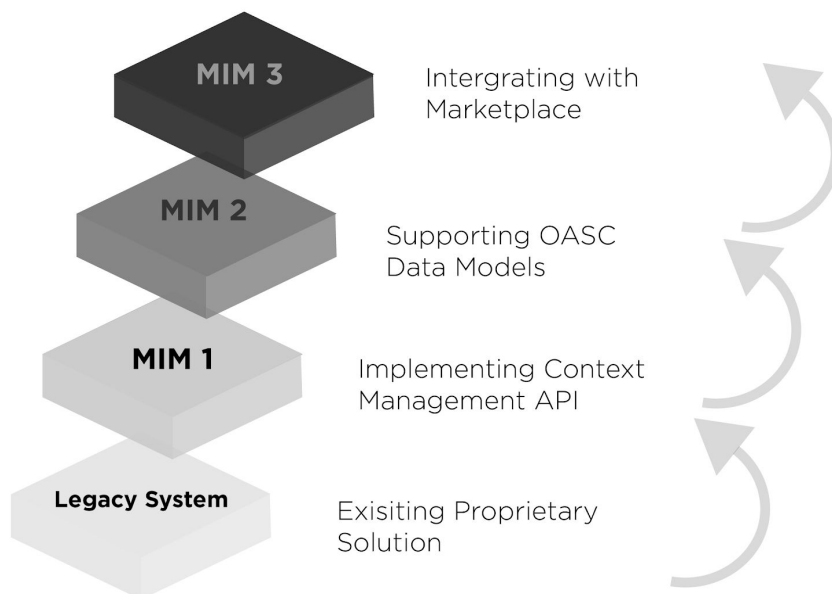# Annex 1: Minimal Interoperability Mechanisms (MIMs)

Introduction

Each city and community is different from one another, which is reflected by their approach to digital transformation: But while differing in many respects, cities also share common needs:

- Increasing efficiency and effectiveness of government
- Driving down costs of innovation and procurement
- Policy-making based on more and better data
- Stimulating the local economy and innovation ecosystem

Unlocking the Benefits of Interoperability

Minimal Interoperability Mechanisms (MIMs) are universal tools for achieving interoperability of data, systems, and services between cities and suppliers around the world. As they are based on an inclusive list of baselines and references, MIMs take into account the different backgrounds of cities and communities and allow cities to achieve interoperability based on a minimal common ground.

Implementation can be different, as long as crucial interoperability points in any given technical architecture use the same interoperability mechanisms.

The MIMs are vendor-neutral and technology-agnostic, meaning that anybody can use them and integrate them in existing systems and offerings.

OASC Minimal Interoperability Mechanisms

On 16 January 2019, the OASC Council of Cities have adopted officially the following mechanisms as OASC Minimal Interoperability Mechanisms (OASC MIMs):

Table 1: OASC Minimal Interoperability Mechanisms

MIM	MIM Name	Interoperability Point	Description
1	OASC Context Information Management MIM	Context Information Management API	This API allows to access to real-time context information from different cities.
2	OASC Data Models MIM	Shared Data Models	Guidelines and catalogue of common data models in different verticals to enable interoperability for applications and systems among different cities.
3	OASC Ecosystem Transactions Management MIM	Marketplace API	The Marketplace API exposes functionalities such as catalogue management, ordering management, revenue management, Service Level Agreements (SLA), license management, etc. Complemented by marketplaces for hardware and services.

The underlying baselines and standards supporting the MIMs are listed in Table 2 below. These standards and baselines will be curated transparently and in a continuous process by OASC.

Table 2: OASC MIMs: Underlying Standards and Baselines

MIM	Name	Standards & [Baselines]	Reference
1	OASC Context Information Management MIM	ETSI NGSI-LD API[1], OMA NGSI, ITU- T SG20/FG-DPM [FIWARE NGSI]	Reference Architecture for IoT-Enabled Smart Cities (SC-D2.10)
2	OASC Data Models MIM	[SAREF, FIWARE, GSMA, schema.org, SynchroniCity RZ + partner data models]	Guidelines for the definition of OASC Shared Data Models (SC-D2.2) Catalogue of OASC Shared Data Models for Smart City domains (SC-D2.3; to be released)
3	OASC Ecosystem Transaction Management MIM	[TM Forum Business Ecosystem API, FIWARE Business Ecosystem and Marketplace Enabler API, SynchroniCity API]	Basic Data Marketplace Enablers (SC-D2.4) Guidelines for the integration of IoT devices in OASC compliant platforms (SC-D2.6)

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[1] https://www.etsi.org/images/files/ETSIWhitePapers/etsi_wp31_NGSI_API.pdf