bi-weekly meetings via WebEx announced on the IDS mailing list
  - Next meeting is scheduled for Thursday, November 30, 2023 at 3pm ET

The Printer Working Group

IPP Workgroup Status

Paul Tykodi (TCS), Ira McDonald (High North), Michael Sweet (Lakeside Robotics)

IPP WG: Officers

- **IPP WG Co-Chairs:**
  - Paul Tykodi (TCS)
  - Ira McDonald (High North)
- **IPP WG Secretary:**
  - Michael Sweet (Lakeside Robotics)
- **IPP WG Document Editors:**
  - Michael Sweet (Lakeside Robotics) – IPP Console Extensions v1.0, IPP Encrypted Jobs and Documents v1.0, IPP Everywhere v2.0, IPP Everywhere Printer Self-Certification Manual v2.0, IPP OAuth Extensions v1.0, IPP Shared Infrastructure Extensions v1.1, IPP System Service v1.1
  - Smith Kennedy (HP Inc.) – IPP Encrypted Jobs and Documents v1.0, IPP Firmware Update Extensions v1.0

IPP WG: Status

- Specifications in development:
  - IPP Encrypted Jobs and Documents v1.0 (Prototype)
  - IPP Everywhere™ v2.0 (Prototype)
  - IPP Everywhere™ Printer Self-Certification Manual v2.0 (Interim)
  - IPP OAuth Extensions v1.0 (Stable)
  - IPP Shared Infrastructure Extensions v1.1 (Interim)
  - IPP System Service v1.1 (Prototype)
- Registrations in development:
  - IPP Console Extensions v1.0 (Initial)
  - IPP Firmware Update Extensions v1.0 (Interim)
- Recently approved:
  - IPP Wi-Fi Configuration Extensions v1.0
  - PWG 5100.12-2024: Internet Printing Protocol/2.x Fourth Edition (BASE)
- Up-to-date pending IANA registrations online:
  - https://www.pwg.org/ipp/ipp-registrations.xml

IPP WG: More Information

- We welcome participation from all interested parties
- IPP workgroup 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 27 and March 13, 2025 at 3pm ET

The Printer Working Group

Liaison Status – February 2025

Linux Foundation OpenPrinting

OpenPrinting CUPS (ZdenekDohnal, RedHat / Mike Sweet, Lakeside Robotics)
- Current v2.x release is OP CUPS v2.4.11 on 30 September 2024
  - https://openprinting.github.io/cups-2.4.11
- Current v3.x release is OP CUPS v3.0rc3 on 22 October 2024
  - https://github.com/OpenPrinting/libcups/releases/v3.0rc3

OpenPrinting CUPS Filters (Till Kamppeter, Ubuntu, OP Manager)
- Current v2.x release is OP CUPS Filters v2.1.0 on 17 October 2024
  - https://github.com/OpenPrinting/libcupsfilters/releases/tag/2.1.0

OpenPrinting PAPPL (Printer Application) (Mike Sweet, Lakeside Robotics)
- Current release is PAPPL v1.4.7 on 15 October 2024
  - https://github.com/michaelrsweet/pappl/releases/tag/v1.4.7

OpenPrinting Website, News, and Minutes
- OpenPrinting Website
  - https://openprinting.github.io/
- OpenPrinting News
  - https://openprinting.github.io/news/
  - https://openprinting.github.io/OpenPrinting-News-Google-Summer-of-Code-2025-Project-Ideas-List-posted/
- OpenPrinting Monthly Minutes
  - http://ftp.pwg.org/pub/pwg/liaison/openprinting/minutes/

Trusted Computing Group (TCG)

- **Recent and Next TCG Members Meetings**
  - TCG Hybrid F2F (Boston, MA) – 29-31 October 2024 – Ira called in
  - TCG Hybrid F2F (Austin, TX) – 17-20 February 2025 – Ira to call in
  - TCG Hybrid F2F (Amsterdam, Netherlands) – 2-5 June 2025 – Ira to call in? (conflict w/ ISO TC22/SC32/WG11)

- **Mobile Platform (MPWG) – Ira is co-chair and co-editor since November 2024**
  - Formal Liaisons – GP (TEE, SE, TPS), ETSI (NFV/SAI Security and Privacy)
  - Informal Liaisons – 3GPP, GSMA, IETF, ISO, ITU-T, SAE, US NIST
  - *GP TPS Client API / Entity Attestation API / Keystore API – publication Q1/Q2 2025 – joint w/ TCG*
  - *TCG TPM 2.0 Mobile Common Profile v2 – work-in-progress since Q1 2024*
  - *TCG MARS 1.0 Mobile Profile – work-in-progress since Q4 2023*
  - *TCG Mobile Reference Architecture v2 – published August 2023*
  - *TCG TMS Use Cases v2 – published September 2018*

- **Recent Specifications**
  - http://www.trustedcomputinggroup.org/resources
  - *TCG PC Client Platform TPM Profile Specification for TPM 2.0 v1.06rc1 – public review January 2025*
  - *TCG DICE Attestation Architecture v1.2rc1 – public review January 2025*
  - *TCG OID Registry v1.00 – published December 2024*
  - *TCG Canonical Event Log Format v1.1r10 – public review December 2024*
  - *TCG Trusted Platform Module Library v1.84 – public review December 2024*

- **Recent and Next IETF Members Meetings**
    - IETF 121 Hybrid F2F (Dublin, Ireland) – 4-8 November 2024 – Ira called in
    - IETF 122 Hybrid F2F (Bangkok, Thailand) – 17-21 March 2025 – Ira to call in
    - IETF 123 Hybrid F2F (Madrid, Spain) – 21-25 July 2025 – Ira to call in
    - IETF 124 Hybrid F2F (Montreal, Canada) – 3-7 November 2025 – Ira to call in
- **Transport Layer Security (TLS)**
    - IETF Delegated Credentials for TLS and DTLS – RFC 9345 – July 2023
      https://datatracker.ietf.org/doc/rfc9345/
    - IETF Exported Authenticators in TLS – RFC 9261 – July 2022
      https://datatracker.ietf.org/doc/rfc9261/
    - IETF Hybrid Key Exchange in TLS 1.3 – draft-12 – January 2025 – Waiting for WG Chair
      https://datatracker.ietf.org/doc/draft-ietf-tls-hybrid-design/
    - IETF TLS 1.3 Extension for Using Certificates with an External Pre-Shared Key – December 2024
      https://datatracker.ietf.org/doc/draft-ietf-tls-8773bis/
    - IETF TLS 1.2 is in Feature Freeze – draft-05 – December 2024 – IETF Last Call
      https://datatracker.ietf.org/doc/draft-ietf-tls-tls12-frozen/
    - IETF DTLS 1.3 – draft-00 – December 2024 – Waiting for AD
      https://datatracker.ietf.org/doc/draft-ietf-tls-rfc9147bis/
    - IETF Large Record Sizes for TLS and DTLS with Reduced Overhead – draft-00 – November 2024
      https://datatracker.ietf.org/doc/draft-ietf-tls-super-jumbo-record-limit/
    - IETF IANA Registry Updates for TLS and DTLS – draft-10 – November 2024 – WG Last Call
      https://datatracker.ietf.org/doc/draft-ietf-tls-rfc8447bis/
    - IETF Extended Key Update for TLS 1.3 – draft-03 – October 2024
      https://datatracker.ietf.org/doc/draft-ietf-tls-extended-key-update/
    - TLS Encrypted Client Hello – draft-22 – September 2024 – IETF Last Call
      https://datatracker.ietf.org/doc/draft-ietf-tls-esni/
    - IETF TLS 1.3 – draft-11 – September 2024 – IETF Last Call
      https://datatracker.ietf.org/doc/draft-ietf-tls-rfc8446bis/
    - IETF Deprecating Obsolete Key Exchange Methods in TLS 1.2 – draft-05 – September 2024 – IETF Last Call
      https://datatracker.ietf.org/doc/draft-ietf-tls-deprecate-obsolete-kex/

- **Concise Binary Object Representation (CBOR)**
  - **IETF Updates to the Concise Data Definition Language (CDDL) Grammar – RFC 9682 – November 2024**
    https://datatracker.ietf.org/doc/rfc9682/
  - IETF CBOR Tags for Time, Duration, and Period – RFC 9581 – August 2024
    https://datatracker.ietf.org/doc/rfc9581/
  - **IETF CBOR Common Deterministic Encoding (CDE) – draft-07 – January 2025**
    https://datatracker.ietf.org/doc/draft-ietf-cbor-cde/
  - IETF More Control Operators for CDDL – draft-08 – January 2025 – RFC Editor
    https://datatracker.ietf.org/doc/draft-ietf-cbor-cddl-more-control/
  - **IETF CBOR Extended Diagnostic Notation – draft-16 – January 2025 – IETF Last Call**
    https://datatracker.ietf.org/doc/draft-ietf-cbor-edn-literals/
  - IETF External References to Values in CBOR Diagnostic Notation (EDN) – draft-01 – December 2024
    https://datatracker.ietf.org/doc/draft-ietf-cbor-edn-e-ref/
  - **IETF CDDL Module Structure – draft-03 – September 2024**
    https://datatracker.ietf.org/doc/draft-ietf-cbor-cddl-modules/
  - **IETF Packed CBOR – draft-13 – September 2024 – Waiting for WG Chair**
    https://datatracker.ietf.org/doc/draft-ietf-cbor-packed/
- **Network Time Protocols (NTP)**
  - IETF Secure Selection and Filtering for NTP with Khronos – RFC 9523 – February 2024
    https://datatracker.ietf.org/doc/rfc9523/
  - **IETF Updating the NTP Registries – draft-17 – January 2025 – RFC Editor**
    https://datatracker.ietf.org/doc/draft-ietf-ntp-update-registries/
  - **IETF Roughtime – draft-12 – December 2024**
    https://datatracker.ietf.org/doc/draft-ietf-ntp-roughtime/
  - IETF NTP Interleaved Modes – draft-08 – December 2024 – RFC Editor
    https://datatracker.ietf.org/doc/draft-ietf-ntp-interleaved-modes/
  - IETF NTS4PTP - Network Time Security for the Precision Time Protocol – draft-00 – August 2024
    https://datatracker.ietf.org/doc/draft-ietf-ntp-nts-for-ptp/
  - IETF Network Time Protocol v5 – draft-02 – June 2024
    https://datatracker.ietf.org/doc/draft-ietf-ntp-ntpv5/

- **Remote ATtestation ProcedureS (RATS)**
    - **IETF YANG Data Model for Challenge-Response-based RATS – RFC 9684 – December 2024 – TCG standard**
      https://datatracker.ietf.org/doc/rfc9684/
    - **IETF Remote Integrity Verification of Network Devices Containing TPMs – RFC 9683 – December 2024 – TCG standard**
      https://datatracker.ietf.org/doc/rfc9683/
    - IETF RATS Architecture – RFC 9334 – January 2023
      https://datatracker.ietf.org/doc/rfc9334/
    - IETF Reference Interaction Models for RATS – draft-12 – January 2025
      https://datatracker.ietf.org/doc/draft-ietf-rats-reference-interaction-models/
    - IETF Attestation Event Stream Subscription – draft-06 – January 2025
      https://datatracker.ietf.org/doc/draft-ietf-rats-network-device-subscription/
    - IETF Intel Profile for Remote Attestation – draft-03 – January 2025
      https://datatracker.ietf.org/doc/draft-cds-rats-intel-corim-profile/
    - IETF RATS Conceptual Messages Wrapper (CMW) – draft-11 – November 2024
      https://datatracker.ietf.org/doc/draft-ietf-rats-msg-wrap/
    - **IETF RATS Endorsements – draft-05 – November 2024 – WG Last Call**
      https://datatracker.ietf.org/doc/draft-ietf-rats-endorsements/
    - **IETF EAT Media Types – draft-12 – November 2024 – RFC Editor**
      https://datatracker.ietf.org/doc/draft-ietf-rats-eat-media-type/
    - IETF Remote Posture Assessment for Systems, Containers, and Applications at Scale – draft-01 – October 2024
      https://datatracker.ietf.org/doc/draft-ietf-rats-posture-assessment/
    - IETF Concise Reference Integrity Manifest – draft-06 – October 2024
      https://datatracker.ietf.org/doc/draft-ietf-rats-corim/
    - IETF PKI-based Attestation Evidence – draft-00 - October 2024
      https://datatracker.ietf.org/doc/draft-ietf-rats-pkix-evidence/
    - **IETF Entity Attestation Token (EAT) – draft-31 – September 2024 – RFC Editor**
      https://datatracker.ietf.org/doc/draft-ietf-rats-eat/
    - IETF ARM PSA Attestation Token – draft-24 – September 2024 – RFC Editor
      https://datatracker.ietf.org/doc/draft-tschofenig-rats-psa-token/

- **IRTF Crypto Forum Research Group (CFRG) – future algorithms**
    - IRTF FROST Protocol for Two-Round Schnorr Signatures – RFC 9591 – June 2024
      https://datatracker.ietf.org/doc/rfc9591/
    - IRTF Ristretto255 and Decaf448 Groups – RFC 9496 – December 2023
      https://datatracker.ietf.org/doc/rfc9496/
    - IRTF Blind BBS Signatures – draft-00 – January 2025
      https://datatracker.ietf.org/doc/draft-irtf-cfrg-bbs-blind-signatures/
    - IRTF Verifiable Distributed Aggregation Functions – draft-14 – January 2025
      https://datatracker.ietf.org/doc/draft-irtf-cfrg-vdaf/
    - IRTF Hierarchical Deterministic Keys – draft-06 – January 2025
      https://datatracker.ietf.org/doc/draft-dijkhuis-cfrg-hdkeys/
    - IRTF Galois Counter Mode with Strong Secure Tags (GCM-SST) – draft-16 – January 2025
      https://datatracker.ietf.org/doc/draft-mattsson-cfrg-aes-gcm-sst/
    - IRTF AEGIS Family of Authenticated Encryption Algorithms – draft-15 – January 2025 – RG Last Call
      https://datatracker.ietf.org/doc/draft-irtf-cfrg-aegis-aead/
    - IRTF KangarooTwelve and TurboSHAKE – draft-16 – December 2024 – IESG Review
      https://datatracker.ietf.org/doc/draft-irtf-cfrg-kangarootwelve/
    - IRTF OPAQUE Augmented PAKE Protocol – draft-18 – November 2024 – RFC Editor
      https://datatracker.ietf.org/doc/draft-irtf-cfrg-opaque/
    - IRTF ML-KEM Security Considerations – draft-02 – November 2024
      https://datatracker.ietf.org/doc/draft-sfluhrer-cfrg-ml-kem-security-considerations/
    - IRTF Additional Parameter sets for HSS/LMS Hash-Based Signatures – draft-17 – October -2024 – Waiting for IRTF Chair
      https://datatracker.ietf.org/doc/draft-fluhrer-lms-more-parm-sets/
    - IRTF Properties of AEAD Algorithms – draft-09 – October 2024 – RFC Editor
      https://datatracker.ietf.org/doc/draft-irtf-cfrg-aead-properties/
    - IRTF Usage Limits on AEAD Algorithms – draft-09 – October 2024 – RG Last Call
      https://datatracker.ietf.org/doc/draft-irtf-cfrg-aead-limits/
    - IRTF X-Wing: general-purpose hybrid post-quantum KEM – draft-06 – October 2024
      https://datatracker.ietf.org/doc/draft-connolly-cfrg-xwing-kem/

Mopria Alliance

- Anthony Suarez (Kyocera): Mopria Alliance liaison to PWG

- Smith Kennedy (HP Inc.): PWG liaison to Mopria Alliance

- PWG presented "IPP New Features Overview" at Mopria Member Meeting November 14, 2024

- Mopria requested "printer-more-info-config" IPP attribute
  - To be discussed during this face-to-face

3MF Consortium

- Duann Scott (Bits to Atoms) is the Executive Director of the 3MF Consortium
- Mike Sweet (Lakeside Robotics) is the PWG liaison to the 3MF
- No updates since the November 2024 virtual Face-to-Face meeting

3D / Additive Manufacturing Liaisons

- American Concrete Institute Committee 564 - 3-D Printing with Cementitious Materials
    - https://www.concrete.org/committees/directoryofcommittees/acommitteehome.aspx?committe e_code=C0056400
        - Paul Tykodi is updating PWG presentation slides from fall 2019.
        - PWG steering committee has determined that the most efficient way to deliver information about the relevance of PWG Safe G-code, in the preparation of 3D Concrete Printing test files, is for Paul Tykodi to prepare a training video on the subject and make the resulting video file available from the PWG Web site.

- ASTM Summary of 3D Concrete Printing Related Standards Development Through 2021
    - https://sn.astm.org/features/shape-concrete-come-ma21.html

3D / Additive Manufacturing Liaisons

- Some Standards Organizations Involved with 3D Concrete Printing

  - **AASHTO** – The American Association of State Highway and Transportation Officials
    - Transportation Infrastructure Codes & Standards
  - **ASTM Committee C01 on Cement**
    - C01.22 – Workability
  - **ASTM Committee C09 on Concrete and Concrete Aggregates**
    - C09.25 - Organic Materials for Bonding
  - **ASTM Committee F42 on Additive Manufacturing Technologies**
    - F42.07.07 - Construction
  - **The International Federation for Structural Concrete (fib)**
    - TG2.11 Structures Made by Digital Fabrication
  - **ISO Technical Committee/261 – Additive Manufacturing**
    - ISO/TC 261/JG 80 - Joint ISO/TC 261-ASTM F42 Group:
      Quality requirements for additive manufacturing in building & construction (structural and infrastructure elements)
  - **NIST – National Institute of Standards and Technology**
    - Data Management and Fusion for AM Industrialization
    - Infrastructure Materials Group
    - Metrology
  - **RILEM - International Union of Laboratories and Experts in Construction Materials, Systems and Structures**
    - Digital Fabrication
  - **UL Solutions**
    - UL 3401 - Outline of Investigation for 3D Printed Building Construction

3D / Additive Manufacturing Liaisons

- The ASTM International Conference on Additive Manufacturing (ICAM 2024 – Oct 28-Nov 1, 2024 – Atlanta, GA) -
  - https://amcoe.org/event/icam2024/
    - Alan Sukert chairperson of the IEEE-ISTO PWG Imaging Device Security(IDS) Workgroup participated in the **Industry 4.0: Security Aspects of AM** track within the 2024 ICAM conference. The title of his presentation was *"Implementing a Cyber Security Certification for the Additive Manufacturing Process"*.
    - Alan's presentation leveraged some new capabilities recently added to the Common Criteria standard, which can be used to develop Common Criteria certification for a whole digital thread workflow. The new capabilities can be used to validate some of the latest Additive Manufacturing Security efforts being undertaken by NIST.

- ASTM Committee F42 on Additive Manufacturing Technologies -
  - https://www.astm.org/COMMITTEE/F42.htm
    - Paul Tykodi has been invited to participate in the activities of ISO/TC 261/JG 80 - Joint ISO/TC 261-ASTM F42 Group: Quality requirements for additive manufacturing in building & construction (structural and infrastructure elements) on behalf of the PWG.
    - To participate, Paul had to become a member of ASTM F42 and its subcommittee F42.07.07 Construction.
    - Membership was achieved by leveraging the existing liaison agreement between the IEEE-ISTO PWG and ASTM F42.

3D / Additive Manufacturing Liaisons

- Formnext Tradeshow Related Activities

  - **The Standards Forum** hosted by Formnext and sponsored by ASTM Center of Excellence with assistance from the US Commercial Service will occur on either the first or second day of the upcoming Formnext Tradeshow in Frankfurt, Germany

  - **Formnext Tradeshow** – November 19-22, 2024 – Frankfurt, Germany - https://formnext.mesago.com/frankfurt/en.html

  - **Formnext Tradeshow** – November 18-21, 2025 – Frankfurt, Germany - https://formnext.mesago.com/frankfurt/en.html

  - **Formnext Chicago** – Scheduled for April 2025 has been postponed

3D / Additive Manufacturing Liaisons

- America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC) -
  - https://www.ansi.org/standards-coordination/collaboratives-activities/additive-manufacturing-collaborative.
    - The IEEE-ISTO Printer Working Group participated in the AMSC version 3 update activities. ANSI announced publication of version 3 on July 17th, 2023.
    - The sponsor of the AMSC effort (America Makes) has recently established two new Digital Stockpile working groups. Due to the past participation of the PWG in AMSC activities, it received notification of the establishment of Working Group 2 titled **"Digital Infrastructure, Data Packages, Standards, and IP Protections"**. Paul Tykodi has subscribed to the working group mailing list to monitor the standardization efforts discussed in the working group on behalf of the PWG."
    - At the May 2023 PWG F2F, some editorial improvements impacting PWG content in the AMSC version 2 document were approved in the PWG Session titled "3D Printing Liaisons - Status & Guidance". Some of the PWG approved editorial changes did make it into the AMSC version 3 update published in July 2023 while others did not.
    - ANSI has announced that they will be accepting updated content for AMSC version 3 in the fall of 2024. Paul Tykodi plans to add the remaining approved by the PWG AMSC editorial improvement text from calendar 2023 to the AMSC version 3 document when the fall updating opportunity becomes available.

3D / Additive Manufacturing Liaisons

- VDMA OPC UA for Additive Manufacturing - Joint Working Group 40540
  - https://www.vdma.org/events-trade-fairs/-/event/view/70649
    - Paul Tykodi is representing the IEEE-ISTO Printer Working Group in the activities of the Joint Working Group. The JWG has a potential interest in referencing IPP 3D standard for secure remote job submission
    - The next scheduled meeting, to review the latest release draft, will occur on November 27th, 2024

- 3D PDF at the PDF Association -
  - https://www.pdfa.org/3d-pdf-at-the-pdf-association/
    - Paul Tykodi is representing the IEEE-ISTO Printer Working Group in the activities of the PDF Association 3D PDF Technical Working Group (TWG) and as time permits the 3D PDF User Liaison Working Group (LWG) as well.
      - Participation in the work of the PDF Association allows the PWG to monitor the activities of ISO TC171 SC2 - *Document file formats, EDMS systems and authenticity of information* https://www.iso.org/committee/53674.html, which is the committee responsible for PDF file format standardization
    - Current PDF Standards Supporting 3D Content
      - ISO 32000-2:2020 PDF 2.0 https://pdfa.org/resource/iso-32000-pdf/#pdf-2
      - ISO 21757 (ECMAscript for PDF) https://pdfa.org/resource/iso-21757-ecmascript/
      - ISO 14739-1:2014 PRC https://pdfa.org/resource/3d-formats/#prc-1
      - ISO/TS 24064:2023 STEP (AP242) https://www.iso.org/standard/77686.html
    - In Process PDF Standards Supporting 3D Content
      - ISO/CD TS 32007 Document management — Portable Document Format — RichMedia annotations conforming to glTF assets https://www.iso.org/standard/45880.html

Other Questions / Comments

May 5-7 – Virtual

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