Bindings Registry for TD

W3C TPAC 2023

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Discussion Points

- Normative Bindings: document status (REC or not etc.), testability (how to do that, what is in our scope to mandate), what do we "guarantee" to the users of the bindings
- Submission Process: who and where they do what
- Experience with registry mechanism from other groups. Contacting https://www.w3.org/TR/webcodecs-codec-registry/ editors to learn from them?
- Use Cases: (to be detailed) Smart city that needs various verticals -> different protocols -> How do we manage the bindings to the different protocols

Copied from

https://www.w3.org/WoT/IG/wiki/Main_WoT_WebConf/2023_WoT_TPAC_Agenda#Thing_Description_Final_Topics

Why are we talking about it at all?

- Decided: There will be no more core binding document after the next WG Note
- Decided: Binding concepts will be incorporated into TD
- Decided: Existing bindings will be listed in the TD spec
- Undecided: How we will list them?
- Undecided: How will that list evolve?

- Decided since years: WoT has the goal to support multiple protocols
  - E.g. Smart cities need various verticals -> different protocols -> How do we manage the bindings to the different protocols

A List in a REC Document

- All W3C REC Track documents cannot be changed in a whim, they cannot be changed at all after publication.
- So if we have a list of bindings in TD 2.0 REC and a new binding is needed after publication, we are stuck!

The new registry mechanism has a solution to this!

Definition of Registry from W3C Process

Working Groups can also publish registries in order to document collections of values or other data. These are typically published in a separate registry report, although they can also be directly embedded in Recommendation Track documents as a registry section. Defining a registry requires wide review and consensus, but once set up, changes to registry entries are lightweight and can even be done without a Working Group. See § 6.5 The Registry Track for details.

Thus:

We can continue as a normal Recommendation and include a Registry Section in the Recommendation

What does it mean for us

1. We have a **special table** in the TD spec that includes **links** to binding documents
2. **We** define how that table can be changed
3. The entries are **informative** and **not** protected by patent policy thus a TD implementor does not have to implement any of the bindings
4. More in [the process document](#)

Example from IANA

application

Available Formats

CSV

Name	Template	Reference
1d-interleaved-parityfec	application/1d-interleaved-parityfec	[RFC6015]
3gpdash-qoe-report+xml	application/3gpdash-qoe-report+xml	[_3GPP][Ozgur_Oyman]
3gppHal+json	application/3gppHal+json	[_3GPP][Ulrich_Wiehe]
3gppHalForms+json	application/3gppHalForms+json	[_3GPP][Ulrich_Wiehe]
3gpp-ims+xml	application/3gpp-ims+xml	[_3GPP][John_M_Meredith]
A2L	application/A2L	[ASAM][Thomas_Thomsen]
ace+cbor	application/ace+cbor	[RFC9200]
ace+json	application/ace+json	[RFC9431]
activemessage	application/activemessage	[Ehud_Shapiro]

https://www.iana.org/assignments/media-types/media-types.xhtml

Example from W3C

- **WebCodecs Codec Registry**

§ 3. Audio Codec Registry

codec string	common name	public specification
flac	Flac	FLAC codec registration [WEBCODECS-FLAC-CODEC-REGISTRATION]
mp3	MP3	MP3 WebCodecs Registration [WEBCODECS-MP3-CODEC-REGISTRATION]
mp4a.*	AAC	AAC WebCodecs Registration [WEBCODECS-AAC-CODEC-REGISTRATION]
opus	Opus	Opus WebCodecs Registration [WEBCODECS-OPUS-CODEC-REGISTRATION]
vorbis	Vorbis	Vorbis WebCodecs Registration [WEBCODECS-VORBIS-CODEC-REGISTRATION]
ulaw	u-law PCM	u-law PCM WebCodecs Registration [WEBCODECS-ULAW-CODEC-REGISTRATION]
alaw	A-law PCM	A-law PCM WebCodecs Registration [WEBCODECS-ALAW-CODEC-REGISTRATION]
pcm-*	Linear PCM	Linear PCM WebCodecs Registration [WEBCODECS-PCM-CODEC-REGISTRATION]

§ 4. Video Codec Registry

FLAC WebCodecs Registration
W3C Group Draft Note, 4 January 2023

▼ **More details about this document**

This version:
https://www.w3.org/TR/2023/DNOTE-webcodecs-flac-codec-registration-20230104/

Latest published version:
https://www.w3.org/TR/webcodecs-flac-codec-registration/

Editor's Draft:
https://w3c.github.io/webcodecs/flac_codec_registration.html

Previous Versions:
https://www.w3.org/TR/2022/DNOTE-webcodecs-flac-codec-registration-20221212/

History:
https://www.w3.org/standards/history/webcodecs-flac-codec-registration

Feedback:
GitHub

Editors:
Paul Adenot (Mozilla)
Bernard Aboba (Microsoft Corporation)

Experience with Registries

From Bernard Aboba (Microsoft), Co-Editor of WebCodecs Codec Registry

Summary of email exchange:

The W3C Registry mechanism is relatively new, so there isn't much experience yet.

However, IANA has accumulated experience and they have documented it:
Guidance for RFC Authors (iana.org)

… Continued

"living will" has to be carefully thought out. This has two sides:

1. The WG can be disbanded but inputs to their the registries need to be processed somehow by someone.
2. The registry entry's group can be disbanded or the linked document can disappear. Long standing SDOs are ok but there are new SDOs or less "official" bodies. Deciding who can register an entry and how link stability is achieved is an important consideration.
   a. IANA Registry entries have many cases of people changing companies etc. This is not a problem unless the registration requires maintenance. Note that allocations to IANA registries are permanent

… continued

EK: Question on "living will". What about the other side, i.e. the registry entry's group is not active anymore or even worse, the linked document is removed from the Web?

For the WebCodecs registry, most codec specifications come from long-standing SDOs like IETF or ITU-T, but we also have registration pages referencing specifications from younger SDOs like AoMedia, and have had inquiries asking about the requirements for registering a codec. If we were to create a registry page for a proprietary codec or one from a national standards body or industry association, the odds of the group becoming inactive would increase. So deciding who can register an entry and how link stability is achieved is an important consideration.

The IANA registry has lots of registrations from individuals who have changed companies, leaving email addresses that are no longer valid. However, this is not necessarily a big deal unless the registration requires maintenance (e.g. if the allocations can be revoked or modified). For most IANA registries the allocations are permanent, and most of the allocations are made within IETF RFCs which are archival documents that cannot be modified once published (though errata can be filed). The IETF RFCs are housed at the RFC Editor website, so that enables stable references.

Experience with Registries

Paul Adenot (Mozilla Foundation), Co-Editor of WebCodecs Codec Registry

Chat during coffee break:

There has been no negative comments or experiences. Ability to change the registry entries easily has helped us a lot. I agree with the comments from Bernard and the how you define the rules and liveliness is important.

EK: How do you take care of breaking changes to a core document?

The change is applied to all documents at the same time.

Discussion

Users of a Registry

We have to be mindful of who uses our registry

1. Contributors of new entries
2. Users of an entry

Contribution Process

We have multiple aspects to discuss after the TPAC

1. Inputs: Type of Document
2. Testability: how to do that, what is in our scope to mandate
3. Who and where they do what
   a. Who? Participants of various CGs, other SDOs can submit to registry table
   b. Where?
4. What happens to the registry if the WoT WG does not exist anymore? Who accepts additions, changes etc.
5. What happens the linked item disappears?

Users

What do we "guarantee" to the readers/implementers of the bindings

Notes

Kaz:

- There are examples that use word registry but are not registry (GitHub, Note)
- There are other ways to manage

- 2 or 3 step approach to understand what kind of registry or approach to manage the type of information we need.

- Other examples:
  - https://w3c.github.io/tt-profile-registry/#registry
  - https://www.w3.org/TR/mse-byte-stream-format-registry/
  - https://www.w3.org/TR/did-spec-registries/ (thinking of switching to "official" registry approach)

Notes 2

Versioning from McCool

- Append only, cannot change
- Adding to specific TD spec version
- Only publicly available specs
- Archival versions can be submitted

There should be validation files per binding so that we can validate at least the TD. Validating the device is conformance testing