

FCOS Press Briefing

FCOS Integration at Giesecke & Devrient

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Agenda

- G&D Development Activities for FCOS™
- FCOS™ Development Roadmap
- Difference between FCOS™ and Standard Modules for Card Manufacturers
- FCOS™ Benefits for Card Manufacturers
- FCOS™ Benefits for Applications
- G&D Qualification Tests
- Production Flow

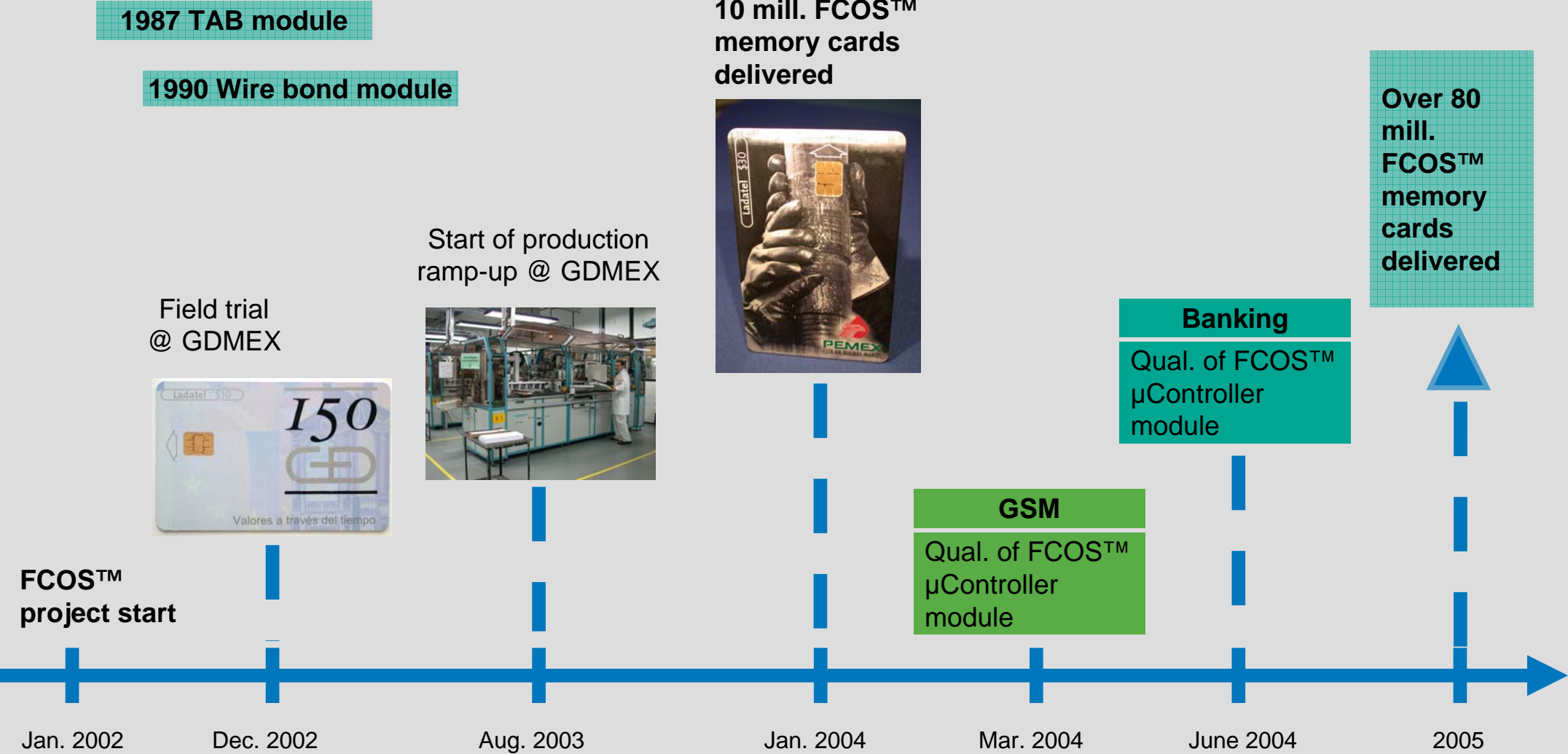


G&D Development Activities for FCOS™

- Pre-testing for module design optimization
- Setup of manufacturing process at G&D
- Intensive reliability tests based on international standards and internal requirements
- Organization and analysis of field trials
- Volume production ramp-up
- Market launch



FCOS™ Development Roadmap



Difference between FCOS™ and Standard Modules for Card Manufacturers

- More flexible module tape
 - ➔ Training in handling
- Advanced module tape material
 - ➔ Adaptation of adhesive used for bonding into card body
- Thinner module and different temperature sensitivity
 - ➔ Modification of process parameters

FCOS™ Benefits for Card Manufacturers

- Improvement resulting in high dynamic bending stress (e.g. mailing stability)
- Increased mechanical reliability for static tests
- Increased flatness of the module
- Optical improvement of overall card appearance
- Increased bonding area module/card body
- Same or better machine throughput
- Standard card production equipment usable



Benefits of FCOS™

- High corrosion resistance
- Housing for large IC area
- FIPS -140* compatibility
- Green package (RoHS** compliant)
- Proven technology - successful in the field
- Meets future technology requirements (such as 3FF/Mini-UICC)

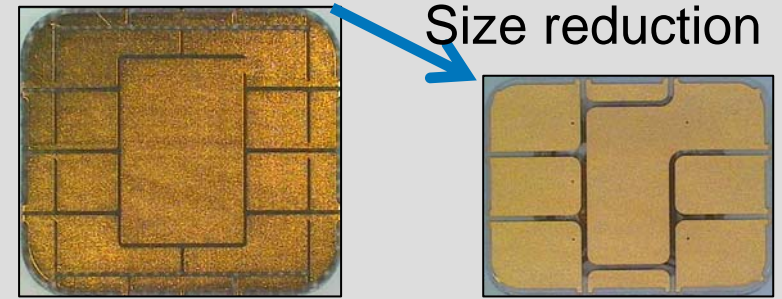
* FIPS Federal Information Processing Standards **Restrictions of Hazardous Substances



Benefits for Applications (Example: Mini-UICC)



ID-1



M5.3

MFC5.6



ID-000



Mini-UICC

- Standard modules have to be modified to fit into the new Mini-UICC form factor
- MFC5.6 is suitable for immediate use in the Mini-UICC

Extract of Qualification Tests @ G&D

Module qualification

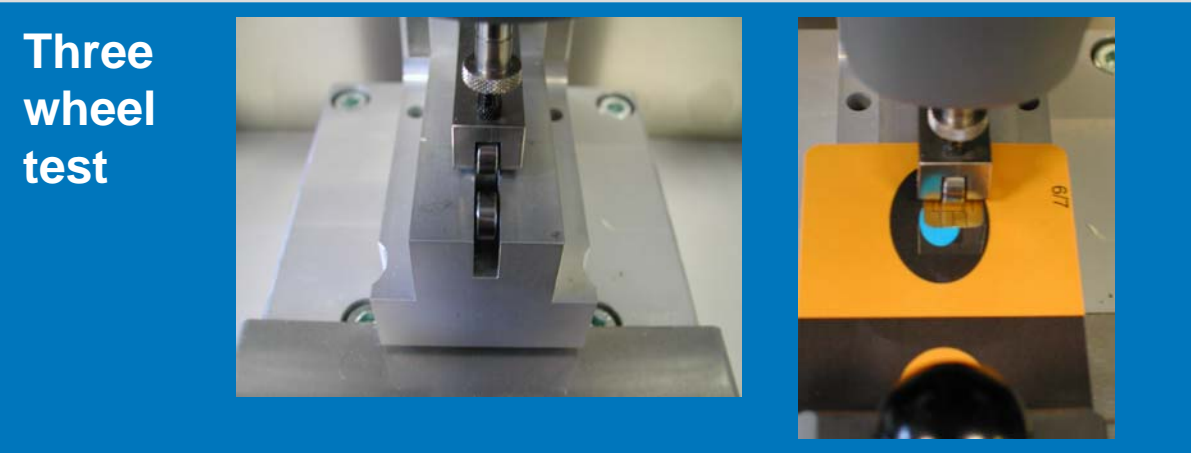
Electrical reliability tests

- Life test (125°C;168h; V_{cc})
- Data retention (125°C, 500h)
- Temperature cycling (-40°C...+125°C)
- THB (85°C;85%rel. V_{cc} ; 168h)
- ...

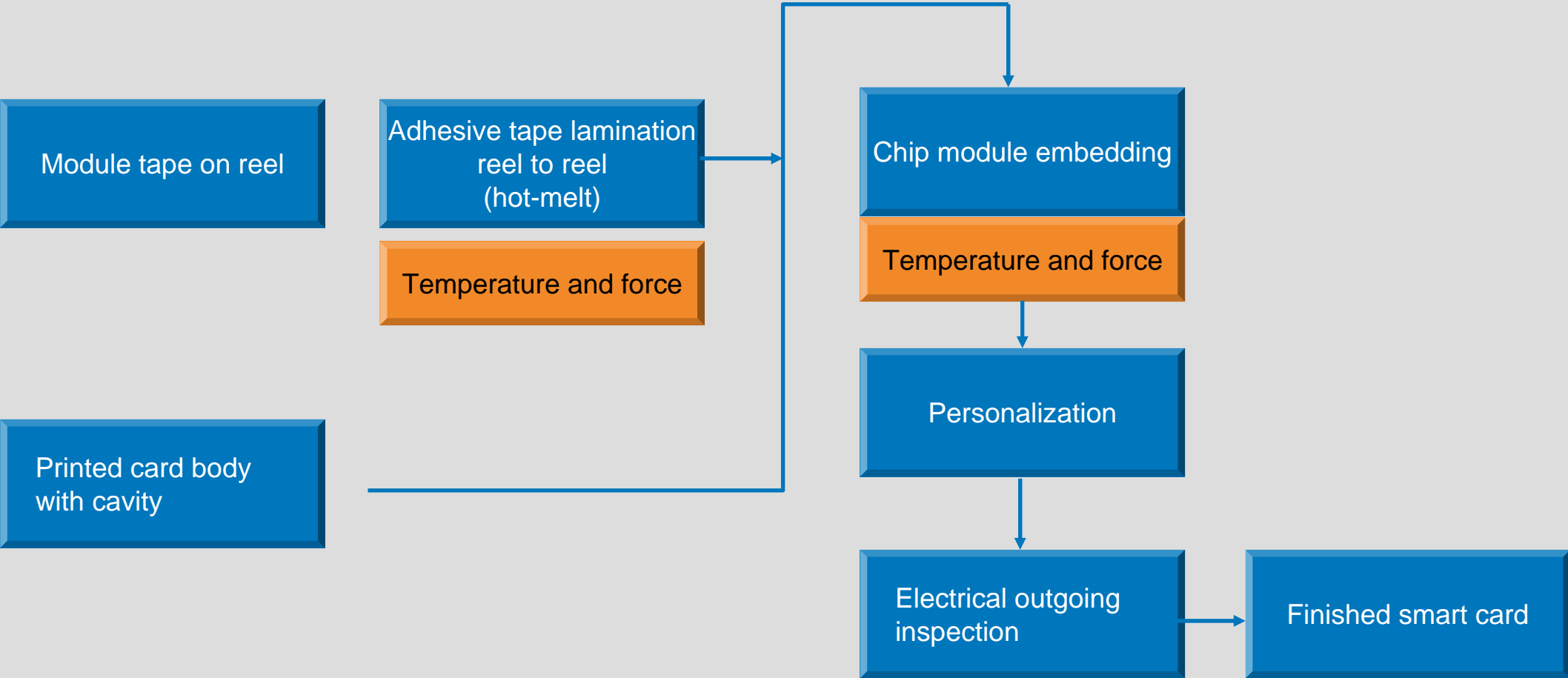
Mechanical reliability tests

- ISO bending and torsion
- Hand test A/B
- Wrapping test
- Mailing test
- ...

Sample Qualification Tests @ G&D



Production Flow FCOS™ to Smart card





security at work.

Thank you for your attention.



Giesecke & Devrient