

JSON-LD Web Vocabulary

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other

Project Details

Domain	Specification Domain
Project Identifier	P1111
Bureau Decision #	#2112054, #2206083, #2206085, #2212017, #2304032, #2304033, #2309068, #2310073
Project Proposal Status	Official
Project Page	JSON-LD Web Vocabulary
Supporting VC	Marek Laskowski
Project Lead	Nis Jespersen
Project Chair	Maria CECCARELLI
HoD Support	AU, RU, UA, BR
Status	Completed
Version	2.0
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Draft Development Completion	2023-05-31
Publication Date	2023-08-31

Project Purpose

Traditional document-based message exchange is only one way of integrating data across supply chains. A number of fast growing alternatives are emerging.

- Web APIs (Application Programming Interfaces) offer a more granular collection of distributed services designed to get data from the source of truth. So, rather than exchange data, just exchange references to the data – for example, given a containerID, then get more details about that container from BIC (<https://www.bic-code.org/api-information-page/>)
- IoT (internet of things) data streams provide a constantly updated stream of small data snippets from sensors on containers, gates, trucks, etc. So, rather than exchange documents about a thing, subscribers can consume real time data streams - for example to get continuous information about the location of a vessel or the temperature in a container.
- DIDs (Decentralised Identifiers) and VCs (Verifiable Credentials) are fast being adopted as a scalable means to attach high integrity digital proof to physical things. For example, a traveller's covid vaccination certificate, or a supply chain certificate like a certificate of origin or phytosanitary certificate. Rather than being exchanged in a B2B or G2G channel, a VC is issued to a holder (eg a trader) and presented to a verifier (eg a regulator) who can verify authenticity and extract data without contacting the issuer.

All of these emerging technologies depend on common semantics in order to achieve scalability. But the semantics are managed as web vocabularies where each term has a specific meaning and can be composed dynamically in any order. In this world, the dictionary is more important than the document. The most popular syntax for publishing and managing these semantic dictionaries in JSON-LD. There are already a number of very important web vocabularies in use today.

- Schema.org is the worlds most used JSON-LD vocabulary. It contains hundreds of standard classes, some of which overlap with UN /DEFACT standards (eg <https://schema.org/Organization>). The full vocabulary is at <https://schema.org/version/latest/schemaorg-current-https.jsonld>
- GS1 is also publishing their standards as web vocabularies <https://www.gs1.org/gs1-web-vocabulary>
- IATA is moving quickly to support decentralized information sharing architectures – see https://www.iata.org/contentassets/a1b5532e38bf4d6284c4bf4760646d4e/one_record_tech_insight_decentralized_architecture_with_linked_data.pdf and has already published JSON-LD vocabularies - https://github.com/IATA-Cargo/ONE-Record/tree/master/working_draft/API/json-ld
- Even the W3C has started publishing a supply chain traceability vocabulary to support their DID/VC work for real implementations of verifiable credentials in the supply chain – see the specification here <https://w3c-ccg.github.io/traceability-vocab/> and the actual vocabulary here <https://w3c-ccg.github.io/traceability-vocab/contexts/traceability-v1.jsonld>

UN/CEFACT has perhaps the world's most mature supply chain vocabulary (CCL and RDMs) and also an outstanding and trusted brand as a standards authority. But we do not publish our semantics in a usable way for modern web use cases. We risk losing relevance as a standards authority if we continue to focus only on document standards and do not support more modern technologies such as APIs, IoTs, and VCs. Therefore, the purpose of this project is to catch up with other semantic publishers and re-establish UN/CEFACT as the highest quality and authoritative publisher of supply chain semantic standards by publishing a UN/CEFACT JSON-LD vocabulary that includes all classes, properties, and code sets.

Project Scope

This project will deliver a high quality JSON-LD vocabulary published to a well-known unece domain and maintained throughout the ongoing development of the CCL, RDMs, and code lists. The vocabulary will be both human readable and machine readable and will support the international community in the development of interoperable APIs, IoT streams, and Verifiable Credentials. In order to support that outcome, the project will deliver

- A technical specification that describes the JSON-LD structure and architecture. This work is already 90% completed as a technical guidance note from the RDM2API project – please refer to “draft-rdm2api-json-ld-ndr-docx at <https://uncefact.unece.org/pages/viewpage.action?pageId=43384856>
- A human and machine readable JSON-LD vocabulary on a unece web domain. This work is already 90% completed and a draft vocabulary is available at <https://service.unece.org/trade/uncefact/vocabulary/uncefact/> (human readable) and <https://service.unece.org/trade/uncefact/vocabulary/uncefact.jsonld> (machine readable)
- A publishing mechanism that allows the secretariat to continue to easily update the vocabulary as CCL, RDM, and code list changes happen.

Project Deliverables

The project deliverables are:

Deliverable 1: Technical Specification

Deliverable 2: Published & maintained JSON-LD vocabulary

Exit Criteria

The exit criteria will be:

- Exit Criteria for Deliv. 1: Public Review logs demonstrating all comments have been satisfactorily resolved; Final document ready for publication.
- Exit Criteria for Deliv. 2: Published & maintained JSON-LD vocabulary

Project Team Membership and Required Functional Expertise

Membership is open to UN/CEFACT experts with broad knowledge in the area of: CCL/RDM Business Semantics, JSON-LD technology.

In addition, Heads of Delegations may invite technical experts from their constituency to participate in the work.

Experts are expected to contribute to the work based solely on their expertise and to comply with the UN/CEFACT Code of Conduct and Ethics and the policy on Intellectual Property Rights.

Geographical Focus

The geographical focus of the project is global.

Initial Contributions

- RDM2API-JSON-LD Vocabulary Guidelines – a deliverable from the RDM2API project can be re-used as the basis for the technical specification
- <https://service.unece.org/trade/uncefact/vocabulary/uncefact/> - existing published draft vocabulary can be re-used as the basis for a final vocabulary publishing framework
- UNCEFACT Projects (unece.org) – Application Programming Interface Technical Specification (API TechSpec)

Resource Requirements

Participants in the project shall provide resources for their own participation. The existence and functioning of the project shall not require any additional resources from the UNECE secretariat.

Meetings Schedule, Standing Agenda & Link

Meetings are held Wednesdays 10:00–11:00 Central European Time, fortnightly starting January 19th 2022 (i.e. 19/01/2022, 02/02/2022, 16/02/2022...).

The standing agenda is to review open Pull Requests, then open Issues.

A host and a scribe will be appointed at the beginning of each meeting. Meeting minutes will be shared on this repo.

Google Meet link: <https://meet.google.com/mga-zknx-ofb>

Phone dial in: <https://tel.meet/mga-zknx-ofb?pin=6104012882984> PIN: 245 729 010#

Project Proposal Files

File	Modified
PDF File JSON-LD-WebVocabularyProjectProposal-v2.pdf	Dec 16, 2021 by Aruna VIVEKANANTHAM
PDF File 220112 - 3x JSON HoD support AU.pdf	Dec 22, 2021 by SHLYKOVA
PDF File 220112 - 3x JSON HoD support RU.pdf	Dec 22, 2021 by SHLYKOVA

PDF File 220112 - 3x JSON HoD support UA.pdf

Dec 30, 2021 by Kevin Macdonald BISHOP

PDF File 220112 - 3x JSON HoD support BR.pdf

Jan 11, 2022 by Kevin Macdonald BISHOP

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