ICAO UNITING AVIATION

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Results Interop-Test 2014

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Interoperability Test

- Crossover Test
- Conformity Test

Objectives of Interoperability Test

- Test of Documents (Samples)
- Test of Inspection Systems
- Test of Test Tools
- Test of Specifications

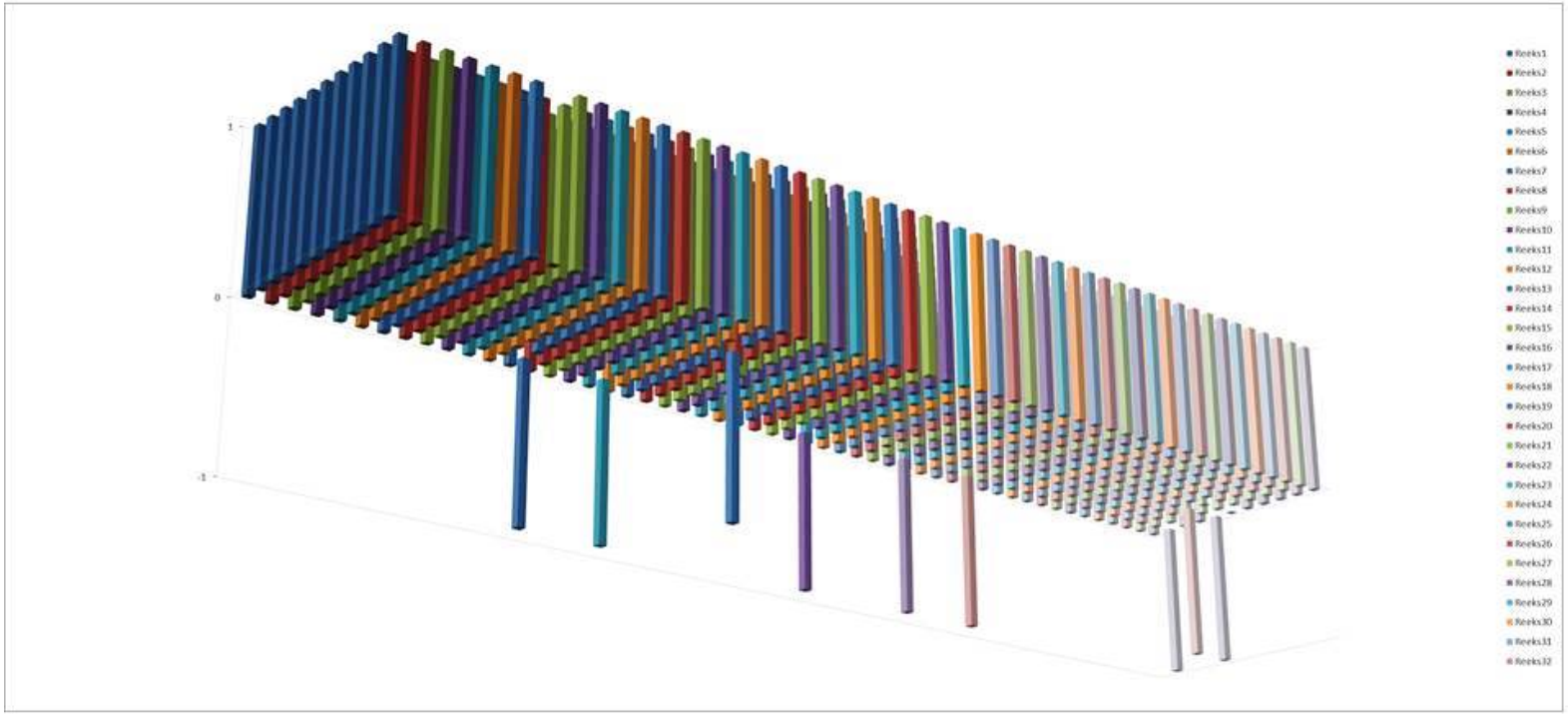
Participants

- 31 Document Providers
  - 18 Samples' Sets from Countries
  - 13 Samples' Sets from Industries
    - Total of 52 different document samples (One or two sets)
- 10 Inspection System Providers
  - 11 Inspection Systems stations
- 3 Test Labs for Conformity Testing

The Interop Test Room

SAC Cross Over test Overview results

BAC Cross Over test Overview results



Crossover Test

Samples

- Mismatches between EF.CardAccess and DG14 (i.e. declared algorithms)
- Some EF.CardAccess contained additional or unexpected information
- Open questions on use of extended length (specification and support by IS and samples)

General

- The quality of the used certificates varied widely (CSCA, DS and CVCA)

Crossover Test

Inspection Systems

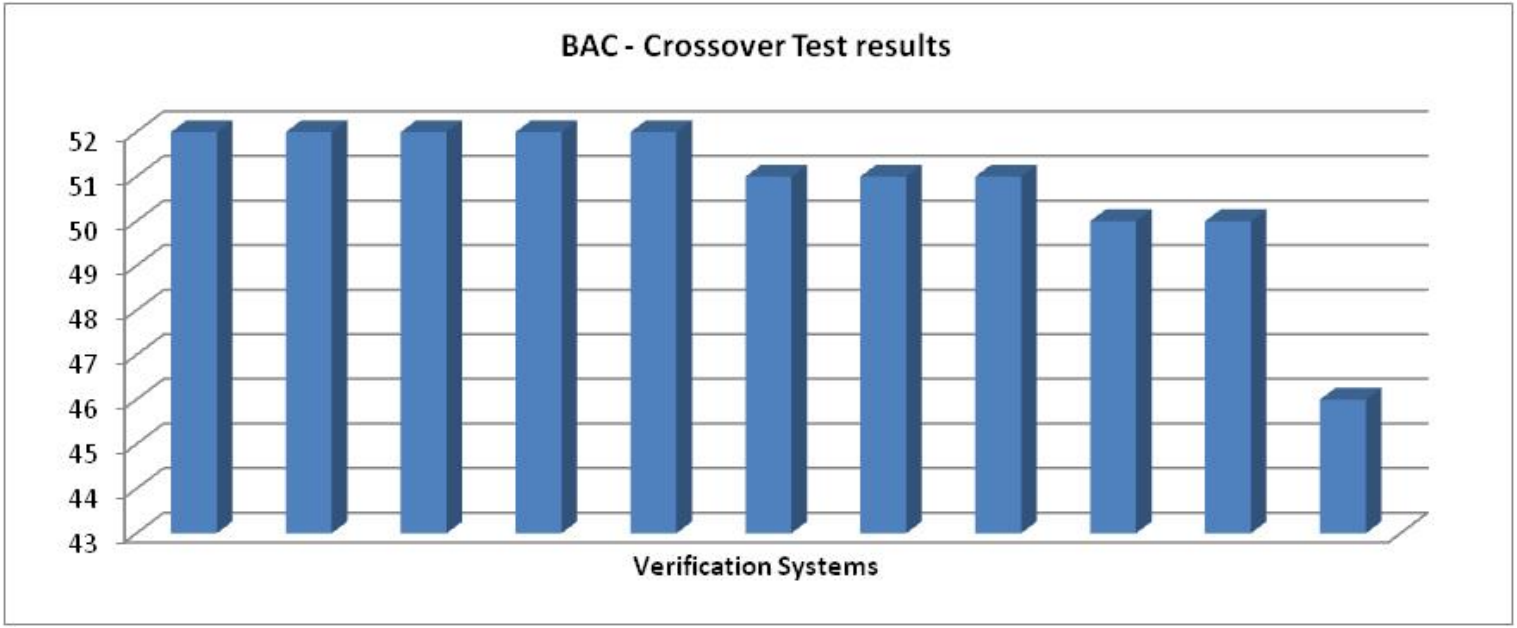
- Some were upgraded during tests (end result after the tests: improved the interoperability)
- Some were definitely not doing EAC and PA
- Some were able to read the samples even if samples were not fully compliant (IS were compensating for errors)

- Note that Integrated Mapping was NOT supported by all Inspection Systems
- Not all algorithms were supported

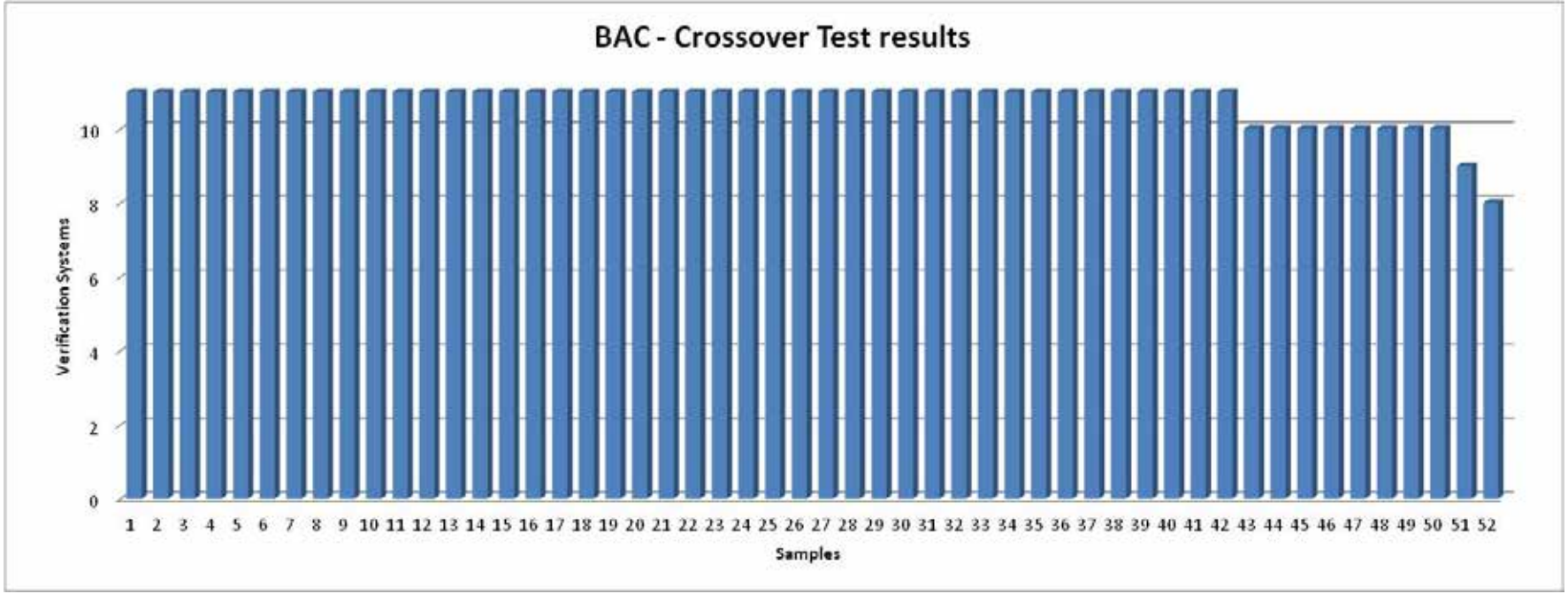
General

- Make sure that IS support all algorithms

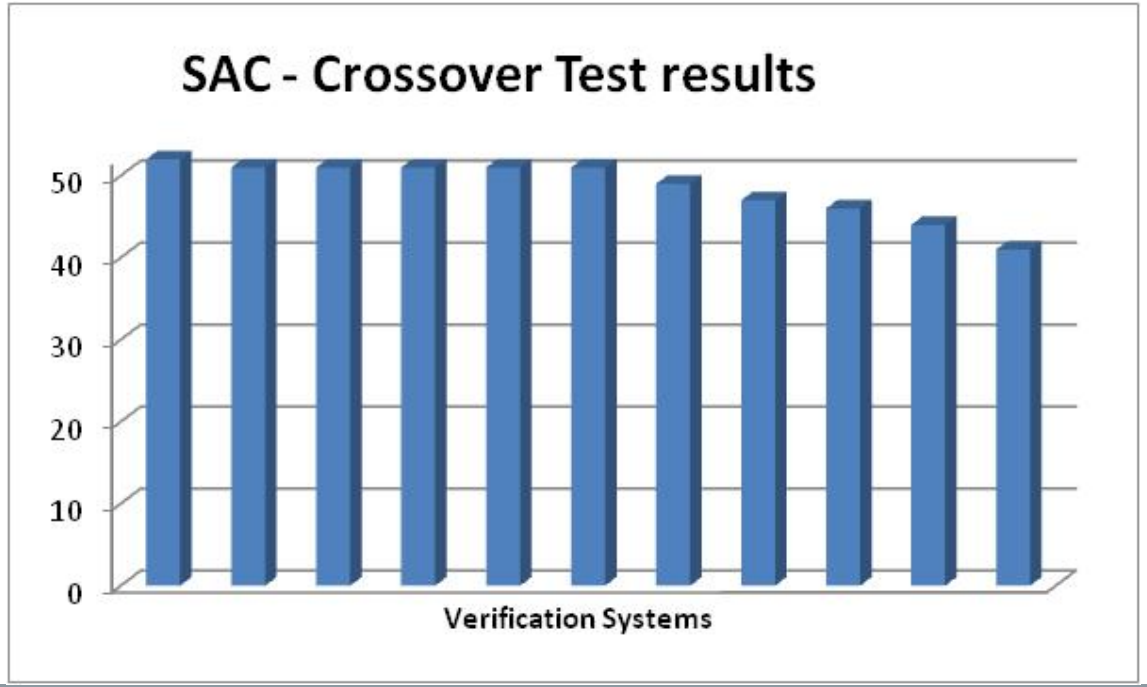
Crossover Test



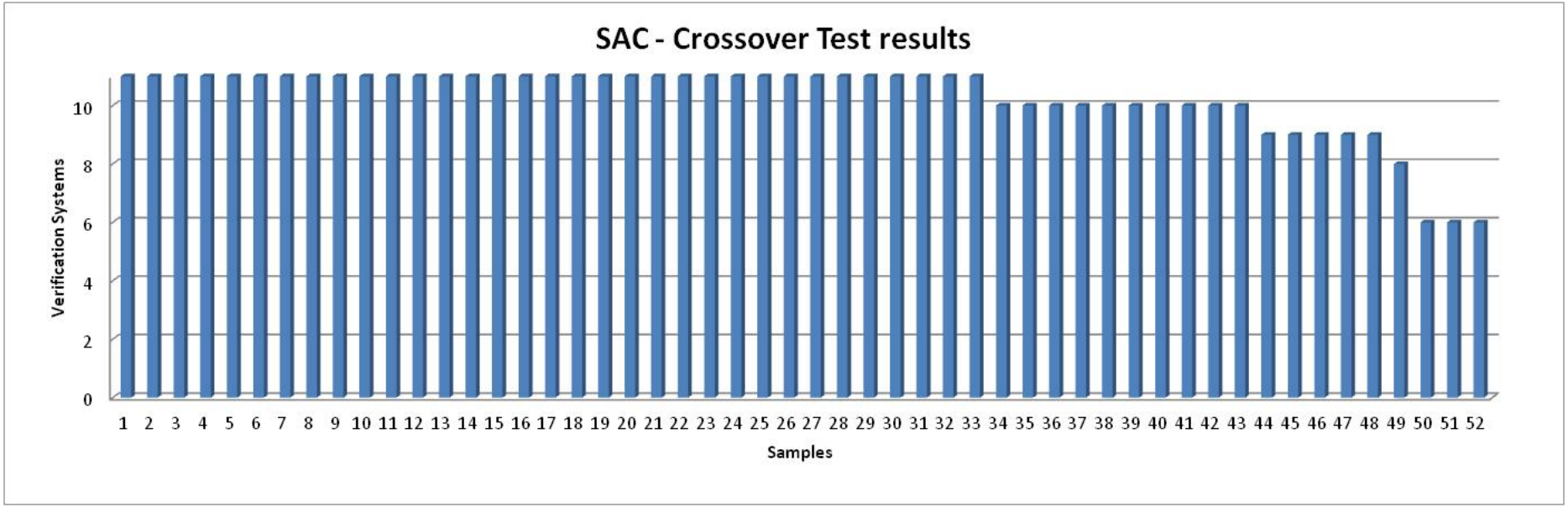
Crossover Test



Crossover Test



Crossover Test



Crossover Test

Notes

- Almost all IS tested both BAC and PACE but some did not plan to support BAC
- In comparison with the Interop in London many more IS were supporting Integrated Mapping
- The expectations of the Interop session was that IS vendors would provide systems representative of functional border control systems
- Not all samples were representative of Governmental issued eMRTD (some were more like development cards)

Crossover Test

Some more statistical information

BAC
- 80% of the samples have been successfully read by all IS with BAC
- but only 45% of the IS could read all samples with BAC

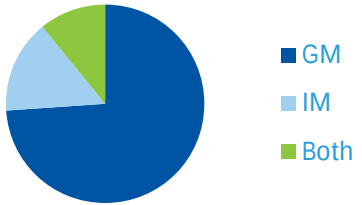
SAC
- 63% of the samples have been successfully read by all IS with SAC(PACE)
- but only 55% of the IS could successfully read 98% of samples with SAC(PACE)
- note that 1 IS could successfully read all samples with SAC(PACE)

Conformity Test

- 3 Test Labs with Conformity Test Tools
  - Keolabs (France): „ICAO Conformance Solution“
  - TÜViT + HJP Consulting (Germany): „GlobalTester“
  - UL (Netherlands): „Collis eMRTD Test Tool“
- Subset of „ICAO TR RF Protocol and Application Test Standard for e-Passports, Part 3“ Version 2.01:
  - Test suite ISO7816_O: Security conditions for PACE protected MRTDs
  - Test suite ISO7816_P: PACEv2
  - Test suite ISO7816_Q: SELECT and READ file EF.CardAccess
  - Test suite LDS_E: Matching between DG14 and EF.CardAccess
  - Test suite LDS_I: Structure of EF.CardAccess

Document Information (1/2)

- Generic Mapping vs. Integrated Mapping*
- SAC may use either IM or GM to map the nonce
  - Samples supporting GM: 34
  - Samples supporting IM: 7
  - Samples supporting GM and IM: 5

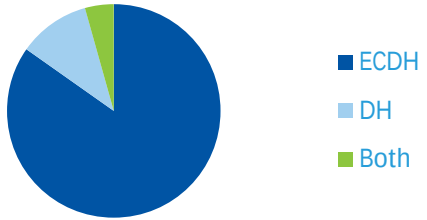


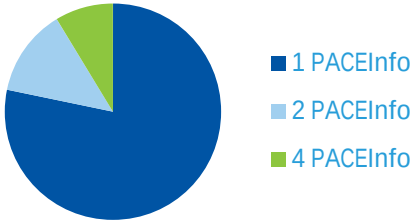
- Additional in 2014: Chip Authentication Mapping

*Based on 46 ICS

Document Information (2/2)

- PACE with
  - ECDH: 39
  - DH: 5
  - Both: 2
- Number of PACEInfos
  - One PACEInfo: 36
  - Two PACEInfos: 6
  - Four PACEInfos: 4

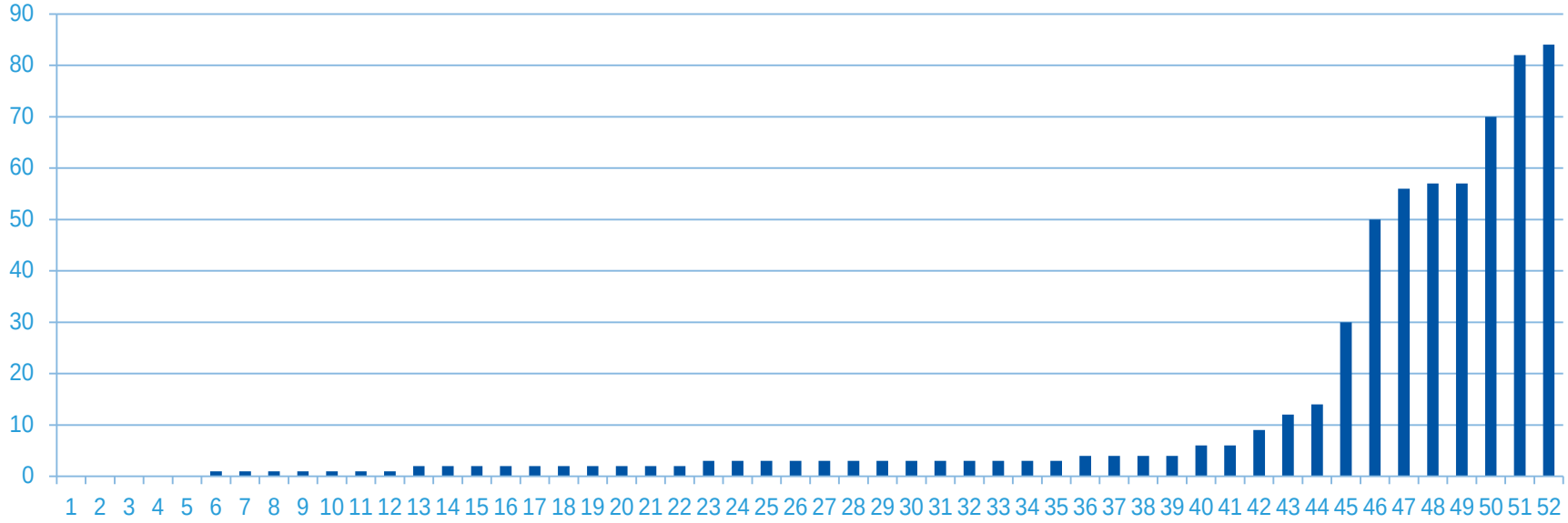




Overall Test Results (Conformity)

- Number of test cases performed: 21.282
- Results:
  - Passed: 9.203 (13.925)
  - Failed: 615 (713)
  - Not performed: 4.514 (6.644)

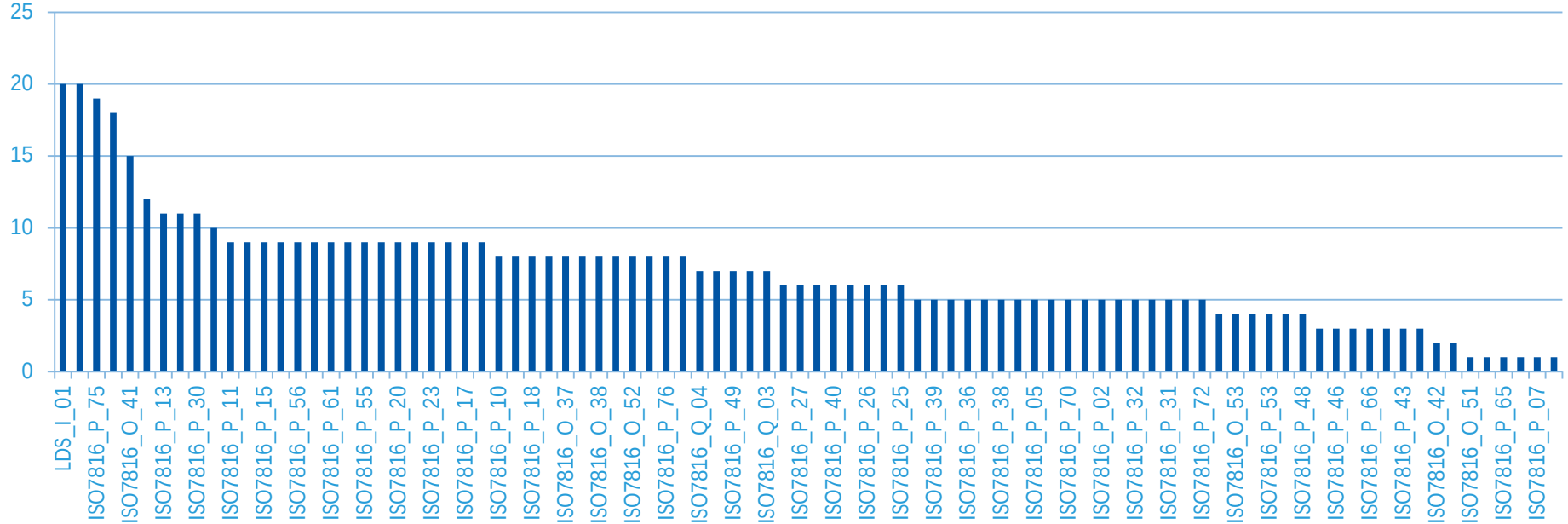
Failed Test Cases per Document



Test Cases with failures (Top 7)

Test Case	#Fail	Description
LDS_I_01	20	Test of ASN.1 encoding of security infos in EF.CardAccess
LDS_I_03	20	Test of ASN.1 encoding of PACEDomainParameterInfo
7816_P_75	19	Positive test without domain parameter reference (DO 84) and eMRTD supports only one set of domain parameters
LDS_I_02	18	Test of ASN.1 encoding of PACEInfo
7816_O_41	15	Accessing the EF.DG3 file with Read Binary. The test verifies the enforcement of SM after the PACE protocol has been performed successfully.
7816_P_64	12	MSE: Set AT command without data object 80
7816_P_13	11	General Authenticate to get the encrypted nonce command with an additional object data

Number of Failures per Test Case



Observations Conformity Testing

- Document quality varies from
  - Close to Release State vs. Experimental State
- Test results differ between test labs
  - Quality process to identify deltas
- Different interpretations of
  - Padding in EF.CardAccess and EF.DG14
  - Encoding of TerminalAuthenticationInfo in EF.DG14
  - Use of DO 84 in PACE
  - Use of ParameterID in PACE when proprietary or standardized domain parameters are used
- Certificates for EAC protocol were missing or not usable
- Use of Test Specification Version 2.01 (two test labs) and 2.06 (one test lab)

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