
ANALOG DEVICES
SHARC®
Communications • Digital Audio • Automotive
Industrial and Medical • Instrumentation • Biometrics

Einführung

µC ⟷ DSP

Ausführen von Programmen:

- Steuerungszwecke
  (z.B. Aufzugssteuerung)
-Vermittlungstechnik
  (Ethernet Switch)
- Datenverarbeitung
- ...

Digitale Signalverarbeitung:

- Digitale Filter
- Codec Implementierung
  (Surround Dekodierung &
  digital/analog Wandlung)
- Rauschunterdrückung
- Komprimierung
- FFT, MPEG2, HDTV...

Anforderungen an DSP

Algorithmen brauchen:

- hohe Datendurchsatzrate

- organisierte Datenströme (Pipelining)

- extrem schnelle Multiplikation / Addition / Subtraktion

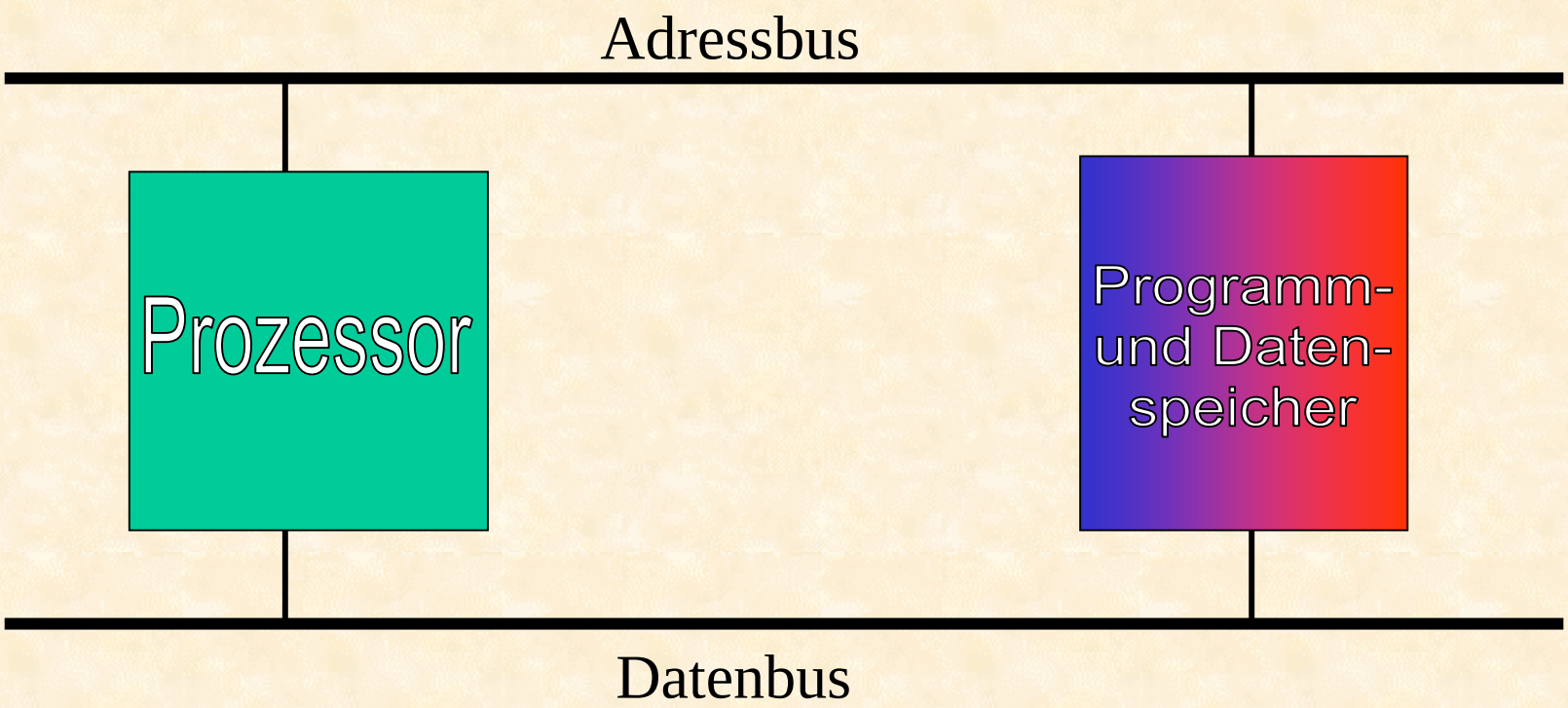
- großer Datenspeicher

- hohe Wortbreiten

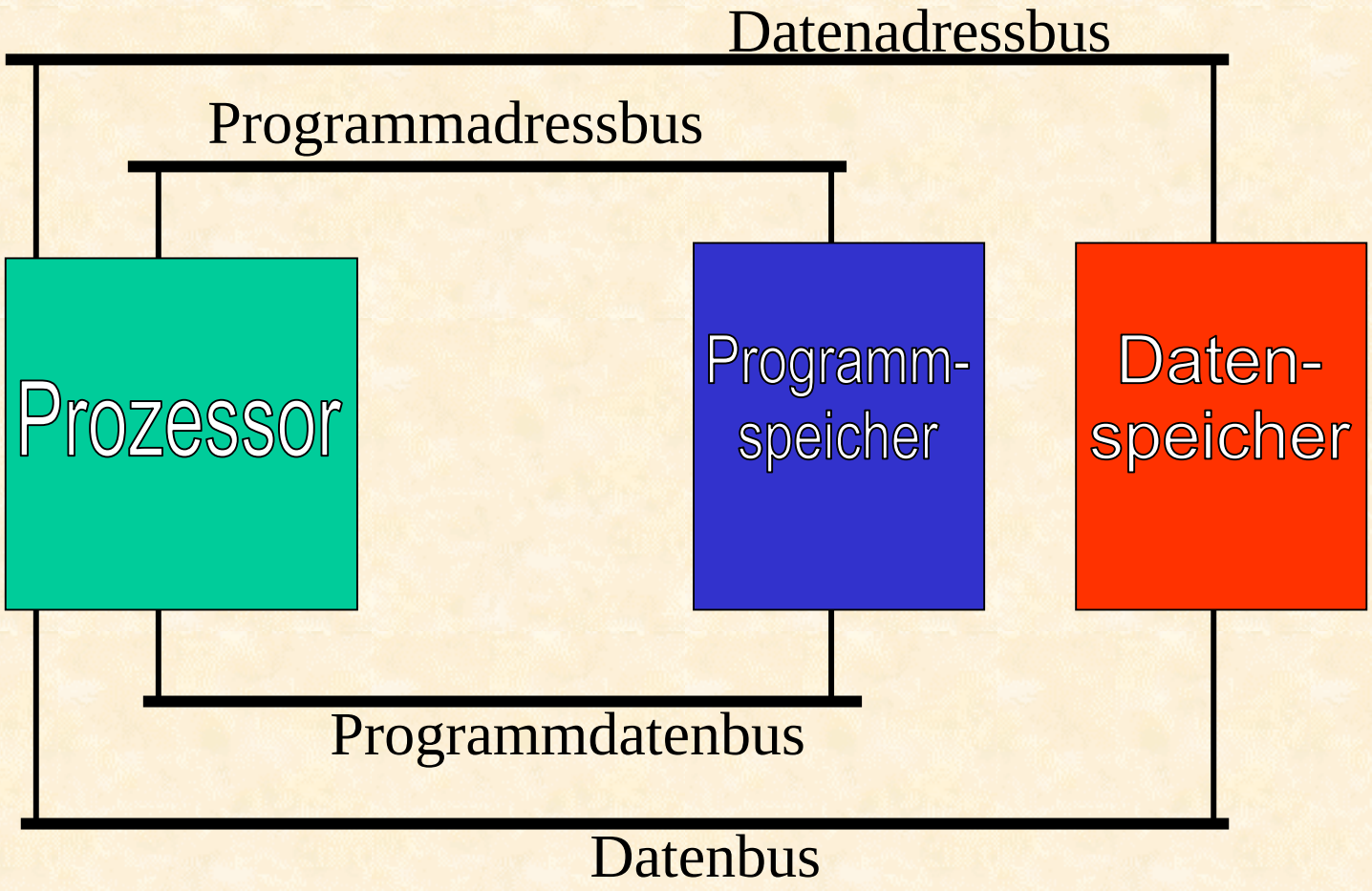
Eigenschaften der SHARC-Familie

- Up to 198 MFLOPS (32-bit floating-point)
- 16K x 32-bit dual-ported on-chip memory
- 64M x 32-bit word external address space
- 2 serial transmit/receive ports support 32-channel TDM
- I2S mode supports up to 8 channels
- Two timers with event capture and PWM
- 12 programmable I/O pins
- 10 DMA channels
- Multiprocessing with two ADSP-21065L SHARC DSPs
- SHARC DSP family binary code compatible
- 3.3 Volt, 208-pin PQFP, 196 ball mBGA
- QFP and BGA packages available

Von Neumann -Architektur

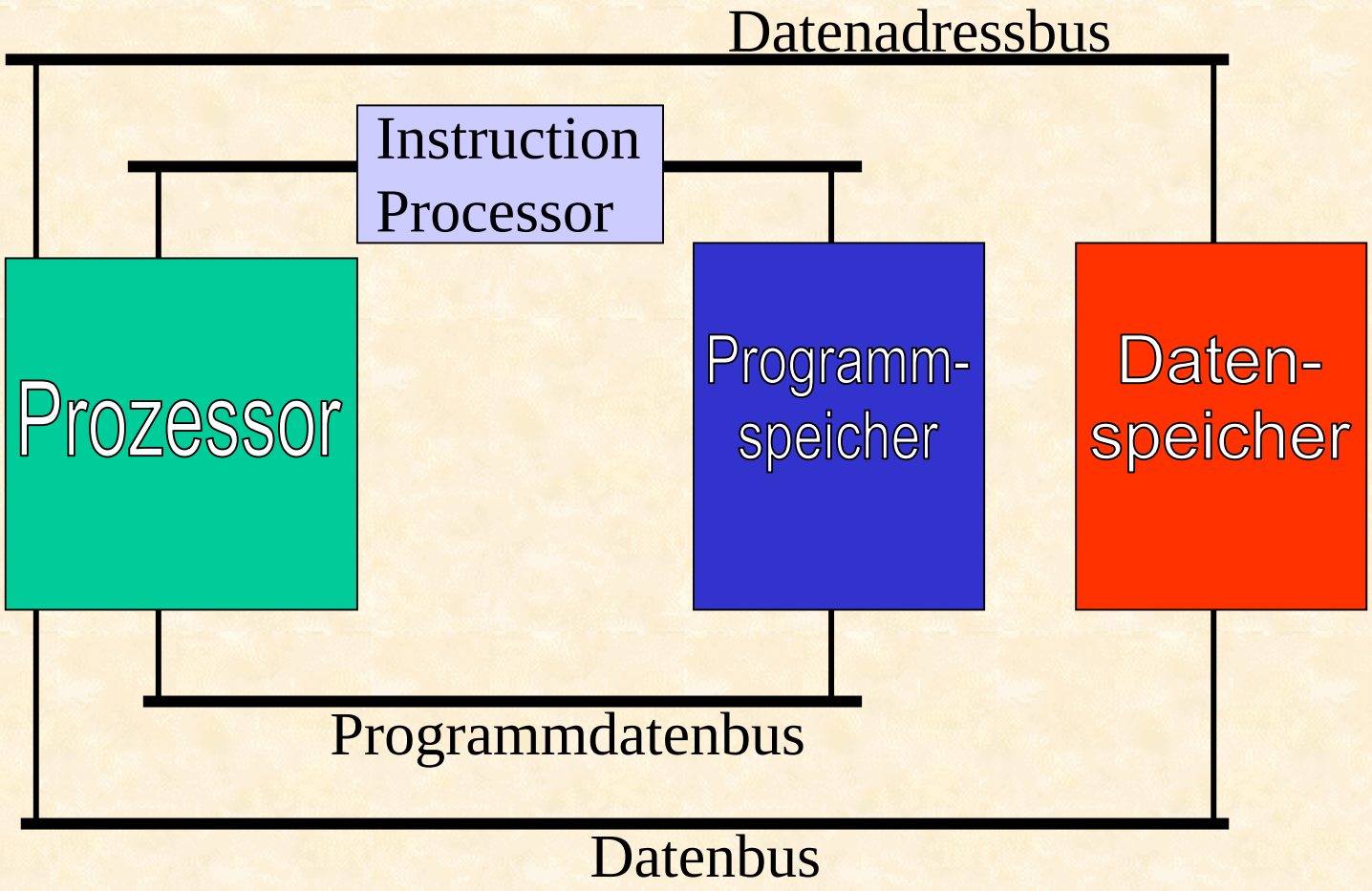


Harvard Architektur



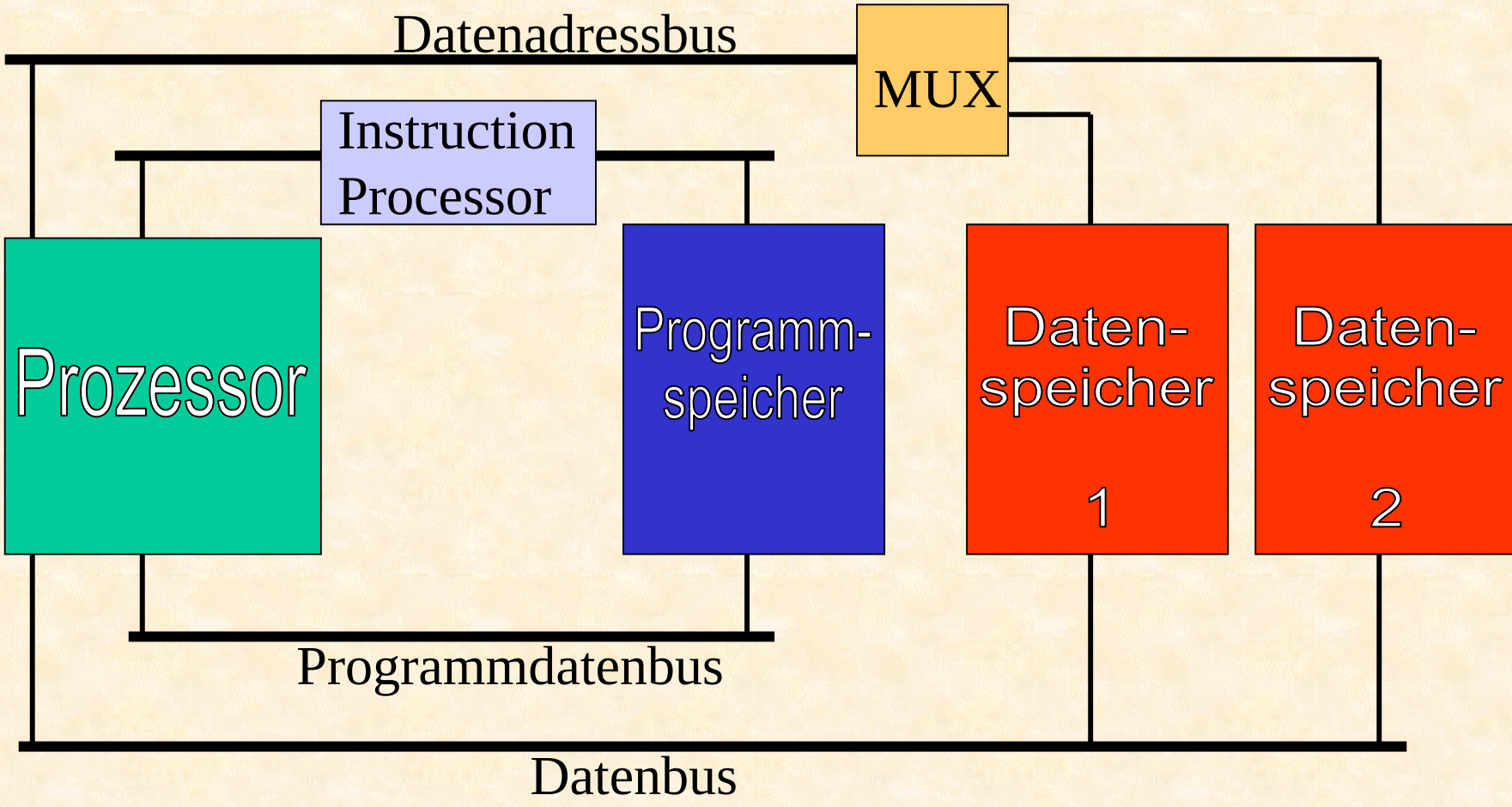
Harvard Architektur

um IP erweitert



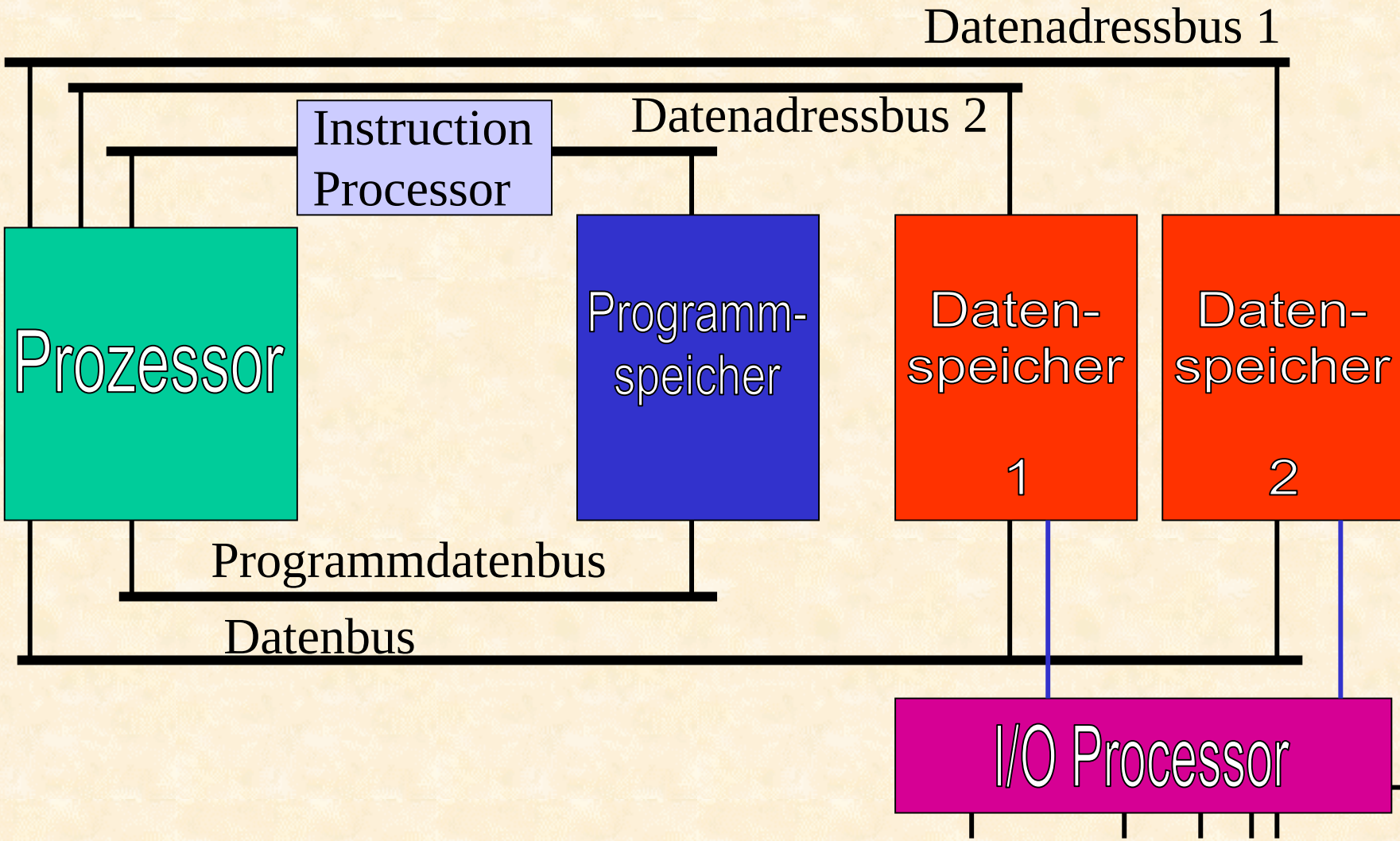
Harvard Architektur

mit 2 Datenspeichern



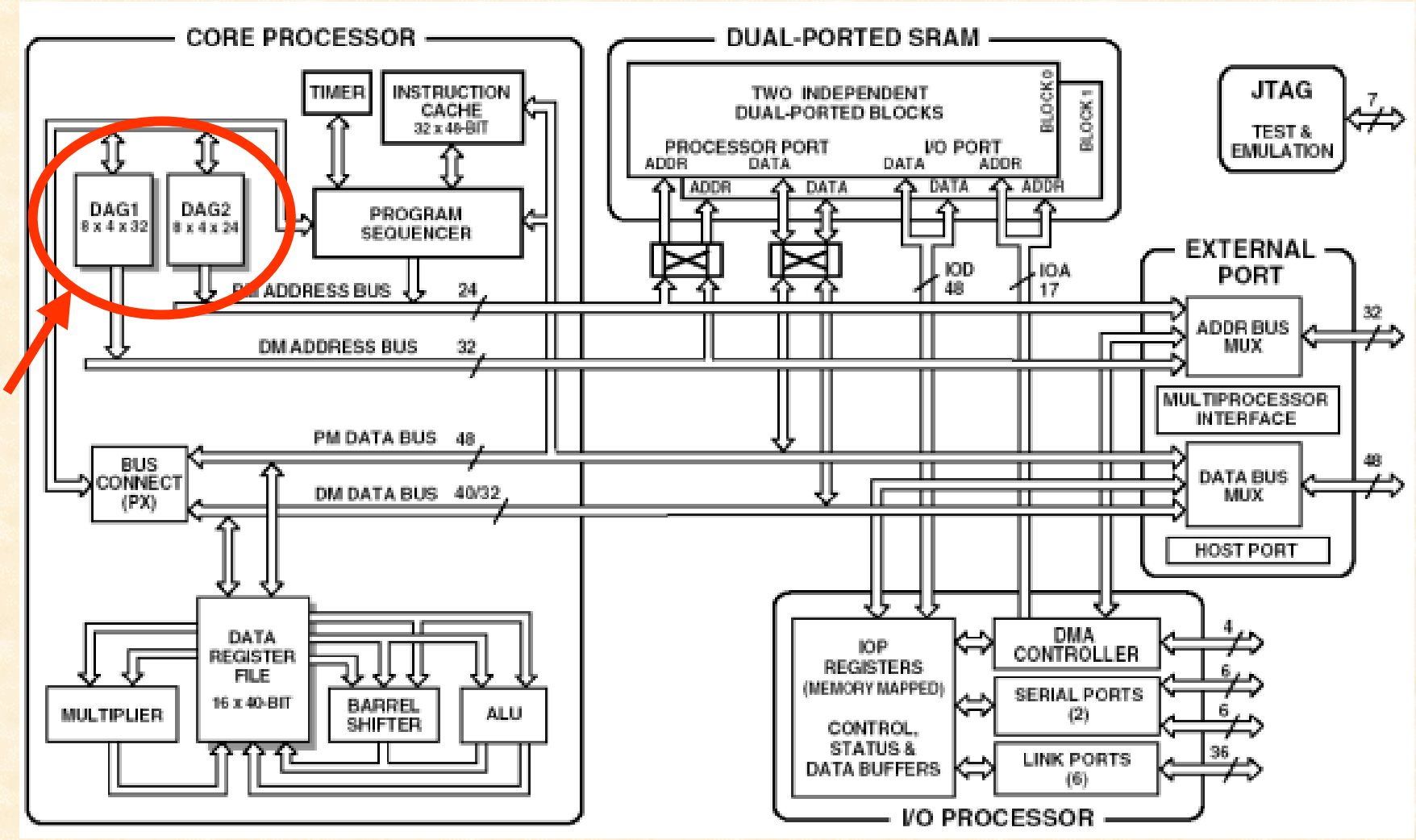
Architektur des SHARC

Super Harvard Architektur



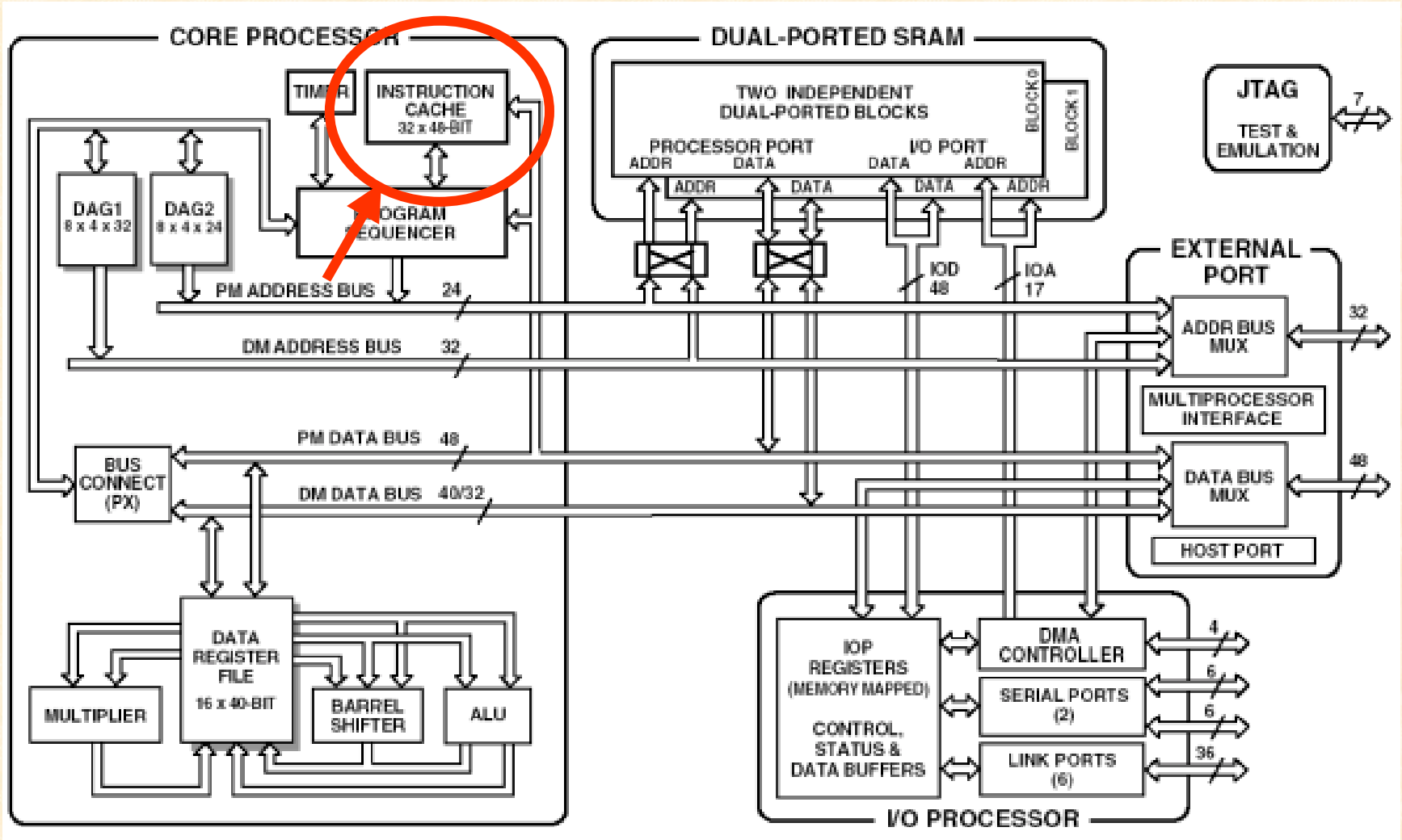
Architektur des SHARC

DAG = Data Adress Generator



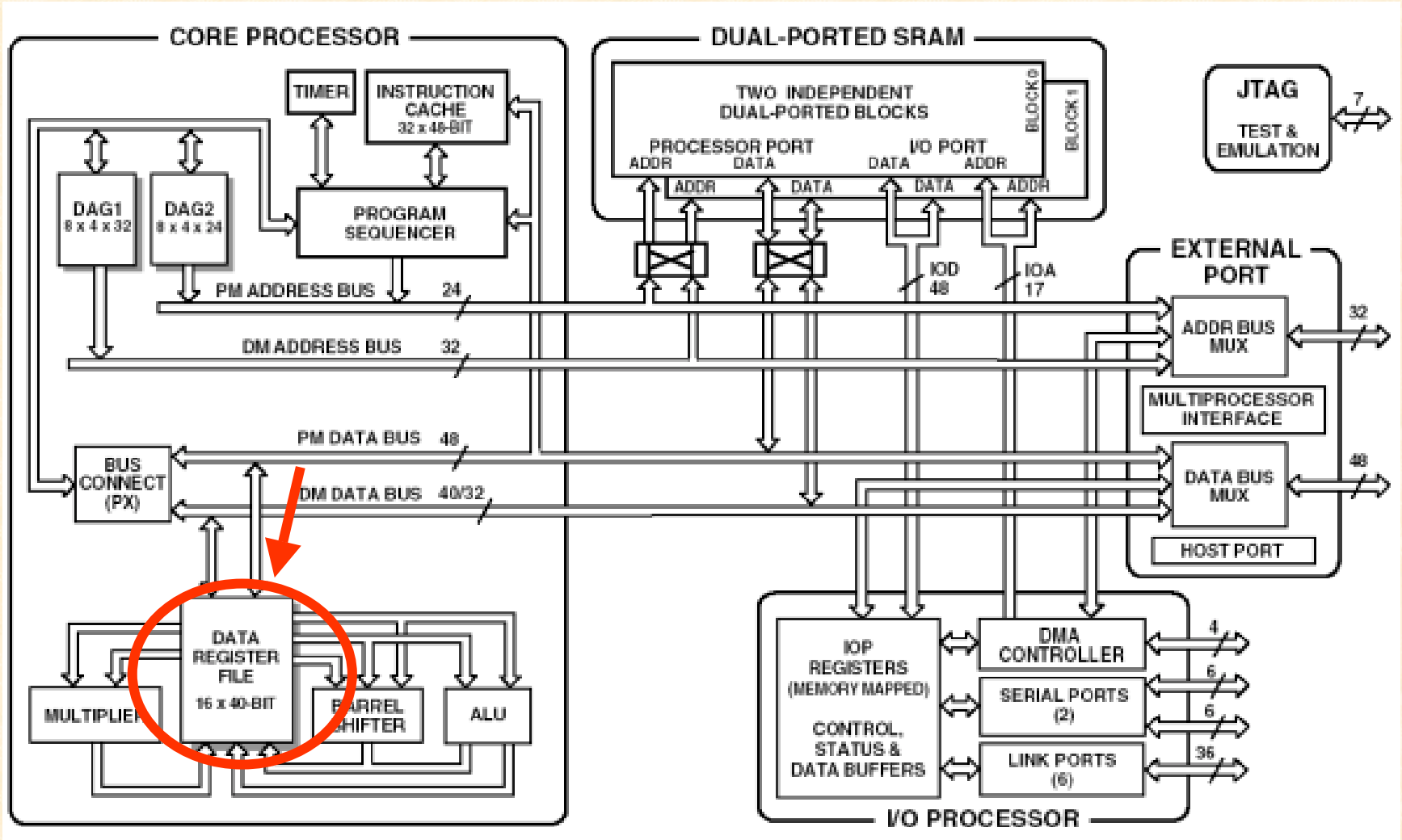
Architektur des SHARC

Instruction Cache

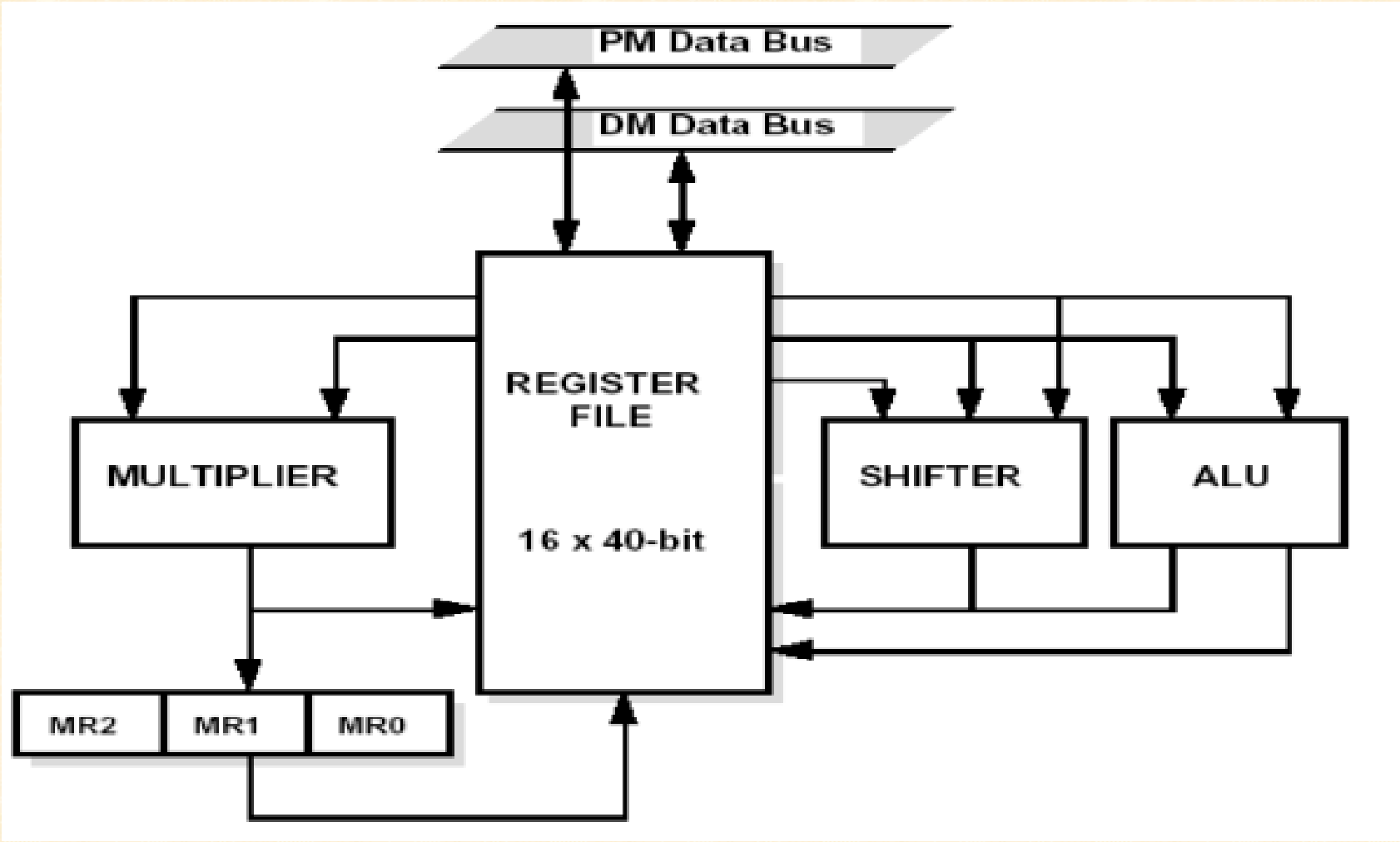


Architektur des SHARC

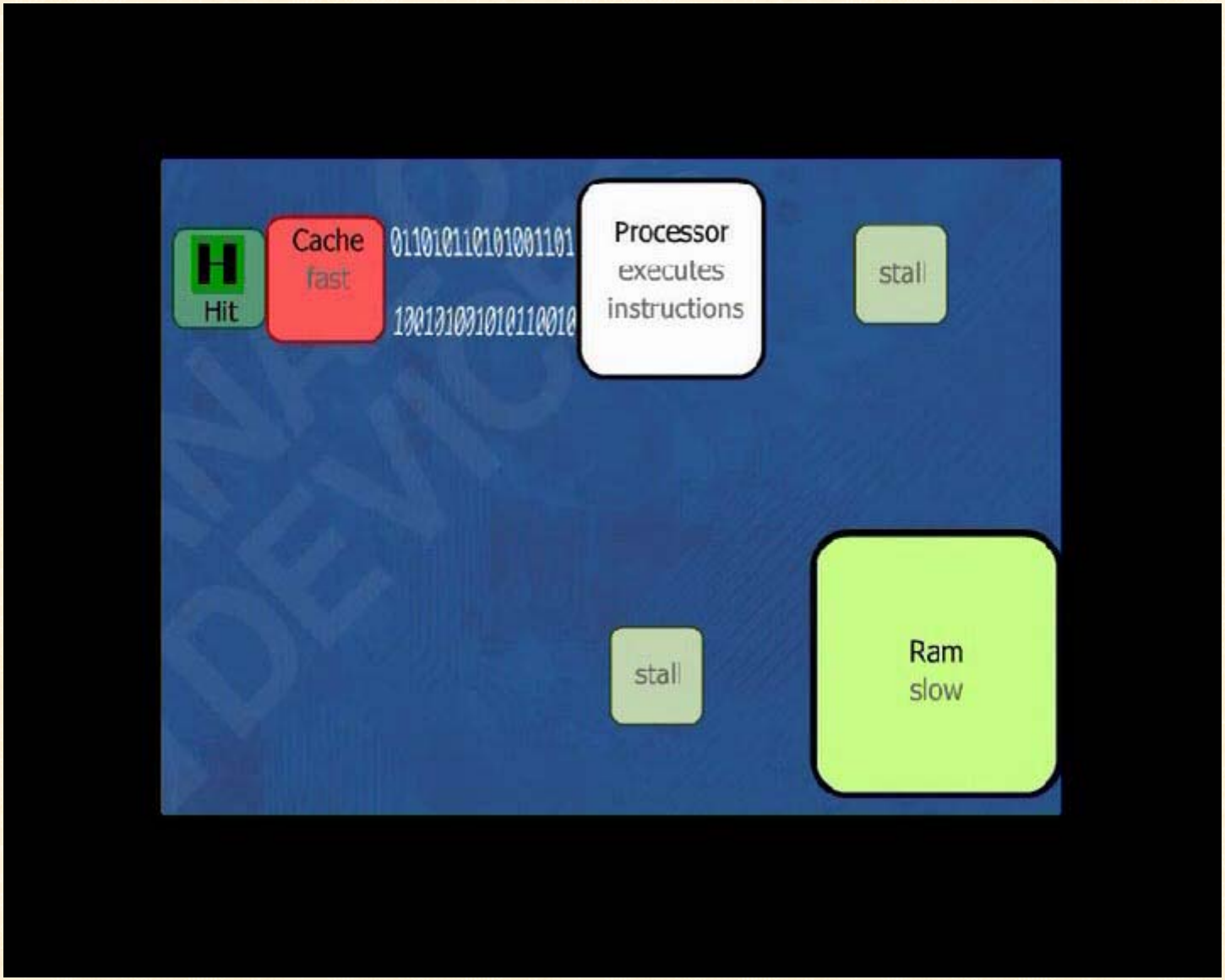
Data Register



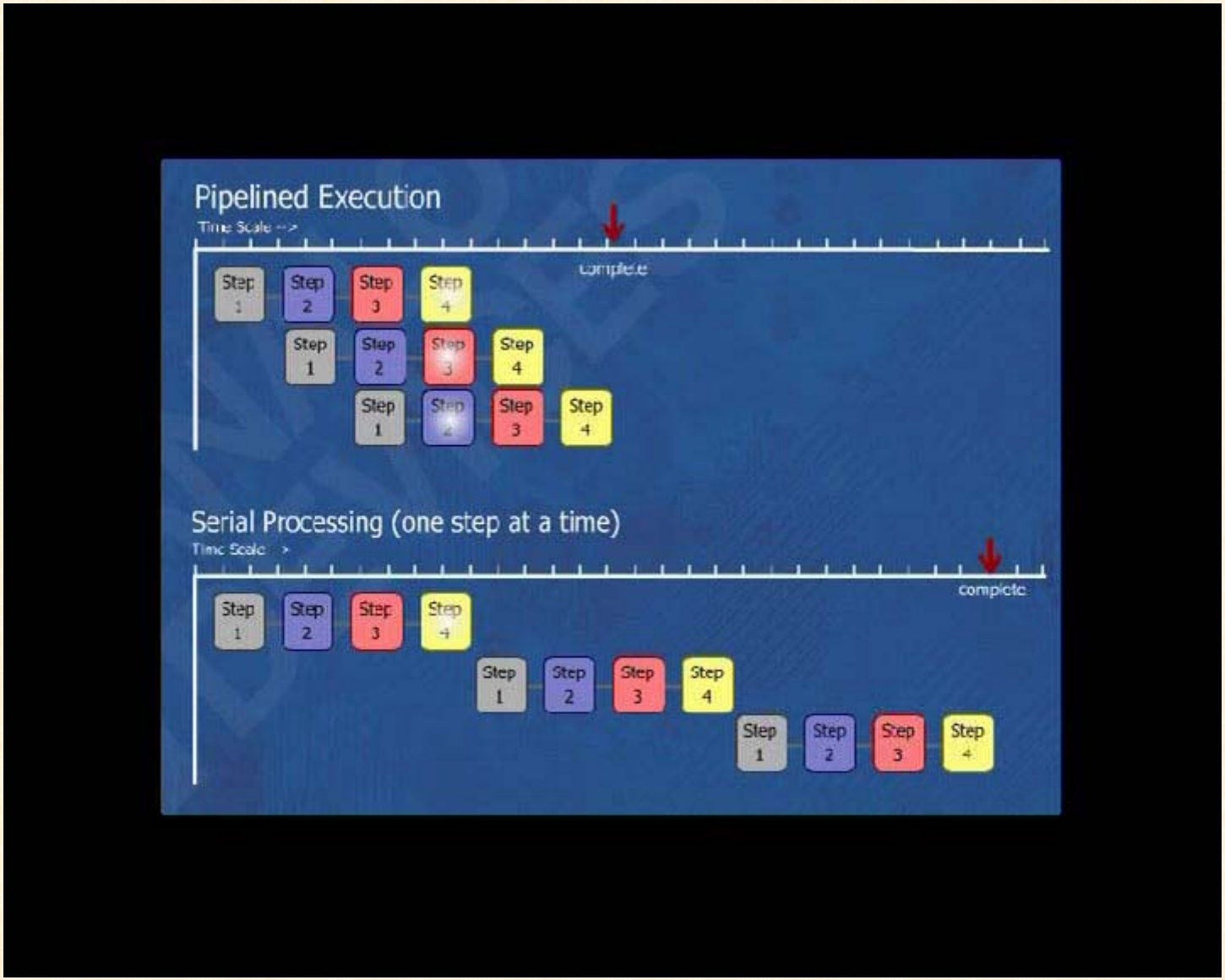
Computation Unit



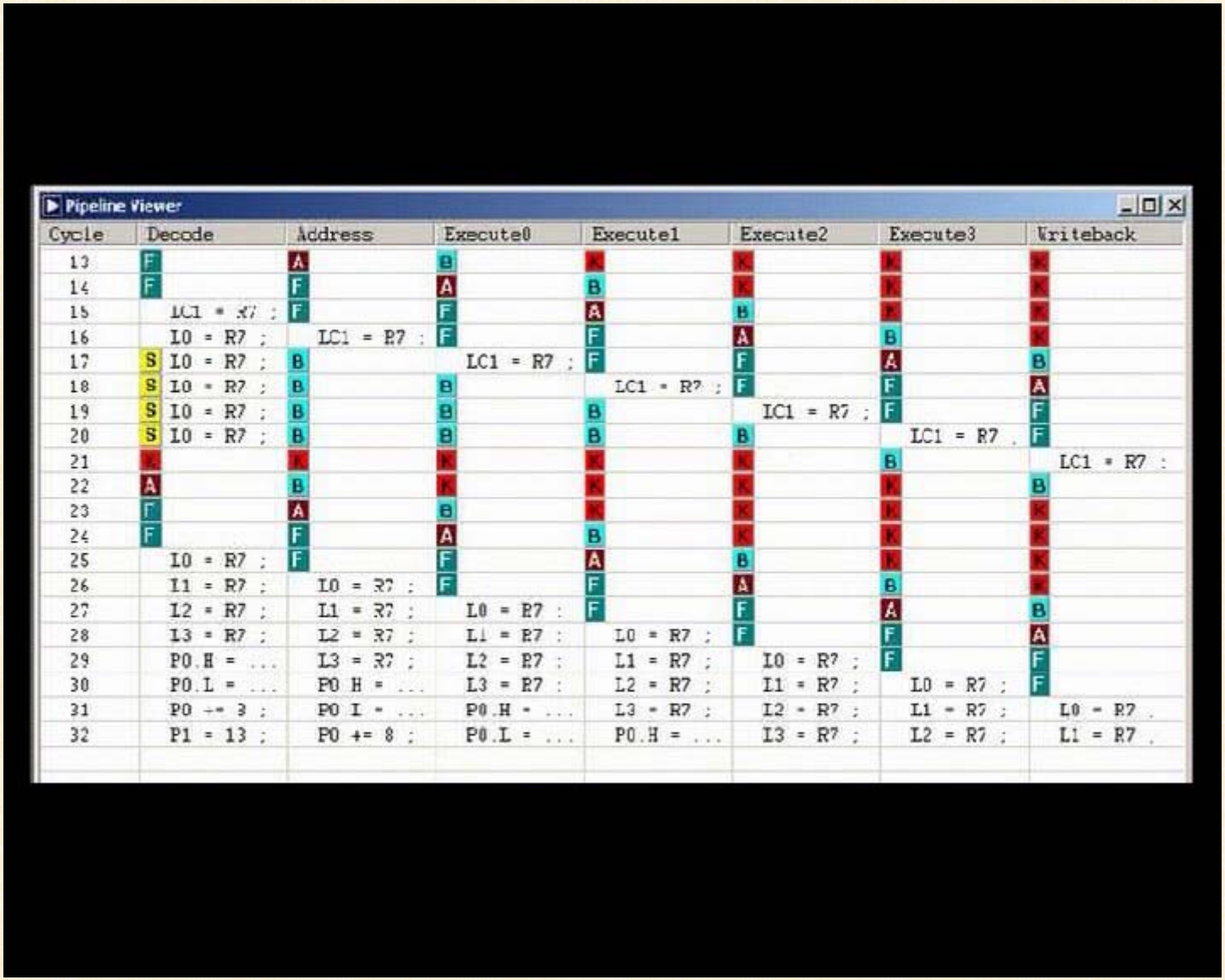
Pipeline and Cache Overview



Pipelined Execution



Optimierung im Pipeline Viewer



Multiprocessing

„Langsame“ Cluster-Anordnung (nur 40 Mbyte/s)

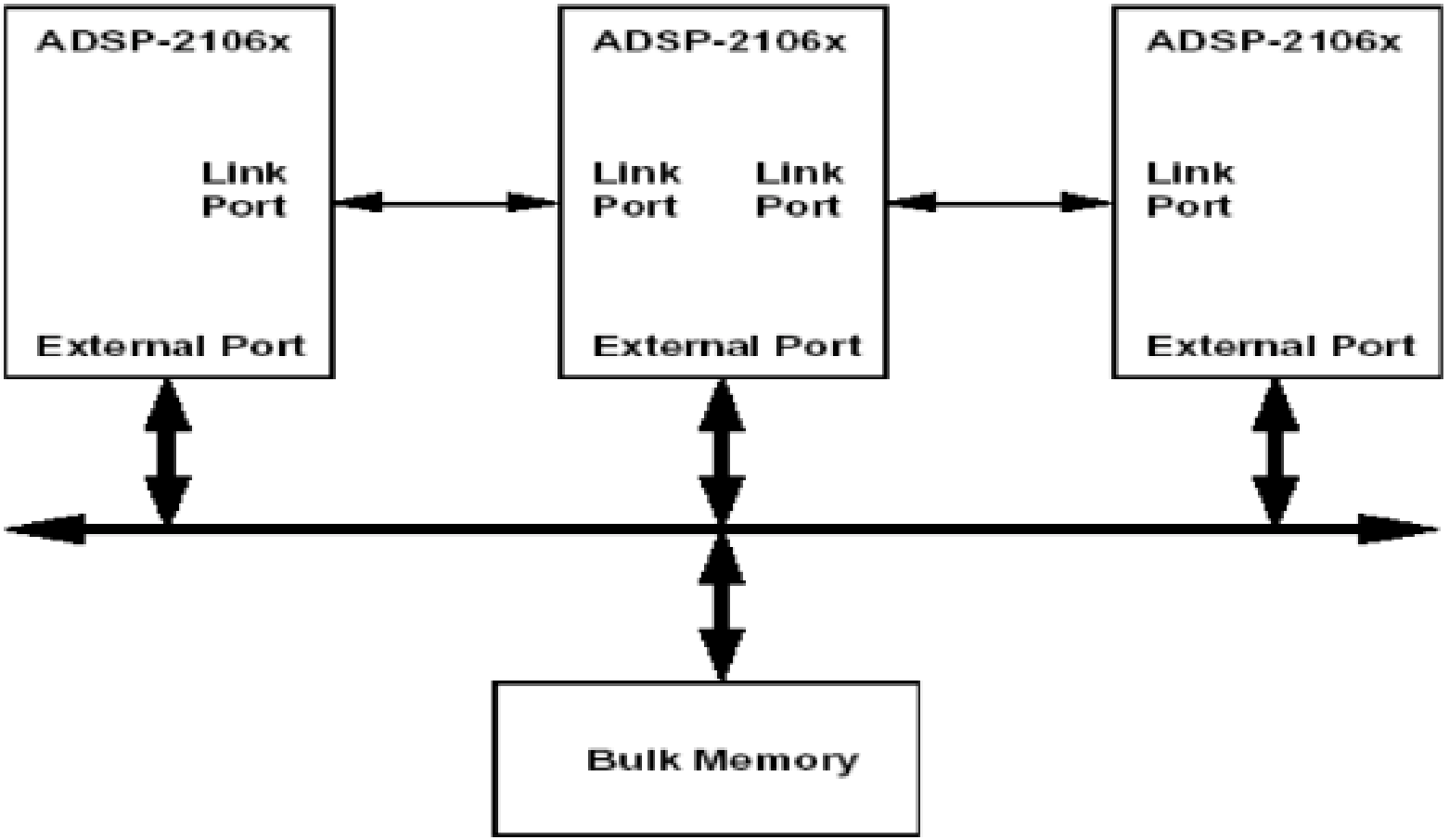
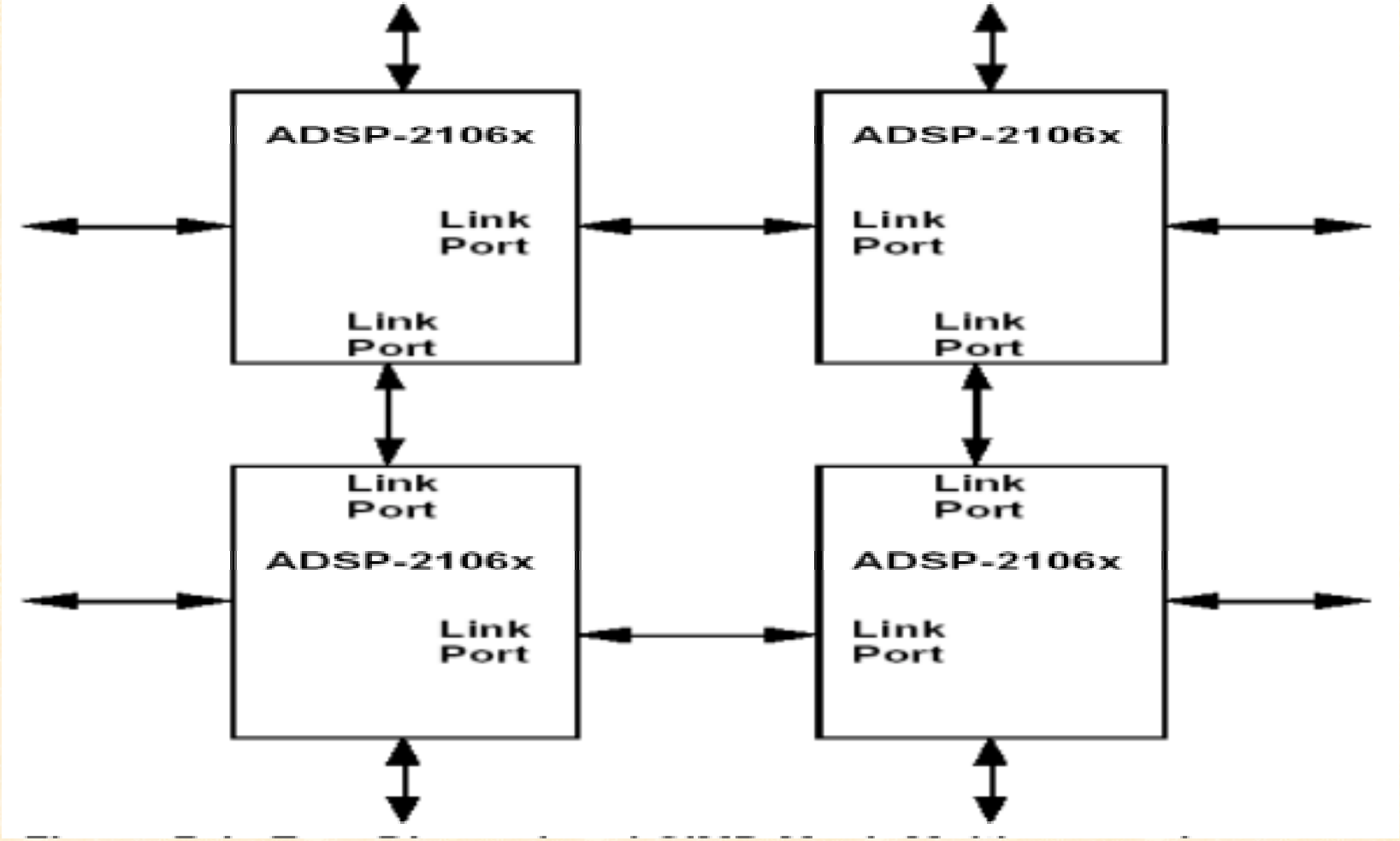


Figure 7.3 Cluster Multiprocessing

Multiprocessing

2D-Mesh-Anordnung (240 Mbyte/s)



Fragen?

Weitere Informationen auch unter: www.analog.com
www.stonee.de