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TECHNICAL REPORT

Internet of Things (IoT) – IoT-based management of tangible cultural heritage assets –
Part 1: Framework



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FOREWORD

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The text of this Technical Report is based on the following documents:

Draft	Report on voting
JTC1-SC41/480/DTR	JTC1-SC41/492A/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1, and the ISO/IEC Directives, JTC 1 Supplement available at www.iec.ch/members_experts/refdocs and www.iso.org/directives.

A list of all parts in the ISO/IEC 30189 series, published under the general title *Internet of Things (IoT) – IoT-based management of tangible cultural heritage assets*, can be found on the IEC and ISO websites.

INTRODUCTION

Cultural heritage assets can include museums, historical landmarks, artworks, and other cultural artifacts. Effective management of cultural heritage is crucial for preserving these important assets for future generations. The cultural heritage management can include efforts to preserve and protect cultural heritage assets from damage, deterioration and theft.

The Internet of Things (IoT) technology can be used for management of tangible cultural heritage assets. In particular, IoT-based sensing, monitoring and location tracking can be performed for management of tangible cultural heritage.

In the status monitoring, IoT technology can be used to monitor the condition of cultural heritage or assets, such as the temperature and humidity of a museum. This is important because certain environmental conditions can cause damage to and deterioration of valuable cultural assets. By monitoring these conditions in a real-time manner, it is possible to take corrective action to prevent damage and ensure that the assets are being preserved in optimal conditions.

In the location tracking, IoT technology can be used to keep track of various cultural assets. By applying appropriate IoT sensors to these assets, it is possible to track their location and movement in a real-time manner. This can help prevent theft and ensure that valuable assets are properly protected. For example, if an artifact is removed from its display, the IoT sensor will trigger an alert, enabling museum staff to quickly take actions to secure the asset.

This document describes how IoT technology can be used to effectively manage a variety of cultural heritage assets. This document is purposed to provide useful information or guidelines for development of platforms or services on IoT-based management of cultural heritage.

In particular, this document focuses on management of stand-alone cultural heritage assets. A stand-alone cultural heritage is a single cultural asset that is not part of a larger collection or group of assets. Stand-alone cultural assets can be important to a particular community or group and can be preserved and protected in order to preserve the cultural heritage of that group. In the context of cultural heritage management, stand-alone cultural assets can be treated differently than assets that are part of a larger collection, as they possibly do not have the same level of institutional support or resources available for their preservation.

IEC TR 30189 consists of two parts.

– Part 1 describes a framework for the use of IoT technology for management of tangible cultural heritage assets, which includes the associated functional entities and information flows.
– Part 2 describes a set of use cases for IoT-based management of tangible cultural heritage assets, based on the framework, which include implementations and experimentations for the associated services.

INTERNET OF THINGS (IOT) – IOT-BASED MANAGEMENT OF TANGIBLE CULTURAL HERITAGE ASSETS –

Part 1: Framework

1 Scope

This document describes a framework for the use of IoT technology for management of tangible cultural heritage assets, which includes the associated functional entities and information flows.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1
cultural heritage
legacy of physical objects and intangible attributes of a group or a society that are inherited from past generations, maintained and protected in the present and preserved for future generations

[SOURCE: ISO 18461:2016, 2.1.3]

3.2
Internet of Things
infrastructure of interconnected entities, people, systems and information resources together with services which processes and reacts to information from the physical world and virtual world

[SOURCE: ISO/IEC 20924:2024, 3.2.8]