



October 26, 2025 | Bologna

# W3C WebAgents Community Group

Andrei Ciortea, Rem Collier, Ege Korkan, and Antoine Zimmermann



# W3C WebAgents Community Group

## Goals

This CG aims to investigate the design of a new class of Web-based Multi-Agent Systems (MAS) that:

- inherit the beneficial architectural properties of the Web (Internet-scalability, evolvability, simplicity, etc.),
- preserve the beneficial properties of MAS (adaptability, openness, robustness, etc.), and
- are human-centric (support transparency, usability, accountability, etc.).

We are especially interested in the use of Linked Data and Semantic Web standards for weaving a hypermedia fabric that mediates uniform interaction among heterogeneous entities: people, artificial agents, (low-power) devices, digital services, knowledge repositories, etc. — for this reason, we refer to this new class of Web-based MAS as Hypermedia MAS. This community group brings together experts actively contributing to advances in autonomous agents and MAS, the Web Architecture and the Web of Things, Semantic Web and Linked Data, and Web standards in general — as well as any other areas that could contribute to this approach for distributed intelligence on the Web.

# W3C WebAgents Community Group

## Scope of Work

To achieve its goals, the WebAgents CG pursues the following activities:

- Organizing events such as hackathons, plugfests, workshops, etc.
- Writing Community Group Reports on the findings of the CG.
- Curating online materials to help promote the work of the CG and to support experimenting with Hypermedia MAS.
- Creating liaisons with other groups at the W3C (Community Groups) that are relevant to the topics explored in this CG.
- Creating liaisons with the research community and other relevant groups.

## Out of Scope

Under this initial charter, the work of the WebAgents CG is in an exploratory phase — and the scope of the relevant topics also needs to reflect the interests of CG members.

The WebAgents CG aims to maintain its complementarity with other CGs. For instance, while many of the topics related to the overall objective of this CG draw from (Decentralized) AI research, its main focus is primarily on architectures for and the engineering of Hypermedia MAS. Other W3C groups might be better suited for other AI-related topics (e.g., see the [Cognitive AI CG](#), the [AI Knowledge Representation CG](#), or the [Human-Centric AI CG](#)). The WebAgents CG provides a unique forum for everyone interested to integrate these aspects for exploring and designing large-scale, open, long-lived, and decentralized Web-based systems of people and intelligent (artificial) agents.

# Hybrid Meeting, Oct. 25

## TABLE OF CONTENTS

### Abstract

### Status of This Document

#### 1. Introduction

#### 2. Terminology

#### 3. Agents on the Web

##### 3.1 Visions of Agents on the Web

##### 3.2 Conceptual Dimensions

##### 3.3 Architectural Considerations

###### 3.3.1 Design Goals

###### 3.3.2 Architectural Patterns

###### 3.3.3 Considerations

##### 3.4 State of Web-based Multi-Agent Systems

###### 3.4.1 Agents and Web Services

###### 3.4.2 Agents and the Decentralized Social Web

###### 3.4.3 Agentic AI

#### 4. Identification

## WebAgents Community Group Report on Interoperability for Agents on the Web

Draft Community Group Report 25 October 2025

6

ReSpec

### Latest published version:

none

### Latest editor's draft:

<https://w3c-cg.github.io/webagents/TaskForces/Interoperability/Reports/report-interoperability.html>

### Editors:

[Andrei Ciortea](#) (Inria and University of St.Gallen)

[Rem Collier](#) (University College Dublin)

### Authors:

[Jérémy Lemée](#) (University of St.Gallen)

[Your Name](#)

### Feedback:

[GitHub w3c-cg/webagents](#) (pull requests, new issues)

Copyright © 2025 the Contributors to the WebAgents Community Group. This document is published by the [Autonomous Agents on the Web Community Group](#). A human-readable [summary](#) is available.

### Abstract

Advances in large language models (LLMs) that can act as autonomous agents and multi-agent systems. Like previous systems designed for specific tasks, highlighting the need for



<https://bit.ly/hyperagents2025-webagents-report>

What should be the **role of the Web** in the emerging landscape of Agentic AI?

What are the **relevant standards** within and maybe also outside the W3C?

What are the **standardization gaps** (if any)?

# Hybrid Meeting, Oct. 25

## TABLE OF CONTENTS

### Abstract

### Status of This Document

#### 1. Introduction

#### 2. Terminology

#### 3. Agents on the Web

##### 3.1 Visions of Agents on the Web

##### 3.2 Conceptual Dimensions

##### 3.3 Architectural Considerations

###### 3.3.1 Design Goals

###### 3.3.2 Architectural Patterns

###### 3.3.3 Considerations

##### 3.4 State of Web-based Multi-Agent Systems

###### 3.4.1 Agents and Web Services

###### 3.4.2 Agents and the Decentralized Social Web

###### 3.4.3 Agentic AI

#### 4. Identification

## WebAgents Community Group Report on Interoperability for Agents on the Web

Draft Community Group Report 25 October 2025

Latest published version:

none

Latest editor's draft:

<https://w3c-cg.github.io/webagents/TaskForces/Interoperability/Reports/report-inter>

Editors:

[Andrei Ciortea](#) (Inria and University of St.Gallen)

[Rem Collier](#) (University College Dublin)

Authors:

[Jérémy Lemée](#) (University of St.Gallen)

[Your Name](#)

Feedback:

[GitHub w3c-cg/webagents](#) (pull requests, new issue, open issues)

Copyright © 2025 the Contributors to the WebAgents Community Group Report on Interoperability for Agent published by the [Autonomous Agents on the Web Community Group](#) under the [W3C Community Contributor License Agreement](#). A human-readable [summary](#) is available.

## Abstract

Advances in large language models (LLMs) that can follow instructions and use tools have enabled the development of autonomous agents and multi-agent systems. Like previous generations of agents, LLMs are designed for specific tasks, highlighting the need for open networks of agents that comp

6

ReSpec

	Relevant Concepts	Agent Interaction	Tool Use	Identifiers	Descriptions	Discovery Mechanisms	Arch. Style
MCP	<a href="#">Tool</a> , <a href="#">Resource</a> , <a href="#">Prompt</a>	N/A	Function calling	Strings (Tools and Prompts), URIs (Resources)	<a href="#">Tool definition</a> , <a href="#">Resource descriptions</a> , <a href="#">Prompt definitions</a> , (JSON)	Directories (via */list)	Client-Server with streaming RPC connectors (JSON-RPC 2.0, HTTP+SSE)
A2A	<a href="#">Agent Card</a> , <a href="#">Task</a>	Task invocation	N/A	Strings?	<a href="#">Agent Card</a> , <a href="#">Task description</a> , (JSON)	Well-known URIs, Directories	Async. Client-Server with streaming RPC connectors and webhooks (JSON-RPC 2.0, HTTP+SSE)
ANP	Agent, <a href="#">Agent Description</a> , Communication Protocol	Communication protocols with protocol negotiation	N/A	W3C DID with custom <a href="#">Web-based Agent DID Method</a>	<a href="#">Agent Description</a> (RDF/JSON-LD)	Directories	Peer-to-Peer? (WebSocket subprotocol)
LMOS	<a href="#">Agent</a> , <a href="#">Agent Group</a> , <a href="#">Tool</a> , <a href="#">Agent Description</a> , <a href="#">Tool Description</a>	Message passing? (in principle: TD interaction affordances)	Property Affordances, Event Affordances, Action Affordances ( <a href="#">W3C WoT TD</a> )	Uniform identifiers (IRIs, W3C DIDs)	<a href="#">Agent Description</a> , <a href="#">Tool Description</a> (W3C WoT TD; JSON, RDF/JSON-LD)	DNS-SD/mDNS, Well-known URIs, Directories ( <a href="#">W3C WoT Discovery</a> )	W3C WoT Arch.? with protocol bindings for HTTP and WebSocket subprotocol

# Hybrid Meeting: Architectural Patterns

CET	Agenda
14:00 - 14:15	Welcome & Agenda Setting
14:15 - 15:30	Focused Discussion
15:30 - 16:00	Coffee Break
16:00 - 17:00	Demo / Hands-on session
17:00 - 17:30	Wrap-up and Next Steps



What **goals** should guide the design of Web-based Multi-Agent Systems (MAS)?

How can the **Web** contribute to those design goals?

What is a **minimal set of architectural patterns** for Web-based MAS?

What **architectural constraints** do we need in order to fully leverage the Web?

# W3C WebAgents Community Group



<https://www.w3.org/community/webagents/>



# Any Questions / Comments / Doubts / Concerns?





# Images

<https://freepik.com>