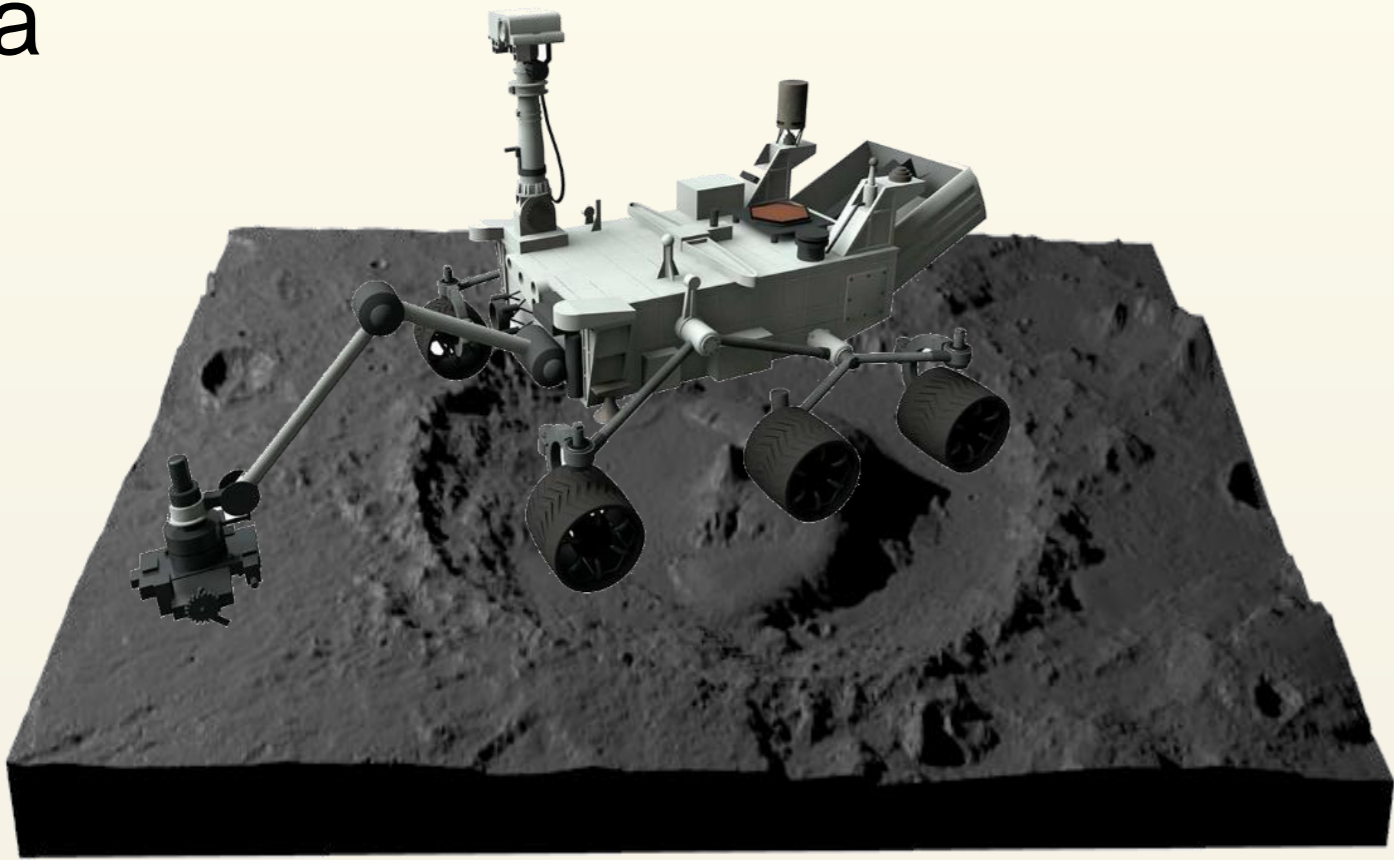


User input ↓

## 3D Visualization and Analysis

- Realtime interactive visualization
- Complete capturing of simulation data

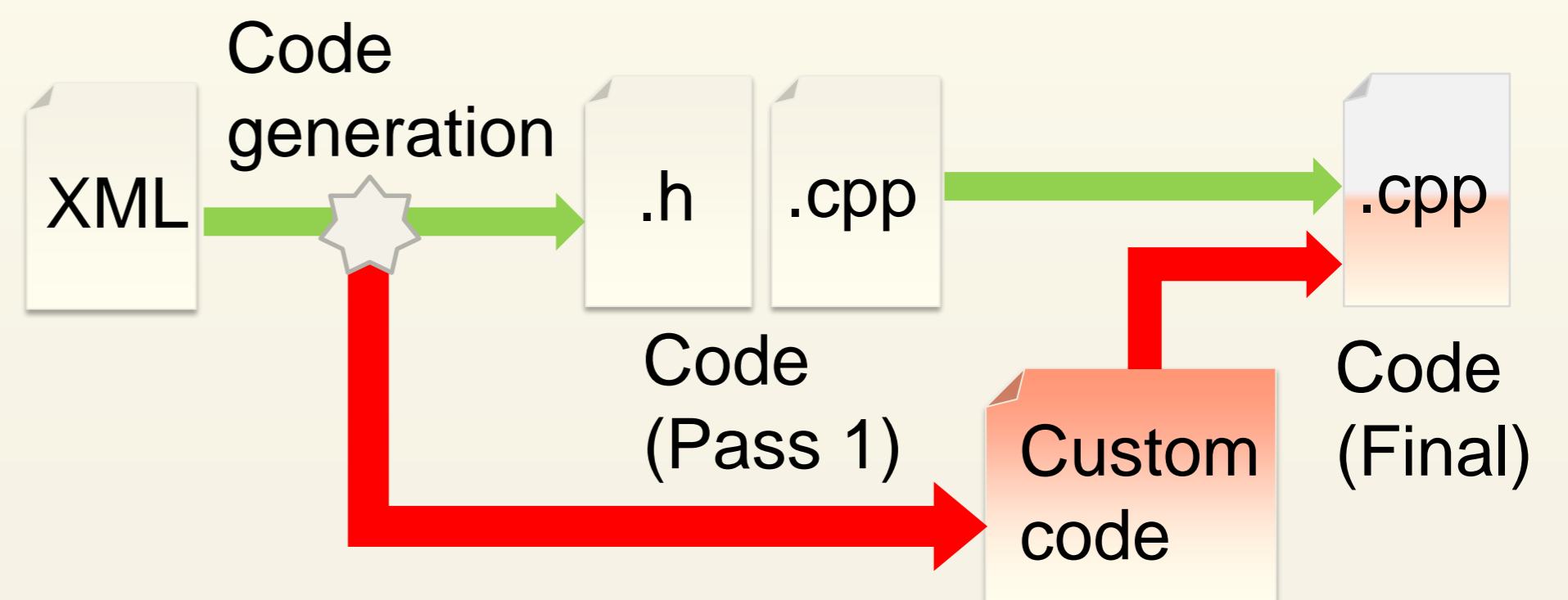


Simulation state ↔

XML definition ↓

## Template-Based Code Generation

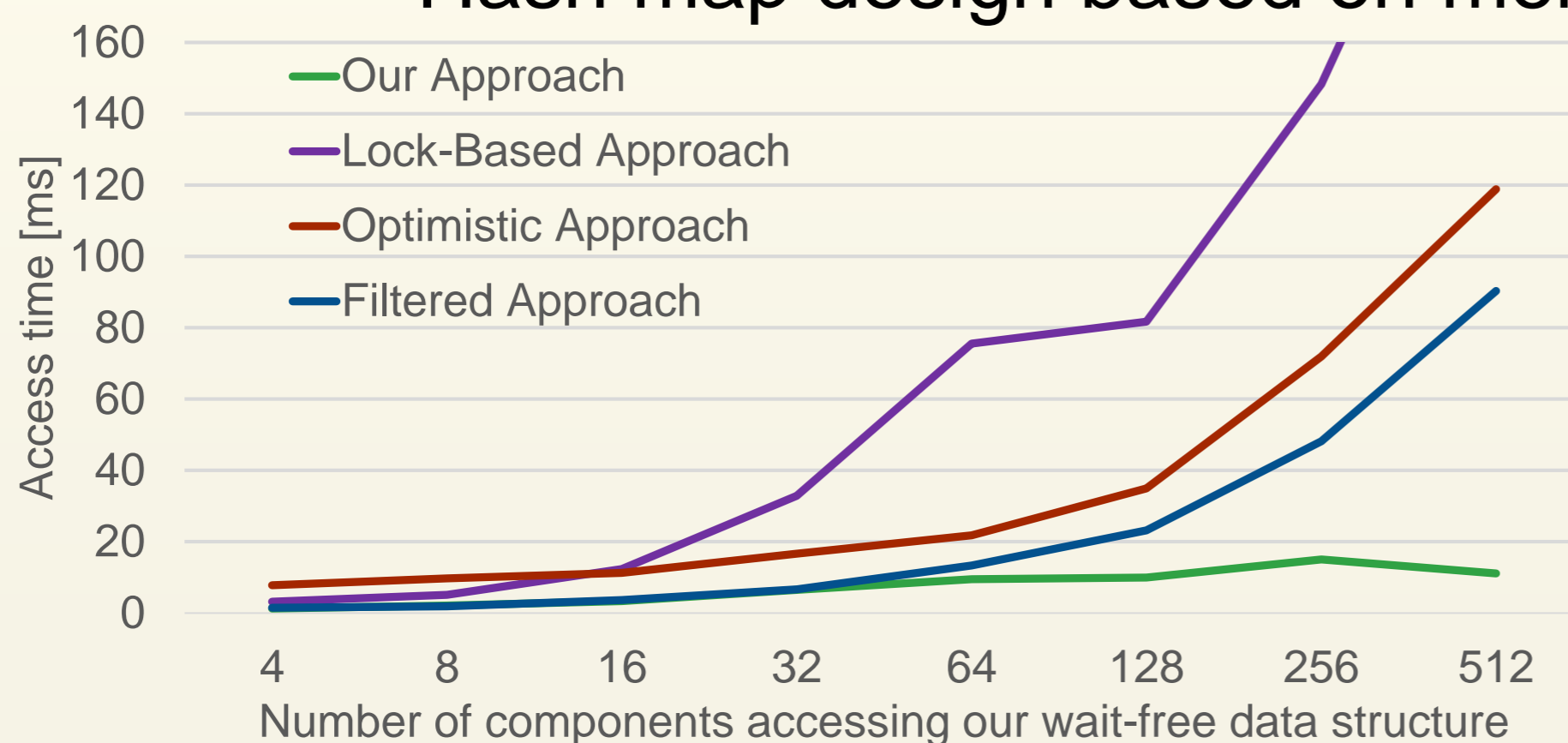
- Automatic generation of dataflow and workflow for simulation and optimization
- Complete system verification



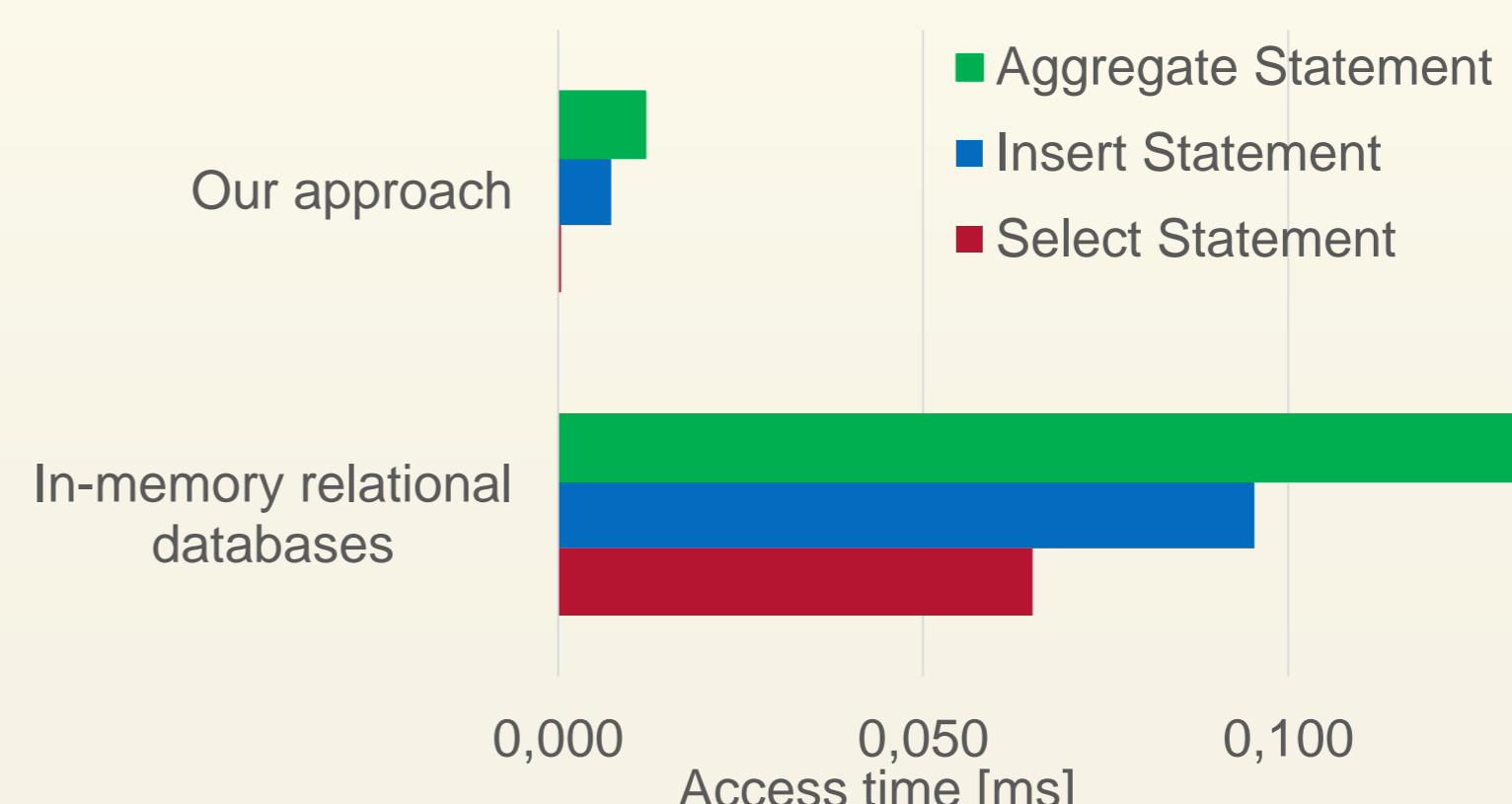
Workflow & dataflow definition ↓

## Massively Parallel Simulation via Wait-Free Data Management

- Non-locking read and write operations
- Supports relational database queries
- Hash map design based on memory cloning and atomic operations



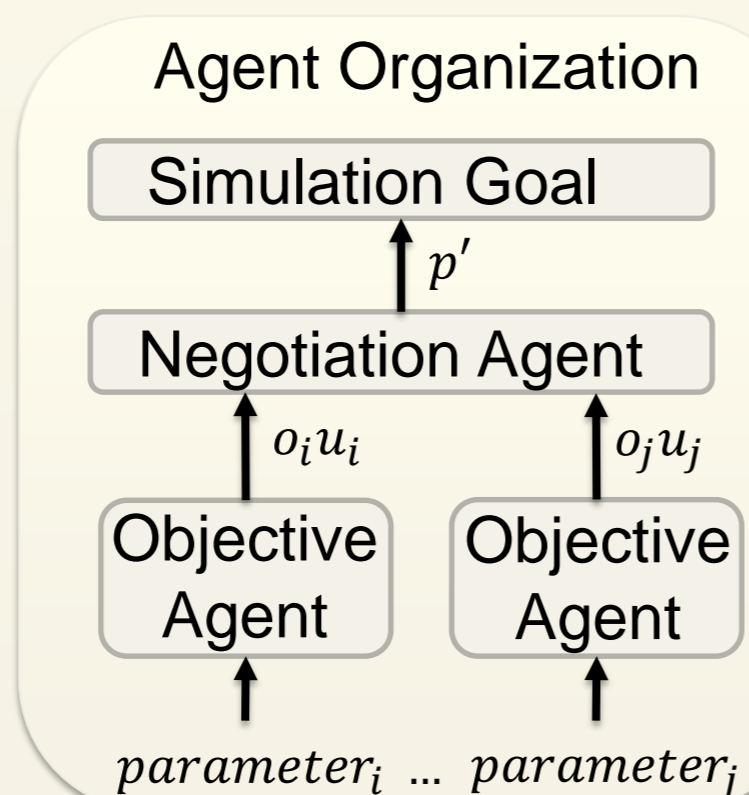
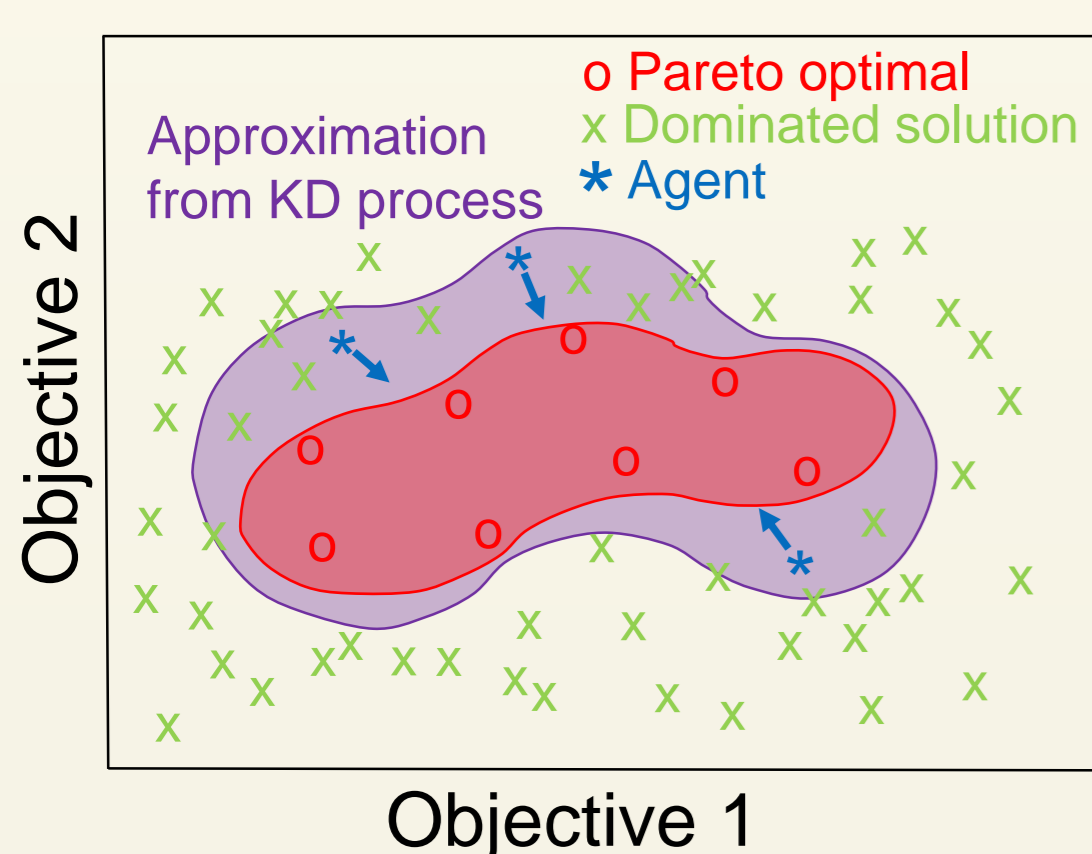
Simulation state ↔



Parameters ↓ Simulation goals ↓

## Massively Parallel Optimization

- Massively parallel multi-agent system optimizes all goals in parallel
- Fast agent communication via wait-free data exchange
- Adaptive parameter adjustment prioritization



Feasible design space approximation

## Knowledge Discovery for Blackbox Simulations

- Discovers hidden relationships between parameters in simulation workflow
- Reduces simulation samples via splines
- Approximates feasible design space

