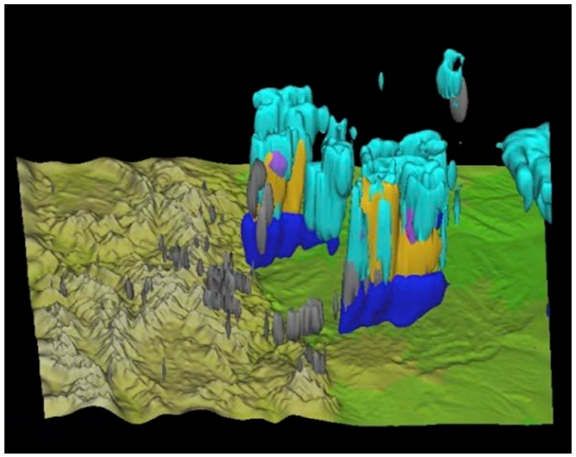
National Science Foundation
WHERE DISCOVERIES BEGIN

NSF and the National Earth Science Prediction Capability

Investments in fundamental science through NSF Atmospheric Science Programs:

- ***Physical and Dynamical Meteorology***
- ***Climate and Large-Scale Dynamics***
- ***Atmospheric Chemistry***
- **Sponsored Visitor Programs**
  - **NCEP**
  - **Developmental Testbed Center**



Investments in community support through NCAR:

- **Climate and Earth system modeling**
- **Weather modeling and prediction**
- **Computational studies**
- **Data assimilation**
- **Visualization**

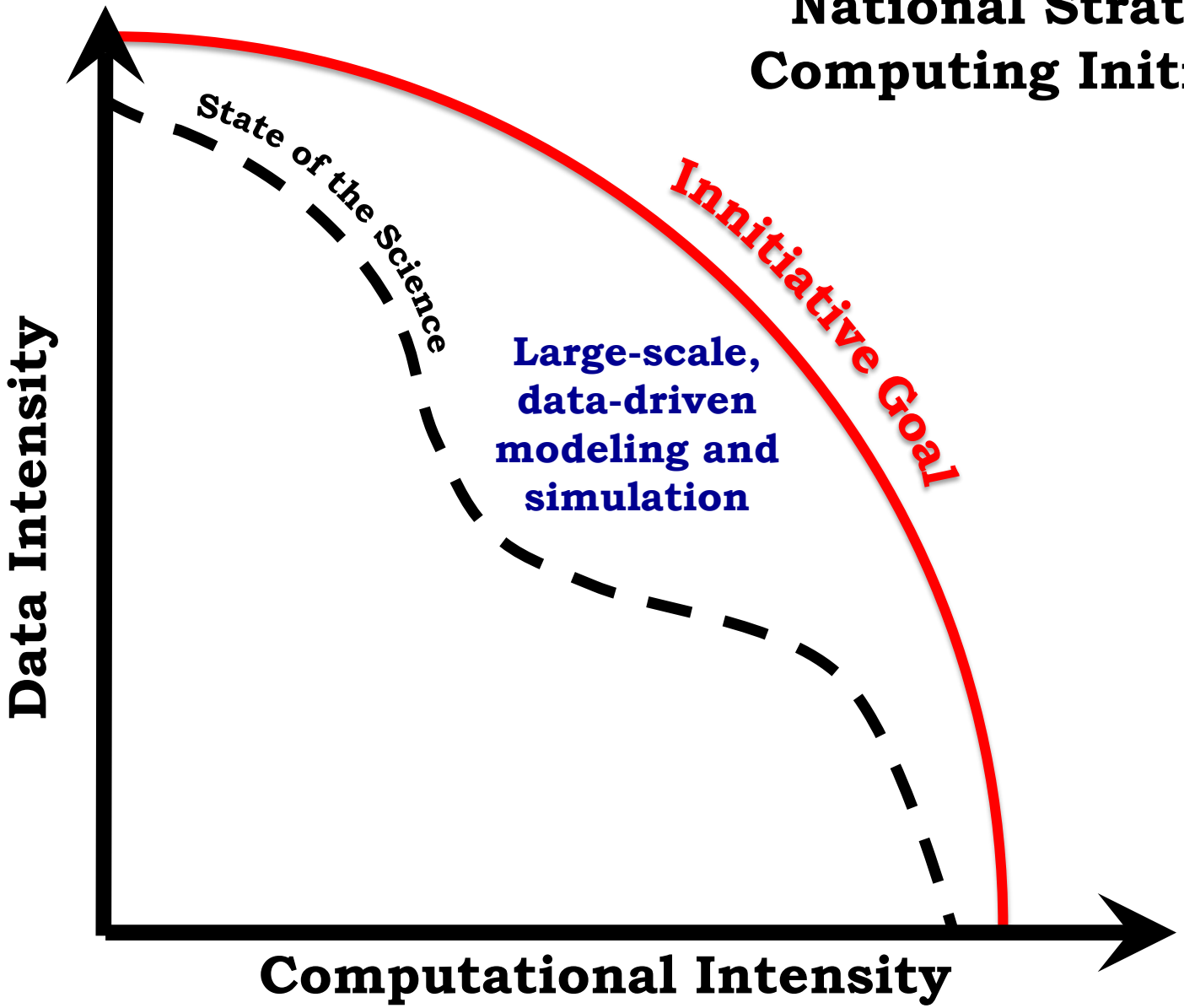
Executive Order:
Creating a National Strategic Computing Initiative (NSCI)

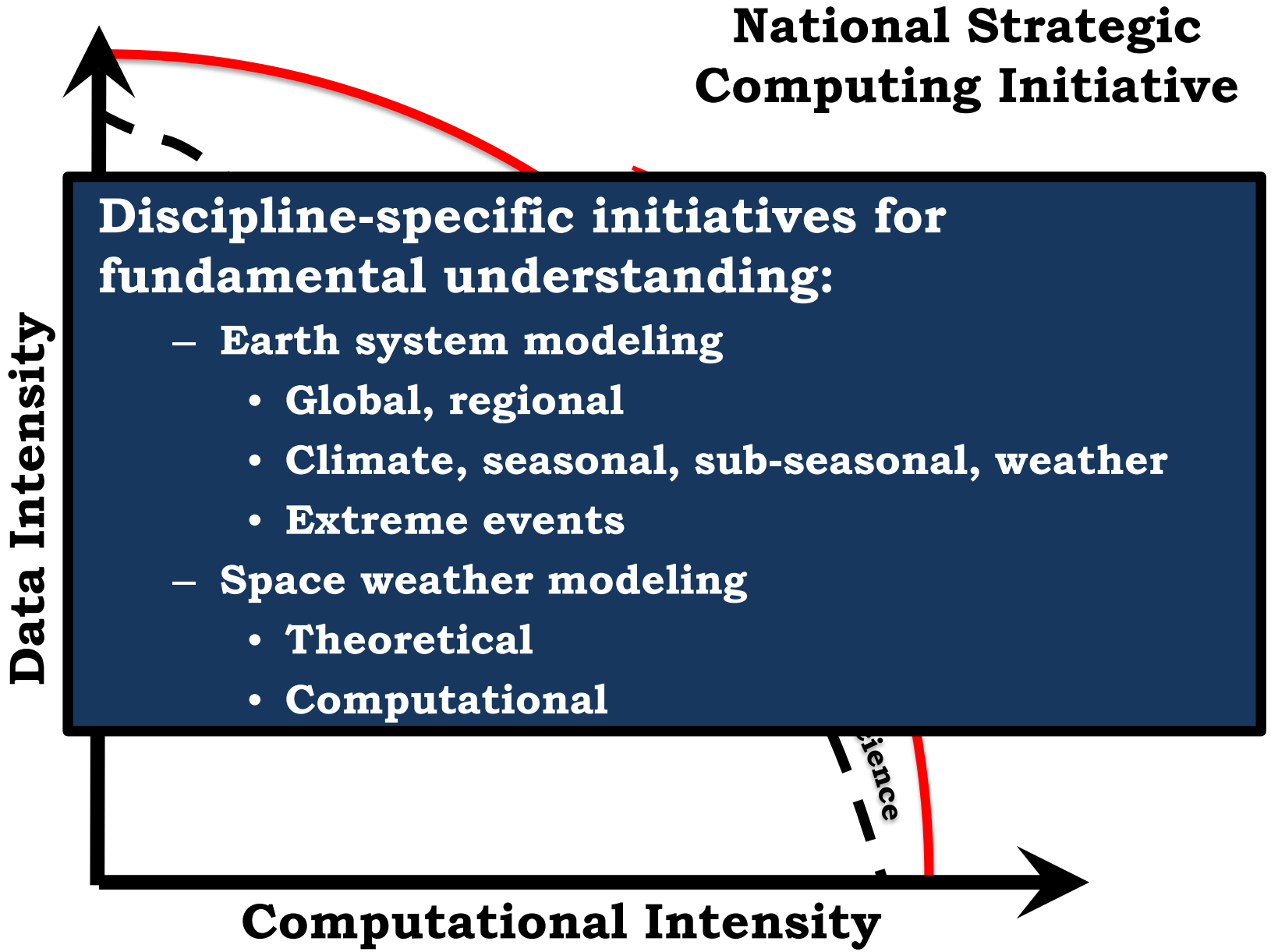
Lead agencies: DoD, DoE, NSF
Deployment Agencies: NASA, NOAA, DHS, FBI, NIH

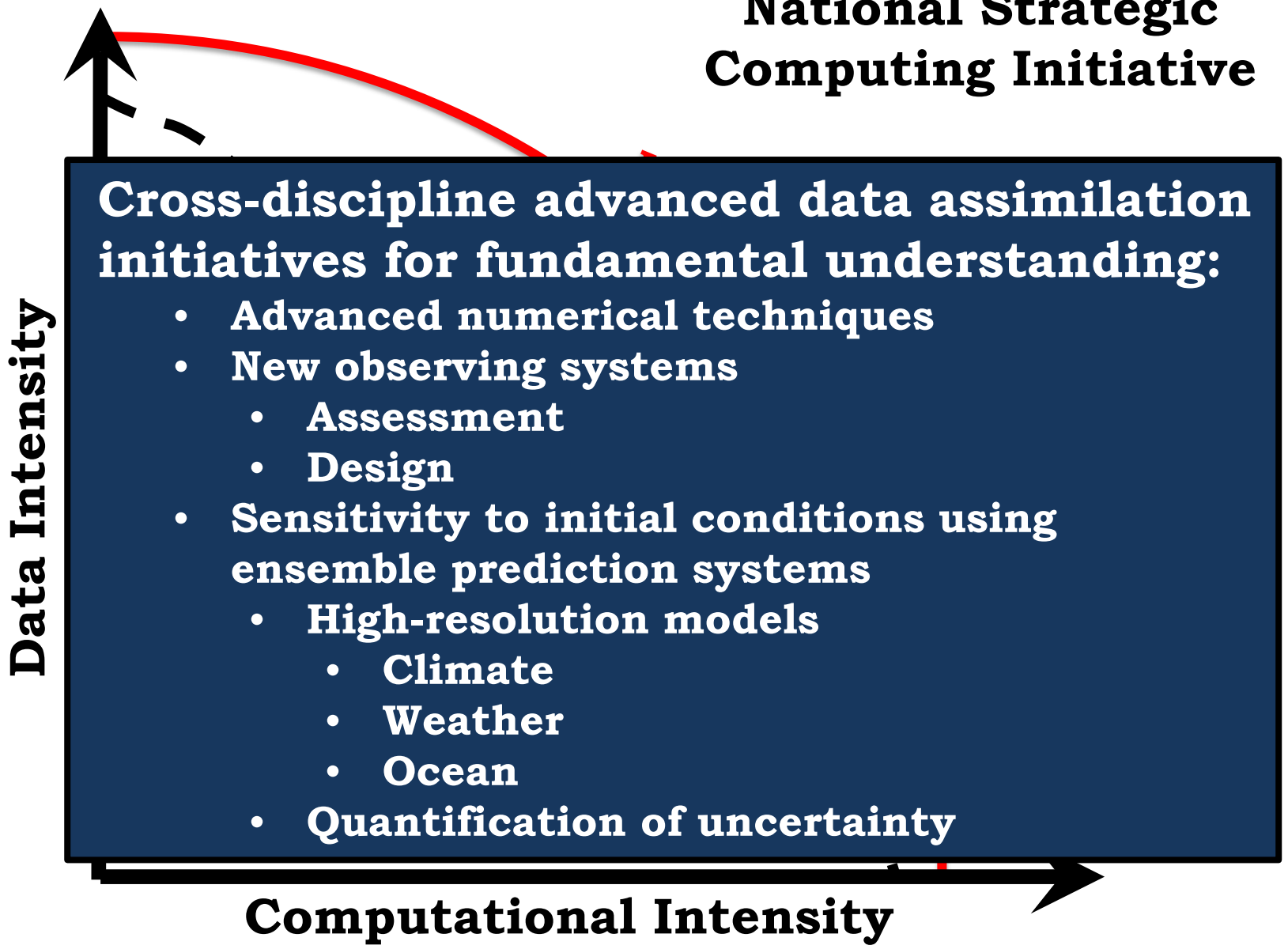
Strategic Objectives:

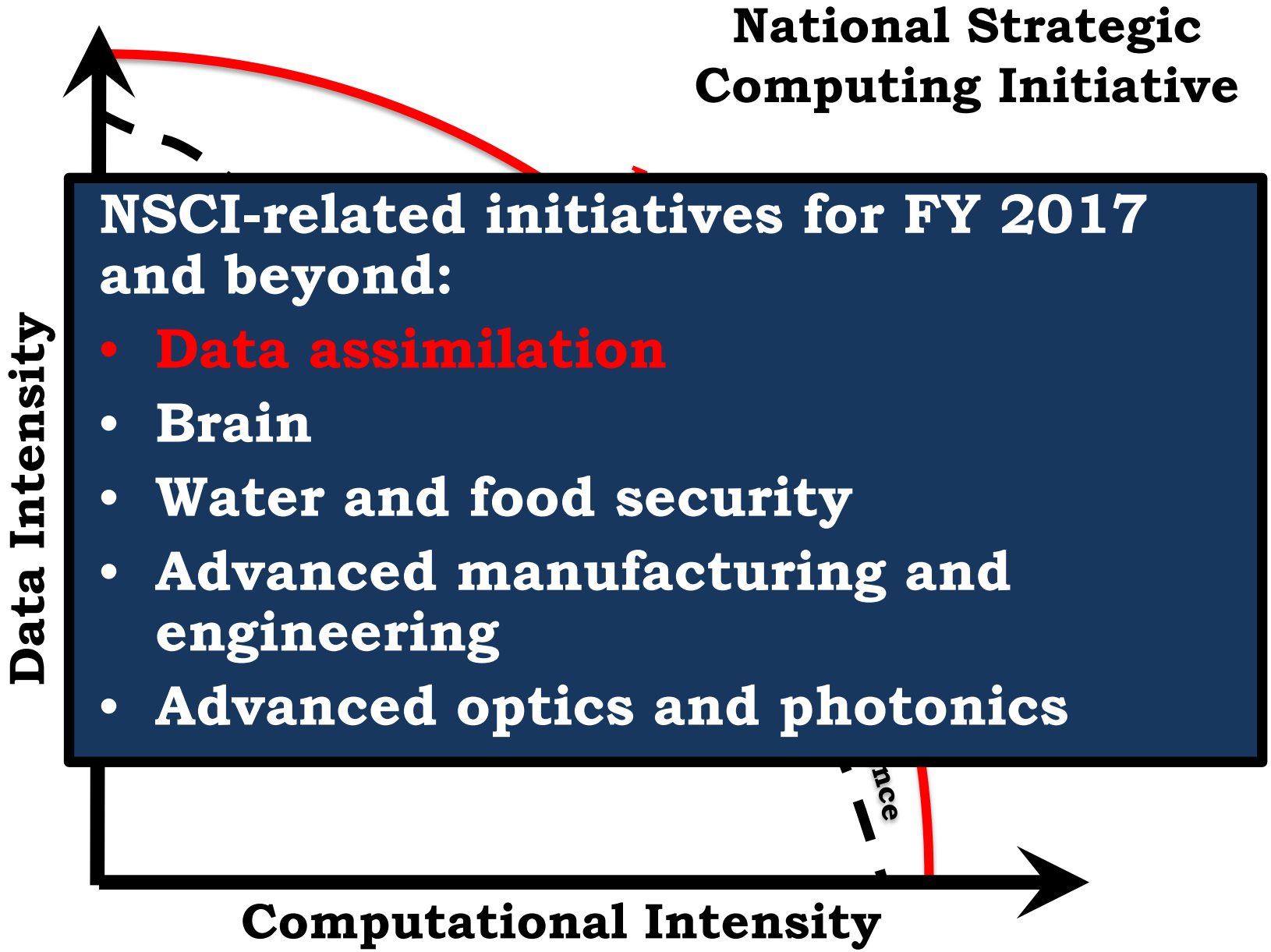
- **Accelerate delivery of capable exascale computing**
- **Increase technology coherence between modeling and data computing**
- **Extend beyond limits of current semiconductor technology**
- **Establish a sustained high-performance computing ecosystem**
- **Support public–private partnerships**

National Strategic Computing Initiative




National Strategic
Computing Initiative
Discipline-specific initiatives for fundamental understanding:
– Earth system modeling
• Global, regional
• Climate, seasonal, sub-seasonal, weather
• Extreme events
– Space weather modeling
• Theoretical
• Computational
Data Intensity
Computational Intensity


National Strategic
Computing Initiative
Cross-discipline advanced data assimilation initiatives for fundamental understanding:
• Advanced numerical techniques
• New observing systems
• Assessment
• Design
• Sensitivity to initial conditions using ensemble prediction systems
• High-resolution models
• Climate
• Weather
• Ocean
• Quantification of uncertainty
Data Intensity
Computational Intensity


National Strategic
Computing Initiative
NSCI-related initiatives for FY 2017 and beyond:
• Data assimilation
• Brain
• Water and food security
• Advanced manufacturing and engineering
• Advanced optics and photonics
Data Intensity
Computational Intensity