E-Passport Testing

Ensuring Global Acceptance

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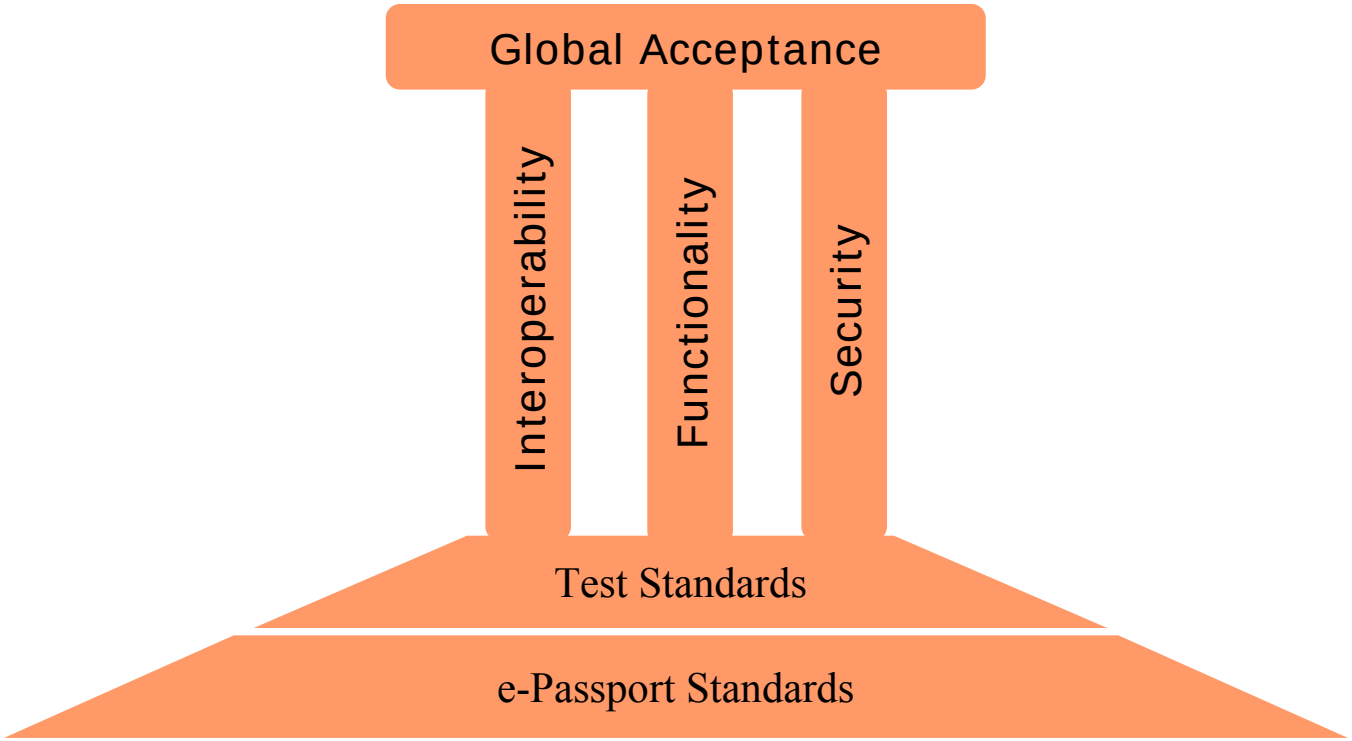
Location: ASML

Collis

Global Acceptance of the e-Passport

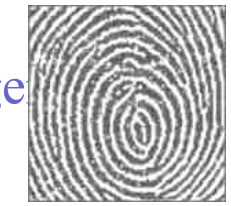


Agenda

- The e-Passport
- The ICAO/ISO e-Passport Standards
- Test coverage of the Application Protocol and Logical Data Structure Test Standard
- Findings and Conclusions

The e-Passport

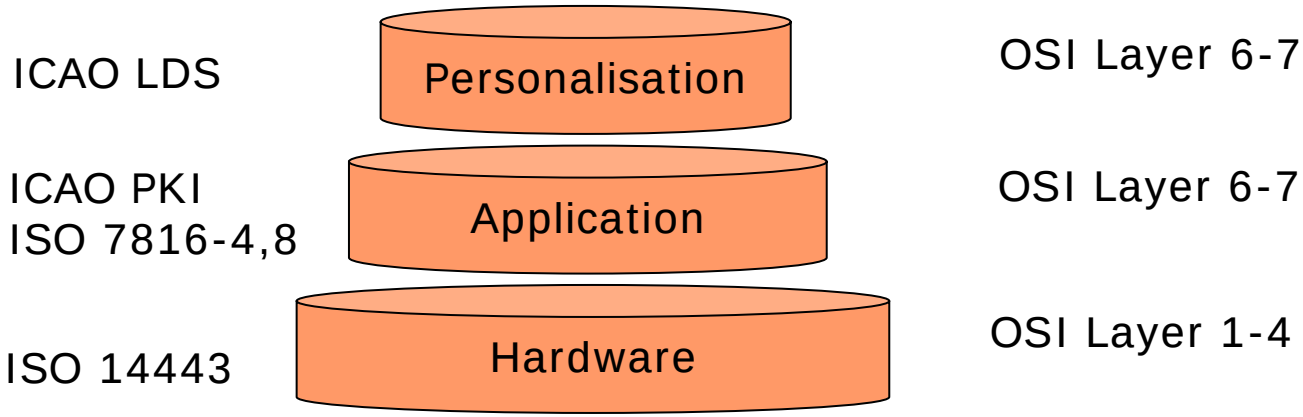
- Contactless chip
  - Processing capability
  - Data storage
- PKI
- Biometrics (Face, finge
  eyes)



- Secure electronic identification

The e-Passport Standards

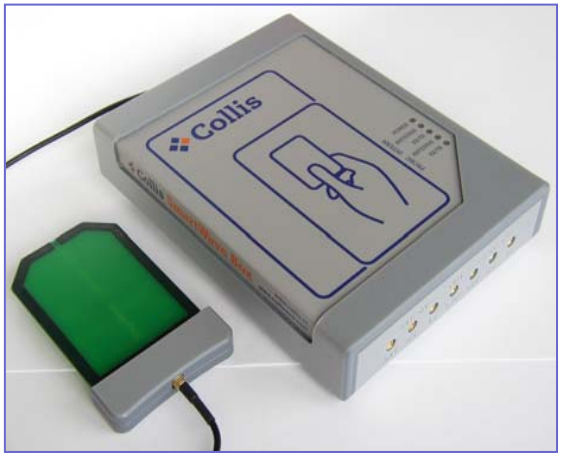
- ISO 14443
- Public Key Cryptography conform to the ICAO PKI standard
- The ISO 7816-4 Standard
- Standard for the e-Passport Logical Data Structure (LDS)



Testing the e-Passport Hardware

- Collis SmartWave box
  - Reads/simulates
- Test Suite's
- Low level interoperability

- Low level interoperability test events (ISO 14443):
  - Cross-over testing
  - 'interoperability' rates
    - 93% in Singapore
    - 87% in Berlin
    - Readable ≠ ISO/ICAO conformance

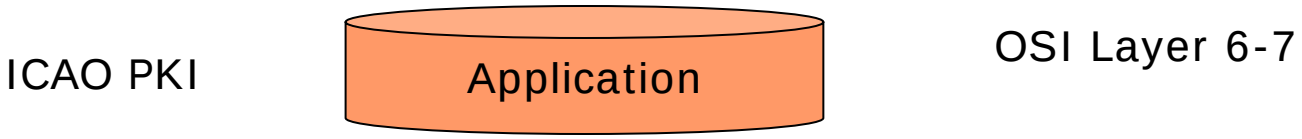


e-Passport Security Mechanisms

Security mechanisms:

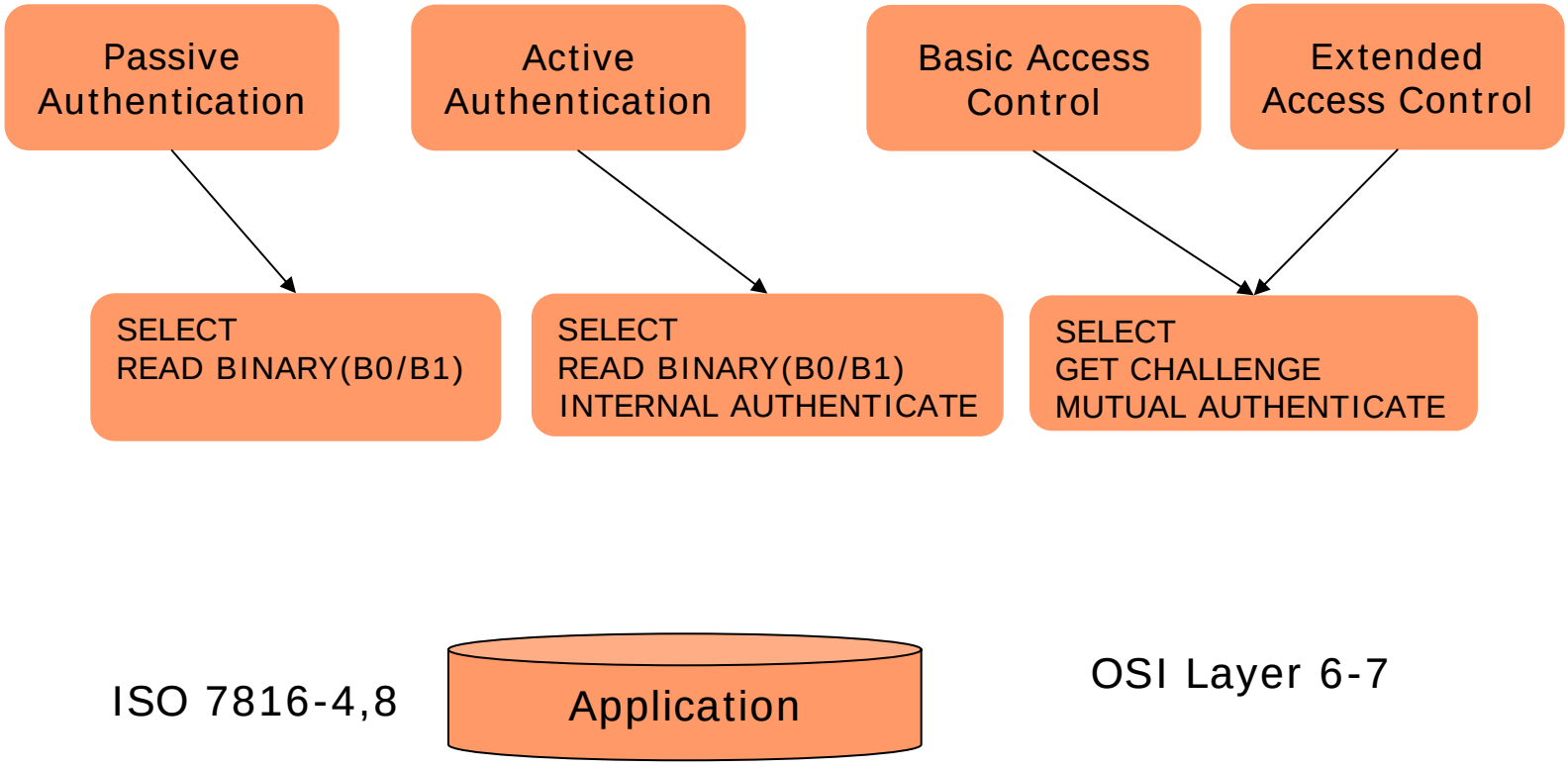
- Passive Authentication (Mandatory)
- Active Authentication (Optional)
- Basic Access Control (Optional)
- Extended Access Control (Optional)

"Issuing States MAY choose additional security, using more complex ways of securing the chip and its data. "

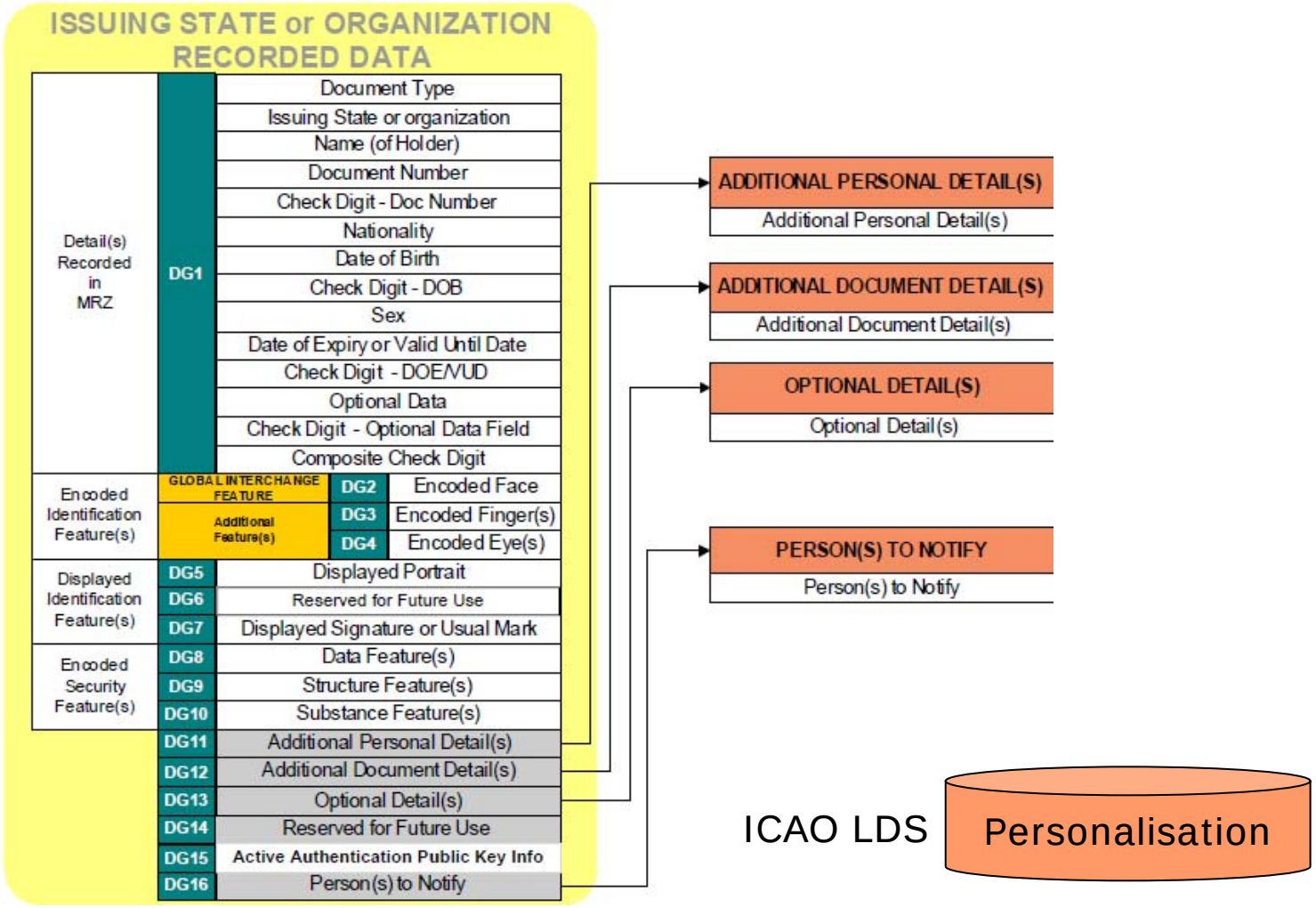


e-Passport Smartcard Commands

- e-Passport to reader communication on APDU level



The e-Passport LDS



Testing the e-Passport Application and LDS

- ICAO/ISO Test Standard
- Security
  - Security Mechanisms
- Smartcard commands
  - Positive
  - Negative
- The LDS
  - Encoding of the LDS data objects

Test Coverage of the ICAO PKI Test Standard

	Mandatory	EU	US
Passive Auth.			
Active Auth.			
Basic Access Control			
Extended Access Control			

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Passive Auth.			
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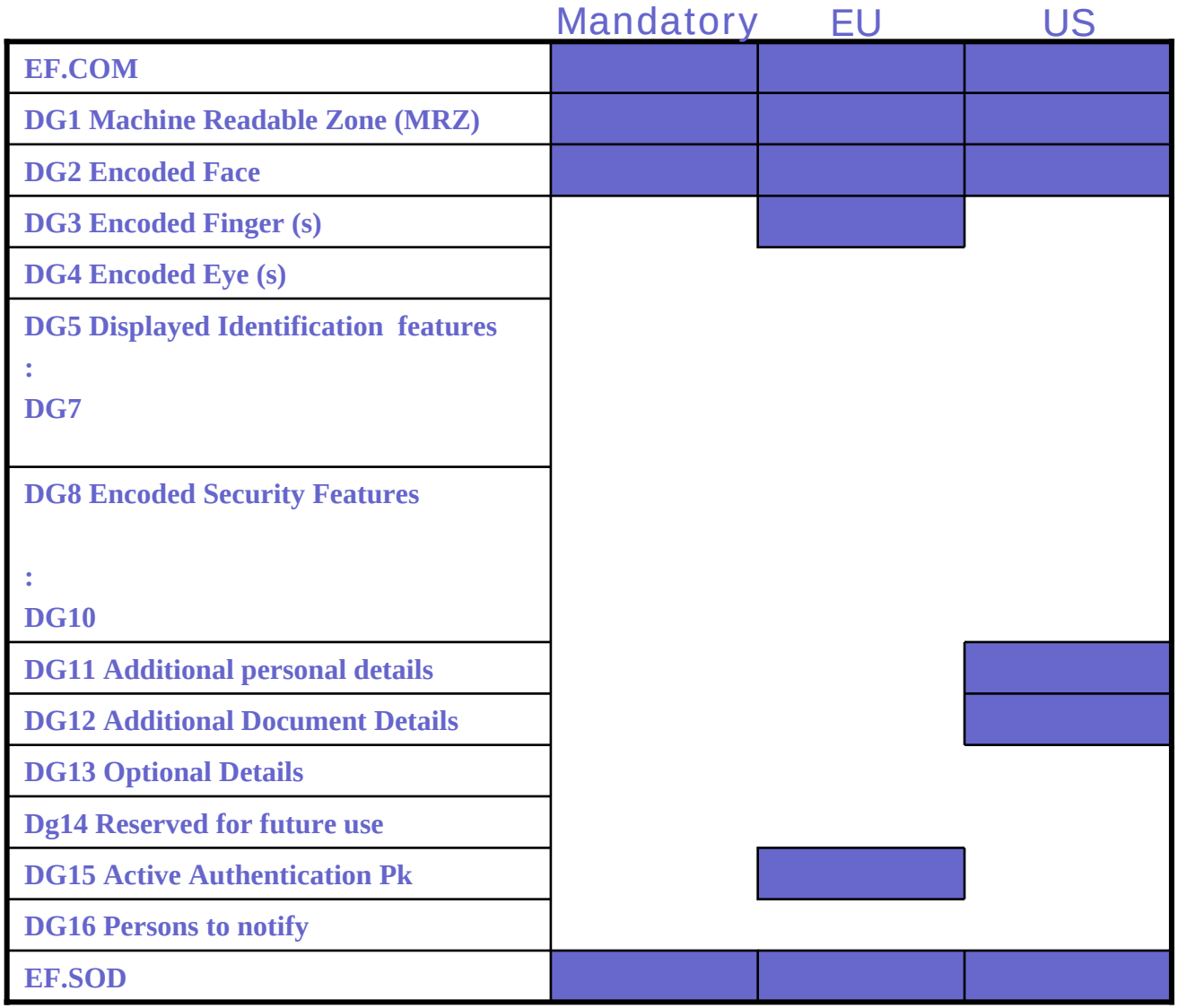
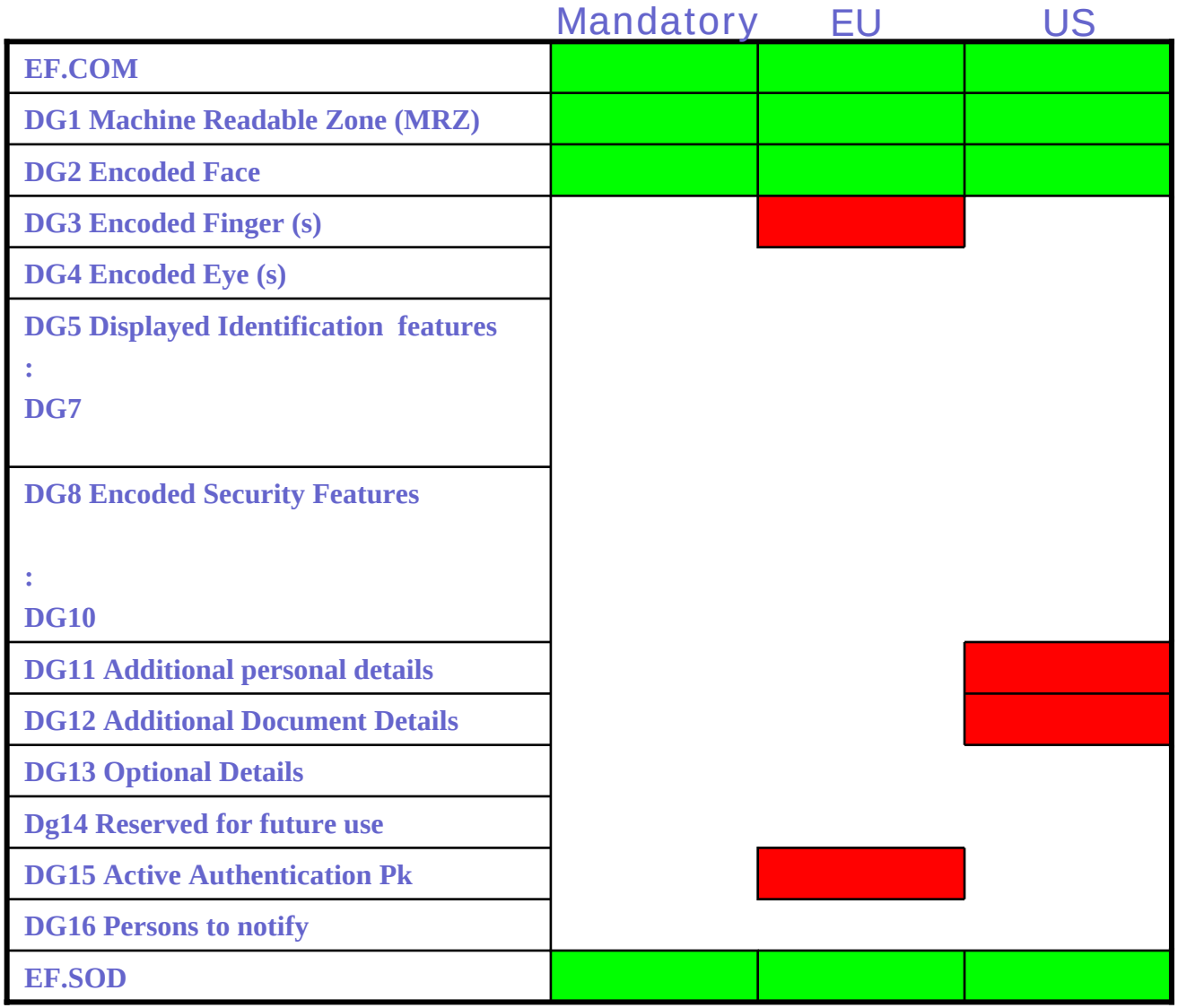
Extended Access Control			

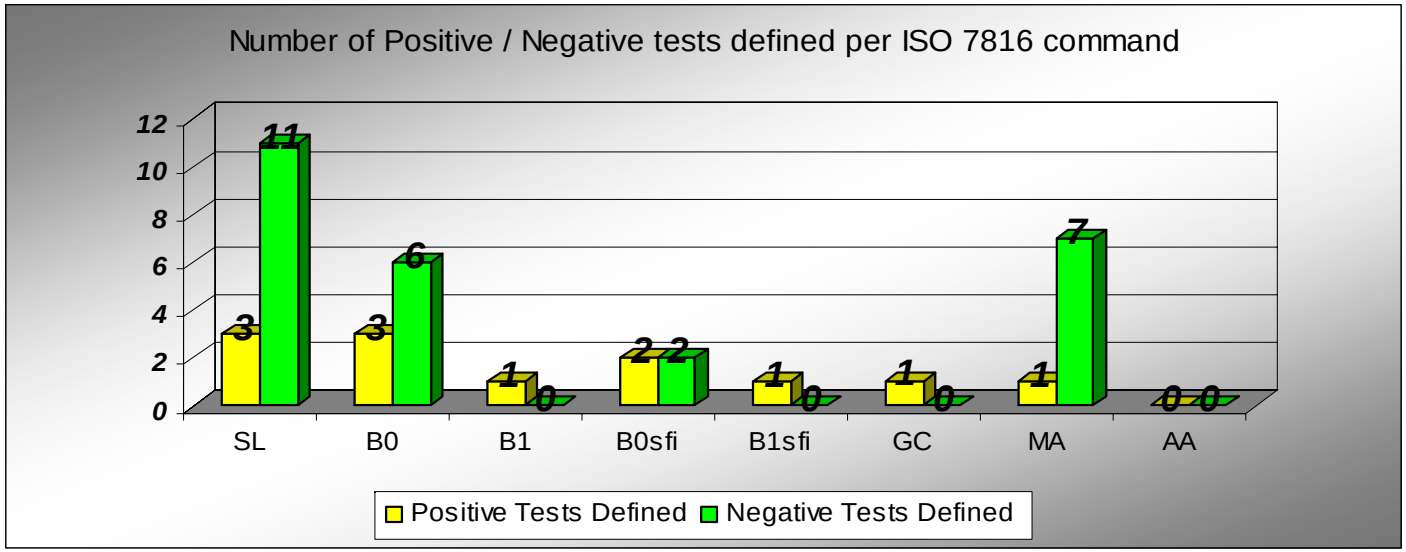
Test Coverage of the ICAO LDS Test Standard



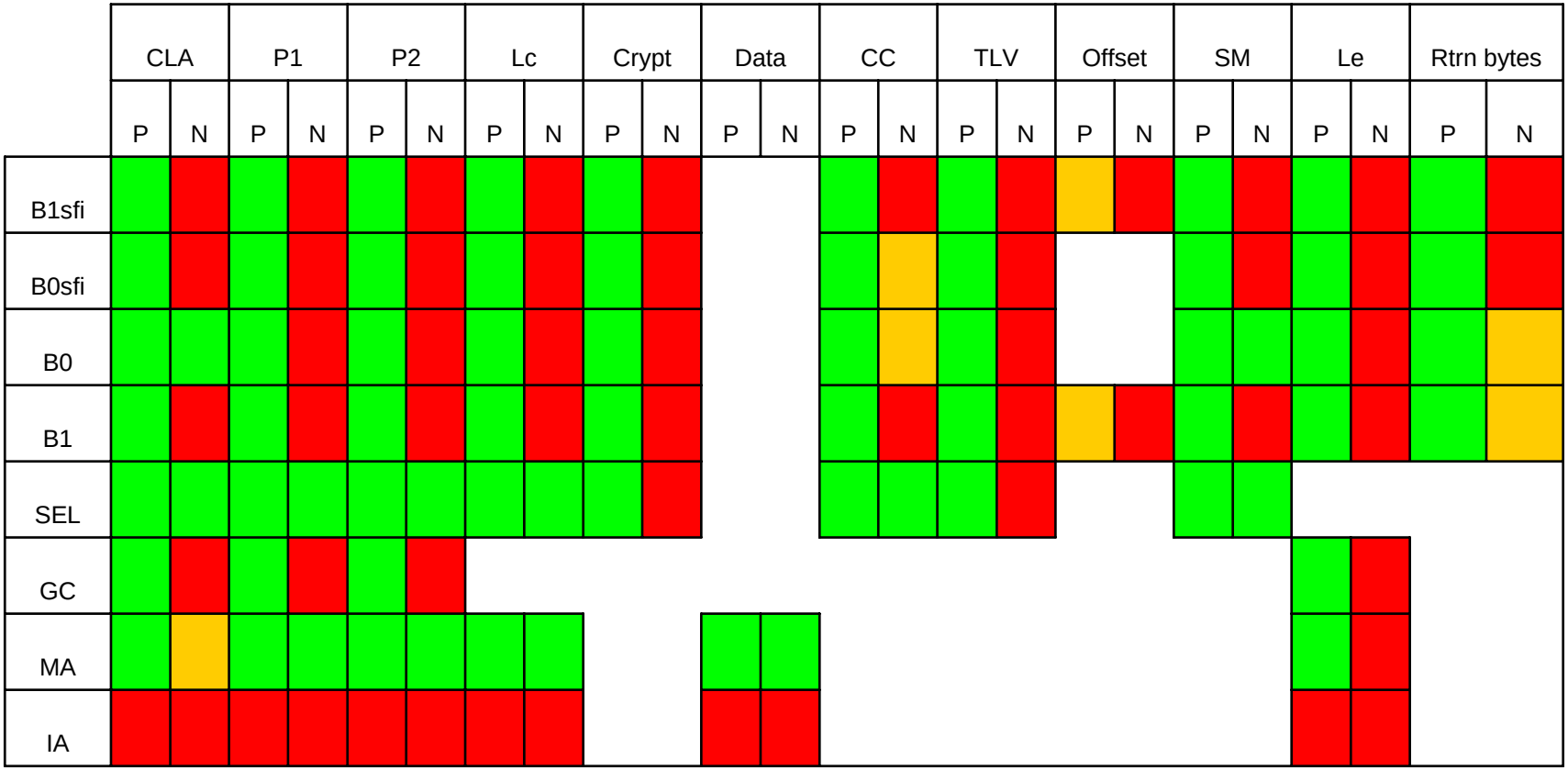
Test Coverage of the ICAO LDS Test Standard



Smartcard Command APDU Tests

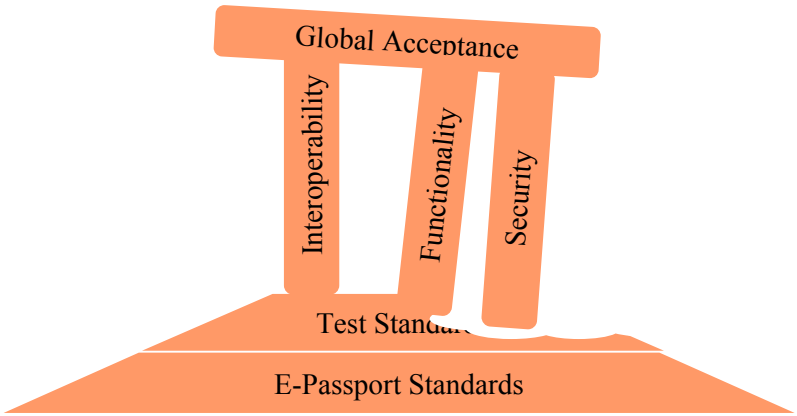


ISO 7816 Command Test Coverage Matrix



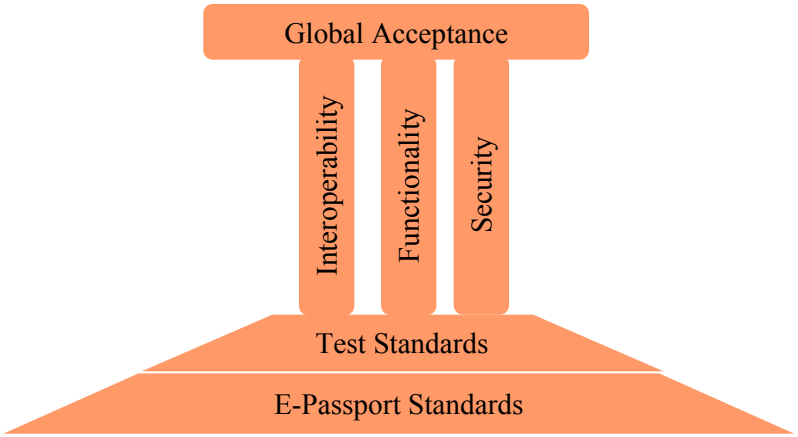
Findings

- Some optional, but important security features not covered by the ICAO test standard (AA, EA)
- e-Passport chip response on incorrect commands not tested thouroughly (negative tests)
- Gaps in the test specification



Recommendation

- Additional tests need to be developed to fill up gaps in the test specification



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