

Team Project

Effective Tool for Application of Knowledge and Deriving Engineering Competencies

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Microelectronics Engineering Curricula

Theoretical background

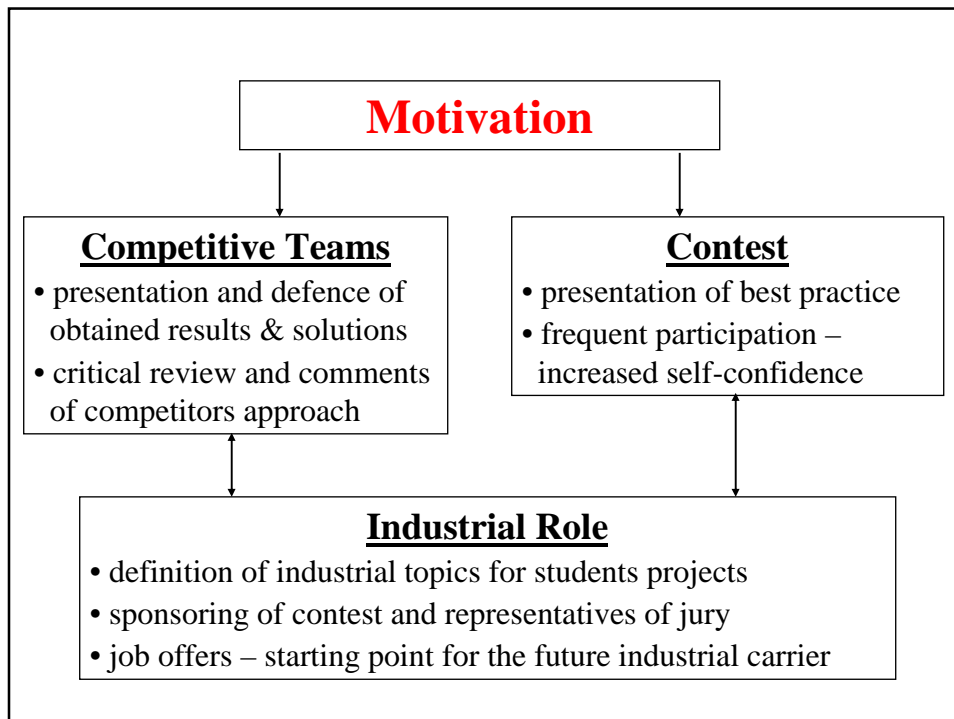
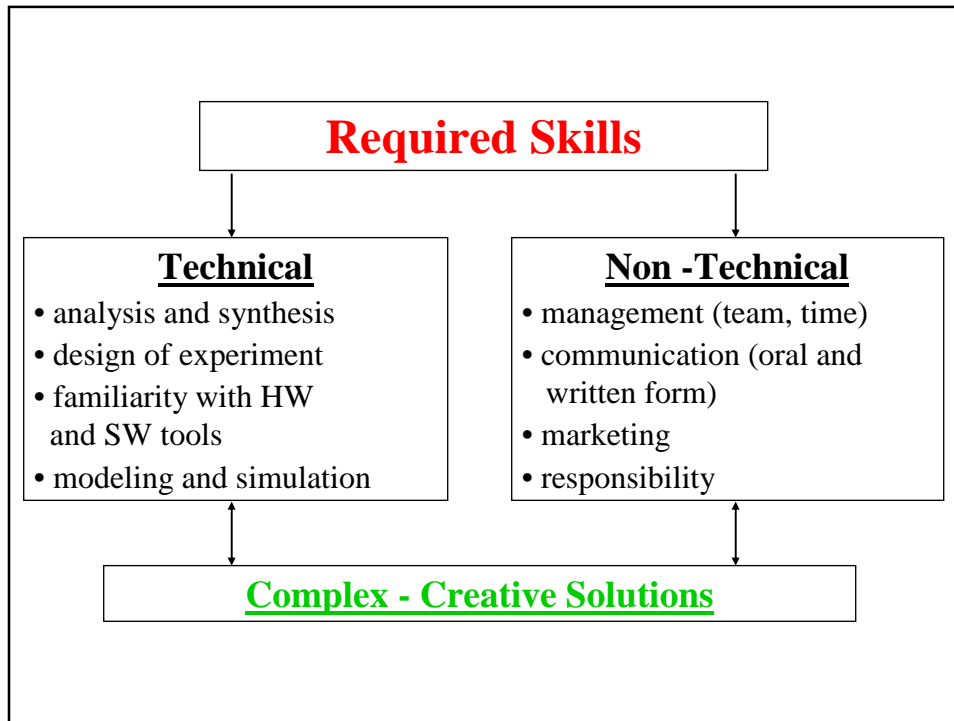
- mathematics
- physics
- electronics
- informatics

Specialization

- microelectronics
- optoelectronics
- sensorics
- vacuum electronics

Practical Training

- seminars and laboratories
- individual projects (semester, year, diploma, PhD)
- team project



Objectives of a Team Project

- problem definition, selection of most important parameters
- analysis of the current situation in the field, search for suitable technology including market and cost analysis
- project management, partitioning of complex task, definition of role of individual team members, time schedule
- exchange of obtained results among team members, feedback from colleagues, interactive optimisation of partial solutions
- written documentation, data sheets, protocols, results of simulation, minutes and conclusions from meetings, ...
- leadership, assessment of individual contributions

Specification of the product

Actions:

- market analysis (current market, customer needs)
- choosing the potential market

Outputs:

- Preliminary data sheet with main parameters according to the customer needs

EURO Switch VGM2026

Dual high side power distribution MOSFET switch

The VGM2026 is dual channel High side MOSFET switch optimized for general purpose, IEEE applications conforming to IEEE requirements. An over-current (OCU), Fault (FAULT) and under-voltage lockout (UVL) are built into the product.

Features

- IEEE 488 (D0) High Side Pushover MOSFET Switch
- 2.7V to 5.5V Operating Voltage Range
- 100 mA Continuous Load Current per Pin
- 100 mA DC Load Switch Current
- 1.5 A Fault High Side Switch Current
- 100 mA DC Load Switch Current
- Overcurrent Limit Protection
- Thermal Shutdown Protection
- Operating Temperature Range: -40°C to 85°C
- Complete Input Composites with OCU, UVL, and FAULT
- 1.5 A Fault High Side
- Set-Point Protection


Pin Configuration

```

    1 2 3 4 5 6 7 8
    | | | | | | | |
    1 2 3 4 5 6 7 8
    | | | | | | | |
    1 2 3 4 5 6 7 8
    
```

Pin Description

Pin	Type	Function
1	I	Input Pushover MOSFET Gate
2	I	Control
3	I	Control Input (Active Low)
4	I	Control Input (Active Low)
5	I	Control Input (Active Low)
6	O	1.5 A High Side Switch Output, Indicates overcurrent, UVL or thermal shutdown
7	O	1.5 A High Side Switch Output, Indicates overcurrent, UVL or thermal shutdown
8	O	Control Output
9	O	Control Output



EURO Switch
Switching
Design Center

Chassis: Rev. 0.1.1.1.1.1.1.1.1.1
Substrate: Process 1.0
Layer: Process 1.0

off dimensions -
cell area -

Typical Applications

- USB Power Management
- Battery Charge Controller
- Hot Plug and Power Supply

Design preparation

Actions:

- Design feasibility analysis

Outputs:

- Block schematic of the product defined
- Project time plan set up
- Maximum area of the final design approved according to all possible packages
- Project cost model evaluated

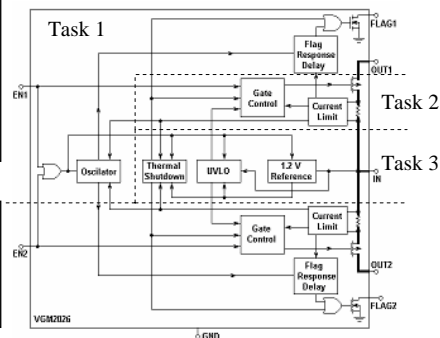
Team work distribution

Actions:

- Work packages definition
- Packages interactions definition
- Team members responsibility definition

Outputs:

- Work spread over the team
- Design dependencies defined



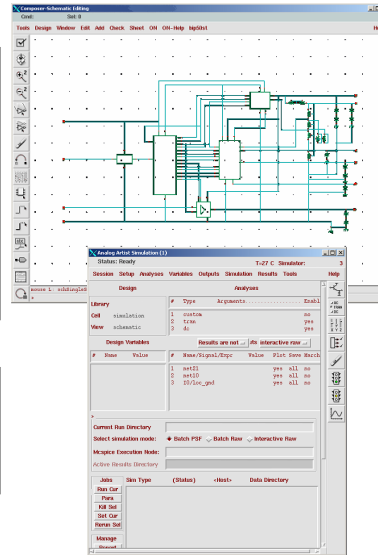
Design stage of the project

Actions:

- Technology selection (according the cost model, package size and parameters)
- Design of the previously defined device blocks according the design dependencies

Outputs:

- Preliminary schematics and functional simulations of the designed blocks



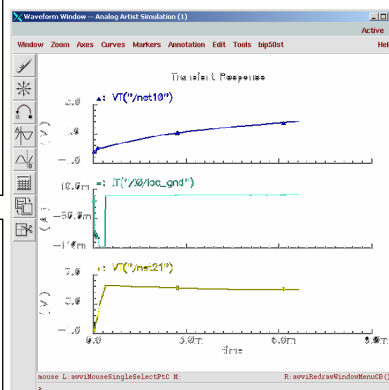
Project finalization

Actions:

- Functional simulations of the completed circuit
- Reliability simulations (technology corner and temperature analysis)

Outputs:

- Updated data sheet of the final product
- Final schematics of the product prepared for layout



Conclusions

- **Team project – integral part of curricula**

- **Complex approach – virtual product**

- **Acquired technical and non-technical skills**

- **Learning by playing**

- **Motivation via competition and contest**