

**clearSY**

Safety Solutions Designer

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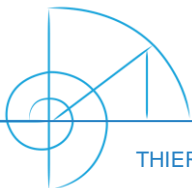
[WWW.CLEARSY.COM](http://WWW.CLEARSY.COM)

TUTORIAL

ABZ  
2021

JUNE 2021

# Using B to program the CLEARSY Safety Platform



THIERRY.LECOMTE@CLEARSY.COM

# Contributors

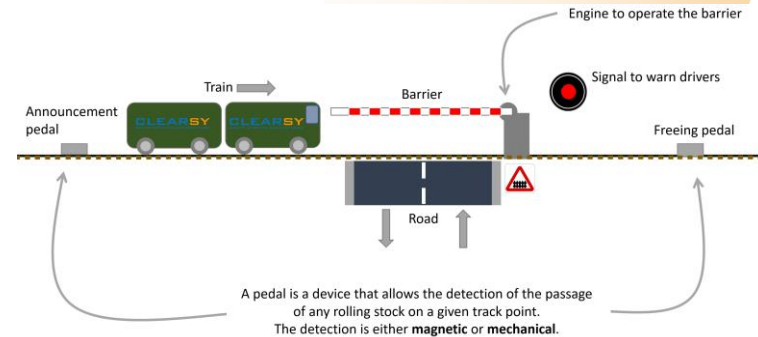
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- |                   |   |
|-------------------|---|
| ▶ Thierry Lecomte | Slides, edition, live presentation                  |
| ▶ Bruno Lavaud    | CS <sub>0</sub> , C code, slides, live presentation |
| ▶ Patrick Péronne | SK <sub>0</sub> , Software simulator, example       |
| ▶ Lilian Burdy    | B models  |

Resources available at <https://github.com/CLEARSY/tutorial-ABZ-2021>

# OBJECTIVES

- ▶ Learn how to use formal method for « serious thing »
  - ▷ More than just model, predicate and proof
  - ▷ More a **detailed introduction** than a full course on SW dev.
- ▶ Audience
  - ▷ students, teachers, researchers, engineers
- ▶ Low requirements
  - ▷ Some knowledge of formal logic
  - ▷ Notation introduced when required
  - ▷ Software development
- ▶ A single example (railway Xing)



# RESOURCES

- ▶ Slides and pre-recorded videos
  - ▷ Slides on github (already)
  - ▷ Tutorial video on Youtube\* (this week)
- ▶ Other resources on github
  - ▷ Source code and formal models
  - ▷ CLEARSY Safety Platform for education (Windows-only software simulator)
  - ▷ Several informative pdf

(\*): <https://www.youtube.com/channel/UCWoU4LVYy7Q7OYRp4D9FnOQ>

# AGENDA (2 hours)

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## ► Introduction

- ▷ Safety, standards & embedded systems
- ▷ The level crossing example
- ▷ The CLEARSY Safety Platform in a nutshell

## ► The CLEARSY Safety Platform for Education

- ▷ The starter kit SK0
- ▷ The software simulator (VM)

## ► The CLEARSY Safety Platform for Industry

- ▷ Industrial platform
- ▷ Scope of the example
- ▷ Implementation
- ▷ Real implementation

## ► Conclusion

# IN PRACTICE

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- ▶ Listen and learn
- ▶ Browse the resources (slides, docs, source code, models)
- ▶ Play with the CLEARSY Safety Platform for Education
- ▶ Ask questions on the chat at any time
  - ▷ Quick answer on the fly
  - ▷ By batch during topic transition
- ▶ For further questions/remarks:
  - ▷ [thierry.lecomte@clearsy.com](mailto:thierry.lecomte@clearsy.com)