

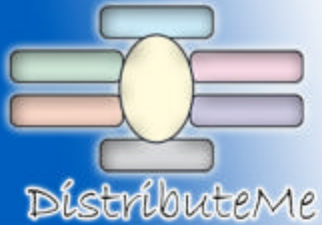
Chernihiv
State
Technological
University

Ukraine

DistributeMe

System for distributed applications development

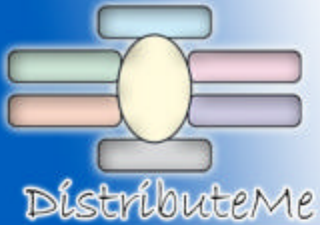
Yuriy Tkach
O. M. Skosyr
V. V. Bondarenko



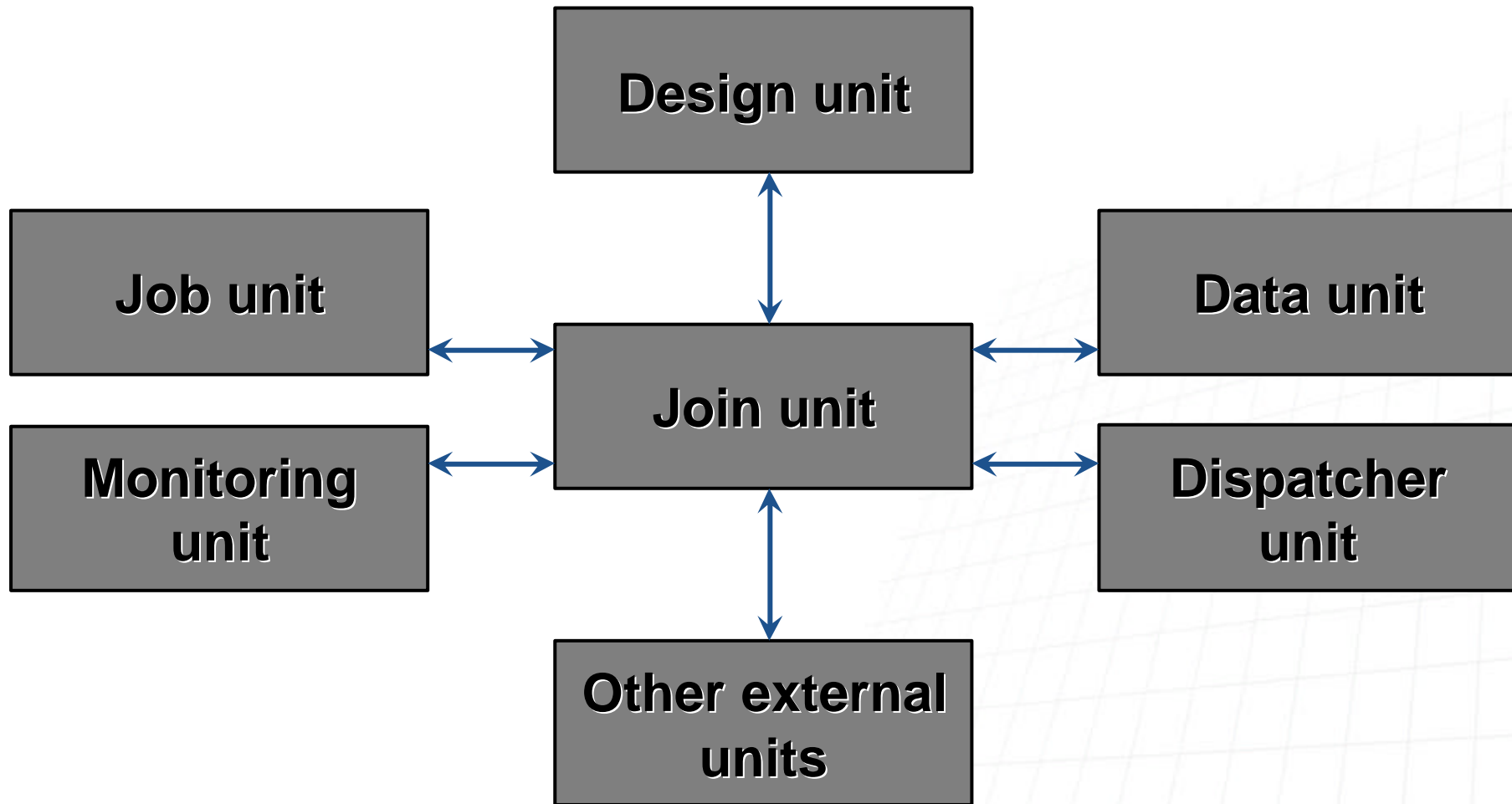
Motivations for system creation



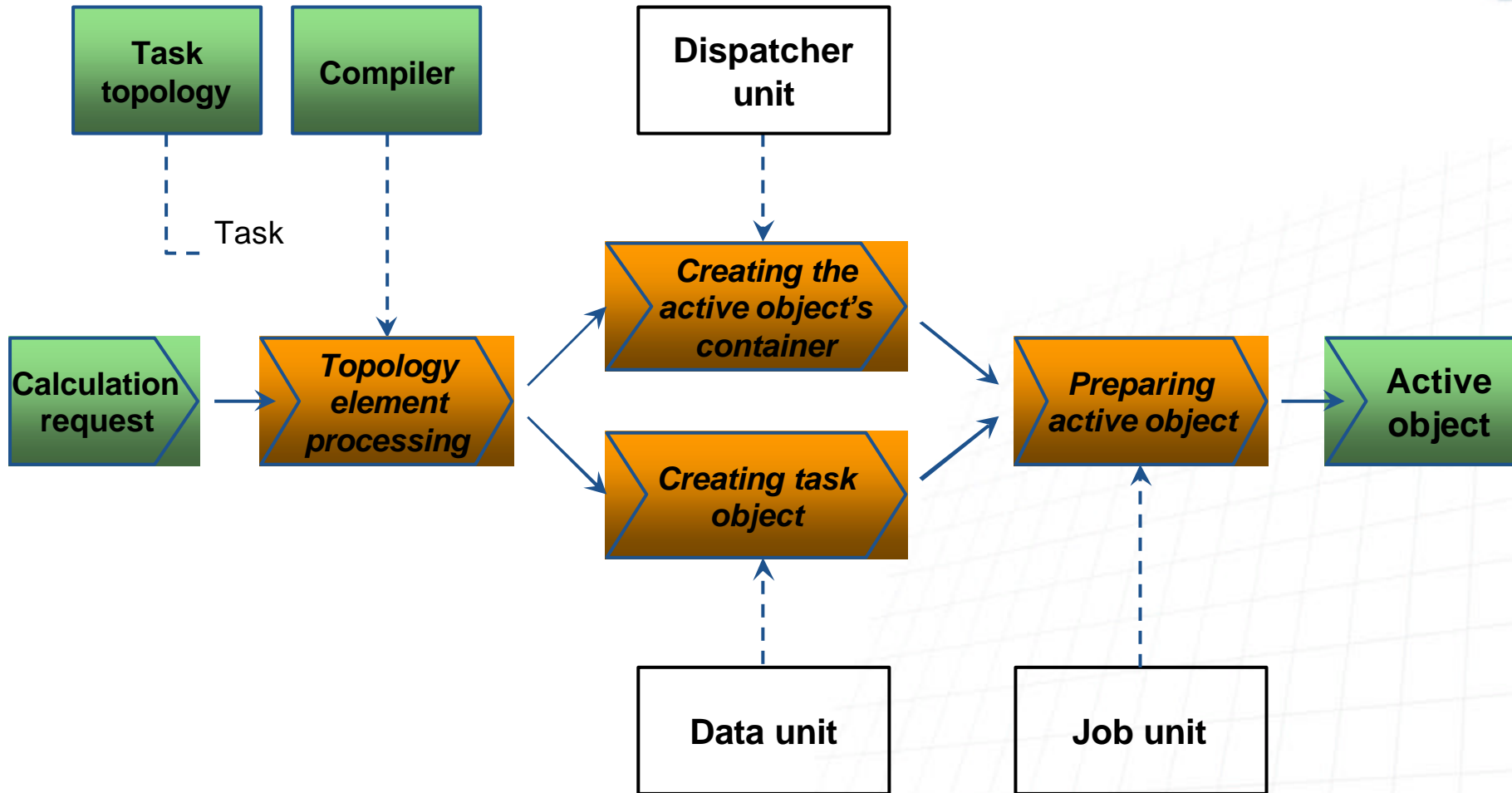
- Automatic changing of executing task on the working node
- Distributed storage of task data on the working nodes
- Using object model for definition of tasks and their parameters
- Altering granularity of task based on number of available working nodes
- Securing working node against harmful task actions



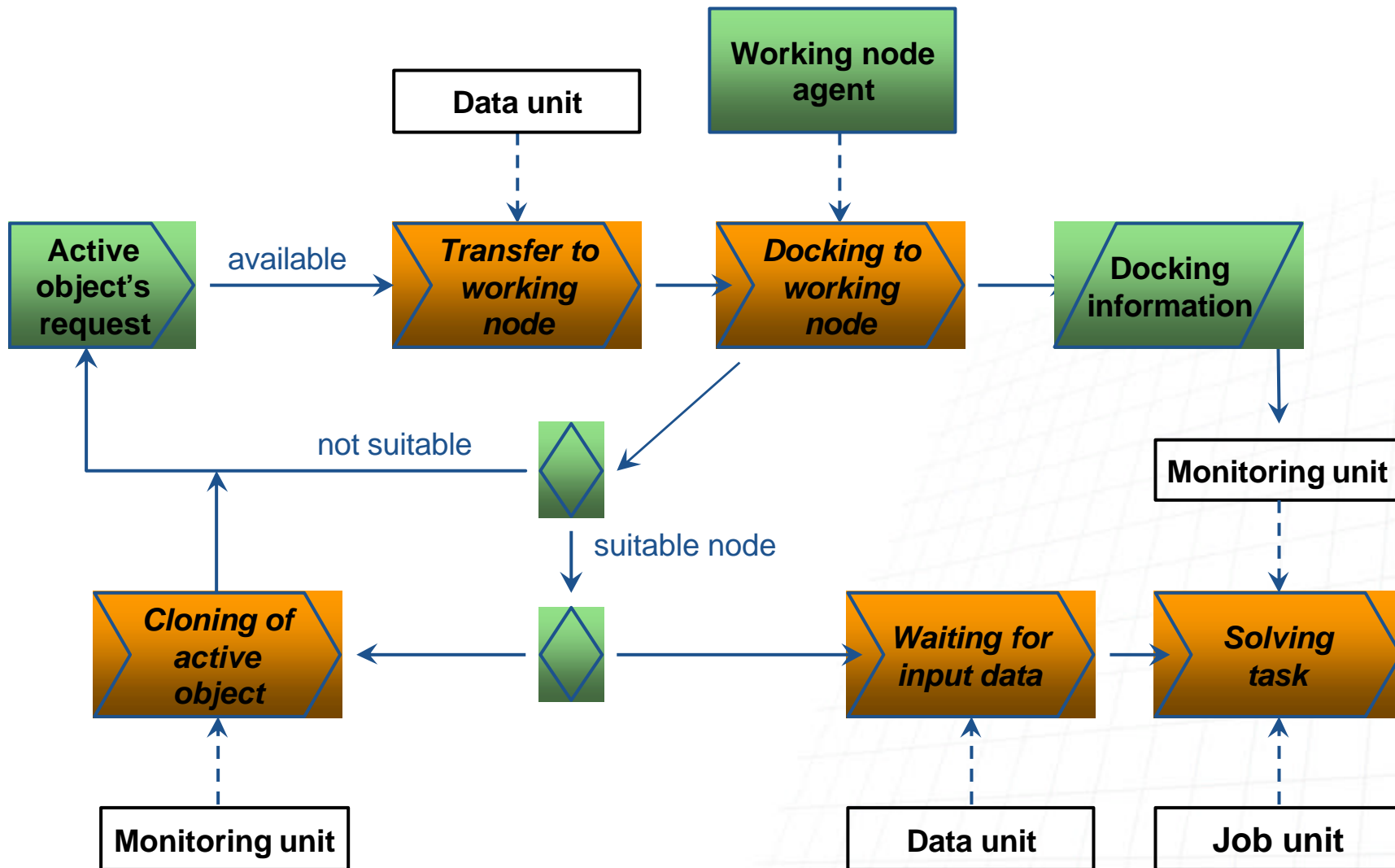
General system structure



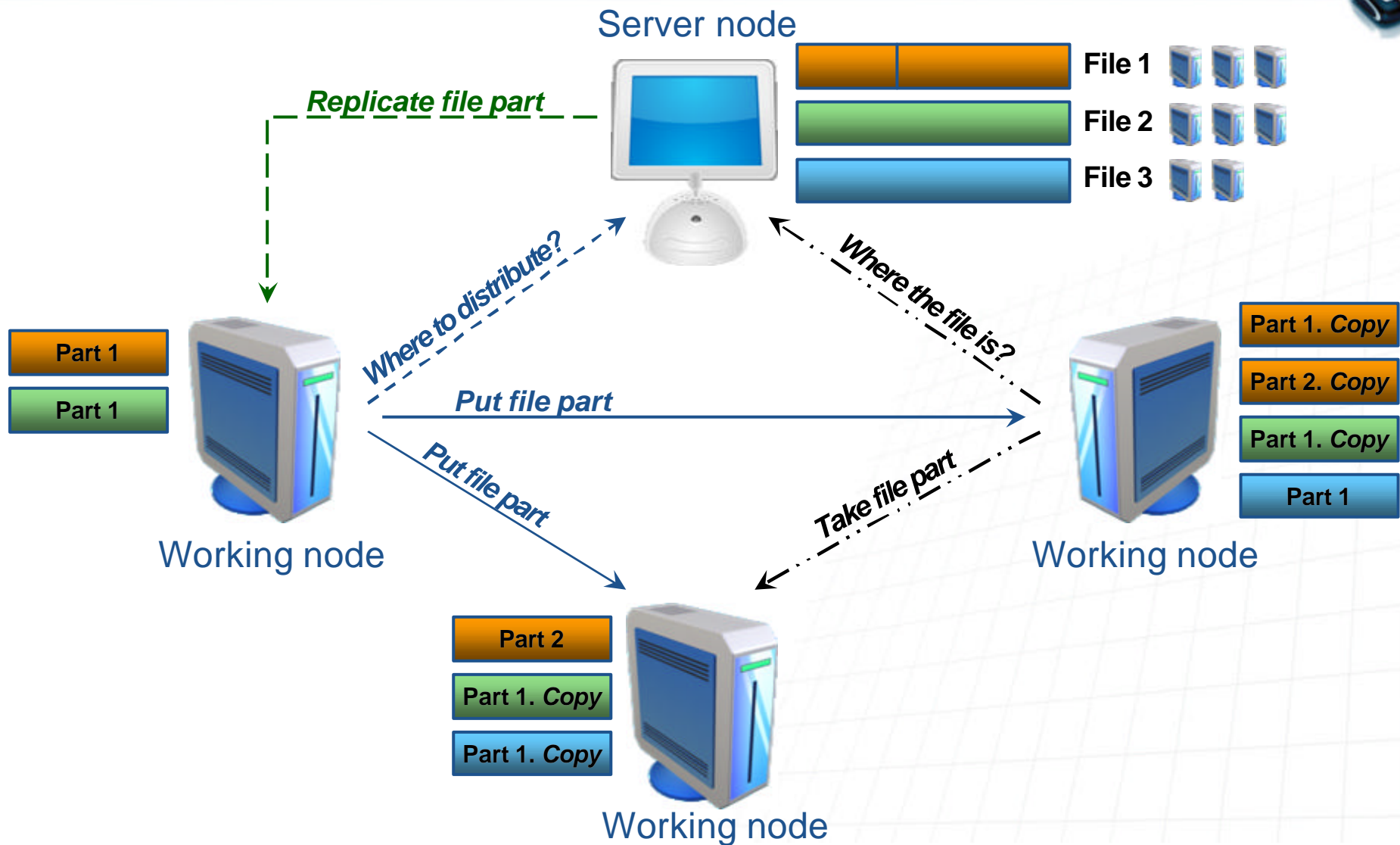
Task preparation



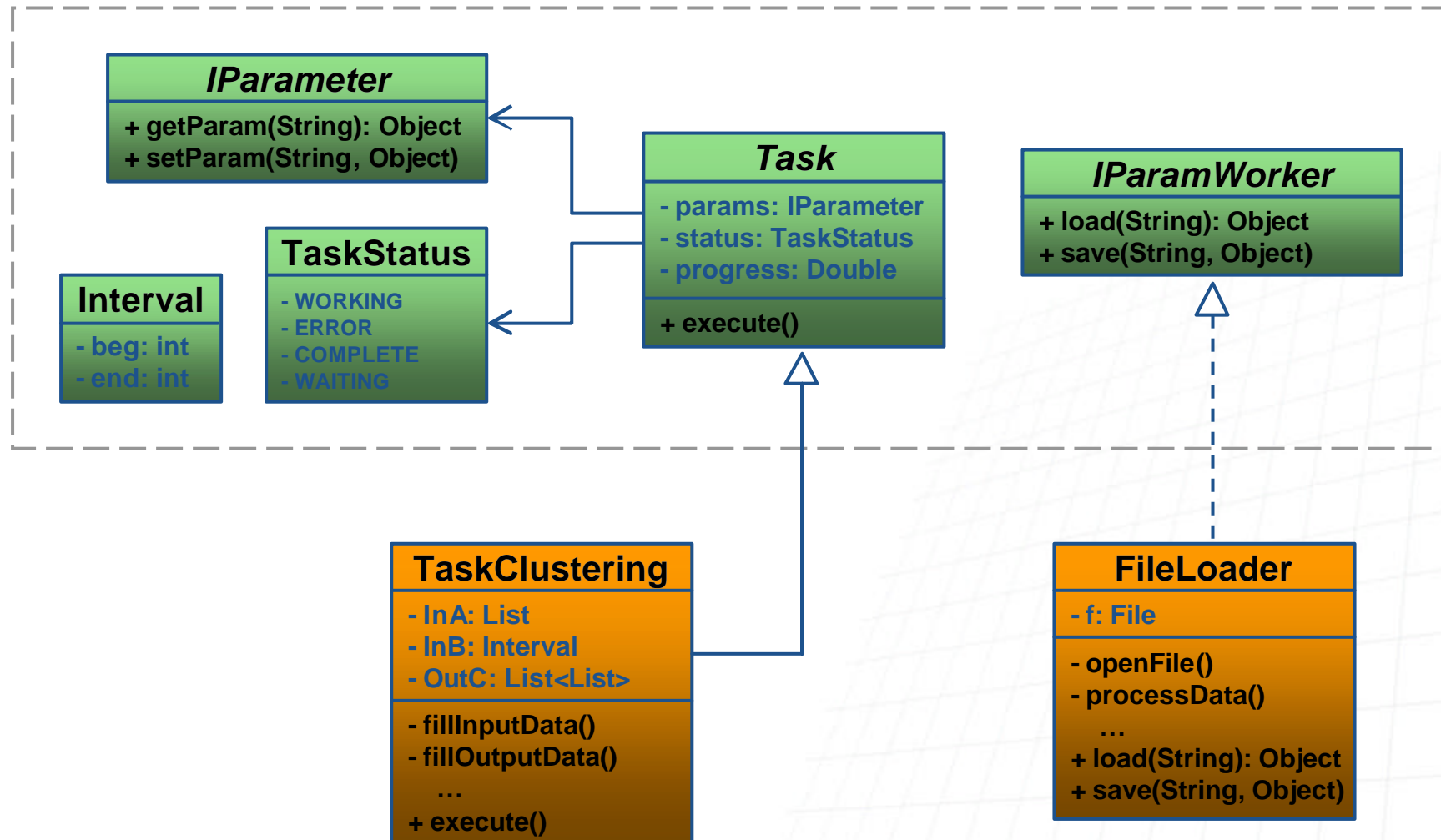
Active object activity



Data unit



Task object model



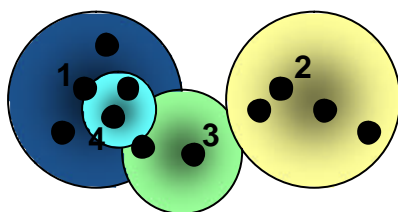
Molecules set clustering



Generating molecule fingerprints

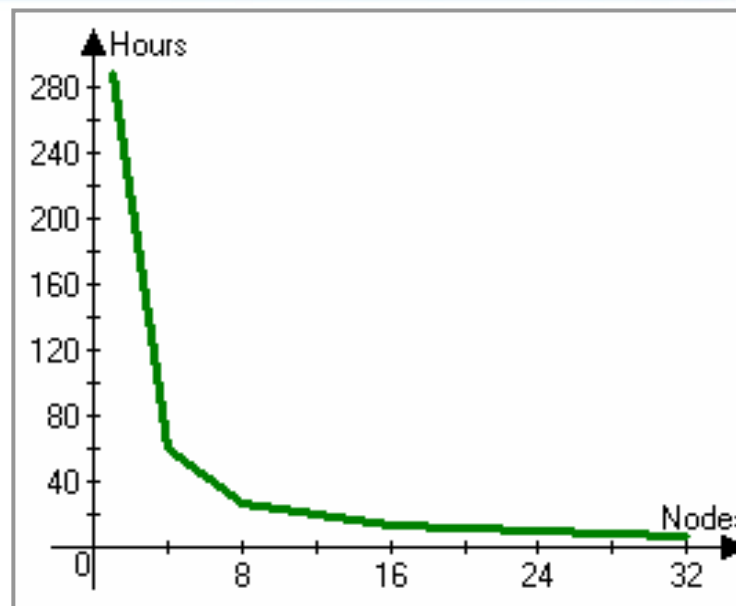
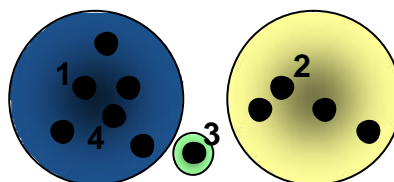
1 – 10010010011101010
 2 – 10001111010011011
 3 – 10111001110010100

...
 1024 – 2048 bits



Identifying potential cluster centroids

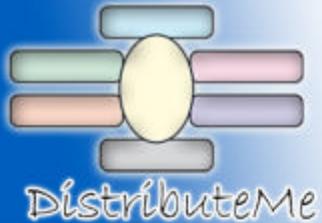
Isolating homogeneous clusters



Experiment

Clustering 400 thousand molecules using working nodes with such parameters:

- Processor **1.6 – 3 GHz**
- RAM **512 MB – 1 GB**
- Disk space **4 – 10 GB**
- **TIME** **7 hours**



Further research and development



- Development of Design unit
- Improvement of dispatching algorithms
- Possibility to solve tasks programmed in different languages
- Enhance the scalability and fault tolerance



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