

# Plataformas de computação paralela e distribuída

- Execução eficiente de aplicações intensivas em dados ou computação
- Tipos de ambientes:
  - **HPC** (High Performance Computing)
  - **HTC** (High Throughput Computing)
- Exs de apps **HPC**: meteorologia, processamento matemático em geral
- Exs de apps **HTC**: HEP, bioinformática, finanças etc.

# Tipos de plataformas

## Tipos de Plataformas de Computación

NQE

### Alternativas Centralizadas



Servidores SMP



High speed networks  
Servidores MPP

IBM sp2,  
SGI Origin 2000  
Beowulf clusters

### Alternativas Distribuidas



Clusters dedicados



Clusters no dedicados

PBS

Condor

More:  
•Instruments  
•BDs

# Primeiro pequeno trabalho

- Pesquisa breve sobre RMS (Resource Management Systems)
- Baixar e instalar na sua máquina um gerenciador de recursos (e.g. condor, openpbs, sge)
- Submeter alguns programas sequenciais
- Submeter algum programa que utilize MPI
- **Apresentação: 26 de Fevereiro**

# History and Evolution of Grids

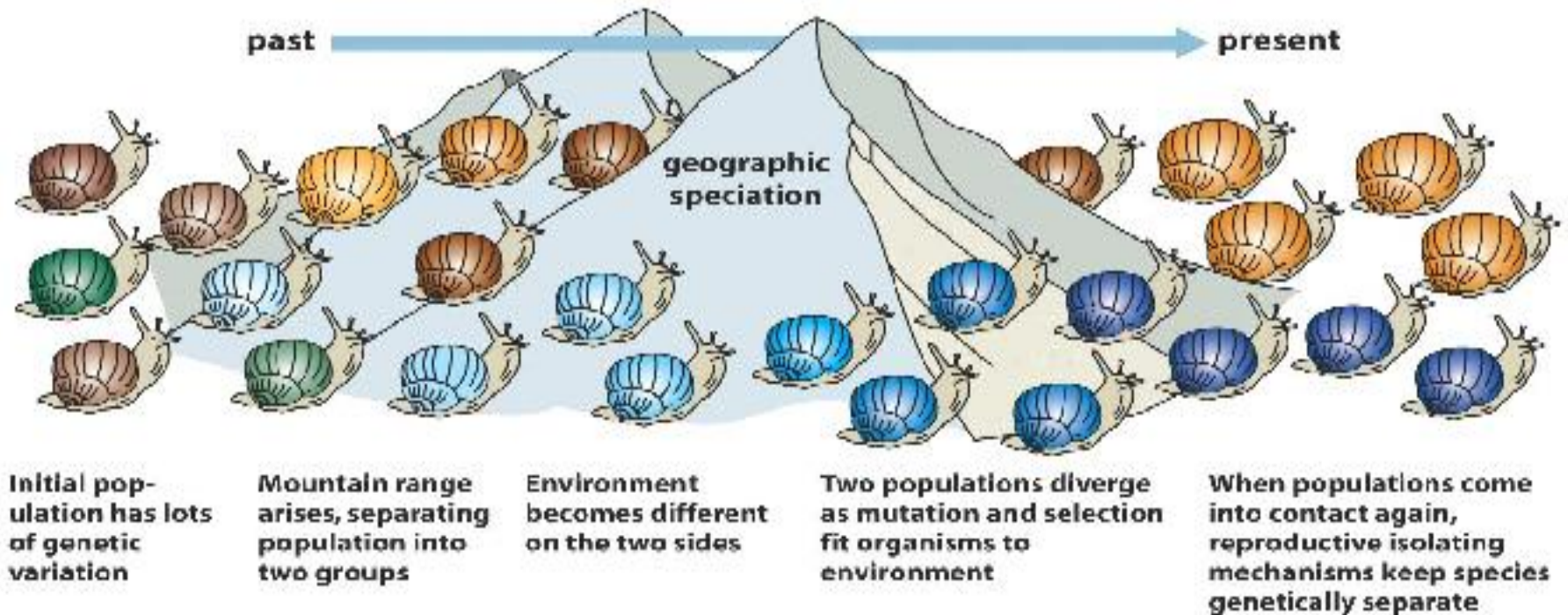


Figure 5-14 Biology Today, 3/e (© 2004 Garland Science)

# History and Evolution of Grid

- **Early to mid 90s**: numerous research projects on distributed computing
- **1992** (Smarr and Catlett): **metasystem**
  - a transparent network that will increase the computational and information resources available to an application
- **1993**, Legion (Univ of Virginia)
  - Comercial system became AVAKI Sep 2001

# History and Evolution of Grid

- 1995, I-Way
  - IEEE/ACM 1995 Super Computing (San Diego), 11 high speed networks used to connect 17 sites to create one super **meta-computer**
  - Foster, Nature, 12/2002
- 1996, Globus project started (ANL & USC)
  - Followed I-Way
- 1997, Unicore (Germany)

# History and Evolution of Grid

- **2002**, Open Grid Services Architecture (OGSA) was first announced during the Grid Global Forum (now Open Grid Forum)
- **July 2003**: first release of the Globus Toolkit using a service-oriented approach based on OGSA
  - Open Grid Service Infrastructure (OGSI)
- **Jan 2004**: WS-Resource Framework (WS-RF)
- **April 2005**: Globus Toolkit version 4

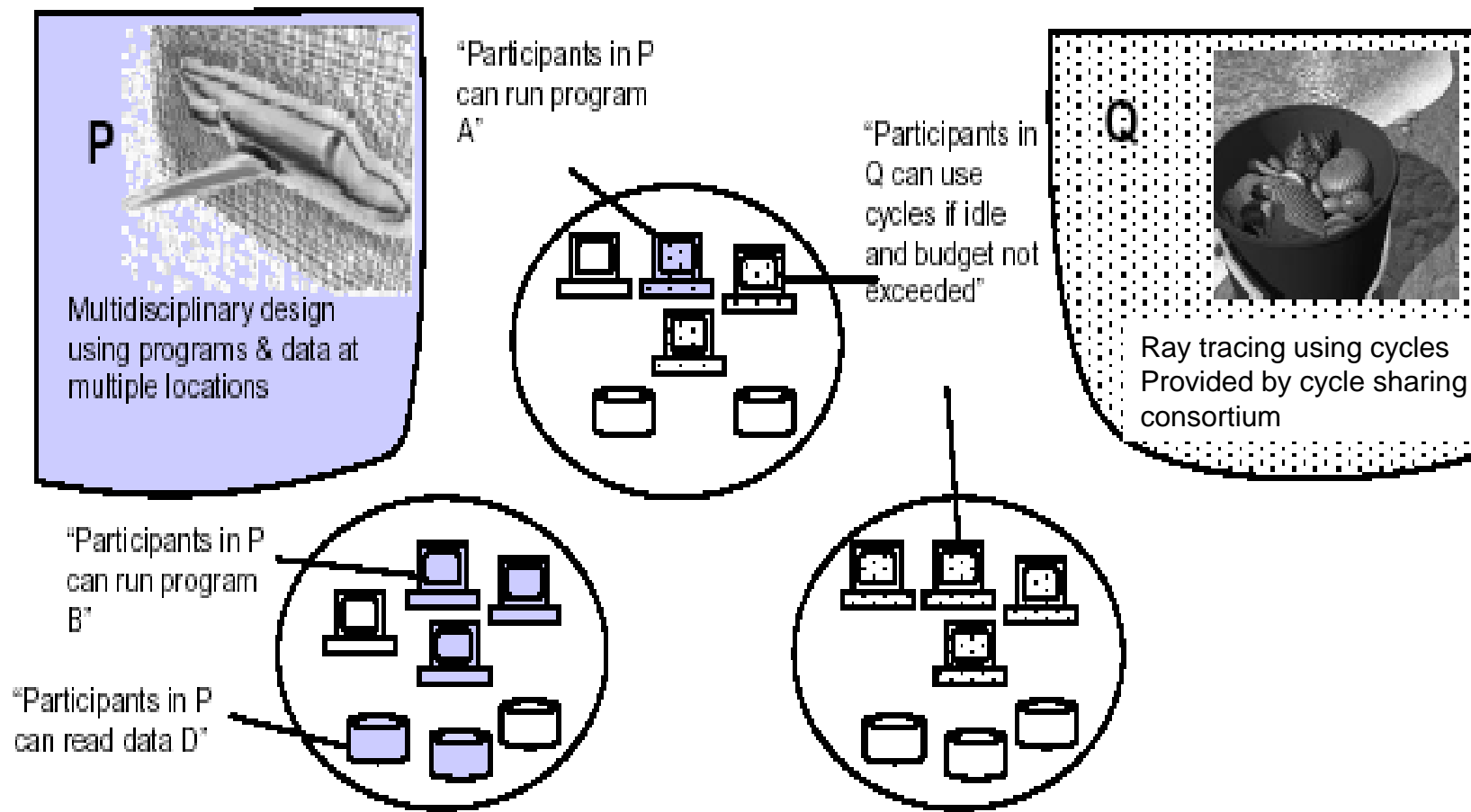
# History and Evolution of Grid

- 2000-2006: The Grid Global Forum
- 2006-: Open Grid Forum



# History and Evolution of Grid

## The Emergence of Virtual Organisations (VO)



Source: "The Anatomy of the Grid", Foster, Kesselman, Tuecke, 2001

# History and Evolution of Grid

## The Emergence of Virtual Organisations (VO)

“A **virtual organization** (or company) is one whose members are geographically apart, usually working by computer e-mail and groupware while appearing to others to be a **single, unified organization with a real physical location.**”

(source: whatis.com)

# History and Evolution of Grid

## The Emergence of Virtual Organisations (VO)

- Sharing resources:
  - The degree of service availability – which resources will be shared
  - The authorization of the shared resource – who will be permitted
  - The type of the relationship - Peer to peer
  - A mechanism to understand the nature of the relationship
  - The possible ways the resource will be used (memory, computing power, etc.)