Common Specifications & Test Practices

A Good Thing?

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Proposed:

- Common specifications for system performance
- Common standards for the interoperability of tolling system components and sub-systems
- Common test sequences to prove conformance

So…….

- Do we need them?
- Should we want them?
- Are there both good and bad aspects?
- Does the good outweigh the bad?

The Answer is…….

It Depends!

On the surface……

- These all sound like good, logical goals
- But there are different ways to examine these proposals & we should look at all of them
- Taking the proposed objectives one at a time……

Proposal 1:

- Common specifications for system performance
  - Pro:
    - Would guarantee minimum level of performance
    - Could create 'categories' of performance (but would this then be interoperable across boundaries?)
  - Con:
    - Needed performance levels are often situation dependent. (Buying more performance than needed can add cost.)
    - What specs in mixed systems? RF systems typically required to provide 99.5% (or better) accuracy. Video systems are pressed to achieve 90%.

Proposal 2:

- Common standards for the interoperability of tolling system components and sub-systems
  - Pro:
    - Obvious advantages of interoperability. However, this can be (and is today) achieved by simply specifying 'must be interoperable'
  - Con:
    - Could easily limit the 'mix' of technologies used (or allowed). Different technologies and different system designs have various strengths and weaknesses. Today these are matched to the local application requirements. Imposed commonality may limit this.

Proposal 3:

- Common test sequences to prove conformance
  - Pro:
    - Easy to design, cost and conduct test programs.
  - Con:
    - Qualifications/tests today are matched to system needs and requirements. 'Common test sequences' must by definition cover all cases, so are overkill for many needs.
    - Attributes of different technologies must be accounted for in testing 'mixed technology' systems.

ISO has done some things (1)

- From ISO TC204 WG5 (EFC):
  - ISO/TS 12813:2009 – EFC – Compliance check communication for autonomous systems
    - ISO/TS 13142 (2 parts) tests conformity to ISO 12813
  - ISO/TS 14904:2002 – EFC – Interface specification for clearing between operators
  - ISO/TS 14907(2 parts):various dates – EFC – Information exchange between service provision and toll charging
    - ISO 12855:DIS will add additional information & detail
    - Includes conformance test procedures

ISO has done some things (2)

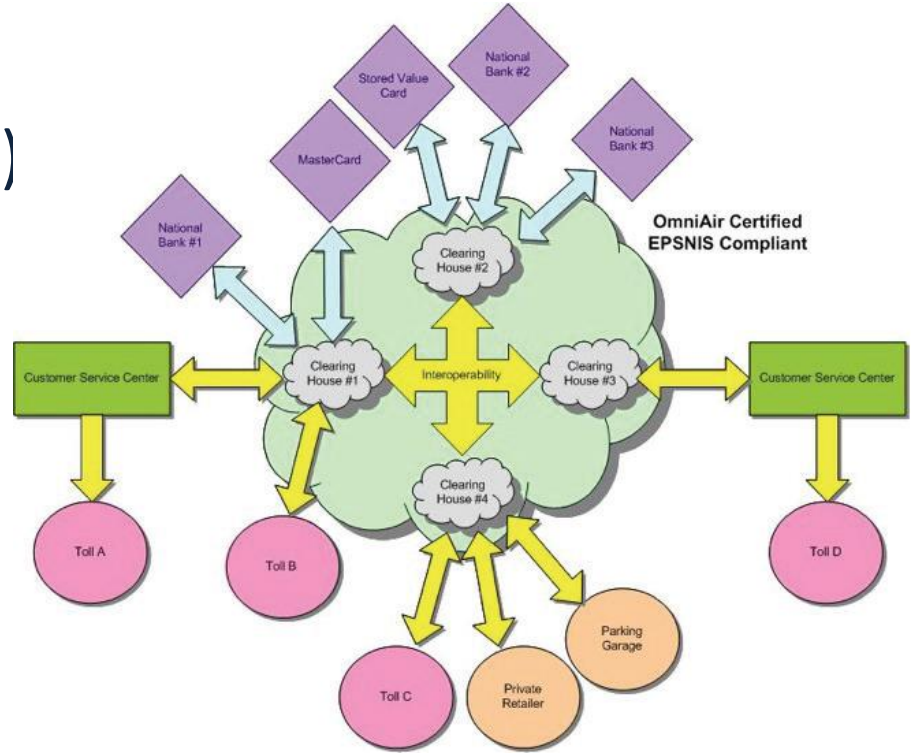
- More from ISO TC204 WG5 (EFC):
  - ISO/TS 17574:2009 – EFC – Guidelines for security protection profiles
  - ISO/TS 17575(4 parts):2010 – EFC – Application interface definition for autonomous systems
    - ISO/TS 16401, 16403, 16407 and 16410 address different aspects of 17575 testing & conformance
  - ISO/TS 25110:2008 – EFC – Interface definition for onboard account using integrated circuit cards

ISO has done some things (3)

- Still more from ISO TC204 WG5 (EFC):
  - ISO 14906:2004 (currently being updated) – EFC – Application interface definition for DSRC
  - ISO 17573:2010 – EFC – Systems architecture for vehicle-related tolling
  - ISO/TS 13141:2010 – EFC – Localization augmentation communication for autonomous systems
    - ISO/TS 13140 (2 parts) tests conformity to ISO 13141
  - ISO/TS 16785:NP – EFC – Interface definition between DSRC-OBE and external in-vehicle devices

OmniAir has an initiative

- EPSNIS (Electronic Payment Systems National Interoperability Specification)
  - Precisely describes the file exchange process and file structures for information exchange of ETC services
  - Controls a financial transaction network for electronic processing of vehicle transactions to process toll (or other fee) payments



And there are more…..

- Other standards exist:
  - Europe (CEN/ETSI)
  - Asia
  - Assorted other global regions

- However, most regional standards in this area are replicated in the ISO standards

Why not use them?

- USA
  - Implementation & testing standards have been 'traditionally' ignored
  - No U.S. participation in TC204 WG5, therefore no U.S. 'flavor' in existing standards
- Rest of World
  - Better (though imperfect) use of implementation & testing standards

An anomaly…..

- Possible to have multiple standards to address the same application, same requirements
  - System A can be standard-compliant
  - System B can be standard-compliant
  - Systems A and B may not be interoperable
- This can usually be controlled at a regional (or even national) level thru user coordination

You Frequently Hear…..

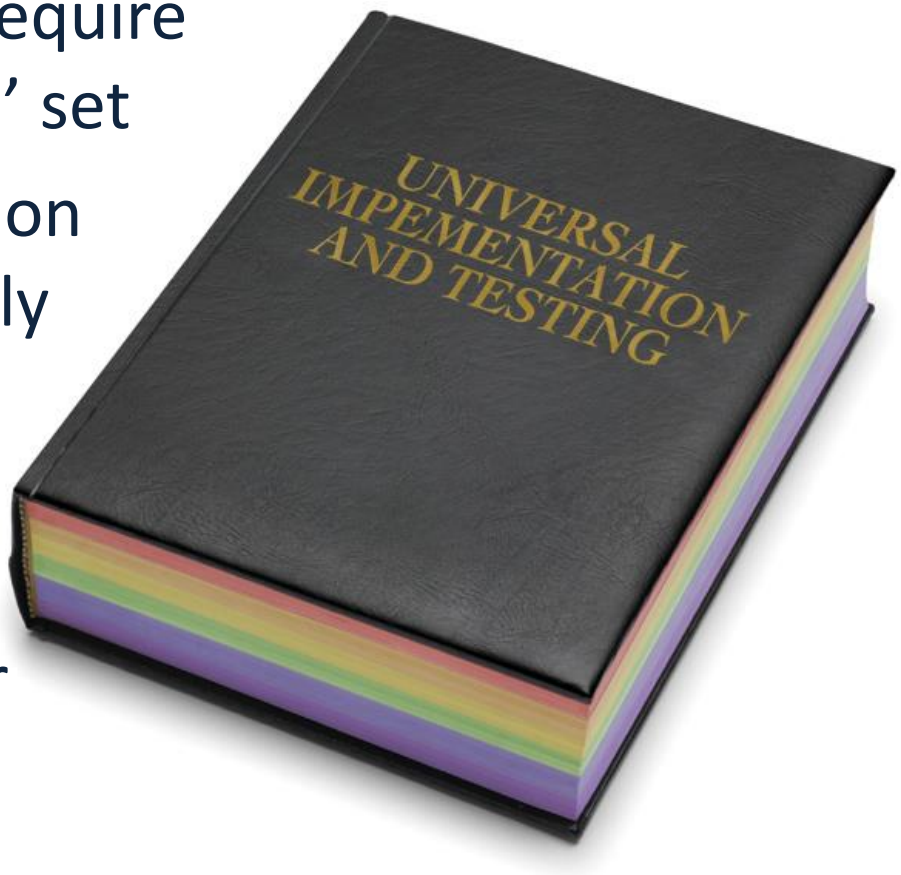
- "Nobody knows what I need but me"

And You Generally See…..

- Total emphasis on local requirements
- No real consideration of what others are doing (or have done)

In A Nutshell…..

- To be 'universal' requires being all-inclusive
- Most implementations require only parts of a 'universal' set
- 'Universal' implementation and/or testing is generally overkill and therefore unnecessarily complex and costly.
- Authorities would rather save money.



Bottom line……

- There are no strictly 'right' answers to these proposal questions – none are clearly good or bad on the surface. 'It Depends' is very appropriate here.

- **For discussion** – a reasonable start might be to create some ranges or levels of commonality to narrow the variations without being over-prescriptive.