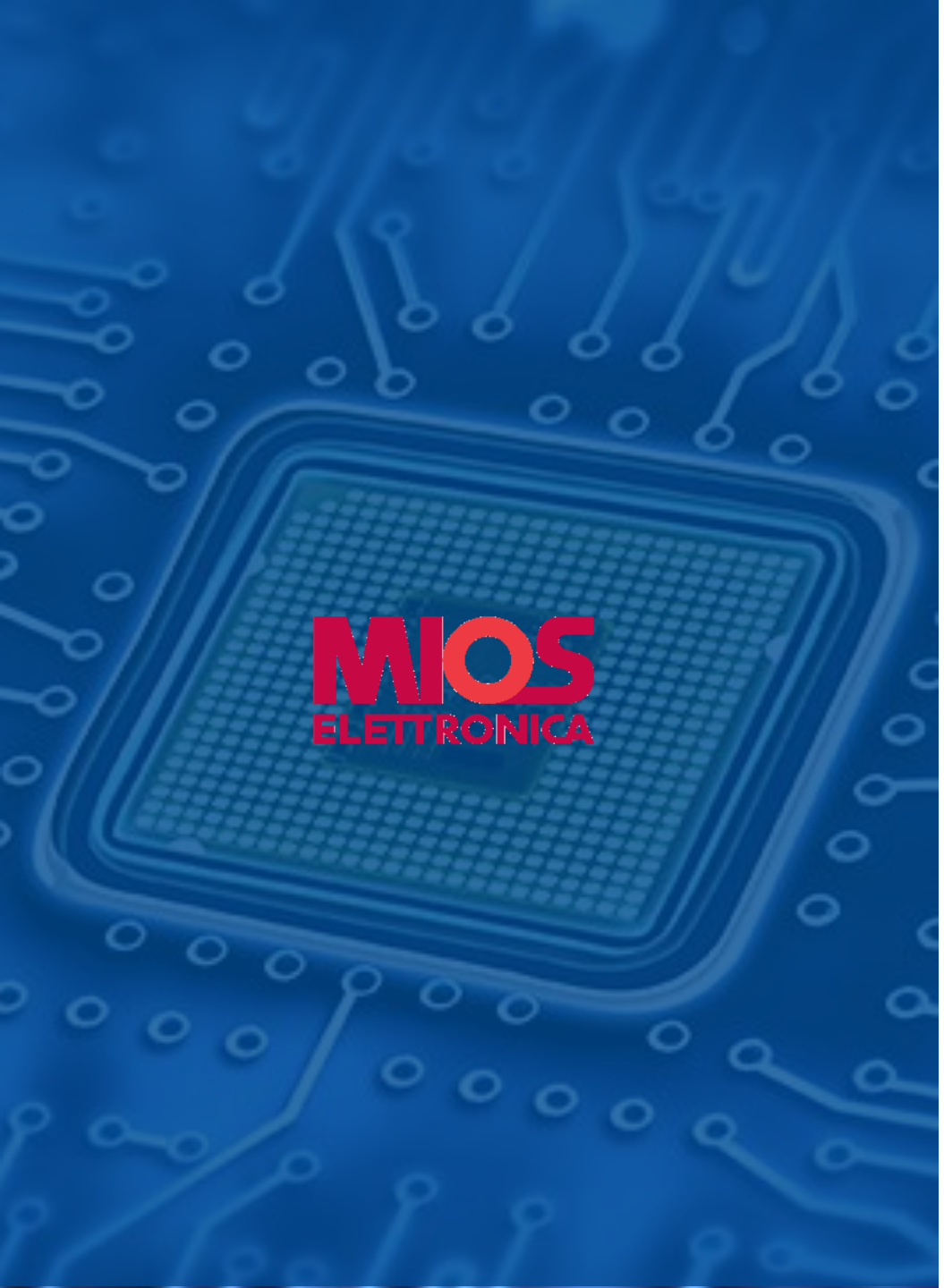
Railway and Industry Business Expertise

June 2020

A COMPANY OF ATIG GROUP

www.mioselettronica.com



WHO WE ARE

MIOS Elettronica has been established in 2011 based on a vision and an entrepreneurial initiative of few experienced managers coming from leading Engineering Companies in the field of Railway business, Oil & Gas and Aeronautics.

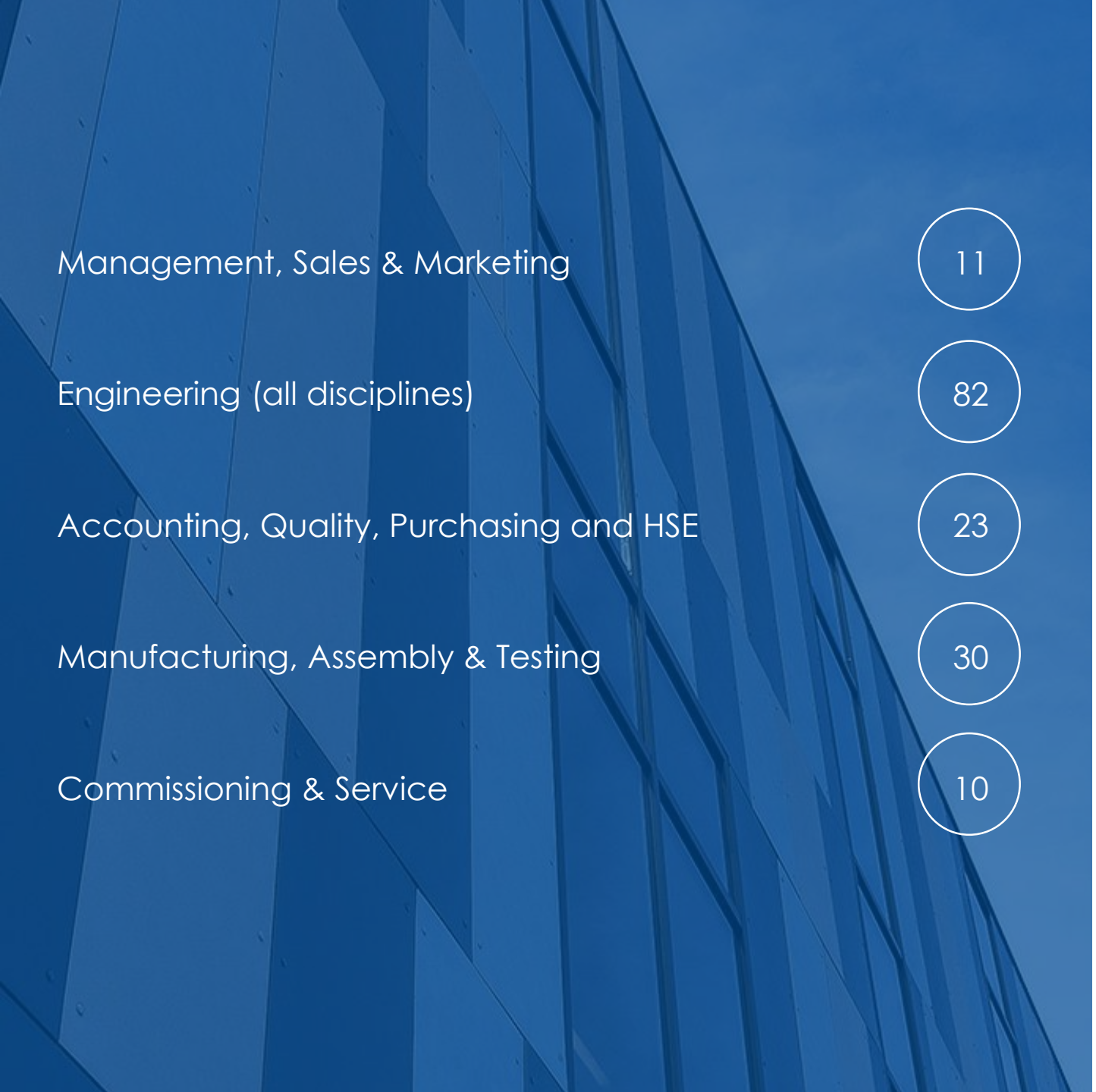
We felt there was a gap between futuristic to come innovation and cutting edge technology for actual needs and problems.

From 2016 MIOS Elettronica is fully owned by a Financial holding called **ATIG** (Advanced Technology Industrial Group).

ATIG GROUP

MIOS Elettronica is part of ATIG Group

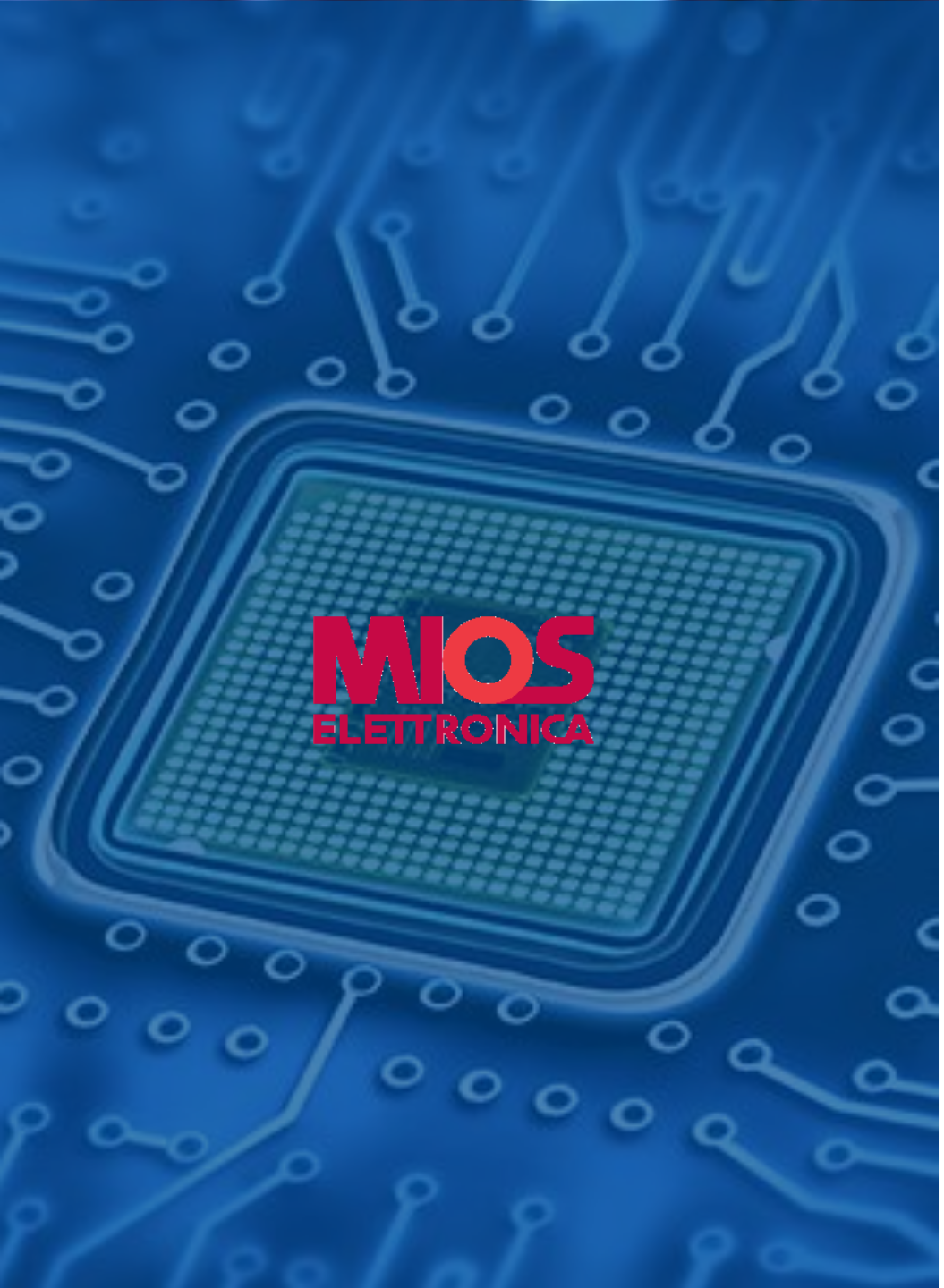
ATIG GROUP FOOTPRINT



Management, Sales & Marketing	11
Engineering (all disciplines)	82
Accounting, Quality, Purchasing and HSE	23
Manufacturing, Assembly & Testing	30
Commissioning & Service	10

OUR STAFF AT GROUP LEVEL

Organization



TEAM

Our Team has a long experience in the Railway and Industry business as well as our selected Partners and our Network of professionals.

MIOS Elettronica takes part to the main International Standardization Bodies and to the Industrial Organizations.

MIOS Elettronica has important partnership with Universities and Research Institutes.

MIOS Elettronica has qualified Electronic Manufacturer Services (EMS) in EU, North America and Far East.

Railway Electronic Market

Demands, Requirements and Regulations

European

General
- EN 50155 - Railway applications - Rolling stock - Electronic equipment √

Environmental
- EN 50125-1 - Railway applications- Environmental conditions tor equipment- Part 1: Rolling stock and on-board equipment
- EN 61373 - Railway applications - Rolling stock equipment- Shock and vibration tests

EMC
- EN 50121-3-2 - Railway applications - Electromagnetic compatibility- Part 3-2: Rolling stock Apparatus

Electrical
- EN 50124-1 - Railway applications - Insulation coordination - Part 1: Basic requirements -Clearances and creepage distances for all electrical and electronic equipment.
- EN 50153 - Railway applications - Rolling stock - Protective provisions relating to electrical hazards

Fire & Smoke
- EN 45545 (all parts) - Railway applications - Fire protection on railway vehicles

Reliability & Safety
- EN 50126-1 - Railway Applications- The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) - Part 1: Generic RAMS Process
- EN 50657 - Railway applications - Rolling stock applications - Software onboard of √ rolling stock
- EN 50129 - Railway applications - Communication, signalling and processing systems - Safety related electronic systems for signalling

International

General
- IEC 60571 - Railway applications - Rolling stock - Electronic equipment

Environmental
- IEC 62498-1 - Railway Applications – Environmental conditions for equipment- Part1: Equipment on board rolling stock
- IEC 61373 - Railway applications - Rolling stock equipment- Shock and vibration tests

EMC
- IEC 62236-3-2 2008 Railway Applications - Electromagnetic compatibility- Part 3-2: Rolling stock – Apparatus

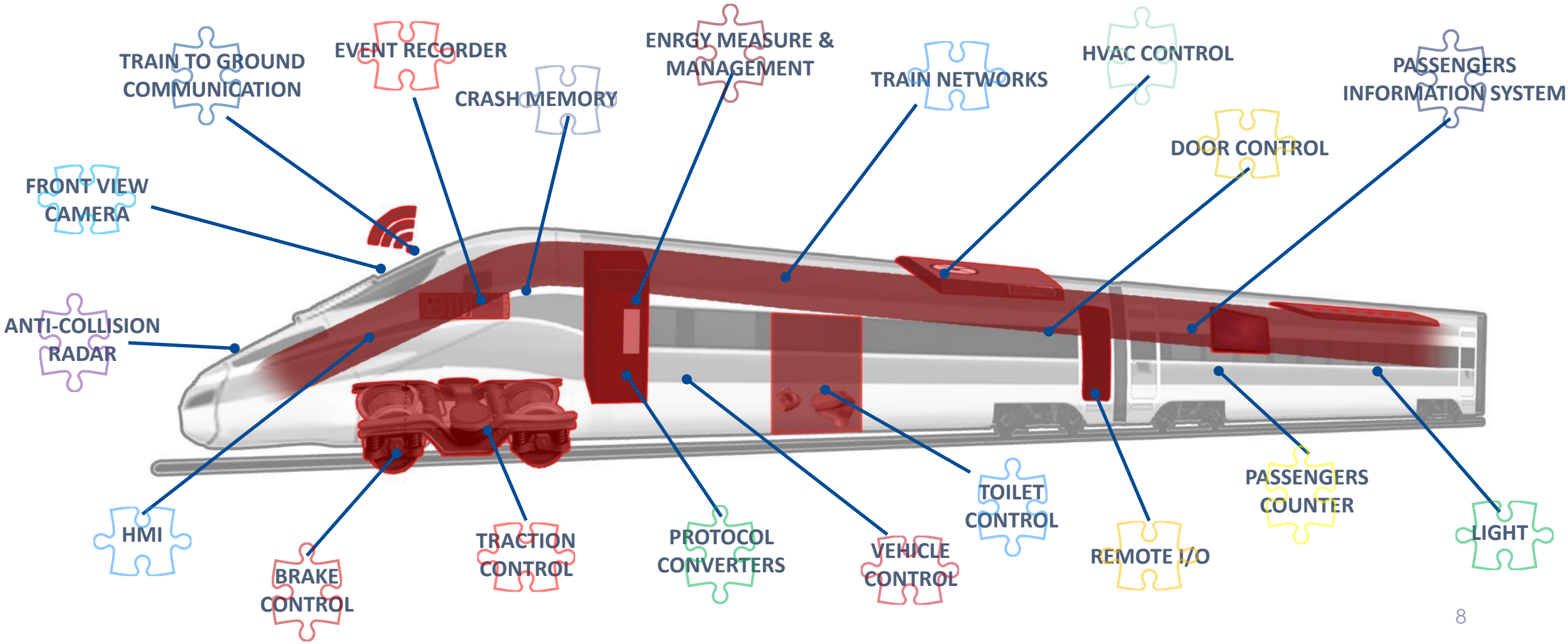
Electrical
- IEC 62497-1 . Railway applications - Insulation coordination - Part 1: Basic requirements - Clearances and creepage distances for all electricaland electronic equipment
- IEC 60077 Series Railway applications – Electrotechnical equipment for rolling stock

Reliability & Safety
- IEC 62278 - Railway applications - The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS)
- IEC 62279 Railway applications - Communication, signalling and processing systems - Software for railway control and protection systems

Application Specific
- IEC 61375 (all parts) - Electronic railway equipment - Train communication network √
- IEC 62625 (all parts) - Electronic railway equipment - On board driving data √ recording system
- IEC 62589 (all parts) - Electronic railway equipment - On-board multimedia and telematic subsystems for railways
- IEC 62888 (all parts) - Railway applications - Energy measurement on board trains √

Railway Electronic Market

Demands, Requirements and Regulations



Railway Electronic Market

Solution development full modular approach

MEMORY MANGER

OS

VIDEO GRAPHICS

EVENT MANAGER

SIGNAL PROCESSING

CAN Open

MOTOR DRIVER MODULATION

TRAIN TOPOLOGY DATABASE

EthernetIP

TRDP

TTDP

HIGH AVAILABILITY SEAMLES RDUNDANCY

TIME SENSITIVE NETWORK

ETHERNET SWITCH

MVB PROTOCOL

LOG MANAGER

DATA MARSHIALLING

MAPPING SERVER

WTB PROTOCOL

IMAGE RECOGNITION

VIDEO GRABBER

MIOS ELETTRONICA **CORE7010 - SoM**

MAIN STANDARDS COMPLIANCE

- EN 50155 - IEC 60571 - IEC 61375 - EN 45545

ENVIRONMENTAL

- Nominal Power supply: 5 Vdc.
- Power consumption: 1.5W typical, 3W max.
- Operating Temperature: class OT4 according to EN50155-2018 and TX according to IEC 60571

SYSTEM FEATURES

- Microprocessor Xilinx ZC7010 Zynq® dual core ARM Cortex A9 + internal Aritx7®FPGA
- 1000 MB DDR3 (down to 256MB optional)
- 32 MB QSPI NOR Flash;
- 512 KB MRAM/FRAM
- eMMC 4 GB (up to 16GB optional)
- 1 Power supplies supervisor & enhanced watch dog controller
- 1 Smart RTC

On Board CONNECTIVITY

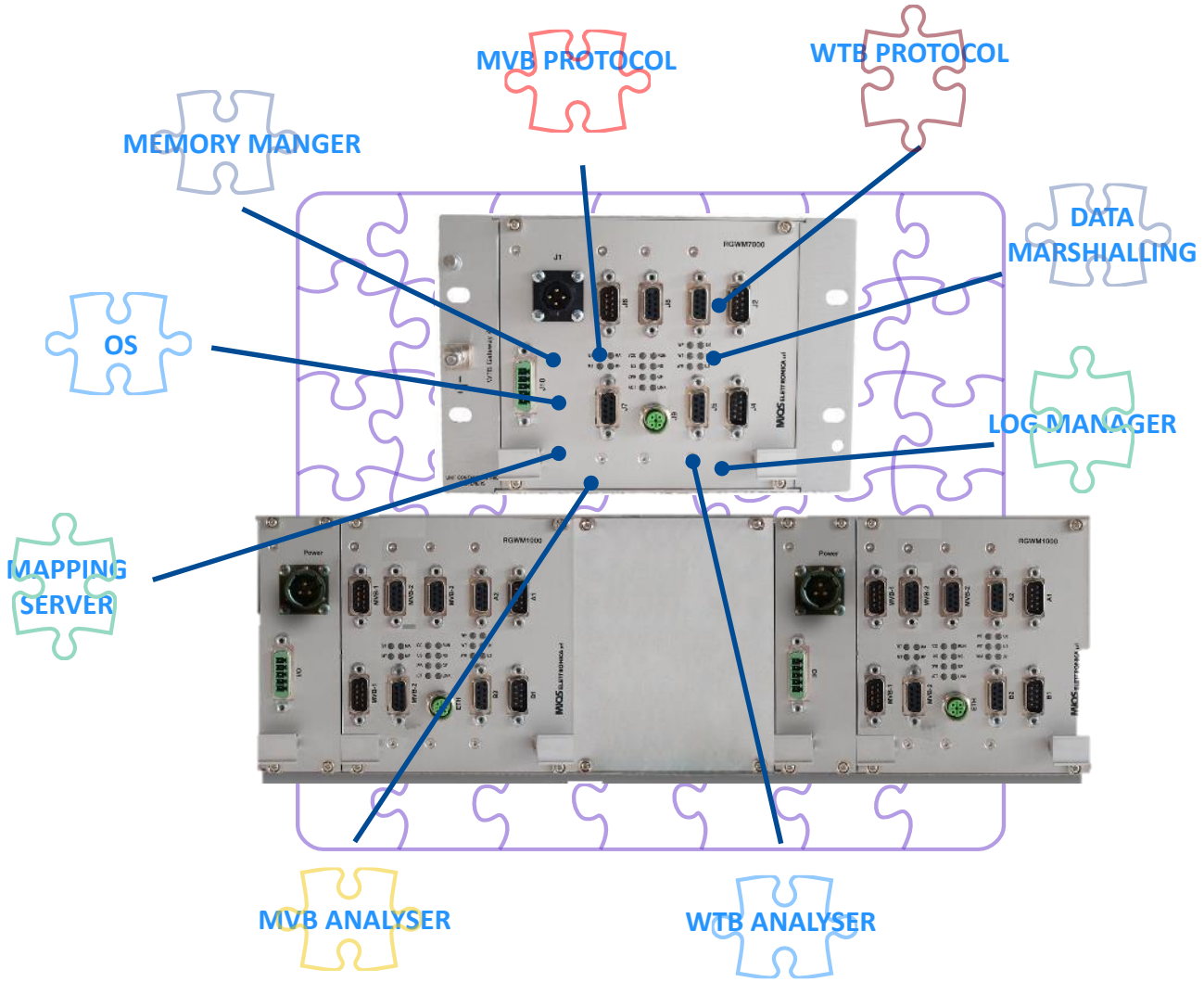
- 1 PHY Ethernet 10BaseT/100 Base-TX/1000BaseT
- 1 MAC Ethernet RGMII
- 1 USB OTG interface
- Up to 76 I/O lines directly from Zynq Micro or FPGA to implement SPI, I2C, MVB, UART, SD Card I/F, etc.

MECHANICAL

- Dimensions (w x l x h): 50 x 60 x 5 mm

Railway Electronic Market

Solution development full modular approach



RGWM1000 family

The RGWM1000 is a family of railway on-board gateway compliant to IEC 61375 and UIC 556 leaflet.
They come in a compact 3U sub-rack shape and coupling two RGWM1000 single units by means of the serial interface the
Gateways act as a redundant TCN node. Traffic data, redundancies and all other features are programmable by XML files or with the companion software DEVCON5.
RGWM1000 has been homologated by Italcertifer on March 2016

MAIN FEATURES

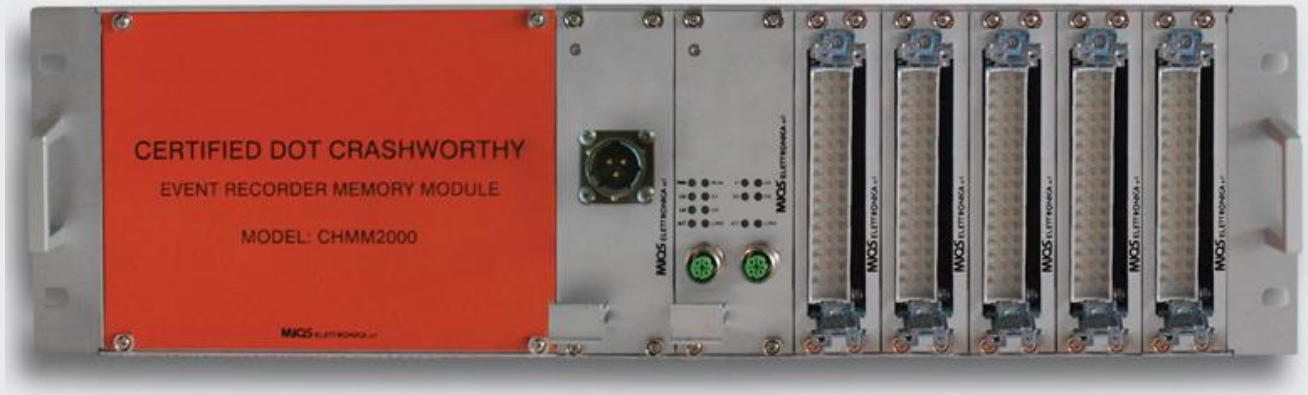
- Microprocessor Xilinx Zynq® dual core ARM Cortex A9 SoC
- 512 MB DDR3
- 32 MB NOR Flash
- SD Card Up to 16 Gb (optional)
- 1 Ethernet 10/100 Base-T (2nd optional)
- 1 WTB full redundant with fritting function
- 1 MVB bus full redundant EMD (ESD or OGF available on request)
- 1 isolated CAN bus (optional)
- 1 isolated RS232/485/422 (optional)
- 2 Digital Inputs
- 1 Digital Output

MIOS PRODUCTS

MIOS Elettronica designs and supplies a wide range of highly technological solutions for on-board electronics in rail transport: from communication to networking, from recording of data and events to train monitoring and monitoring.MIOS Elettronica products are based on cutting-edge technology for embedded systems.

MAIN PRODUCTS

- RGWM1000 - TCN Gateway (WTB-MVB, WTB-CAN, WTB-ETH)
- RVCU1000 - Vehicle Control Unit
- RDCU1000 - Door Control Unit



PRODUCTS - TRANSPORT

The architecture of MIOS prducts is based on Xilinx Zynq® SoC. The Real-time components are implemented in FPGA, while non-real-time modules are developed directly on the microprocessor using the state of the art of software tecnologies.

MAIN PRODUCTS

- EVR1000 - On-board event recorder
- CHMM1000 Crash protected memory
- MMGW7010 - Multi-purpose & multi-functions mobile gateway

MIOS ELETTRONICA

RAILWAY PROJECTS

TCMS equipment for China push-pull Loco

TOSHIBA
Leading Innovation

CRRC Dalian Co., Ltd.
中国中车 CRRC

MIOS ELETTRONICA

RAILWAY PROJECTS

Event Recorder of FLIRT DMU for Ferrovie Nord Milano

STADLER

MIOS ELETTRONICA

RAILWAY PROJECTS

Train Communication Network Gateways with SIL 2 functions, for ECx trains of Deutsche Bahn.

Talgo

DB

MIOS ELETTRONICA

RAILWAY PROJECTS

TCMS equipment for InterCity Trains

LEDATEL

pesa

MIOS ELETTRONICA

RAILWAY PROJECTS

In-Cab Audio & Video Recording System for High Speed Trains & Commuter Trains

renfe

SNCF

MIOS ELETTRONICA

RAILWAY PROJECTS

Train Bus Data Logger and companion ground server for data collection and maintenace management

TRENITALIA
GRUPPO FERROVIE DELLO STATO

DB Cargo

MIOS ELETTRONICA

RAILWAY PROJECTS

On-board EtherNetIP-CAN Communication Gateway for Auxiliary Power Converter

ABB

ALSTOM

Réseau express métropolitain

MIOS ELETTRONICA

RAILWAY PROJECTS

Remote Control of the Traction of Maintenance Vehicles based on TCN redundant WTB-CAN Gateway and driver HMI

TESMEC

RFI RETE FERROVIARIA ITALIANA
GRUPPO FERROVIE DELLO STATO ITALIANE

TRANSPORT REFERENCES



ITALY - VERONA



CANADA - MONTREAL

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