

"MxN" Parallel Data Redistribution

Enabling Model Coupling of Component-Based Parallel Scientific Simulations

(Pronounced "M by N"! ☺)

Create Complex Scientific Simulations by
Coupling Together Multiple Parallel Components

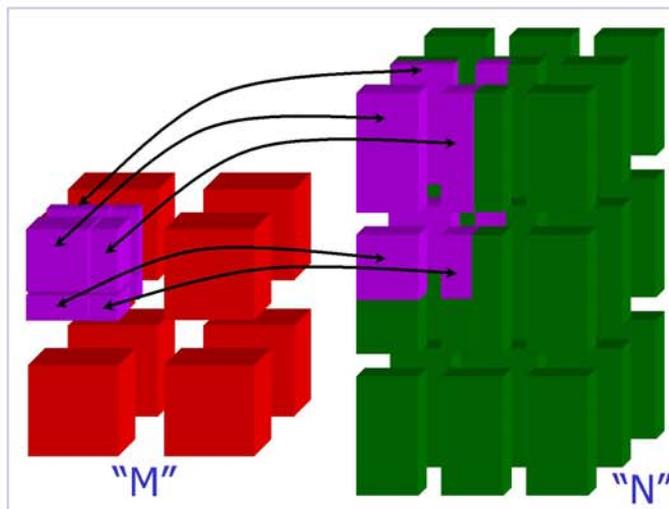
New "MxN" Interface & Prototypes

PAWS
PARALLEL
APPLICATION
WORK
SPACE



Generalizes CUMULVS & PAWS

→ Fundamental operations for
any parallel data coupler

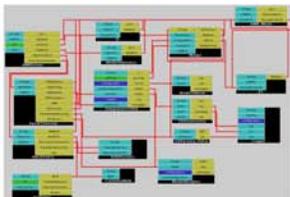


MxN Capabilities:

- Application / Data Discovery
- Communication Schedules
- Dynamic Connections
- Parallel Synchronization
- One-Shot & Periodic Transfers
 - Automated Handling
 - Between Frameworks
 - Self Connections

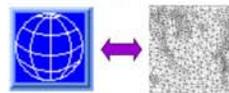
SC2001 Demonstrations:

→ "Mx1" for Visualization



Future Research Challenges:

- Spatial & Temporal Interpolation
- Flux Conservation
- Unit Conversion



Work has begun to integrate the
Climate community's
"Model Coupling Toolkit" (MCT)
with the MxN interfaces...

<http://www.csm.ornl.gov/cca/mxn/>