Multidimensional Performance Modeling for Advanced Embedded Signal Processors

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**Multidimensional Performance Modeling**

DoD missions/systems require new approaches/tools to exploit emerging reconfigurable technologies to form polymorphous/power aware systems.

- **Problem:**
  - Traditional performance modeling approaches are unable to address emerging requirements and component technologies. This is a result of an increased awareness and need for dynamically adaptive or reconfigurable systems, particularly in the area of power dissipation/performance.

- **Goal(s)/Objectives(s):**
  - Define methods/algorithms to accurately model and optimize reconfigurable architectures and functions (services) required to support multidimensional performance modeling.
  - Apply ideas developed from InfoPad, ACS, PAC/C, DARES, PCA, and MSP to develop a unique new rapid prototyping/optimization capability.

- **Approach:**
  - Define features required to support accurate performance and multidimensional modeling and optimization of DRAs.
  - Evaluate algorithms/methods for performing intelligent, reactive dynamic scheduling.
  - Evaluate algorithms/methods for performing offline analysis, data reduction, pattern recognition, and execution planning.
Stream Processors indicated by filled boxes

GP Processors indicated by outlined boxes

Dynamic bar chart indicating total active processors, active stream processor active GP processors and active threaded processors

Total active processor count display

PCA Virtual Processor State and Activity

System State and Task Flow

Mission Assignment

Threat Avoidance

Communications

Flight Control

Imaging

Route Planning

Self Test and MaCS

MaCS messages and status

Mission status

RADAR Tasks

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