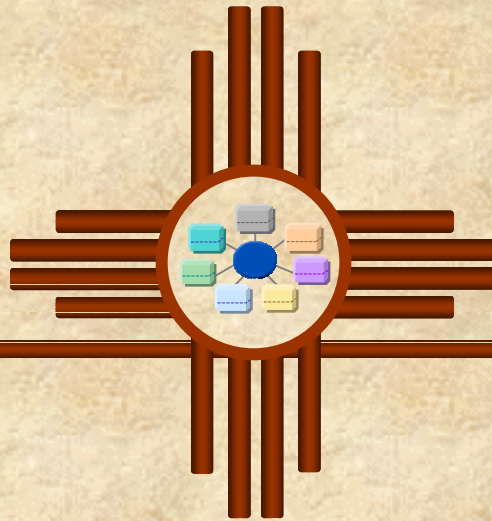


Storage Resource Broker

Data Grids, Digital Libraries, and
Persistent Archives



*20th IEEE / 11th NASA Goddard Conference on Mass
Storage Systems and Technologies*

Reagan W. Moore
San Diego Supercomputer Center



Object Storage Systems

- **Data Grids**
 - ◆ Data sharing
- **Digital Libraries**
 - ◆ Data publication
- **Persistent Archives**
 - ◆ Data preservation

- **Storage Resource Broker** integrates all three data management environments



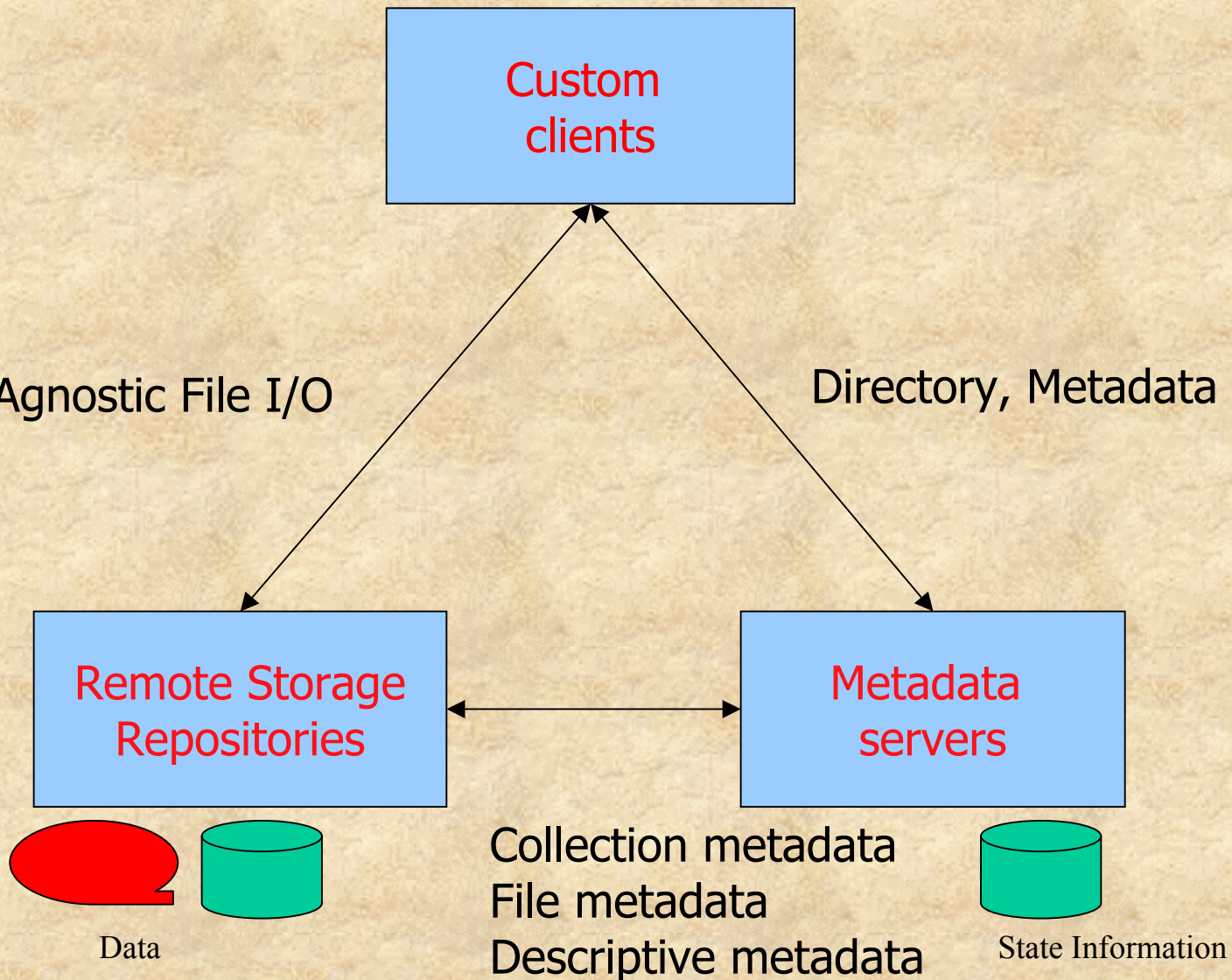
SRB Object-based Storage

- Reference digital entity by a **logical name**
 - ◆ Map from logical name to physical name
- Assign **state information** to the logical name
 - ◆ Location
 - ◆ Access controls
 - ◆ Encryption
 - ◆ Descriptive metadata
- Provide **collection hierarchy** for organizing the logical name space
- Support **remote proxies** for the manipulation of digital entities directly at the remote storage repository

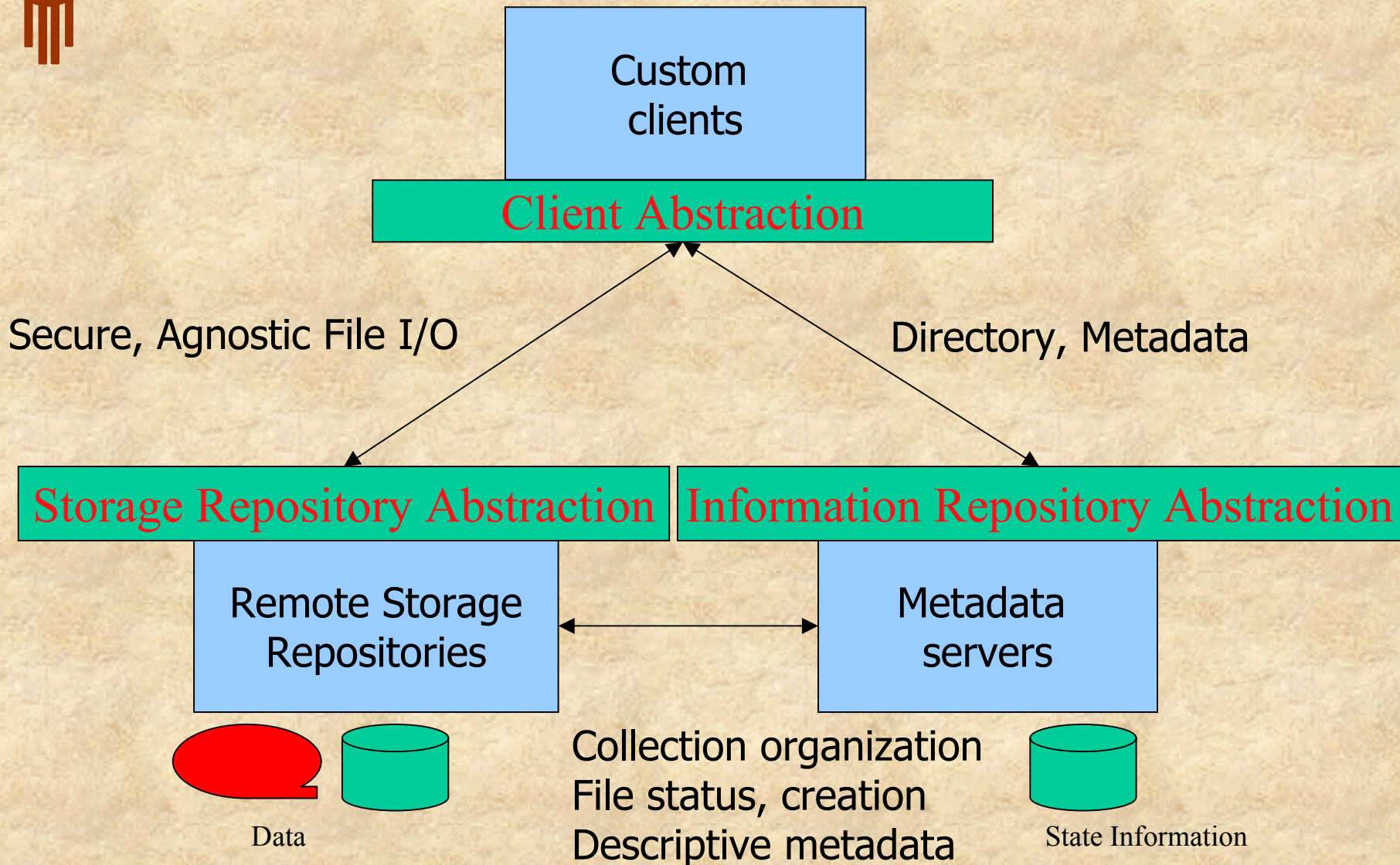
Data Grid Approach

Secure, Agnostic File I/O

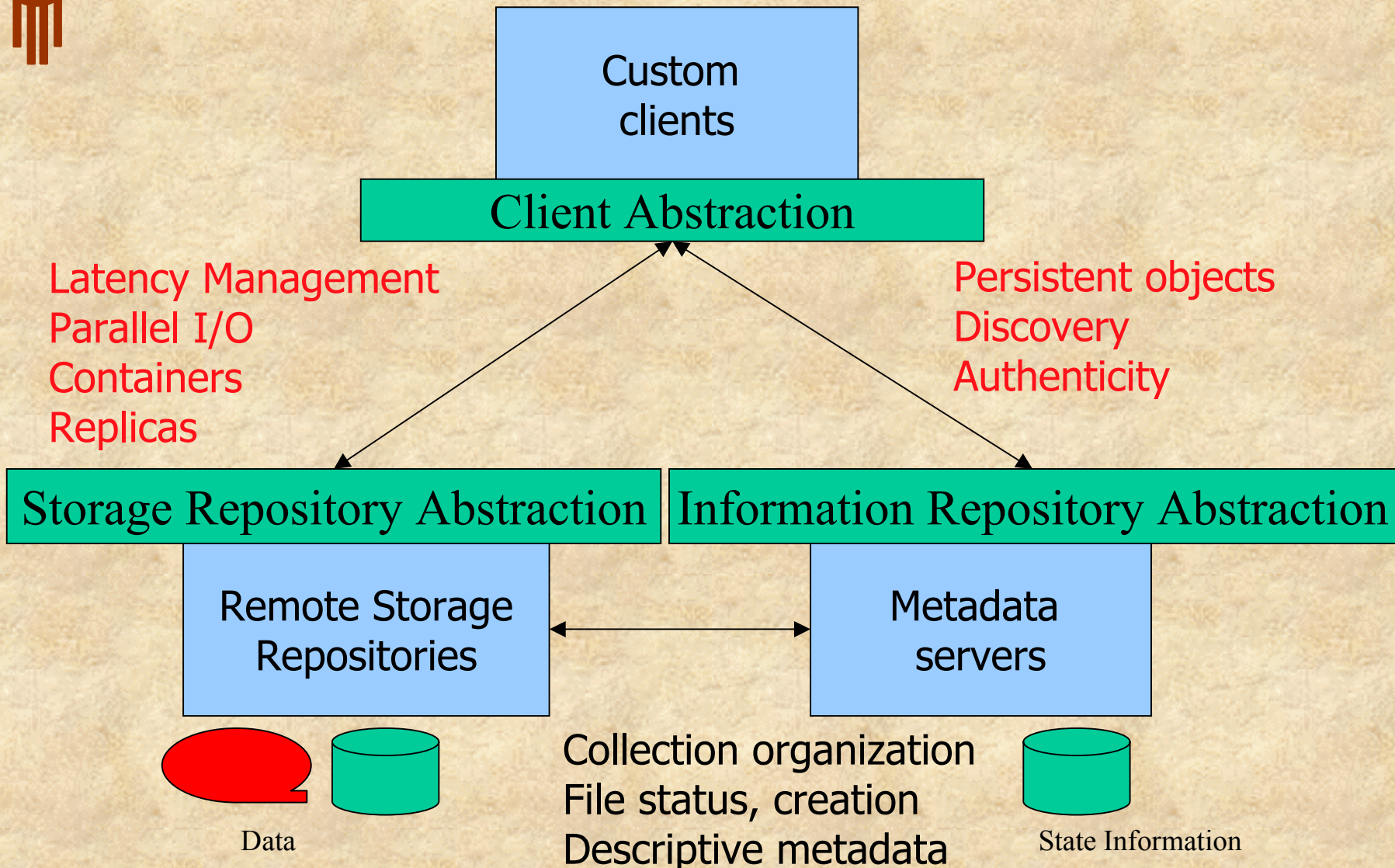
Directory, Metadata



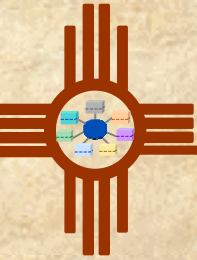
Data Grid Approach



Data Grid Approach



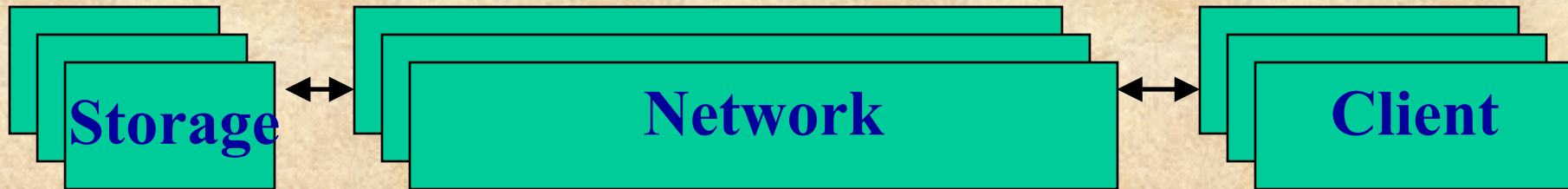
SRB Latency Management



Remote Proxies,
Staging

Data Aggregation
Containers

Prefetch



Replication
Server-initiated I/O

Streaming
Parallel I/O

Caching
Client-initiated I/O

Storage Resource Broker

Application

C, C++, Libraries	Linux I/O	Unix Shell	Java, NT Browsers	DLL / Python	GridFTP	OAI WSDL
------------------------------	----------------------	-----------------------	------------------------------	-------------------------	----------------	---------------------

Access
APIs

Consistency Management / Authorization-Authentication

Logical Name Space	Metadata Transport	Data Transport	Latency Management
-------------------------------	-------------------------------	---------------------------	-------------------------------

Prime
Server

Catalog Abstraction

Storage Abstraction

Databases DB2, Oracle, Sybase, SQLServer, Postgres	Archives HPSS, ADSM, UniTree, DMF	HRM	File Systems Unix, NT, Mac OSX	Databases DB2, Oracle, Postgres
---	--	------------	---	--

Servers



For More Information



Reagan W. Moore
San Diego Supercomputer Center

moore@sdsc.edu

<http://www.npaci.edu/DICE>

<http://www.npaci.edu/DICE/SRB/index.html>

<http://www.npaci.edu/dice/srb/mySRB/mySRB.html>