

Training Software Engineers using Open-Source Software: The Professors' Perspective



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NORTHERN
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Traditional SE courses

- Emphasis on the fundamentals
- Little time available to teach in-depth details

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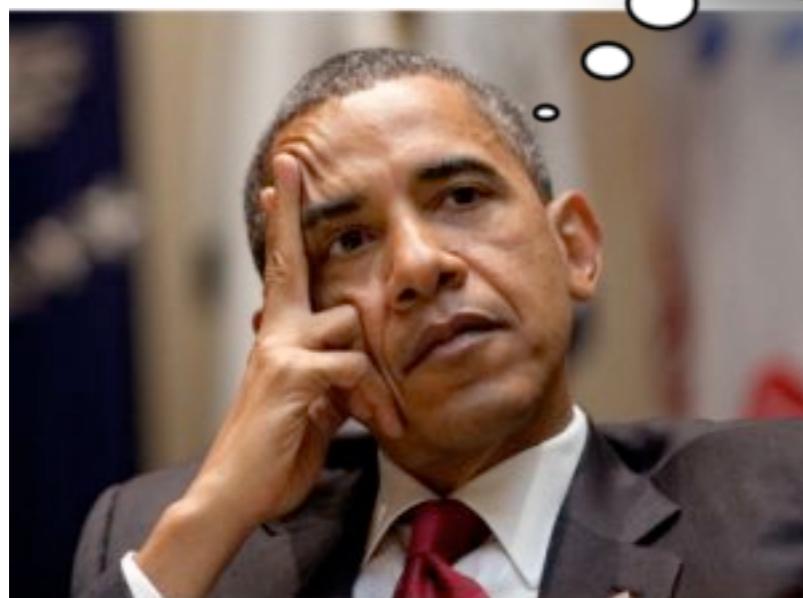
Software industry needs

- Eager to hire developers experienced with legacy code
- Little time available to train developers



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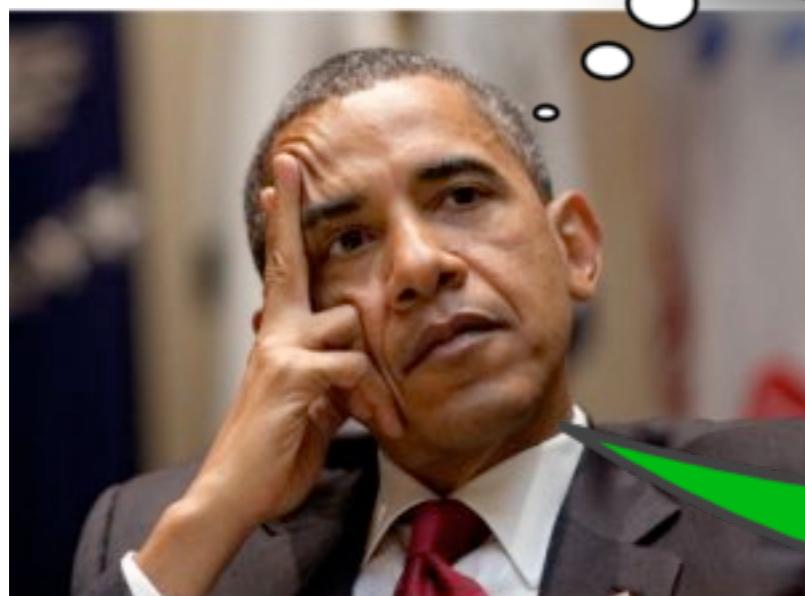
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Software industry needs

- Eager to hire developers experienced with **big O** notation?
- The **big O** notation is available to developers





Why not
introducing
students to
free/open source
software?

Data Analysis & Platforms



Databases / Data warehousing



Operational



Multivalue database



Big Data search



Data aggregation



Multidimensional



Business Intelligence



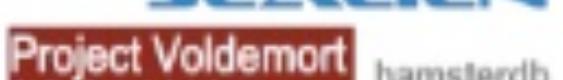
Data Mining



Social



KeyValue



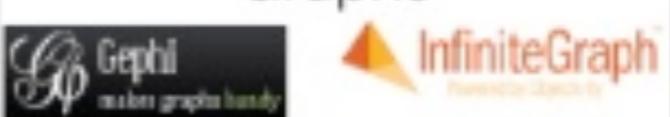
Document Store



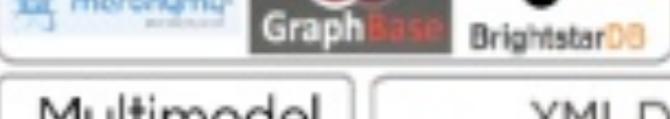
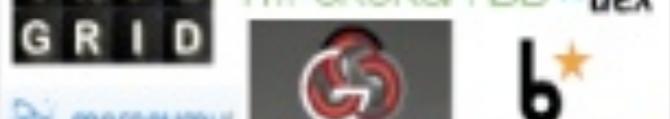
Object databases



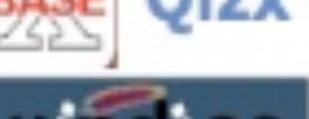
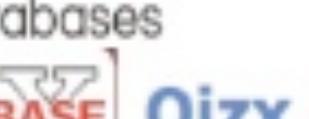
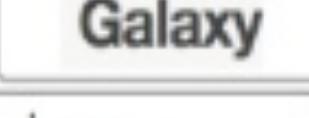
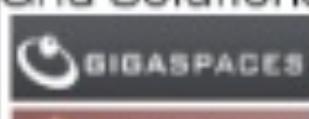
Graphs



FlockDB



Grid Solutions

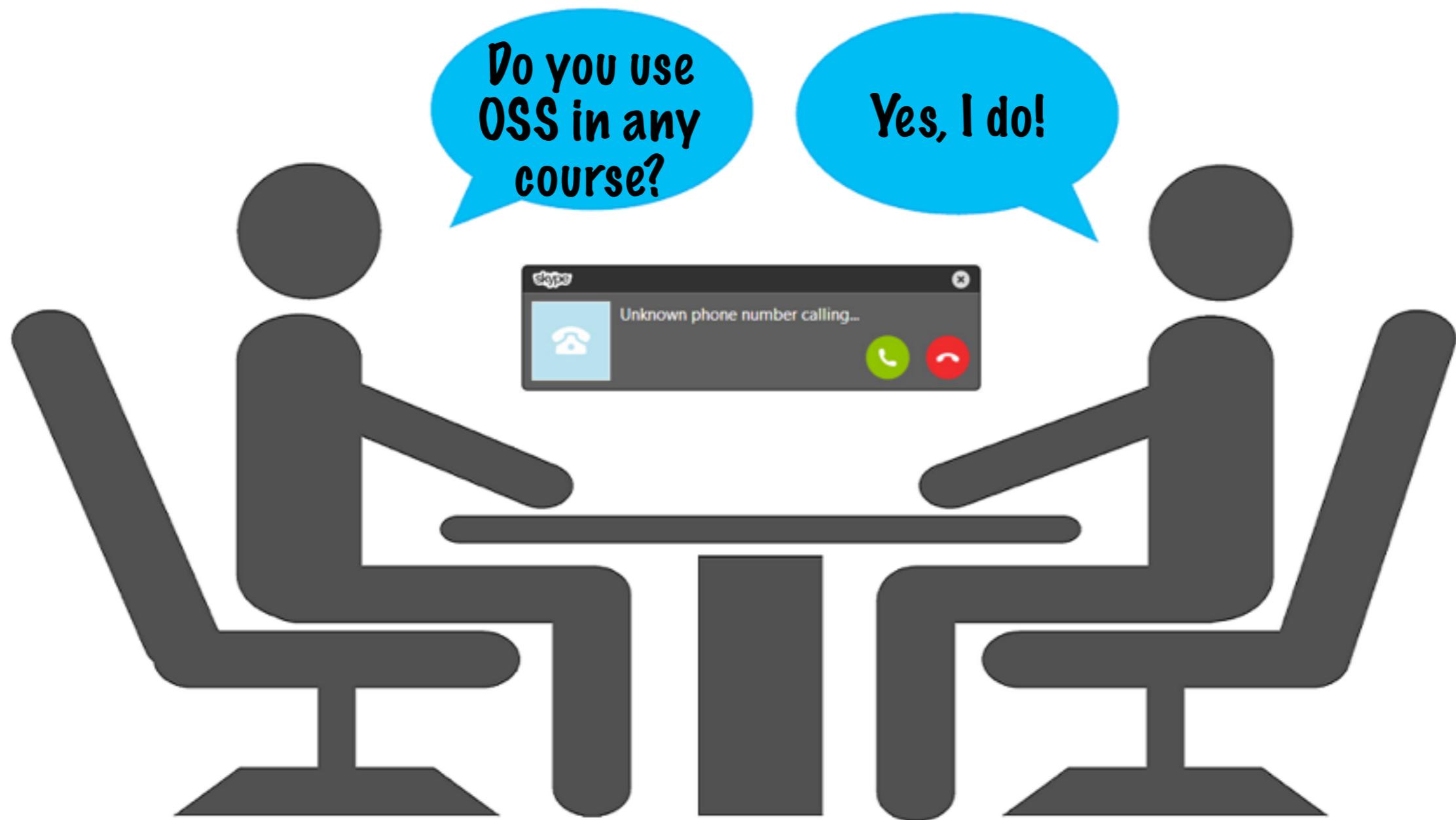


Can we use
open-source software
to better support
software engineering
courses?



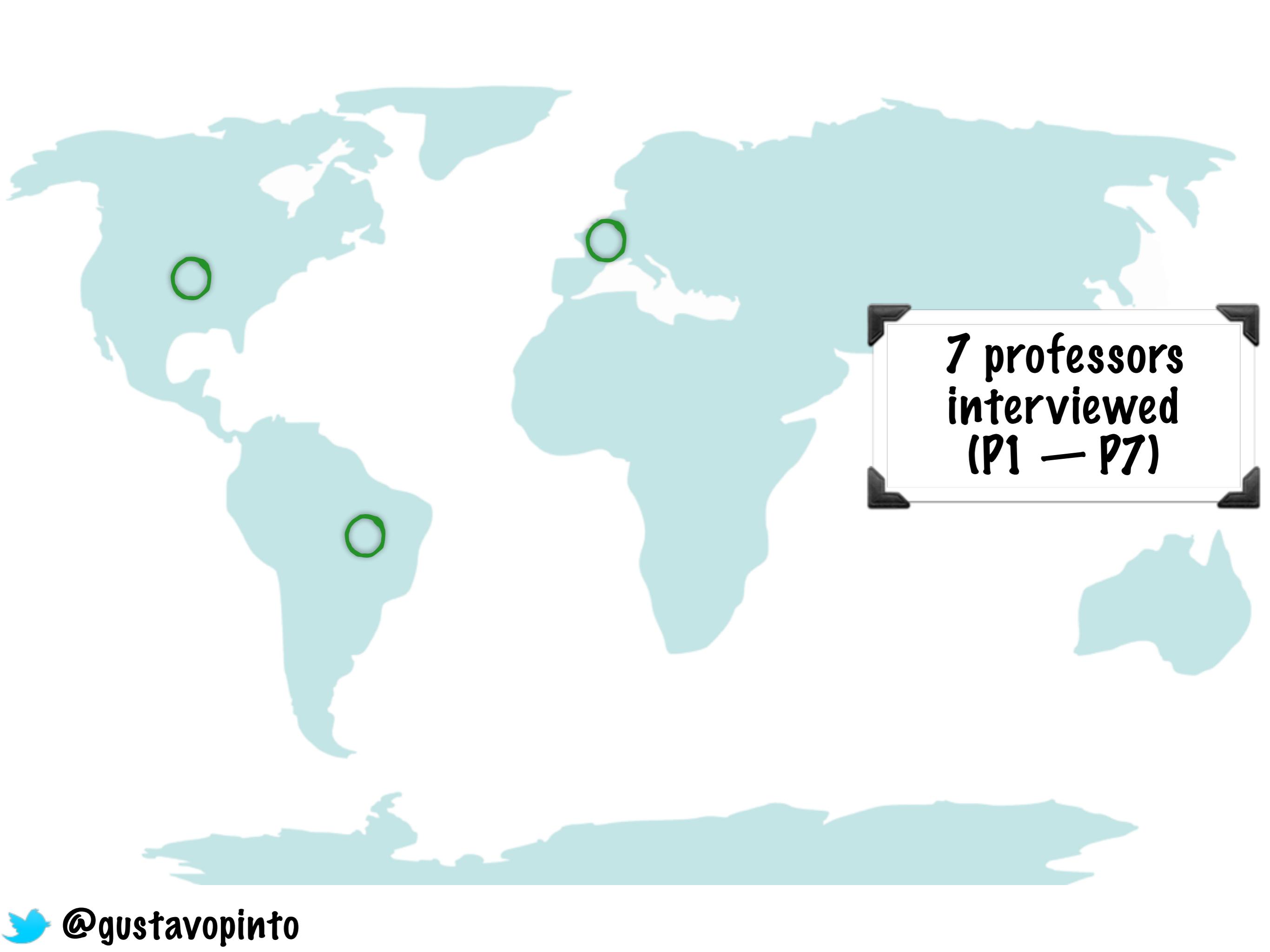
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Semi-structured Interviews



How to find professors?

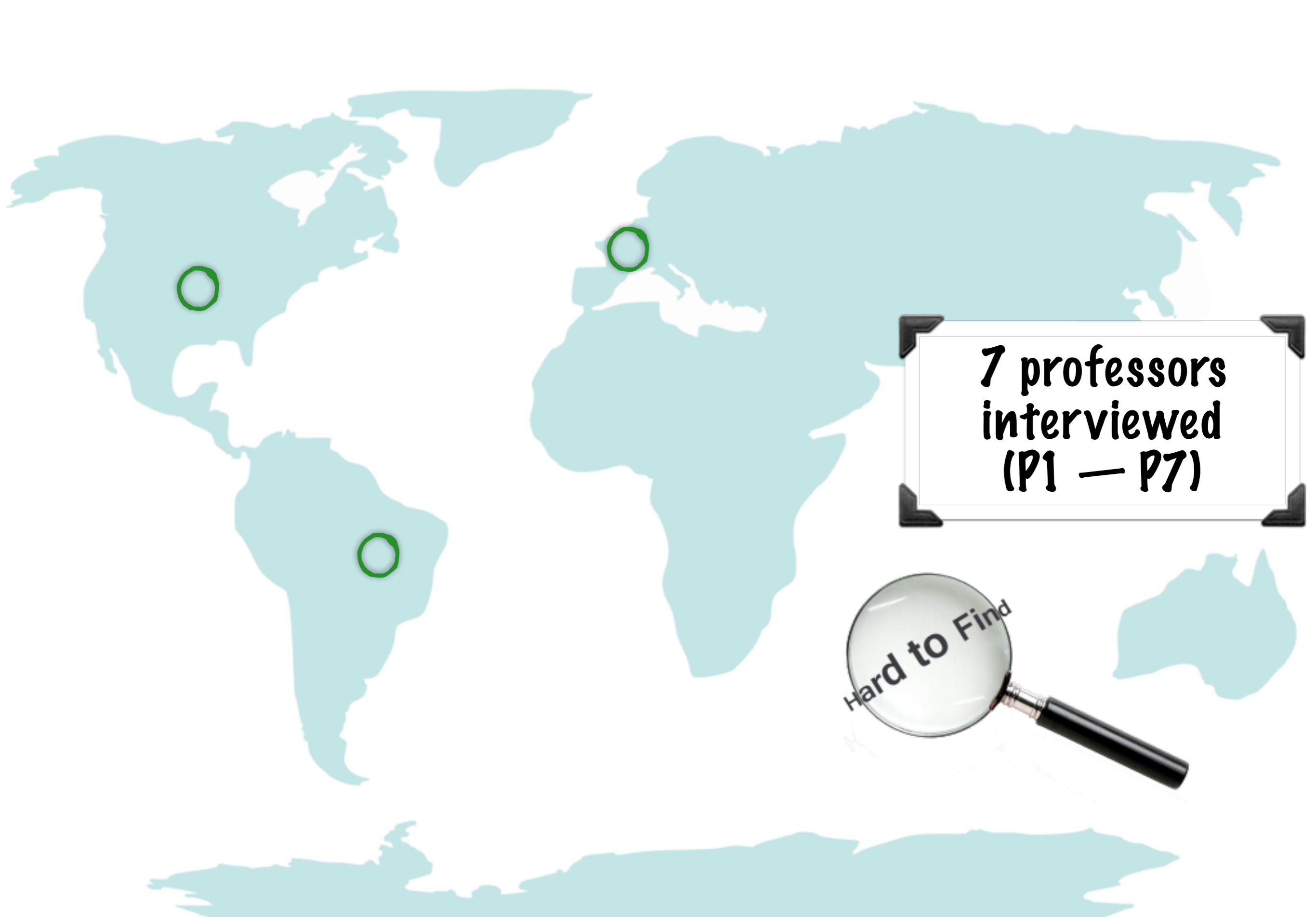




7 professors
interviewed
(P1 — P7)



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Research Questions

RQ1. What makes a good OSS project for training SE students?



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Unfriendly community



Research Questions

RQ2. What are the benefits of exposing students to OSS development?



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RQ3. What are the challenges associated with exposing students to OSS?



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but students had some **degree of freedom**

“there was a student team that liked networks and they chose NS3, which is a network simulator that has never occurred to me as a project to be selected.” [P2]

RQ1. What makes a good OSS project for training SE students?

Should be a balance between **project popularity** and **relevance of a contribution**

“I know that is tempting to choose a popular project, but these tend to be **harder** to make contributions or to get contributions accepted.” [P3]

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“If you pick a small project, maybe the contributions would have little relevance”



RQ1. What makes a good OSS project for training SE students?

P5 and P4 get in touch with core member **before** letting students select a project

“the only thing I ask the maintainer is to provide faster feedback than usual” [P5]

“we present the projects that are closer to the contacts.” [P4]

RQ2. What are the benefits of exposing students to OSS development?

We engage students with **real projects**

“You teach your students how real world software is developed” [P4]

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OSS is a good way to introduce **new tools**

“it is a good way to teach version control systems” [P5]

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Students develop their **technical skills**

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Good opportunity to learn **social skills**

“They learn how to be part of a team, learn how to be part of a distributed project.”

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It is good for their curriculum

“When interview with companies, they can say:
‘these are the projects I have contributed to. I was
part of the team” [P6]

RQ3. What are the challenges associated with exposing students to OSS?

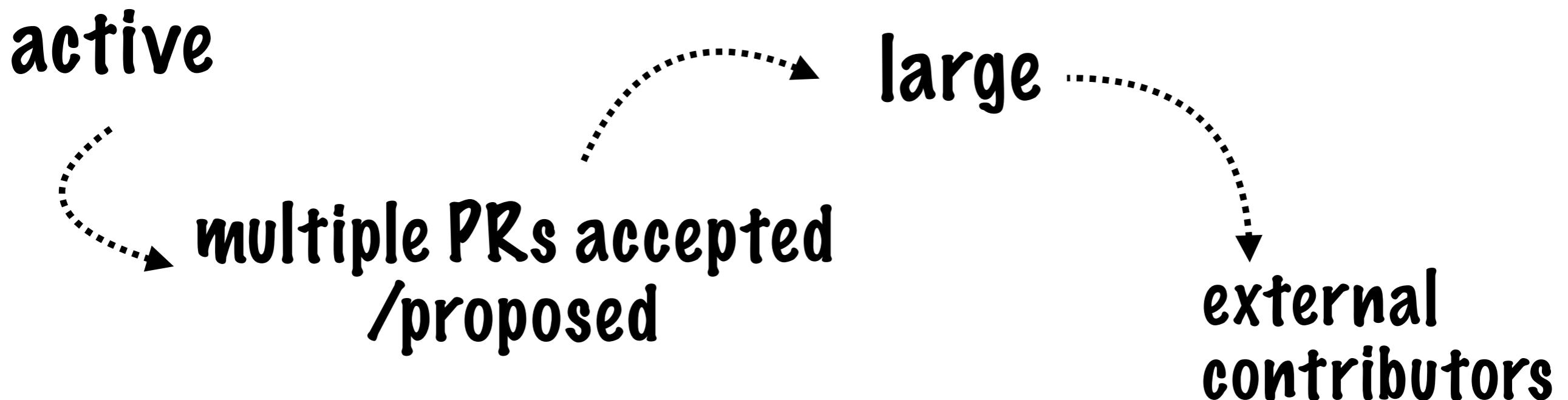
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RQ1

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RQ1



RQ3. What are the challenges associated with exposing students to OSS?

Students face many **barriers** during the process

“Open-source software is not a fairy tale” [P4]

“Finding a suitable thing to do is trick” [P1]

“technical level could be the main problem” [P1]

RQ3. What are the challenges associated with exposing students to OSS?

The **short duration** of a course is an issue

“We should engage students quickly” [P3]

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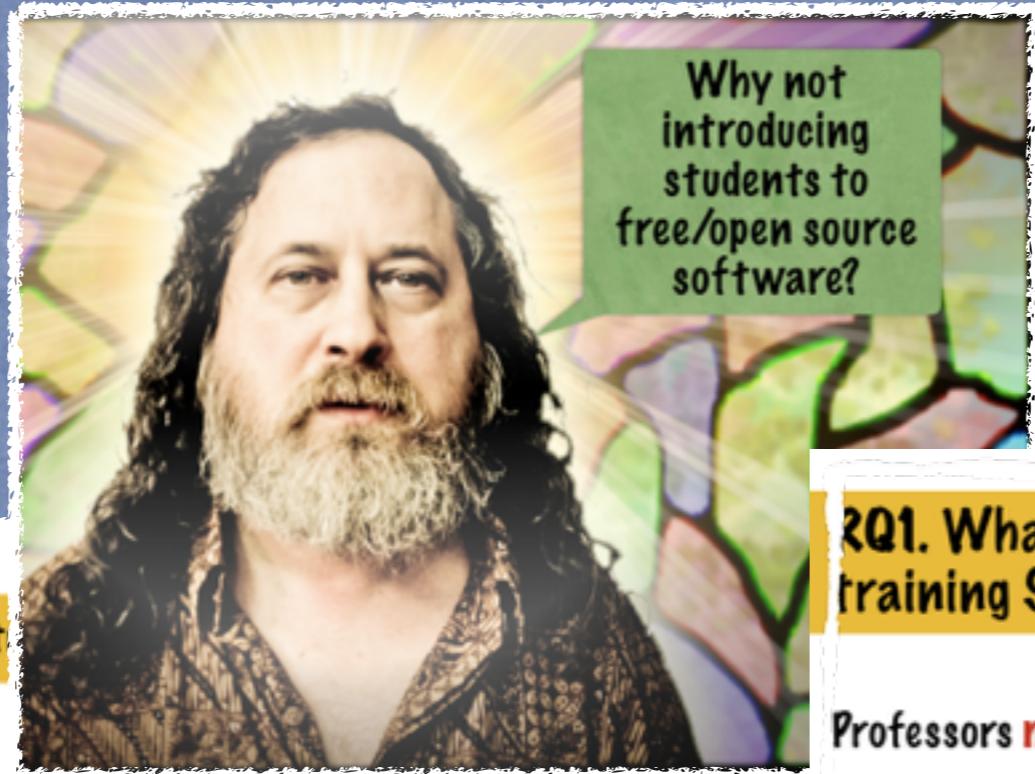
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Professors’ **time** availability is also challenge

“I’d follow students closely to try to help them. However, I can’t follow them as close as I want to”



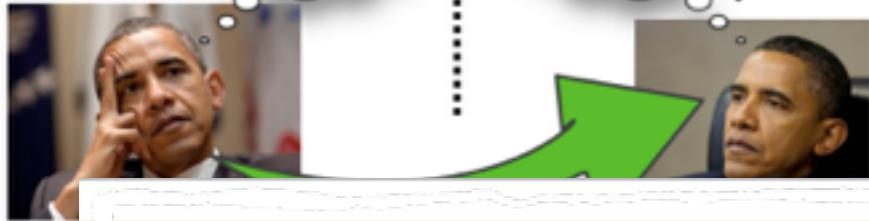


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"you may not be able to throw them in the deep end of the pool and say swim" [P6]

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