

INTERNATIONAL  
STANDARD

ISO/IEC  
18040

First edition  
2019-05

---

---

---

**Information technology — Computer graphics, image processing and environmental data representation — Live actor and entity representation in mixed and augmented reality (MAR)**

*Technologies de l'information — Infographie, traitement de l'image et représentation des données environnementales — Représentation d'acteurs et d'entités réels en réalité mixte et augmentée (MAR)*



Reference number  
ISO/IEC 18040:2019(E)

© ISO/IEC 2019



**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
<b>Foreword</b>	<b>v</b>
<b>Introduction</b>	<b>vi</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms, definitions and abbreviated terms</b>	<b>1</b>
3.1 Terms and definitions	1
3.2 Abbreviated terms	3
<b>4 Concepts of LAE representation in MAR</b>	<b>3</b>
4.1 Overview	3
4.2 Components	6
4.2.1 General	6
4.2.2 LAE capturer and sensor	7
4.2.3 LAE recognizer	8
4.2.4 LAE tracker	8
4.2.5 LAE spatial mapper	8
4.2.6 LAE event mapper	8
4.2.7 Renderer	8
4.2.8 Display and user interface	8
4.2.9 Scene representation	8
<b>5 LAE capturer and sensor</b>	<b>9</b>
5.1 Overview	9
5.2 Computational view	9
5.2.1 General	9
5.2.2 LAE capturer	9
5.2.3 LAE sensor	10
5.3 Informational view	12
<b>6 Tracker and spatial mapper for an LAE</b>	<b>13</b>
6.1 Overview	13
6.2 Computational view	14
6.3 Informational view	16
6.4 An example of LAE tracking and spatial mapping in MAR	17
<b>7 Recognizer and event mapper for an LAE</b>	<b>17</b>
7.1 Overview	17
7.2 Recognizer	17
7.3 Event mapper	19
7.4 Event execution	20
7.5 Examples of LAE recognizing and event mapping in MAR	21
<b>8 Scene representation for an LAE</b>	<b>22</b>
8.1 Overview	22
8.2 Scene description	23
<b>9 Renderer</b>	<b>24</b>
9.1 Overview	24
9.2 Computational view	24
9.3 Information view	25
<b>10 Display and UI</b>	<b>25</b>
<b>11 Extensions to virtual actor and entity</b>	<b>25</b>
<b>12 System performance</b>	<b>26</b>
<b>13 Safety</b>	<b>27</b>