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28. Windenergietage

SAFETY & SECURITY – AKTUELLE ANFORDERUNGEN IN DER WINDENERGIEBRANCHE / SYNERGIEN NUTZEN

2019-11-06

Electronic Portfolio

Automotive

Aerospace

SILVER ATENA

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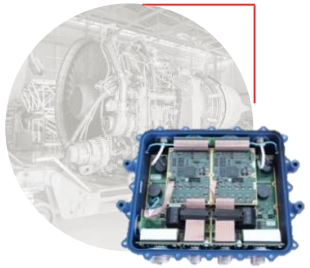
>300 employees

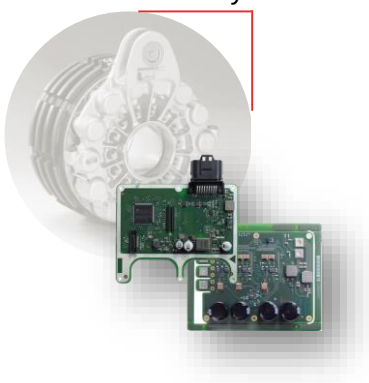
4 sites

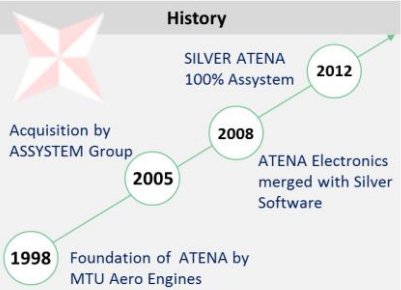
- ECU- & Component Development
- Independent and efficient development of safety relevant units and power electronics
- Delivery of prototypes and small series

Aero Engine



Industry





SILVER ATENA Hamburg / Bremen

- >80 engineers
- Systems engineering
- Safety & Security
- Hardware & Software Development

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Competences

Our strength is

- efficient,
- well structured,
- process & MBSE orientated

development of components

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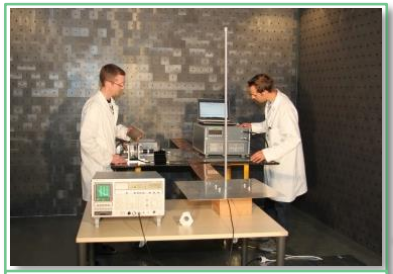
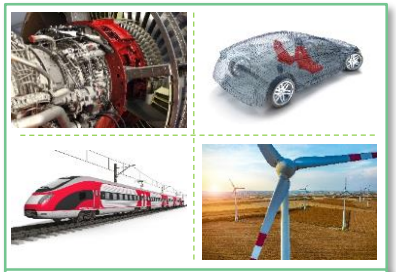
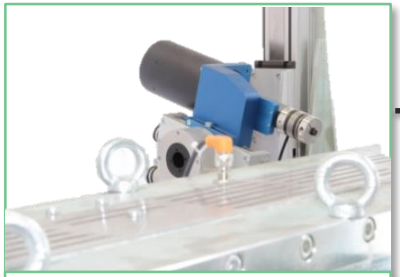


Qualification



Systems Engineering



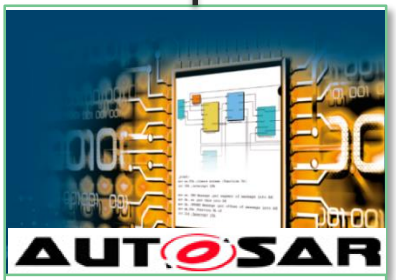
Test & Validation

ECU as product

Safety & Security

TQ NEWAYS flex Zollner

Production



Software

Hardware

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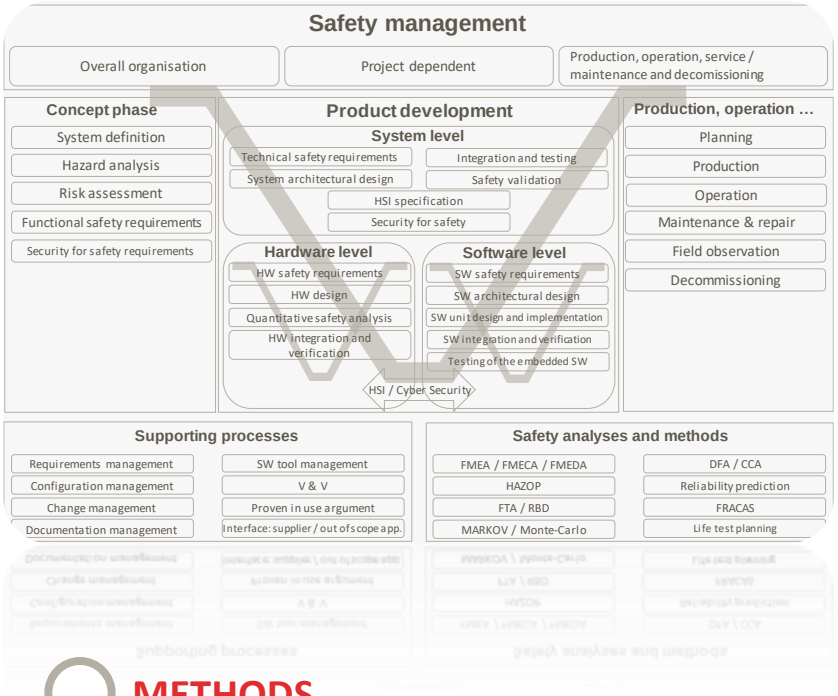
Safety Engineering

EXPERTISE

- Hazard Analysis and Risk Assessment
- Safety concepts design and management
- Functional analysis and specification
- Safety verification and validation reporting
- Safety analysis and documentation
- Contingency and business planning
- Multi-domain knowledge (automotive, railway, aerospace, industry, wind energy)



STANDARDS & TECHNOLOGIES

- IEC 61508, IEC 62061, ISO 13849, IEC 61709, Siemens SN 29500
- ISO 26262, ISO/PAS 21448 (SOTIF), EN 5012X
- ECSS-Q-ST-40 (Space), ARP 4754 & ARP 4761, CS-2X, DO 178, DO 254
- MIL-STD-882 (System Safety), Standard 00-56, MIL-HDBK-217
- IEC 61400-1, DNVGL-ST-0438

METHODS

- Qualitative: Risk Graph / FMEA / FMECA / FMEDA / HAZOP
- Quantitative: RBD / FTA / Markov / Monte-Carlo
- Reliability Prediction according to applicable standards/handbooks or field & test data

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Security Engineering

SECURITY DESIGN & DEVELOPMENT

- Basic Security Assessment to identify threats to your assets
- Advanced Security Assessment to assure sufficient protection
- Security Process Risk Assessment and Improvement
- Implementation of Security Measures
- Support for Process and Product Certification

SECURITY VERIFICATION AND VALIDATION

- Requirements Based Security Review and Test
- Weak Spot Analysis including Penetration Testing

STANDARDS

Compliance with main industry standards as

- IEC 62443, ISO 27001/27002
- BSI 200-x
- NIST SP 800-30, NIST SP 800-37
- EUROCAE ED-202A
- EN 50159, TISAX
- DNVGL-RP-0496, BIMCO

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Dependability / RAMS Engineering

EXPERTISE

- RAMS concepts design and management
- Functional analysis and specification
- Dependability verification and validation reporting
- Dependability analysis and documentation
- Maintainability and cost analysis & optimization
- Reliability prediction
- Spare part & warranty cost estimation

STANDARDS & TECHNOLOGIES

- EN 50126-1 (Railway)
- ECSS-Q-ST-30C (Space)
- ISO EN 60300-X (Dependability management)
- ISO 31000 (Risk management)
- DIN 31051 (Maintenance)

BRANCHES

- Marine technology
- Railway
- Aviation & Space technology
- Wind energy

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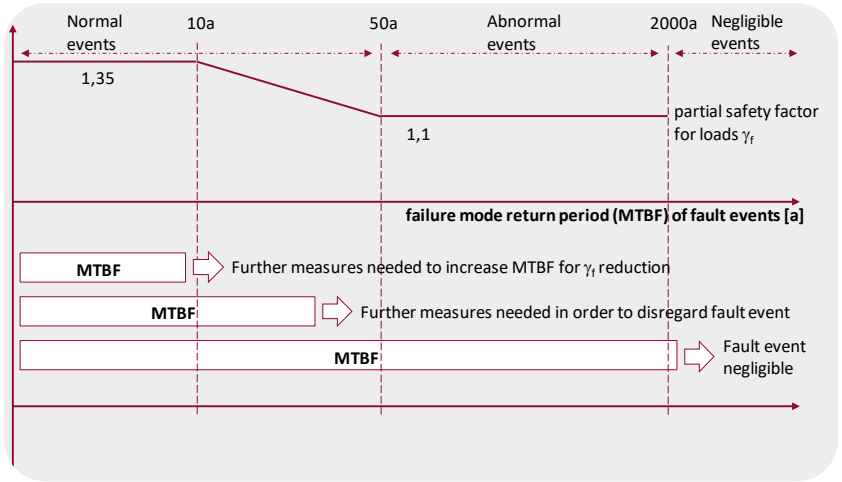
Probabilistic Design
Fault event assessment and Partial load factor reduction

EXPERTISE

- Fault event and Failure mode identification
- MTBF prediction (field data, handbooks) / quantitative system analysis (RBD, FTA)
- Fault event assessment and Partial load factor reduction
- Requirements Engineering
- Model-Based Systems Engineering



STANDARDS & TECHNOLOGIES

- IEC 61400-1 (Design requirements: partial safety factor / failure mode return periods / probabilistic design / …)
- IEC 61508 / ISO 13849 / IEC 62061 (Functional Safety)
- ISO EN 60300-X (Dependability management)
- IEC 61709, Siemens SN 29500, MIL-HDBK-217 (Reliability Prediction)

METHODS

- Qualitative: FMEA / FMECA / HAZOP
- Quantitative: RBD / FTA / Markov / Monte-Carlo
- Reliability Prediction according to applicable standards/handbooks or field & test data

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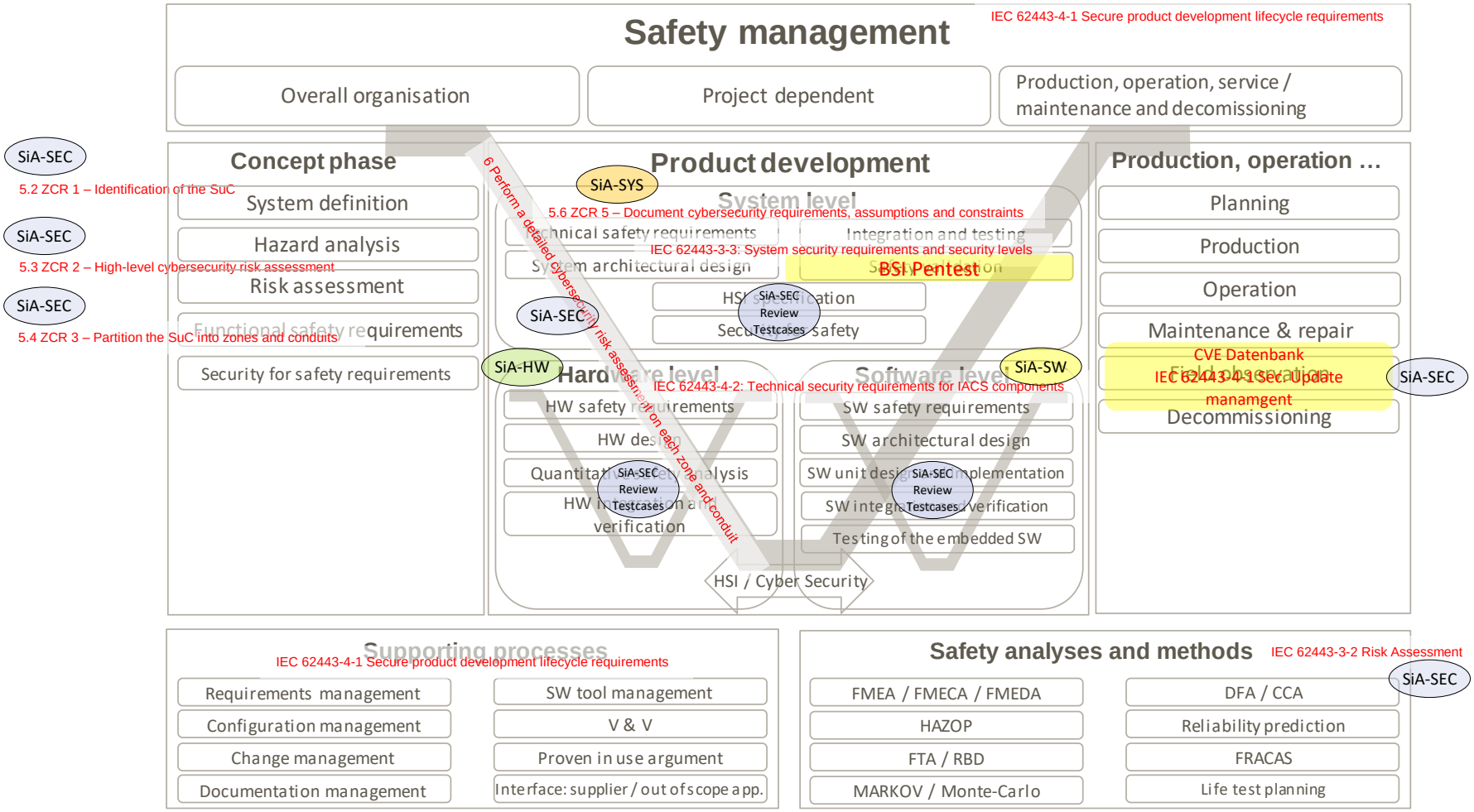
SAFETY & SECURITY

DIFFERENT OBJECTIVES, SIMILAR TASKS AND PROCESSES

Security Tasks compared to the Safety Process



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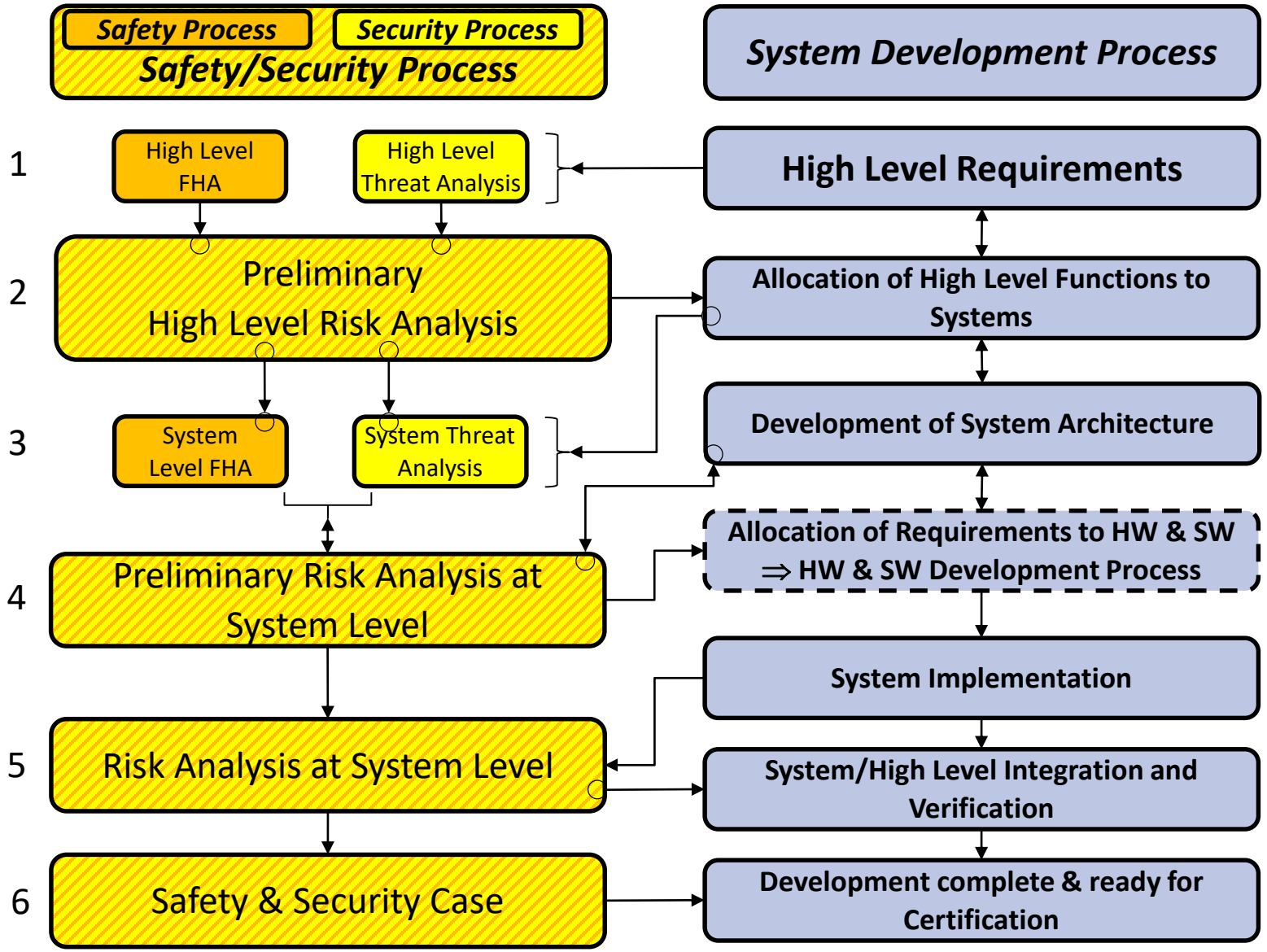
Common Safety & Security Process at System level



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Summary

Due to similar tasks it make sense to synchronize safety & security (security4safety)

It is beneficial to define and implement safety & security requirements early in the product development ⇒ MBSE / MBSA

Identify and solve requirements conflicts (safety vs. reliability, safety vs. security) early in the process

Overall objective is to reduce costs and time for development (link to MBSE) and to consider system safety, reliability and cyber security aspects