# Simplifying Parallel Graph Processing:
## Survey of Existing Platforms

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This is a survey of existing graph analytics frameworks.

## 1 Arya

Below are the preliminary results by running two benchmarks on the research computer Arya.

Machine Specifications

| CPU | 72 Core Intel Xeon E5 2699 v3 |
|-----|-------------------------------|
| RAM | 256 GB DDR4 ? MHZ |

Report Card

| Transport |
|-----------|
| Network Topology |
| Local Scheduling |
| Runtime Feedback |
| Approach |
| Algorithmic Considerations |

Performance in millions of traversed edges per second (MTEPS)

|      | PowerGraph | OpenG |
|------|-----------:|------:|
| BFS  | 87.4       | 341   |
| SSSP | 1.09       | 3.08  |

## 2 Graph Processing Taxonomy

This is in the spirit of [1]. Here, "|" means "or" and "+" means "and." FOSS means Free and Open Source Software. The quotes around "yes" for HPC mean that the product claims to be amenable to high performance computing. Whether these actually achieve their goal is one of the purposes of this project.

| Name | Type | HPC | Parallelism | Target | FOSS | Source | Notes |
|------|------|-----|-------------|--------|------|--------|-------|
| PowerGraph | Framework | "yes" | both | CPU | yes | [2] | 1 |
| GraphBIG | Benchmark | "yes" | shared | CPU\|GPU | yes | [3] | |

## References

[1] Doekemeijer, N., and Varbanescu, A. L. A survey of parallel graph processing frameworks. Tech. rep., Delft University of Technology, 2014.

[2] Gonzalez, J. E., Low, Y., Gu, H., Bickson, D., and Guestrin, C. Powergraph: Distributed graph-parallel computation on natural graphs. In *Presented as part of the 10th USENIX Symposium on Operating Systems Design and Implementation (OSDI 12)* (Hollywood, CA, 2012), USENIX, pp. 17–30.

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[1]The current version is a closed-source product by Turi though PowerGraph v2.2 is on Github.

[3] NAI, L., XIA, Y., TANASE, I. G., KIM, H., AND LIN, C.-Y. Graphbig: Understanding graph computing in the context of industrial solutions. In *Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis* (New York, NY, USA, 2015), SC '15, ACM, pp. 69:1–69:12.