

11th International Workshop on the Application of FPGAs in Nuclear Power Plants

Trends for FPGA Technology in Safety Critical Applications

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Connecting Forward

Trends for FPGA Technology in Safety Critical Applications

Where we started in the nuclear industry...

What has been accomplished since then ...

What is being accomplished now ...

Other trends to watch ...

The future for the nuclear sector?

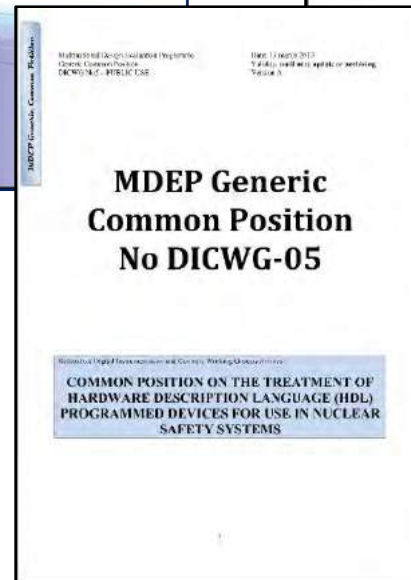
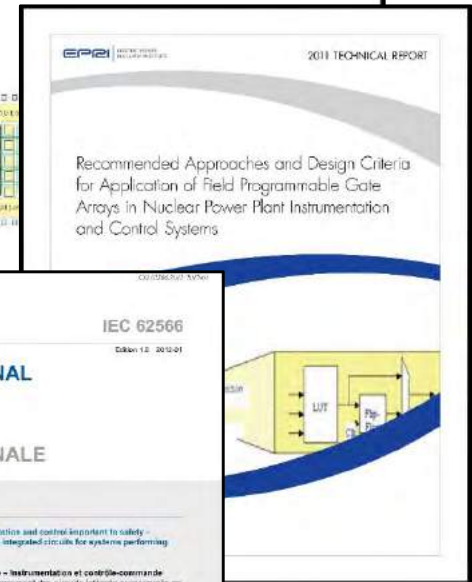
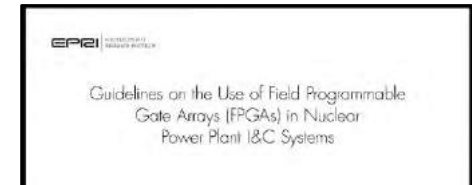
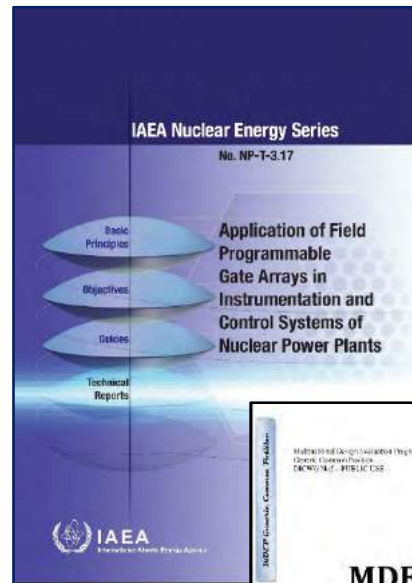
Where we started in the nuclear industry...

- FPGA technology new to the nuclear industry
- Experience with microprocessor technology shaped concerns with FPGA technology
- No specific guidance documents or standards for FPGA technology
- Regulatory bodies had to treat FPGA technology as software



What has been accomplished since then ...

- Specific guidance documents and standards for FPGA technology use in the nuclear sector
- Additional standards are in development



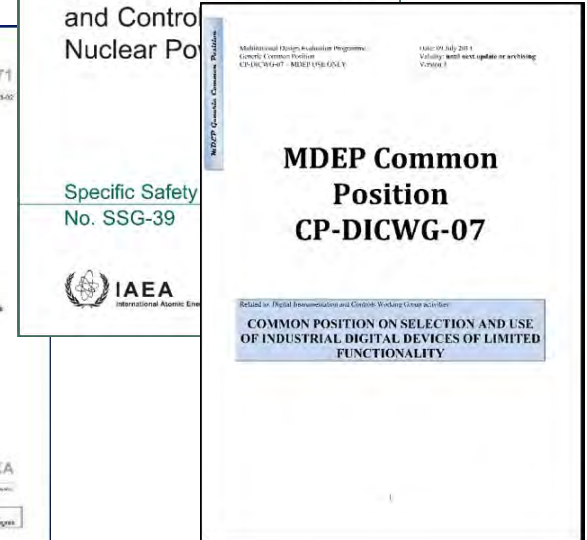
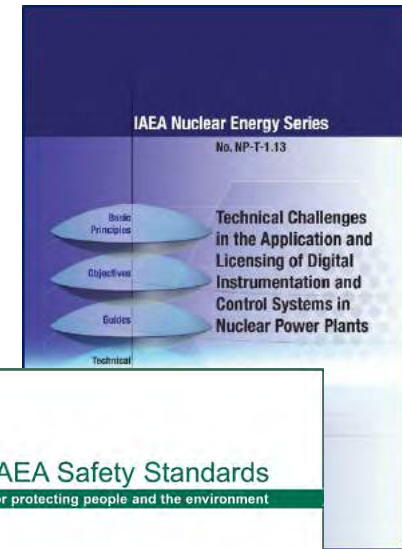
What has been accomplished since then ...

- Nuclear industry and regulatory bodies have learned how to treat FPGA technology for safety applications
 - FPGA-based systems installed in nuclear plants in many countries
 - FPGA-based I&C platforms now accepted and available for use
 - FPGA technology provides solutions for common cause failures vulnerabilities based on internal diversity features



What is being accomplished now ...

- Nuclear industry and regulatory bodies are learning how to treat embedded digital technologies like FPGA in smart devices and how to credit certification of FPGA components, development tools, and products



ONR Office for Nuclear Regulation

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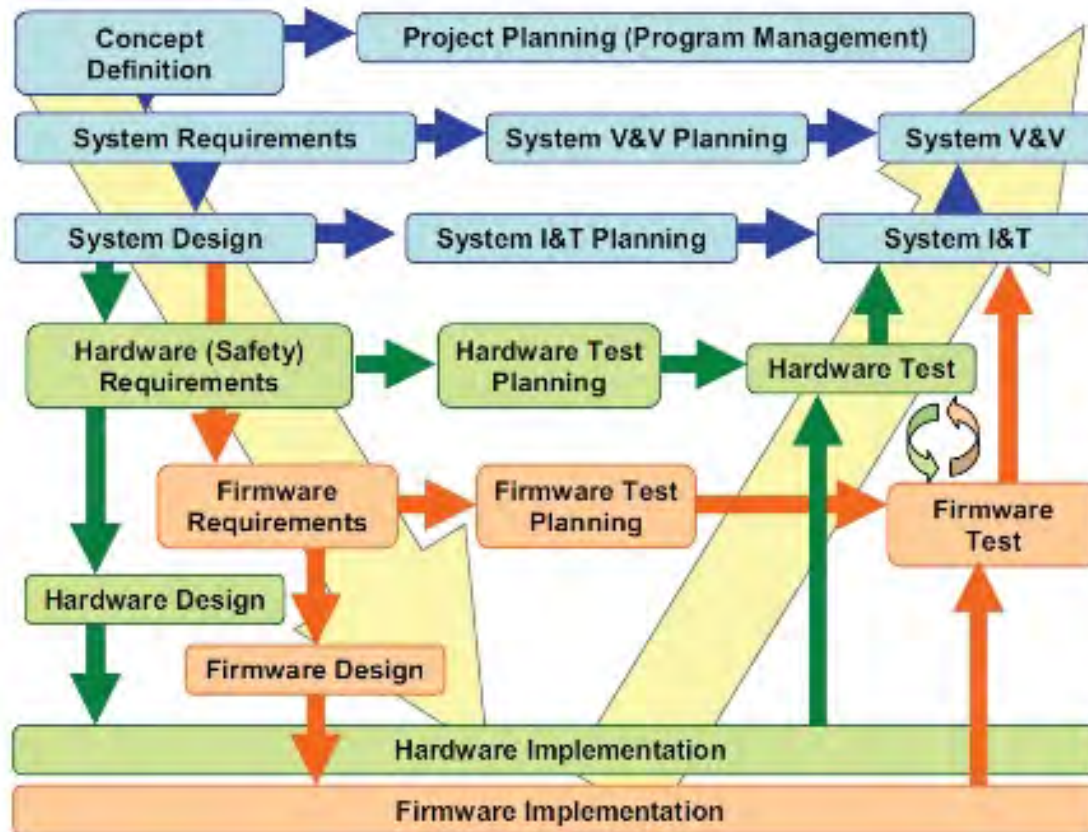
Other trends to watch ...

- Other industry sectors have also developed standards for use of FPGA technology in safety-critical applications
 - Driving market towards certified FPGA components and development tools
 - Driving market towards certified products (e.g., IEC 61508 SIL Certification)



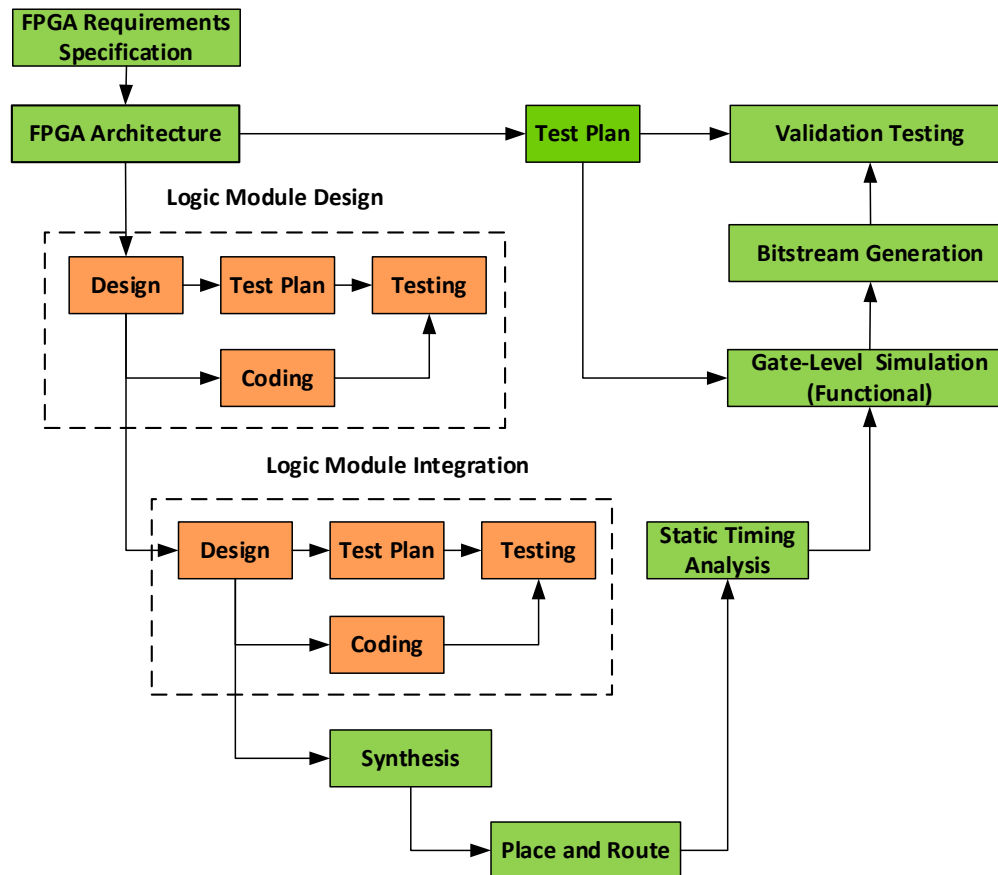
The future for the nuclear sector?

- Accepted standard development processes and tool flows



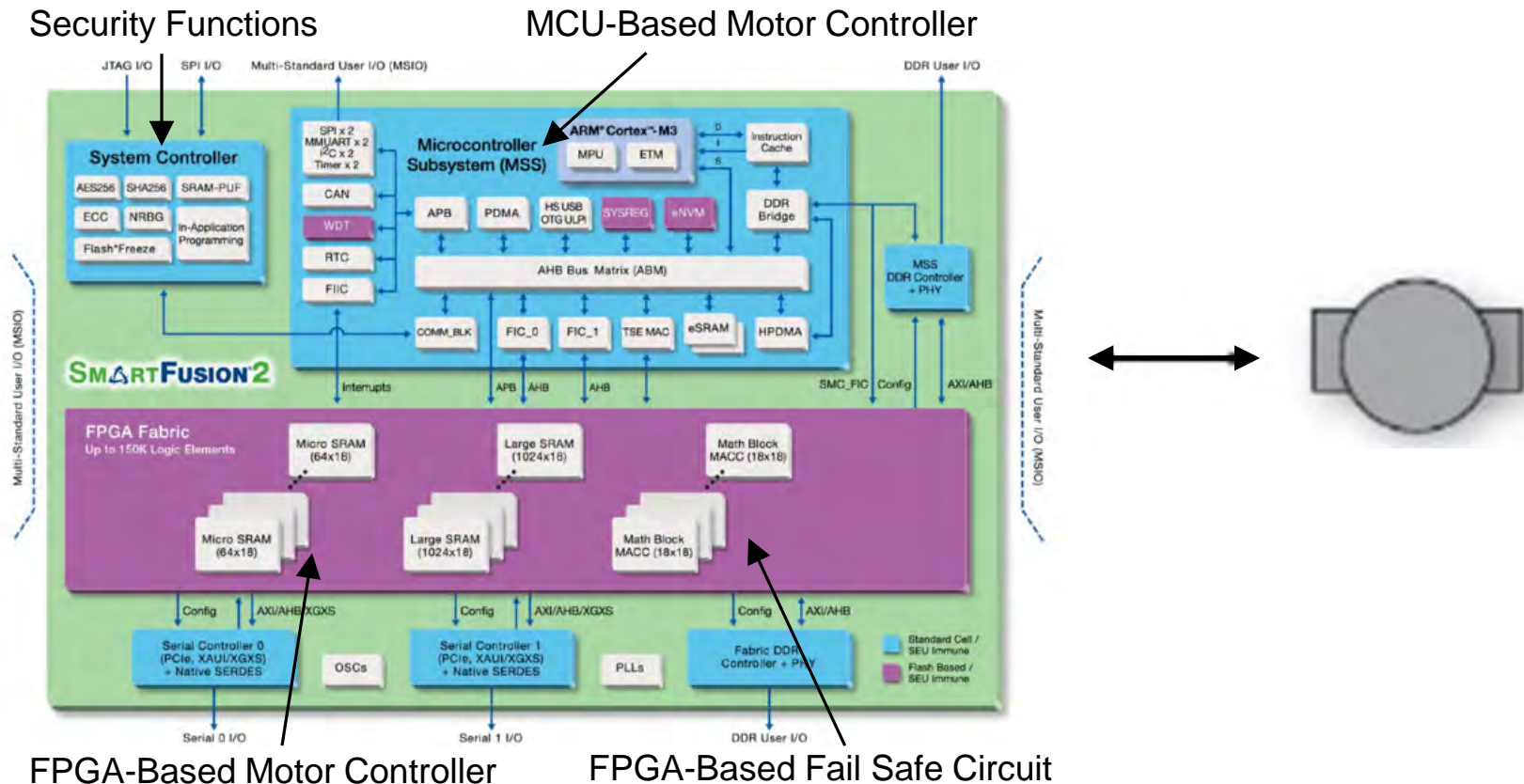
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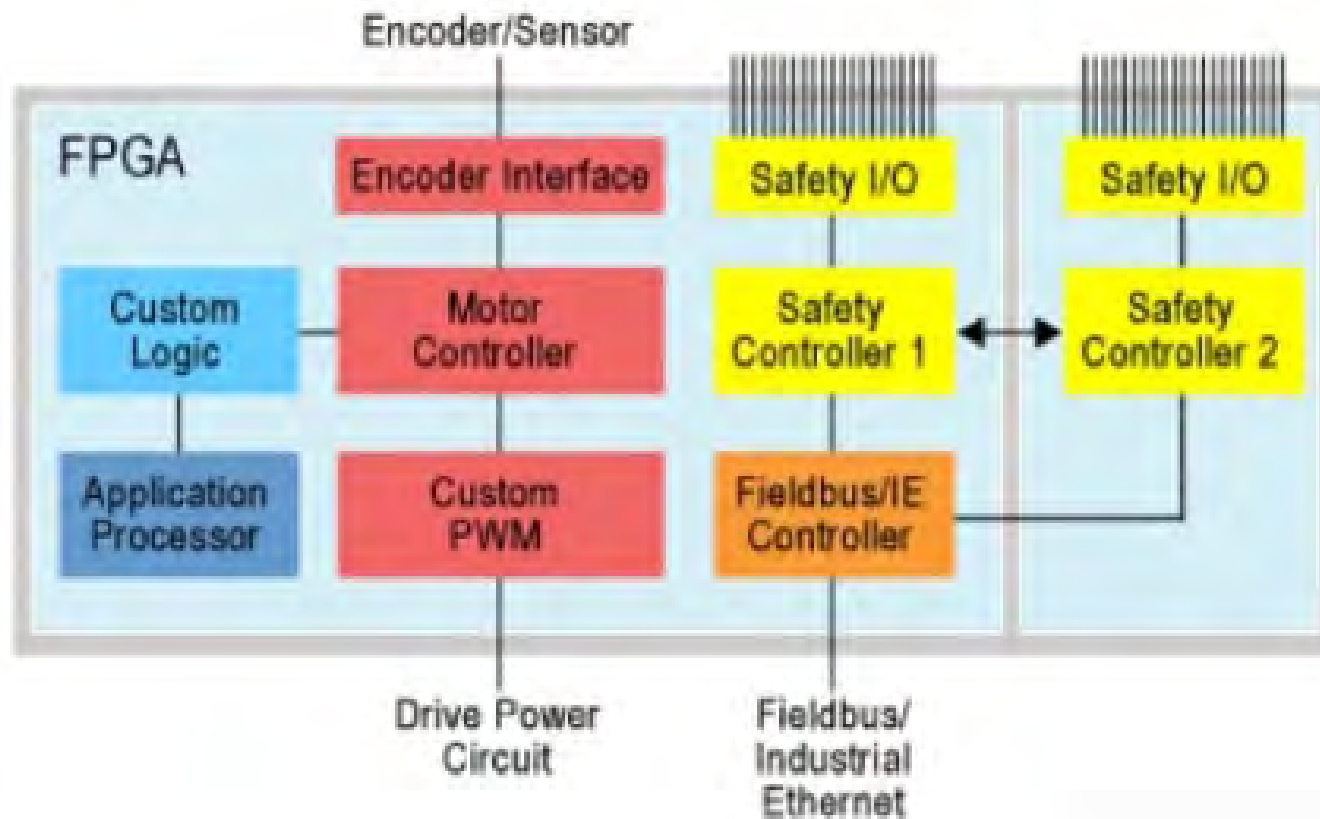
The future for the nuclear sector?

- Accepted safe integrated solutions for standard industry needs



The future for the nuclear sector?

- Accepted safe integrated solutions for standard industry needs



The future for the nuclear sector?

- Realization process improvements through use of certified products



The future for the nuclear sector?

- Realization process improvements through use of certified products





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Thank you

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