Content Draft

Report

* Introduction
* Constraints
  + System specification
  + Challenges
* State of the art
* Solution Proposal
  + Selection
  + SW Structure
  + HW Structure
* Implementation
  + LED Control
  + Temperature Control
  + Extra SPI interface
  + EtherCAT Library adaptation
  + Network integration
  + System SMs
  + PCB design
* Results
  + Communication Captures
  + PCB captures
  + Further Development
* Conclusions

# Introduction

This is a general description of the project thesis.

## State of the art

### RT industrial networks

The following is a list of hardware/software options to implement industrial devices compatible with RT Industrial Networks.

RT industrial networks have been a relatively recent area that has seen development by different **private** companies with parallel improvements starting from the standard of Ethernet. Some examples, widely used in the last 20 years are listed below. [quote to paper].

Profinet

EtherCAT

DeviceNET

All of them have improved their initial protocols to support RT constraints. Lately there is an initiative to standardize the different approaches in a similar fashion to the standard XXXX during the 90s. [quote to paper].

### Development tools

ASICs and ICs compatible for EtherCAT complying devices are listed below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | AX58100 AX58200 | fido5200 | ET1100 ET1810/ET1811/ET1812 ET1851/ET1816/ET1817 | netX 100 netX 500 netX 50 netx51  netX52 netX4000 netX90 | Anybus NP40 XMC4300 XMC4800 LAN9252 EC‐1 RZ/T1 R‐IN32M3‐EC |
| Type |  |  |  |  |  |
| Supplier |  |  |  |  |  |
| Software Support | YES, full support, blackbox |  |  |  |  |
| License |  |  |  |  |  |
| SOES compatibility |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name | XMC4300 XMC4800 | LAN9252 | EC‐1 RZ/T1 R‐IN32M3‐EC | Sitara AM3357/9 Sitara AM4377/9 Sitara AM571xE Sitara AM572xE Sitara AMIC110 SoC | TMC8460 TMC8461 TMC8462 | ANTAIOS |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |