



# The Printer Working Group

## PWG August 2020 Face-to-Face Plenary Session

Smith Kennedy, PWG Chair  
August 18, 2020

# Plenary Agenda



- 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 Patent Policy
- Agenda

# 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](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 Eastern Daylight Time)

## **Tuesday, August 18**

- 10:00 – 11:15 PWG Plenary
- 11:15 – 11:30 IPP WG : Status
- 11:30 – 12:00 Linux OpenPrinting : GSoC / GSoD Status
- 12:00 – 12:30 Break / Lunch
- 12:30 – 1:00 IPP WG : INFRA Cloud Proxy Registration
- 1:00 - 2:00 IPP WG : Job Accounting with IPP v1.0

# Agenda Overview – Day 2



(All times Eastern Daylight Time)

## **Wednesday, August 19**

- |               |   |
|---------------|---|
| 10:00 – 12:00 | IDS WG : Status and Discussion · PWG Hardcopy Device Security Guidelines v1.0 |
| 12:00 – 12:30 | Break / Lunch   |
| 12:30 – 1:00  | IPP WG : Encrypted Jobs and Documents v1.0                                    |
| 1:00 – 2:00   | IPP WG : IPP Enterprise Printing Extensions v2.0                              |

# Agenda Overview – Day 3



(All times Eastern Daylight Time)

## **Thursday, August 20**

- 10:00 – 10:20 IPP WG: Production Printing Extensions v2.0
- 10:20 – 12:00 IPP WG: Driverless Printing Extensions v2.0
- 12:00 – 12:30 Break / Lunch
- 12:30 – 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 (2019-2021 Term)

- PWG Chair: Smith Kennedy, HP Inc.
- PWG Vice-Chair: Jeremy Leber, Lexmark
- PWG Secretary: Ira McDonald, High North

# 2020 Membership



## 28 Members – Welcome **directprint.io!**

Alan Sukert	 Epson	 Konica Minolta	 Oki Data	 Toshiba Business Solutions
 Apple Inc.	 Fuji Xerox	 Kyocera	 PaperCut Software	 Tykodi Consulting Services LLC
 Brother Industries, Ltd.	 Google	 Lakeside Robotics	 Qualcomm	 Xerox
 Canon	 High North, Inc.	 Lexmark	 Ricoh	YSoft
Danny Brennan	 HP Inc.	 Meteor Network	 Synaptics	
directprint.io	 Intel	 Microsoft	Technical Interface Consulting	



# Future Meeting Schedule

- 2020
  - November 10 - 12: Virtual
- 2021
  - February 9 - 11: Virtual
  - May 4 - 6: (Joint PWG/OpenPrinting) - Hosted by ???
  - August 24 - 26: Virtual
  - November 8 - 10: Virtual

Contact [chair@pwg.org](mailto:chair@pwg.org) if you are interested in hosting a PWG F2F event



# IPP Everywhere™ Certified Printers

- <https://www.pwg.org/ipp/everywhere.html>
- 412 printers now certified!
  - <https://www.pwg.org/printers/>
  - More on the way!
- IPP Everywhere™ Self Certification 1.0 Update 5
  - Released June 2020; approved August 2020
  - Valid for certification until Q2 2021
- IPP Everywhere™ Self Certification 1.1 Update 1
  - Released June 2020
  - Mandatory for certification starting Q2 2021





# Recently Approved

- Candidate Standards
  - IPP Transaction Based Printing Extensions v1.1
    - <https://ftp.pwg.org/pub/pwg/candidates/cs-ipptrans11-20200327-5100.16.pdf>
- Registrations
  - System Service Discovery Registration
    - <https://ftp.pwg.org/pub/pwg/ipp/registrations/reg-ippsysdisc10-20200604.pdf>



# Public Relations Efforts

- Recent Press Releases
  - INCITS TC / PWG Liaison Announcement
  - Mopria / PWG Liaison Refresh
  - General IPP announcement
    - IPP System Service v1.0
    - IPP Transaction-Based Printing Extensions v1.1
    - IPP Label Printing Extensions v1.0
  - Recently approved 3D related PWG specifications
    - IPP 3D Printing Extensions v1.1
    - PWG Safe G-Code Subset for 3D Printing v1.0
- Pending press releases
  - IPP Everywhere™ v1.1 (~August 2020)



# Process Updates

- Including Best Practices and Requirements documents in the numbering system
  - Update to "IPP Registry-policy" approved 2020-04-20
  - PWG Namespace Policy approved 2020-07-20
  - PWG Roles and Responsibilities Policy in review
  - PWG Officer Elections in review
- Process v4.0 in development
  - New draft posted ???



# Projects on GitHub

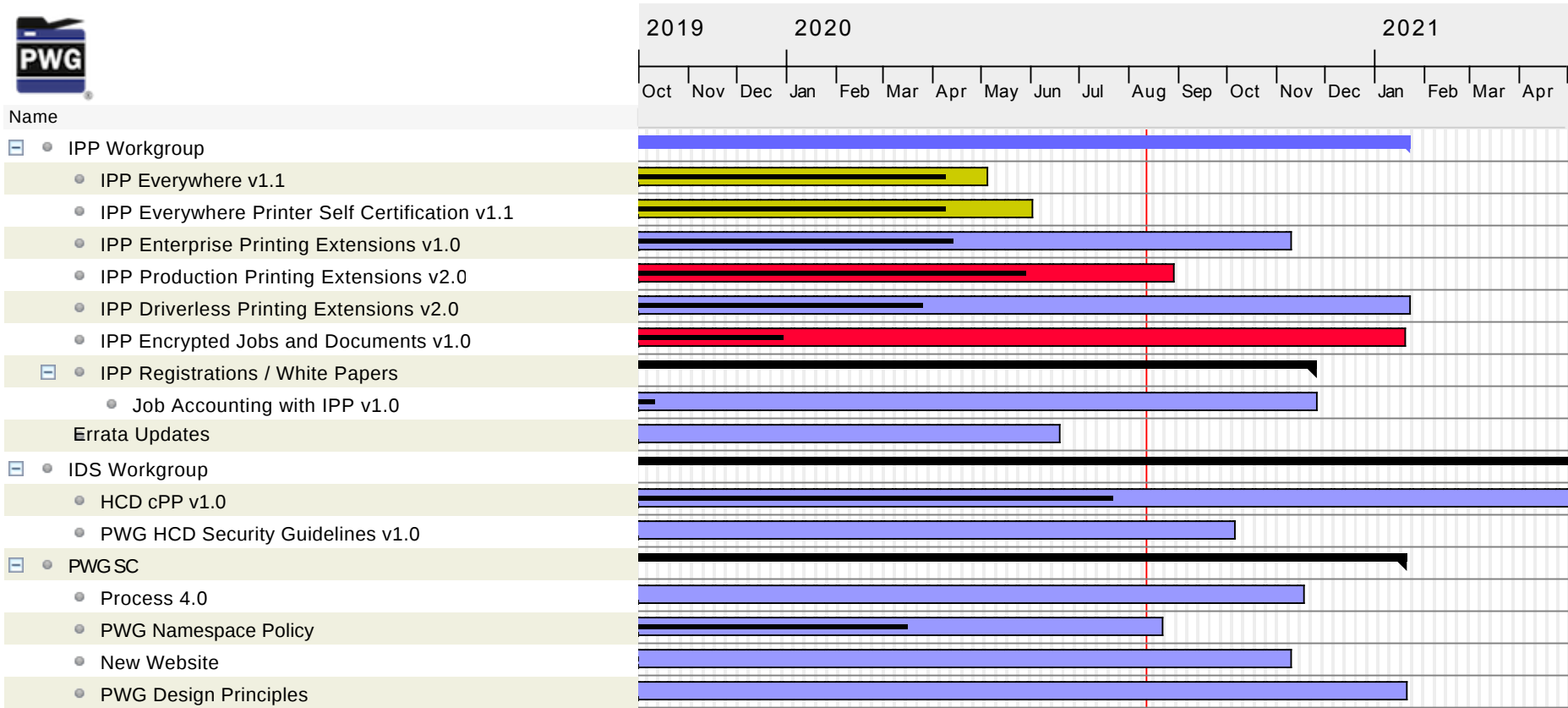
- PWG on GitHub:
  - <https://github.com/istopwg>
- IPP Sample
  - <https://github.com/istopwg/ippsample>
- IPP Everywhere Self Certification Tools
  - <https://github.com/istopwg/ippeveselfcert>
- IPP Registry
  - <https://github.com/istopwg/ippregistry>
- PWG Books:
  - <https://github.com/istopwg/pwg-books>



**The Printer Working Group**

Workgroup Status

# Work In Progress



**Planned**

**Interim**

**Prototype**

**Prototyped**

**Stable**



# The Printer Working Group

IDS Workgroup Status

Alan Sukert



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



# IDS: Current Status

- IDS Charter updated to reflect development of HCD Security Guidelines by Ira
- Focus now is on Common Criteria HCD Protection Profiles (PPs), HCD Security Guidelines and Hardcopy Device security standards
  - IDS Charter updated to focus the IDS WG on outreach with standards bodies involved in HCD security issues.
    - Monitoring development of Hardcopy Device collaborative PP (cPP) / Supporting Document (SD)
    - Looking at initiating interface with other standards efforts related to hardcopy devices
  - Conference Calls.
    - Reinitiated Regular IDS Conference Calls
    - Since last IDS F2F on 5/7/2020, calls held on 5/28, 6/11, 6/25, 7/9, 7/23 & 8/6
    - Next Conference Call tentatively scheduled for 09/03/2020



# IDS: Current Status

- Focus now is on Common Criteria HCD Protection Profiles and other HCD-related Security Standards
  - HCD international Technical Committee (iTC) Bi-Weekly Meetings:
    - HCD iTC formally approved by CC Management Committee in Feb 2020
    - Since then have been holding bi-weekly HCD iTC Meetings; goal is to develop, review and publish an HCD cPP/SD v1.0 by 1Q 2022
    - Will discuss the results of the multiple Bi-Weekly HCD iTC Meetings held since last IDS F2F and the current HCD cPP/SD v1.0 status at the IDS F2F Session on Wednesday Aug 19<sup>th</sup>
  - Will look at our IDS review of the new ETSI Cyber Security for Consumer Internet of Things Standard
  - Will also discuss general status of some other standards efforts that impact HCDs
- Developing Security Guidelines to provide guidance on current security technology and security issues
  - Will review the latest status at the IDS F2F Session



# 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 conference calls via Zoom announced on the IDS mailing list
  - Next conference call is scheduled for Thursday, September 3, 2020 at 3pm ET



# The Printer Working Group

## IPP Workgroup Status

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



- Current charter:
  - <https://ftp.pwg.org/pub/pwg/ipp/charter/ch-ipp-charter-20170615.pdf>
- *Will be doing a charter update in 2020*
- 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, the PWG MIBs, and handle synchronization with changes in IPP



- 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 Encrypted Jobs and Documents v1.0, IPP Production Printing Extensions v2.0, Job Accounting with IPP v1.0
  - Smith Kennedy (HP Inc.) – IPP Driverless Printing Extensions v2.0, IPP Encrypted Jobs and Documents v1.0, IPP Enterprise Printing Extensions v2.0



# Status (1/3)

- PWG Specifications in development:
  - IPP Encrypted Jobs and Documents v1.0 - Prototype
  - IPP Enterprise Printing Extensions v2.0 - Interim
  - IPP Driverless Printing Extensions v2.0 - Interim
  - IPP Production Printing Extensions v2.0 - Prototype
- IPP Best Practices/Registrations in development:
  - Job Accounting with IPP v1.0 - Interim
- Recently published:
  - IPP Label Printing Extensions v1.0 (registration)
  - IPP System Service Discovery v1.0 (registration)
  - PWG 5100.14-2020: IPP Everywhere v1.1
  - PWG 5100.16-2020: IPP Transaction-Based Printing Extensions v1.1
  - PWG 5100.20-2020: IPP Everywhere Printer Self-Certification Manual v1.1





# Status (2/3)

- Up-to-date pending IANA registrations online:
  - <https://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>
  - 412 printers currently listed
  - Fifth 1.0 self-certification tools update released in June 2020
    - Approved in August 2020
- IPP Sample Code:
  - Github repository:
    - <https://github.com/istopwg/ippsample>
  - Fork of CUPS code includes ipp3dprinter, ippeveprinter, ippfind, ippproxy, ippserver, ipptool, ipptransform, and ipptransform3d



- Pending Errata:

- PWG 5100.1-2017 (Finishings): 2 issues
- PWG 5100.5-2019 (Document Object): 3 issues
- PWG 5100.6-2003 (Page Overrides): 1 issue
- PWG 5100.9-2009 (Printer State Extensions): 1 issue
- PWG 5100.12-2015 (IPP 2.0, 2.1, and 2.2): 2 issues
- PWG 5100.15-2014 (FaxOut): 2 issues
- PWG 5100.18-2015 (Infrastructure Extensions): 5 issues
- PWG 5100.19-2015 (Implementor's Guide 2.0): 6 issues
- PWG 5107.3-2019 (MFD Alerts v1.1): 1 issue

- In-Progress Errata:

- PWG 5100.3-2001 (Production Printing): 2 issues
- PWG 5100.11-2010 (JPS2 - Enterprise Printing): 4 issues
- PWG 5100.13-2012 (JPS3 - Driverless Printing): 12 issues



# 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, August 27 and September 10, 2020 at 3pm ET



®

**The Printer Working Group**

Liaison Status



# Trusted Computing Group (TCG)

- **Next TCG Members Meetings**
  - TCG Virtual F2F – 12-16 October 2020 –Ira to call in
  - TCG Virtual F2F – TBD dates February 2021 –Ira to call in
- **Trusted Mobility Solutions (TMS) – Ira is co-chair and co-editor**
  - Formal – GP (TEE, SE), ETSI (NFV/MEC), ATIS (5G Security)
  - Informal – 3GPP, GSMA, IETF, ISO, ITU-T, SAE, US NIST
  - *TCG TMS Use Cases v2 – published September 2018*
- **Mobile Platform (MPWG) – Ira is co-editor**
  - Formal – GP (TEE, SE), ETSI (NFV/MEC), ATIS (5G Security)
  - *TCG Runtime Integrity Preservation for Mobile Devices – Nov 2019*
  - *TCG Mobile Reference Architecture v2 – work-in-progress*
  - *TCG TPM 2.0 Mobile Common Profile – work-in-progress*
- **Recent Specifications**
  - <http://www.trustedcomputinggroup.org/resources>
  - *TCG Algorithm Registry r1.32 – June 2020*
  - *TCG TSS 2.0 Feature API (FAPI) – June 2020*
  - *TCG TSS 2.0 Enhanced System Level API (ESAPI) – May 2020*
  - *TCG TPM 2.0 Library r1.62 – review May 2020 – not for publication*
  - *TCG TPM 2.0 Library r1.59 – March 2020*



# Internet Engineering Task Force (IETF) (1 of 4)

- **Next IETF Members Meetings**
  - IETF 109 Virtual F2F – 16-20 November 2020 – Ira to call in
  - IETF 110 Virtual F2F – 8-12 March 2021 – Ira to call in
- **Transport Layer Security (TLS)**
  - TLS 1.3 Extension Cert-Based Auth w/ Ext PSK – RFC 8773 – March 2020  
<https://tools.ietf.org/html/rfc8773>
  - Applying GREASE to TLS Extensibility – RFC 8701 – January 2020  
<https://tools.ietf.org/html/rfc8701>
  - TLS/1.3 – RFC 8446 – August 2018  
<https://tools.ietf.org/html/rfc8446>
  - Flags Extension for TLS 1.3 – July 2020  
<https://datatracker.ietf.org/doc/draft-ietf-tls-tlsflags/>
  - Delegated Credentials for TLS – June 2020  
<https://datatracker.ietf.org/doc/draft-ietf-tls-subcerts/>
  - Exported Authenticators in TLS – June 2020 – to IETF LC  
<https://datatracker.ietf.org/doc/draft-ietf-tls-exported-authenticator/>
  - Guidance for External PSK Usage in TLS – June 2020  
<https://datatracker.ietf.org/doc/draft-ietf-tls-external-psk-guidance/>
  - DTLS/1.3 – draft-38 – May 2020 – IETF LC  
<https://datatracker.ietf.org/doc/draft-ietf-tls-dtls14/>
  - Deprecating MD5 and SHA-1 in TLS 1.2 – May 2020 – to IETF LC  
<https://datatracker.ietf.org/doc/draft-ietf-tls-md5-sha1-deprecate/>
  - TLS Certificate Compression – draft-10 – January 2020 – RFC Editor  
<https://datatracker.ietf.org/doc/draft-ietf-tls-certificate-compression.txt>



# Internet Engineering Task Force (IETF) (2 of 4)

- **Security Automation and Continuous Monitoring (SACM)**
  - Concise Software Identifiers – draft-15 – May 2020 – to IETF LC  
<https://datatracker.ietf.org/doc/draft-ietf-sacm-coswid/>
  - SACM Architecture – draft-06 – May 2020  
<https://datatracker.ietf.org/doc/draft-ietf-sacm-arch/>
  - Endpoint Posture Collection Profile – draft-01 – February 2020 – to IETF LC  
<https://datatracker.ietf.org/doc/draft-ietf-sacm-epcp/>
- **Concise Binary Object Representation (CBOR)**
  - CBOR Tags for Typed Arrays – RFC 8746 – February 2020  
<https://tools.ietf.org/html/rfc8746>
  - CBOR Sequences – RFC 8742 – February 2020  
<https://tools.ietf.org/html/rfc8742>
  - Concise Data Definition Language (CDDL) – RFC 8610 – June 2019  
<https://tools.ietf.org/html/rfc8610> - JSON/CBOR schema
  - CBOR Tags for Date – draft-05 – July 2020 – to IETF LC  
<https://datatracker.ietf.org/doc/draft-ietf-cbor-date-tag/>
  - CBOR Tags for OIDs – draft-00 – July 2020  
<https://datatracker.ietf.org/doc/draft-ietf-cbor-tags-oid/>
  - CBORbis – draft-14 – June 2020 – to IETF LC  
<https://datatracker.ietf.org/doc/draft-ietf-cbor-7049bis/>



# Internet Engineering Task Force (IETF) (3 of 4)

- **Remote ATtestation ProcedureS (RATS)**
  - **RATS Architecture – draft-05 – July 2020**  
<https://datatracker.ietf.org/doc/draft-ietf-rats-architecture/>
  - **TPM-based Network Device RIV – draft-02 – July 2020**  
<https://datatracker.ietf.org/doc/draft-ietf-rats-tpm-based-network-device-attest/>
  - **Time-Based Uni-Directional Attestation – draft-03 – July 2020**  
<https://datatracker.ietf.org/doc/draft-birkholz-rats-tuda/>
  - **Reference Interaction Models for RATS – draft-03 – July 2020**  
<https://datatracker.ietf.org/doc/draft-birkholz-rats-reference-interaction-model/>
  - **YANG Data Model for CHARRA using TPMs – draft-02 – June 2020**  
<https://datatracker.ietf.org/doc/draft-ietf-rats-yang-tpm-charra/>
  - **CBOR Tag for Unprotected CWT Claims Sets – draft-01 – June 2020**  
<https://datatracker.ietf.org/doc/draft-birkholz-rats-uccs/>
  - **Trusted Path Routing – draft-00 – June 2020**  
<https://datatracker.ietf.org/doc/draft-voit-rats-trustworthy-path-routing/>
  - **MUD-Based RATS Resources Discovery – draft-00 – March 2020**  
<https://datatracker.ietf.org/doc/draft-birkholz-rats-mud/>
  - **Entity Attestation Token (EAT) – draft-03 – February 2020**  
<https://datatracker.ietf.org/doc/draft-ietf-rats-eat/>





# Internet Engineering Task Force (IETF) (4 of 4)

- **IRTF Crypto Forum Research Group (CFRG) – future algorithms**
  - **Hybrid Public Key Encryption – draft-05 – July 2020 – RG LC**  
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-hpke/>
  - **Oblivious Pseudorandom Functions (OPRFs) – draft-04 – July 2020**  
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-voprf/>
  - **Cpace Balanced Composable PAKE – draft-00 – July 2020**  
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-cpace/>
  - **OPAQUE Asymmetric PAKE Protocol – draft-06 – June 2020**  
<https://datatracker.ietf.org/doc/draft-krawczyk-cfrg-opaque/>
  - **Hashing to Elliptic Curves – draft-09 – June 2020**  
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-hash-to-curve/>
  - **Randomness for Security Protocols – draft-13 – June 2020**  
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-randomness-improvements/>
  - **Pairing-Friendly Curves – draft-07 – June 2020**  
<https://datatracker.ietf.org/doc/draft-irtf-cfrg-pairing-friendly-curves/>
  - **Transition from Classical to Post-Quantum Cryptography – draft-07 – May 2020**  
<https://datatracker.ietf.org/doc/draft-hoffman-c2pq/>



# Linux Foundation OpenPrinting

- **Linux Foundation OP Google Summer of Code 2019**
  - Thanks to OpenPrinting coordinators, mentors, students!
  - Lots of good work & contributions to PWG GitHub projects
  - Close reading of PWG specs revealed additional errata
- **Linux Foundation OP Google Summer of Code 2020**
  - <https://developers.google.com/open-source/gsoc>
  - GSoC 2020 coding completes on 31 August 2020
  - *More to come later today in OP GSoC/GSoD presentation!*
- **Linux Foundation OP New Website**
  - <https://openprinting.github.io/>
  - <https://openprinting.github.io/news/>
  - Driverless Printing pages w/ PWG IPP Everywhere™ logo  
<https://openprinting.github.io/driverless/01-standards-and-their-pdls/>
  - OP website issues page  
<https://github.com/OpenPrinting/openprinting.github.io/issues>



- Mopria liaison to PWG : Michael Rhines (Qualcomm)
- New 2-year liaison agreement signed April 3, 2020
- PWG Chair to present IPP State of the Union 2020 at the November 2020 Mopria Member Meeting

# INCITS TC (1 of 2)



- PWG / INCITS TC Liaison established April 15, 2020
- Paul Tykodi will represent the PWG in INCITS TC activities
- INCITS Digital Manufacturing Technical Committee
  - The IEEE-ISTO Printer Working Group has established a liaison relationship with INCITS Digital Manufacturing Technical Committee  
<https://www.businesswire.com/news/home/20200505006085/en/International-Committee-Information-Technology-Standards-INCITS-IEEE-ISTO>.
  - The INCITS Digital Manufacturing Technical Committee meets monthly (third Tuesday of the month from 12 pm to 2 pm EDT).



- **INCITS Digital Manufacturing Technical Committee**
  - The INCITS TC has asked Paul Tykodi to determine whether PWG members would potentially be willing to participate in two different focused discussions to be held at the Sept 15<sup>th</sup>, 2020 and the October 20<sup>th</sup>, 2020 INCITS meetings:
    - Sept 15<sup>th</sup>, 2020 – Discuss whether 3D PDF could possibly be considered as a candidate for a future 3D CAD Data Transfer Standard
    - October 20<sup>th</sup>, 2020 – Discuss the possible benefits in creating cyber security common criteria profiles for 3D printers
  - The INCITS Digital Manufacturing TC is the current US TAG for ISO/IEC JTC 1 WG 12 (3D Printing and Scanning). The Printer Working Group is monitoring the activities of JTC 1 WG 12 via the INCITS liaison relationship
    - ISO/IEC JTC 1 WG 12 3D Printing and Scanning eCommittee - [https://www.web3d.org/sites/default/files/attachment/node/2326/edit/06\\_ByoungNamLee\\_JTC1\\_WG12\\_report\\_3D\\_Printing\\_and\\_ScanningSeoulJanuary2019.pdf](https://www.web3d.org/sites/default/files/attachment/node/2326/edit/06_ByoungNamLee_JTC1_WG12_report_3D_Printing_and_ScanningSeoulJanuary2019.pdf)

# 3D / Additive Manufacturing Liaisons



- America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC) -
  - [https://www.ansi.org/standards\\_activities/standards\\_boards\\_panels/amsc/America-Makes-and-ANSI-AMSC-Overview](https://www.ansi.org/standards_activities/standards_boards_panels/amsc/America-Makes-and-ANSI-AMSC-Overview). The IEEE-ISTO Printer Working Group is participating in the AMSC initiative.
- ASTM Committee F42 on Additive Manufacturing Technologies - <https://www.astm.org/COMMITTEE/F42.htm>
  - The IEEE-ISTO Printer Working Group standardization efforts intersect with the activities of at least two ASTM F42 subcommittees.
    - Subcommittee F42.08 Data
    - Subcommittee F42.91 Terminology
  - The purpose of the liaison agreement is to keep the standardization efforts of ASTM F42 and the IEEE-ISTO PWG synchronized in areas where both organizations are actively working.
- 3MF Consortium
  - <https://www.3mf.io>

# Possible Future 3D / Additive Manufacturing Liaisons



- **PDF Association**

- Paul Tykodi has been asked by the 3D PDF Consortium and PDF Association to chair an ad hoc for ISO TC171 SC2. The purpose of the ad hoc is to investigate how PDF files support 3D content stored within them and to make possible recommendations for enhancing future ISO 32000 (PDF standard) support for metadata describing 3D content placed into a PDF file.
- The PDF Association has taken over the role of US TAG for ISO TC171 SC2 from the 3D PDF Consortium. Paul Tykodi was asked to join the PDF Consortium as a member, in order to be allowed to create a PDF Association liaison working group, in support of the information gathering needs of the ad hoc. Once the ad hoc completes its efforts, the longer-term strategy for the PWG would likely be to create a liaison with the PDF Association.

- **ISO TC171 SC2 WG12 (PDF Metadata) -**

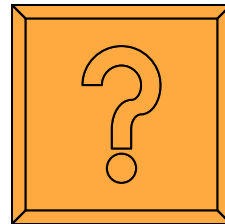
<https://www.iso.org/committee/53674.html>

- The IEEE-ISTO Printer Working Group has been asked to form a Category C liaison with ISO TC171 SC2 in order to participate in a new foundational metadata for 3D content contained in a PDF file standardization effort to be undertaken by WG12. This request is currently on hold pending the outcome of the research to be performed by the ad hoc described above.

- **Society of Manufacturing Engineers (iRAMP)**

- Interactive Rapid Additive Manufacturing Portal – [www.sme.org/iramp/](http://www.sme.org/iramp/)

# Other Questions / Comments







# Next PWG Face-to-Face Meeting

November 10 - 12: Virtual

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

Contact [chair@pwg.org](mailto:chair@pwg.org) if you are interested in and willing to hosting a PWG face-to-face meeting