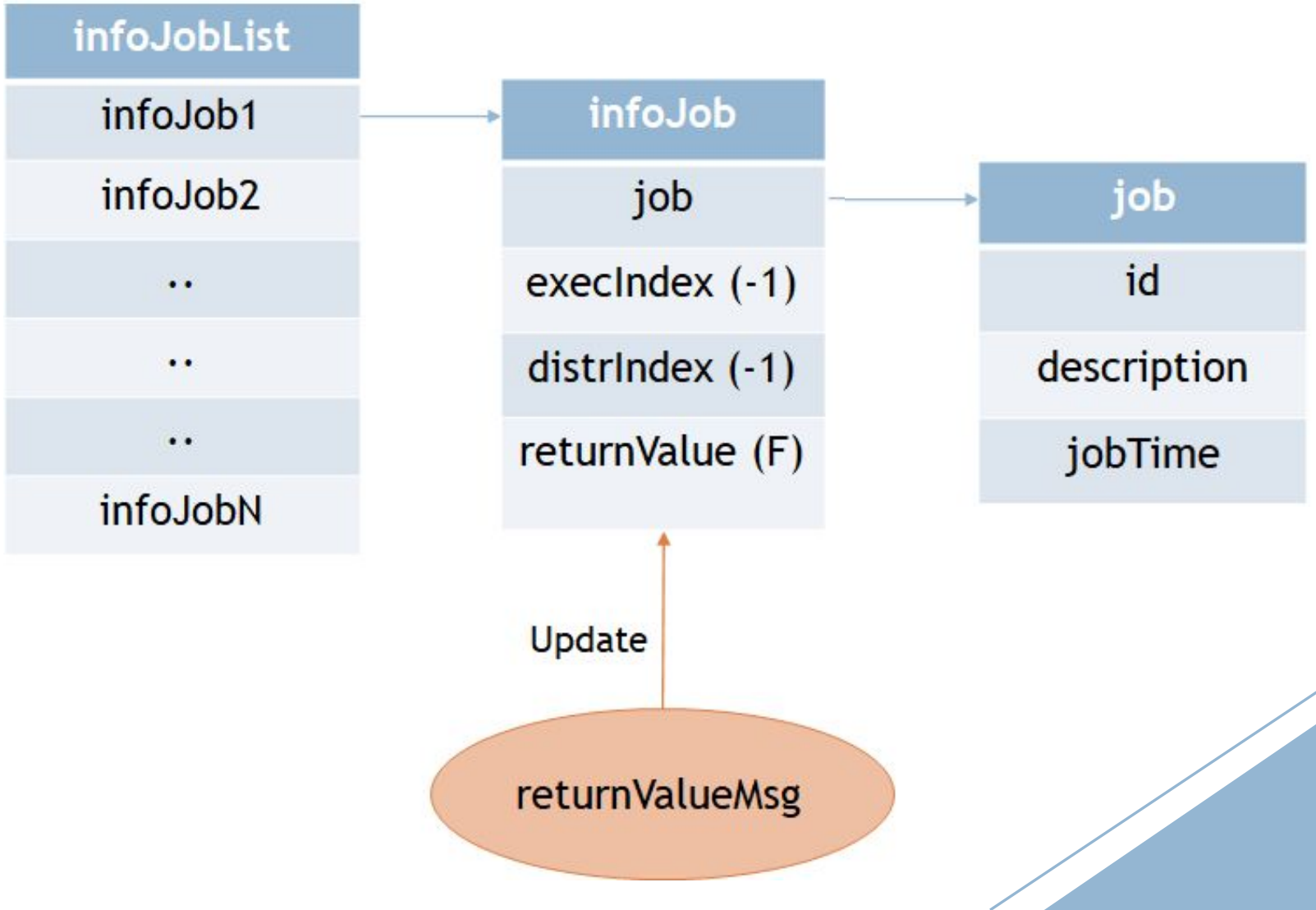
Distributed System Project:
Distributed Job Scheduling

Casali Alice
Meta Samuele
Metaj Stiven

Outline

1. Data Structures
2. Message Dynamics
3. Simulation
4. Results

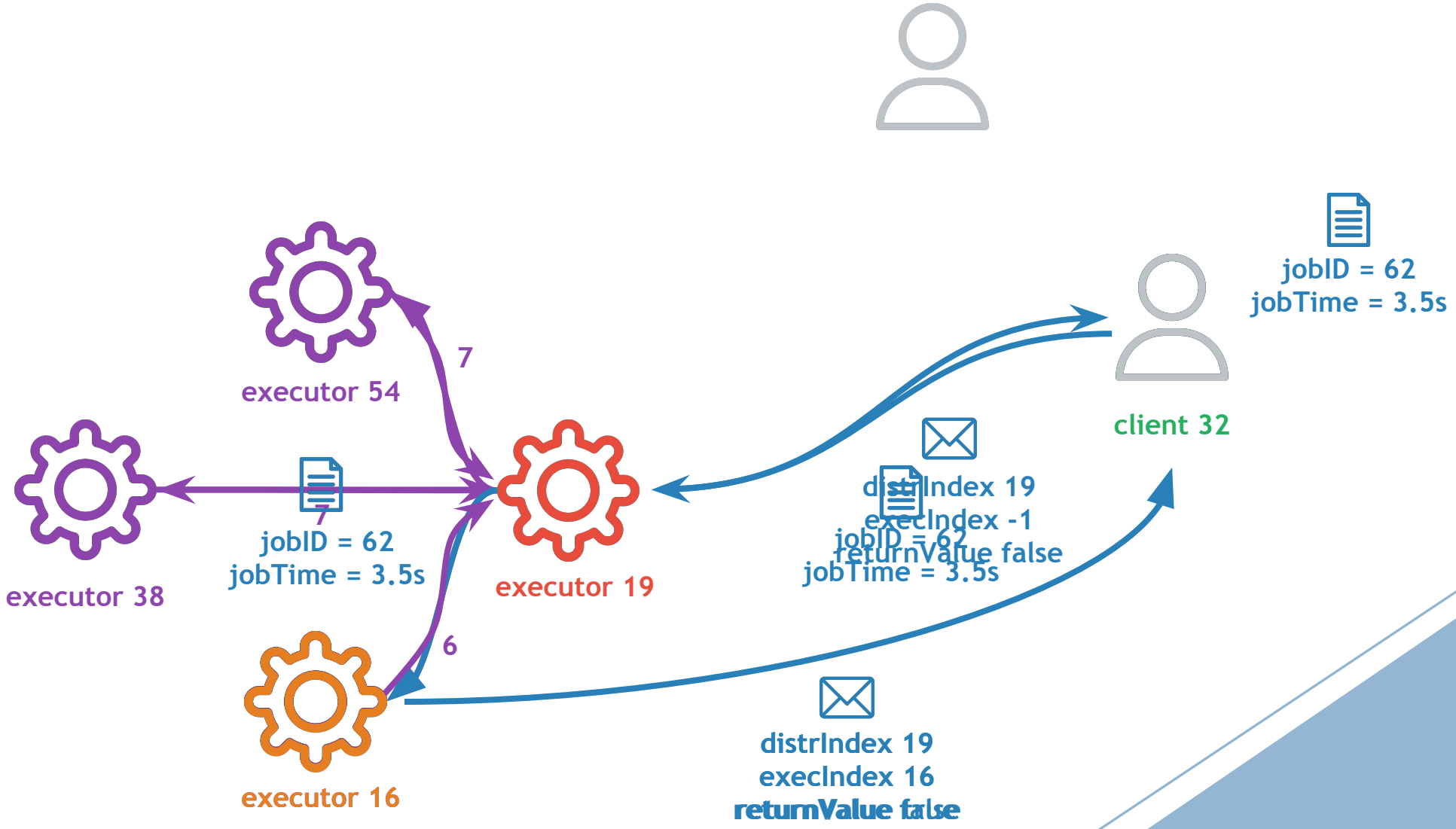
Data Structures - Client



Data Structures - Executor

- WaitingList
  - Waiting queue of jobs to be distributed in order to avoid conflicts
- ToDoList
  - Once the job is distributed, it waits to be executed in this list
- DoneList
  - Stable storage of the executor to keep safe executed jobs
- InfoExec
  - Struct list used in phase of distribution to select the laziest executor

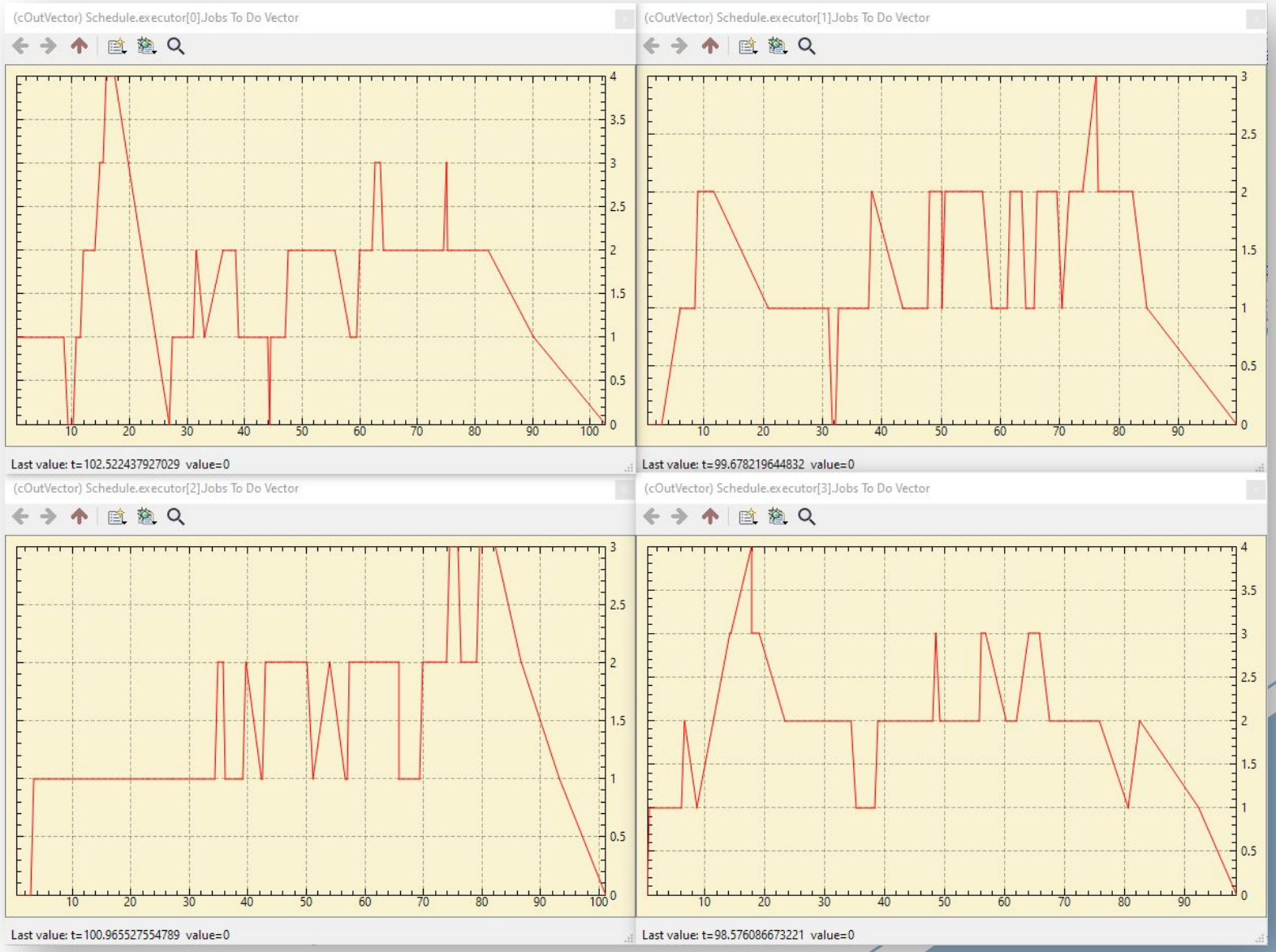
Simulation


executor 54
7
executor 38
7
jobID = 62
jobTime = 3.5s
executor 19
client 32
jobID = 62
jobTime = 3.5s
distrIndex 19
execIndex -1
jobID = 62
returnValue false
jobTime = 3.5s
6
executor 16
distrIndex 19
execIndex 16
returnValue false

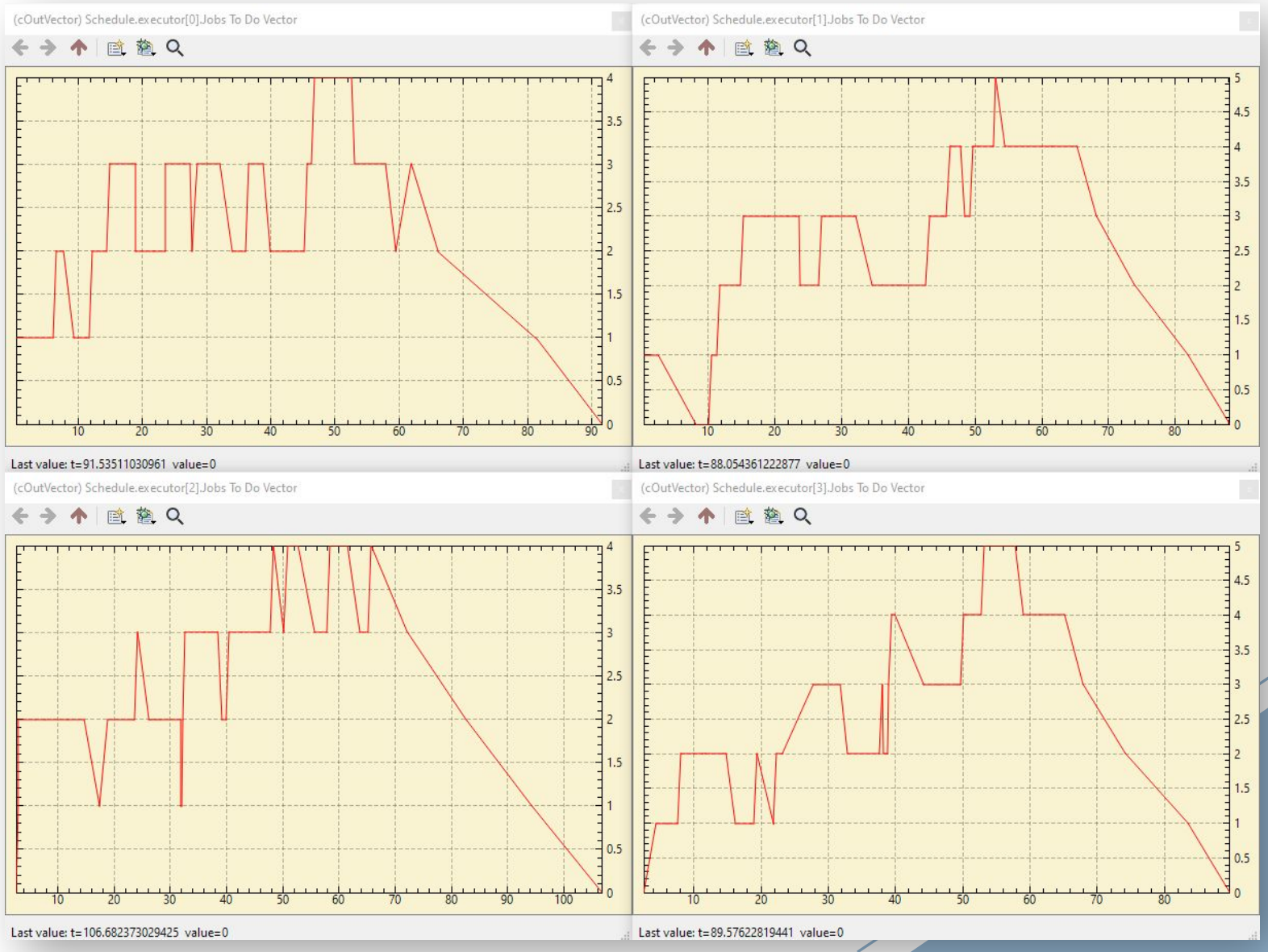
Simulation (on OMNeT++)

- HyperParameters
  - 2 Clients, 4 Executors, 20 Jobs for each Client
  - jobTime = uniform(5, 15) [seconds]
  - betweenJobs = uniform (0.5, 6) [seconds]
  - failureProbability = 0.70 % (0.00 % to see what happens without failures)

Results - With Failures



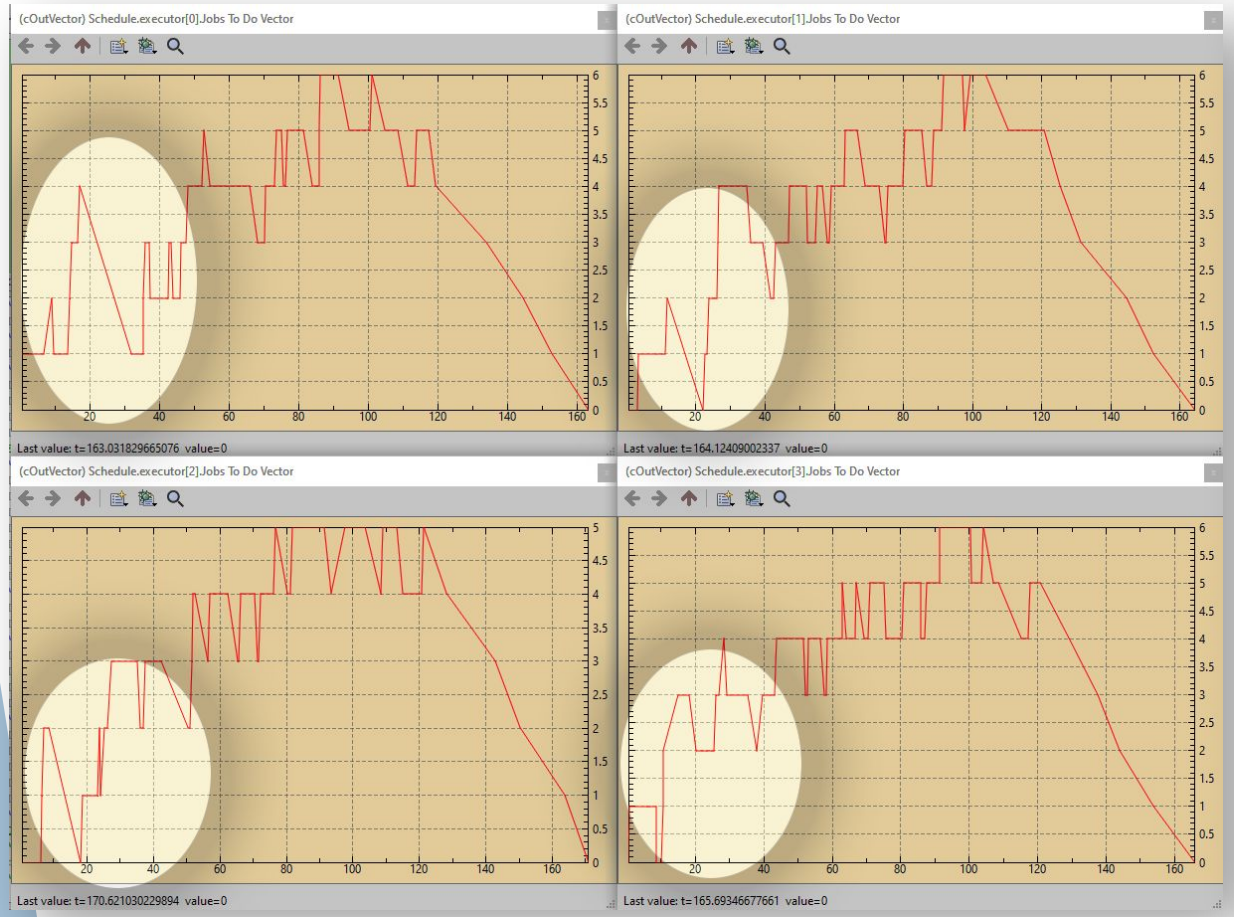
Results - Without Failures



Results - 30 Jobs Differences

Results - 30 Jobs Differences

With Failures



Without Failures