

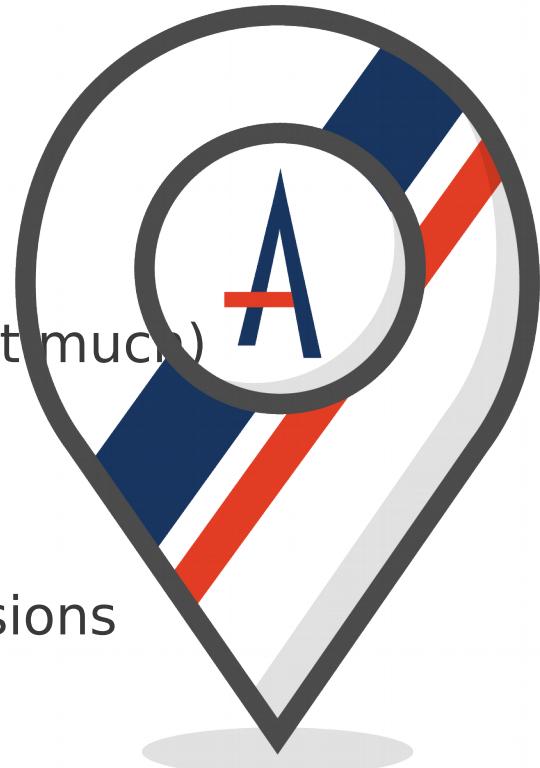


# Functional Hardware Verification Engineer

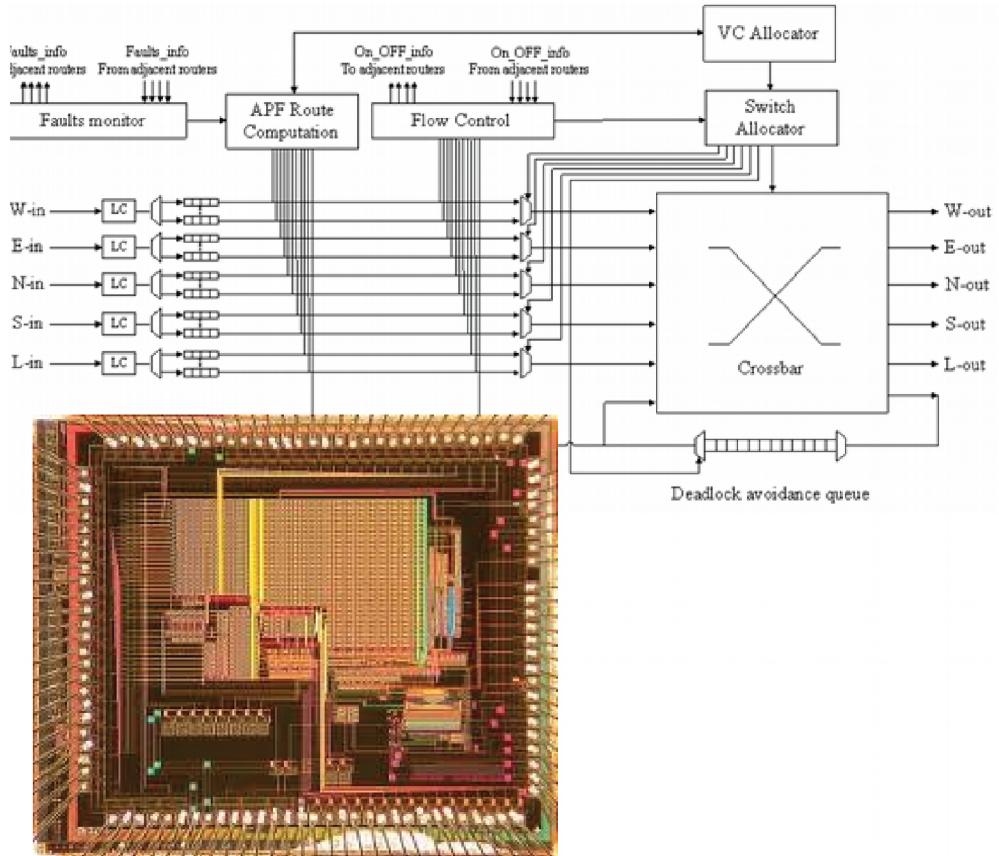
A Job Description Intro

# > Why are you here?

- ✓ you get an insight of a real job's requirements:
- ✓ you can plan to focus on certain subjects early (4 years is not much)
- ✓ you find out what a real company expects from you
- ✓ you are more prepared for the post-university life
- ✓ you are informed so you are in a better position to take decisions



# > General Info



```

virtual class amiq_eth_packet extends uvm_object;
  //pack the Ethernet packet to a list of bytes in the format required by Wireshark software
  //param byte_data - array in which to put the packed information
  virtual function void to_wireshark_array(ref byte unsigned byte_data[$]);
    bit bitstream[];
    bit current_pack_preamble = pack_preamble;
    bit current_pack_sfd = pack_sfd;
    pack_preamble = 0;
    pack_sfd = 0;
    void'(pack(bitstream));
    pack_preamble = current_pack_preamble;
    pack_sfd = current_pack_sfd;
    byte_data = {>> {bitstream}};
  endfunction

  //returns a string containing the bytes of the packet as required for Wireshark software
  //return printable bytes of the packet
  virtual function string to_wireshark_string();
    string result = "";
    byte unsigned byte_data[$];
    to_wireshark_array(byte_data);

    for(int i = 0; i < byte_data.size(); i++)
      result += byte_data[i];
  end

  return result;
endfunction
endclass

```



# What does a F. HW. Verification Engineer do?



- ✓ Read and understand device specification
- ✓ Create a verification plan, strategy and architecture
- ✓ Implement the verification environment using specific programming languages
- ✓ Simulate the design, debug, collect metrics
- ✓ Report bugs
- ✓ Track verification progress
- ✓ Collaborate with others

# ➤ Required Skills

- ✓ Practical experience with Verilog/VHDL
- ✓ Practical experience with OOP (e.g. C/C++, Java 6m+)
- ✓ Practical experience with Algorithms and Data Structures
- ✓ Practical experience in Software Debug
- ✓ Practical experience with a Simulator (Icarus, QuestaSim, NCSim, VCS)



# Required Skills



- ✓ Practical experience with Linux (basic commands, regular expressions)
- ✓ Practical experience with Shell Scripting (bash, sh, csh, perl, python)
- ✓ Practical experience with Build Tools (Makefile, Perl-scripts, Ant)
- ✓ Practical experience with Versioning Systems (GIT, CVS, SVN, ClearCase)
- ✓ Practical experience with an IDE (Eclipse, NetBeans, VisualC++ +)

## ➤ 'Good to have' Skills

- ✓ FPGA-based design and implementation
- ✓ Assembler
- ✓ Embedded programming
- ✓ Practical experience with  
Matlab/Octave/SystemC (e.g. model  
development)



# ➤ Required Knowledge



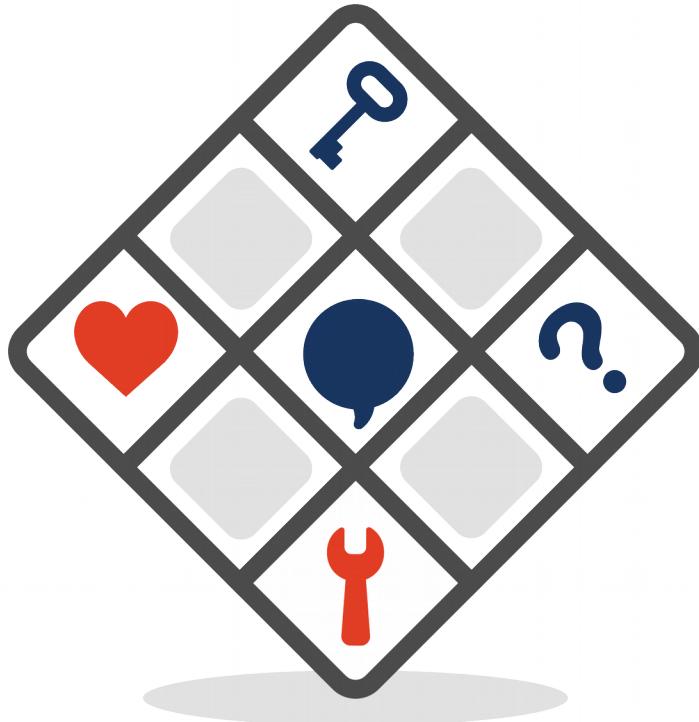
- ✓ Digital Circuits Design and related
- ✓ Hardware Design Patterns
- ✓ Generic programming (C, algorithms, data structures)
- ✓ Object Oriented Programming (C++, Java)

# ➤ 'Good to have' Knowledge

- ✓ Digital Signal Processing
- ✓ Communication Protocols and Networking
- ✓ Microprocessor/microcontroller Architecture
- ✓ System-on-Chip Architecture (e.g. RaspberryPi)
- ✓ Analog Design
- ✓ Software Design Patterns



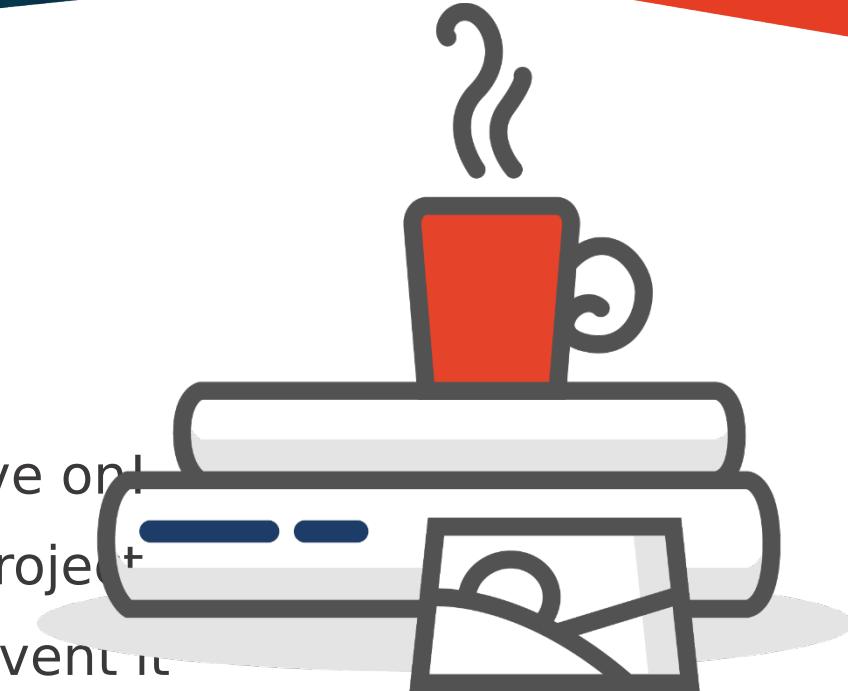
# ➤ Required Soft Skills



- ✓ Passionate, Determined
- ✓ Responsible, Proactive
- ✓ Inquisitive, Curious
- ✓ Organised, Detail Oriented
- ✓ Strong interpersonal and communication skills
- ✓ Good English communication skills (both in verbal and written)

# ➤ Few simple recommendations

- ✓ Play: Imagine, Experiment, Get Results, Move on!
- ✓ Collaborate: contribute to an OpenSource project +
- ✓ Take initiative: if you don't have a project invent it!
- ✓ Be passionate about technology, but don't cling to it!
- ✓ Exercise interviews, go for internships, go for summer schools or volunteering
- ✓ Enhance your knowledge and culture:  
Coursera/Udacity/Standford online



# Questions

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Thank  
you! And Good  
Luck!