Опыт применения добровольных вычислений для решения вычислительных задач с помощью эволюционного алгоритма

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Experience of using voluntary computations to solve computational problems using an evolutionary algorithm

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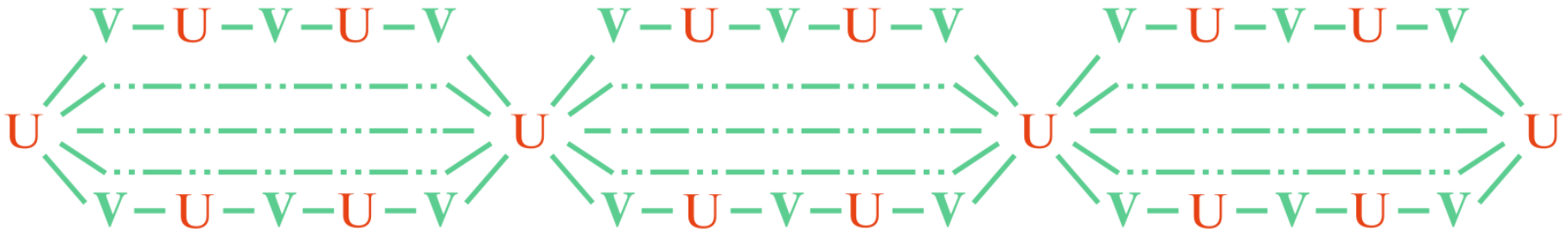
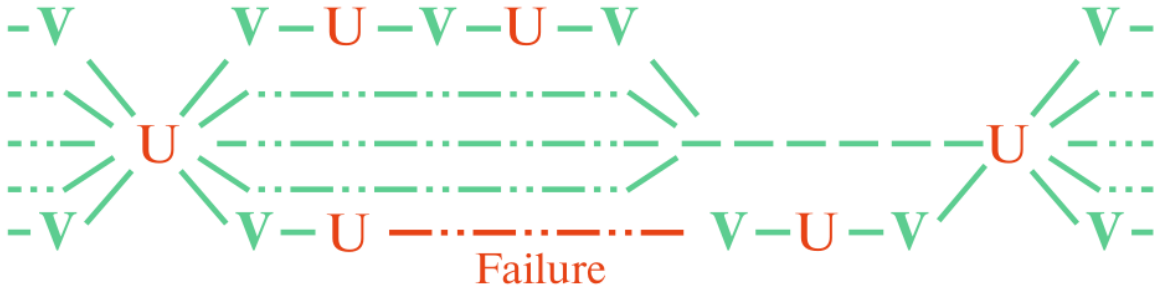
Evolutionary Algorithm

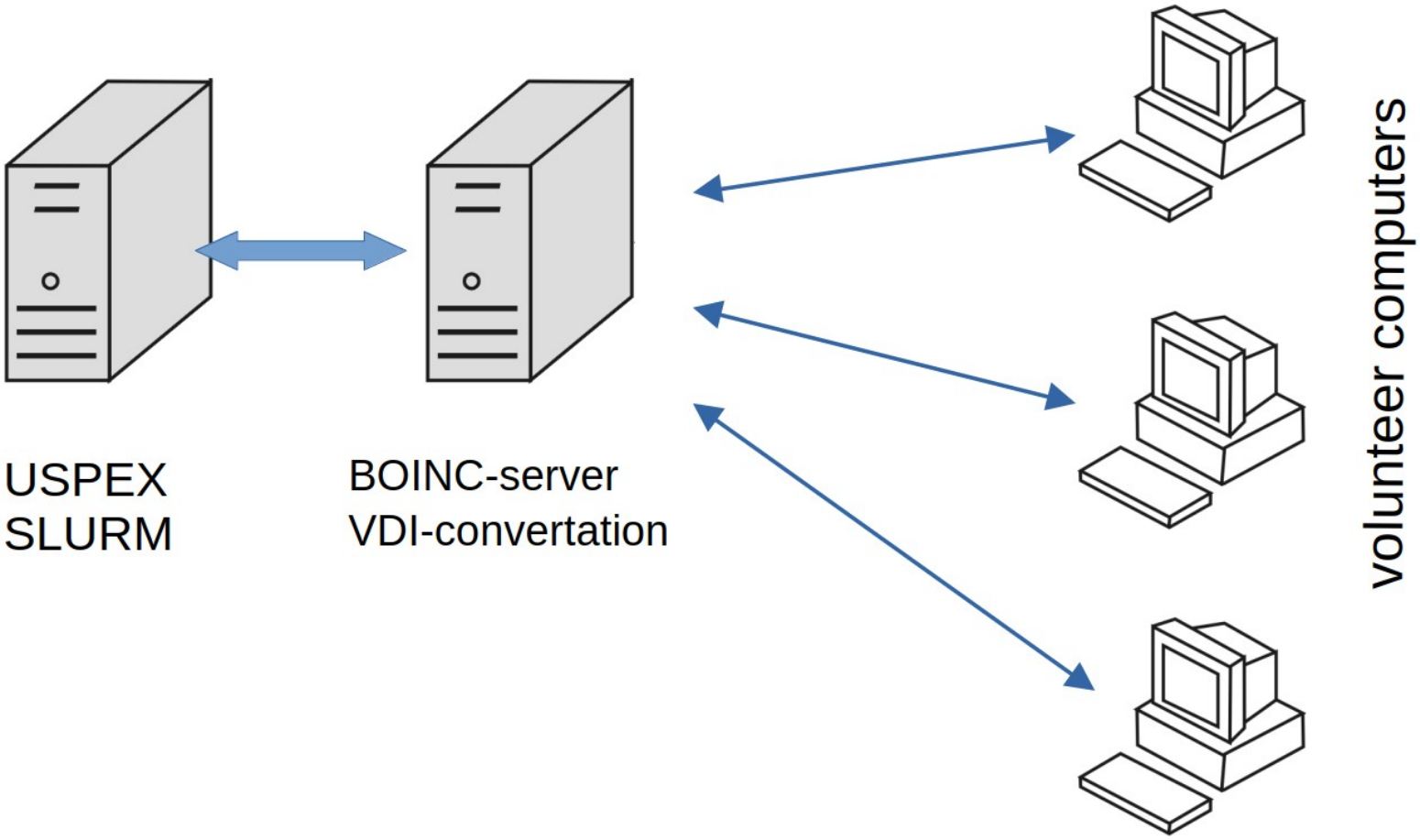


For One that is Missing There is no Spoiling a Wedding

Проблема «семеро одного не ждут»



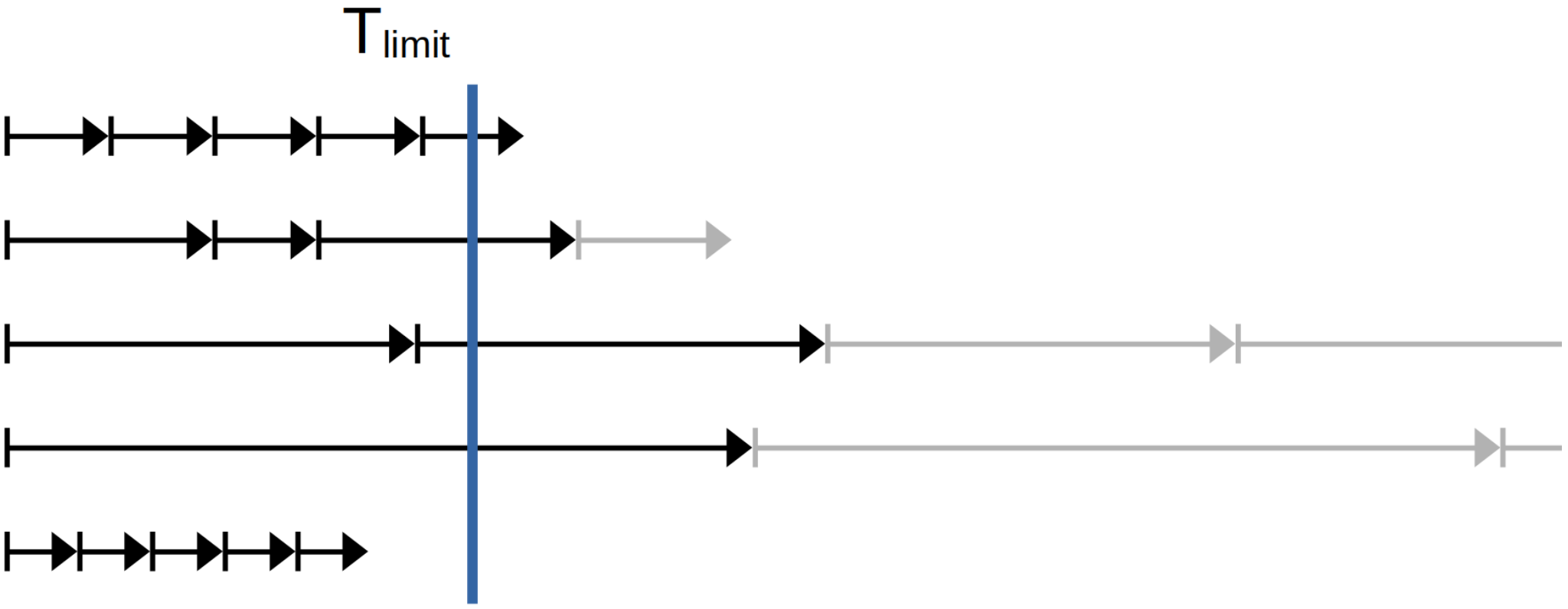
USPEX@HOME architecture



Control of computational complexity of BOINC tasks

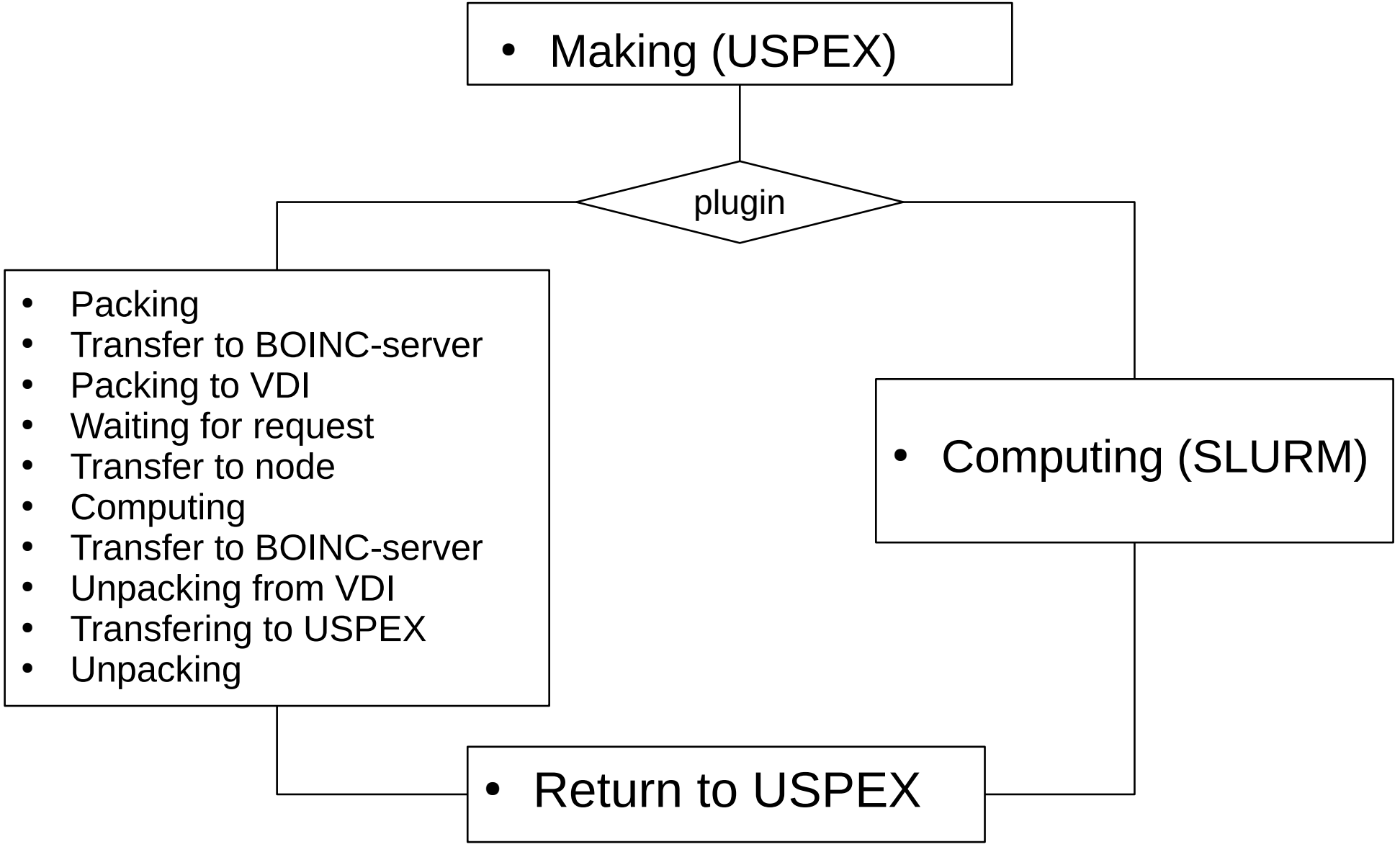
- **Paking** - combining a pre-set number of USPEX-tasks into one BOINC-task. On a computing node, the tasks are executed **sequentially**. This is the preferred approach for large numbers of tasks of low computational complexity.

Paking with time limit



Paking with time limit (example)

- *Minimum duration of USPEX-task: 10 min.*
- *Maximum duration of USPEX-task: 10 h.*
- **Packing for 5 tasks:**
- Minimum duration of BOINC-task: 50 min.
- Maximum duration of USPEX-task: 50 h.
- **Packing for 5 tasks within time limit 2 hours:**
- Minimum duration of BOINC-task: 50 min.
- Maximum duration of USPEX-task: 10 + 2 = 12 h.


• Making (USPEX)
plugin
• Packing
• Transfer to BOINC-server
• Packing to VDI
• Waiting for request
• Transfer to node
• Computing
• Transfer to BOINC-server
• Unpacking from VDI
• Transfering to USPEX
• Unpacking
• Computing (SLURM)
• Return to USPEX

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