

### ISO/IEC 18598

Edition 1.1 2021-03 CONSOLIDATED VERSION

# INTERNATIONAL STANDARD



Information technology – Automated infrastructure management (AIM) systems – Requirements, data exchange and applications

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 35.200 ISBN 978-2-8322-9620-2

Warning! Make sure that you obtained this publication from an authorized distributor.





## **REDLINE VERSION**

Edition 1.1 2021-03 CONSOLIDATED VERSION



Information technology – Automated infrastructure management (AIM) systems – Requirements, data exchange and applications



### CONTENTS

| F  | OREWO  | )RD   | 4  |  |  |  |
|----|--|---|----|--|--|--|
| ١N | ITRODI   | JCTION  | 6  |  |  |  |
| IN | ITRODI   | JCTION to Amendment 1                                       | 6  |  |  |  |
| 1  |  | De  |    |  |  |  |
| 2  | ·  |   |    |  |  |  |
| 3  |  | ns, definitions and abbreviations                           |    |  |  |  |
| J  | 3.1  | Terms and definitions                                       |    |  |  |  |
|    | 3.1  | Abbreviations   |    |  |  |  |
| 4  | -  | formance  |    |  |  |  |
| 5  |  | mated infrastructure management (AIM) systems               |    |  |  |  |
| Э  | •  |   |    |  |  |  |
|    | 5.1<br>5.2   | Functional elements   |    |  |  |  |
|    | 5.3  | Functional requirements                                     |    |  |  |  |
|    | 5.3.   |   |    |  |  |  |
|    | 5.3.2  |   |    |  |  |  |
|    | 5.3.3  |   |    |  |  |  |
|    | 5.4  | Functional recommendations                                  |    |  |  |  |
| 6  | AIM  | solutions: business benefits                                | 13 |  |  |  |
|    | 6.1  | General   | 13 |  |  |  |
|    | 6.2  | Intrinsic benefits of stand-alone AIM systems               |    |  |  |  |
|    | 6.2.   | •   |    |  |  |  |
|    | 6.2.2  | 2 Asset management  | 13 |  |  |  |
|    | 6.2.3  | Capacity management   | 14 |  |  |  |
|    | 6.2.4  | Change management   | 14 |  |  |  |
|    | 6.2.   | Incident management   | 15 |  |  |  |
|    | 6.2.6  | Documentation, monitoring and management of remote powering | 15 |  |  |  |
|    | 6.3 Extrinsic benefits of AIM when linked with other business information are network management systems |   | 15 |  |  |  |
|    | 6.3.   |   |    |  |  |  |
|    | 6.3.2  | 2 IT-related systems  | 16 |  |  |  |
|    | 6.3.3  | Building management systems                                 | 18 |  |  |  |
|    | 6.3.4  | Data centre infrastructure management (DCIM)                | 19 |  |  |  |
|    | 6.3.   | Configuration management database (CMDB) applications       | 20 |  |  |  |
| 7  | AIM  | solutions: Data exchange framework                          | 20 |  |  |  |
|    | 7.1  | General   | 20 |  |  |  |
|    | 7.2  | Data exchange format and protocols                          | 20 |  |  |  |
|    | 7.3  | Commands  |    |  |  |  |
|    | 7.4  | Common data model definition                                |    |  |  |  |
|    | 7.4.   |   |    |  |  |  |
|    | 7.4.2  |   |    |  |  |  |
|    | 7.4.3  |   |    |  |  |  |
|    | 7.4.4  | •   |    |  |  |  |
|    |  | (informative) Hierarchy and containment rules               |    |  |  |  |
|    | Annex B (informative) Field descriptions   |   |    |  |  |  |
| Α  | Annex C (normative) Implementation requirements and recommendations                                      |   |    |  |  |  |

| C.1 General  | 32 |
|--|----|
| C.2 Design   | 32 |
| C.3 Specification  | 32 |
| C.3.1 Business, operational and system requirements                      | 32 |
| C.3.2 Integration requirements for data exchange with other applications |    |
| C.3.3 System test plan   |    |
| C.4 Installation   |    |
| C.5 Operation  |    |
| Annex D (informative) Optional lower level data exchange framework       |    |
| Annex E (normative) AIM systems providing remote powering support        |    |
| E.1 General  |    |
| E.2 Documentation and maintenance of information within AIM software     |    |
| E.3 Management and usage of information within AIM software              |    |
| Annex F (informative) Data import from field test equipment              |    |
| Bibliography   | 38 |
|  |    |
| Figure 1 – Example of a helpdesk work flow integrated with an AIM system |    |
| Figure 2 –Relationship between AIM systems and CMDB applications         |    |
| Figure A.1 – Spaces  | 29 |
| Figure A.2 – Telecommunications equipment                                | 29 |
| Figure A.3 – Work orders   | 30 |
|  |    |
| Table 1 – Work order management commands                                 | 21 |
| Table 2 – Asset management   | 21 |
| Table 3 – Alarms and events  | 22 |
| Table 4 – Circuit tracing  | 22 |
| Table 5 – Attribute key  | 22 |
| Table 6 – Connectivity   |    |
| Table 7 – Premises/space   |    |
| Table 8 – Furniture  |    |
| Table 9 –Telecommunications equipment                                    |    |
| Table 10 – Organizational Element  |    |
| Table 11 – Work Order  |    |
| Table 12 – Work Order Task   |    |
| Table 13 – Event   |    |
| Table 14 – Alarm   |    |
|  |    |
| Table B.1 – AIM software fields  |    |
| Table D.1 – Port level   |    |
| Table D.2 – Port level work actions                                      | 34 |

## Automated infrastructure management (AIM) systems – Requirements, data exchange and applications

#### **FOREWORD**

- 1) ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.
- 2) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees and ISO member bodies.
- 3) IEC, ISO and ISO/IEC publications have the form of recommendations for international use and are accepted by IEC National Committees and ISO member bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC, ISO and ISO/IEC publications is accurate, IEC or ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees and ISO member bodies undertake to apply IEC, ISO and ISO/IEC publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any ISO, IEC or ISO/IEC publication and the corresponding national or regional publication should be clearly indicated in the latter.
- 5) ISO and IEC do not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. ISO or IEC are not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or ISO or its directors, employees, servants or agents including individual experts and members of their technical committees and IEC National Committees or ISO member bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication of, use of, or reliance upon, this ISO/IEC publication or any other IEC, ISO or ISO/IEC publications.
- 8) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this ISO/IEC publication may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

ISO/IEC 18598 edition 1.1 contains the first edition (2016-09) and its amendment 1 (2021-03) [documents JTC1-SC25/2996/FDIS and JTC1-SC25/3011/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

ISO/IEC 18598:2016+AMD1:2021 CSV - 5 - © ISO/IEC 2021

International Standard ISO/IEC 18598 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

#### INTRODUCTION

This International Standard is intended for

- · premises owners and facility managers,
- · suppliers of AIM solutions,
- planners of network infrastructures,
- network operation managers,
- data centre operation managers,
- IT process managers,
- · suppliers of management system software,
- software integrators.

This International Standard is one of a number of documents prepared in support of International Standards and Technical Reports produced by ISO/IEC JTC 1/SC 25.

#### **INTRODUCTION** to Amendment 1

This amendment adds the following content to ISO/IEC 18598:2016:

- updates to the data exchange model;
- an Annex E which addresses the optional application of AIM systems to cabling supporting remote powering in accordance with IEEE 802.3bt-2018;
- an Annex F which addresses formatting of data from field test equipment.

## Automated infrastructure management (AIM) systems – Requirements, data exchange and applications

#### 1 Scope

This International Standard specifies the requirements and recommendations for the attributes of automated infrastructure management (AIM) systems.

This International Standard explains how AIM systems can contribute to operational efficiency and deliver benefits to

- a) cabling infrastructure and connected device administration,
- b) facilities and IT management processes and systems,
- c) other networked management processes and systems (e.g. intelligent building systems),
- d) business information systems covering asset tracking and asset management together with event notifications and alerts that assist with physical network security.

For AIM systems providing support functionality for remote powering as an option, this International Standard addresses additional administration requirements and recommendations.

This International Standard specifies a framework of requirements and recommendations for data exchange with other systems

#### 2 Normative references

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

There are no normative references in this document.





**FINAL VERSION** 

Edition 1.1 2021-03 CONSOLIDATED VERSION

Information technology – Automated infrastructure management (AIM) systems – Requirements, data exchange and applications



### CONTENTS

| F  | OREWO   | )RD  | 4  |  |  |  |
|----|---|--|----|--|--|--|
| IN | ITRODI  | JCTION   | 6  |  |  |  |
| IN | ITRODI  | JCTION to Amendment 1  | 6  |  |  |  |
| 1  |   | De   |    |  |  |  |
| 2  |   |  |    |  |  |  |
|    |   |  |    |  |  |  |
| 3  |   | ns, definitions and abbreviations  |    |  |  |  |
|    | 3.1   | Terms and definitions  |    |  |  |  |
| 4  | 3.2   | Abbreviations  |    |  |  |  |
| 4  |   | formance   |    |  |  |  |
| 5  | Automated infrastructure management (AIM) systems |  |    |  |  |  |
|    | 5.1   | Functional elements  |    |  |  |  |
|    | 5.2   | System requirements  |    |  |  |  |
|    | 5.3   | Functional requirements  |    |  |  |  |
|    | 5.3.  |  |    |  |  |  |
|    | 5.3.2   | ů ů  |    |  |  |  |
|    | 5.3.3   | 3 7  |    |  |  |  |
| _  | 5.4   | Functional recommendations   |    |  |  |  |
| 6  |   | solutions: business benefits   |    |  |  |  |
|    | 6.1   | General  |    |  |  |  |
|    | 6.2   | Intrinsic benefits of stand-alone AIM systems  |    |  |  |  |
|    | 6.2.  |  |    |  |  |  |
|    | 6.2.2   |  |    |  |  |  |
|    | 6.2.3   | , , ,  |    |  |  |  |
|    | 6.2.4   | 9 9  |    |  |  |  |
|    | 6.2.5   | 9  |    |  |  |  |
|    | 6.2.6   | ,  | 15 |  |  |  |
|    | 6.3   | Extrinsic benefits of AIM when linked with other business information and network management systems |    |  |  |  |
|    | 6.3.  |  | _  |  |  |  |
|    | 6.3.2   | •  |    |  |  |  |
|    | 6.3.3   | 0 0  |    |  |  |  |
|    | 6.3.4   | <b>5</b>   |    |  |  |  |
|    | 6.3.5   | · , , , , ,  |    |  |  |  |
| 7  | S .   |  |    |  |  |  |
|    | 7.1   | General  |    |  |  |  |
|    | 7.2   | Data exchange format and protocols   |    |  |  |  |
|    | 7.3 Commands                                      |  |    |  |  |  |
|    | 7.4   | Common data model definition   |    |  |  |  |
|    | 7.4.  |  |    |  |  |  |
|    | 7.4.2   |  |    |  |  |  |
|    | 7.4.3   |  |    |  |  |  |
|    | 7.4.4   | •  |    |  |  |  |
|    |   | (informative) Hierarchy and containment rules  |    |  |  |  |
| A  | nnex B  | (informative) Field descriptions   | 31 |  |  |  |
| Α  | nnex C  | (normative) Implementation requirements and recommendations  | 32 |  |  |  |

| C.1 G         | eneral  | 32 |
|---------------|---|----|
|               | esign   | 32 |
|               | pecification  |    |
| C.3.1         | Business, operational and system requirements   |    |
| C.3.2         | Integration requirements for data exchange with other applications  |    |
| C.3.3         | System test plan  |    |
|               | stallation  |    |
|               | peration  |    |
| -             | formative) Optional lower level data exchange framework prmative) AIM systems providing remote powering support |    |
| · ·           | eneral  |    |
|               | ocumentation and maintenance of information within AIM software   |    |
|               | anagement and usage of information within AIM software  |    |
|               | formative) Data import from field test equipment  |    |
| -             | /   |    |
| Dibliography  | ······································  |    |
| Figure 1 – E  | xample of a helpdesk work flow integrated with an AIM system  | 17 |
| _             | elationship between AIM systems and CMDB applications   |    |
| •             | - Spaces  |    |
| •             | · Telecommunications equipment  |    |
| •             | - Work orders   |    |
| i igule A.5 - | Work orders   |    |
| Table 1 – W   | ork order management commands   | 21 |
|               | sset management   |    |
|               | arms and events   |    |
|               | rcuit tracing   |    |
|               | tribute key   |    |
|               | ·   |    |
|               | onnectivity   |    |
|               | remises/space   |    |
|               | ırniture  |    |
|               | lecommunications equipment  |    |
|               | Organizational Element  |    |
|               | Vork Order  |    |
|               | Nork Order Task   |    |
| Table 13 – E  | Event   | 28 |
| Table 14 – A  | Alarm   | 28 |
| Table B.1 –   | AIM software fields   | 31 |
| Table D.1 –   | Port level  | 34 |
| Table D.2 -   | Port level work actions   | 34 |

### Automated infrastructure management (AIM) systems – Requirements, data exchange and applications

#### **FOREWORD**

- 1) ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.
- 2) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees and ISO member bodies.
- 3) IEC, ISO and ISO/IEC publications have the form of recommendations for international use and are accepted by IEC National Committees and ISO member bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC, ISO and ISO/IEC publications is accurate, IEC or ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees and ISO member bodies undertake to apply IEC, ISO and ISO/IEC publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any ISO, IEC or ISO/IEC publication and the corresponding national or regional publication should be clearly indicated in the latter.
- 5) ISO and IEC do not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. ISO or IEC are not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or ISO or its directors, employees, servants or agents including individual experts and members of their technical committees and IEC National Committees or ISO member bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication of, use of, or reliance upon, this ISO/IEC publication or any other IEC, ISO or ISO/IEC publications.
- 8) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this ISO/IEC publication may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

ISO/IEC 18598 edition 1.1 contains the first edition (2016-09) and its amendment 1 (2021-03) [documents JTC1-SC25/2996/FDIS and JTC1-SC25/3011/RVD].

This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.

ISO/IEC 18598:2016+AMD1:2021 CSV - 5 - © ISO/IEC 2021

International Standard ISO/IEC 18598 was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

#### INTRODUCTION

This International Standard is intended for

- · premises owners and facility managers,
- · suppliers of AIM solutions,
- planners of network infrastructures,
- network operation managers,
- data centre operation managers,
- IT process managers,
- · suppliers of management system software,
- software integrators.

This International Standard is one of a number of documents prepared in support of International Standards and Technical Reports produced by ISO/IEC JTC 1/SC 25.

#### **INTRODUCTION to Amendment 1**

This amendment adds the following content to ISO/IEC 18598:2016:

- · updates to the data exchange model;
- an Annex E which addresses the optional application of AIM systems to cabling supporting remote powering in accordance with IEEE 802.3bt-2018;
- an Annex F which addresses formatting of data from field test equipment.

## Automated infrastructure management (AIM) systems – Requirements, data exchange and applications

#### 1 Scope

This International Standard specifies the requirements and recommendations for the attributes of automated infrastructure management (AIM) systems.

This International Standard explains how AIM systems can contribute to operational efficiency and deliver benefits to

- a) cabling infrastructure and connected device administration,
- b) facilities and IT management processes and systems,
- c) other networked management processes and systems (e.g. intelligent building systems),
- d) business information systems covering asset tracking and asset management together with event notifications and alerts that assist with physical network security.

For AIM systems providing support functionality for remote powering as an option, this International Standard addresses additional administration requirements and recommendations.

This International Standard specifies a framework of requirements and recommendations for data exchange with other systems

#### 2 Normative references

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

There are no normative references in this document.