

# ISO/TS 21089:2018-04 (E)

## Health informatics - Trusted end-to-end information flows

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Abbreviated terms .....	25
5	Truth, trust, end-to-end information flows and foundations of interoperability .....	27
6	Trust characteristics in end-to-end information flow .....	28
7	The trust constituency .....	29
8	Principles and objectives .....	32
8.1	Ensured trust .....	32
8.2	Trust constituency .....	32
8.3	Health record rights .....	33
8.4	Health record obligations .....	33
8.5	Health record composition .....	34
8.6	Human and business agents and their accountable actions .....	34
8.7	Software and device agents and their accountable actions .....	34
8.8	Scope of accountability .....	34
8.9	Provenance .....	35
8.10	Authentication .....	35
8.11	Auditability .....	36
8.12	Chain of trust .....	36
8.13	Faithfulness, permanence, persistence and indelibility .....	36
8.14	Data definition, data registry .....	36
8.15	Data integrity .....	36
8.16	Completeness .....	36
9	Downstream/upstream information flow perspectives .....	37
9.1	Downstream information flow perspective -- Subject of care .....	37
9.2	Downstream information flow perspective -- Accountable agent(s) for health record content .....	38
9.3	Upstream perspective -- Accountable agent(s) for health record access/view .....	39
10	Agents, actions and corresponding persistent record entries .....	39
10.1	Agent takes action .....	39
10.2	Agent documents action taken .....	40
10.3	Agent stewards the record entry .....	40
11	Key contexts for action instances and record entry instances .....	41
11.1	Identity Context .....	41
11.2	Accountability Context .....	41
11.3	Data Integrity Context .....	41
11.4	Clinical Context .....	41

11.5	Administrative/operational context .....	42
12	Roles and relationships (examples) .....	42
12.1	Subject of care and provider relationships .....	42
12.2	Health services .....	42
12.3	Health record relationships .....	42
12.4	Individuals, organizations and business unit relationships .....	43
12.5	Inter-healthcare professional relationships .....	43
13	Record lifecycle events and CRUD (create, read, update, delete) .....	44
14	Key lifecycle events in trusted end-to-end information flows .....	46
15	Record lifecycle events and action instances .....	47
15.1	Initial instance .....	47
15.1.1	Initial action instance .....	47
15.1.2	Record lifecycle event -- Originate/retain record entry instance(s) .....	48
15.2	Subsequent instance .....	50
15.2.1	Subsequent action instance .....	50
15.2.2	Record lifecycle event -- Amend (update) record entry instance(s) .....	50
15.3	Record lifecycle event -- Transform/translate .....	51
15.4	Record lifecycle event -- Attest .....	52
15.5	Record lifecycle event -- Access/view .....	53
15.6	Record lifecycle event -- Report (output) .....	54
15.7	Record lifecycle event -- Disclose .....	54
15.8	Record lifecycle event -- Transmit .....	54
15.9	Record lifecycle event -- Receive/retain .....	56
15.10	Record lifecycle event -- De-identify (anonymize) .....	57
15.11	Record lifecycle event -- Pseudonymize .....	58
15.12	Record lifecycle event -- Re-identify .....	60
15.13	Record lifecycle event -- Extract .....	61
15.14	Record lifecycle event -- Archive .....	62
15.15	Record lifecycle event -- Restore (from archive) .....	63
15.16	Record lifecycle event -- Destroy/delete .....	64
15.17	Record lifecycle event -- Deprecate .....	65
15.18	Record lifecycle event -- Reactivate (from delete or deprecate) .....	66
15.19	Record lifecycle event -- Merge .....	67
15.20	Record lifecycle event -- Unmerge .....	68
15.21	Record lifecycle event -- Link .....	69
15.22	Record lifecycle event -- Unlink .....	69
15.23	Record lifecycle event -- Add legal hold .....	70
15.24	Record lifecycle event -- Remove legal hold .....	71
15.25	Record lifecycle event -- Verify .....	72
15.26	Record lifecycle event -- Encrypt .....	73
15.27	Record lifecycle event -- Decrypt .....	74
	Annex A (informative) HL7 Fast Health Interoperable Resources (FHIR) .....	76
	Annex B (informative) Lifecycle metadata captured in FHIR resources .....	78
	Annex C (informative) Sample lifecycle event sequence with FHIR resources .....	82
	Annex D (informative) Lifecycle Event Sequence -- Point of Origination to Point of Access (Example) .....	84
	Bibliography .....	85