



SOCIETIES
INITIAL STANDARDIZATION PLAN D9.1

Editor:	Claudio Venezia (TI)
Deliverable nature:	Initial standardization plan
Dissemination level: (Confidentiality)	PU
Contractual delivery date:	M12
Actual delivery date:	28/10/2011
Suggested readers:	All consortium members
Version:	1.0
Total number of pages:	16
Keywords:	SOCIETIES Standards

Abstract

This document highlights the importance for SOCIETIES in pursuing interoperability goals through standards and describes SOCIETIES' approach to the relevant initiatives. During the first project year, while some technological choices where maturating, we collected an initial list of standard bodies and started to work in creating the basis for future contributions and impacts.

[End of abstract]

Disclaimer

This document contains material, which is the copyright of certain SOCIETIES consortium parties, and may not be reproduced or copied without permission.

In case of Public (PU):

All SOCIETIES consortium parties have agreed to full publication of this document.

In case of Restricted to Programme (PP):

All SOCIETIES consortium parties have agreed to make this document available on request to other framework programme participants.

In case of Restricted to Group (RE):

All SOCIETIES consortium parties have agreed to full publication of this document. However this document is written for being used by <organisation / other project / company etc.> as <a contribution to standardisation / material for consideration in product development etc.>.

In case of Consortium confidential (CO):

The information contained in this document is the proprietary confidential information of the SOCIETIES consortium and may not be disclosed except in accordance with the consortium agreement.

The commercial use of any information contained in this document may require a license from the proprietor of that information.

Neither the SOCIETIES consortium as a whole, nor a certain party of the SOCIETIES consortium warrant that the information contained in this document is capable of use, or that use of the information is free from risk, and accept no liability for loss or damage suffered by any person using this information.

Impressum

[Full project title] Self Orchestrating Community Ambient Intelligence Spaces

[Short project title] SOCIETIES

[Number and title of work-package] WP9

[Document title] D9.1 Initial Standardization plan

[Editor: Name, company] Claudio Venezia, Telecom Italia

[Work-package leader: Name, company] Daniele Abbadessa, NEC

[Estimation of PM spent on the Deliverable] 3

Copyright notice

© 2010 Participants in project SOCIETIES

Optionally list of organisations jointly holding the Copyright on this document

Executive summary

This document is the description of SOCIETIES' initial standardization plan. When dealing with dynamic creation of community and integration of pervasive enablers it gets critical to refer to standards as much as possible in order to maximize interoperability and portability.

Despite at the end of the first year of the project implementation technologies and protocols have still to be chosen, we have tried to get to a preliminary list of standard bodies' initiatives which may be relevant for our work.

SOCIETIES partners involved in Task 9.1 have performed an initial screening of standardization initiatives in which they are already involved that may address SOCIETIES' needs. Furthermore the role of the partners, in this first year, has been to try strengthening their position in the most promising groups. Standardization activities have their own lifecycle and are widely based on participants' consensus. SOCIETIES' partners have been basically working on creating the conditions for SOCIETIES to be able to submit its inputs to them as soon as there will be something concrete to submit.

This document describes the list of collected initiatives along with an initial focus on the most relevant ones along with a draft contribution roadmap. The main goal of the documents remains still trying to explain to the reader why we plan to target a specific initiative, if we plan to reuse a specific standard or impact it and to provide a motivation for the specific work.

List of authors

Company	Author
Telecom Italia	Claudio Venezia
NEC	Miquel Martin, Daniele Abbadessa
Soluta.Net	Pierfranco Ferronato
PTIN	João Gonçalves
SETCCE	Jan Porekar
INTEL	Leckey Alexander J
TRIALOG	Bruno Jean-Bart

Table of Contents

Exe	ecutive su	mmary3	
Lis	t of author	rs4	
Tal	ole of Con	itents5	
1	Introduc	tion6	
1	.1 Stru	octure of the document	6
2	List of in	nitial standardization targets7	
	2.1.1	W3C Social Web Incubator Group	7
	2.1.2	W3C Context Awareness and Personalization Working Group	7
	2.1.3	W3C Device API Working group	
	2.1.4	W3C HTML5 Working Group	
	2.1.5	W3C Geolocation API Working Group	7
	2.1.6	OMA NGSI	
	2.1.7	Trusted Network Connect	
	2.1.8	Web Services Interoperability Organization	
	2.1.9	Web Services for Management	
	2.1.10	OMG – DSL/XMI	
	2.1.11	OMG – SoAML	
	2.1.12	The Open Group – SOA Governance; Partners: SN, IBM	
	2.1.13	OASIS – Service Component Architecture	
	2.1.14	OSGi Alliance	
	2.1.15	Home Gateway Initiative	
	2.1.16	W3C WebID	
	2.1.17	W3C Federated Social Web	
	2.1.18	ESTI M2M Communications.	
	2.1.19	Broadband World Forum	_
	2.1.20	ETSI ISG Identity and Access Management for Networks and Services (ISN)	
	2.1.21	W3C Web Real-Time Communications Working Group	
	2.1.22	XMPP Standards Foundation.	11
3		n the first sub-list of concrete objectives and initial plans	
	3.1.1	Standardization objectives and plan	12
4	Further i	initiatives and highlights	

1 Introduction

The vision of SOCIETIES is to develop a complete, integrated Community Interaction Space (CIS), which extends pervasive systems beyond the individual to dynamic communities of users. CISs will embrace online community services, such as Social Networking, in order to offer new and powerful ways of working, communicating and socializing. Pervasive computing uses information derived from the array of sensors and devices that make up the context of our digital lives. Context could be the location at given times of the day, the number of cars on the road or the weather.

The concept of bridging pervasive and Social computing is indeed the main conceptual innovation introduced by SOCIETIES. One functional foundation of SOCIETIES is the ability of creating dynamic community on the fly without requiring an explicit subscription to the community. SOCIETIES is not aimed at serving another vertical Social Network, it will instead rely on existing Social Networks or Identity providers in order to retrieve information about the potential community participants.

SOCIETIES will try to reuse existing standards as much as possible. Interoperability is a critical requirement for the platform. In this light there will be a tight correlation with the "Interoperability Architecture" task (T3.3) in order to coordinate the identification of SOCIETIES' critical interoperability points with the standardization activities which may impact or be impacted.

During the first year of the project, while waiting for a better defined technical framework, we have been performing a screening of the Standards Bodies and activities which are relevant to SOCIETIES' goals and frame and where SOCIETIES' partners already have consolidated active contribution channels. In the meantime some partners have already started an activity of dissemination, contribution and lobbying which is necessary to achieve the desired goals as documented in Section 3.

Furthermore SOCIETIES is leading the Service Front Ends Working group within the FP7 programme. It has been accounted as a critical enabler for creating synergies among FP7 projects aimed at providing service platforms in order to maximize the effectiveness towards the Standardization community.

1.1 Structure of the document

The document is structured in two main sections.

- 1. List of initial standardization targets (Section 2)
- 2. Focus on the first sub-list of concrete objectives (Section 3)

In the first section we provide a list of the targeted standard bodies based on the initial screening. For each entry the reference partners have tried to define the type of relationship SOCIETIES may want to implement to the specific group. In some cases SOCIETIES will mainly take existing specifications as inputs in others it is planning to actively contribute to the standard. An initial mapping on the specific SOCIETIES WPs was also carried out.. Each contribution proposal comes along with the indication of which specific SOCIETIES' WP which should be entitled in coordinating the activity. In a preliminary information gathering phase 27 standardization initiatives have been noted as potential targets.-.

In the second section, a subset of the complete list is provided. The list contains those standardization bodies that we recognize as the most relevant initiatives Albeit a definite technical and implementation map is not available at the time of writing we try to provide a roadmap based on the specific group lifecycle.

2 List of initial standardization targets

2.1.1 W3C Social Web Incubator Group

Social Web XG has completed its mission producing a public non normative result which is available at [http://www.w3.org/2005/Incubator/socialweb/wiki/FinalReport]; other two groups have been taking over some of the work: Web ID and Federated Social Web, Telecom Italia is active in both and plan to submit SOCIETIES use cases. The activities within this group are relevant to SOCIETIES' WP3.

Further information about the group at the following URL (http://www.w3.org/2005/Incubator/socialweb/).

SOCIETIES' partners involved: NEC (active in group establishment), TI, INTEL.

2.1.2 W3C Context Awareness and Personalization Working Group

The group has not been able to collect the critical mass to start working; TI will monitor future evolutions and keep SOCIETIES consortium up to date.

Further information about the group at the following URL (http://www.w3.org/2007/uwa/wiki/New_Charter).

SOCIETIES' partners involved: TI

2.1.3 W3C Device API Working group

The group is aimed at specifying standard APIs for Web Applications to access devices capabilities. The group is actually targeting the specification of the following APIs: camera, capture, generic sensor, messaging, volume level, network etc. SOCIETIES will also investigate complimentary extensions that may be used to provide pervasive applications. For example, access to a wider group of context sources.

Further information about the group at the following URL (http://www.w3.org/2009/dap).

SOCIETIES' partners involved: TI, INTEL, TSSG, TRIALOG

2.1.4 W3C HTML5 Working Group

The group specify the language of the Web. TSSG will attempt to use HTML5 in the implementation of third party applications, and provide feedback on any necessary potential extensions to develop pervasive applications.

Further information about the group at the following URL (http://dev.w3.org/html5/spec/Overview.html).

SOCIETIES' partners involved: TSSG

2.1.5 W3C Geolocation API Working Group

This group aims at specifying standard APIs for Web application to access Geolocation information from device location sensor.

The Geolocation Working Group published the Candidate Recommendation Working Draft of the Geolocation API on 07 September 2010; SOCIETIES may be willing to refer to it for location based API implementations http://www.w3.org/TR/2010/CR-geolocation-API-20100907/

Further information about the group at the following URL (http://dev.w3.org/geo/api/spec-source.html).

SOCIETIES' partners involved: TI

2.1.6 OMA NGSI

The group published a few recommendations available that SOCIETIES can target reuse in area of Identity control and federation, Preference handling, Multimedia list handling, Service recommendation management, Context management, Group list management.

Further information about the group at the following URL (http://www.openmobilealliance.org/Technical/release_program/NGSI_v1_0.aspx).

SOCIETIES' partners involved: NEC,TI

2.1.7 Trusted Network Connect

Trusted Network Connect (TNC) is one of the solutions offered from the Trusted Computing Group (TCG). It provides a network security architecture enabling intelligent policy decisions, dynamic security enforcement and communication between security systems. SOCIETIES is interested in similar research domains such as pervasive security, Network Access Control and could possibly contribute from a secure community perspective.

Further information about the group at the following URL (http://www.trustedcomputinggroup.org/developers/trusted_network_connect).

SOCIETIES' partners involved: INTEL

2.1.8 Web Services Interoperability Organization

WS-I is now part of OASIS as of Nov 2010. WS-I is interested in Web services interoperability for selected groups of Web services standards across platforms, operating systems, and programming languages. SOCIETIES has an interoperability task under WP3 that could both use and influence these best practices.

Further information about the group at the following URL (http://www.ws-i.org/).

SOCIETIES' partners involved: IBM

2.1.9 Web Services for Management

WS-Management is attempting to enable a more effective management of IT systems, addressing cost, complexity and information exchange across IT infrastructure. The management of networked devices using webservices ties in with our Device & Communications Abstractions task in WP4.

Further information about the group at the following URL (http://www.dmtf.org/standards/wsman/).

SOCIETIES' partners involved: INTEL, IBM

2.1.10 OMG – DSL/XMI

XMI is an XML based standard format for describing models, it will be used to streamline DSL expressions. Actually the XMI 2.4 specification is available. It is used by Enterprise Architect to import and export Packages to and from other sources through the use XMI. Soluta.Net will investigate the interest in OMG to open a SIG in social network language representation. At this time there is no effort in this sense in the OMG, they are rather involved in social businesses, as an application of BPM, that is not relevant to Societies effort.

Further information about the group at the following URL (http://www.omg.org/spec/XMI/2.1.1/).

SOCIETIES' partners involved: SN, IBM

2.1.11 OMG - SoAML

The SOA protocol is a key element of the SOCIETIES project. The expertise gained in the project can be used to propose advancements and improvements to the standard.

Further information about the group at the following URL (http://www.omgwiki.org/SoaML/doku.php?id=).

SOCIETIES' partners involved: SN, IBM

2.1.12 The Open Group – SOA Governance; Partners: SN, IBM

SOA governance is aimed at defining contracts and relationships between IT and business in the entire software life cycle. The SOCIETIES project is a unique benchmark for this standard and can provide useful info to the consortium.

Further information about the group at the following URL

(http://www.theopengroup.org/projects/soa-governance/).

SOCIETIES' partners involved: SN, IBM

2.1.13 OASIS – Service Component Architecture

At this time the project is committing to OSGi, rather than SCA, as such OASIS is not involved in the standardization process. As a consequence this process is suspended, unless there is a new direction toward SCA in WP4. In case Soluta.Net will use its participation to the work group to attest the significance of SCA and possible gaps in the design, specification and development of SOCIETIES. The expertise gained in this project could be used to impact the standard's discussion.

Further information about the group at the following URL (http://www.oasis-opencsa.org/sca).

SOCIETIES' partners involved: SN

2.1.14 OSGi Alliance

This is a new opportunity for standardisation in the OSGi Alliance (http://www.osgi.org) which fits well with the intent of SOCIETIES. Soluta.Net will attend Requirements Committee Meetings to provide inputs, recommendation to influence the spec. The aim is to define profiles for OSGi in the context of social service collaborative environment.

Further information about the group at the following URL (http://www.osgi.org/).

SOCIETIES' partners involved: SN

2.1.15 Home Gateway Initiative

PTIN is involved in several taskforces of the HGI, and is especially interested in the topics of testing, diagnostics and software modularity. Expertise gained in SOCIETIES will be used to impact the standard discussion regarding software modularity.

Further information about the group at the following URL (http://www.homegatewayinitiative.org/)

SOCIETIES' partners involved: PTIN, NEC

2.1.16 W3C WebID

TI is active in this group. WebID will build upon an existing submission to define a distributed Identity Framework on the Web; TI plans to submit SOCIETIES use cases to contribute to the problem definition and endorsing an implementation in line with the objectives of Social Multimedia Scene as part of SOCIETIES night out scenario

WebID builds upon an existing widely adopted security mechanisms to define a distributed Identity Framework for the Web environment and can as such cover scenarios that relate to social networks. SETCCE aims at reusing existing WebId Identity Framework to cover identity of various concepts within a socio-pervasive system.

The web of trust is built using semantic web vocabularies in RESTful manner to form linked data. SETCCE is monitoring the standardization initiative and will look into ways to reuse FOAF+SSL standard for achieving trust in a decentralized socio-pervasive network.

PTIN, while targeting core identity issues in SOCIETIES, regards WebID as an interesting option for webbased authentication. Ways of extending and using it in the broader context of the project will be studied.

Further information about the group at the following URL (http://www.w3.org/2005/Incubator/webid/wiki/Main_Page)

SOCIETIES' partners involved: TI, SETTCE, PTIN

2.1.17 W3C Federated Social Web

TI has recently joined the group; it is aimed to collect success stories of Social Networking Federations and provide guidelines; We expect Social Network Federation to be part of the goals of SOCIETIES WP4 interoperability CRA and overall a mission critical objective of SOCIETIES architecture.

NEC, TI, HWU and PTIN have been present at the Federated Social Web Summit in Berlin on June 3-5 where the Societies approach has been presented to the other participants.

Further information about the group at the following URL (http://www.w3.org/2005/Incubator/federatedsocialweb/charter)

SOCIETIES' partners involved: TI, NEC

2.1.18 ESTI M2M Communications

The ETSI M2M Communications is a new ETSI Technical Committee developing standards for Machine to Machine Communications. NEC is active in this group and the standardization work carried out here can be relevant to SOCIETIES research activities in the area of context and pervasiveness.

Further information about the group at the following URL (http://www.etsi.org/Website/Technologies/M2M.aspx)

SOCIETIES' partners involved: NEC

2.1.19 Broadband World Forum

The Broadband Forum is the central organization driving broadband wireline solutions and empowering converged packet networks worldwide to better meet the needs of vendors, service providers and their customers. NEC is an active member and some of the work carried out in this body can be relevant for CSS management and monitoring.

Further information about the group at the following URL (http://www.broadband-forum.org/)

SOCIETIES' partners involved: NEC

2.1.20 ETSI ISG Identity and Access Management for Networks and Services (ISN)

ETSI ISG INS framework enables applications to cross boundaries between enterprise, telecommunications, the web and cloud in terms of Identity Management, Authentication, Authorization, SSO and Privacy.

The first set of group specifications support interoperability and incorporate privacy into the telecoms services and networks domain. For example, GS INS 001 on IdM Interoperability between Operators or ISPs with Enterprise provides mechanisms, interfaces and protocols which allows scenarios (e.g. SaaS) where third party providers may retrieve or share attributes through with the operator, or reuses its authentication, to allow Single Sign-On, for example. GS INS 003 on distributed user profiles connect access control with societal privacy needs and the associated legal framework. New work items have been defined for key areas, such as establishing an enforcement framework to ensure that key actions are carried out when accessing data and processes, as well as for establishing user consent.

Further information about the group at the following URL (http://portal.etsi.org/portal/server.pt/community/INS/345)

SOCIETIES' partners involved: PTIN, NEC (Chairman position)

2.1.21 W3C Web Real-Time Communications Working Group

This working group is aimed at defining APIs to enable building applications that can be run inside a browser, requiring no extra downloads or plugins, that allow communication between parties using audio, video and supplementary real-time communication, without having to use intervening servers (unless needed for firewall traversal, or for providing intermediary services). This is definitely an application enabler of interest for SOCIETIES.

Further information about the group at the following URL (http://www.w3.org/2011/04/webrtc-charter.html) SOCIETIES' partners involved: TI

2.1.22 XMPP Standards Foundation

The work with XMPP within SOCIETIES attempts to use as strictly as possible existing XMPP and XMPP Extension specifications. However, there are a number of a core communication features that XMPP does not provide. Where applicable, SOCIETIES should extend XMPP using the defined extension processes. This way the resulting extension specifications may be submitted for consideration by the XMPP Standards Foundation board.

Further information about the XMPP Standards Foundation at the following URL (http://xmpp.org/about-xmpp/xsf/)

SOCIETIES' partners involved: PTIN, TRIALOG

Focus on the first sub-list of concrete objectives and initial plans

3.1.1 Standardization objectives and plan

In the following table, we provide an initial selection of the most relevant standardization targets and we try to detail further SOCIETIES' objectives towards them. For each entry we provide the type of relationship we aim at building towards the group, e.g. "Input" if SOCIETIES plans to primarily make use of the specific group results and/or "Output" if SOCIETIES plans to impact concretely the work of the specific group.

There is also a further detail on the scope and motivation behind the activity, and an hypothetical roadmap of contribution which for the time being is based on the group status and timeline

Item	I/O	Description of technology to be standardized	Scope and motivation	Relevant SOCIETIES WP	Roadmap
W3C Social Web Incubator Group	I	The group aims to a definition of Social Web terminology, an analysis of the Identity problem space, profiles, privacy, activity	SOCIETIES leverage on the paradigm of distributed Social Web	WP3	The group is closed, SOCIETIES is leveraging on its results
W3C Context Awareness and Personalizatio n Working Group	I.	Context Ontology, as an extension of the previous W3C Delivery Context Ontology	This group aims at defining extensible modular ontologies for personal preferences, device capabilities and environmental conditions	WP5	Work in progress
W3C Device API Working group	I/O	The group is defining standard APIs for device functionalities access from mobile Web applications.	SOCIETIES is targeting HTML5 thin clients, it is therefore critical to actively follow and contribute to this work in order to widen the availability of APIs for interacting with devices. The group is actually targeting the specification of the following APIs: camera, capture, generic sensor, messaging, volume level, network etc.	WP4	Telecom Italia is involved and creating the conditions for contributing SOCIETIES results in the future.
W3C Geolocation API	I	The group is defining standard APIs for accessing location information (geolocation	SOCIETIES is targeting HTML5 thin clients, and location based services some use cases which	WP4	Telecom Italia is involved and creating the conditions

		coordinates) from device	are relevant to SOCIETIES are already in the scope of the group such as: Find points of interest in the user's area, Annotating content with location information, Show the user's position on a map, Alerts when points of interest are in the user's vicinity, Upto-date local information and Location-tagged status updates in social networking applications		for contributing SOCIETIES results in the future.
W3C WebID	I/O	The group is defining standard mechanism to implement a distributed Identity mechanisms ecosystem on the Web	SOCIETIES is planning to make use of this group results. Distributed Identity management is a key facet for SOCIETIES. A WebID is a way to uniquely identify a person, company, organization, or other agent using a URI One direct use of this concept is the protocol known as foaf+ssl that is now being worked on in the WebID Incubator Group at the W3C.	WP3	Telecom Italia is involved and creating the conditions for contributing SOCIETIES results in the future.
W3C Federated Social Web	I/O	The group is defining architectural guidelines to set up open and distributed Social Networking environments on the Web	SOCIETIES is planning to make use of this group's results. The Federated Social Web Group's deliverables will primarily be a set of user stories with associated test-cases that build the core functionality of a federated social web, and the overall technical architecture for a federated social web should be investigated. One input for this architecture will be OStatus, which is an architecture combining Pubsubhubbub, WebFinger, ActivityStreams, and PortableContacts. However, many different kinds of architectures will also be used as	WP3	Telecom Italia . NEC, HWU and PTIN are involved and creating the conditions for contributing SOCIETIES results in the future. They also participated to the Federated Social Web Summit in Berlin, presenting the Societies approach.

			inputs into the discussion, such as SMOB (RDFa and SPARQL) and XMPP-based architectures. The Federated Social Web Incubator Group will also strive to help mature the specifications that allow web developers to implement federated social web capabilities. These deliverables will apply to both social websites ran from the serverside but hopefully also to client-side environments such as desktop and mobile browsers.		
W3C Web Real-Time Communicati ons Working Group	Ι	The group is defining standard API to implement real time communications in browsers based on WRC protocol defined by IETF	SOCIETIES is planning to make use of this group's results. The group is targeting Web API for encoding and other processing of those media streams; API functions for establishing direct peer-to-peer connections, including firewall/NAT traversal; API functions for decoding and processing (including echo cancelling, stream synchronization and a number of other functions) of those streams at the incoming end and Delivery to the user of those media streams via local screens and audio output devices (partially covered with HTML5)	WP4	Telecom Italia is involved and creating the conditions for contributing SOCIETIES results in the future.
OMA Mobile Social Networking Work Item	I/O	The group is defining guidelines for interoperable Mobile Social Network (MSN) clients	This Work Item aims at allowing large-scale deployments and interoperability of Mobile Social Network(MSN) Clients and MSN Servers in a timely manner, further guaranteeing social network federation so that users can easily communicate with users on other SNs and	WP3	Telecom Italia is involved and creating the conditions for contributing SOCIETIES results in the future.

			migrate their data. In particular, this Work Item intends specifying a new MSN Enabler, by identifying a coherent subset of functionalities specific to MSN that can be rapidly specified as a core specification.		
Standards for Machine to Machine Communicati ons.	I/O	Further information about the group at the following URL (http://www.etsi.org/Website/Technologies/M2M.aspx)	The Technical Committee's overall objective is creating open standards for m2m communications to foster the creation of a future network of objects and services so that already existing and rapidly growing m2m businesses based on vertical applications using a multitude of technical solutions and disperse standards can be turned to interoperable m2m services and networked businesses.	WP4	NEC is active in this group and the standardization work carried out here can be relevant to SOCIETIES research activities in the area of context and pervasiveness.

The reader must have noticed that we have mentioned several times in D9.1 Initial standardization plan that we will be able to concretely impact standards by when SOCIETIES' technical framework will be better defined. On the other hand it is not feasible to begin contributions without the preparatory works (explained in D9.1) especially for an ambitious platform like SOCIETIES which aims to focus on interoperability as a critical asset. At the time of writing some technical task forces have been identified to tackle the development of specific parts of the platform. We expect them to produce concrete results in 6 months. Their work will produce a concrete screening on technological adoptions and gaps to be filled. It will be the baseline for identifying and targeting specific contributions. We set the date for effectively engaging standard bodies close to M18.

4 Further initiatives and highlights

In the activity of creating the basis for impacting the specific standardization activity. The involved partners have been already fostering some initiatives:

- SOCIETIES architecture has been presented at the Federated Social Web Summit in Berlin in June
- SOCIETIES has presented its standardization roadmap during the Service Front Ends meeting which has been organized in September by the European Commission
- SOCIETIES will have a presentation slot at the W3C Social Business Jam, an online conversation among leaders from around the world about the current state of social business, the future role that social technologies can play in improving the bottom line, and how social technology should evolve in order to support business objectives.
- SOCIETIES has been exploring of formalizing some concrete (early)standardization process by means of the W3C community groups format. W3C Community Groups are open forums, without fees, where Web developers and other stakeholders develop specifications, hold discussions, develop test suites, and connect with W3C's international community of Web experts.