Goddard Space Flight Center IRAD

- **Establish a "Lambda Network"**
  - Use optical wavelength technology (10Gbps Ethernet per wavelength)
  - Connect GSFC's Earth Science Greenbelt facility in Maryland to Scripps Institution of Oceanography in through the University of California at San Diego (UCSD)
  - Ride the National LambdaRail
- **Synergies**
  - Falls in with reinvigorating the nation's cyber infrastructure
  - Takes advantage of next generation networking technologies (Lambda-Nets)
  - Makes use of NSF funded compute, storage and visualization resources being implemented at UCSD (OptIPuter and GEON)
- **Benefits**
  - Develop real-time interactive collaborations with leading Earth and space science academic institutions
  - Enable scientists at both institutions to share and use compute intensive community models, complex data base mining and multi-dimensional streaming visualization
  - Creates a virtual laboratory and SIO wing within GSFC's Building 33
  - Several NASA missions benefit from the high bandwidth connection, eg:
    - HPC between ARC/Project Columbia and GSFC/NCCS
    - CEOP data analyses between Rhodes (SIO) and Bosilovich (GSFC)

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GSFC FY04 IRAD Proposal

- **"Preparing Goddard for Large Scale Team Science in the 21st Century: Enabling an All Optical Goddard Network Cyberinfrastructure"**
- **Transcontinental, Regional, and Local Networking**
  - **Became a member of the NLR, with NREN Project assistance, through a Mid-Atlantic Terascale Partnership membership arrangement**
  - **Deploying GMPLS-managed Movaz Optical Switches and Add Drop Muxs at GSFC and in DRAGON regional multiwavelength network**
  - **Utilize NLR lambdas between GSFC and UCSD/SIO**
  - **Interconnect GSFC's Thunderhead and other clusters to UCSD/SIO's OptIPuter network at 10GigE via this Lambda Network**

- **Application Development**
  - **Integrate Earth System Modeling Framework software with GRID middleware by constructing prototype interfaces between the components**
  - **Identify requirements for new methods and/or messages that would be desirable for supporting GSFC models and data assimilation**

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