

E-Workforce Development

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Scale and scope of problem?

- NEED vs availability
 - Data mostly not available
 - Lots of anecdotal evidence of a deficit
- Hypothesis: Traditional training is NOT formal in software and usually a migration from domain science;
 - Unable to meet demand.
 - Application of software engineering to development of software for domain science application is an unresolved issue.
- CSE is not an attractive proposition for most Computer scientists and Data scientists.
 - Traditional computer scientists not geared to and do not necessarily trained in the skills needed in CSE
 - changes in required curriculum almost impossible.

Different levels of skills and expertise

- 2 year gap between hiring and productive CSE engineer in industry
 - Disperse computational skill training in general education
 - missing: ability to use existing tool set
- Different levels of skills and expertise
 - Multiscale training/retraining
 - short term Just In Time training
 - software carpentry
 - google summer of code as a model
 - ALCF -- 2 week training including video resources
 - Incentivize MOOCs
- One of the main problems: academic award system
 - Software skills not rewarded - problem in both labs and academia
 - Metrics needed, but no standard/agreement available
 - Career path unclear / non existent

What role can funding agencies play in fostering efforts?

- Center for excellence in CSE in the US?
- Who should lead?
 - DOE is mission agency -> not ideal
 - NSF is more focussed on workforce development
- Incentivize delivery of good s/w as part of funding
 - Data mgt; software training plan?
 - Would need required follow-up, e.g., in reports
- New college ranking criteria -- digital literacy?

Sustainability

Software engineering training requirement during proposal reviews