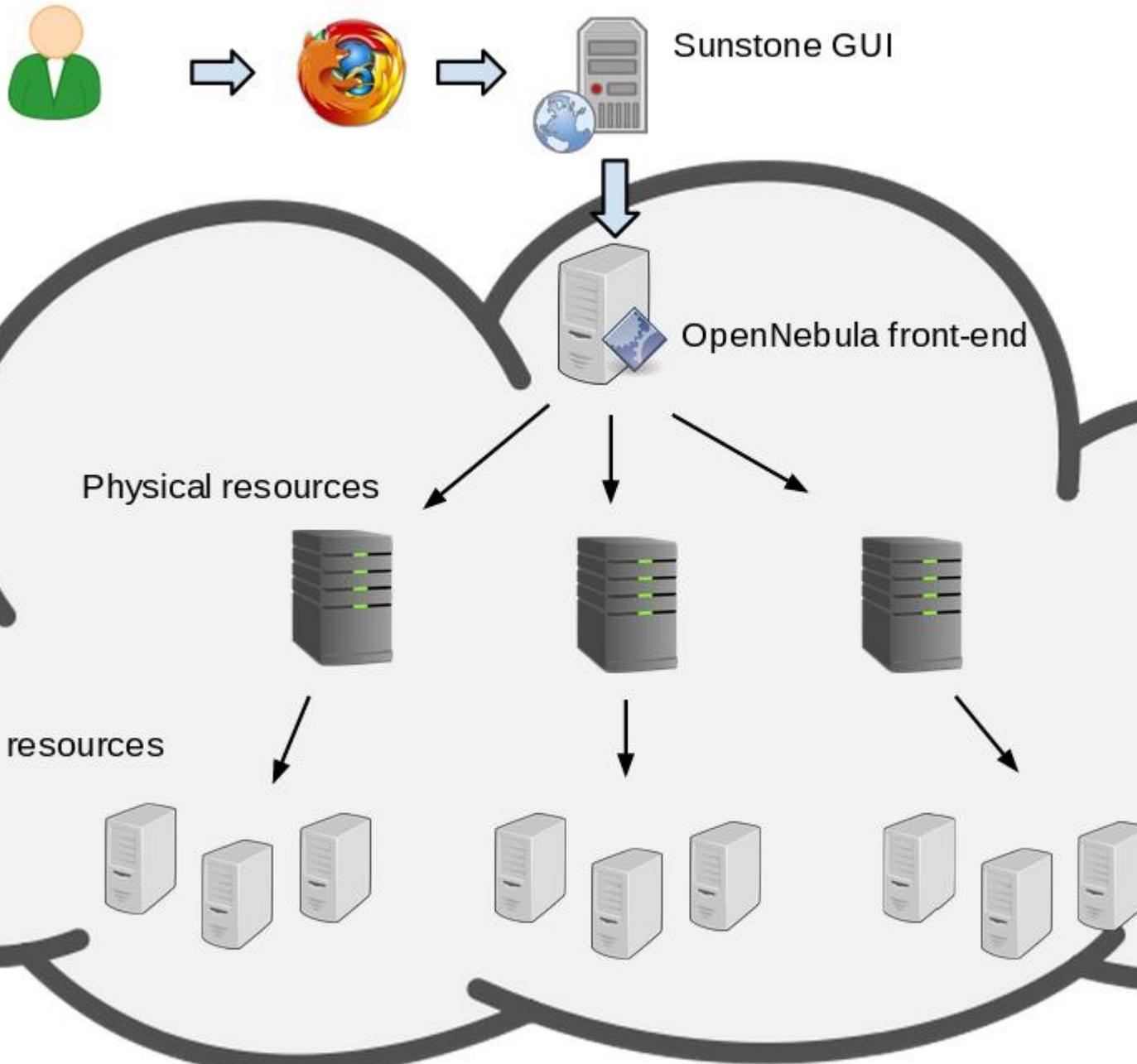


Optimization of Over-provisioned Clouds

N. Balashov, JINR, LIT

JINR Cloud structure



Activities

- **Developers**
 - development, testing and debugging various apps in various environments.
- **System administrators**
 - testing and studying specifics of installation and operation of new apps or testing updates
- **Users**
 - Physicists – major workload source

As much as possible strategy

Resources utilization

Virtual Machines

83

TOTAL

78

ACTIVE

0

PENDING

1

FAILED

ALLOCATED CPU



ALLOCATED MEMORY



REAL CPU



REAL MEMORY



Can we optimize?

Resource Overcommitment



Hosts view

Capacity



Host 1

Host 2

Capacity



Overcommitment

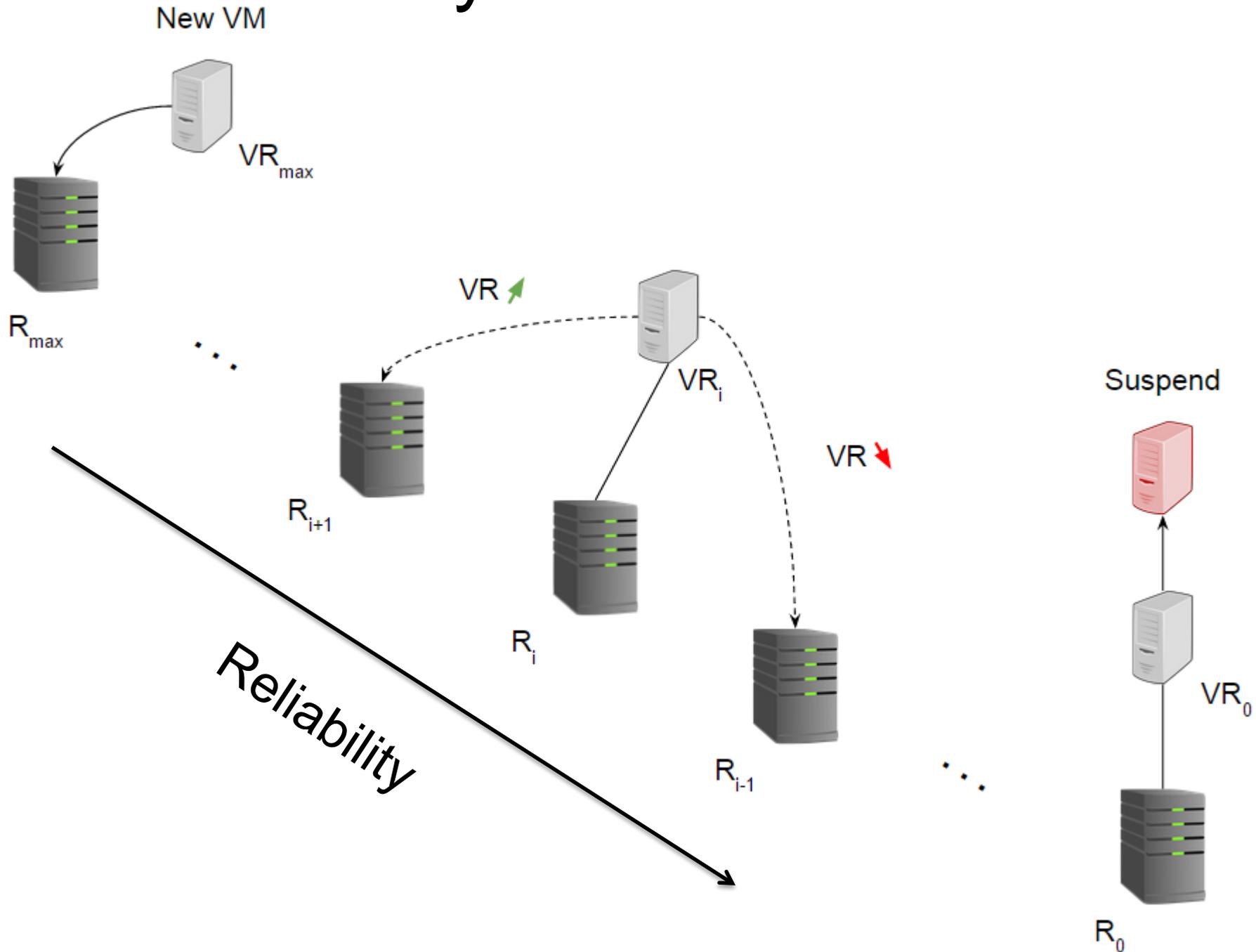


Increases resource utilization efficiency

Reduces reliability



Dynamic VM re-allocation



Alternative Solutions

- OpenStack Neat
- Green Cloud Scheduler for OpenNebula

Goal: minimize power consumption

Work and plans

- Gathering historical data
- Interactive cloud model
- Hosts and VMs ranking criteria
- Live-migration possibility
- Safe VM consolidation thresholds

Thanks for your attention!