

1
2 TO:
3 Directorate-General for Communications Networks, Content and Technology
4 Digital Industry (Directorate A)
5 Competitive Electronics Industry (Unit A.3)

6
7 TO: Andreas Lymberis
8 TO: Gökalp Gümüşdere

9
10
11 **Reference: Smart Wearables: Reflection and Orientation Paper**

12
13 First of all, a lot of thanks to Directorate-General for Communications Networks, Content and
14 Technology (Unit A.3) for organising this important consultation.

15
16 This opinion represents an opinion of an individual citizen, not any legal entity.

17
18 This opinion does not contain:
19 – any business secrets
20 – any trade secrets
21 – any confidential information.

22
23 This opinion is public.
24 PDF file of this opinion can be added to a relevant web page

25
26 Annex 1 holds information about previous consultations on the European Union level.
27 Annex 2 holds information about disclaimers and copyright.

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31 Best Regards,

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35 Jukka S. Rannila
36 citizen of Finland
37
38 signed electronically

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The same issues are repeated many times – check Annex 1

On the Annex 1 is information about my previous opinions. I guess that units of some Directorate-Generals have reviewed my previous opinions.

Here we can conclude that the same issues are repeated many times – even though several issues have been repeated in different order.

One reference / May & Andersen (2001)

Here we can note the following reference:

May, M., & Andersen, P. B. (2001). Instrument Semiotics. In K. Liu, R. J. Clarke, P. B. Andersen, & R. K. Stamper (Eds.), Information, Organisation and Technology: Studies in Organisational Semiotics (pp. 271–298). Boston, MA: Springer US. doi:10.1007/978-1-4615-1655-2_10

May & Andersen (2001) use a figure (figure 3 in the article) to describe 14 different media classes. Here we can present a table based on 14 different media classes (based on May & Andersen 2001).

**14 different media classes (16 minus 2 possible combinations)
(based on May & Andersen 2001)**

		TEMPORAL			
		Static	Repetitive	Sequential	Dynamic
M E D I A	<u>Graphic</u>	static graphic	repetitive graphic	sequential graphic	dynamic graphic
	<u>Acoustic</u>	(not possible)	repetitive acoustic	sequential acoustic	dynamic acoustic
	<u>Haptic</u>	static haptic	repetitive haptic	sequential haptic	dynamic haptic
	<u>Kinetic</u>	(not possible)	repetitive kinetic	sequential kinetic	dynamic kinetic

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Here we can note that smart wearables can be linked to different (14) media classes.

Proposal 1: 14 different media classes could be assessed after this consultation.

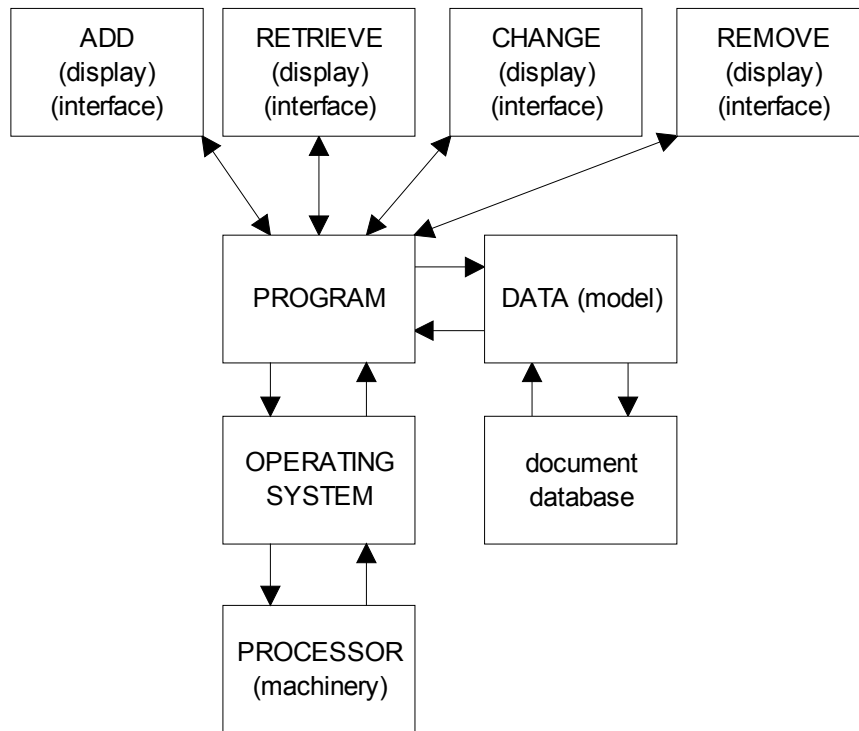
Proposal 2: Different efforts for smart wearables could be linked to 14 different media classes after this consultation.

74 **One presentation for information systems / About figure 1 on the reflection paper**

75

76 Following figure on the reflection paper is one conception of information system. I have presented
77 the following figure as one conception of information system.

78



79

80

Basic issues of an information system

81

82 Generally speaking we have different techniques on the information technology field. Here we can
83 note that programs (most arrows) are in the middle of different information systems. Then programs
84 handle the data in a system (documents and/or databases). However we have to have one specific
85 program which is different – i.e. operating system. Operating systems handle connections with
86 machinery and processors. Generally speaking programs can work with an operating system and
87 developers of programs use different parts of an operating system.

88

What this means to information systems?

90

1) **There can be several processor (machinery) possibilities**

91

2) **There can be several operating systems possibilities**

92

3) **There can be several programs possibilities**

93

4) **Programs handle data in different ways**

94

5) **The data can modelled in different ways**

95

6) **There can documents and/or databases in different systems**

96

7) **There are always four basic functions (add, retrieve, change, remove).**

97

8) **There are several providers of different computer programs.**

98

9) **There are naturally competing programs.**

99 **10) Different programs comply with different standards.**

100
101 Based on figure 2 on the reflection paper we can conclude that these basic functions still exists even
102 though there are several (new) technical possibilities.

103
104 **Proposal 3: Future work on smart wearables could be divided to different classes based**
105 **on presented basic functions/parts of an information system (previous 1 and**
106 **explanation).**

107
108 We have to note that data can have different models and data (models) are developed and/or used by
109 different stakeholders (four basic functions). Especially in databases there are possibilities for
110 several data models; depending on the modellers there can be different data models in databases.
111 Generally speaking changing data models can be very difficult in many cases.

112
113 Here we can note that ownership, agreement and membership are interlinked in different ways.
114 Generally speaking average usage of a system means an unique combination of ownership,
115 agreement and membership. When everything works fine there are not problems. However changes
116 with ownership, agreement and membership can result difficult situations.

117

	Owner? Member? Agreement?	Standards?	OPEN	CLOSED
1. Device / Machinery				
2. Operating system				
3. Program(s)				
4. Data models / Conceptual models				
5. Documents				
6. Databases				
7. Communications				
8. Retrieve / Interface / Display				
9. Add / Interface / Display				
10. Remove / Interface / Display				
11. Change / Interface / Display				

118
119 Here we can note the difference between owners, agreements and members. In reality ownerships
120 agreements and memberships cause very complex networks, and those networks are changing all
121 the time: divisions, mergers, ownership changes, agreement changes, cooperation with other
122 entities, life-cycles, etc.

123

124 **One information system only?**

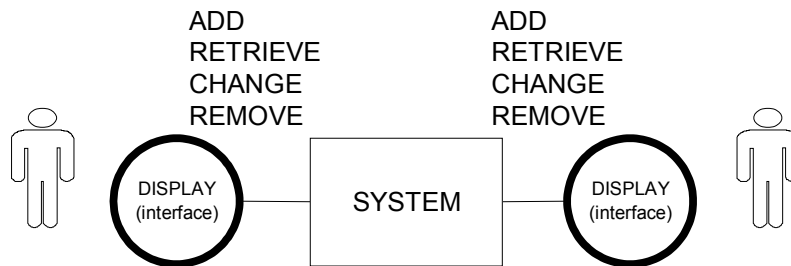
125

126 Generally speaking an information system contains displays and/or interfaces which can be used in
 127 different ways. There can be several users and/or user groups for an information system

128

129 Here we can note four basic functions for an information system: adding data, retrieving data,
 130 changing data and removing data.

131

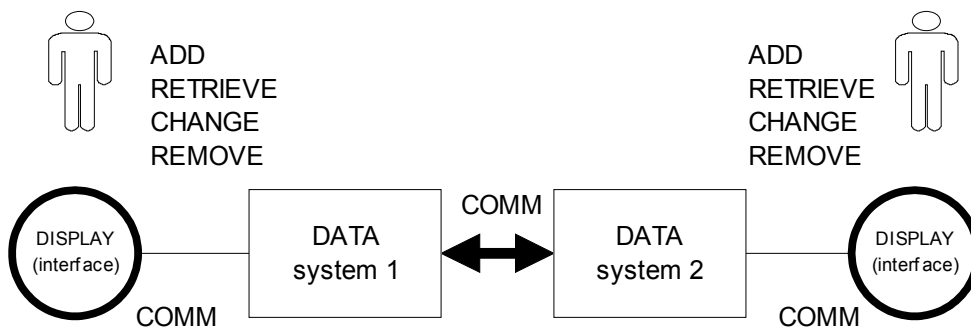


132

133

134 Then we can note that different information systems can have some cooperation based on different
 135 communication methods (COMM).

136



137

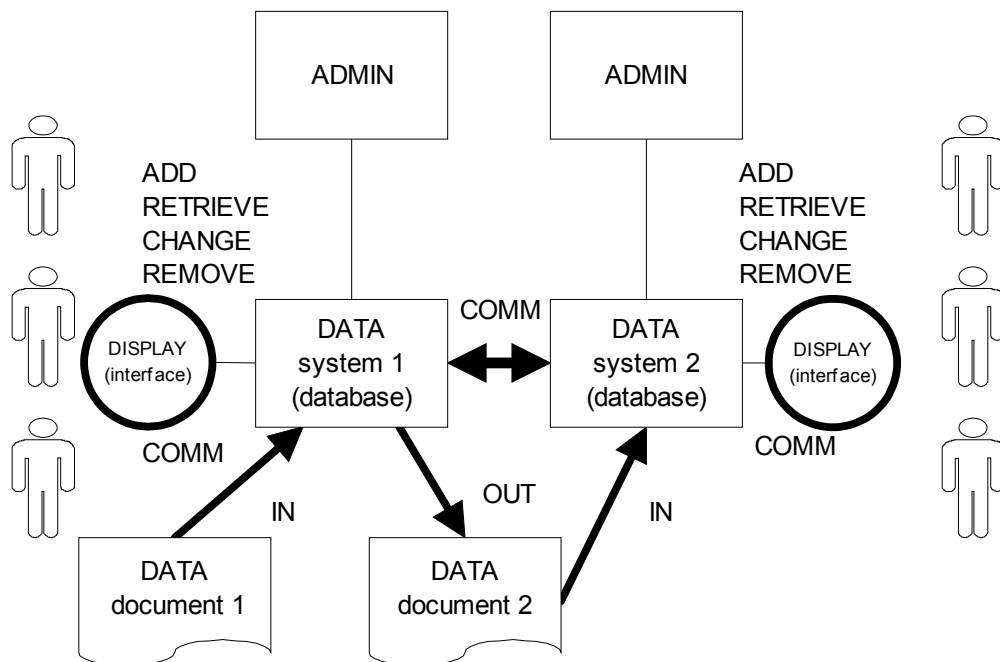
138

139 Cooperation between systems can be direct system-to-system communication (COMM). Then we
 140 can note that cooperation between systems can be based on transmitting documents between
 141 different information systems. There is also different administrative (ADMIN) duties when different
 142 systems are used.

143

144 [Continues on the next page]

145



146

147

148

What this means to smart wearables?

149

11) There can be several users / user groups for an information system.

150

12) There can be several systems which can have direct system-to-system cooperation.

151

152

13) There can be several systems which can transmit documents between different systems.

153

154

155

Like the figure indicates, there are databases in different information systems. Then there are different documents for transmitting data between different systems. Here we can note especially following standardisation needs for different parts of different parts of an information system.

156

157

158

159

From this simple (figure) conception we can differentiate several standard classes.

160

161

1) Data (documents) standards

162

2) Data (database) standards

163

3) Standards for adding data to a system.

164

4) Standards for retrieving data from a system.

165

5) Standards for changing data in a system.

166

6) Standards for removing data from a system.

167

7) Display standards

168

8) Interface standards

169

9) Different communication standards.

170

171

Here we can note that ownership, agreement and membership are interlinked in different ways.

172

Generally speaking average usage of a system means an unique combination of ownership,

173 agreement and membership. When everything works fine there are not problems. However changes
174 with ownership, agreement and membership can result difficult situations.

175
176 **Standards / “standards wars” or “format wars” / Standardisation organisations**

177
178 There are different standards setting organisations on the information technology field. One list ¹ of
179 these standards setting organisations is provided by ConsortiumInfo.org.

180
181 **What this means to information systems?**

- 182 **14) There are several standardisation issues.**
183 **15) There is a need for several standards on different levels.**
184 **16) There are several standardisation organisations.**
185 **17) Assessing and selection of standards mean more work.**
186 **18) This means constant reviews of different standards.**
187 **19) It is possible to implement “wrong” standards.**
188 **20) Part of selected standards can be failures.**
189 **21) This means constant work for implementing existing and new standards.**
190 **22) Constant modifications of software can result new security problems.**

191
192 One warning can be said about standards setting organisations. All standards setting organisations
193 are not successes based on several factors and there can may irrelevant standards setting
194 organisations. Market situation on different vehicle markets varies a lot based on different factors.

195
196 Here we can note some problems:

- 197
198 * some systems are based on **de-facto** standards
199 * some systems are based on **de-jure** standards
200 * there can be confrontations between **de-facto** and **de-jure** standards
201 * there can be a monopoly situation in some domain
202 * some standards may inhibit possible actions of some stakeholders
203 * there can be a standard war on some domains
204 * standards have different life-cycles
205 * systems have different life-cycles
206 * there can be mismatches between different life-cycles
207 * there can be failed standards
208 * there can be deprecated standards.

209
210 It is quite normal situation in the information technology field that there are competing standards
211 for some application field. Therefore there are all the time ongoing “standards wars” or “format
212 wars”. The information technology standards tend to be interrelated and one “standards war” or
213 “format war” can lead to another similar situation.

214
215 **What this means to smart wearables:**

- 216 **23) Different standards should be assessed carefully.**

1 Standard Setting Organizations and Standards List, www.consortiuminfo.org/links/linksall.php

- 217 **24) There could be a catalogue of different standards**
218 **25) There could be some (new?) regulations for keeping the catalogue of different**
219 **standards up-to-date.**

220

221 **Proposal 4: Current standardisation (e.g. list provided by ConsortiumInfo.org) efforts**
222 **by different organisations could be assessed carefully.**

223

224 **Proposal 5: Based on the assessment of different standards, there could be reasoned**
225 **decisions to use some standards.**

226

227 I have advocated open standards even though in some cases open standards are not de facto
228 standards. In practice public sector has very important role, when some standards are competing in
229 the market place. Because public sector has a considerable power when buying/developing
230 information systems and therefore public sector can sometimes direct markets to certain standards.
231 Therefore there should be serious vigilance when assessing different standards and “standards” in
232 some application fields.

233

234 There are differences between horizontal and vertical standards. A simple example is naturally
235 email solutions. There are several vertical standards when creating technically email solutions. Then
236 there are horizontal standards which enable sending messages between technically different email
237 solutions.

238

239 **Proposal 6: There could be assessment of vertical and horizontal standards.**

240

241 **Proposal 7: Using horizontal standards could be favoured when creating different**
242 **information systems.**

243

244 Horizontal standards enables technological solutions which can work together. Horizontal standards
245 hides different complexities in information systems.

246

247 **Opinion: The number of redundant standardisation efforts should be minimal.**

248

249 **Proposal 8: There could be separation of horizontal standards and vertical standards.**

250

251 **Proposal 9: There could be different standardisation efforts to horizontal standards**
252 **and vertical standards.**

253

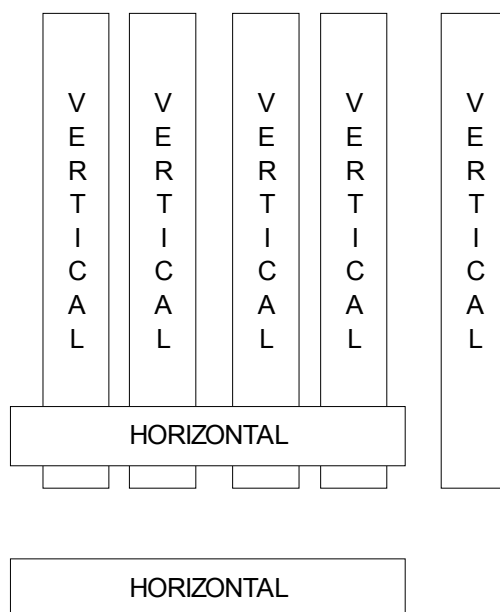
254 Personally I have advocated using different horizontal standards. For example email standards
255 (horizontal) are implemented with very different technologies (vertical).

256

257

258

259 [Continues on the next page]



260
261

262 **Proposal 10: Government(s) should especially concentrate on open horizontal**
263 **standards.**

264

265 **Proposal 11: Some government agencies could apply for memberships of different**
266 **standard setting organisations which develop especially open horizontal standards.**

267

268 **Proposal 12: Government agencies should not be passive by-standers when different**
269 **open horizontal standards are developed.**

270

271 **Proposal 13: Government agencies could financially support development of open**
272 **horizontal standards.**

273

274 Here we can note that developing horizontal standards is very demanding compared to developing
275 vertical standards.

276

277 **What this means to information systems?**

278

279 **26) There can be different standardisation organisations which provide different**
standards.

280

281 **27) There can be competing horizontal standards.**

282

283 **28) Some government agencies could join some standardisation organisations**
284 **which develop especially open horizontal standards**

285

286 **29) Some government agencies could fund development of open horizontal**
standards.

287

288 **30) Sometimes there are no open horizontal standards.**

289

290 **31) Development of new (open) standards means hired personnel and other**
monetary costs.

- 288 **32) Absence of open horizontal standards means several problems.**
289 **33) Horizontal standards based on private solutions mean several problems.**
290

291 Here we can note that developing horizontal standards is very demanding compared to developing
292 vertical standards.

293
294 **Proposal 14: Based on the results of this consultation new ideas for standardisation**
295 **(smart wearables) could be assessed carefully – especially horizontal standards could**
296 **be assessed carefully.**
297

298 **More and more new identifiers (ID) / Challenges to privacy?**
299

300 In the previous consultations there has been discussion about different identifiers (ID) in different
301 information systems. It can be noted from the previous opinions that there will be several and
302 different identifiers (ID) for different levels.
303

304 Examples of these identifiers (ID) are following:
305

- 306 1) Facebook ID for an individual person
307 2) Facebook ID for the individual up-dates of individuals
308 3) Data Universal Numbering System (D-U-N-S)
309 4) Reuters instruments codes (RICs)
310 5) Social security code for individual citizens in the European Union member states
311 6) Business identity code for a company in an European Union member state
312 7) Value added tax code for a company in an European Union member state.
313

314 The examples of private identifiers (Facebook IDs, Data Universal Numbering System (D-U-N-S),
315 Reuters Instrumens Codes (RICs)) show, that persons and/or communities can use or even demand
316 of using identifiers (ID) from privately owned information systems.
317

318 **Proposal 15: There could be a systematic review of different identifiers (ID) on**
319 **different levels.**
320

321 **Proposal 16: Possible systematic review of different identifiers (ID) should assess**
322 **different situations.**
323

324 Different information systems have also internal identifiers (ID) and external identifiers (ID) for
325 (possible) public usage. The added value for different stakeholders is provided by combination of
326 different identifiers (ID) in a specific information system.
327

328 **Proposal 17: There could be some assessment(s) based on different versions of different**
329 **identifiers (ID).**
330

331 It can be possible, that there are some legacy identifiers (ID) in the near future. It can be possible,
332 that gradually some legacy identifiers (ID) can be consolidated for more standardised identifiers

333 (ID), but this consolidation means some serious technical and administrative actions.

334

335 **Proposal 18: Legacy identifiers (ID) could be assessed seriously.**

336

337 When information about relevant identifiers is collected, there could be a serious assessment of
338 possible (near) monopoly situation of some identifiers. Depending on the nature of an identifier,
339 there may be a need for serious (anti-trust?) negotiations with providers of some identifiers.

340

341 **Proposal 19: The nature of different identifiers (ID) could be assessed.**

342

343 **Proposal 20: There could be serious negotiations with some providers of identifiers**
344 **(ID).**

345

346 In the European Union there has been different anti-trust cases which are related to different private
347 sector identifiers (ID), since some of those private sector identifiers (ID) have been used in several
348 other systems. Some private sector identifiers (ID) can mean a (near) monopoly situation.

349

350 **What this means to information systems?**

351 1) **Number of different identifiers (ID) is increasing – not decreasing**

352 2) **New identifiers (ID) mean a lot work for creating and/or updating of different**
353 **information systems.**

354 3) **There can new identifiers (ID).**

355 4) **There can public and private identifiers (ID).**

356 5) **Some private identifiers (ID) can limit actions of different stakeholders.**

357 6) **Different identifiers (ID) related to energy systems could be assessed carefully.**

358 7) **There could be some discussions with communities which provide private**
359 **identifiers (ID).**

360 8) **Monopoly situation with some private identifiers (ID) could be assessed.**

361

362 **3.3.2. Non-technological barriers / Pages 16-17 on the Reflection and Orientation Paper**

363

364 **The absence of standards and test methods?**

365

366 **Proposal 21: Based on the results of this consultation there could be a proposed**
367 **roadmap for different standardisation efforts.**

368

369 **Proposal 22: Joining and/or funding some standardisation organisations could be**
370 **assessed carefully after this consultation.**

371

372 **The development of an appropriate regulatory framework?**

373

374 **Proposal 23: Based on the results of this consultation there could be a white paper for**
375 **legislative agenda for smart wearables.**

376

377 **More technical consultations?**

378

379 Based on answers (this consultation) there could be more technically oriented consultations.

380 Previously mentioned issues (this opinion) could be detailed for new technically oriented
381 consultations.

382

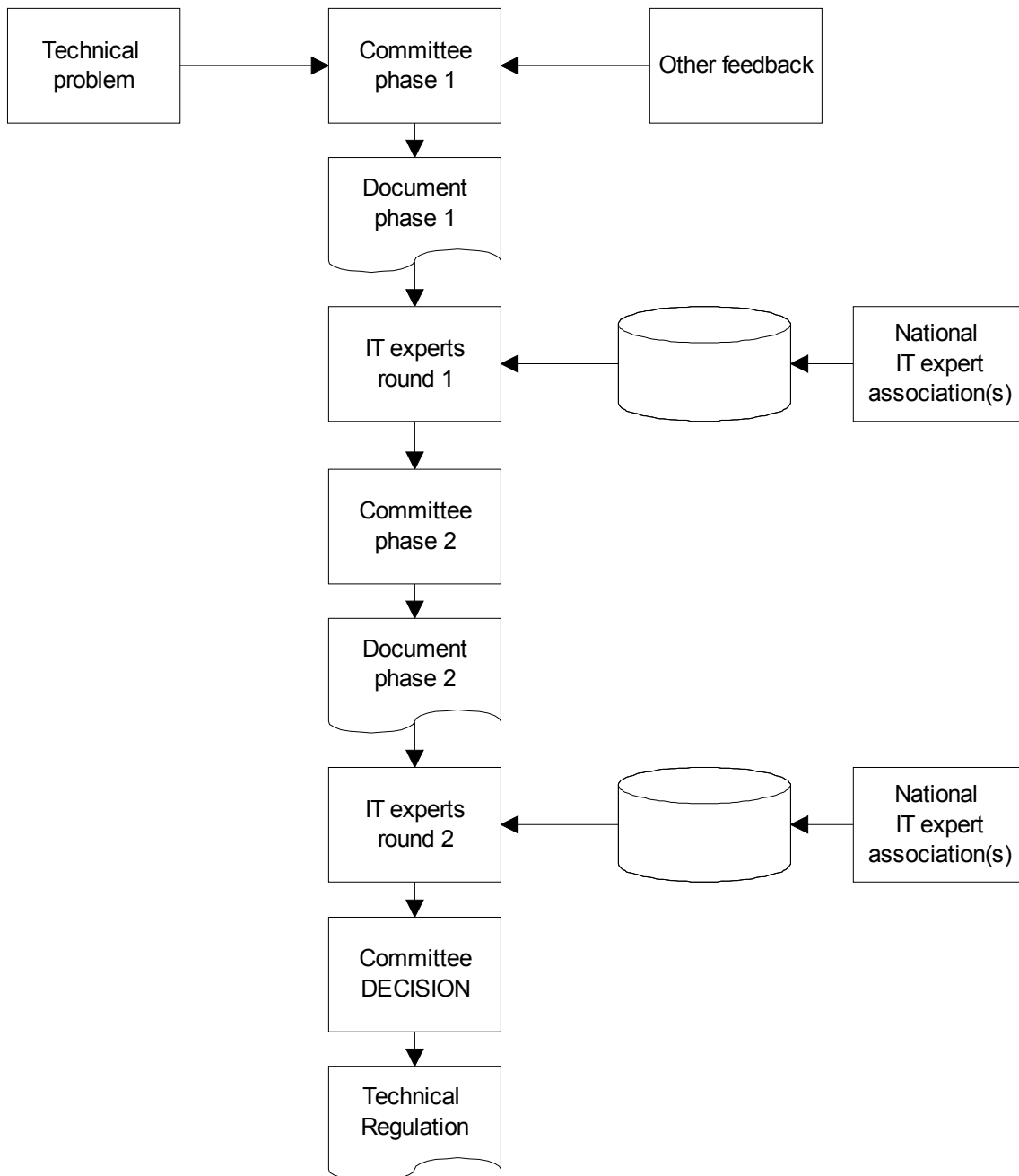
383 **Proposal 24: More technically oriented consultations could be organised after this**
384 **consultation.**

385

386

387 [Continues on the next page]

388



389
390

391 Based on previous opinions a process model for technical consultations can be presented. It could
392 be possible to inform members of different (national) information technology experts associations
393 about different technical consultations. There can different technical problems when developing
394 different information systems.

395
396
397

Proposal 25: Members of different (national) information technology experts associations could be informed about different consultations based on different

398 **technical problems when developing different (public sector) information systems.**

399

400 **Possible reality / Several systems without connections to other systems**

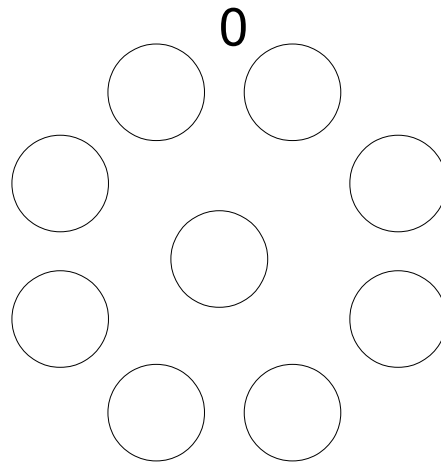
401

402 The current reality (0) is that there can several systems which are not connected to other systems.

403 However in the future there can be several ways for cooperation between systems. The problem in

404 the future may be very complex system-to-system (1) connections.

405



406

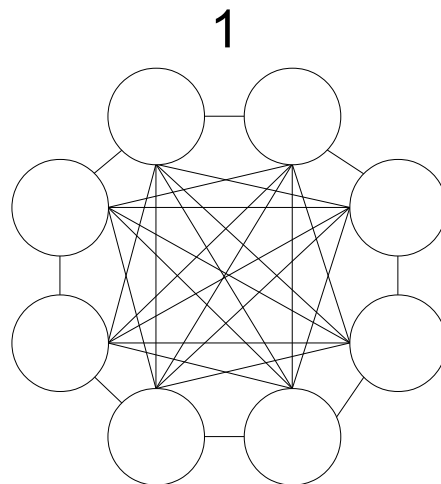
Possible reality: Several systems without connections

407

408

409 **Possible future: Very complex system-to-system relations and/or several connections**

410



411

Possible future: Very complex system-to-system relations and/or several connections

412

413

414 Generally speaking these many-to-many connections can work quite well when there are not

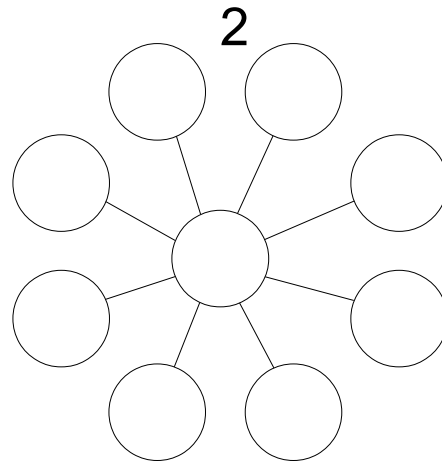
415 changes in different systems. The problem arises when there are changes in one system since one

416 change can affect several other systems.

417

418 Based this problem there are in many cases one central system (2) which can handle cooperation
419 between different (sub)systems. The problem with this option is the failure of the central system and
420 this can lead to unwanted outage of several (sub)systems.

421



One central system

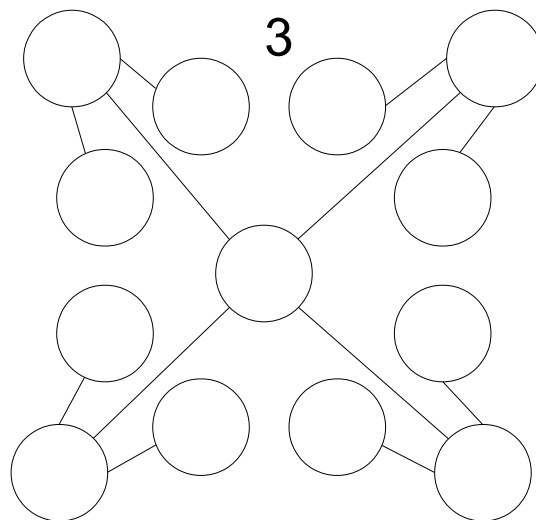
422

423

424

425 One option (3) is to have a hierarchy between different system. In this way there cab some systems
426 which are not connected to the central system. With this approach not all (sub)systems face the
427 same problem with a failure in the central system.

428



Possible future: Some systems are organised into a hierarchical structure

429

430

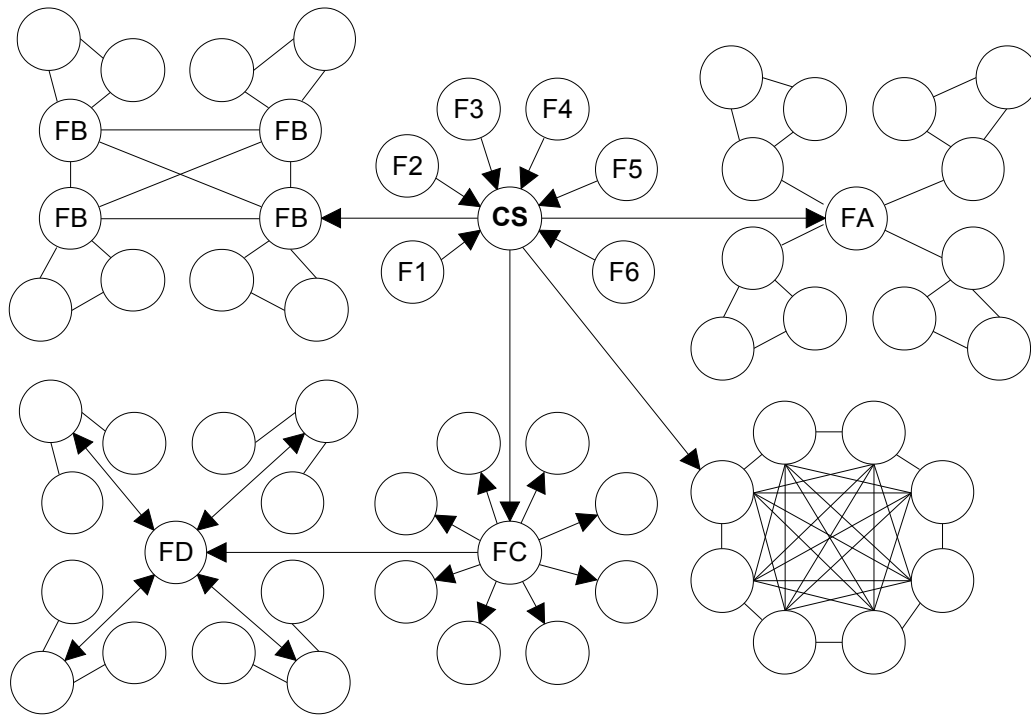
431

432 **Complex networks of different systems?**

433

434 The reality: There will be several layered systems developed by several stakeholder communities

435 (both for-profit and non-profit communities).
 436



437
 438
 439 Here we can note that there can some central systems (CS) and information from those central
 440 systems can be distributed to several other systems. In reality the added value for users (citizens and
 441 different legal entities) is achieved by combining different systems to provide different
 442 services.

443
 444 We can note that there can several formats (e.g. 1-6, A-D) for transmitting information from some
 445 central (CS) information system. Some formats may be non-standard or standard.

446
 447 **Proposal 26: There could be some efforts for developing some central systems.**

448
 449 The practical reality is that there will be several central systems – not all-powerful one central
 450 system.

451
 452 **Proposal 27: There could be some efforts for standardising different central systems.**

453
 454 Based on efforts for developing some central systems there could be better connectivity with
 455 different systems. I suppose that there can be private and public central systems in different
 456 application fields (smart wearables).

ANNEX 1

457

458

459 My opinions to the previous and relevant consultations – there consultations were mostly organised
460 by the European Commission.

461

462 EN: Opinion 1: Review of the rules on access to documents

463 http://www.jukkarannila.fi/lausunnot.html#nro_1

464

465 EN: Opinion 2: Schools for the 21st Century

466 http://www.jukkarannila.fi/lausunnot.html#nro_2

467

468 EN: Opinion 3: The future of pharmaceuticals for Human use in Europe- making Europe a Hub for
469 Safe and Innovative medicines

470 http://www.jukkarannila.fi/lausunnot.html#nro_3

471

472 EN: Opinion 5: Consumer Scoreboard, Questionnaire for stakeholders

473 http://www.jukkarannila.fi/lausunnot.html#nro_5

474

475 EN: Opinion 6: Consultation on a Code of Conduct for Interest Representatives

476 http://www.jukkarannila.fi/lausunnot.html#nro_6

477

478 EN: Opinion 8: European Interoperability Framework, version 2, draft

479 http://www.jukkarannila.fi/lausunnot.html#nro_8

480

481 EN: Opinion 9: CAMSS: Common Assessment Method for Standards and Specifications, CAMSS
482 proposal for comments

483 http://www.jukkarannila.fi/lausunnot.html#nro_9

484

485 EN: Opinion 15: Collective Redress

486 http://www.jukkarannila.fi/lausunnot.html#nro_15

487

488 EN: Opinion 17: Opinion to Antitrust Case No. COMP/C-3/39.530

489 http://www.jukkarannila.fi/lausunnot.html#nro_17

490

491 EN: Opinion 18: Opinion Related to the Public Undertaking by Microsoft

492 http://www.jukkarannila.fi/lausunnot.html#nro_18

493

494 EN: Opinion 19: Official Acknowledgement by the Commission

495 http://www.jukkarannila.fi/lausunnot.html#nro_19

496

497 EN: Opinion 20: SECOND Opinion Related to the Public Undertaking by Microsoft

498 http://www.jukkarannila.fi/lausunnot.html#nro_20

499

500 EN: Opinion 21: Opinion about the European Interoperability Strategy proposal

501 http://www.jukkarannila.fi/lausunnot.html#nro_21

- 502 EN: Opinion 23: Public consultation on the review of the European Standardisation System
503 http://www.jukkarannila.fi/lausunnot.html#nro_23
504
- 505 EN: Opinion 27: Public Consultation on the Modernisation of EU Public Procurement Policy
506 http://www.jukkarannila.fi/lausunnot.html#nro_27
507
- 508 EN: Opinion 28: Consultation on the Europe 2020 Project Bond Initiative
509 http://www.jukkarannila.fi/lausunnot.html#nro_28
510
- 511 EN: Opinion 30: Internet Filtering
512 http://www.jukkarannila.fi/lausunnot.html#nro_30
513 NOTE: Organised by the European Committee for Standardization (CEN) ²
514
- 515 EN: Opinion 32: COMP/C-3/39.692/IBM – Maintenance services
516 http://www.jukkarannila.fi/lausunnot.html#nro_32
517
- 518 EN: Opinion 34: REMIT Registration Format
519 http://www.jukkarannila.fi/lausunnot.html#nro_34
520 NOTE: Organised by The Agency for the Cooperation of Energy Regulators (ACER) ³
521
- 522 EN: Opinion 35: Exploiting the employment potential of the personal and household services
523 http://www.jukkarannila.fi/lausunnot.html#nro_35
524
- 525 EN: Opinion 37: CASE COMP/39.654 - Reuters instrument codes
526 http://www.jukkarannila.fi/lausunnot.html#nro_37
527
- 528 EN: Opinion 39: Registry options to facilitate linking of emissions trading systems
529 http://www.jukkarannila.fi/lausunnot.html#nro_39
530
- 531 EN: Opinion 40: Media Freedom and Pluralism / audiovisual regulatory bodies
532 http://www.jukkarannila.fi/lausunnot.html#nro_40
533
- 534 EN: Opinion 41: AT.39398: observations on the proposed commitments
535 http://www.jukkarannila.fi/lausunnot.html#nro_41
536
- 537 EN: Opinion 42: Opening up Education
538 http://www.jukkarannila.fi/lausunnot.html#nro_42
539
- 540 EN: Opinion 43: Publication of extracts of the European register of market participants
541 http://www.jukkarannila.fi/lausunnot.html#nro_43
542 NOTE: Organised by The Agency for the Cooperation of Energy Regulators (ACER)
543
544

2 <http://www.cen.eu/> (Accessed 2 July 2012)

3 <http://www.acer.europa.eu/> (Accessed 2 July 2012)

- 545 EN: Opinion 44: Evaluation policy guidelines
546 http://www.jukkarannila.fi/lausunnot.html#nro_44
547
- 548 EN: Opinion 45: About ICT standardisation
549 http://www.jukkarannila.fi/lausunnot.html#nro_45
550
- 551 EN: Opinion 46: Review of the EU copyright rules
552 http://www.jukkarannila.fi/lausunnot.html#nro_46
553
- 554 EN: Opinion 51: European Area of Skills and Qualifications
555 http://www.jukkarannila.fi/lausunnot.html#nro_51
556
- 557 EN: Opinion 52: Trusted Cloud Europe Survey
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627 http://www.jukkarannila.fi/lausunnot.html#nro_100
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- 632 My opinions to the previous and relevant consultations – there consultations were mostly organised
633 by the European Commission. General page to all consultations – both in English and in Finnish:
634 <http://www.jukkarannila.fi/lausunnot.html>

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4 Based on the Finnish three-party system there is a phenomenon called extreme-centre in Finland. The 2011 parliamentary elections in Finland challenged the three-party system, since three “old” parties were not traditionally as the three largest parties. On 2015 this “new” party is part of the current Finnish Government. We all must be interested about this new development in Finland.