
**Information technology — User interfaces
for mobile tools for management of
database communications in a client-server
model**

*Technologies de l'information — Interfaces utilisateur pour outils mobiles
de gestion de communications des bases de données dans un modèle
client-serveur*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 18021:2002

<https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-867c0ca822ef/iso-iec-18021-2002>

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 18021:2002](#)

<https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-867c0ca822ef/iso-iec-18021-2002>

© ISO/IEC 2002

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

	Page
1 Scope.....	1
2 Conformance.....	1
3 Terms and definitions	1
4 Illustration of processes for an MBT database operation	3
4.1 Functions of user interfaces	3
4.1.1 User approval or disapproval	3
4.1.2 Feedback	3
4.2 Sequence of functions	3
5 Description of contents in MBT database operation screens	5
5.1 General	5
5.2 User approval or disapproval	5
5.2.1 Prior notice	5
5.2.2 Granting or refusing approval	5
5.2.3 Parameter setting	6
5.3 Feedback to the user (success).....	6
5.3.1 Notice of successful completion	6
5.3.2 User acknowledgement of successful completion	6
5.4 Feedback to the user (failure).....	6
5.4.1 General notice of failure.....	6
5.4.2 Detailed reasons for failure.....	7
5.4.3 Acknowledgement of failure	7
Annex A (informative) Utilization/operation of database of mobile tool.....	8
A.1 Utilization/operation of database	8
A.1.1 General.....	8
A.1.2 Utilization/operation of database (1).....	8
A.1.3 Utilization/operation of database (2).....	9
A.1.4 Utilization/operation of database (3).....	10
A.2 Sample application utilizing database via communication links.....	11

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 18021:2002
<https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-867c0ca822ef/iso-iec-18021-2002>

Annex B (informative) Basic Screen Contents Presentation	12
B.1 User approval or disapproval	12
B.1.1 General	12
B.1.1.1 Prior notice	12
B.1.1.3 Granting and refusing approval	13
B.1.1.4 Parameter setting	13
B.2 Feedback to the user (success)	14
B.2.1 General	14
B.2.2 Notice of successful completion	14
B.2.3 User acknowledgement of successful completion	15
B.3 Feedback to the user (failure)	16
B.3.1 General	16
B.3.2 General notice of failure	16
B.3.3 Detailed reasons for failure	17
B.3.4 Acknowledgement of failure	17
Annex C (informative) Technical information: PDX tags as a screen content description language	18
C.1 Overview of PDX tags	18
C.2 Sample program scripts written by using PDX tags with HTML tags	18
C.2.1 General	18
C.2.2 User approval or disapproval	19
C.2.3 Feedback to the user (success)	20
C.2.4 Feedback to the user (failure)	21
Annex D (informative) Technical information: P4script as a database operation language	22
D.1 Overview of P4script	22
D.2 Sample command written by using P4script language	22

ITeH STANDARD PREVIEW

(standards.iteh.ai)

ISO/IEC 18021:2002

[https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-](https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-86c709125776/iso-iec-18021-2002)

[86c709125776/iso-iec-18021-2002](https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-86c709125776/iso-iec-18021-2002)

Foreword

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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

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

ISO/IEC 18021 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

Annexes A to D of this International Standard are for information only.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 18021:2002
<https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-867c0ca822ef/iso-iec-18021-2002>

Introduction

In recent years, MoBILE Tools (MBT), typically personal digital assistants (PDA), smart phones (mobile phones with web-browsing, e-mail, or some other network function) and other small size devices have become increasingly popular. MBT are constrained by requirements of low power consumption, small physical size, light weight, limited memory, low CPU processing power and restricted display screen size. To enable a variety of services and applications to be used comfortably and efficiently on hardware-restricted MBT, they are typically operated in conjunction with other devices via communication links. When the MBT works in conjunction with server machines or other computers, it becomes more powerful and more useful. Due to these restrictions, it is more difficult to achieve compatibility and interoperability than it would be in a large device. In order to achieve compatibility and interoperability, a different approach than that used for larger equipment is necessary.

When the MBT exchanges data (e.g. address data, schedule data, or sales data, etc.) with other devices via a potentially unreliable or narrow communication line, as in wireless communications, user interfaces for management of database communications of mobile tools are required to meet user's needs such as fast response, high usability, reliability and easy-to-use features. Standardizing these new user-interfaces will be very beneficial and convenient for MBT users.

A MoBILE Tool client (MBT client) is defined as the software of an MBT that performs client operations with other devices via communication links. A MoBILE Tool server (MBT server) is defined as the software of a device that acts as a server with the MBT client via a communication link. An MBT server can be run on a multi-accessible server or on another MBT. When an MBT client communicates with another MBT that has these MBT server capabilities, the former acts as the MBT client and the latter as the MBT server, thereby allowing them to operate together.

The MBT client typically has a small display screen, which provides the user interface that displays information and receive user instructions/input. The MBT client and the MBT server each have their own database. The user instructs/controls the database operation via the small display screen on the MBT client.

<https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-86700ca822c1/iso-iec-18021-2002>

The following problems can occur with the utilization/operation of databases via communication links:

- There is the possibility that another device can operate the MBT client's database or the MBT server's database via communication links. The user needs to know in advance which operations will be executed or whether data in the MBT client's database will be transmitted. However, there is no standard means to enable the user to prevent the update of the MBT client's database or the transmission of data from the MBT client's database without his approval. This creates a security problem.
- The connection, especially wireless, is sometimes broken. In this case, the user needs to know whether the MBT client's database and/or the MBT server's database have been updated or not. There is no standard means for the user to receive feedback as to whether the MBT client's database has been successfully updated. For this is the reason feedback is required.

The purpose of this International Standard is to satisfy these user requirements. If user interfaces providing these functions are standardized, then the user can operate differing types of MBTs in a consistent manner.

This International Standard applies to smart phones, electronic organizers, PDAs, and palm sized personal computers. The adoption of this International Standard will improve compatibility, interoperability and user efficiency for database management.

Note: The principles described in ISO 9241-10 "Ergonomic requirements for office work with visual display terminals (VDTs) – Part 10: Dialogue principles" are of key importance for this International Standard.

Information technology — User interfaces for mobile tools for management of database communications in a client-server model

1 Scope

This International Standard defines user interface functions for management of database communication of an MBT client capable of interchanging data with an MBT server.

This International Standard is applicable to MBT clients.

This International Standard specifically defines the following two user interfaces.

- The user interface function for obtaining user approval in advance when MBT client's database is updated via a communication link, or when data in the MBT client's database is transmitted to another database.
- The user interface function for providing feedback to the user, after the MBT client's or the MBT server's database has been updated via a communication link, or data in MBT client's database has been transmitted to another database.

(standards.iteh.ai)

[ISO/IEC 18021:2002](https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-867c0ca822ef/iso-iec-18021-2002)

2 Conformance

<https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-867c0ca822ef/iso-iec-18021-2002>

A system conforms to this International Standard if it provides the screen contents described in sub clause 5.2 before the MBT database operation is executed and the contents described in sub clause 5.3 or sub clause 5.4 after the MBT database operation has been executed.

3 Terms and definitions

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

3.1

feedback to the user (failure)

function of the user interface that displays information about an *MBT database operation* if and when the *MBT database operation* fails to execute

3.2

feedback to the user (success)

function of the user interface that displays information about an *MBT database operation* after the *MBT database operation* is successful

**3.3
consistent area**

non-scrollable information area that is provided in a section of the *MBT's* screen

**3.4
MoBile Tool, MBT**

mobile communications device with a small display screen and a database intended to interchange data with other devices / a server

Note: The screen size is typically between those of personal computers and mobile telephone devices.

**3.5
MoBile Tool client, MBT client**

software for *MBT*, which operates under user instruction as a client in a communication link with other devices

**3.6
MoBile Tool database operation, MBT database operation**

database operation executed by the *MBT server application*,

Note: Database operation includes the processes of adding, modifying, removing and reading data. Updating of database includes the processes of adding, modifying and removing data, but it doesn't include the process of reading data.

(standards.iteh.ai)

**3.7
MoBile Tool database operation parameter, MBT database operation parameter**

parameter used by the *MBT server application* to execute the *MBT database operation*

Example: When the user operates the schedule book, he specifies year, month, day and time as parameters; when he operates the address book, he specifies name, address, telephone number and E-mail address, and when he operates the inventory database, he specifies product code, customer name and number of stock.

**3.8
MoBile Tool server, MBT server**

software for a device that operates as a server with the *MBT client* via a communication link

**3.9
MoBile Tool server application, MBT server application**

application software on the *MBT server* that, at the request of the *MBT client*, executes an operation and feeds back the result of the operation to the *MBT client* via data interchange of any kind

**3.10
screen content**

information presented on physical display of an *MBT*

3.11 user approval

function of the user interface by which the user grants permission to the *MBT server application* to update the *MBT client's database* or transmit data from the *MBT client's database* to the *MBT server* before the operation is executed

4 Illustration of processes for an MBT database operation

4.1 Functions of user interfaces

When an MBT database operation is executed, the MBT client provides a user interface, which displays information and receives user instructions/input.

The two functions available as part of the user interface for the MBT database operation are:

- User approval or disapproval.
- Feedback to the user.

4.1.1 User approval or disapproval

User approval or disapproval is necessary before the MBT database operation is executed. One screen content is provided for the user to give his approval or his disapproval for operations yet to be performed.

4.1.2 Feedback

Feedback to the user is provided after the MBT database operation has been executed. It provides two screen contents, one which displays information after the MBT database operation has been completed successfully, and the other which displays information if and when the MBT database operation fails to execute.

4.2 Sequence of functions

The screen content for input of user approval or disapproval is displayed before the MBT database operation is executed. If the user grants approval via this screen content, the MBT database operation is executed and the feedback screen content that corresponds to the result of the operation is displayed. If the user disapproves, the MBT database operation is not executed. However, the screen content for input of user approval or disapproval for the MBT database operation need not be displayed, if this MBT database operation only consists of updating the MBT server's database, and if neither the MBT client's database is updated nor data in the MBT client's database is transmitted.

The processes for MBT database operation are illustrated in Figure 1.

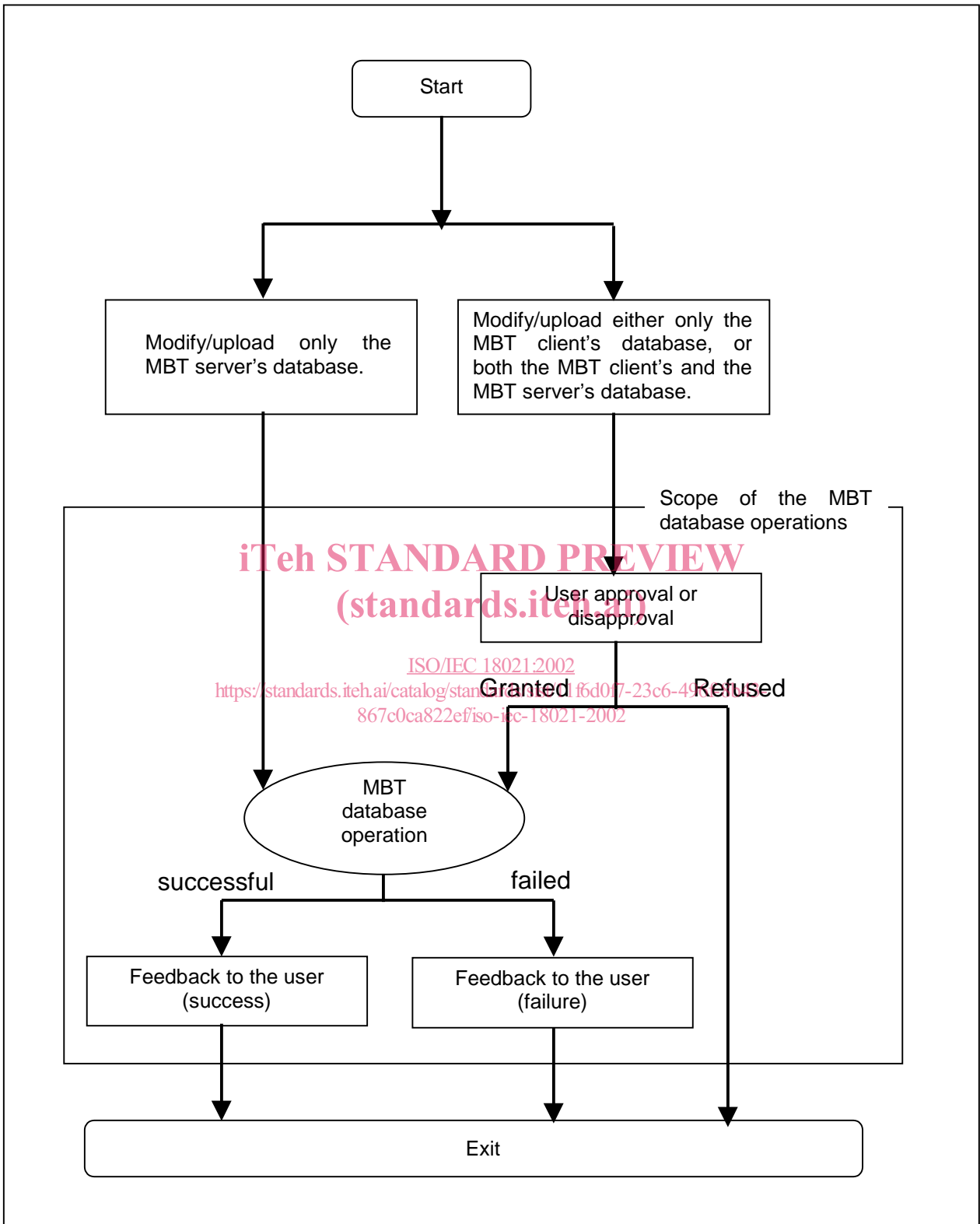


Figure 1 - Illustration of processes for MBT database operations

5 Description of contents in MBT database operation screens

5.1 General

When the MBT database operation is executed, the MBT client shall provide the screen contents described in sub clauses 5.2, 5.3, and 5.4.

Regarding the support of cultural and linguistic adaptability requirements, message numbers specified in this standard shall be used to preserve data interoperability among applications in different natural languages. The messages may be modified or adapted in any natural language. However, the resulting changes shall respect the function defined in this clause to which the messages applies.

Communication between components (the MBT client and the MBT server) shall always use one of the message numbers.

Note: General messages of sample application corresponding to all example message numbers refer to Annex B. It is understood that in the future graphics, voice messages, sounds could be used as the representation for the user. Should it be the case, message numbers shall always be used for data interoperability between components (the MBT client and the MBT server).

The system should have the capability to disable the notification upon the request of the user.

5.2 User approval or disapproval

5.2.1 Prior notice

The MBT client shall inform the user in advance that

- the MBT database operation will be executed. (Note: Example message number 0100)

When appropriate, the MBT client shall inform the user in advance that

- the MBT client's database will be updated by the MBT server application. (Note: Example message number 0111)
- the MBT server's database will be updated by the MBT server application. (Note: Example message number 0121)
- data in the MBT client's database will be transmitted to the MBT server. (Note: Example message number 0131)

5.2.2 Granting or refusing approval

The MBT client shall provide an on-screen button, a fixed button outside of the display screen, or similar control as the means for:

- granting approval for the MBT server application to execute the MBT database operation,
- refusing approval for the MBT server application to execute the MBT database operation.

When the user grants approval, the MBT database operation shall be executed.

When the user refuses approval, the MBT database operation shall not be executed and another screen content shall be displayed.

ISO/IEC 18021:2002(E)

The MBT client shall ensure an exclusive choice between granting and refusing approval for an MBT database operation, by providing radio buttons, select buttons, or the like.

The buttons for granting and refusing approval for the MBT database operation should always be displayed on the screen in a consistent area without being removed by scrolling or any other navigation by the user. Those buttons should be laid out side by side.

5.2.3 Parameter setting

The MBT client may provide a text input area, check buttons, a selectable menu, or similar control, as the means for setting the MBT database operation parameters, if necessary for executing an MBT database operation. If the user sets those MBT database operation parameters, the parameters shall be used by the MBT server application to execute the corresponding MBT database operation. The means for setting the MBT database operation parameters should be displayed on the screen.

5.3 Feedback to the user (success)

5.3.1 Notice of successful completion

The MBT client shall inform the user that:

- the MBT database operation has been completed successfully. (Note: Example message number 0200).

When appropriate, the MBT client shall inform the user that:

- the MBT client's database has already been updated by the MBT server application. (Note: Example message number 0211).
<https://standards.iteh.ai/catalog/standards/sist/11f6d0f7-23c6-496f-8b43-267cb-822a55e4e143/iso-iec-18021-2002>
- the MBT server's database has already been updated by the MBT server application. (Note: Example message number 0221).
- data in the MBT client's database has already been transmitted to the MBT server. (Note: Example message number 0231).

5.3.2 User acknowledgement of successful completion

The MBT client shall provide an on-screen button, a fixed button outside of the display screen, or similar control, as the means for acknowledging the successful completion of an MBT database operation.

After the user has acknowledged the successful completion of the operation, another screen content shall be displayed.

The button for acknowledging the successful completion of the MBT database operation should always be displayed on the screen in a consistent area without being removed by scrolling or any other navigation by the user.

5.4 Feedback to the user (failure)

5.4.1 General notice of failure

The MBT client shall inform the user: