**A Profiling Toolkit for HPC in Tiers 2 and 3**

### Job-Specific Monitoring

- **Telegraf:**
  - Agent to collect metrics and events. Using own and Telegraf community plugins
- **PfITCollect:**
  - A lightweight metric collection tool implemented within the project
- **InfluxDB:**
  - Time series database to store metrics

### Job Reports

- **ASCII report:**
  - Textual summary of the job, which can be output in console or sent as a plain text message
- **PDF report:**
  - More visual job summary, including graphs. Shows more details and is attachable to email
- **Interactive dashboards:**
  - Higher level of details. Includes real-time measurements

### Recommendation system

- After job analysis optimization hints in every kind of report
- Comprehensive instructions to improve efficiency of jobs
- Graphical indication of problems during runtime
- Using machine learning to detect anomalous behavior

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**Goals**

- **Increase awareness**
  - Of the importance of performance of HPC applications
- **Automatic feedback**
  - On the performance and resource consumption of a job
- **Recommendations**
  - For optimization of the job

**Achievements**

- **Working prototypes**
  - Complete toolchain works in a prototype version
- **Modular architecture**
  - Parts of the toolkit can be interchanged
- **Artificial environment**
  - The toolkit is being elaborated and tested within artificial environment without HPC interaction

**Next Steps**

- **Recommendation system**
  - Include machine learning approaches
- **Gathering more metrics**
  - Enlarging the measurement data through profiling and hardware/system specific metrics
- **Recommendations by experts**
  - Create a database of hints formed by HPC experts

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