SDF Extension for Non-Affordance Information

draft-hong-asdf-sdf-nonaffordance-02

– IETF 123 ASDF WG –

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Main Goal

- Introduce a structured way to represent non-interactive, descriptive metadata within SDF models - without overloading affordance semantics

- Why is this needed?
  - Current SDF focuses on affordances (Property, Action, Event)
  - However, real-world Things often require non-interactive metadata
    - Physical dimensions, installation location, manufacturer & certification information, contextual descriptors (e.g., indoor/outdoor)

Proposed Extension: sdfNonAffordance

- Introduce new class: sdfNonAffordance
  - For static, descriptive, and non-actionable information
  - Maintains semantic clarity by separating it from interactive affordances
  - Enables tooling support, interoperability, and digital twin consistency

- **A lightweight, backward-compatible extension to SDF** that enhances its expressiveness for modeling real-world Things
  - Does not break or require modification of existing SDF models
  - Fits into the SDF structure without disrupting affordance semantics
  - Allows gradual adoption and coexistence with legacy tools and models

Why not using 'sdfProperty'

- Technically possible to model it using 'sdfProperty’
- However, this approach introduces semantic confusions:
  - Users may misinterpret the field as observable or interactive
  - Developers may implement unnecessary runtime I/O interfaces
  - Tools and UIs may treat static metadata as operational data

Runtime Message Formats

- Defines message structures to express sdfNonAffordance data at runtime - enabling communication of static metadata

Message type	Purpose
contextSnapshot	Sends a complete snapshot of all sdfNonAffordance data for a Thing or object
identityManifest	Transfers unchanging identity-related metadata (e.g., manufacturer, model, serial number).
contextPatch	Communicates only updated fields in non-affordance data (efficient partial update).

Current status

- **Under call for WG adoption** (by July 28, 2025)

- draft-hong-asdf-sdf-nonaffordance-02 (updates)
  - Section 3 Motivation and Use Cases
    - Expanded to clearly articulate the limitations of using sdfProperty for static, non-interactive metadata
    - Emphasized the importance of semantically distinguishing static metadata from dynamic affordances for robust interoperability
  - Section 4 Model Extension
    - Revised examples of optional runtime message formats (contextSnapshot, identityManifest, contextPatch) to support use of static metadata in dynamic contexts

Discussion issue (1)

- Change the name of the new class, sdfNonAffordance
  - sdfContext
  - sdfAnnotation
  - sdfManifest

Discussion issue (2): sdfNonAffordance vs. instance information

- **Shared Goal, Different Focus**
- Both drafts aim to represent non-affordance information - such as location, identity, manufacturer, and other static or contextual metadata that is not modeled as sdfProperty, sdfAction, or sdfEvent.

Key Differences in Approach

Aspect	sdf-nonaffordance Draft	instance-information Draft
Scope	Model-level structure	Runtime instance messages
Focus	Descriptive metadata inside SDF models	Contextual metadata in operational data
Mechanism	Introduces sdfNonAffordance class	Defines sdfInstance, sdfInstanceOf, sdfConstructor, proofshot, proofshot delta.
Integration	Embedded in static SDF model	Decoupled from model; message-based
Primary Use	Definition of Things and digital twins	Representation of instance state over time

Q&A

Thank you