Design Synthesis
- Report Out -

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Vision

• CyberDesign
  – Is an integrative, optimized, dynamic, intelligent process
  – Occurs in a multi-connected multi-disciplinary distributed cyber-infrastructure
  – Creates intellectual property and wealth within a secure environment
Benefits

• Creation and preservation of intellectual property and innovation, inclusive of small enterprises
• Faster and better product development through coordinated design activities
• Ability to address substantially more complex problems
• Comprehensive information gathering, exchange and reuse
• Support of decision making under uncertainty
Research objectives and strategies

• Integration of diverse data, models and methods
• Establishment of standards for the above to support product development needs
• Development of mathematical models for uncertainty quantification and propagation
• Modeling the design process as a complex adaptive system
• Prepare current and future generations of scientists, engineers, and educators to use, support, deploy, develop, and design cyber-infrastructure
Further research objectives and strategies

- Sensor embedded, cyber enabled adaptive products
- Automated benchmarking for quality control
- Algorithms for decomposition and coordination of large scale distributed multi-level problems
- Higher fidelity, adaptable models that change as design progresses.
- Synthesis in nature and design synthesis
- Emerging properties – design ants or crawlers
- Survivability of design networks
- Paradigms applicable to other fields such as health care, sports, business