WHITEspeed

ERNI

— introducing **WHITEspeed**

TOUGH.
FAST.
WHITE.

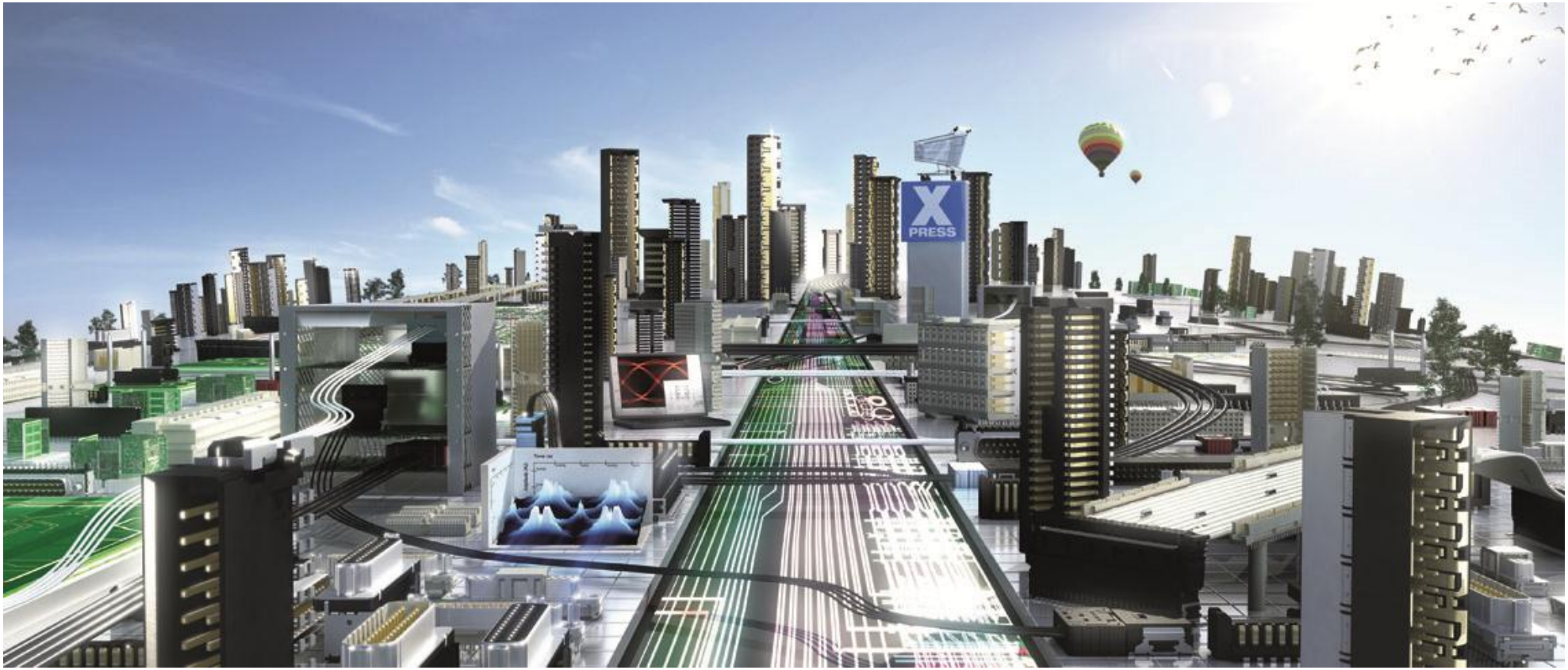
the toughest Computer On Module. designed & assembled by ERNI in Germany.

ERNI

Outline

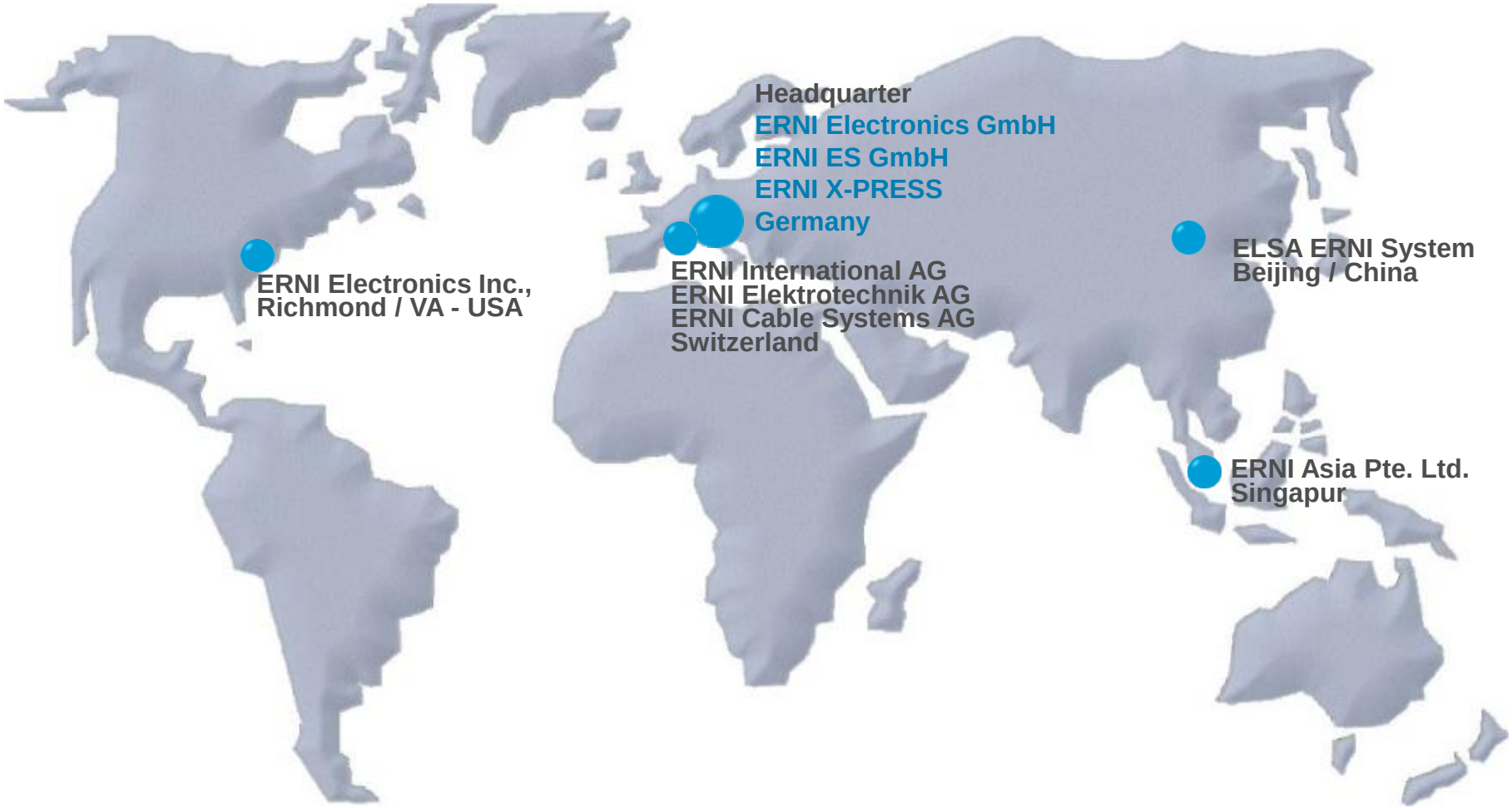
- ERNI at a glance
- About ERNI‘s COM activity
- WHITEspeed computers-on-module

ERNI Electronics
ERNI WoR&D



- ERNI is a full service provider of connectors, backplanes, integrated systems and cable assemblies

ERNI Company Group

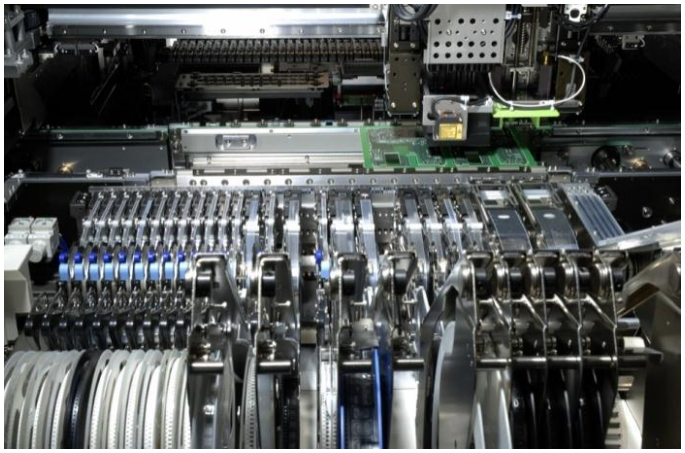


ERNI Electronics GmbH

ERNI WoR&D

Connectors

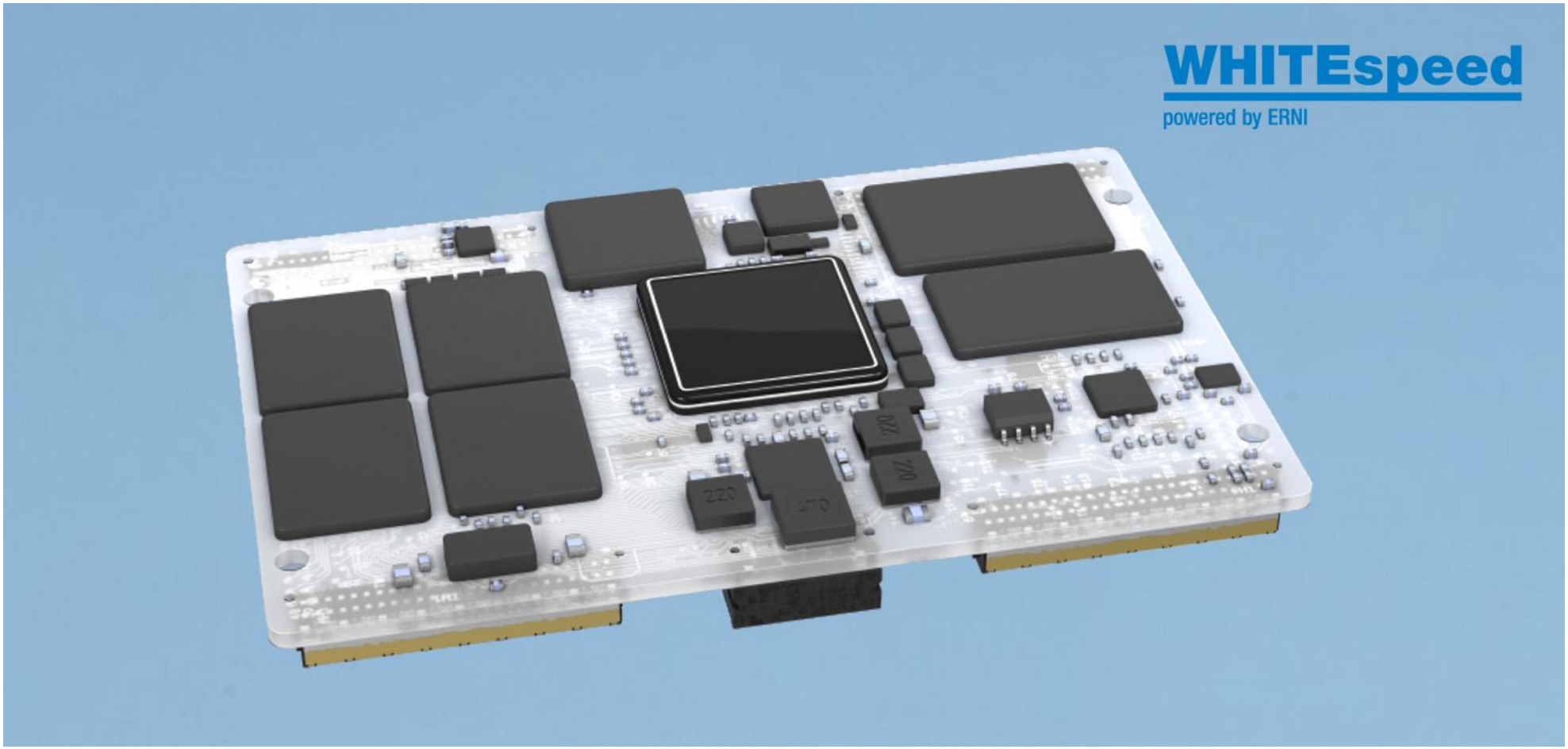
Backplanes and Integrated Systems



ERNI Electronic Solutions (EMS)

Cable Assemblies

ERNI Electronics GmbH



Why Computers-on-Module ?
Why enter the Small Formfactor Systems market for COMs?

- ERNI does all kinds of electroncis for decades
- ERNI connectors not present in standardized computer-on-module concepts
- Leverage ERNI connectors into the SFF and COM markets & embedded markets in general
- ERNI to set own standard
  - demonstrate superior capabilities of ERNI miniature connectors
- wider business base for ERNI systems division
- Existing customer base with focus on x86
  - ERNI focus on ARM Cortex-A

Examples of Small Formfactor Standards

- Variety of Intel-based „standards" exist – 1st approach miniaturized PC-Motherboards
  - PC/104, PC/104+, PC/104-Express (PC/104 Embedded Consortium)
  - ITX, mini-ITX, nano-ITX, pico-ITX (originator Via Systems)
  - pico-ITXe (Via Systems & SFF-SIG)
  - ETX, nano-ETX, ETXexpress, (originator Kontron)
  - nanoETXexpress (Kontron & nanoETXexpress IG
  - COM Express (PICMG COM.0)

  - Qseven (x86 & ARM - Qseven Consortium)

  - recent VITA activities (VITA = VME Industry Trade Association)
  - recent SGET activities (Standardization Group for Embedded Tech.)

- ... and even much more ...

- And one may ask:
  „Aren't there already enough Small Formfactor Solutions ???"

Why does ERNI COMs?

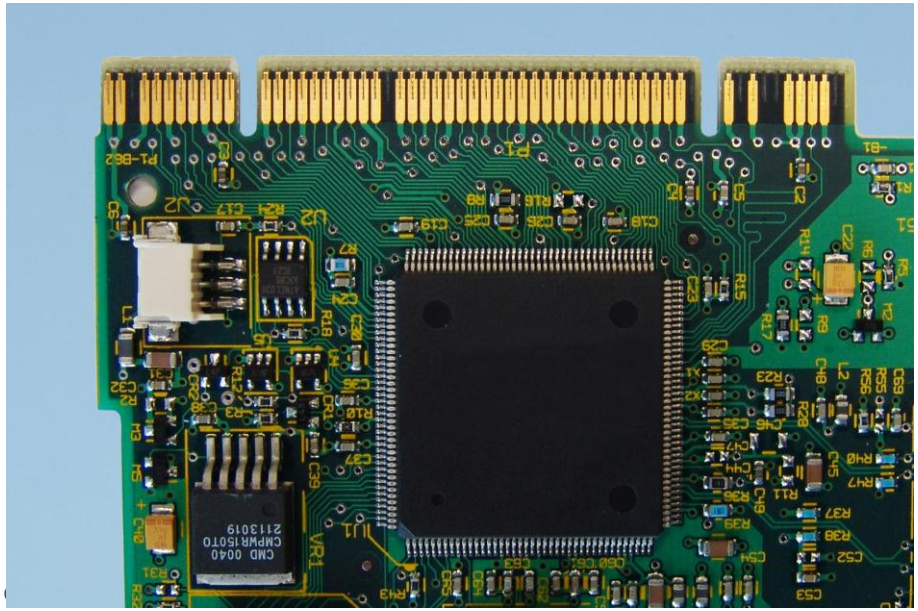
- We believe
  ... one is missing ...

- WHITEspeed

Disadvantages of Existing Module Concepts

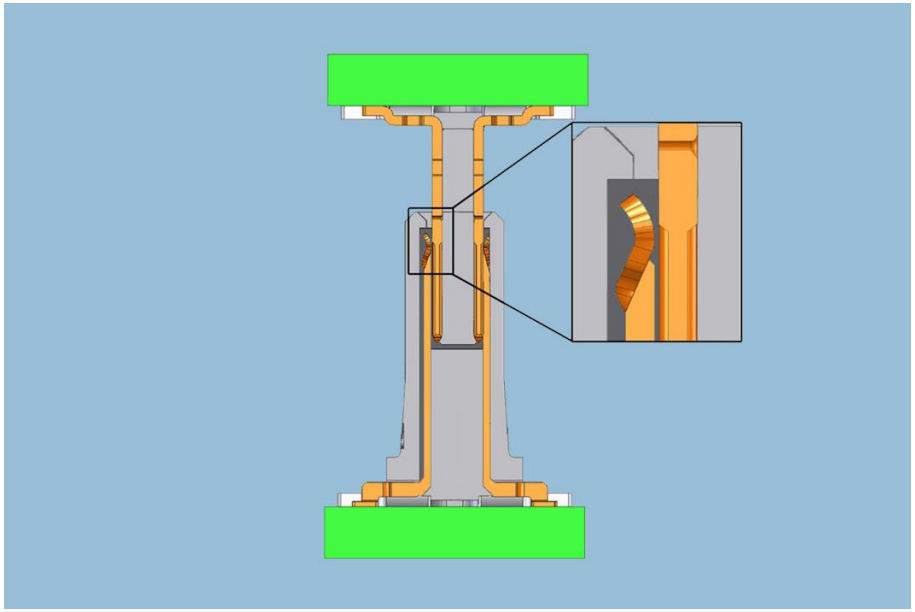
- There are solutions with
  - cardedge connectors (one-piece connectors)
  - most use connectors with single contact point, i.e. no dual-leaf contact designs
- due to the design principles of this connector types such COMs ...
  - lack robustness
  - suffer from sub-optimal reliability

Cardedge Connectors



- Not as cheap as often believed if of high-quality
- Risk of damage during mating und unmating due to exposed glass fibers and nickel edges
- Risk of poor plating quality
- Maybe exposed copper
- Fretting corrosion

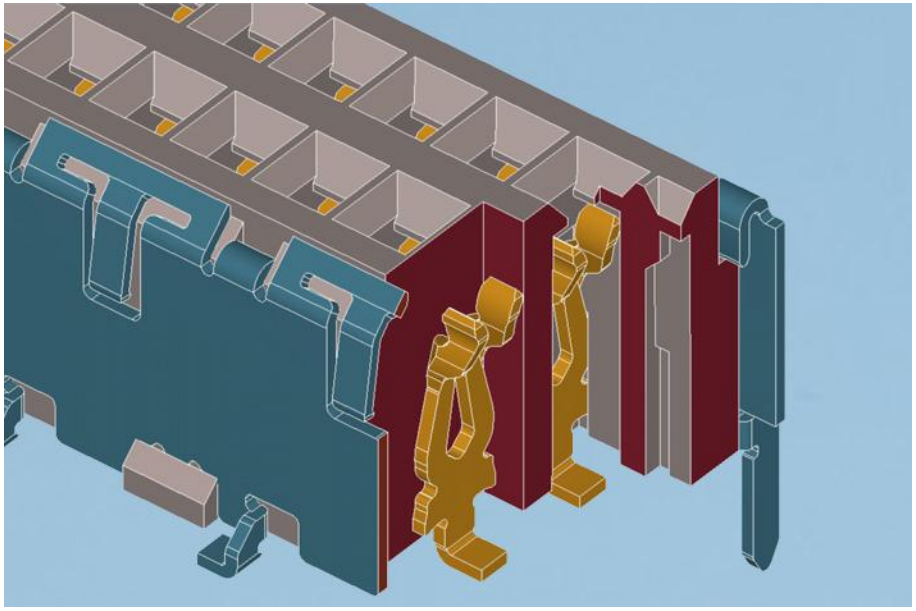
Single-beam Contacts

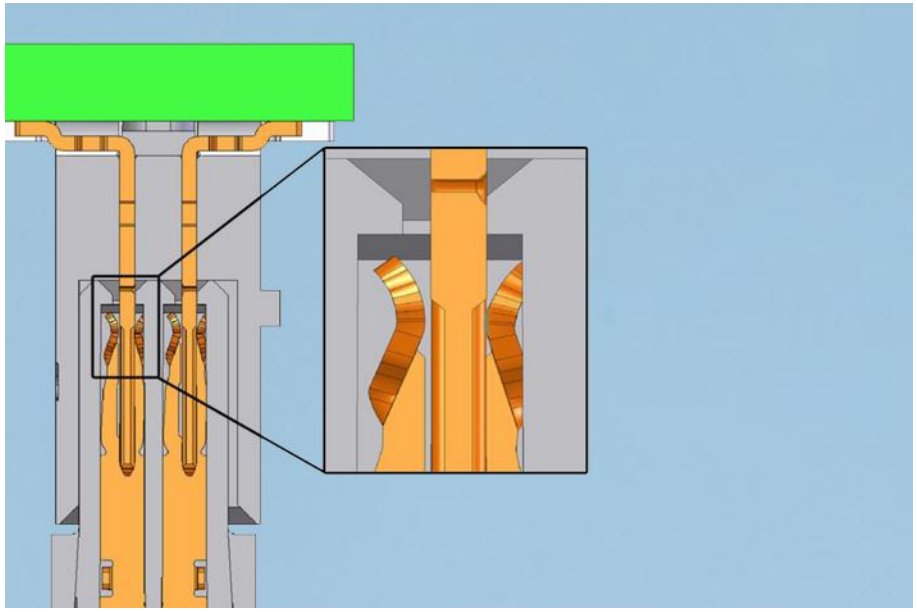


Loss of contact due to

- misalignment
- vibration & shock

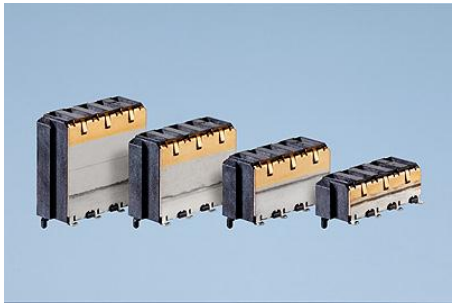
Microspeed with Dual-Beam Leaf Contact



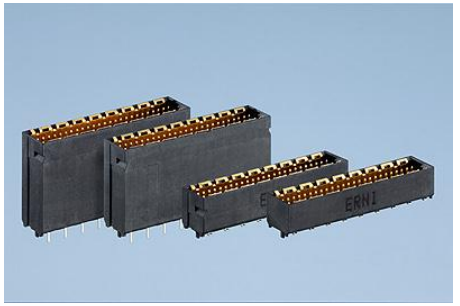


- High reliability through Microspeed connectors with their dual-beam leaf contacts
- The only COM with this in market! This is really an unique selling point

MicroSpeed Variants



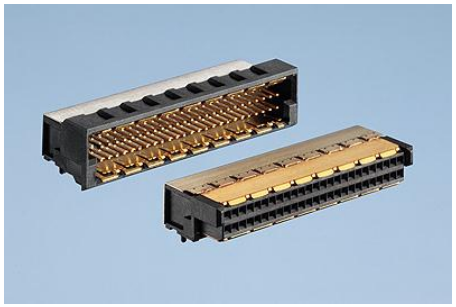
Power



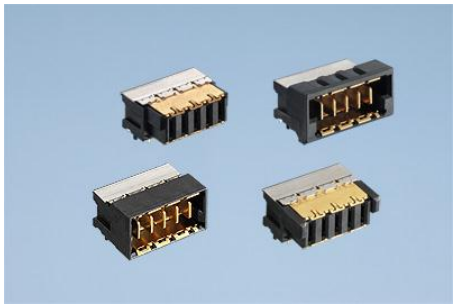
Signal

- Outer shield
- 10 Gbit/s and much beyond
- Best in class EMC & signal integrity

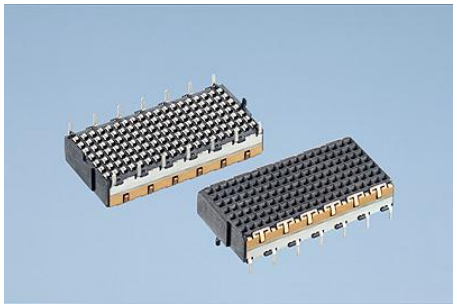
MicroSpeed Variants

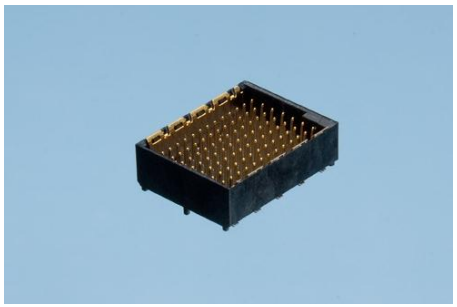


Signal rectangled



Power rectangled

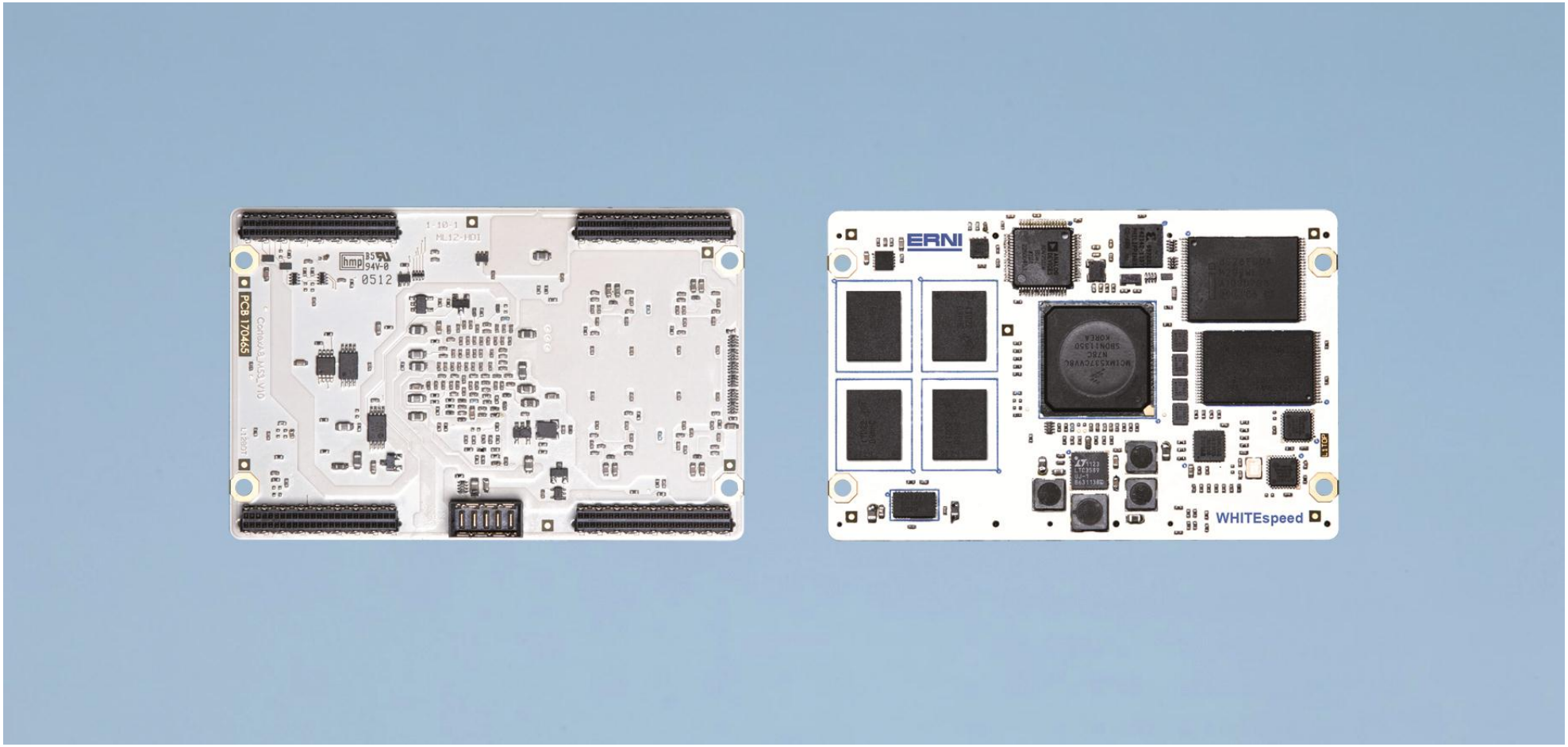




Pin Arrays

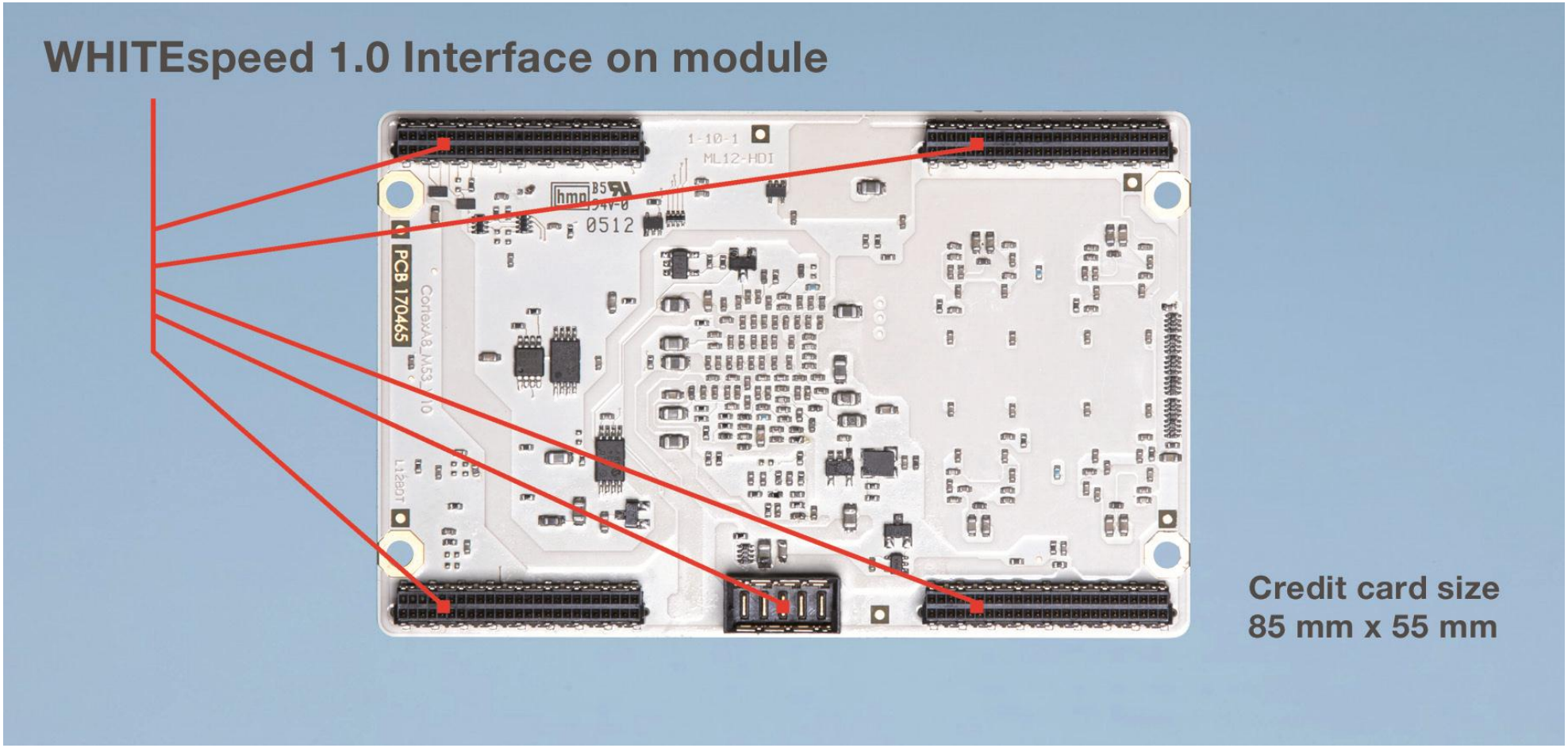
WHITEspeed 1.0 Overview

WHITEspeed Computer-On-Module



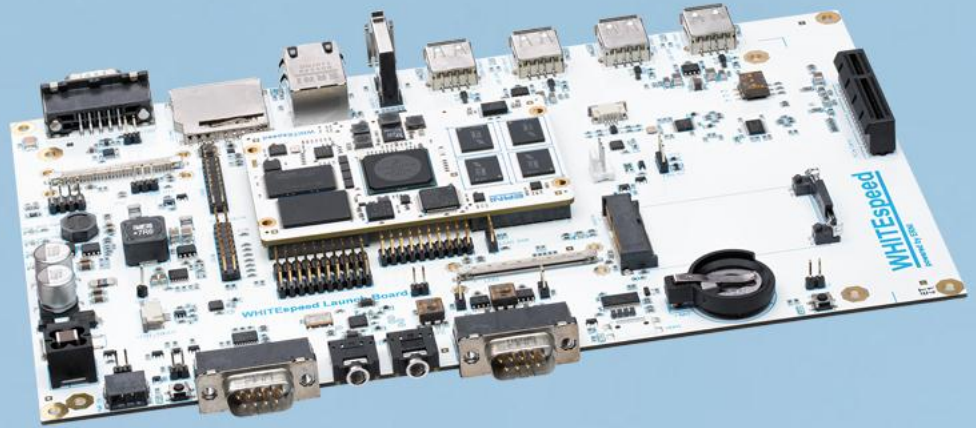
Credit card size: 85 mm x 55 mm

View at Module
Bottom Side

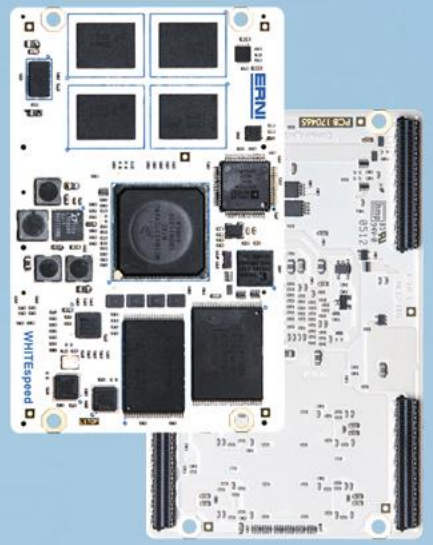


Baseboard & Computers-on-module (COMs)
Standardized interface

Application-optimized baseboard (carrierboard)



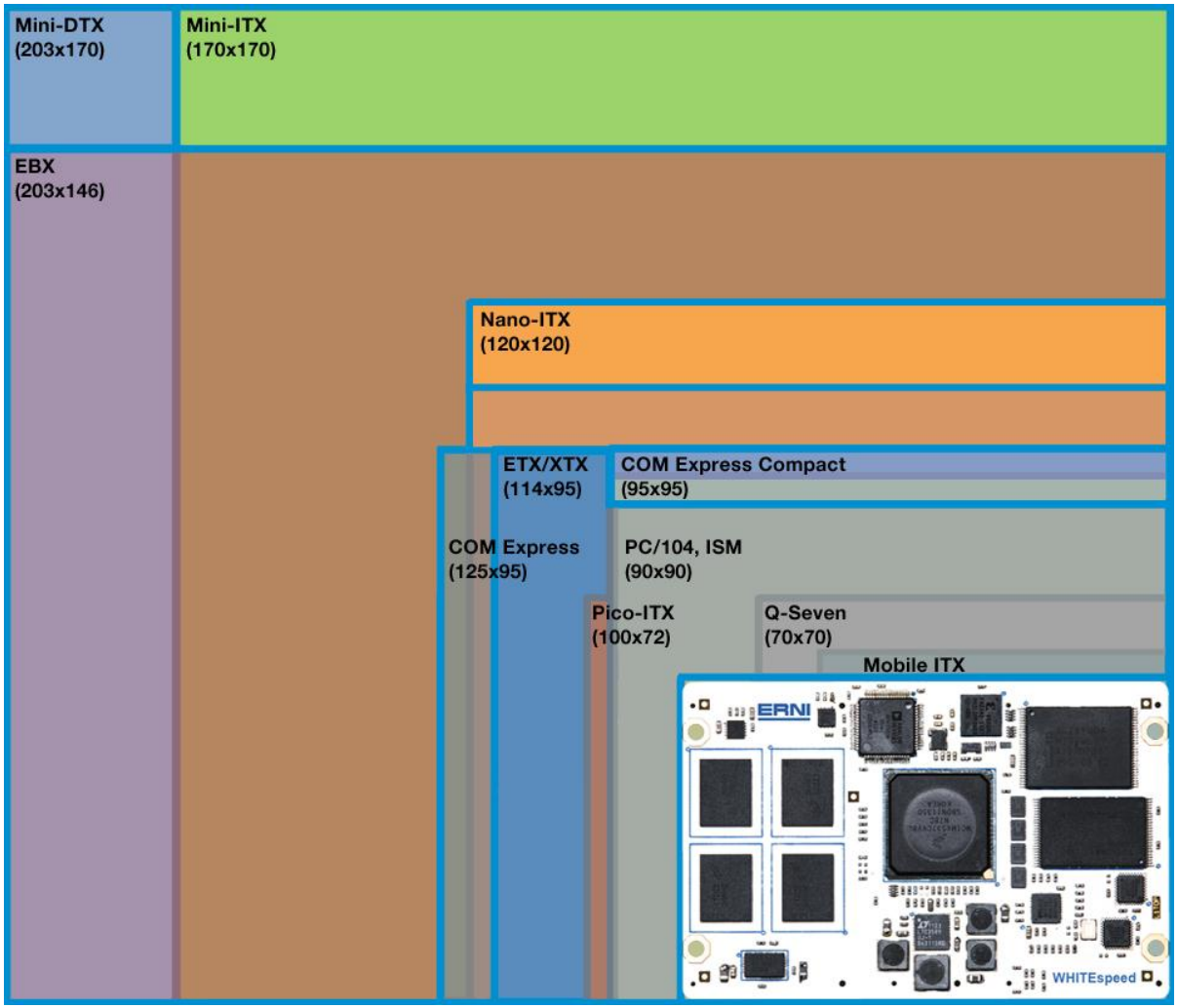
WHITEspeed COM



Standardized Interface -
WHITEspeed 1.0

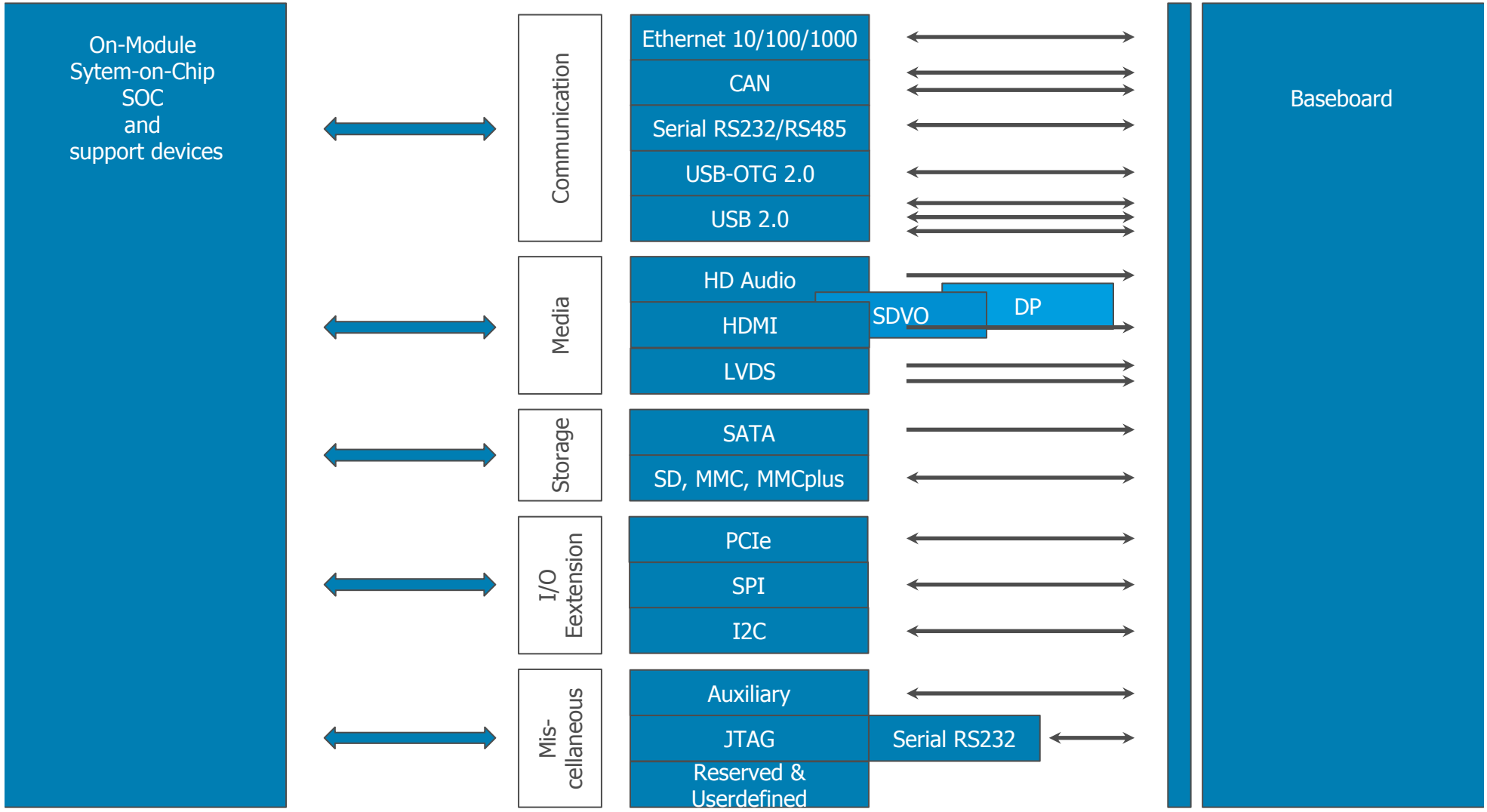
Module dimensions
4 x ERNI Microspeed Signal connector
+ 1 x Microspeed Power Module
connector

SFF Size Comparison

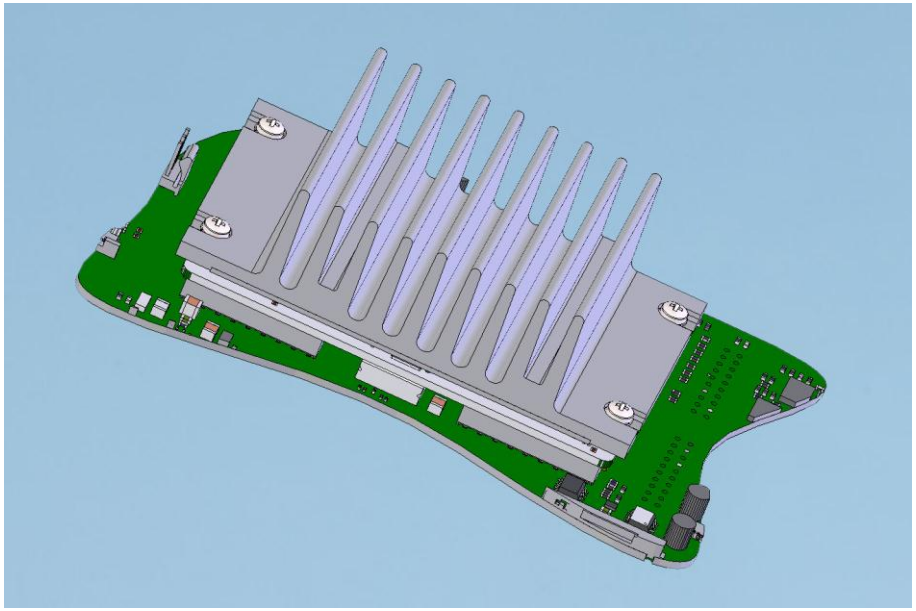


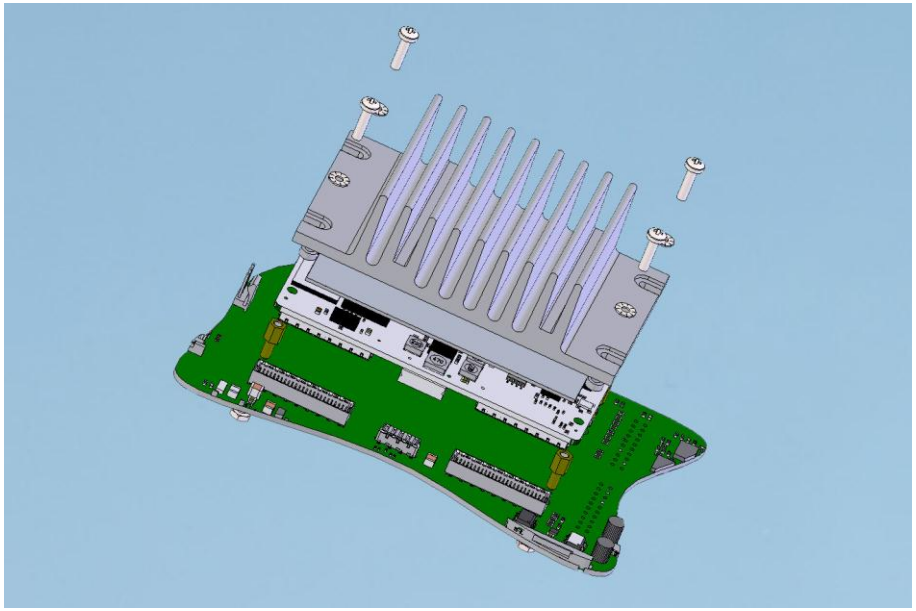
WHITEspeed 85 x 55 mm

WHITEspeed 1.0
Overview



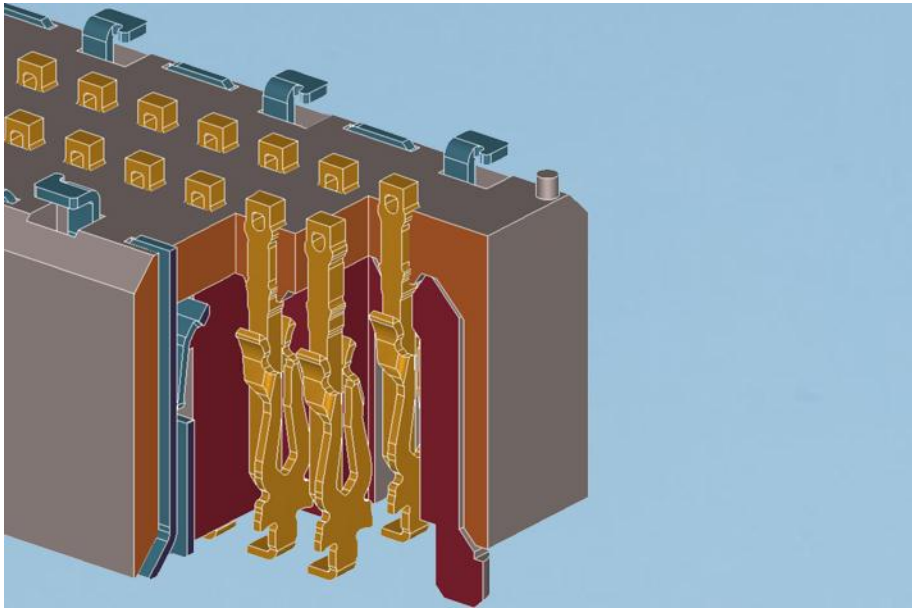
WHITEspeed Advantages





- Extremely robust mechanical concept around module

WHITEspeed Advantages



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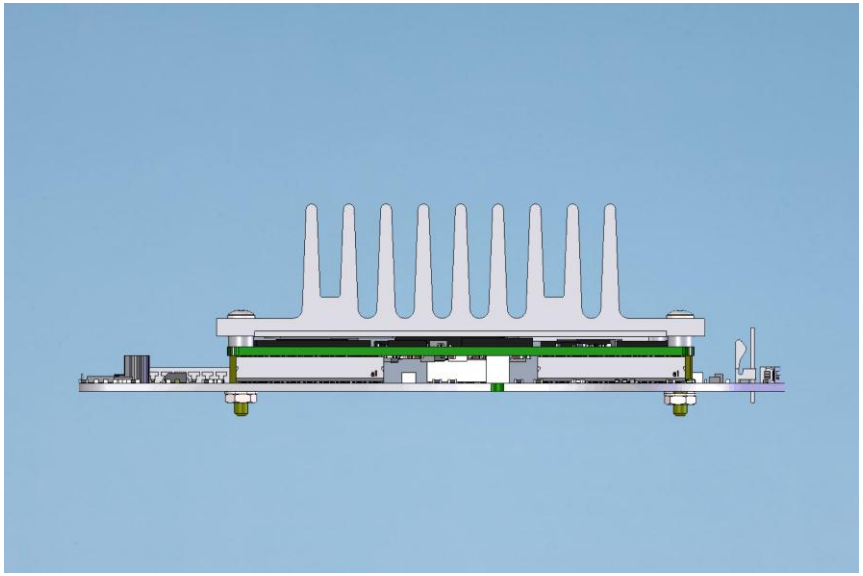
WHITEspeed Advantages



longitudinal side view on module and baseboard

- Flexible - ready for
  - convection cooling
  - conduction cooling
- All components -40 ... +85° C environ. temp. range
- Low power through ARM processor

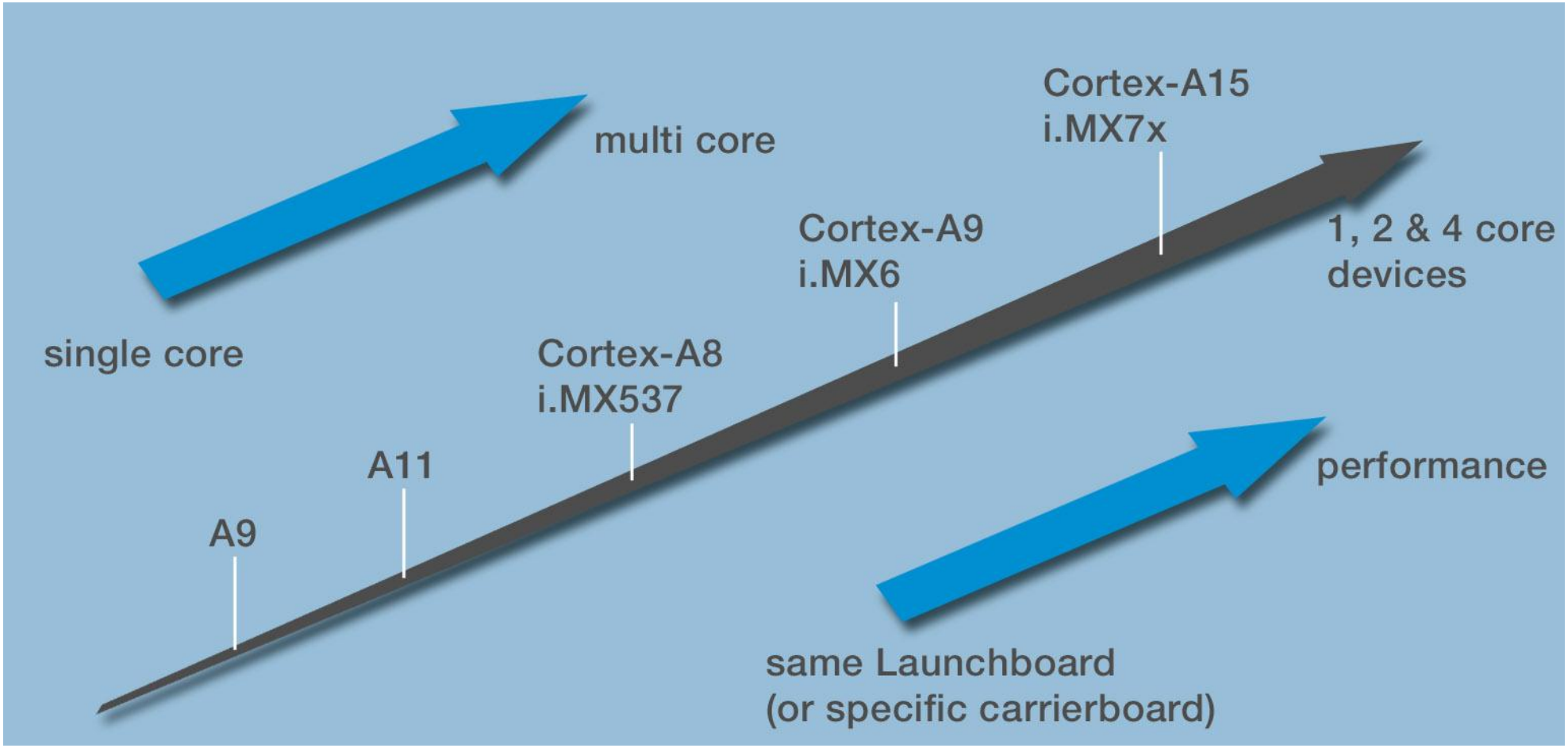
WHITEspeed Advantages

- fully deploys ARM eco system with resources like operating systems, development environments, libraries, software

- long-term availability for CPUs guaranteed by Freescale
- ERNI to provide extended product life-time agreements

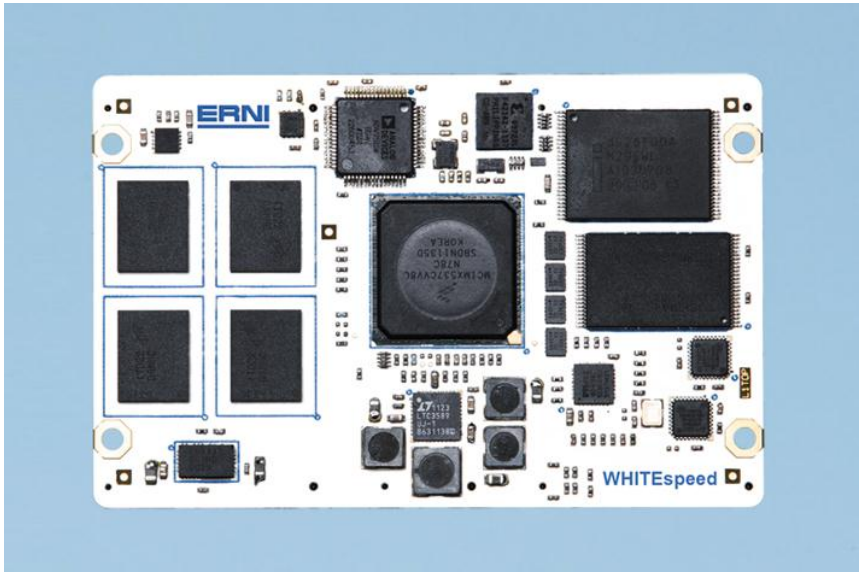
- road map to higher performance modules

Roadmap



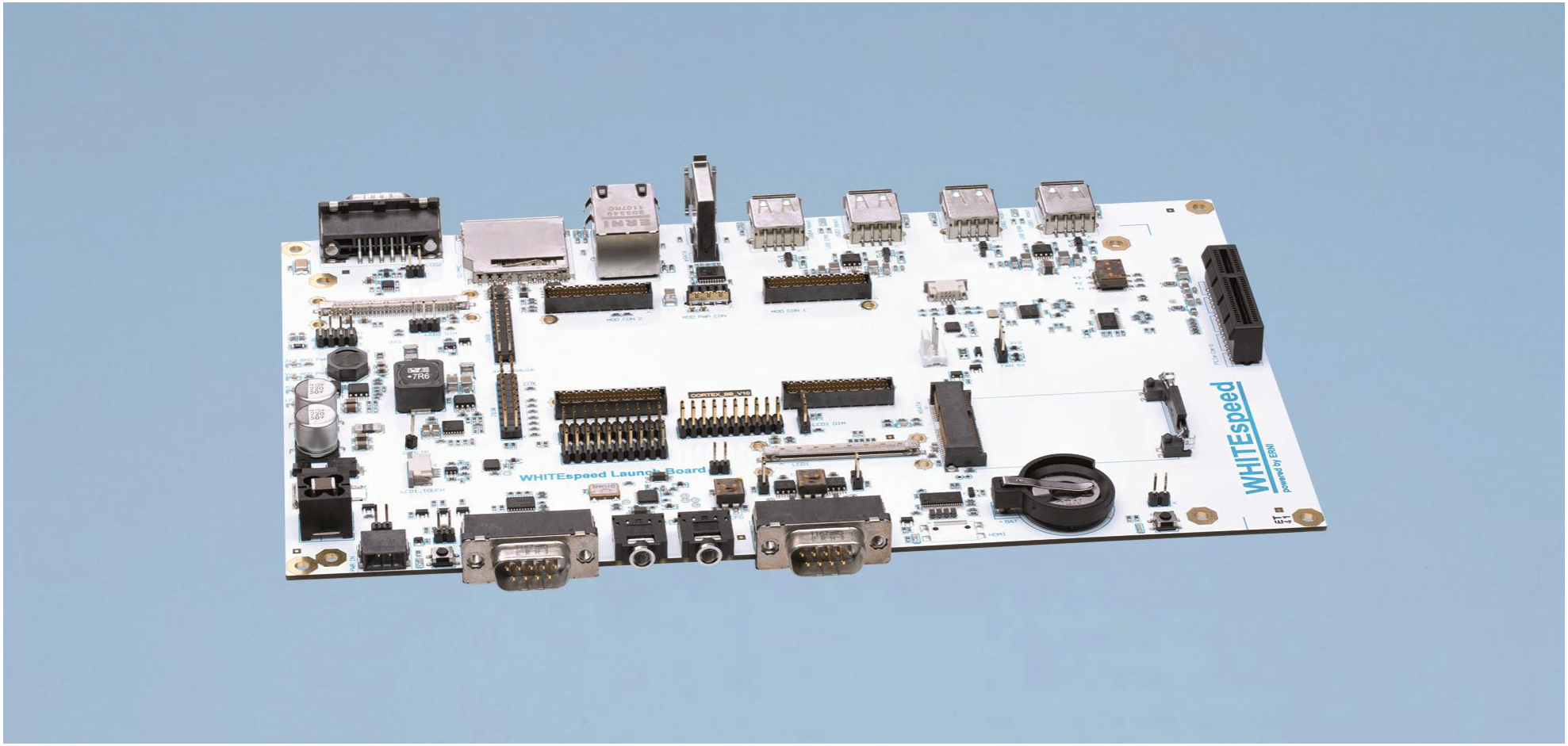
subject to changes

WHITEspeed Advantages – CA8-1/MAX



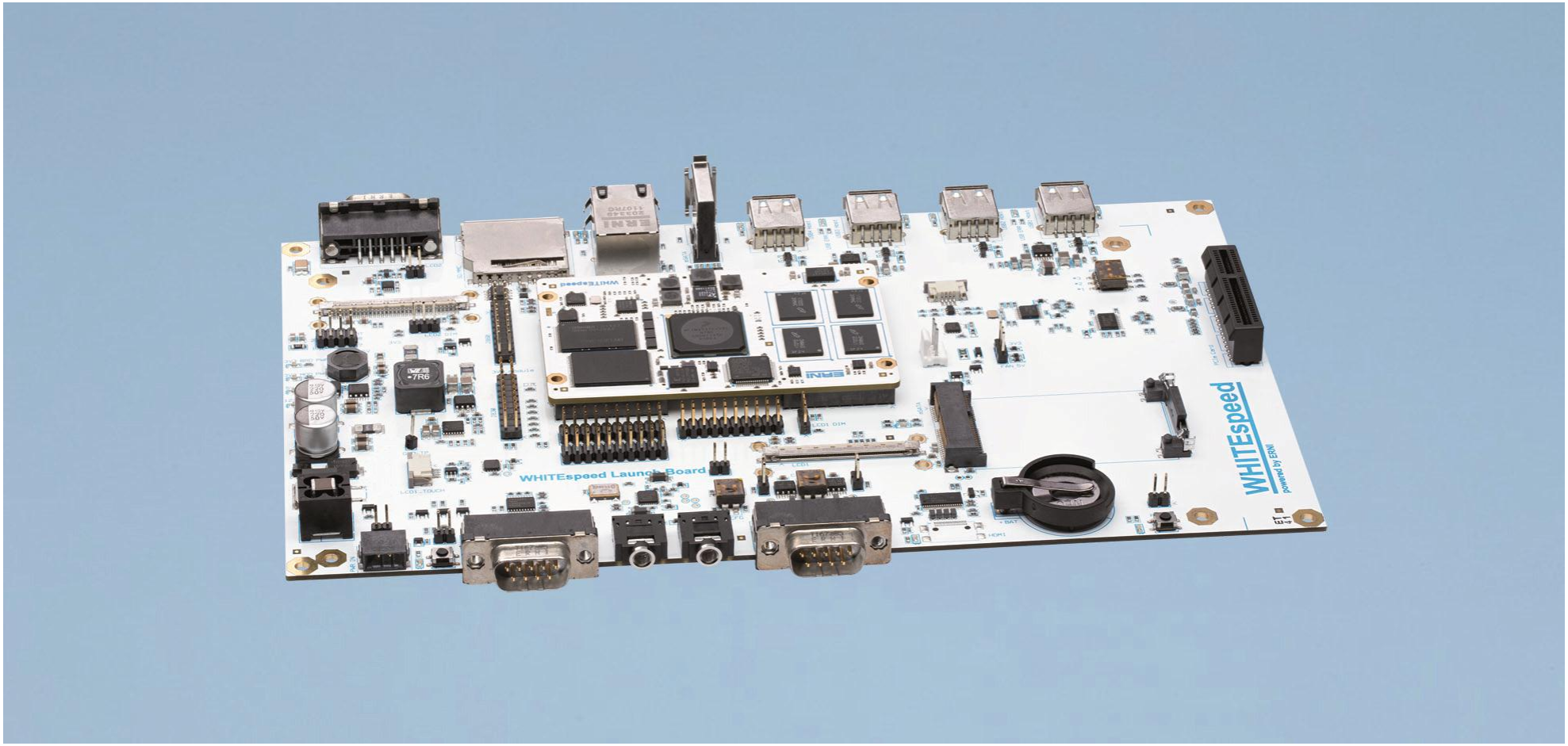
- Generous RAM and Flash memory population
- Both NOR and NAND-Flash memory for highest reliability
- Cost-optimized versions available

WHITEspeed Launchboard for Development Kit



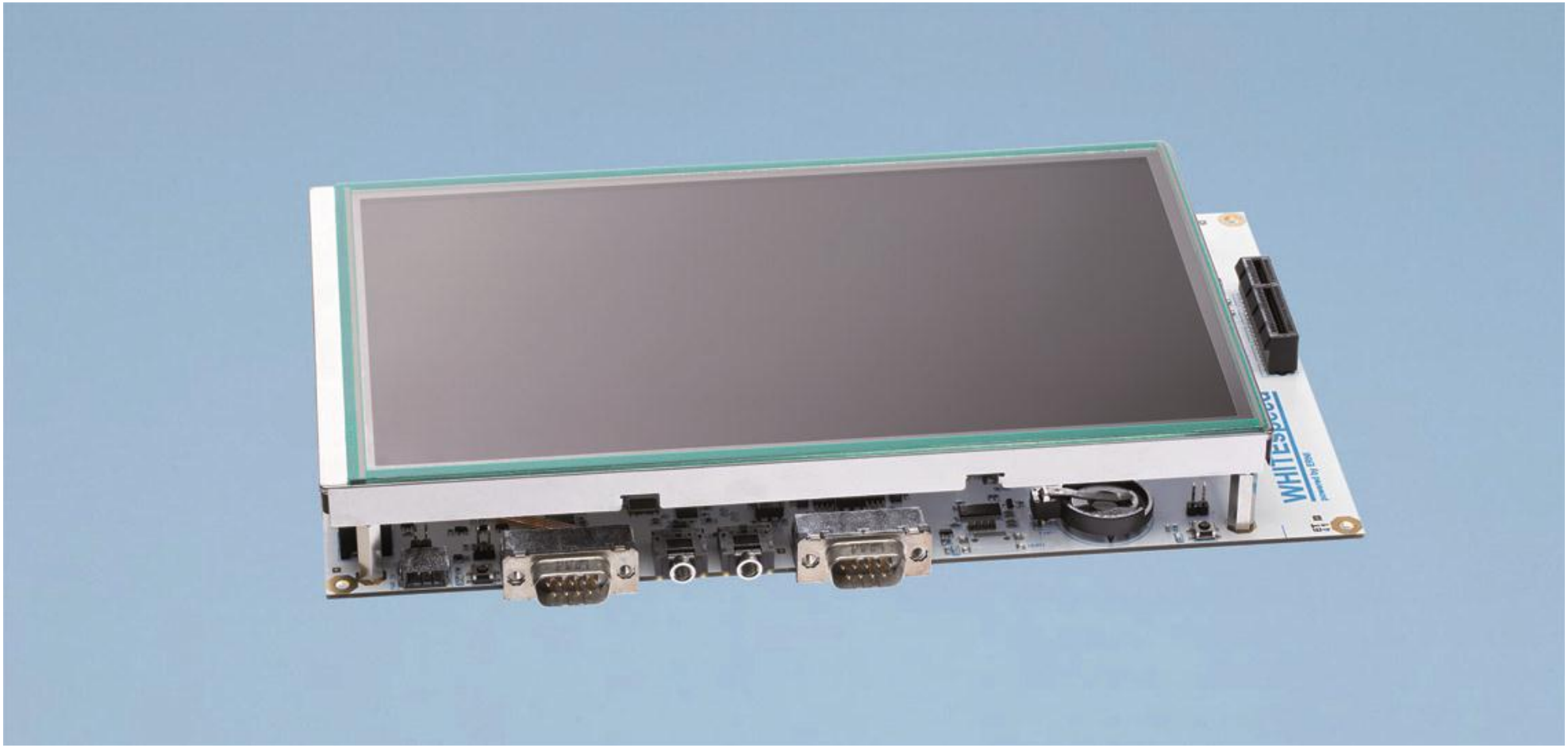
Universal Baseboard for design support: size 241 mm x 147,5 mm

WHITEspeed Development Kit



WHITEspeed Launchboard with module installed

Full-Featured Development Platform with LCD-Display



WHITEspeed Launchboard with module and LCD installed

ERNI Target Applications

- Automation
- Instrumentation & measurement systems
- Transportation
- Medical

- WHITEspeed is an excellent base for Intelligent Operator Panels
  - 1 or 2 external LC-Displays supported with touch, keyboard, mouse, sound etc.

ERNI WHITEspeed Offerings

- WHITEspeed Modules – also customized
-
- WHITEspeed Launchboard – generic baseboard for development system
- WHITEspeed development system with display
  - application-ready
- WHITEspeed development system without display
  - ready for external display
- Linux board support package (BSP)
- Windows CE and other Windows flavours on request
- Customer-specific baseboards
- Support of customers‘ baseboard designs
- Manufacturing services for baseboards (recommended delivery COM+base board)

WHITEspeed
Summary

- State of the art feature set
- User-extensible on baseboard
- WHITEspeed with best-in-class mezzanine connectors
- ERNI with decades of experience as EMS provider . . .
- Made at ERNI in Germany . . .


ERNI