PROPOSED Web of Things Interest Group Charter

The **mission** of the Web of Things Interest Group is to counter the fragmentation of the Internet of Things by complementing available standards through Web technology capable of interconnecting existing Internet of Things platforms, devices, gateways, and cloud services. We aim to reduce costs through the global reach of Web standards, to enable open markets of services, and to unleash the power of the network effect. As a W3C Interest Group, we are seeking to build a deeper understanding of the Web of Things by investigating consumer, industrial, environmental, energy management, and smart city scenarios. This is intended to identify demand for further standards-track work within W3C working groups and to better align with the established W3C liaisons.

This proposed charter is available on GitHub. Feel free to raise issues.

Start date	1 January 2022 (estimated)
End date	31 December 2023 (estimated)
Charter extension	See Change History.
Chairs	Michael McCool (Intel) and Sebastian Kaebisch (Siemens)
Team Contacts	Kazuyuki Ashimura (0.1 FTE), Dave Raggett (0.1 FTE)
Meeting Schedule	**Teleconferences:** weekly with additional topic-specific calls as appropriate. **Face-to-face:** we will meet during the W3C's annual Technical Plenary week; additional face-to-face meetings may be scheduled by consent of the participants, usually no more than 3 per year.

The Internet of Things (IoT) suffers from a lack of interoperability across platforms. As a result developers are faced with data silos, high integration and maintenance costs, and limited market potential. Existing IoT standards address only limited ecosystems and do not provide interoperability across domains. The current IoT is like the Internet before the World Wide Web, with competing incompatible hypertext systems. The W3C is applying lessons learned from the World Wide Web to the Internet of Things to create the Web of Things.

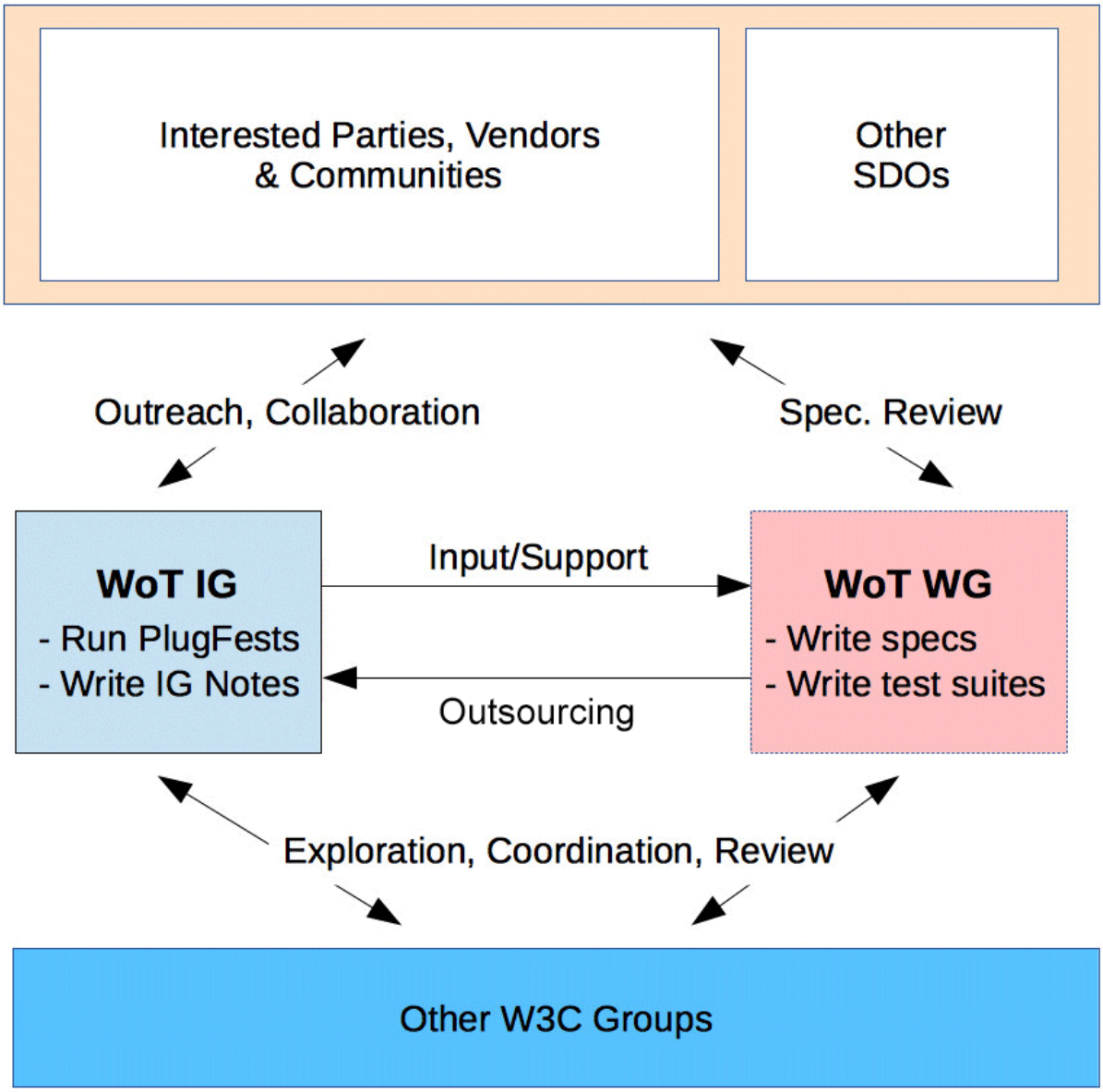
To achieve this goal for cross-platform and cross-domain interoperability, the Web of Things Working Group has developed a first set of standardized building blocks. The core idea is based upon rich metadata that describes the data and possible interactions (i.e., affordances) exposed to applications, and the communications and security requirements for platforms to communicate effectively. The central documents are the WoT Architecture and WoT Thing Description with its *Properties, Actions, Events* interaction model.

The Web of Things Interest Group continues its work to support the WoT Working Group and to explore opportunities for new standards-track work within W3C. The priority in this third charter period is gaining additional practical experience with the in-development building blocks in the field to enable open markets of services on the scale of the Web. To achieve this goal, the Interest Group is seeking to broaden the range of participants to provide the necessary skills and resources for real-world application scenarios in different verticals.

1. Scope

Scope Summary

- Support the Web of Things Working Group
- Organize and run interoperability and testing events, including events for specific vertical industries, to evaluate the current working assumptions in regard to the Web of Things
- Reach out and collaborate with interested organizations, industry specific and infrastructure vendors, and communities in support of the Interest Group's mission
- Develop supporting material such as implementation guidelines and tutorials
- Explore areas and identify work that is ready for transfer to the W3C Recommendation Track



The Web of Things Interest Group (WoT IG) is a forum for discussion of ideas relating to the Web of Things and is intended to complement the role of the Web of Things Working Group (WoT WG). In particular, the WoT IG will propose new work items based upon new requirements, use cases, and discussions with IoT developer communities, standards development organizations, industry alliances, and vertical industry solution and infrastructure providers. Conversely, the WoT IG will consider new topics that are submitted to it by the WoT WG.

An important activity is the operation of PlugFests to collect interoperability implementation experience and to validate the current working assumptions of the potential building blocks discussed in the Web of Things Interest Group. These events enable developers to get together to test their implementations and facilitates networking between partners and experts. The Interest Group will seek to encourage work on open source projects and community evaluation of the Web of Things. In more detail, PlugFests allow participants to:

- assist with preparing implementation reports for WoT WG Candidate Recommendations
- test-drive upcoming or proposed technologies for the W3C Recommendation Track
- identify and test-drive upcoming or proposed technologies as they apply to the collection of technologies required to address specific industry and user community needs
- take part in interoperability experiments across implementations for ideas at different levels of maturity
- reach out to other communities and new members through an OpenDay for non-members, which usually includes a demo track
- ensure interoperability between WoT technologies and assistive technologies used by people with disabilities

The Interest Group will identify requirements for standardization in two ways: first, by exploring use cases and requirements for concrete consumer, industrial, environmental, energy management, and smart cities application scenarios, and second, through examining the requirements for integrating a broad range of IoT platforms into the Web of Things. The exploration tasks that the Interest Group will undertake may include:

- use cases and requirements for different application scenarios and user communities
- lifecycle management of Things
- security requirements and supporting technologies, such as key management and access controls
- clarify relationship with the concept of Digital Twins

- out-of-the-box device onboarding to cloud services
- WoT Scripting API and possible simplifications
- hypermedia-driven interactions for complex/multi-step Actions and Events
- community-driven, bottom-up vocabulary to enable semantic interoperability
- Concrete protocol bindings (e.g. for HTTP, WebSockets, CoAP)

Further ideas for topics are expected from discussions and expert presentations of IoT projects, including for example, Graph Data, Edge Computing, Machine Learning, and Sustainability. The Interest Group will incubate work items for the Web of Things until they are ready for transfer to the W3C Recommendation Track, either in existing Working Groups, such as the WoT WG, or in new Working Groups.

The use case and requirement documents developed by the Interest Group should represent the needs of an international set of users. Users may be either working wholly in a non-Latin script, or in an environment where different actors are using different languages. Any requirements and use cases arising from investigation of international use should, of course, then be reflected in the experience and/or implementation reports for identified building blocks and any primer, best practice, or test case documents.

1.1 Out of Scope

The technical development of standards is not in scope for the Interest Group. Identified Recommendation Track opportunities will be handed over to appropriate W3C groups if such a group exists, or within a dedicated Community Group or Business Group when incubation is needed.

2. Deliverables

The primary deliverables of the WoT Interest Group are IG Notes that identify use cases and requirements for existing and/or new WoT building blocks (i.e., technical ~~↓ specifications). ↓~~ ↕ specifications by the WoT Working Group). ↕ The IG Notes may contain the consensus of first implementation experiences gained by the group (e.g., during PlugFests). The group will also maintain a public list of identified WoT building blocks that it is tracking and investigating.

2.1 Normative Specifications

The Interest Group will not deliver any normative specifications.

2.2 Other Deliverables

Other non-normative documents may be created such as:

- use case and requirement documents;
- experience and/or implementation reports for identified building blocks;
- primers/tutorials, best practice, implementation guidelines, or test case documents (including security) to support WoT developers when designing applications and/or Things.

2.3 Timeline

The IG will, during its lifetime, undertake different activities that may proceed in parallel. No specific timeline has been identified at this point, but the various activities are intended to be running for short periods of time (2-12 months), with the possibility of running a few iterations of them.

3. Coordination

For all deliverables, this Interest Group will seek horizontal review for accessibility, internationalization, performance, privacy, and security with the relevant Working and Interest Groups, and with the TAG. Invitation for review must be issued during each major standards-track document transition, including FPWD. The Interest Group is encouraged to engage collaboratively with the horizontal review groups throughout development of each ~~↓ specification. ↓~~ ↕ document. ↕ The Interest Group is ~~↓ advised to seek a review at least 3 months before first entering CR and is ↓~~ ↕ also ↕ encouraged to proactively notify the horizontal review groups when major changes occur in ~~↓ a specification ↓~~ ↕ its technical reports ↕ following a review.

Additional technical coordination with the following Groups will be made, per the W3C Process Document:

3.1 W3C Groups

Web of Things Working Group
: For collaboration as outlined under Scope.

JSON-LD Working Group
: For collaboration on JSON-LD features and WoT use cases.

Efficient Extensible Interchange Community Group
: In relation to efficient interchange for Thing Descriptions.

Web and Automotive Business & Working Groups
: For collaboration on technologies and requirements relating to connected cars and the Web of Things.

Device and Sensors Working Group
: For coordination on APIs for sensors and actuators.

Accessible Platform Architectures Working Group
: For coordination on development of use cases and requirements, and impact of Web of Things technologies on accessibility for users with disabilities.

Privacy Interest Group
: For collaboration on privacy considerations for the Web of Things.

Internationalization Interest Group

For collaboration on internationalization considerations for the Web of Things.

Web & Networks Interest Group
: For collaboration on networking technologies on the edge and in the cloud when exposing interactions between Things.

3.2 External Organizations

To succeed in establishing inter-platform standards, W3C needs to coordinate with IoT alliances and standards development organizations. The following list provides examples of organizations with which the Interest Group has already had significant coordination during the period of the first charter. A longer list is available on the Interest Group wiki.

IRTF Thing to Thing Research Group
: For coordination of matters of mutual interest in relation to the Web of Things.

Open Connectivity Foundation
: For collaboration on integrating OCF based platforms within the Web of Things, including platform metadata and approaches for enabling semantic interoperability, and end to end security across platforms.

ECHONET Consortium
: For collaboration on integrating ECHONET Consortium based platforms within the Web of Things, including platform metadata and approaches for enabling semantic interoperability, and end to end security across platforms.

Industrial Internet Consortium
: For collaboration on a testbed and gathering user requirements for the Web of Things.

OPC Foundation
: For collaboration on semantic interoperability in terms of information model, protocol binding, and security.

Plattform Industrie 4.0
: For collaboration on use cases and requirements for smart manufacturing, including semantic interoperability, asset administration shell (digital twins), and end to end security across platforms.

oneM2M
: For collaboration on integrating M2M based platforms within the Web of Things, including platform metadata and approaches for enabling semantic interoperability, and end to end security across platforms.

ETSI
: For collaboration on IoT, M2M, security, and semantic interoperability.

OMA SpecWorks
: For collaboration on integrating LWM2M based platforms with the Web of Things.

Open Geospatial Consortium
: For coordination on the OGC SensorThings API and location metadata.

GSMA
: For coordination in respect to the interests of Network Operators.

~~↓eCl@ss↓~~ ↕ECLASS↕
: For collaboration and coordination of the technical realization of the use of ~~↓eCl@ss↓~~ ↕ECLASS↕ in the W3C Thing Description.

AIOTI WG03
: For coordination with the Alliance for Internet of Things Innovation, Working Group 3 (standardisation), in respect to use cases, requirements, and semantic interoperability.

ITU-T SG20
: For developing a unified definition of Web of Things concepts and architecture.

4. Participation

To be successful, this Interest Group is expected to have 6 or more active participants for its duration, including representatives from the key implementors of this specification, and active Editors and Test Leads for each specification. The Chairs, Editors, and Test Leads are expected to contribute half of a working day per week towards the Interest Group. There is no minimum requirement for other Participants.

The group encourages questions, comments and issues on its public mailing lists and document repositories, as described in Communication.

The group also welcomes non-Members to contribute technical submissions for consideration upon their agreement to the terms of the W3C Patent Policy.

5. Communication

Technical discussions for this Interest Group are conducted in public. Meeting minutes from teleconference and face-to-face meetings will be archived for public review, and technical discussions and issue tracking will be conducted in a manner that can be both read and written to by the general public.

Information about the group (including details about deliverables, issues, actions, status, participants, and meetings) will be available from the Web of Things Interest Group home page.

Most Web of Things Interest Group teleconferences will focus on discussion of particular specifications and will be conducted on an as-needed basis.

This group primarily conducts its technical work on GitHub issues. The public is invited to review, discuss and contribute to this work.

The group may use a Member-confidential mailing list for administrative purposes and, at the discretion of the Chairs and Members of the group, for Member-only discussions in special cases when a participant requests such a discussion.

6. Decision Policy

This group will seek to make decisions through consensus and due process, per the W3C Process Document (section 3.3). Typically, an editor or other participant makes an initial proposal, which is then refined in discussion with members of the group and other reviewers, and consensus emerges with little formal voting being required.

However, if a decision is necessary for timely progress and consensus is not achieved after careful consideration of the range of views presented, the Chairs may call for a group vote and record a decision along with any objections.

To afford asynchronous decisions and organizational deliberation, any resolution (including publication decisions) taken in a face-to-face meeting or teleconference will be considered provisional. A call for consensus (CfC) will be issued for all resolutions (for example, via email and/or web-based survey), with a response period from one week to 10 working days, depending on the chair's evaluation of the group consensus on the issue. If no objections are raised on the mailing list by the end of the response period, the resolution will be considered to have consensus as a resolution of the Interest Group.

All decisions made by the group should be considered resolved unless and until new information becomes available or unless reopened at the discretion of the Chairs or the Director.

This charter is written in accordance with the W3C Process Document (Section 3.4, Votes) and includes no voting procedures beyond what the Process Document requires.

7. Patent Disclosures

The Interest Group provides an opportunity to share perspectives on the topic addressed by this charter. W3C reminds Interest Group participants of their obligation to comply with patent disclosure obligations as set out in Section 6 of the W3C Patent Policy. While the Interest Group does not produce Recommendation-track documents, when Interest Group participants review Recommendation-track specifications from Working Groups, the patent disclosure obligations do apply. For more information about disclosure obligations for this group, please see the W3C Patent Policy Implementation .

8. Licensing

This Interest Group will use the W3C Software and Document license for all its deliverables.

9. About this Charter

This charter has been created according to section 5.2 of the Process Document . In the event of a conflict between this document or the provisions of any charter and the W3C Process, the W3C Process shall take precedence.

9.1 Charter History

The following table lists details of all changes from the initial charter, per the W3C Process Document (section 5.2.3) :

Charter Period	Start Date	End Date	Changes
Initial Charter	21 January 2015	31 March 2016	
Charter Extension	1 April 2016	31 July 2016	• Extended for rechartering process to complete
Rechartered	1 August 2016	31 December 2018	• Clarified relation to chartered WoT Working Group • Changed scope to explore role of semantic technologies
Charter Extension	1 January 2019	30 June 2019	• Matthias Kovatsch changed his affiliation and re-appointed as co-Chair. • Yongjing Zhang stepped down as co-Chair.
Charter Extension	1 July 2019	31 December 2019	• Extended for rechartering process to complete
Rechartered	22 October 2019	30 June 2021	• Simplified scope and deliverables to enable a broader set of Participants • Updated coordination groups
Charter Extension	1 July 2021	31 December 2021	• Extended for rechartering process to complete
Rechartered (PROPOSED)	1 January 2022	31 December 2023	• Updated to new charter templates • Updated coordination groups, including external liaisons

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Kazuyuki Ashimura , *Dave Raggett*

Yes, it's on GitHub! .