

# Embedded Vision Electronics

## Design and Production

industrial  
automation  
transportation  
avionics  
medical  
security



# LEADING TECHNOLOGIES FOR MARKET LEADERS

hema electronic – a leading company in electronic design specialized on embedded hardware and software solutions based on FPGA and embedded processors.

Our core competences are the design and production of customized vision and sensor boards.

Innovative leaders choose hema electronic for realizing next generation video, control and feedback systems. We provide design services for industrial, security and medical applications.

Our clients are using our consistent services starting with consulting, design and verification up to long-term availability over the complete product life cycle to achieve and keep their unique market position.

hema electronic is a family owned company with over 40 years experience in electronics and related services. We combine the strength of the German Mittelstand with a strong future oriented strategy of technological leadership.

**The hema mission:**

Push embedded vision technology and faster personal growth.



## HEMA ELECTRONIC – THE EMBEDDED VISION EXPERT

Designing and delivering high end customer specific vision applications and systems.

- videostreaming h.264 and h.265
- analog and digital video
- low latency video transmission
- video multiplexing up to 4K
- realtime graphic overlay
- digital videorecording
- intelligent video management unit:  
image acquisition | image processing | image transmission
- CMOS sensor technology with HDR imaging up  
to 170 dB dynamic range
- sensor fusion
- rugged designs for mobile applications
- long-term availability by system design
- obsolescence management

Furthermore we support you with corresponding certifications, special approvals and acceptance tests.



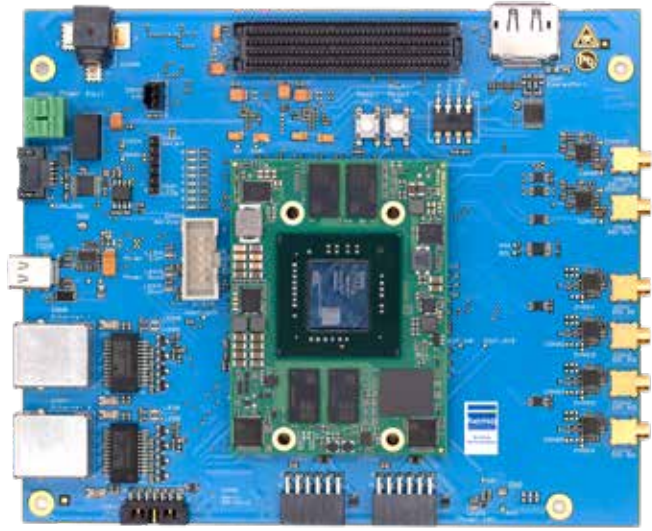
# CONTENTS

## Project design examples

- Embedded Vision Platform
- Medical Imaging
- High Dynamic Range Camera
- Ultra Low Latency Streaming
- Multi-Signal Processing
- Rugged Vision Box
- Digital Videorecorder
- Video Multiplexer/-Distribution

## References

AIRBUS | AREVA | BMW | CASSIDIAN  
MERCEDES-BENZ GROUP AG  
DEKRA | HENSOLDT | KUKA  
SIEMENS | STEMMER IMAGING  
THYSSENKRUPP | ZEISS



## Embedded Vision Platform

<b>Application</b>	Creating product families with optimized features by modular design. Image processing components, optical measuring systems, measurement technology, surveillance.
<b>Sector</b>	Defence, Security, Automation
<b>Requirements</b>	Mainboards with scalable performance in hardware and software. Optional interfaces, standard software, test and start up concept.
<b>Solution</b>	Mainboard with FPGA modules, design blocks for easy extension
<b>Customer benefit</b>	Long-term available of mainboards with expansion options. FPGA modules with integrated software.
<b>Core competence used</b>	Hardware and software design, partner network, inhouse production

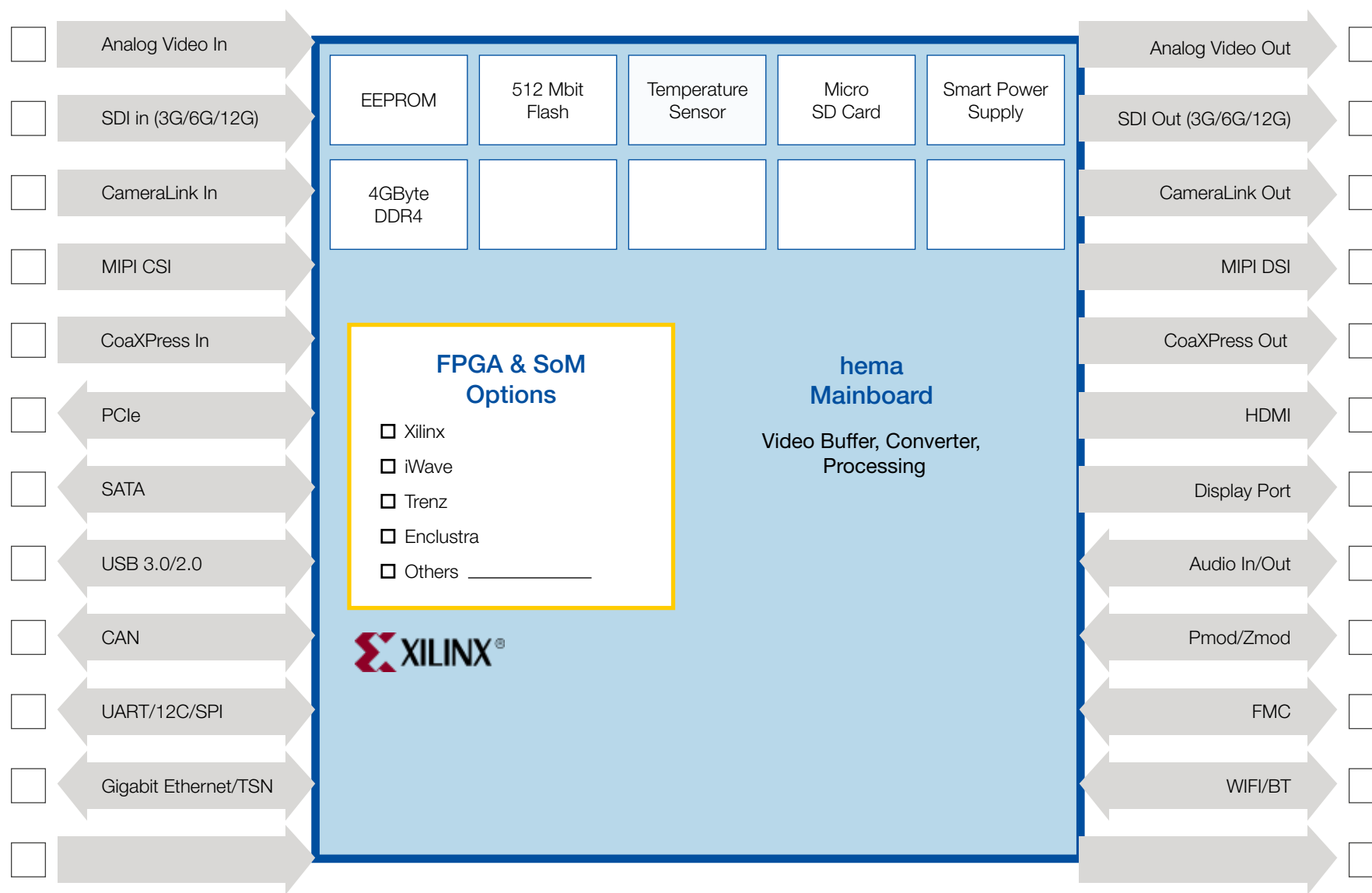


## Medical Imaging

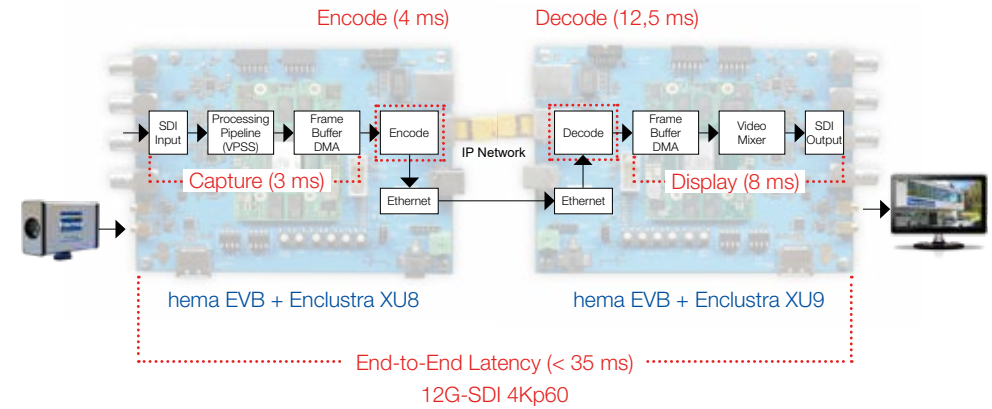
<b>Application</b>	Integrated video management system, control unit for various sensors and cameras.
<b>Sector</b>	Medical imaging, Endoscopy
<b>Requirements</b>	Integration and combination of multiple camera systems. Main unit with scalable performance in hardware and software. Interacting video management, real-time imaging and processing.
<b>Solution</b>	Mainboard with digital and analog video interfaces. High performance FPGA video processing unit, interchangeable modules.
<b>Customer benefit</b>	Longterm availability with options for additional demands in the future, FPGA modules with integrated software, interconnection with other industrial components
<b>Core competence used</b>	Hardware design, video management, optronics, assembly production

# Speed up your product development!

Company: \_\_\_\_\_ Project: \_\_\_\_\_



Contact person @ hema:  
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## High Dynamic Range Camera

<b>Application</b>	Inline weld inspection, robot guidance
<b>Sector</b>	Industrial automation
<b>Requirements</b>	100% real-time inspections
<b>Solution</b>	HDR CMOS sensor 170 dB dynamic range, FPGA + DSP signal processing units
<b>Customer benefit</b>	High dynamic range, high brightness/low light capability, rugged design
<b>Core competence used</b>	HDR sensor, embedded system design

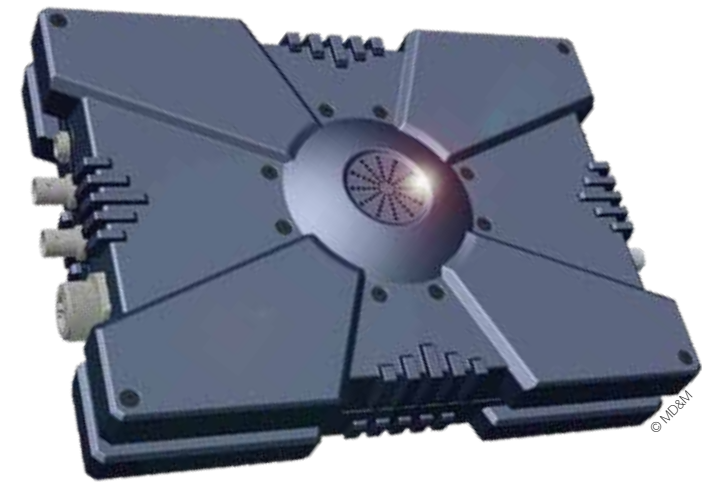
## Ultra Low Latency Streaming

<b>Application</b>	Vehicle control, machine control, video surveillance, real-time video conferencing
<b>Sector</b>	Defence, Security, Industrial automation
<b>Requirements</b>	Ultra low latency applications (from capture to display in less than 35 msec) multi-streaming, multi-view, video distribution
<b>Solution</b>	Mainboard with FPGA modules, h.264/h.265 compressing, 3G-SDI 1080p60, 12G-SDI 4Kp60, SDI capture + output, OSD
<b>Customer benefit</b>	Fast development by using predefined hardware and software. Design blocks for very short time to market, easy to upgrade.
<b>Core competence used</b>	Hardware and software design, rapid prototyping and production by using inhouse facility



## Multi-Signal Processing

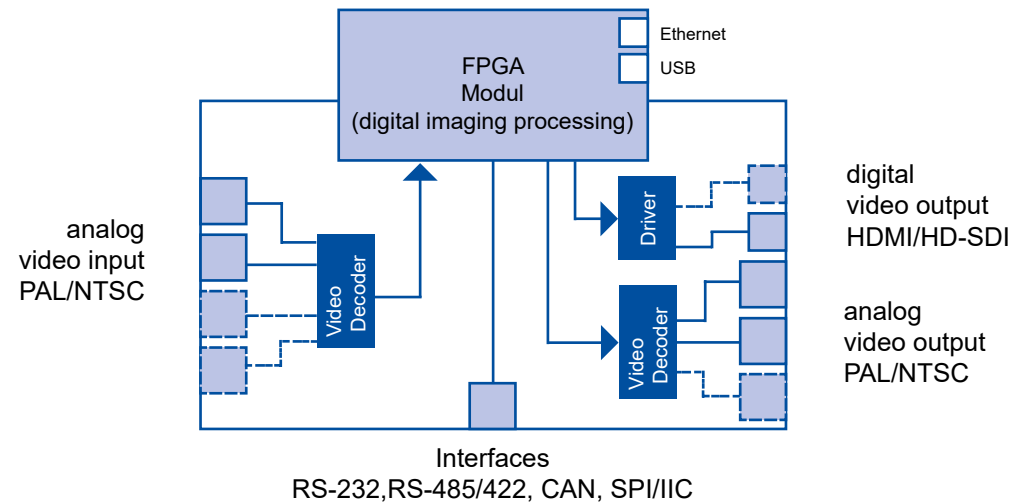
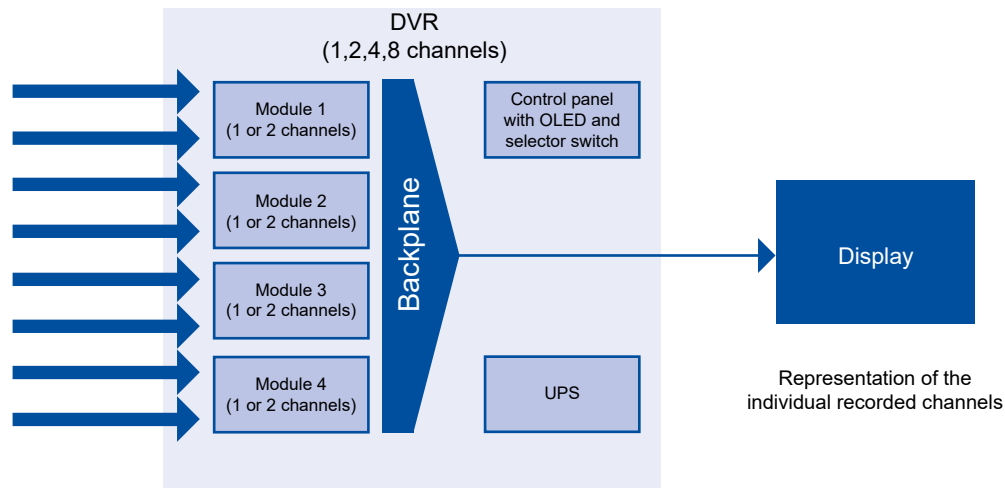
<b>Application</b>	Video and sensor data management in mobile logistics
<b>Sector</b>	Indoor logistics
<b>Requirements</b>	Manage 3x different video sensors plus radar and identification sensors, FPGA for AI application, output for driver and remote operation.
<b>Solution</b>	Mainboard with FPGA SoM, BSP programming for customer application and AI IP Cores.
<b>Customer benefit</b>	Fast prototyping for design and verification, modular platform for customization and longterm availability.
<b>Core competence used</b>	Design experience in data management and FPGA hardware, embedded vision platform for fast prototyping, mainboard with SoMs for scalable solution.



## Rugged Vision Box

<b>Application</b>	Ultra low latency video distribution unit, ultra low latency video streaming unit
<b>Sector</b>	Defense, Security, Transportation, Surveillance
<b>Requirements</b>	Many video data in, video data processing, many video data out. Ultra Low Latency, different interfaces in and out.
<b>Solution</b>	Mainboard with different video in/out (digital and/or analog), with one or more FPGA modules, rugged vision box
<b>Customer benefit</b>	Rugged vision box according customer needs, extended temperature range. Easy to upgrade with FPGA module technology, long term availability.
<b>Core competence used</b>	"Fast lane" engineering by using hema hardware and software design blocks, box design with partner, rapid prototyping.



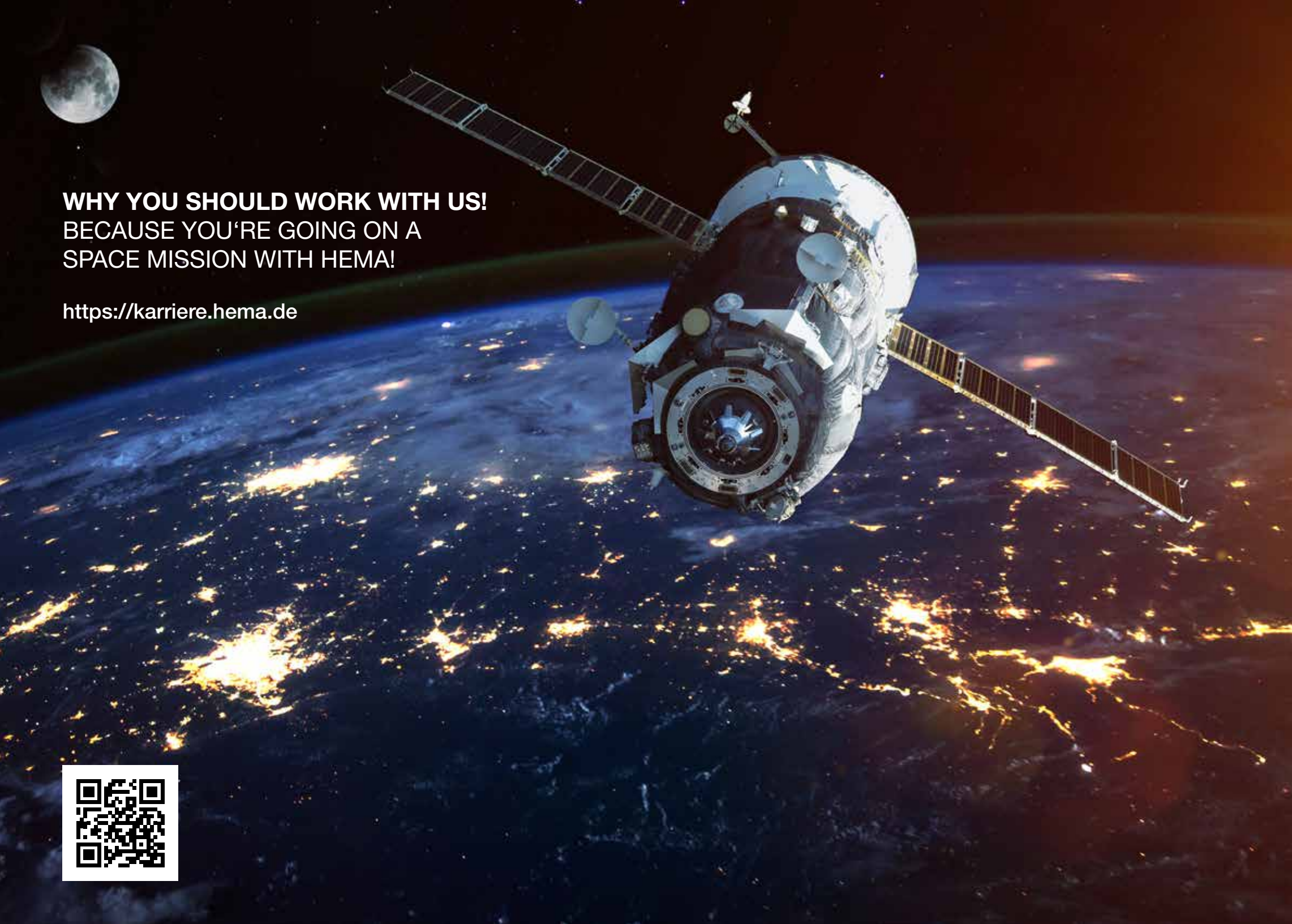


## Digital Videorecorder

<b>Application</b>	Recording video data for monitoring
<b>Sector</b>	Security, Medical, Outdoor use
<b>Requirements</b>	Record and play up to 8 video channels in HD.
<b>Solution</b>	Digital video electronics with compression and video management software.
<b>Customer benefit</b>	Flexible video recording, full-HD video with h.264 codec. Rugged design with long-term availability, industrial temperature range.
<b>Core competence used</b>	Customization of hardware and software, experience with video systems.

## Video-Multiplexer/-Distribution

<b>Application</b>	Technology upgrade for infrastructure installations e.g. video surveillance in public space in the railway technology sector.
<b>Sector</b>	Defence, Security, Building, Automation, Transportation, Surveillance, Communication audio/video
<b>Requirements</b>	Distribution and multiplexing of analog and digital video channels in real-time, backward compatible integrable into the stock, latest digital interfaces, use of new software features.
<b>Solution</b>	Embedded vision board with FPGA module and analog and digital (video-) interfaces, 8-channel video distribution.
<b>Customer benefit</b>	Existing analog (PAL/NTSC) infrastructure can be retained, upgrading existing systems with new functionalities, state of the art FPGA solution, modular and scalable in performance and functions, fast implementation through predefined design blocks.
<b>Core competence used</b>	FPGA programming, IP cores



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