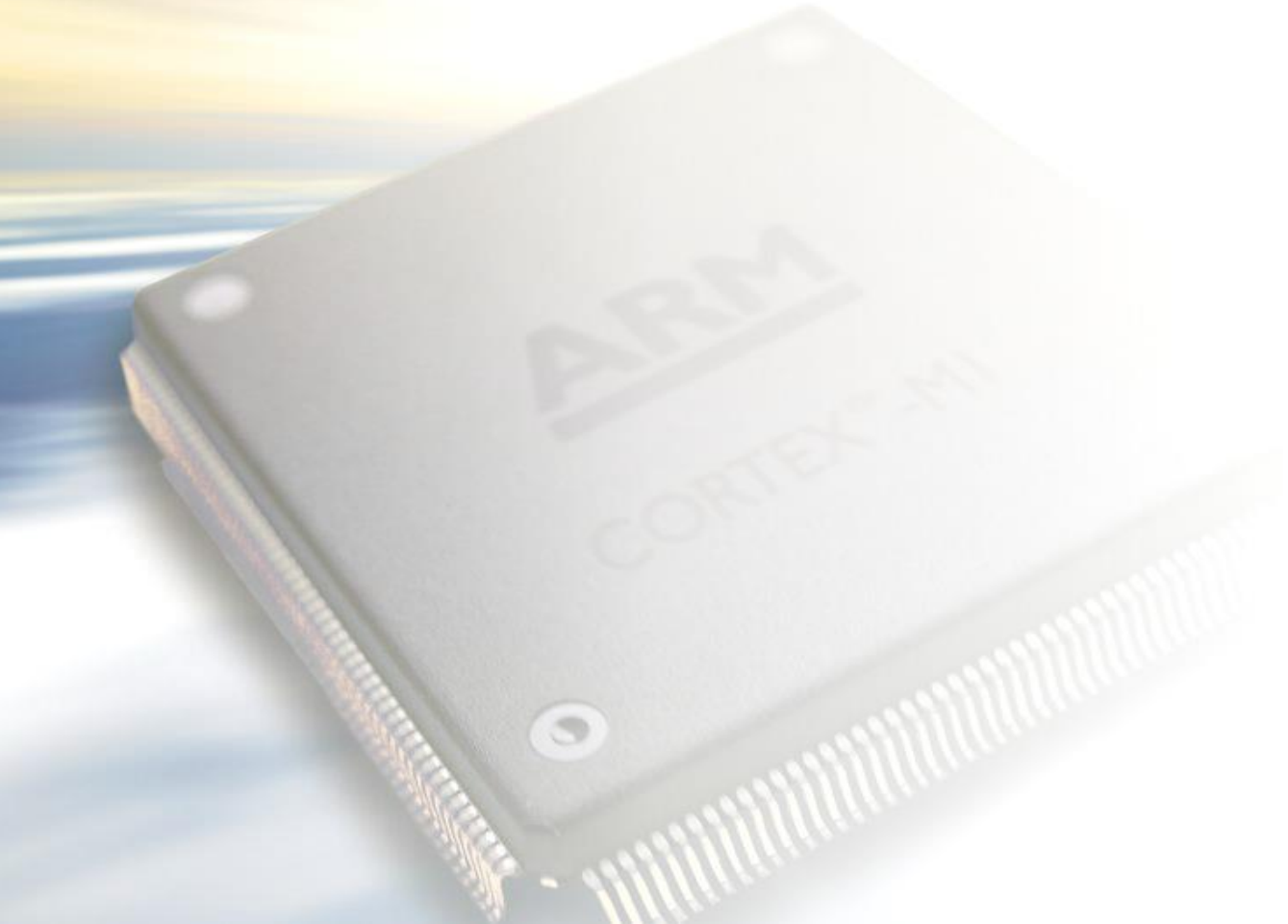
Functional Safety – How ARM® solutions benefit your design



The Architecture for the Digital World®

ARM

Functional Safety - required in many markets

Automotive

Industrial

Medical

Railway

ARM´s package to support your design

- **ARM® Cortex®-R5 processor -** safety document package
- **ARM® Compiler** – safety package for software development
  - Qualification Kit
  - Extended Maintenance
  - Functional Safety Certified

ARM

ARM® Cortex®-R5 Processor - Safety Document Package

Cortex-R5 Safety Package

- **Safety Manual**
- Failure Modes and Effects Analysis
- Development Interface Report

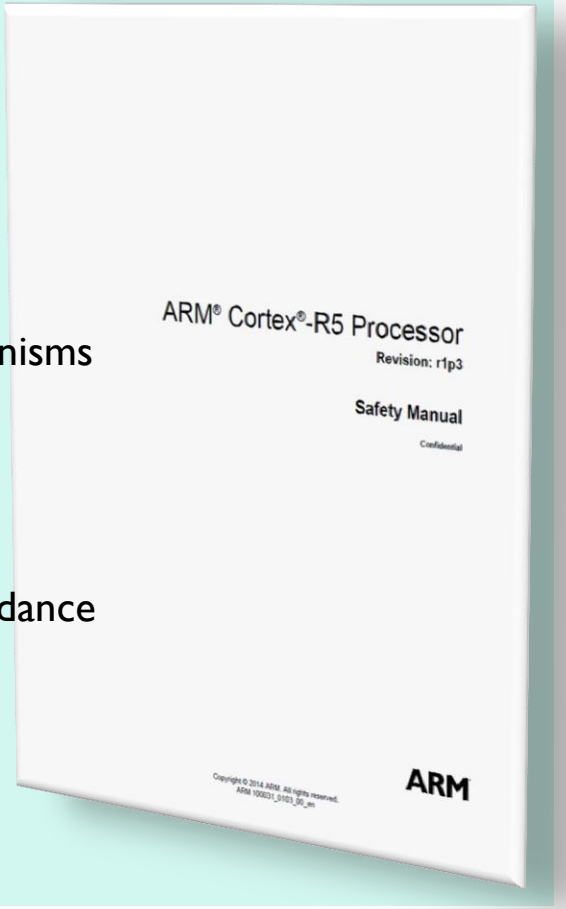
Safety Package

Cortex-R5 **Safety Manual**:

- Introduction
- Cortex-R5 safety lifecycle
- Cortex-R5 safety architecture
- Cortex-R5 configuration options
- Cortex-R5 fault detection and control mechanisms
- Cortex-R5 assumptions of use
- Cortex-R5 safety analysis results

- Appendix - ECC tables
- Appendix - Measures for systematic fault avoidance
- Appendix - Lock-step initialization sequence

- Total contents approx.150 pages



Safety documentation on other selected Cortex processors to follow

ARM

ARM® Compiler - Safety Package

- Compiler Safety Package for software development in safety markets
  - Industrial control, automotive, medical, transportation, military and others

Qualification Kit

- Development process docs
- Safety manual
- Defect report
- Test report

Extended Maintenance

- Five year commitment
- Technical support
- Critical defect fixes

Functional Safety Certified

- TÜV SÜD certification
- ISO 26262 (ASILD)
- IEC 61508 (SIL3)

- The Safety Package comes with DS-5 Ultimate and Keil MDK-Professional
- For more info please visit
  - http://ds.arm.com/solutions/safety-critical/
  - http://www2.keil.com/safety/

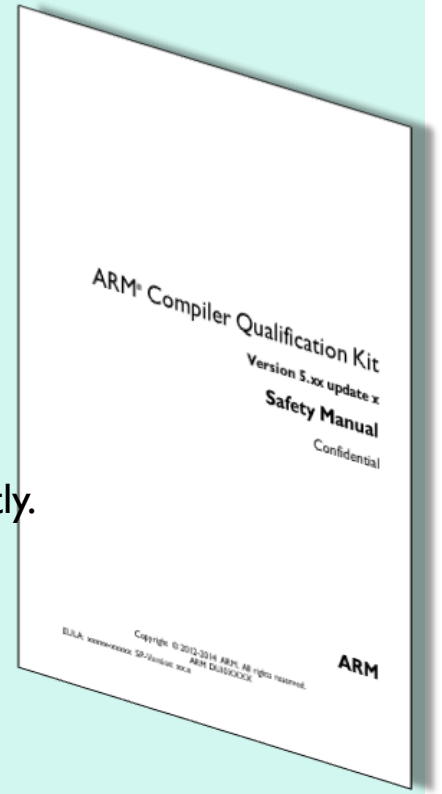
ARM

ARM® Compiler - Qualification Kit - toolchain justification

ARM Complier Qualification Kit
- **Safety Manual**
- Development Process
- Test Report
- Defect Report
- Failure Modes and Effects Analysis
- Release History

Qualification Kit

ARM Compiler **Safety Manual**:
- Description of the
  - high level safety-related faults that the ARM Compiler can generate.
  - communication between the tools, which shows how faults might propagate.
- Mitigation strategies that can be followed
  - to prevent or work-around faults.
  - for identification of specific behaviours of the ARM Compiler that are unsafe if used incorrectly.
  - Total contents approx. 120 pages



ARM® Compiler - Extended Maintenance (EM)

- ARM Compiler 5.04 is a stable branch with regularly scheduled maintenance releases.
  - New critical defects are back-ported to EM branch.

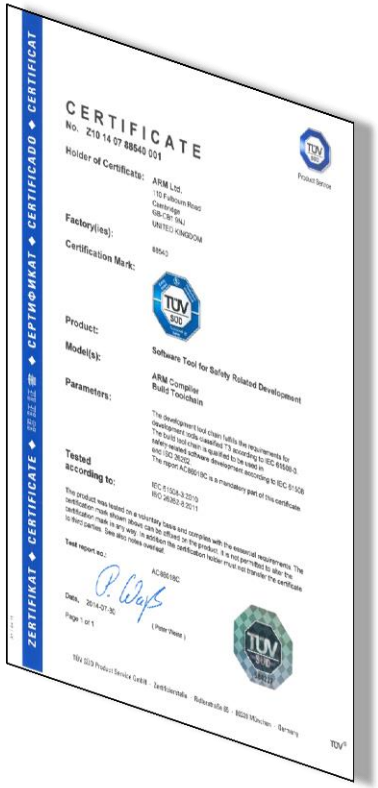
- ARM Compiler 5.04 is the first EM branch, followed by ARM Compiler 5.06 in 2015.
  - ARM Compiler 5.04 will be maintained through 2015.
  - ARM Compiler 5.06 will be maintained through 2020,
  - longer term contracts may be available by special arrangement with ARM.

- ARM Compiler Qualification Kit aligns with EM branches.
  - For every Extended Maintenance release, there will be a QK update.
  - made available to registered users at connect.arm.com

ARM

ARM® Compiler - Functional Safety Certified

- ARM Compiler 5.04u2 and future ARM Compiler 5.04 releases will be TÜV SÜD certified
  - as meeting the toolchain requirements of ISO 26262 (through ASIL D) and IEC 61508 (through SIL 3),
  - as being qualified for safety-related software development up to SIL3 (IEC 61508) or ASILD (ISO 26262) without further qualification activities,
  - and will be licensed as part of MDK-Professional and DS-5 Ultimate package.



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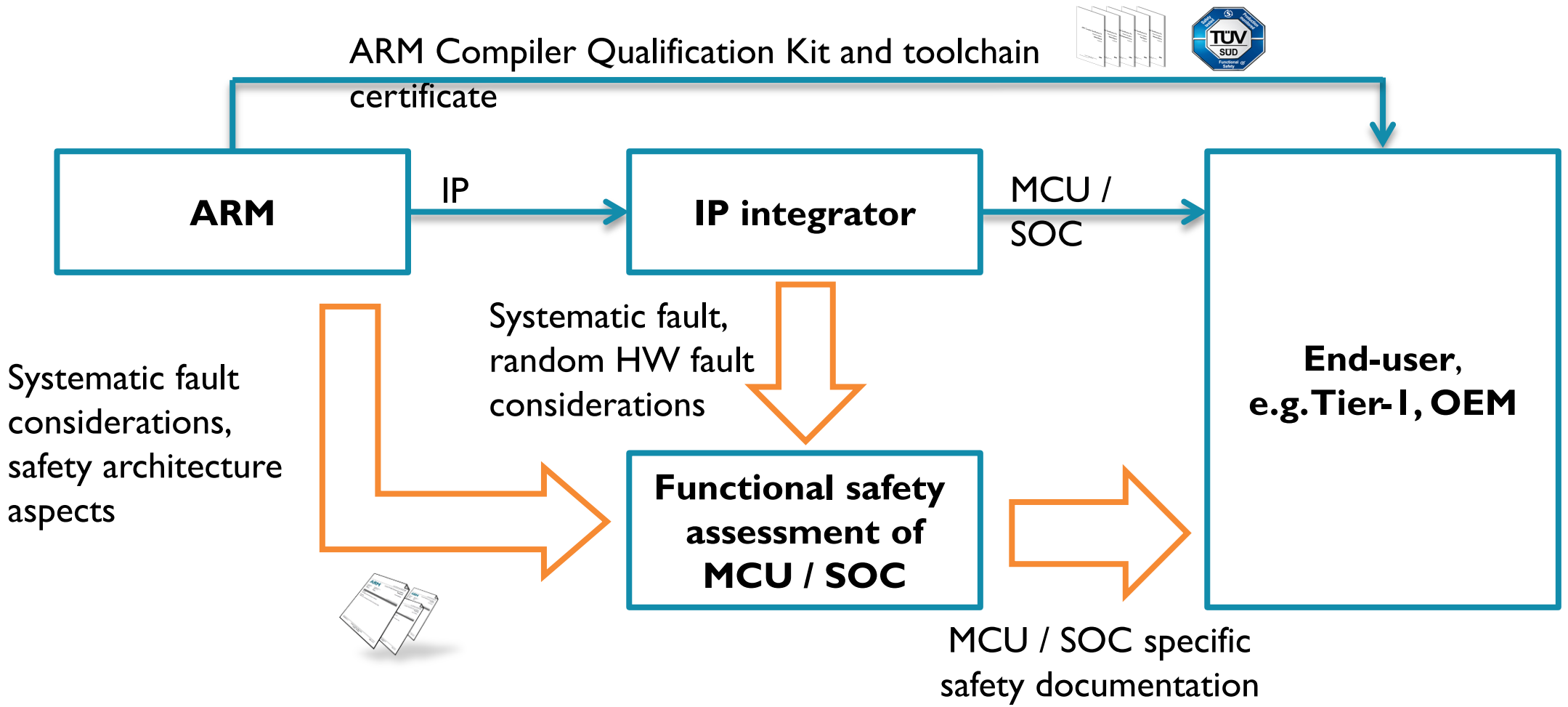
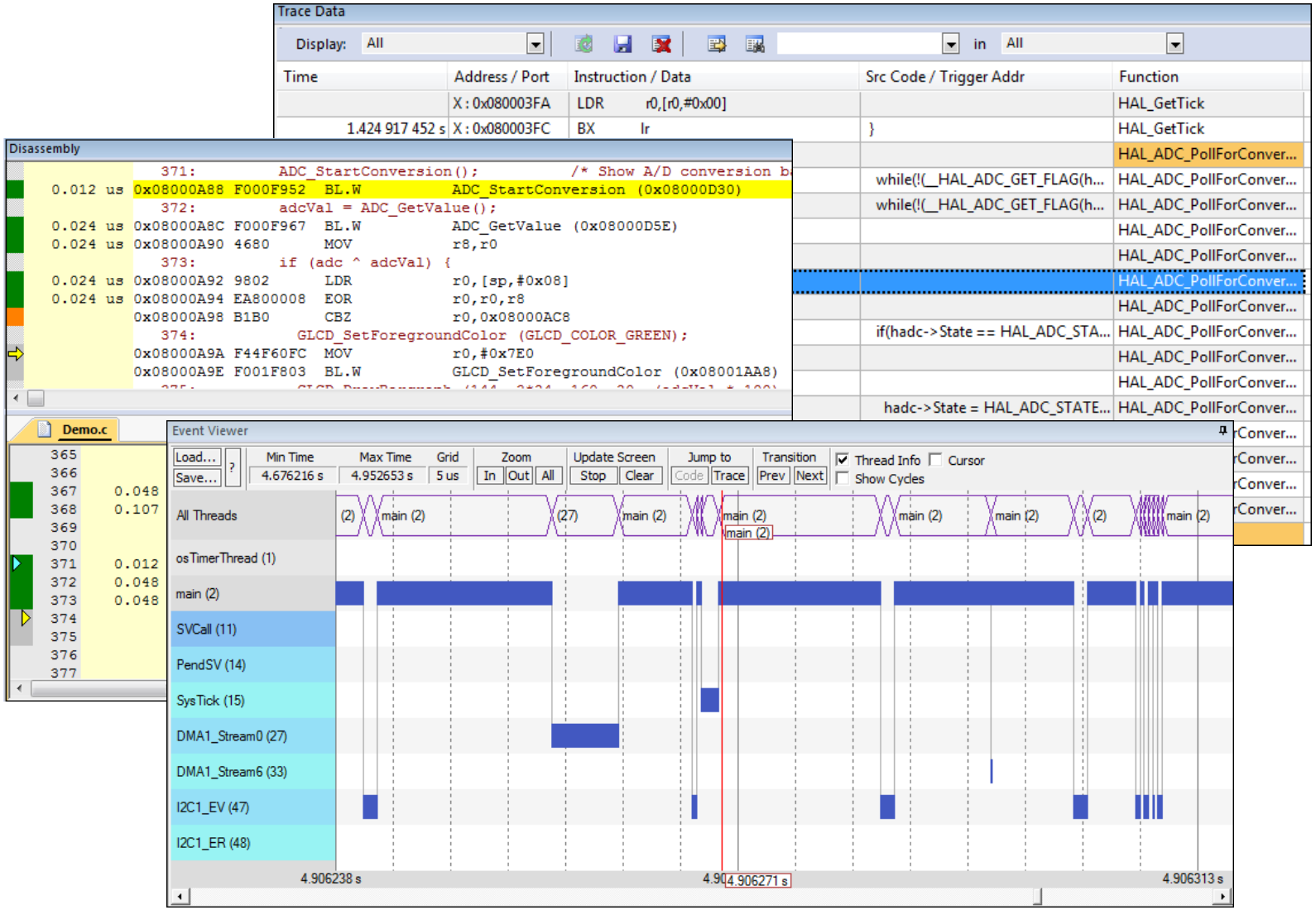


MDK: Features to Support Verification and Certification

Debug & Trace for Cortex-M

- Code Coverage
- Exception Trace
- Event Viewer
- Code Instrumentation



Thank You

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