Funding Opportunities:

Next Generation Software Program

Information Technology Research Program

Dynamic Data Driven Application Systems Thrust

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Supporting Dynamic Execution Environments: Next Generation Software Program (NGS)

NGS Scope: design methods composition, and runtime support of complex applications with end-to-end performance, on distributed heterogeneous platforms, including Grids, GiBs, & embedded systems

Program Components:
- TPES (Technology for Performance Engineered Systems) and CADSS (Complex Application Development and Support Systems)
  - TPES: Methodology for performance engineered computing systems (end-to-end performance analysis & prediction)
    - performance frameworks, multilevel models for analysis and prediction
  - CADSS: Use of performance technology in a new software architecture for application development and run-time support
    - new dynamic (autonomic) compilation/run-time system technology
    - application composition technology
TPES
Technology for Performance Engineered Systems

Distributed Applications
- Languages
- Compilers
- Libraries
- Tools

Distributed Systems Management
- Distributed, Heterogeneous, Dynamic, Adaptive Computing Platforms and Networks

Performance Engineering Frameworks
- Application Models
- IO / File Models
- OS Scheduler Models
- Architecture / Network Models
- Memory Models

Languages
- Visualization
- Scalable I/O
- Data Management
- Archiving/Retrieval
- Services
- Collaboration Environments
- Authentication/Authorization
- Dependability Services
- Other Services . . .

Tools
- Memory Technology
- CPU Technology
- Device Technology
- . . .

Application
- API
- &
- Runtime
- Services

Global
- Management

Component
- Technology
CADSS: Complex Application Development and Support
(integrated feedback and control compiling system
Runtime Compiling System - RTS)
What is DDDAS

OLD
(serialized and static)

NEW PARADIGM
(Dynamic Data-Driven Simulation Systems)

Challenges:
Application Simulations Development
Algorithms
Computing Systems Support
Enabling DDDAS

New Systems Software Technology

Dynamic Data-Driven Application Systems

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Symbiotic Measurement & Simulation Systems

Dynamic Compilers & Application Composition

Performance Engineering

NGS Program

Dynamic Compilers & Application Composition
Information on these opportunities

• **Next Generation Software Program (NGS)**

• **Information Technology Research Program**

• **Dynamic Data Driven Application Systems Thrust (DDDAS)**

• **AND:**
  for **NGS & DDDAS proposals submitted to ITR**, state
  **ACIR (Division) and NGS** as the holding program