Ideas for a journal on "Computing and Software for Data-intensive Physics"

by Markus Elsing

- presentation at the GDB meeting
  - ➡ on behalf of:
    - Christian Caron, Springer Research Group
    - Günter Quast, University Karlsruhe and KIT
    - M.E., CERN

First Ideas

- Initiative arose from Günter Quast giving an inspiring talk at a particle physics conference in Mainz in 2013
  - ➡ In discussions thereafter, also at CERN, emerged first ideas for a textbook on fundamentals, and then a journal on „HEP Computing“

- Textbook:
  - ➡ The proposal and outline still exists. The problem (as so often) remains to find lecturers with enough time to write a chapter.

- Journal:
  - ➡ Idea got very positive feedback (HEP and outside) and receives a growing interest in the community
  - ➡ Original idea evolved, now targeting not only HEP, but software and computing for large scale physics applications
  - ➡ Recent presentations at HEPiX by Yves Kemp and at HSF Workshop in Paris by Christian Caron

Motivation

- Aim for a journal at the interface between physics and computer science
  - ➡ We think this satisfies an apparent need of the HEP software and computing community (and in related fields)
  - ➡ Our publications often do not fit into the scope of either of the two more "classical" types of journals, seen as too application oriented and as too technical

- Further benefits from a refereed journal on S&C with an impact factor
  - ➡ Authoritative and central reference and archive
  - ➡ Increased visibility of our work and the community
  - ➡ Publications will help supporting careers of our young people in the field

- Target communities:
  - ➡ Nuclear, particle and astro-particle physics, as well as observational astronomy and cosmology
  - ➡ Focus on S&C for "data-intensive experiments" and "large scale collaborations"

Ideas for a journal (and books) on "Computing and Software for Data-intensive Physics"

Springer

Christian Caron, Ph.D.
Executive Publishing Editor
Springer Research Group | Physics
Heidelberg | Germany

Present status

➢ Title: Computing and Software for Data-Intensive Physics

➢ Aims:

This peer-reviewed journal, at the interface of the physical and computer sciences, is dedicated to the publication of high-quality material originating from the collective effort by the scientific community to address the special and ever more demanding computing and software needs of the future.

At its core will be nuclear, particle and astro-particle physics, as well as observational astronomy and cosmology, fields in which experimental research is increasingly organised in large and global collaborations around large-scale instruments with huge output of data. Related contributions from other major experimental facilities, such as e.g. high-brilliance light sources, are also welcome.

Facing similar challenges ranging from data reduction, via data sharing, to increasingly data-driven modelling of different facets of the same physical universe, the scientific community requires fundamental and novel concepts for large-scale and collaborative computing and software development, as well as novel algorithms and techniques for data processing.

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Journal: tentative scope

> **Infrastructures** for large-scale, high-throughput computing

> **Middleware** development

> Data **processing, hosting and sharing**

> Distributed **data analysis**

> **Software** development Infrastructures

> Software **benchmarking** and Performance Assessment

> **Frameworks** and software integration

> Novel **algorithms** for efficient data reconstruction and filtering

> **Deep learning** algorithms

> Event and object **classification**

> Online/Offline **data quality** monitoring

> Data **visualisation**

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Open questions:

i) What is the right size/focus/scope between

HEP Computing (close to physics collaborations)

up to

Computing and Software for data-intensive „big science“ in general
(cf e.g. http://www.helix-nebula.eu/ for cloud computing involving Life Sciences etc.)

ii) business model:

hybrid versus pure open access

iii) article types:

no letters, regular articles, reviews, advanced tutorials (e.g. from schools), „no proceedings“.

iv) details of editorial structure

- Editor-in-Chief
- Topical Editors/Managing Editors (HEP, nuclear physics, astro-particles, cosmology, ….)
- Editorial Board