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## Optimization of selected components in MPD Root project: Capabilities of distributed programming techniques

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The article analyses the prospects of optimizing the architecture and the execution logic of selected scripts available in MPD Root project. We considered the option of porting the scripts to allow execution on massive parallel architectures. We collected and structured large data illustrating the project's work:

- the project's dependency tables were drawn up with regard to the support of parallel and concurrent computing;
- the source code database was indexed to identify cross dependencies among architectural entities;
- the code profiling measurements were made at launch time of the scripts in question, the call sequences were analyzed, the execution time of the scripts was evaluated.

The study evaluated the prospects of using various libraries and platforms: CUDA, OpenMP, OpenCL, TBB, and MPI. The obtained measurements and the analysis of the best practices of the software under consideration allows to make recommendations for modifying MPD Root in order to optimize:

- vectorization of loops;
- transfer of continuous computing segments to co-processing architecture;
- source code segments whose operation can be represented as call graphs;
- source code segments that can be subject to load allocation between computing nodes.

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