

DSP Architectures for RASSP

RASSP E&F Module Number: 21

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Module Objectives:

To educate the system designer on RASSP architecture classifications as well as methodologies for choosing the appropriate architecture for a specific application.

Specific Objectives:

Provide information on:

- 1) Overview of architectural elements
- 2) RASSP architecture goals
- 3) Generic architectures for RASSP
- 4) Description of the RASSP architecture selection process
- 5) Tools for architecture selection
- 6) Examples of architectural selection
- 7) Summary of major topics

Prerequisites:

Prerequisite Modules:

RASSP Methodology Overview

Prerequisite Knowledge:

Some knowledge of processing and communication elements and protocol

Syllabus:

- 1) Overview of architectural elements (30 Min.)
 - a) Skillicorn's model for single and multiple processors
 - b) Elements of architectures: computation, communication, configuration
 - c) Features of parallel processors
 - d) Evolution of architectures
 - e) Architectural configurations/topologies
 - f) Software architectures
- 2) RASSP architecture goals (10 Min.)
- 3) Generic architectures for RASSP (20 min)
 - a) Architectural templates
- 4) The architecture selection process (80 Min.)
 - a) Model Year Architecture
 - b) High-level performance models for architectural elements
 - c) Software architectures
 - d) Test architectures
 - e) Tools for architecture selection
 - f) Architectural trade-off advisor
 - g) Metrics for architectural selection

h) Rules of thumb for the selection process

5) Examples of architectural selection (30 Min.)
a) SAR benchmark example

6) Summary (10 Min.)

Audience:

System design and architecture design engineer, first year graduate student.