The Printer Working Group

IPP Workgroup Session, Day 1

November 14, 2016

PWG Virtual F2F Meeting

PWG IP Policy

- "This meeting is being held in accordance with the PWG Intellectual Property Policy"
    - http://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
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Agenda

November 14, 2016

When	What
1:30 - 3:00	IPP Workgroup Status, IPP/1.1 Updates, IPP Everywhere Printer Self-Certification
3:00 - 3:15	Break
3:15 - 5:00	IPP 3D Printing Extensions, IPP Finishings 2.1

November 15, 2016

When	What
1:00 - 4:00	IPP System Service, Next Steps

Charter

- Current charter:
  - http://ftp.pwg.org/pub/pwg/ipp/charter/ch-ipp-charter-20151225.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

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 (SYSTEM), IETF IPP/1.1
  - Michael Sweet (Apple) – IPP System Service (SYSTEM), IETF IPP/1.1, IPP 3D Printing Extensions
  - Smith Kennedy (HP Inc.) – IPP Finishings 2.1

- IETF RFCs in development:
  - IETF IPP/1.1: Encoding and Transport (obsoletes RFC 2910/3382)
    - IESG Approved, RFC Editor's queue
  - IETF IPP/1.1: Model and Semantics (obsoletes RFC 2911/3381/3382)
    - IESG Approved, RFC Editor's queue

- PWG Specifications in development:
  - IPP 3D Printing Extensions (3D)   - Prototype Draft
  - IPP System Service (SYSTEM)   - Interim Draft
  - IPP Finishings 2.1 (FIN)   - Stable Draft, WG Last Call

Status (2/3)

- Recent Full Standard:
  - PWG 5100.12-2015: IPP 2.0, 2.1, and 2.2
- Recent Candidate Standards:
  - PWG 5100.20-2016: IPP Everywhere Printer Self-Certification Manual v1.0 (SELFCERT)
  - PWG 5100.19-2015: IPP Implementor's Guide v2.0 (IG)
  - PWG 5100.18-2015: IPP Shared Infrastructure Extensions (INFRA)
- Recent IETF RFCs:
  - RFC 7612: LDAP Schema for Printer Services
  - RFC 7472: IPP over HTTPS Transport Binding and "ipps" URI Scheme

Status (3/3)

- 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:
  - Submission page:
    - https://www.pwg.org/ippeveselfcert
  - Printer listing page:
    - https://www.pwg.org/printers
    - 19 printers currently listed
- IPP Sample Code:
  - Github repository:
    - https://github.com/istopwg/ippsample
  - Fork of CUPS code includes ippfind, ippproxy, ippserver, and ipptool

IETF IPP/1.1 Updates

- Developing two new RFCs to replace (obsolete) RFCs 2910, 2911, 3381 (deprecated job progress attributes), and 3382 (collection attribute syntax)
- Stable drafts:
  - http://tools.ietf.org/html/draft-sweet-rfc2910bis
  - http://tools.ietf.org/html/draft-sweet-rfc2911bis
  - *Both are approved and awaiting publication*
  - *RFCs will eventually be advanced to IETF Internet Standard through status change (IETF process)*
- Proposed schedule:
  - RFC Publication - Q4 2016

IPP Everywhere Self-Certification

- PWG 5100.20-2016: IPP Everywhere Printer Self-Certification Manual (SELFCERT)
  - http://ftp.pwg.org/pub/pwg/candidates/cs-ippeveselfcert10-20160219-5100.20.pdf
- Released update to v1.0 self-certification tools on October 28th, 2016
- Resources:
  - http://www.pwg.org/ipp/everywhere.html (for tools)
  - https://www.pwg.org/ippeveselfcert (submission form)
  - http://www.pwg.org/printers (printer list)
- Github repository for tools:
  - https://github.com/istopwg/ippeveselfcert
- Proposed Schedule:
  - 1.1 errata update: Q1/Q2 2016

IPP Everywhere Self-Certification

- Future 1.1 errata update for manual and tools in 2017
  - More tests (Cancel-My-Jobs, Close-Job, Identify-Printer)
  - Other necessary changes that are not simple bug fixes in the tools/ submission portal

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Break

IPP 3D Printing Extensions

- Current draft (prototype):
  - http://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipp3d10-20160824-rev.pdf
- Proposed schedule:
  - Stable draft next week
  - PWG Last Call Q4 2016
- Prototype experience (next slide)

Prototype Experience (Apple)

- Apple has implemented all of the required parts of the IPP 3D Printing Extensions - the current prototype is available at:
  - https://github.com/istopwg/ippsample
  - The "examples" directory contains sample 3MF files from the 3MF Consortium's Github samples repository, along with an ipptool test file (create-job-3d.test) that can be used to test a prototype.
- One additional issue found during prototyping:
  - No way to tell Client that the Printer can reproduce multiple colors (not just the material color)
    - Proposal: Add "color-supported (boolean)" Printer Description attribute (standard attribute for 2D printing)

IPP Finishings 2.1

- Current stable draft:
  - http://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippfinishings21-20161025-rev.pdf
- Proposed schedule:
  - PWG Call For Objections Q4 2016
  - PWG Publication Q4 2016

![The Printer Working Group logo (PWG)]

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IPP Workgroup Session, Day 2

November 15, 2016

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November 15, 2016

When	What
1:00 - 4:00	IPP System Service, Next Steps

IPP System Service (SYSTEM)

- Current interim draft at:
  - http://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippsystem10-20161018-rev.pdf
- Combines and implements a concrete IPP binding of the following abstract Semantic Model 2.0 services and objects:
  - PWG 5108.06: System Object and System Control Service
  - PWG 5108.03: Network Resource Service
  - PWG 5109.1: Cloud Imaging Requirements and Model
- In addition to making the System service responsible for resource management, this specification simplifies the data model, semantics, and life cycle of Resource objects (next slides)
- Proposed Schedule:
  - Prototype draft in Q4 2016/Q1 2017

IPP Resource Object Model

- Resource objects are managed by the System service
  - Only administrators can create, install, and cancel Resources
  - Simple state model and life cycle (later slide)
  - Resources include fonts, forms/templates, icons, logos, ICC profiles, firmware, and applications
  - Resources have a unique integer ID: "resource-id (integer(1:MAX))"
- Resources can be allocated to Jobs and Printers
  - Job Resources are allocated with the Create-Job/Print-Job/Print-URI operations and the "resource-ids (1setOf integer(1:MAX))" operation attribute
  - Job Resources are deallocated when the Job reaches a terminating state
  - Printer Resources are allocated with the Create-Printer or Allocate-Printer-Resources operations and the "resource-ids (1setOf integer(1:MAX))" operation attribute
  - Printer Resources are deallocated with the Deallocate-Printer-Resources operation

IPP Resource Description Attributes (Read-Write)

- "resource-info (text(127))"
- "resource-name (name(127))"
- "resource-owner-col (collection)"
  - "owner-uri (uri)"
  - "owner-vcard (1setOf text(1023))"

IPP Resource Status Attributes (Read-Only)

- "date-time-at-canceled (dateTime | unknown | no-value)"
- "date-time-at-creation (dateTime | unknown)"
- "date-time-at-installed (dateTime | unknown | no-value)"
- "resource-data-uri (uri | no-value)"
- "resource-format (mimeMediaType)"
- "resource-id (integer(1:MAX))"
- "resource-k-octets (integer(0:MAX))"
- "resource-state (type1 enum)"
  - 'pending', 'available', 'installed', 'canceled', 'aborted'
- "resource-state-message (text(MAX))"
- "resource-state-reasons (1setOf type2 keyword)"
  - 'cancel-requested','install-requested','resource-incoming'
- "resource-string-version (text(127))"

IPP Resource Status Attributes (con't) (Read-Only)

- "resource-type (type2 keyword)"
  - 'executable-firmware', 'executable-software', 'static-font', 'static-form', 'static-icc-profile', 'static-image', 'static-logo', 'template-document', 'template-job', 'template-printer'
- "resource-uuid (uri)"
- "resource-version (octetString(16))"
- "time-at-canceled (integer(MIN:MAX) | no-value)"
- "time-at-creation (integer(MIN:MAX))"
- "time-at-installed (integer(MIN:MAX) | no-value)"

- Question: Do we want to expose the resource allocation count, e.g., "resource-use-count (integer(0:MAX))"?
  - Implementations already need to track this
  - Cancel-Resource is delayed when a resource is allocated to a Job, Printer, or System (running firmware)
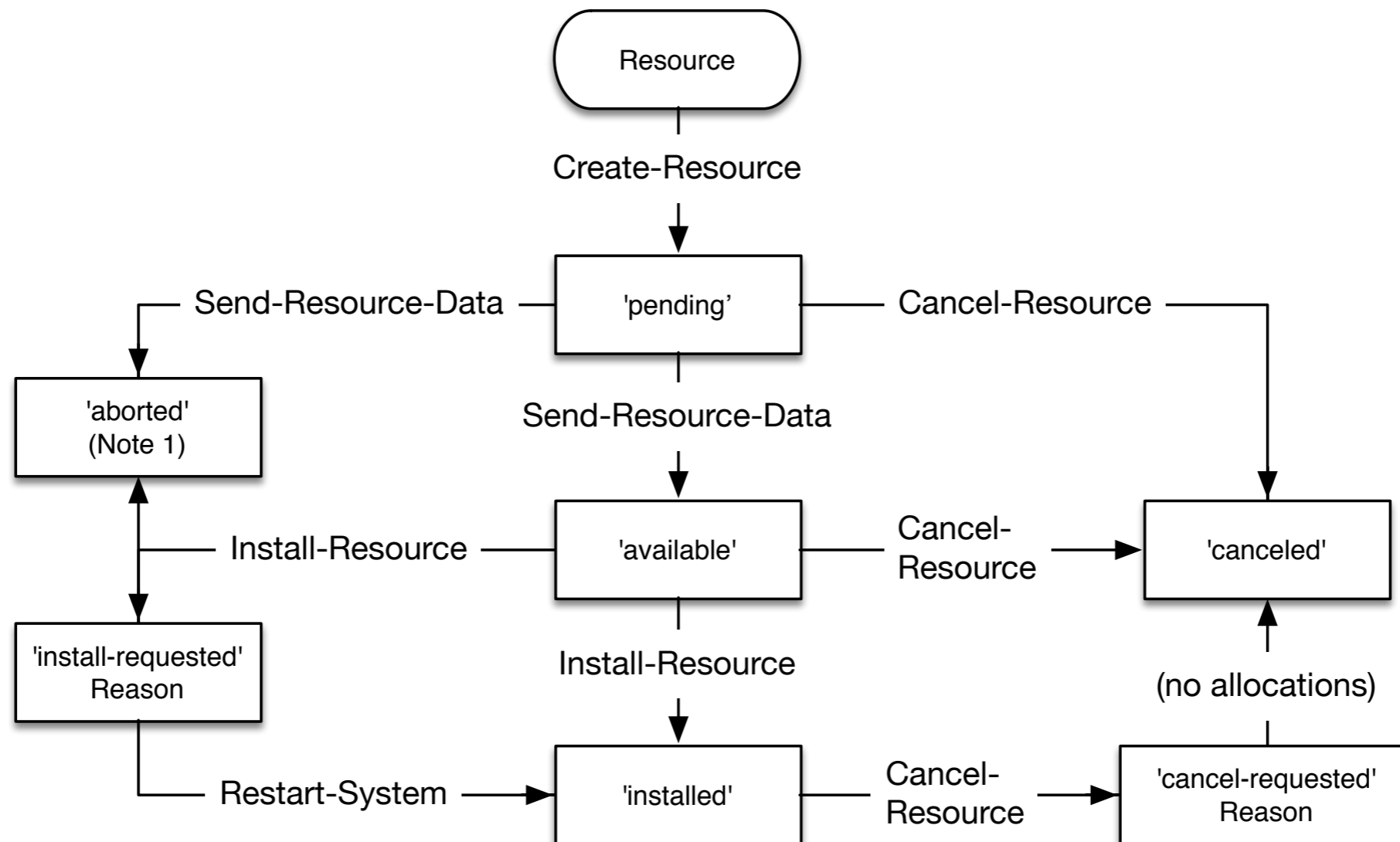
Note 1: A Resource object can transition to the 'aborted' state due to an interrupted Send-Resource-Data request, corrupted Resource data, an unsupported Resource data format, inability to store the Resource data, and/or inability to install the Resource data. The "resource-state-reasons" attribute will contain the reason for the Resource being aborted.
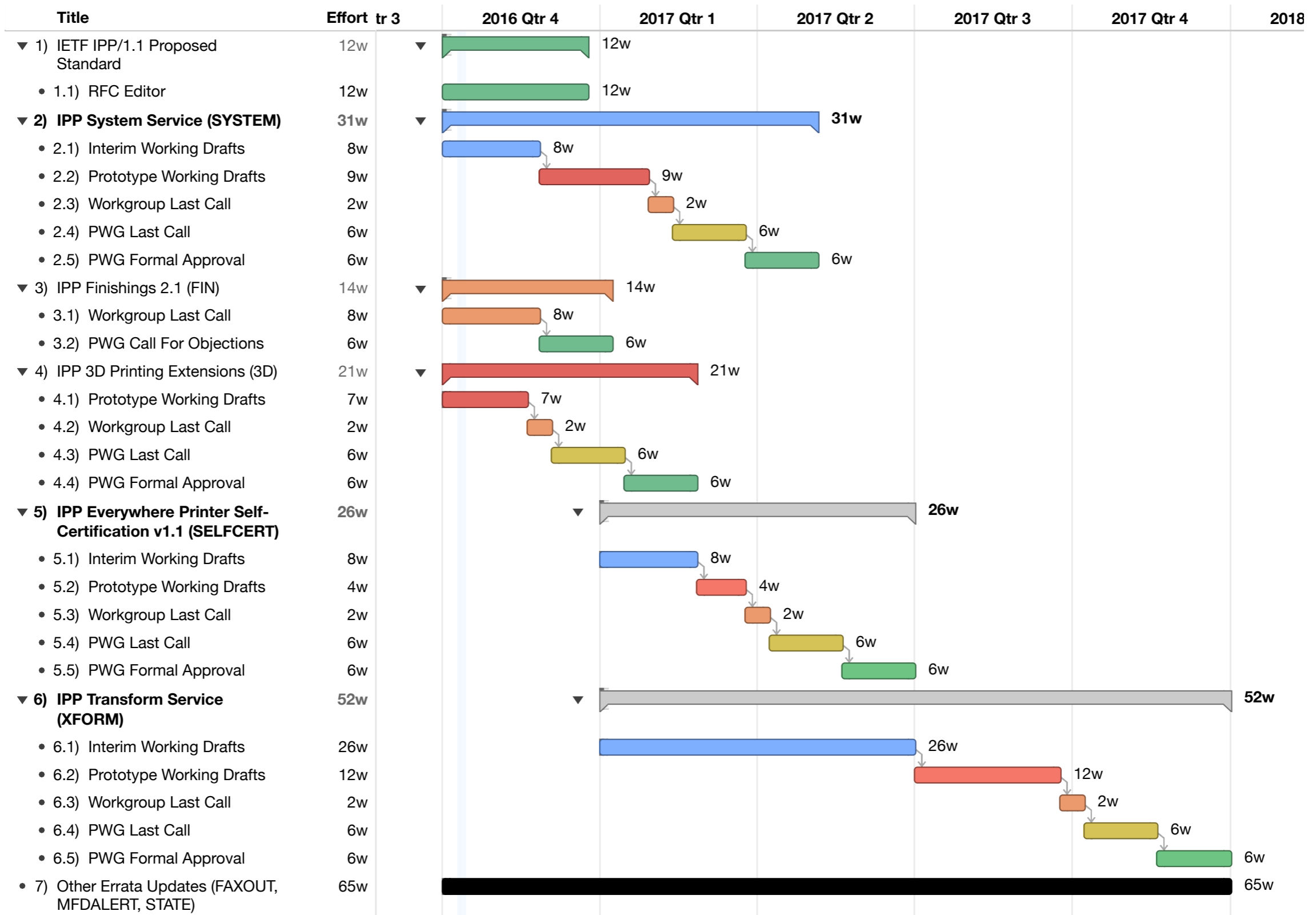
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Next Steps

Next Steps

Title	Effort	tr 3	2016 Qtr 4	2017 Qtr 1	2017 Qtr 2	2017 Qtr 3	2017 Qtr 4	2018
▼ 1) IETF IPP/1.1 Proposed Standard	12w		12w					
• 1.1) RFC Editor	12w		12w					
▼ 2) **IPP System Service (SYSTEM)**	**31w**		31w					
• 2.1) Interim Working Drafts	8w		8w					
• 2.2) Prototype Working Drafts	9w			9w				
• 2.3) Workgroup Last Call	2w			2w				
• 2.4) PWG Last Call	6w			6w				
• 2.5) PWG Formal Approval	6w				6w			
▼ 3) IPP Finishings 2.1 (FIN)	14w		14w					
• 3.1) Workgroup Last Call	8w		8w					
• 3.2) PWG Call For Objections	6w			6w				
▼ 4) IPP 3D Printing Extensions (3D)	21w		21w					
• 4.1) Prototype Working Drafts	7w		7w					
• 4.2) Workgroup Last Call	2w			2w				
• 4.3) PWG Last Call	6w			6w				
• 4.4) PWG Formal Approval	6w			6w				
▼ 5) **IPP Everywhere Printer Self-Certification v1.1 (SELFCERT)**	**26w**			26w				
• 5.1) Interim Working Drafts	8w			8w				
• 5.2) Prototype Working Drafts	4w			4w				
• 5.3) Workgroup Last Call	2w			2w				
• 5.4) PWG Last Call	6w			6w				
• 5.5) PWG Formal Approval	6w				6w			
▼ 6) **IPP Transform Service (XFORM)**	**52w**			52w				
• 6.1) Interim Working Drafts	26w			26w				
• 6.2) Prototype Working Drafts	12w					12w		
• 6.3) Workgroup Last Call	2w					2w		
• 6.4) PWG Last Call	6w						6w	
• 6.5) PWG Formal Approval	6w						6w	
• 7) Other Errata Updates (FAXOUT, MFDALERT, STATE)	65w		65w					

Next Steps

- Advance IPP/1.1 to IETF Internet Standard
  - IETF process to advance to Internet Standard once RFCs are published...
- IPP System Service
  - Prototype working draft in Q4 2016/Q1 2017
- IPP 3D Printing Extensions
  - PWG Last Call in Q4 2016
- IPP Finishings 2.1
  - PWG Call for Objections in Q4 2016
- IPP Everywhere Printer Self-Certification Manual v1.1
  - Interim working draft in Q1 2017
- IPP Transform Service v1.0
  - Initial working draft in Q1 2017
- Other errata (IPP State, etc.) in 2017

More Information

- We welcome participation from all interested parties
- IPP Working Group web page
  - http://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 November 30, 2016 and December 14, 2016 at 1pm ET