



COTS I/O in GEDAE Environment

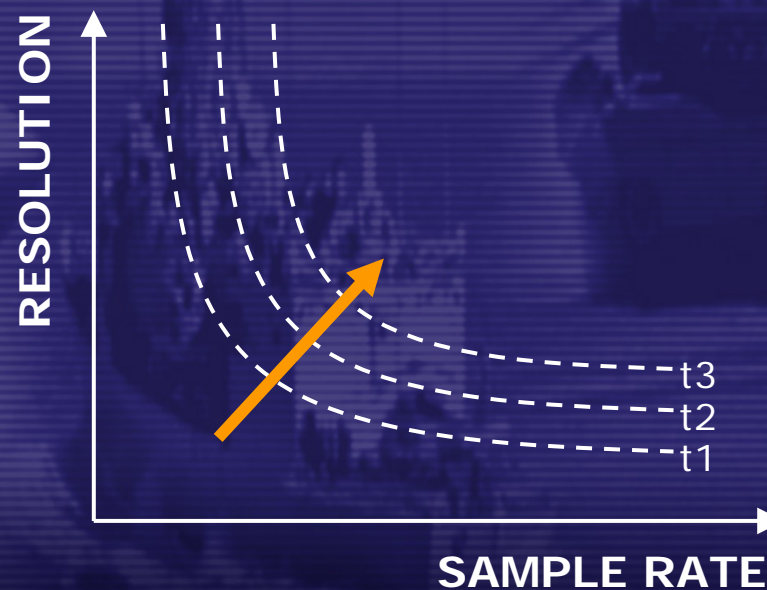
GEDAE User's Conference II

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- ❖ High-performance signal acquisition/reconstruction subsystems to military sensor processing systems
- ❖ Importance of I/O in the system design lifecycle of embedded computing systems
- ❖ Focus on inclusion of high-performance I/O in the GEDAE environment

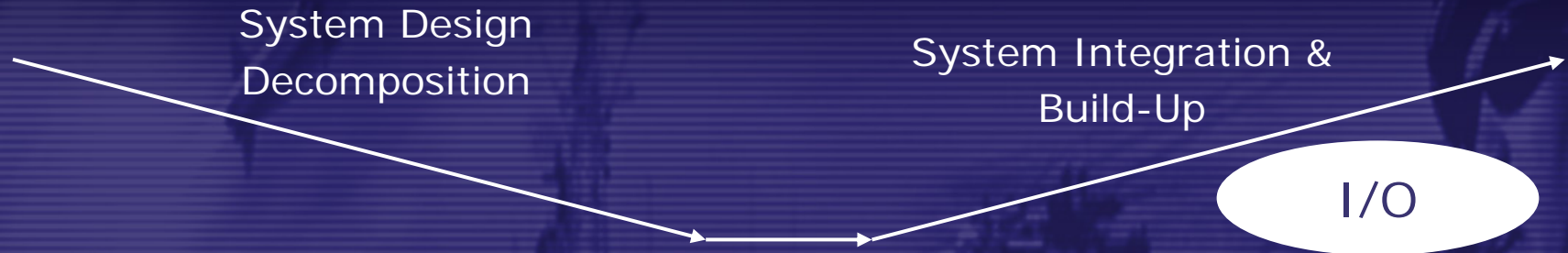
- ❖ Peripheral Component Interconnect (PCI)
 - Driven by commercial market
 - Successful interconnect for processing elements
- ❖ Sub-Card Level Mezzanine Concepts
 - PCI Mezzanine Concept (PMC)
 - eXtended Mezzanine Concept (XMC)
- ❖ Market now offers wide range of modular, easily-configurable sub-systems = **COTS**

- ❖ ADC & DAC technology pushing boundaries in speed and resolution
- ❖ Enables “software-defined” systems



System Design Process

Traditional Waterfall Model



Design Lifecycle



Flexible, Iterative System Design Model

Iterative Design Needs

- ❖ System Modelling & Algorithm Development Toolset - GEDAE
- ❖ Representative Embedded Environment
 - Easy (& cheap) to instantiate
 - Incrementally build-up the environment towards final solution
 - Risk-reduction in uPx & FPGA development
 - However...

Increasingly difficult to model the dynamics of an embedded system

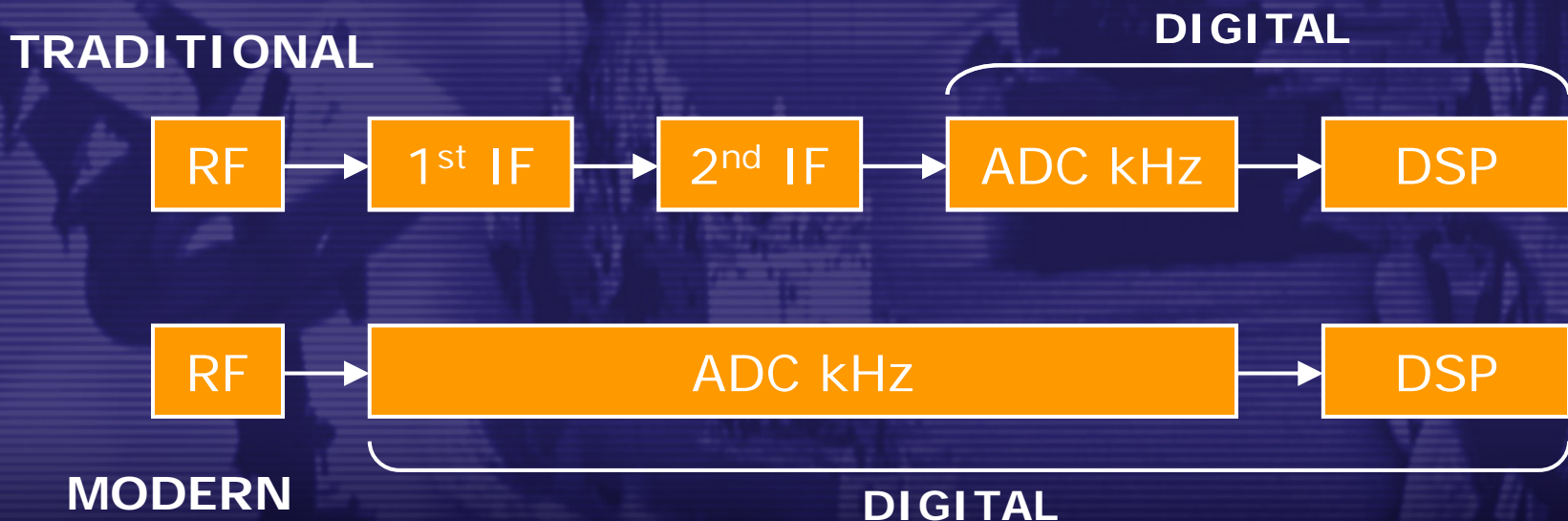
I/O in Sensor Processing

- ❖ I/O drives the signal processing system
- ❖ Mode-oriented systems scheduled in real-time, with hard deadlines
- ❖ Early integration of representative I/O de-risks the system design process
- ❖ Naturally...
 - Focus has been on software development
 - FPGA-based DSP now recognised

Inclusion of I/O is the next step

Key Business Perspective

- ❖ Obsolescence & System Upgrades
 - GEDAE delivers re-usable algorithm design and protection from technology evolution



System Design Solution

- ❖ Market needs proven, de-risked solutions
 - Enhanced software development
 - Fast time-to-complete
- ❖ Required Offering
 - System Design Environment – GEDAE
 - Integrated Embedded Environment - Encompassing processing & I/O domains
 - Delivered as an off-the-shelf package

- ❖ I/O is a fundamental piece of the sensor processing jigsaw
- ❖ GEDAE has improved software & firmware development efficiency
- ❖ Opportunity now exists to tackle the I/O challenge earlier in the system design lifecycle
- ❖ Delivering flexible, high-performance I/O into GEDAE now a critical issue