NEW WORK ITEM PROPOSAL	
Closing date for voting	Reference number (to be given by the Secretariat)
Date of circulation	**ISO/TC / SC N**
Secretariat	☐ **Proposal for new PC**

A proposal for a new work item within the scope of an existing committee shall be submitted to the secretariat of that committee with a copy to the Central Secretariat and, in the case of a subcommittee, a copy to the secretariat of the parent technical committee. Proposals not within the scope of an existing committee shall be submitted to the secretariat of the ISO Technical Management Board.

The proposer of a new work item may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, or organization in liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General.

The proposal will be circulated to the P-members of the technical committee or subcommittee for voting, and to the O-members for information.

IMPORTANT NOTE: Proposals without adequate justification risk rejection or referral to originator.
Guidelines for proposing and justifying a new work item are contained in Annex C of the ISO/IEC Directives, Part 1.

Proposal (to be completed by the proposer)

Title of the proposed deliverable.
(in the case of an amendment, revision or a new part of an existing document, show the reference number and current title)

English title **Internet of Things (IoT) in the supply chain - Containerized cargo**

French title (if available) **Internet des objets (IdO) dans la chaîne d'approvisionnement - Le fret conteneurisé**

Scope of the proposed deliverable.

This International Standard specifies the component pieces necessary for the effective implementation of Internet of Things applications for containerized cargo. This International Standard specifies the necessary forms of identification, communications, types of devices, sensors, actuators, means of localization and tracking, appropriate security, methods of storage, and processing of IoT data.

Purpose and justification of the proposal.

For more than a decade ISO TC 122 has written standards addressing linear bar code symbols, two-dimensional symbols, RFID, and the basics of sensor technology for containerized cargo. It is now possible to provide any time connection from anywhere to anything through the use of IoT technology. The use of location-based technologies, combined with Internet connectiveity, and mobile phone-like communications are now able permit a cargo owner to identy where that cargo is located, anywhere in the world, by simply calling the cargo. Likewise, if the cargo is exposed to environmental conditions beyond those defined, by introducing sensor technology, the cargo is able to call the cargo owner, advise of its condition, and report its location.

The need exists within all IoT applications to define the means to achieve any time/any where/any thing connectivity.

Failing to achieve a common means of IoT implementations can raise the cost of product design and the lack of an international solution can provide a barrier to trade.

If a draft is attached to this proposal,:

Please select from one of the following options (note that if no option is selected, the default will be the first option):

☒ Draft document will be registered as new project in the committee's work programme (stage 20.00)
☐ Draft document can be registered as a Working Draft (WD – stage 20.20)
☐ Draft document can be registered as a Committee Draft (CD – stage 30.00)
☐ Draft document can be registered as a Draft International Standard (DIS – stage 40.00)

Is this a Management Systems Standard (MSS)?

☐ Yes ☒ No

Indication(s) of the preferred type or types of deliverable(s) to be produced under the proposal.

☒ International Standard ☐ Technical Specification ☐ Publicly Available Specification ☐ Technical Report

Proposed development track ☐ 1 (24 months) ☐ 2 (36 months - default) ☒ 3 (48 months)

Known patented items (see ISO/IEC Directives, Part 1 for important guidance)

☐ **Yes** ☒ **No** **If "Yes", provide full information as annex**

A statement from the proposer as to how the proposed work may relate to or impact on existing work, especially existing ISO and IEC deliverables. The proposer should explain how the work differs from apparently similar work, or explain how duplication and conflict will be minimized.

There are no known ISO or IEC deliverables addressing the Internet of Things, however components of IoT have been subject of various ISO and IEC standards. It is not intended that this work item will replace existing standards, but are intended to incorporate by means of reference existing ISO and IEC standards, as well as incorporating by means of reference the work of other SDOs.

A listing of relevant existing documents at the international, regional and national levels.

ISO 17363, ISO 18185, ISO/IEC/IEEE 21450, ISO/IEC/IEEE 21451-1, ISO/IEC/IEEE 21451-2, ISO/IEC/IEEE 21451-4, ISO/IEC/IEEE 21451-5, ISO/IEC/IEEE 21451-7, ISO/IEC/IEEE 8802-15-4, ISO/IEC/IEEE 8802-11, ISO/IEC 29161, ISO/IEC 15963, ISO/IEC 15459, ISO/IEC 15424, IEEE EUI, ISO/IEC 29167, ISO/IEC 18000-63. ISO/IEC 24730.

A simple and concise statement identifying and describing relevant affected stakeholder categories (including small and medium sized enterprises) and how they will each benefit from or be impacted by the proposed deliverable(s)

A significant portion of mobile application providers, sensor manufacturers, RFID/RTLS manufacturers, location-based service providers, and distribution organizations fall within the category of less than 250 employees with sales of less than 75 million dollars (USD). Each of thes SMEs will benefit by the uptake in business resulting from IoT serving as a revenue generator as opposed to simply a topic for white papers. Larger organizations, such as telcos and semiconductor manufacturers will benefit as well. Telcos will be impacted with a request to establish a global communication pricing for IoT messaging across various carriers.

Liaisons:

A listing of relevant external international organizations or internal parties (other ISO and/or IEC committees) to be engaged as liaisons in the development of the deliverable(s).

JTC 1/SC 31, JTC 1/WG 7, JTC 1/SC 6, JTC 1/SC 17, JTC 1/SC 25, JTC 1/SC 27, JTC 1/SC 29, JTC 1/SC 32, JTC 1/SC 35, JTC 1/SC 37, JTC 1/SC 38, ISO TC 104, ISO TC 204, ISO TC 247, ISO TC 122, ETSI M2M, 3GPP, OGC, IETF, XMPP, ITU-T JCA-IoT, ITU-T FG M2M, IEEE 1451, IEEE 802.15, IEEE 802.11, ITU-T SG 13, ITU-T SG 16, ITU-T SG 17, ITU-R SG 5, WP 5A, ITU-T SG 9, OMA, IMSO, and GS1

Joint/parallel work:

Possible joint/parallel work with:

☐ IEC (please specify committee ID)
☐ CEN (please specify committee ID)
☐ Other (please specify)

A listing of relevant countries which are not already P-members of the committee.

Singapore, New Zealand, Australia

Preparatory work (at a minimum an outline should be included with the proposal)

☐ A draft is attached ☒ An outline is attached ☐ An existing document to serve as initial basis

The proposer or the proposer's organization is prepared to undertake the preparatory work required ☒ Yes ☐ No

Proposed Project Leader (name and e-mail address)	**Name of the Proposer** (include contact information)
Craig K. Harmon **craig.harmon@qed.org**	**Craig K. Harmon, Chair US TAG to TC 122** **3963 Highlands Lane, SE** **Cedar Rapids, IA 52403** **(V): +1 319/364-0212** **craig.harmon@qed.org**

Supplementary information relating to the proposal

☒ This proposal relates to a new ISO document;

☐ This proposal relates to the amendment of existing ISO document

☐ This proposal is for the revision of an existing ISO document;

☐ This proposal relates to the adoption as an active project of an item currently registered as a Preliminary Work Item;

☐ This proposal relates to the re-establishment of a cancelled project as an active project.

Other:

Annex(es) are included with this proposal (give details)

☒ **Outline of proposed standard**

Reference number of working document: **ISO/TC 000/SC 0 N 000**

Date: 2012-07-18

Reference number of document: **ISO/WD nnn-n**

Committee identification: ISO/TC 000/SC 0/WG 0

Secretariat: XXXX

Internet of Things (IoT) in the supply chain — Containerized cargo

Internet des objets (IdO) dans la chaîne d'approvisionnement - Le fret conteneurisé

Warning

This document is not an ISO International Standard. It is distributed for review and comment. It is subject to change without notice and may not be referred to as an International Standard.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Document type: International standard
Document subtype: if applicable
Document stage: (20) Preparation
Document language: E

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Basic template BASICEN3 2002-06-01

Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO nnn-n was prepared by Technical Committee ISO/TC 122, *Packaging*.

Introduction

For more than a decade ISO TC 122 has written standards addressing linear bar code symbols, two-dimensional symbols, RFID, and the basics of sensor technology for containerized cargo. It is now possible to provide any time connection from anywhere to anything through the use of IoT technology. The use of location-based technologies, combined with Internet connectivity, and mobile phone-like communications are now able permit a cargo owner to identify where that cargo is located, anywhere in the world, by simply calling the cargo. Likewise, if the cargo is exposed to environmental conditions beyond those defined, by introducing sensor technology, the cargo is able to call the cargo owner, advise of its condition, and report its location.

The need exists within all IoT applications to define the means to achieve any time/any where/any thing connectivity.

Internet of Things (IoT) in the supply chain — Containerized cargo

1 Scope

This International Standard specifies the component pieces necessary for the effective implementation of Internet of Things applications for containerized cargo. This International Standard specifies the necessary forms of identification, communications, types of devices, sensors, actuators, means of localization and tracking, appropriate security, methods of storage, and processing of IoT data.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 19762, *Information technology -- Automatic identification and data capture techniques -- Harmonized vocabulary*

3 Terms, definitions, symbols, and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO/IEC 19762 and the following apply.

3.1
term
definition

4 The Internet of Things

4.1 Understanding the components

Figure 1 is a representation of the components of the Internet of Things (IoT).

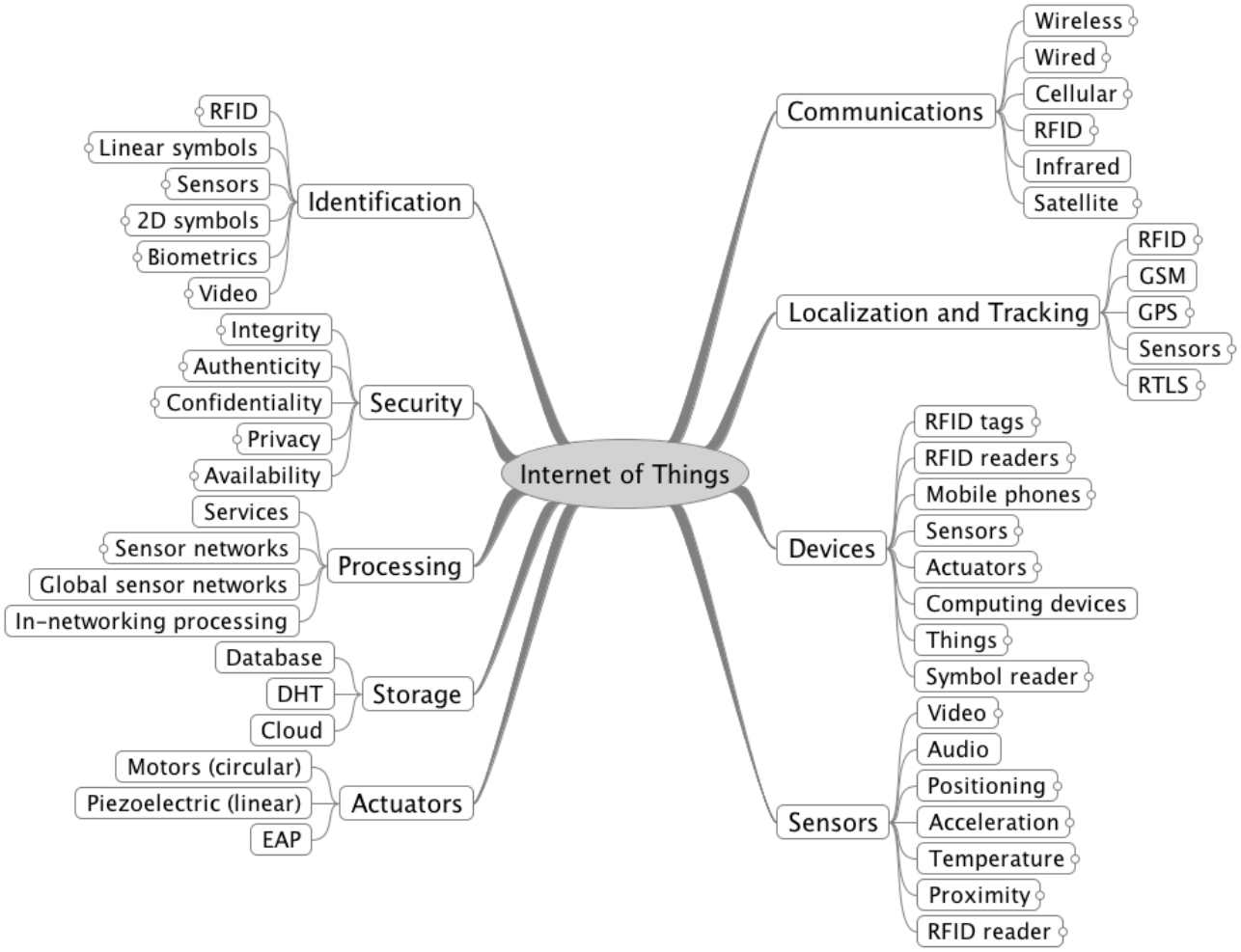

Figure 1 – Map of the Internet of Things (IoT)

4.1.1 Communications

A paragraph.

4.1.2 Localization and tracking

A paragraph.

4.1.3 Devices

A paragraph.

4.1.4 Sensors

A paragraph.

4.1.5 Actuators

A paragraph.

4.1.6 Storage

A paragraph.

4.1.7 Processing

A paragraph.

4.1.8 Security

A paragraph.

4.1.9 Identification

A paragraph.

4.2 The ontology of “things”

Figure 2 provides an ontology of “entities” or “things”

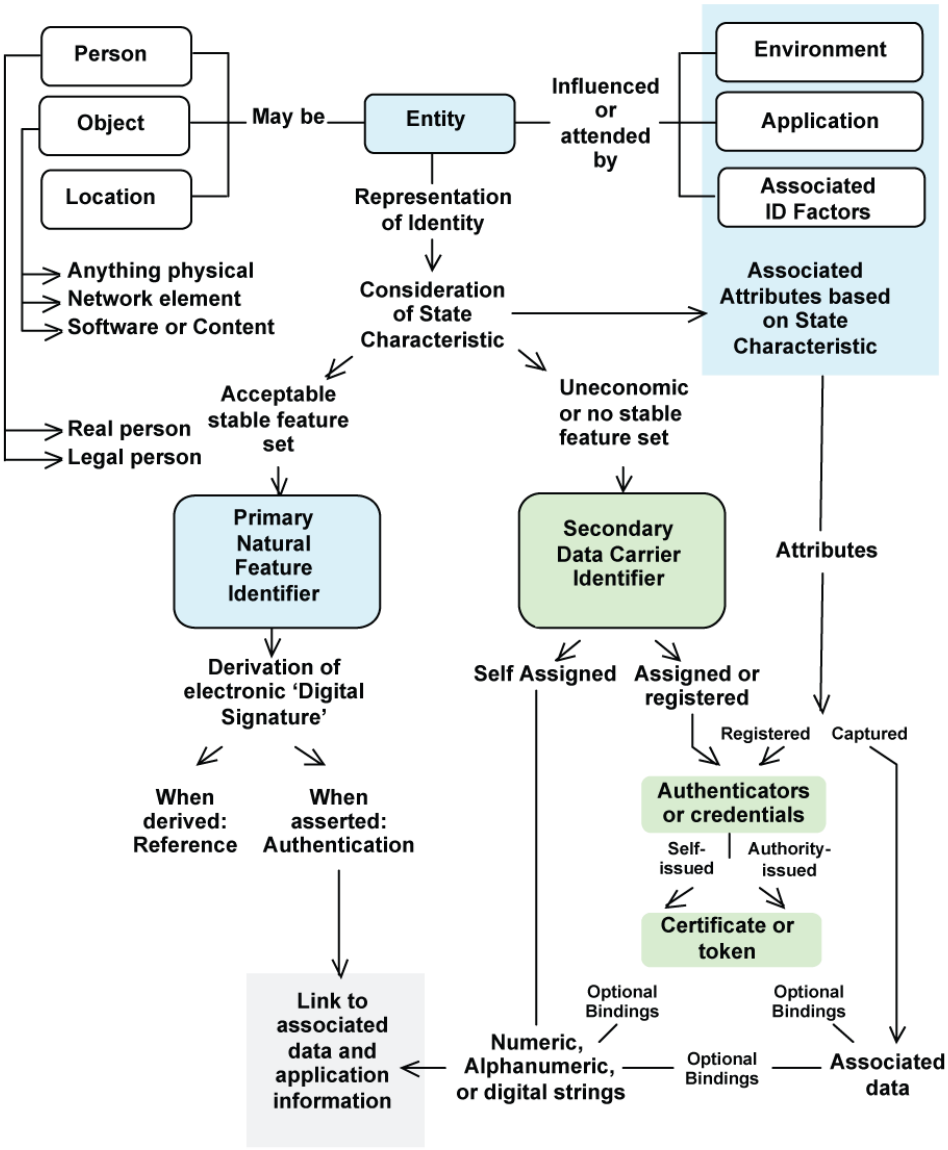

Figure 2 – The ontology of things

4.2.1.1

A paragraph.

5 Applications of the Internet of Things compliant to this International Standard

5.1 Cold chain

A paragraph.

5.2 Asset location

A paragraph.

Figure 3 is a representation of cargo equipped with IoT electronics

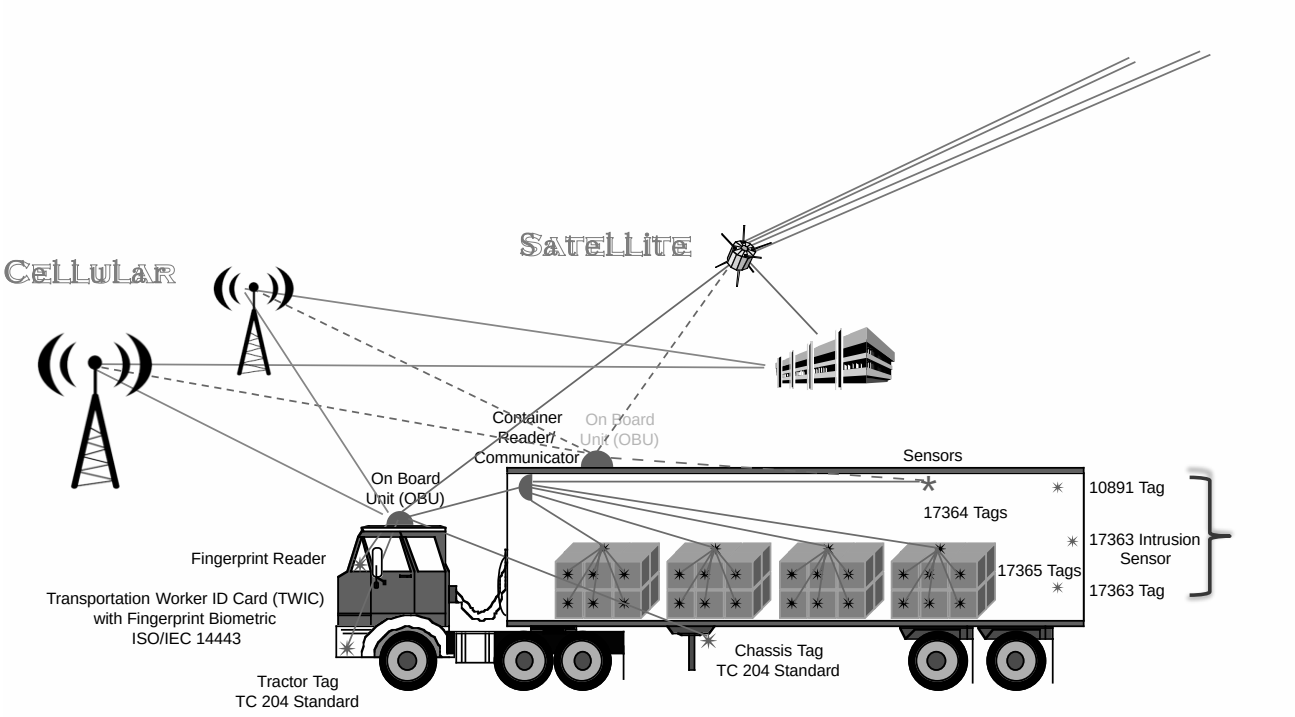

Figure 3 – IoT pallet

Figure 4 is a breakout of the electronics of an IoT cargo device

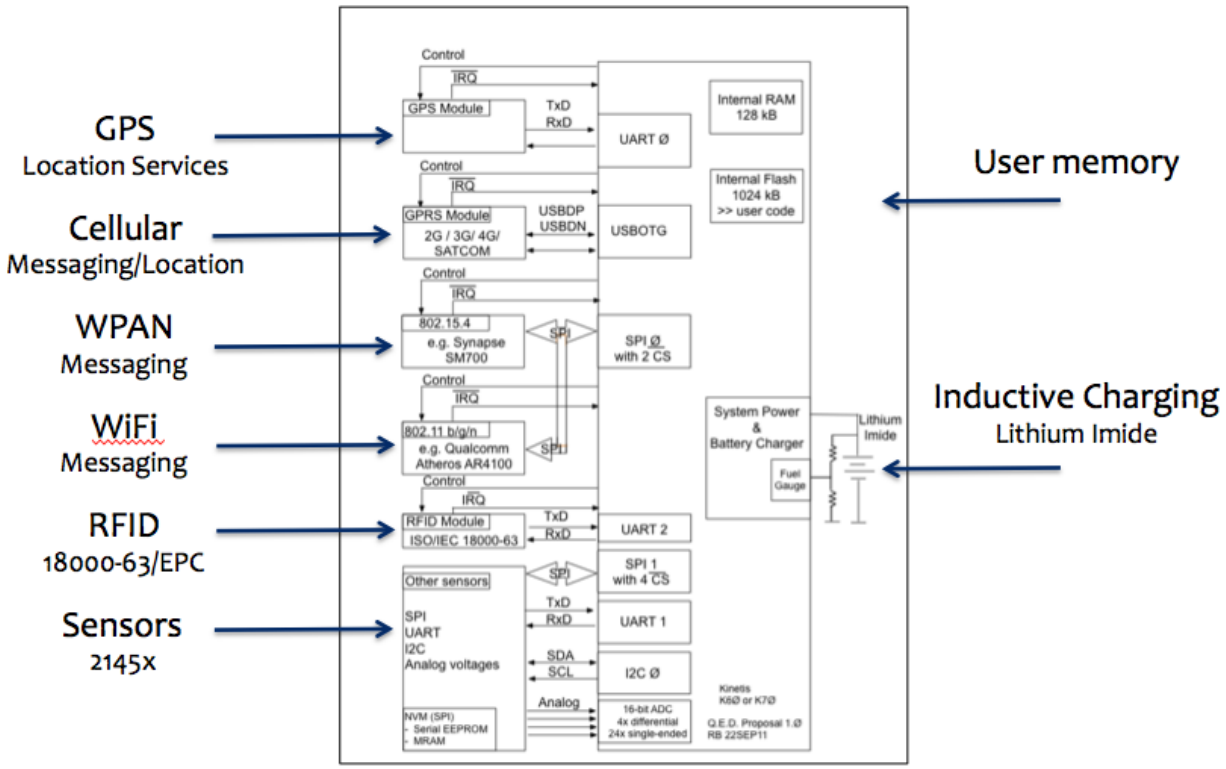

Figure 4 – IoT cargo device electronics

5.2.1 Identification technologies to be used

5.2.1.1 Communications

5.2.1.1.1 ISO/IEC/EEE 8802-11 - WiFi

A paragraph.

5.2.1.1.2 ISO/IEC/EEE 8802-15-4 - WPAN

A paragraph.

5.2.1.1.3 3G/4G

A paragraph.

5.2.1.1.4 SATCOM

A paragraph.

5.2.1.2 Localization and tracking

5.2.1.2.1 GPS

A paragraph.

5.2.1.2.2 GPRS

A paragraph.

5.2.1.3 Devices – RFID – ISO/IEC 18000-63

A paragraph.

5.2.1.4 Sensors

A paragraph.

5.2.2 Storage

A paragraph.

5.2.2.1 Processing

A paragraph.

5.2.2.2 Security

A paragraph.

5.2.2.3 Identification

A paragraph.

…

Annex A
(normative)

Annex title

A.1 General

Annexes shall appear in the order in which they are cited in the text. Each annex shall be designated by a heading comprising the word “Annex” followed by a capital letter designating its serial order, beginning with “A”, e.g. “Annex A”. The annex heading shall be followed by the indication “(normative)” or “(informative)”, and by the title, each on a separate line. Numbers given to the clauses, subclauses, tables, figures and mathematical formulae of an annex shall be preceded by the letter designating that annex followed by a full-stop. The numbering shall start afresh with each annex. A single annex shall be designated “Annex A”.

Normative annexes give provisions additional to those in the body of the document. Their presence is optional. An annex’s normative status (as opposed to informative) shall be made clear by the way in which it is referred to in the text, by an indication in the table of contents and under the heading of the annex.

Informative annexes give additional information intended to assist the understanding or use of the document. They shall not contain requirements, except as described in the following paragraph. Their presence is optional. An annex’s informative status (as opposed to normative) shall be made clear by the way in which it is referred to in the text, by an indication in the table of contents and under the heading of the annex.

Informative annexes may contain optional requirements. For example, a test method that is optional may contain requirements but there is no need to comply with these requirements to claim compliance with the document.

A.2 Clause

A.2.1 Subclause (level 1)

A.2.1.1 Subclause (level 2)

A paragraph.

A.2.1.1.1 Subclause (level 3)

A paragraph.

A.2.1.1.1.1 Subclause (level 4)

A paragraph.

A.2.1.1.1.2 Subclause (level 4)

A paragraph.

Annex B
(informative)

Which styles correspond to which element — Quick reference guide

Bibliography

[1] ISO/IEC Directives, Part 2, *Rules for the structure and drafting of International Standards*, 2001

[2] ISO 10241, *International terminology standards — Preparation and layout*