



CAREER & TRAINING WG

Closeout: Progress and Plans

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Progress

The scope of the group is to:

- ***Motivate why training is crucial for R&D and applying new techs***
- ***Draw a roadmap for new training programs and utilization of existing ones based on existing challenges and available resources***

First day of the meeting

1 Training Chapter - Community White Paper

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June 2017

4 **Contents**

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First day of the meeting

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4 Contents

Google Doc with bullet point style relevant ideas.

[LINK HERE](#)

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MN/MJ: Perhaps useful to have a "call out" in the CWP, not a big piece, but present, even if not exactly the same status as the other WG (may be a specific paragraph in the final document, to be discussed later)

MN: Also could help frame "software" as a useful "upgrade" activity within the experiments

OS: There's a number of issues I can think of:

- Software is developed by people with insufficient training, e.g. grad students or senior physicists who are not aware of modern technologies
 - People with proper training can not be engaged because:
 - Universities have no positions for software engineers or application experts outside their computing centres
 - Academic salaries are not attractive for software experts, and in general not seen as adequate for this high-stress job
 - Trained software developers have little understanding of underlying physics or hardware problems
 - Physics departments can not award degrees in CS, hence can not attract PhD students from CS/IT
 - Quality software development is a full-time job and thus detrimental to the academic career
 - No career path
 - No academic credits: even if software can be cited as e.g. a paper, one typically works on only one piece of software, which means only one "publication"
 - When done by grad students, is seen as an obstacle to their main project progress
 - Even if we succeed in hiring a properly trained expert, they don't have career path in academy and remain low-level programmers/engineers for the rest of their employment
 - I have to mention unattractiveness of our work to women: it is a stressful environment with tough competition, when success at times depends on hidden political currents. Disorderly manner of many developments only adds to the frustration.
 - PC
 - does writing a successful Open Source library further your career?
 - Would publishing in a CS journal helps?
 - Receiving a grant is known to work!
 - Why has there never been a jenkins or github or numpy coming out of our community?
 - Are we really special?
 - RK: In order to design training materials/processes we should have answers to the following questions:
 - What is the set of computing skills that (almost) every member of our community should have?
 - Which of these skills should be designated prerequisites and which should be taught by our community?
 - How should people acquire prerequisites?
 - There are many computing skills not included in the above; what fraction of our community should have each of these skills and how should they acquire them?
 - How do the answers to these questions change over the life cycle of an experiment?
 - On new experiments with "green field" software, there are often no "analysis ~~TTrees~~" with information that is accessible to a new student who is supervised by someone who knows the physics and the detector but not the main body of the software
- Does the community have a consensus on the answers? Is this consensus realistic?
- PS: [promotion of LHCb products] The LHCb starterkit (one week software training for students entering LHCb) got awarded with the LHCb Early Career Scientist awards in 2016. <https://lhcb.github.io/starterkit/> i.e. the necessity for software training is known and gets rewarded.

Progress

We put together a document and a lot of progress has been made for the time given

<https://www.sharelatex.com/project/595500273c5204ff35dfdcf9>

The screenshot displays a LaTeX editor interface for a document titled "TrainingChapterCommunity...". The interface is divided into three main sections: a file explorer on the left, a source code editor in the center, and a rendered preview on the right.

File Explorer (Left): Shows a directory structure with folders "bib", "Images", and "src". The "src" folder is expanded, showing files "training.tex" (selected), "main.tex", and "preamble.tex".

Source Code Editor (Center): Displays the LaTeX source code for the document. The code includes a section header for "Introduction" and several paragraphs of text. A comment is visible: `%suggest that the emphasis here should be that we need to provide career paths for HEP people who leave the field due to limited opportunities for advancement within HEP}.` A pink highlight is present on the text "Re-read next paragraph:".

Rendered Preview (Right): Shows the compiled output of the LaTeX code. It features a blue "Recompile" button at the top. The document content includes a section titled "1 Introduction" followed by several paragraphs of text. A pink highlight is visible on the text "Re-read next paragraph:" in the rendered output.

Progress

We put together a document and a lot of progress has been made for the time given

<https://www.sharelatex.com/project/595500273c5204ff35dfdcf9>

The screenshot displays the ShareLaTeX interface for a project titled "TrainingChapterCommunity...". The main editor shows 44 changes in the file "training.tex". The document content includes:

easy to add material to the site, make it appear under a specific topic (such as, e.g., Software/Techniques/Machine-Learning) and manipulate it as if it would be a single document. In the end, students can selectively choose individual chapters from the site and have the corresponding pdf sent them as a book, complete with index, content and chapters.

101
102 The adoption of such an approach is made rather easy in WikiToLearn by the relative simplicity of the wikimedia-based toolset: users contribute their training material using just a web-browser, and in order to do this efficiently the learning curve has been kept appropriately shallow.

103
104 `\begin{itemize}`
105
106 `\item` given the competition for permanent positions, physicist leave HEP for industry and have to learn new tools. Using common tools will avoid an additional learning curve.
107 `\end{itemize}`
108
109
110 %-----
111 `\subsection{Knowledge that needs to be transferred \textcolor{pink}{needs a re-write}}`
112
113 At all stages of software & computing training, we should take care to encourage Good Practices Across the Community (GPAC), such as i.e. error checking, modularity of modularity of code design, writing tests-writing, etc. All the key concepts addressed in the training should not be specific to a particular experiment or field of application, but general enough to be useful for the whole HEP community. ~~Having said that,~~ in this section, we present a list of specific concepts that need to be taught to members of the community, in order to guarantee the base level of competence needed to write efficient code for the different tasks performed in HEP experiments.

114
115 `\textcolor{red}{DO WE WANT TO SPECIFY WHETHER OR NOT THESE ARE TAUGHT TO BEGINNERS OR INTERMEDIATE FOLKS?}` %These need to be much more precise
116
117 Base knowledge to be transferred includes basic programming concepts, data structures, basics of code design, error checking, code management tools. More advanced topics include modularity of code design, advanced data structures, evaluation metrics, writing tests and working with different types of hardware accelerators. Special emphasis should be made on reporting results and documenting them.

118
119 `\begin{itemize}`
120 `\item` Basic Programming Concepts
121 `\item` Existing case studies beyond conference presentations

The interface also shows a sidebar with a file explorer containing "bib", "Images", and "src" folders, with "training.tex" selected. A "Deleted Files" list includes "applications.tex", "bridges.tex", "challenges.tex", "introduction.tex", "participants.tex", "resources.tex", and "software.tex". A right-hand panel shows a list of recent updates to "training.tex" with timestamps and user names.

File	Time	User
training.tex	5:37 pm	Hadrien Grasland
training.tex	5:37 pm	Riccardo Maria Bianchi
training.tex	5:37 pm	Hadrien Grasland
training.tex	5:37 pm	D.Katz
training.tex	5:36 pm	Hadrien Grasland
training.tex	5:36 pm	Hadrien Grasland
training.tex	5:36 pm	Riccardo Maria Bianchi
training.tex	5:33 pm	Riccardo Maria Bianchi
training.tex	5:33 pm	Plskubic
training.tex	5:33 pm	Hadrien Grasland
training.tex	5:33 pm	Anonymous
training.tex	5:28 pm	Plskubic
training.tex	5:28 pm	Anonymous
training.tex	5:24 pm	Anonymous
training.tex	5:24 pm	Meghan Kane
training.tex	5:22 pm	Anonymous
training.tex	5:22 pm	Meghan Kane
training.tex	5:21 pm	Anonymous
training.tex	5:21 pm	Fernanda Psihas

Buttons for "Restore to before these changes" and "32 more updates below" are visible.

Progress

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He always logs in before editing the sharelatex and you should too

1 Training Chapter - Community White Paper

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7 3 Training needs of the community 3

8 3.1 Knowledge that needs to be transferred *needs a re-write* 4

9 4 Challenges *needs more content* 4

10 5 Implementation Roadmap *needs a 2 sentence intro* 5

11 5.1 Initiatives for future training programs *Needs paragraphizing* 5

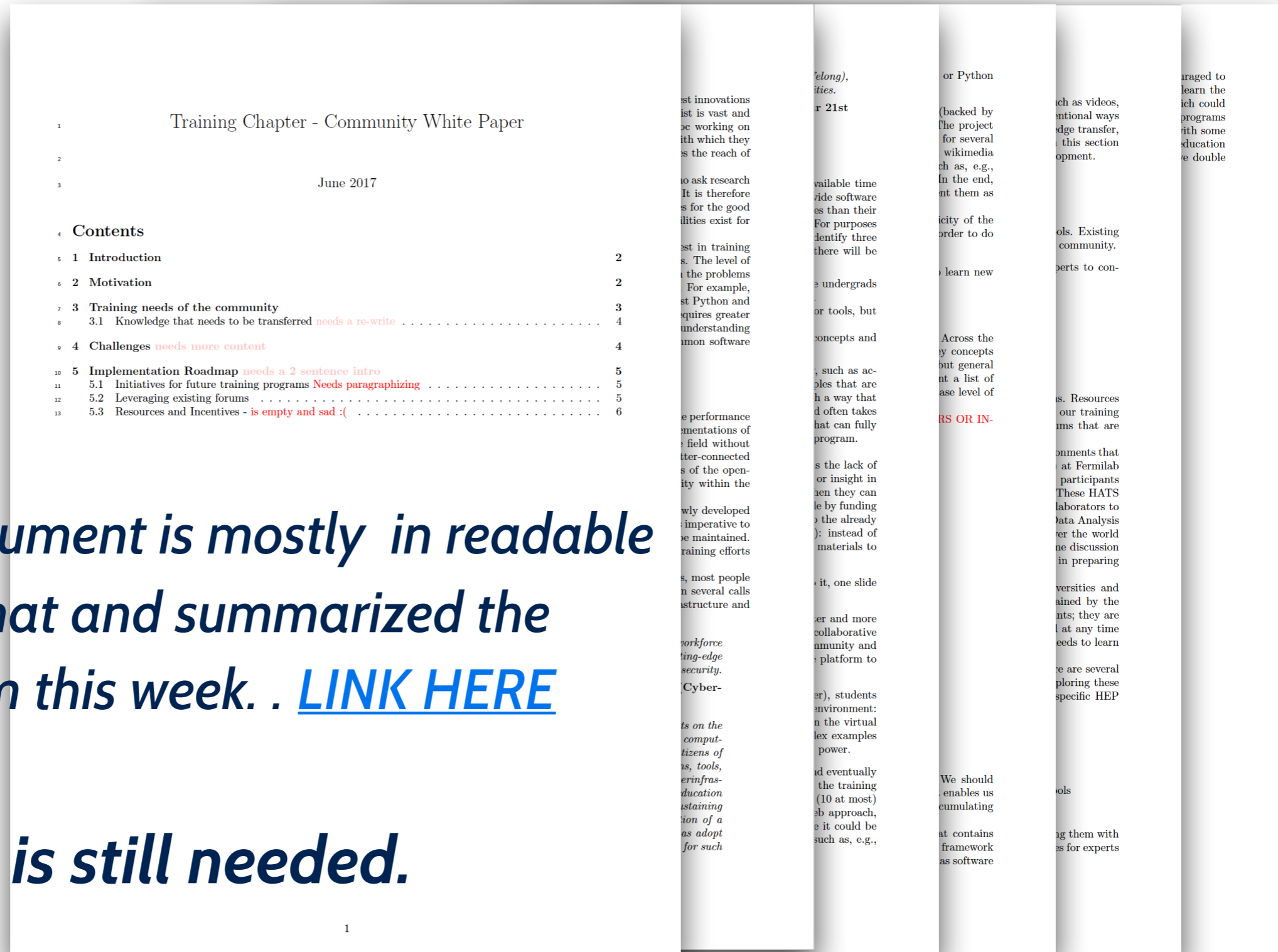
12 5.2 Leveraging existing forums 5

13 5.3 Resources and Incentives - *is empty and sad :(* 6

1

Today

<https://www.sharelatex.com/project/595500273c5204ff35dfdcf9>



The current document is mostly in readable paragraph format and summarized the discussions from this week. . [LINK HERE](#)

A lot of work is still needed.

Progress

This meeting:

We started with no document and one working session.



Progress

This meeting:

We started with no document and one working session.

~10 enthusiastic attendants!

Incorporated content from other sections which better motivates training

Brainstormed on some key points about existing efforts, overlap, needs and incentives

Discussion narrowed down to main ideas to communicate in the chapter:

Motivation and Training needs of the community

Challenges

Implementation Roadmap and Incentives

Plans for next few weeks

More writing is needed to finalize the current version but it is mostly outlined in the document already.

Will contact leads from other groups to proofread and add to “community training needs” in the coming weeks

Roadmap is not evident from the content at this point.

More participation is needed, please join the google group

<https://groups.google.com/forum/#!forum/hep-sf-training-wg>

You can still make a large impact on the outcome of this section.