

Software Tools Compared To User Education in High Performance Computing

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The Challenge of Large Datasets

Increasing "volume, velocity and variety" of datasets a well-recognised problem... and it's going to get worse.

Challenges exist in storage, curation, transfer, processing etc. Only the issue of processing is directly addressed here

Large dataset processing can only be carried out by high performance computers using either data or task parallelism.

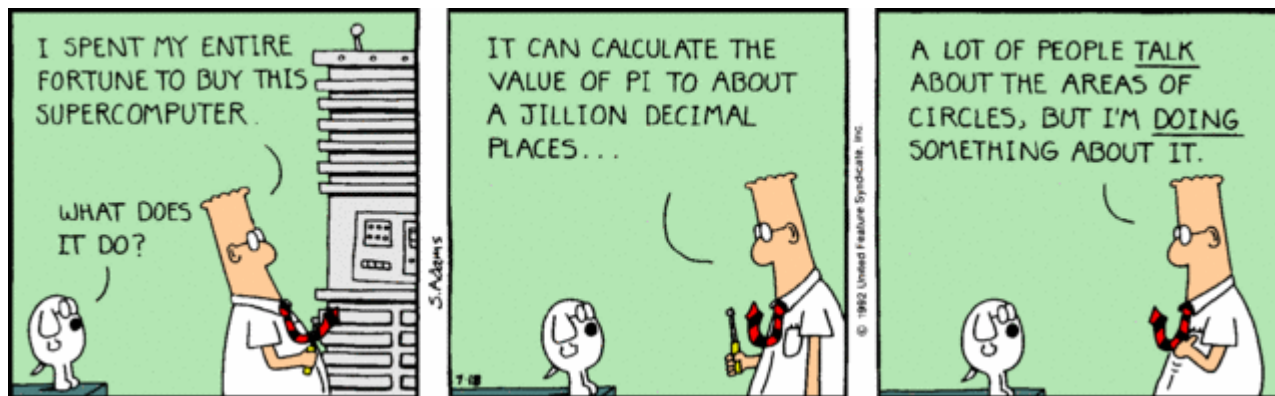


Research Computing vs HPC

Necessary high performance computing skills are not sufficiently common among researchers.

HPC advocates tend to concentrate more on computational potentials rather than research use.

Because of processing needs for large datasets, research computing and high performance computing *must* become a unified set.



HPC for Institutional Survival

The institutional survival hypothesis; large datasets require HPC to process. Processing requires researchers with HPC skills. Those institutions that have researchers with HPC skills will survive. Others... not so much.

Tentative confirmation of hypothesis; institutions with good HPC facilities are producing more research papers.



But the command line is hard?

Attempts to introduce a GUI interface to HPC are less than successful. Such interfaces succeed when (a) a complex task can be simplified and (b) when abstract intuition can be introduced instead of understanding.

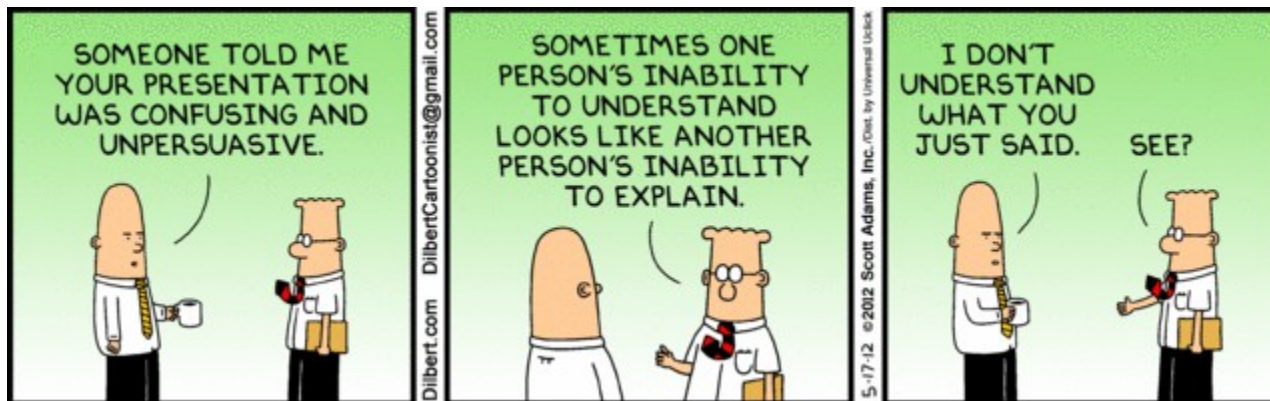
STRUDEL is a tool which succeeds in some HPC tasks and has a good, albeit limited, success in this manner.



The training alternative

V3 Alliance's training programme makes use of insights in adult and advanced education addressing learners, content, and delivery.

Voluntaristic engagement and self-motivated, greater experiential resources. Structured content, embedded contexts, grounded reasons. Multimedia presentation, "hands-on" experience, proximal and connectivist development.



The results that matter ...

Change in cluster saw significant increase in usage from both partner institutions... but the one which make use of HPC training improved *much* more.

Trifid Usage (CPU Hours) to December 31st 2014

Year	RMIT	La Trobe
2012	1,729,837h	1,719,554h Tango
2013	8,108,695h	3,301,052h Trifid
2014	9,760,919h	4,964,297h Trifid

Trifid Course Enrolments to December 31st 2014

RMIT enrolments 229

La Trobe enrolments 29



Opportunities

The pressure on research institutions that need to process ever-increasingly large datasets means that utilisation of HPC must increase if those research institutions are to survive.

Where a computing system has processes which are difficult to simplify or have processes which require a deeper understanding rather than intuition, then adult and advanced education is more effective than interface changes. Skill-up the user rather than dumb-down the interface.

V3 Alliance can assist you in these areas.



THANKS FOR WATCHING



& LISTENING PATIENTLY