ISO 21622-3:2024-03 (E)

Irrigation techniques - Remote monitoring and control for irrigation - Part 3: Interoperability

Contents

Page

Foreword vi

Introduction vi

1 Scope 1

2 Normative reference 1

3 Terms and definitions 2

4 Interoperability I: System architecture 4
4.1 Levels and components of an interoperable architecture 4
4.2 Interface specifications 6

5 Interoperability II: exchange of data from irrigation entities 20
5.1 General outline 20
5.2 Static data of the irrigation entities 20
5.3 Structure of an irrigation entity identifier (EntityID) 28
5.4 Properties 28
5.5 Entity events 35

6 Interoperability III: Exchange of data from procedural elements performed in irrigation entities 37
6.1 General outline 37
6.2 Statuses and actions 37
6.3 Types of Operation recipes 37
6.4 Types of Unit Procedure recipes 56
6.5 Types of Procedure recipes 58
6.6 Report 59
6.7 Procedural element events 62

Annex A (normative) Management interface with SOAP 1.2 64
A.1 Overview 64
A.2 Requirements 64
A.3 Implementation classes for web services 66
A.4 Implementation classes for authorization server 87
A.5 WSDL 88

Annex B (normative) Subsystem interface with SOAP 1.2 104
B.1 Overview 104
B.2 Requirements 104
B.3 Implementation classes for web services 106
B.4 Implementation classes for authorization server 121
B.5 WSDL 122

Annex C (normative) Event interface with SOAP 1.2 135
C.1 Overview 135
C.2 Requirements 135
C.3 Implementation classes for web services 137
C.4 Implementation classes for authorization server 140
C.5 WSDL 140

Annex D (informative) Interoperability test protocol **144**
D.1 Overview **144**
D.2 General description **144**
D.3 IT infraestructure **145**
D.4 Test bed description **146**
D.5 Test procedure **148**
D.6 Tests over subsystems **151**
D.7 Tests over coordination brokers **235**
D.8 Tests over management information systems **243**
D.9 Tests report **245**

Annex E (informative) Coordination broker software requirement specifications **247**
E.1 Overview **247**
E.2 Data model **249**
E.3 Minimal functions — Coordination broker **255**
E.4 Desirable functions **259**
E.5 Specific requirements **267**
E.6 Request management **285**
E.7 Cases of use **294**

Annex F (normative) Management interface with REST **295**
F.1 Overview **295**
F.2 Requirements **295**
F.3 Implementation method for web services **297**
F.4 ComplexType definition **307**
F.5 Implementation methods for authorization **321**
F.6 WADL **322**
F.7 ComplexTypeF **325**

Annex G (normative) Subsystem interface with REST **334**
G.1 Overview **334**
G.2 Requirements **334**
G.3 Implementation method for web services **336**
G.4 ComplexType definition **342**
G.5 Implementation methods for authorization **353**
G.6 WADL **354**
G.7 ComplexTypeG **356**

Annex H (normative) Event interface with REST **363**
H.1 Overview **363**
H.2 Requirements **363**
H.3 Implementation methods for web services — NewEvent method **364**
H.4 ComplexType definition **365**
H.5 Implementation methods for authorization **368**
H.6 WADL **369**
H.7 ComplexTypeH **370**

Bibliography **371**