

## Louv1.01x Paradigms of Computer Programming

<http://goo.gl/1K2m7s>

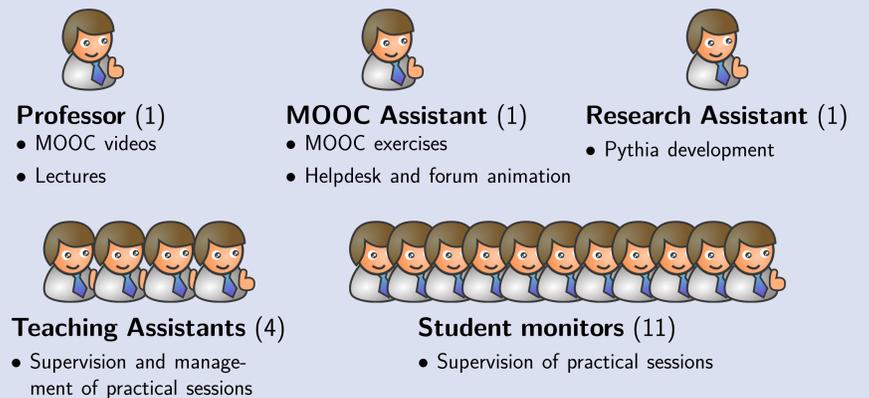
- **Creating** a MOOC based on an existing traditional course
- **Assessing** programming exercises
- Testing and evaluating the MOOC with on-site students, by means of a **SPOC**
- Making **living in parallel** the SPOC with traditional teaching of advanced concepts



### 1. Context

- edX MOOC to be opened in **February 2014**
- **Existing on-site** course on paradigms of computer programming  
*About 300 second-year bachelor students in engineering and in computer science*
- On-site 5 ECTS course versus a **3 ECTS MOOC**
- **Integration** with the on-site course as a SPOC  
*SPOC used to build a flipped classroom style on-site course, and must be a self-contained course*

### 2. Human Resources



### 3. Structure and Timeline

#### Organisation of a week

- Twelve **SPOC lessons**, one per week

Fri	Sat	Sun	Mon	Tue	Wed	Thu
SPOC			Lab and Practical Sessions			Lecture
<ul style="list-style-type: none"> <li>• Discussion forum</li> <li>• MOOC assistant</li> </ul>			<ul style="list-style-type: none"> <li>• Student monitors (tutors)</li> <li>• Teaching assistants</li> </ul>			<ul style="list-style-type: none"> <li>• Professor</li> </ul>

- About 50 minutes videos, split in chunks of between 5 and 10 minutes
- Two kinds of exercises: classical and coding exercises
- First lecture before the first SPOC lesson to introduce the structure and timeline
- The lecture restructures the current SPOC lesson and introduces the next one

#### Organisation of the remastered on-site course

- Two **parallel tracks** for each SPOC lesson

	SPOC	Practical Session	Lecture
SPOC	Video + exercises ( <i>i</i> )	Feedback ( <i>i</i> )	Restructuring ( <i>i</i> )
Traditional Course		Advanced exercises ( <i>i</i> - 1)	Advanced concepts ( <i>i</i> )

- Traditional course track covers advanced concepts
- Shift between SPOC and traditional course tracks for the taught material
- Mid-term evaluations of the SPOC serve as review for on-site students
- On-site students can earn a bonus or a penalty for their final grade

### 4. Exercises

- Interactive exercises after each video

#### Classical exercises

- Multiple choices or simple text line

#### Assessing programs

- Coding exercises for which programs have to be produced
- Automatic **programs grading** with the *Pythia* platform
- “Intelligent” feedback to support learning



<http://www.pythia-project.org/>

### 5. Conclusion

- Creating a MOOC is very time-consuming and requires a lot of resources
- A MOOC can be an opportunity to recast an existing course

#### Future work

- Evaluation of the remastered on-site course
- Preparation of the MOOC

### References

- Sébastien C., Adrien B., Peter Van R. Recasting a Traditional Course into a MOOC by Means of a SPOC. *EMOOCs 2014. (To be presented)*
- Sébastien C., Vianney le C. Teaching Programming and Algorithm Design with Pythia, a Web-Based Learning Platform. *Olympiads in Informatics, 2012.*