

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

F.921

(08/2018)

SERIES F: NON-TELEPHONE TELECOMMUNICATION
SERVICES

Accessibility and human factors

Audio-based indoor and outdoor network navigation system for persons with vision impairment

Recommendation ITU-T F.921

ITU-T F-SERIES RECOMMENDATIONS
NON-TELEPHONE TELECOMMUNICATION SERVICES

TELEGRAPH SERVICE	
Operating methods for the international public telegram service	F.1–F.19
The gentex network	F.20–F.29
Message switching	F.30–F.39
The international telemessage service	F.40–F.58
The international telex service	F.59–F.89
Statistics and publications on international telegraph services	F.90–F.99
Scheduled and leased communication services	F.100–F.104
Phototelegraph service	F.105–F.109
MOBILE SERVICE	
Mobile services and multideestination satellite services	F.110–F.159
TELEMATIC SERVICES	
Public facsimile service	F.160–F.199
Teletex service	F.200–F.299
Videotex service	F.300–F.349
General provisions for telematic services	F.350–F.399
MESSAGE HANDLING SERVICES	
DIRECTORY SERVICES	
DOCUMENT COMMUNICATION	
Document communication	F.550–F.579
Programming communication interfaces	F.580–F.599
DATA TRANSMISSION SERVICES	
MULTIMEDIA SERVICES	
ISDN SERVICES	
UNIVERSAL PERSONAL TELECOMMUNICATION	
ACCESSIBILITY AND HUMAN FACTORS	F.900–F.999

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T F.921

Audio-based indoor and outdoor network navigation system for persons with vision impairment

Summary

Recommendation ITU-T F.921 specifies how audio-based network navigation systems can be designed to ensure that they are inclusive and meet the needs of persons with visual impairments. Recommendation ITU-T F.921 adopts a technology neutral approach by specifying the functional characteristics of the system. The aim is to give designers of audio-based network navigation systems the information they need at the initial stages of development to anticipate and overcome any restrictions and barriers that prevent users with visual impairments from making full and independent use of the built environment. Recommendation ITU-T F.921 explains how to accommodate users' experience of audio-based network navigation systems and ensure the interoperability of those systems. Recommendation ITU-T F.921 recognizes that by meeting the user needs of persons with visual impairments, audio-based network navigation systems may also benefit persons with other disabilities, age-related conditions and specific needs, as well as the general public.

This revision provides updates based on feedback received from field use of this Recommendation, as well as other text clarifications and corrections.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T F.921	2017-03-01	16	11.1002/1000/13185
2.0	ITU-T F.921 (V2)	2018-08-29	16	11.1002/1000/13662

Keywords

Accessibility, audio-based, network navigation system, persons with disabilities.

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2018

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

Table of Contents

	Page
1 Scope.....	1
2 References.....	1
3 Definitions	1
3.1 Terms defined elsewhere	1
3.2 Terms defined in this Recommendation.....	2
4 Abbreviations and acronyms	3
5 Conventions	3
6 Design principles	3
7 Validation principles.....	3
8 Directions.....	3
9 Audio instructions.....	4
9.1 Components of an audio instruction.....	4
9.2 Audio instructions – Classification	4
10 Specific features, landmarks and objects.....	5
10.1 Entrances and exits	5
10.2 Pathways.....	5
10.3 Decision points	5
10.4 Tactile walking surface indicators.....	5
10.5 Escalators.....	6
10.6 Stairs	6
10.7 Lifts.....	6
10.8 Ticket control gates and barriers	7
10.9 Platforms.....	7
11 Railway stations.....	8
12 Mobile app features	8
Appendix I – Examples of an audio instruction.....	9
Bibliography.....	10

Introduction

This Recommendation specifies how audio-based network navigation systems can be designed to ensure they are inclusive and meet the needs of persons with visual impairments. This Recommendation adopts a technology neutral approach by specifying the functional characteristics of the system.

The aim is to give designers of audio-based navigation system the information they need at the initial conception stage to anticipate and overcome any restrictions and barriers that prevent users from making full and independent use of the built environment. Whilst existing audio-based network navigation systems have utilized mobile technologies to provide users with efficient, effective and satisfying wayfinding and hardware, compatibility and interoperability standards for mobile technologies may provide a useful basis for promoting audio-based navigation, this Recommendation explains how to accommodate the users' experience of inclusive audio-based network navigation systems (IABNNSs) and ensure their interoperability. This Recommendation recognizes that, by meeting the user needs of persons with visual impairments, IABNNSs can also benefit persons with other disabilities, age-related conditions and specific needs, as well as the general public. This Recommendation can be applied to IABNNSs in a variety of built environments, including those in urban or rural settings.

NOTE – This Recommendation on audio-based network navigation systems does not consider the specialized requirements of people who are deaf or with impaired hearing.