

# What Business Model?

- Business model includes
  - What you provide “in-house” versus contract out versus allow users/projects to do themselves
  - How do you obtain services or assets required to provide the “in-house” services
- Depends on many factors
  - including the “mission” of the “network”
    - who are the customers, what do they need
- Multiple examples available
  - no single “correct” answer

# Types of Networks

<b>Network</b>	<b>#Sites</b>	<b>Distances (mi)</b>	<b>Reliability</b>	<b>#Users</b>	<b>Timing</b>	<b>Business Model</b>
<b>ESnet</b>	30-40	1000's	99.9%	10's of thousands	12-18 months	Contract services
<b>TeraGrid</b>	~10	1000's	99% (but predictable)	thousands	12-18 months	Contract assets
<b>I-WIRE</b>	~10	100's	99% (mostly predictable)	Depending on layer, dozens to thousands	~36 months	Purchased fiber & equipment

# Business Model Factors

Layer	Capital Investment	Facilities	ESnet	TeraGrid	I-WIRE
Embedded Services (Middleware, video conf, instrumentation, etc.)	Servers	Site space/power	Some in house	Some in house	
IP Network Services	IP Routers	Site space/power	All in house	All in house	Some in house
Wavelength Services	DWDM, Optical Amplifiers	Hut space/power	Contracted Services	Contracted Assets	All in house
Dark Fiber	Fiber	Route maintenance			Purchased Assets

# Moving Forward

- What types of network and middleware services are required to support DOE science, including projects from all of the MICS program areas
- What business models are available
- What are the trade-offs between them
- Cannot be done on a piecewise basis
  - The sum of costs for buying layer n and providing layer n+1 in-house may be greater than buying layers n and N+1
  - Costs include money, attention (opportunity costs)
  - Move up? (begin providing more middleware services)
  - Move down? (begin providing fiber and wavelengths)
- DOE needs to do a serious evaluation of options available *today*, in the context of expected needs over the next five or more years.