EMV Migration Forum

EMV Development Preparation

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Topics

- Documentation
- Device Requirements and Kernels
- API Choice
- Importance of Design Stage
- Project Stages
- Data integrity
- Remote management and parameter files
- Post live operation
- Other technologies
- Review

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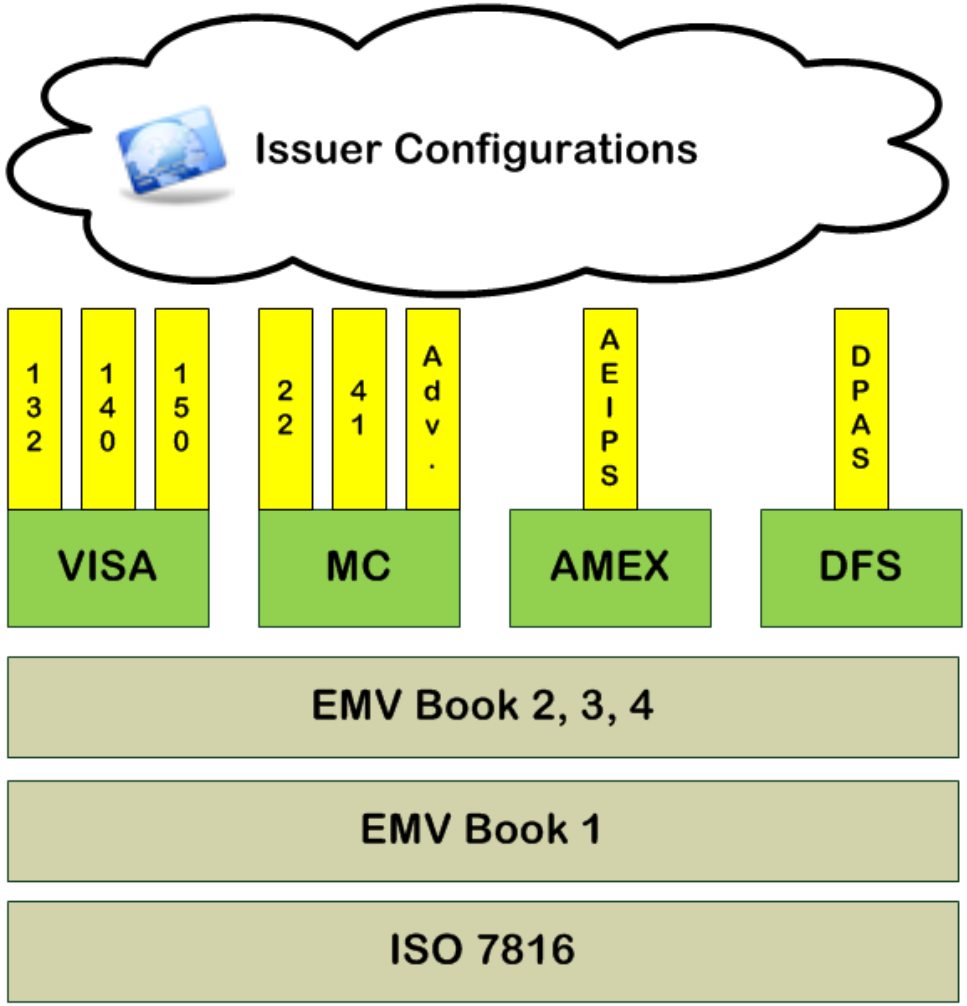
Documentation

Ensure that you have all the correct documentation
… including …

- EMVCo Book 3 (and the other books for reference)
- Brand acceptance criteria (TADG, M/Chip Requirements, …)
- Acquirer specific acceptance criteria
- Acquirer Host protocol specifications
- Acquirer testing requirements
- Brand testing requirements (ADVT, MTIP, AEIPS, E2E, …)
- EMV Kernel documentation
- Level 2 API documentation
- EMVCo Bulletins and Advisories

Please check the versions, and keep them up to date

The Documentation Stack



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Device Requirements and Kernel Settings

	Retail	Fuel	F&B	Multi-lane
CVM – Sig	✓		✓	✓
CVM – None	✓	?	✓	✓
CVM – PIN	✓	✓	✓	✓
ODA – SDA		✓		
ODA – DDA		✓	?	
ODA – CDA		✓	?	
Motorised		✓		?
Tip function			✓	
Terminal Type	21/22	31/32	21/22	21/22

Different payment environments require different EMV features and kernel options

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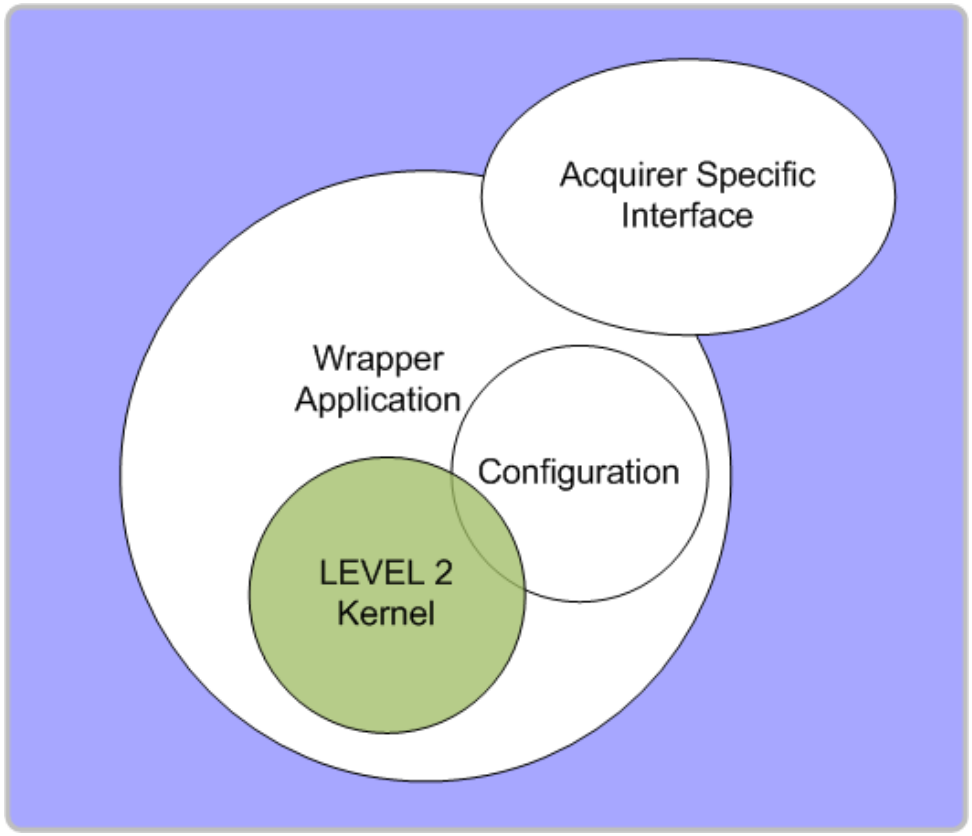
Device Requirements and Kernel Settings

	Credit EMV	Debit EMV	International	Others
CVM – Sig	✓	✓	✓	?
CVM – None	✓	✓		?
CVM – PIN	~	✓	✓	?
ODA – SDA			✓	?
ODA – DDA	~		✓	?
ODA – CDA	~		✓	?

Different card products also require different EMV features and kernel options

Inside an EMV system



There are many “moving parts” within the EMV acceptance system

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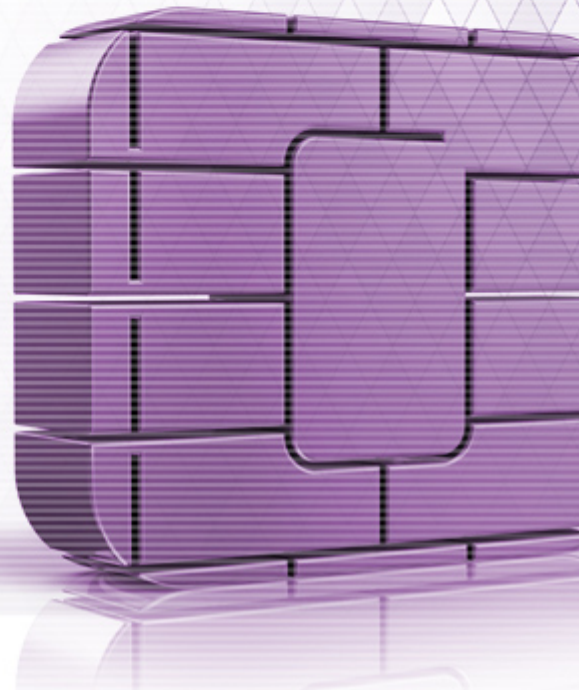
Kernel API

Depending on the hardware, you may have a choice of API options. The API needs to:

- Integrate with your existing payment application
- Offer flexibility for your merchant environment
- Supply the options you need to support

EMV Kernel Certifications expire!

Choose a kernel with a longer lifetime, so you can avoid unnecessary in-field updates



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Importance of the Design Stage

- Allow extra time in the early stages of your project to analyze the merchant and brand requirements
- Ensure the Kernel integrates well with your existing payment systems and processes
- Ring-fence as much of the EMV integration to ease testing and future change
- Use best practice for cardholder transaction flow
- Build in diagnostics, reporting, and statistics

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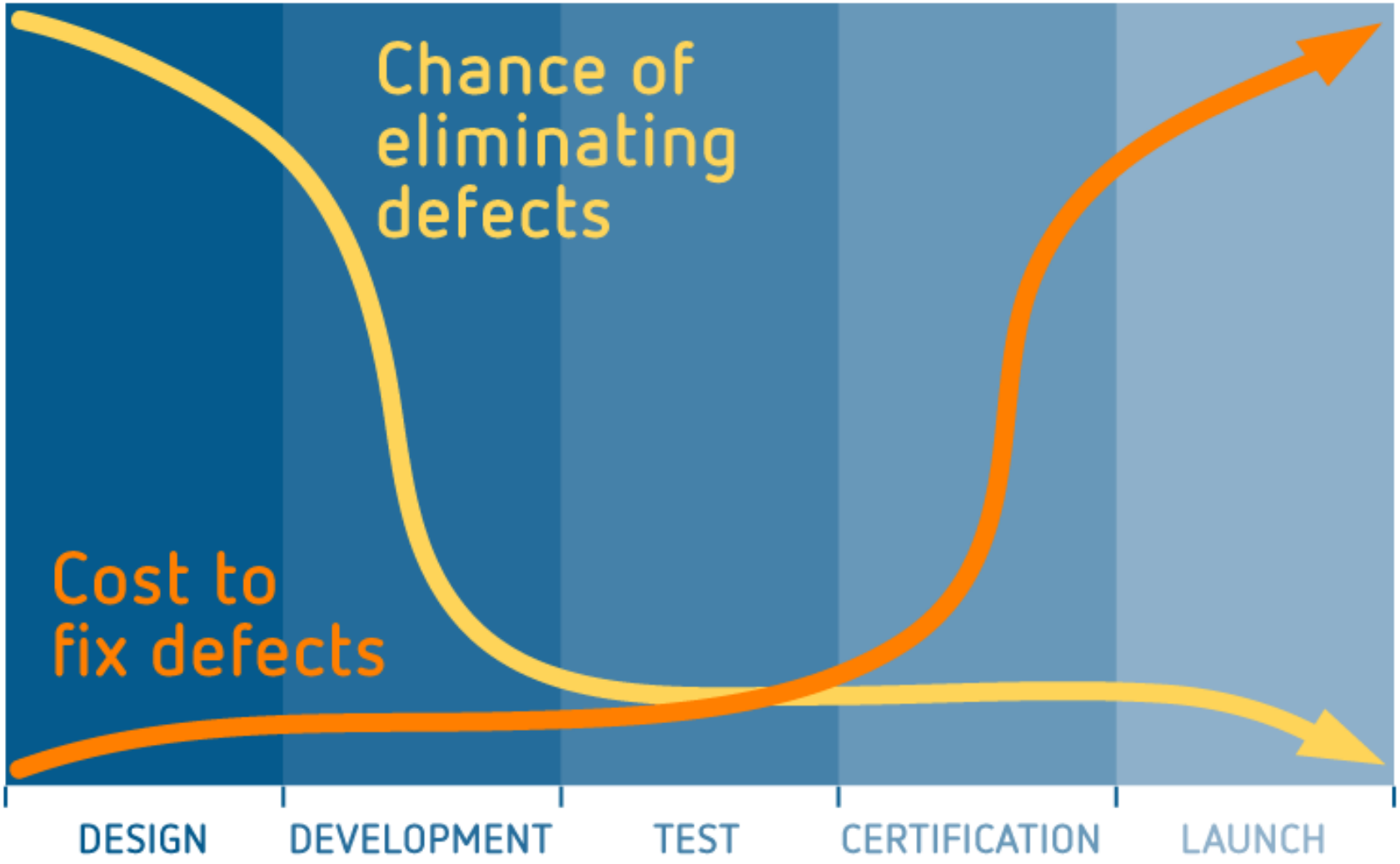
Cost of change



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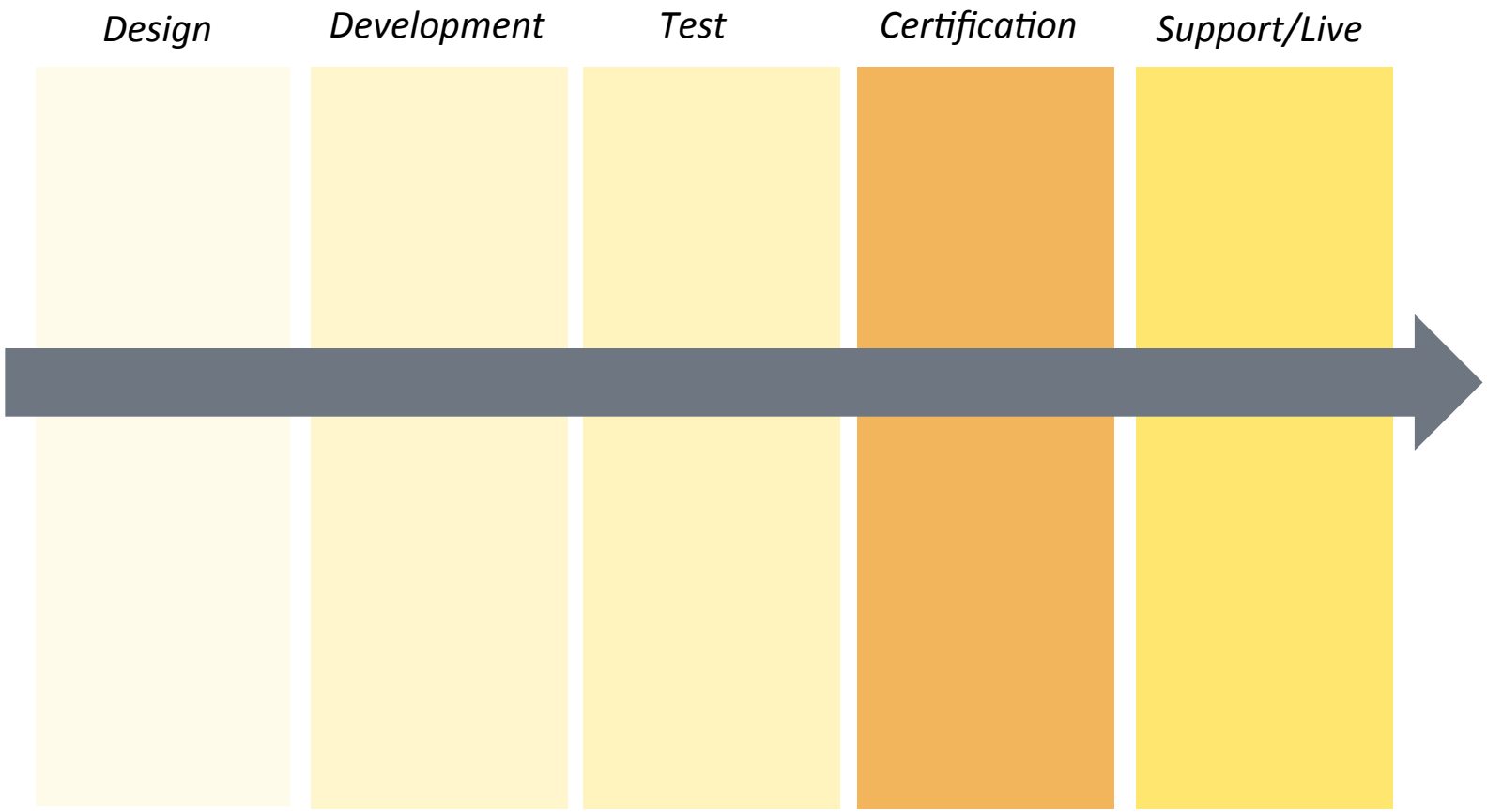
Project Stages



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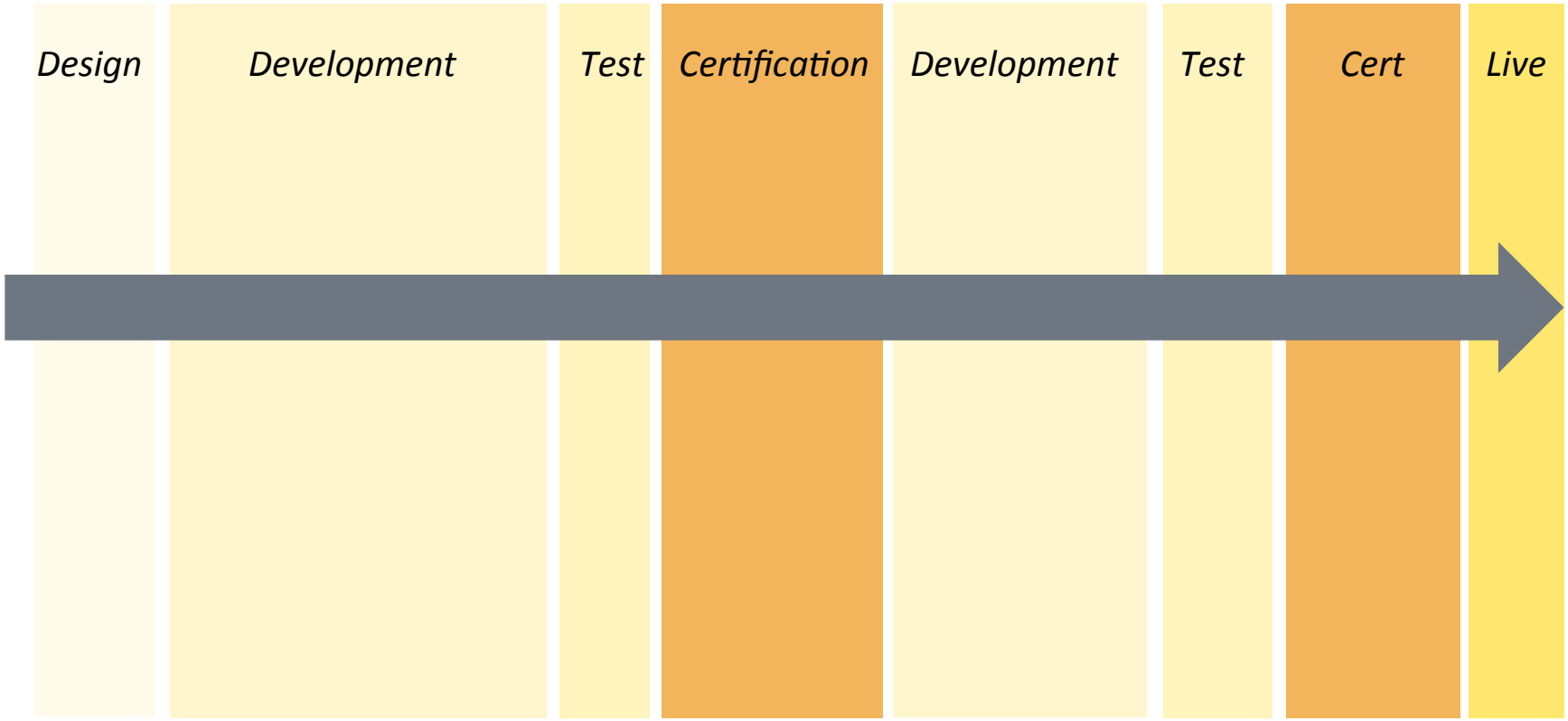
Project Stages – my experiences



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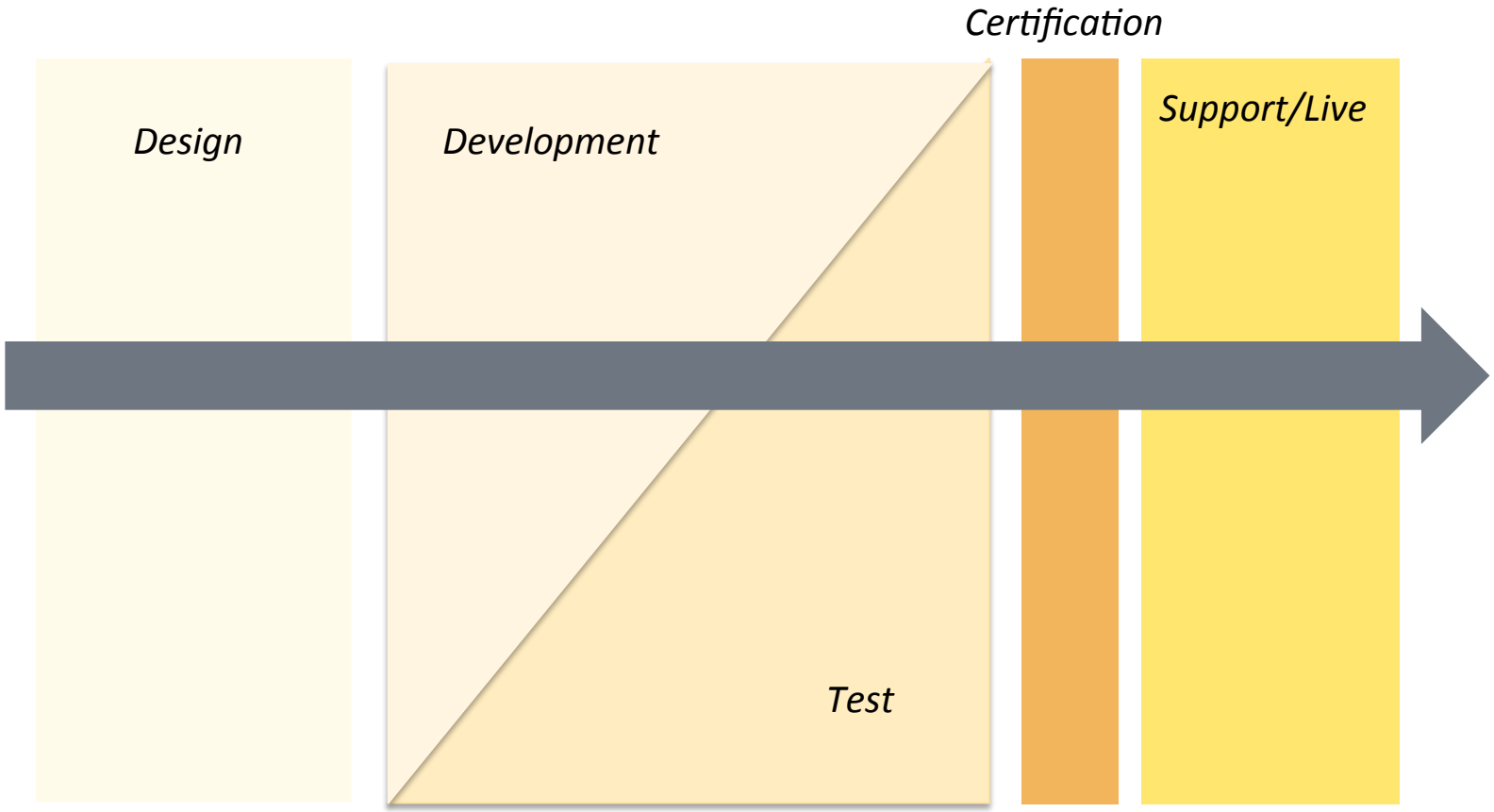
Project Stages – my suggestion



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Project Tips

- Spend more time on design
- Brand certification is not a QA cycle
- Negative and exception testing are vital
- Test with a wide range of card types
- Certification testing for a system that's ready takes hours
- Extend the project into live support to assist with interoperability issues

Magnetic Stripe Transaction

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00

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F4 F2 F5 F7 F1 F8 F0 F5 F0 F0 F9 F0 F0 F0 F0 F0 F0 F0 F0 F1
F5 F9 F6 F8 40 40 40 40 40 40 40 40 40 40 40 D4 81 89 93 40
D6 99 84 85 99 40 E2 88 96 97 40 40 40 40 40 40 40 40 C4 A4
82 93 89 95 40 40 40 40 40 40 40 40 C9 D9 D3 F0 F1 F0 E3 F6
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F8 F0 F3 F1 F5 F0 F1 F0 F0 F1 F0
```

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EMV Transaction

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01 CE 89 BE E7 11 F0 F1 F2 D4 C3 C3 F7 F2 F1 F5
F4 F0 F3 F0 F3 F0 F1 F0 F0 F1 F0

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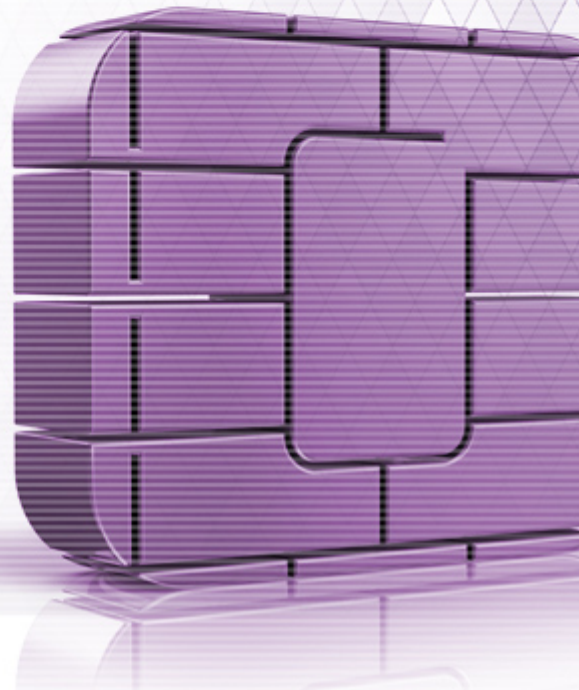
Data Integrity

- There is a lot of data in various formats
- It needs to be safely moved to and from the kernel, to and from the acquirer
- Translation from tags to host messages important (and in reverse for responses)

Loss or damage of transaction data may result in a transaction decline



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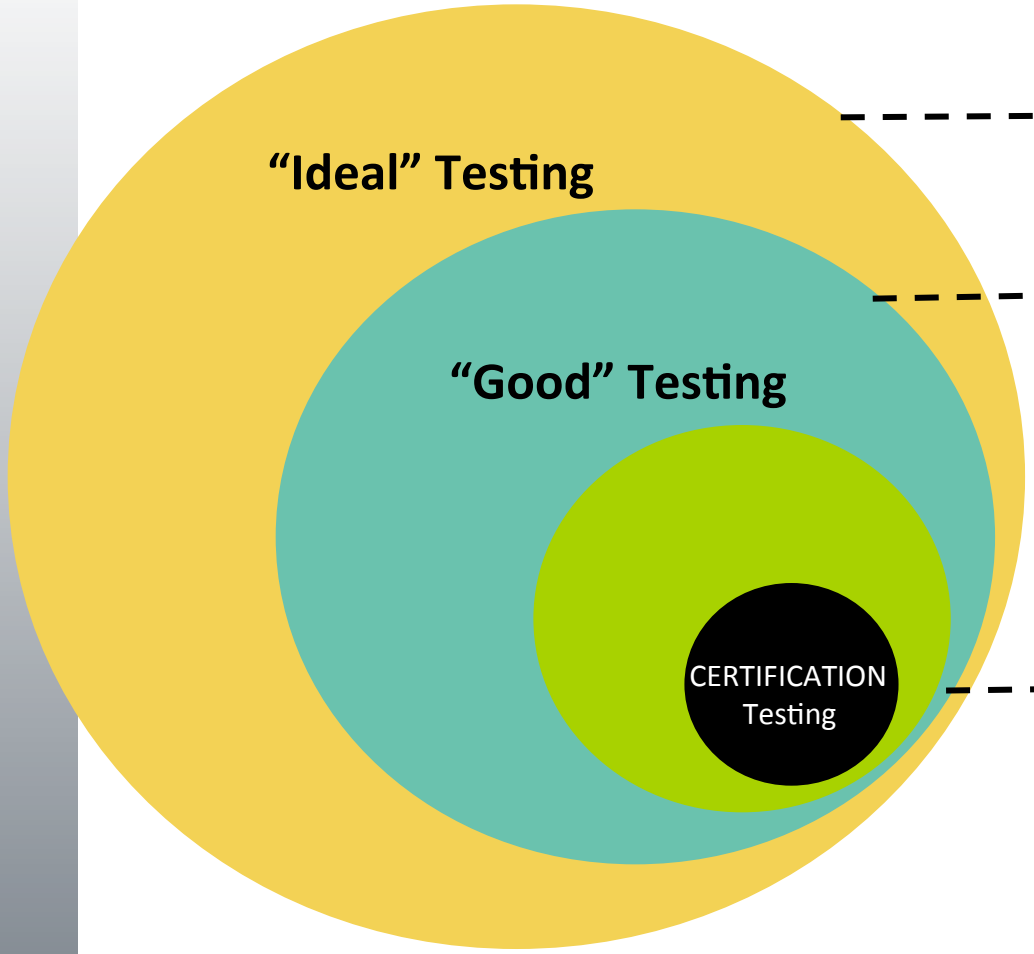
Role of Testing



'Ideal' Testing: Not limited by time and resource can test for every scenario

'Good' Testing: Limited by time and resource. Needs to comprehensively replicate infield scenarios and **test collaboratively** to **rigorously establish interoperability and infield performance** of product

'Certification' Testing :

- **A small component of 'Good'** Testing
- **Not** a **QA cycle**
- **A Minimum test of** conformance
- **Short** and low effort

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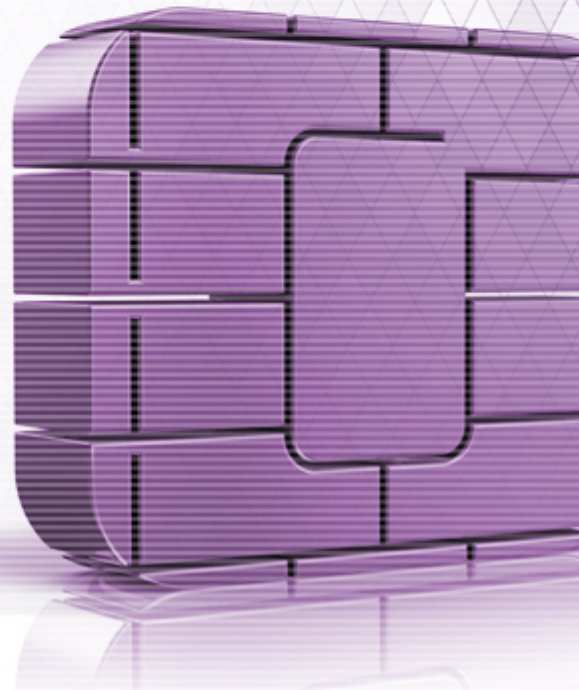
Exception and negative testing

- 99% of volume generates 1% of customer issues
- 1% of volume generates 99% of issues
- Exception and error handling can always be better
- Reduce call-centre costs with better device/system quality

Additional test cases for

- Timeouts, delays, and invalid transaction data
- Communication failure, timeouts, invalid message data and more



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Remote Management

- Terminal management systems
- Update/download/change
- Software/firmware updates
- Secure remote access to PIN pads
- PCI safe audit logs and diagnostic information
- There will still be compliance changes and updates

Post Live – Support, Issues, Interoperability

- Unfortunately not everything is going perfect
- Devices tend to be “behind the curve”
- Cards tend to be “ahead of the curve”
- Facilitate diagnostic reporting of issues
- Have common and unambiguous messaging
- Reports for device settings (dump TMS data)
- Supervisor option for detailed transaction dump (PCI safe)

Don’t forget Murphy’s law

Other technologies

- Magnetic stripe is still with us
- In many regions EMV will be in the minority for some time
- Magnetic stripe fallback is also possible where there are acceptance issues with EMV cards
- Contactless EMV has similar complexities to contact EMV

Summary

- Documentation
- Device Requirements and Kernels
- API Choice
- Importance of Design Stage
- Project stages – test early and often
- Certification is not a QA stage
- Data integrity – a common failure point
- Remote management and parameter files
- Other technologies

Questions?

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