

Quality Assurance Due to Modeling Guidelines: How Do You Persuade Your Team?

Philipp Arnold & Melina Simichanidou

SOFTWARE QUALITY. IN CONTROL.

Solutions for Integrated Quality Assurance of Embedded Software

▶ Questions?

- Ask at any time – this is an open discussion.
- Please check whether or not you are on mute.
- Use the Q&A if sound is not working.

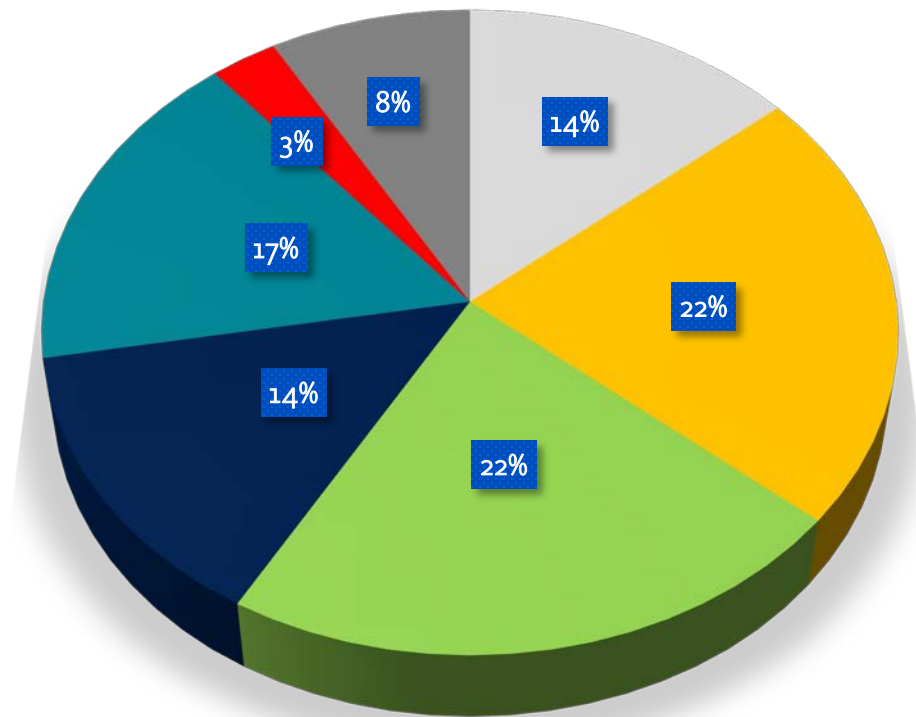
▶ You will receive the presentation afterwards by email.

▶ Moderators:

- Philipp Arnold, Product Application Engineer MXAM
- Melina Simichanidou, Software Engineer MXAM

- ▶ What do you hear most often about static model analysis?
- ▶ Let's tease out the troubles & causes!
- ▶ How does continuous integration come into play?
- ▶ Your favorite aspects
- ▶ Hands on: Steps to guideline compliance with happy users!

What do you hear most often about static model analysis?



- Guidelines are superficial!
- Ugh, way too many findings.
- I don't have time for MXAM!
- My modeling style has improved.
- I have learned a lot about potential problems.
- Nothing works without static analysis.
- I'm not allowed to use any of the cool Simulink features anymore.



Your Feedback

19 answers as of July 7, 2020

■ Guidelines are superficial!

■ Ugh, way too many findings.

■ I don't have time for MXAM!

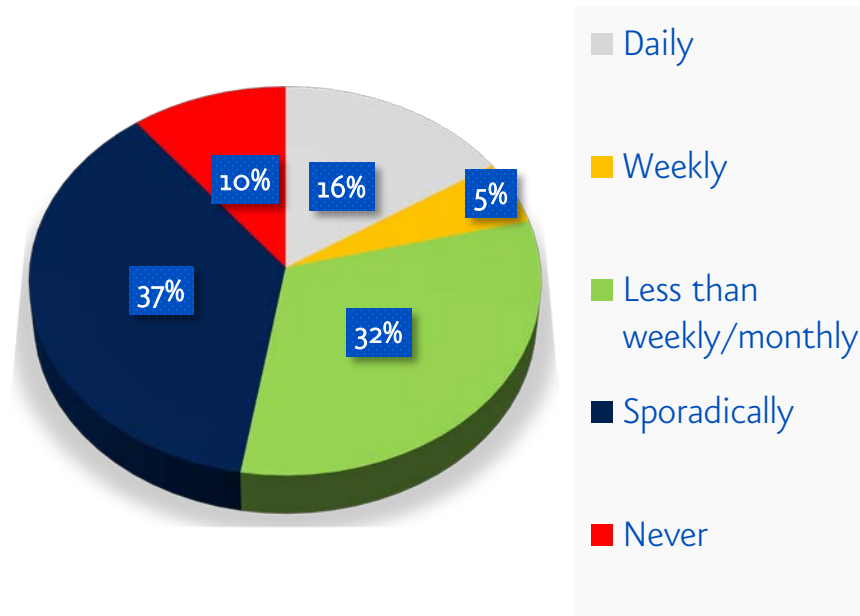
- ▶ What are possible causes?
Which obstacles have you faced in your team?



~10 min

Process & time reasons	Quantity of content	General comprehension	Handling old projects
static analysis not yet established in process - quality assurance itself - frequency of analyses	which guideline set to apply in the first place?	lack of knowledge on guidelines	“never change a running system ... right?”
no urgency at the beginning of projects, e.g. milestone too far away	lots of guidelines to follow / guideline document contains a lot of guidelines	understand the meaning of specific findings	
time-taking analyses	several tools for static analysis		

▶ How often do you statically analyze your models?



▶ When to apply guidelines

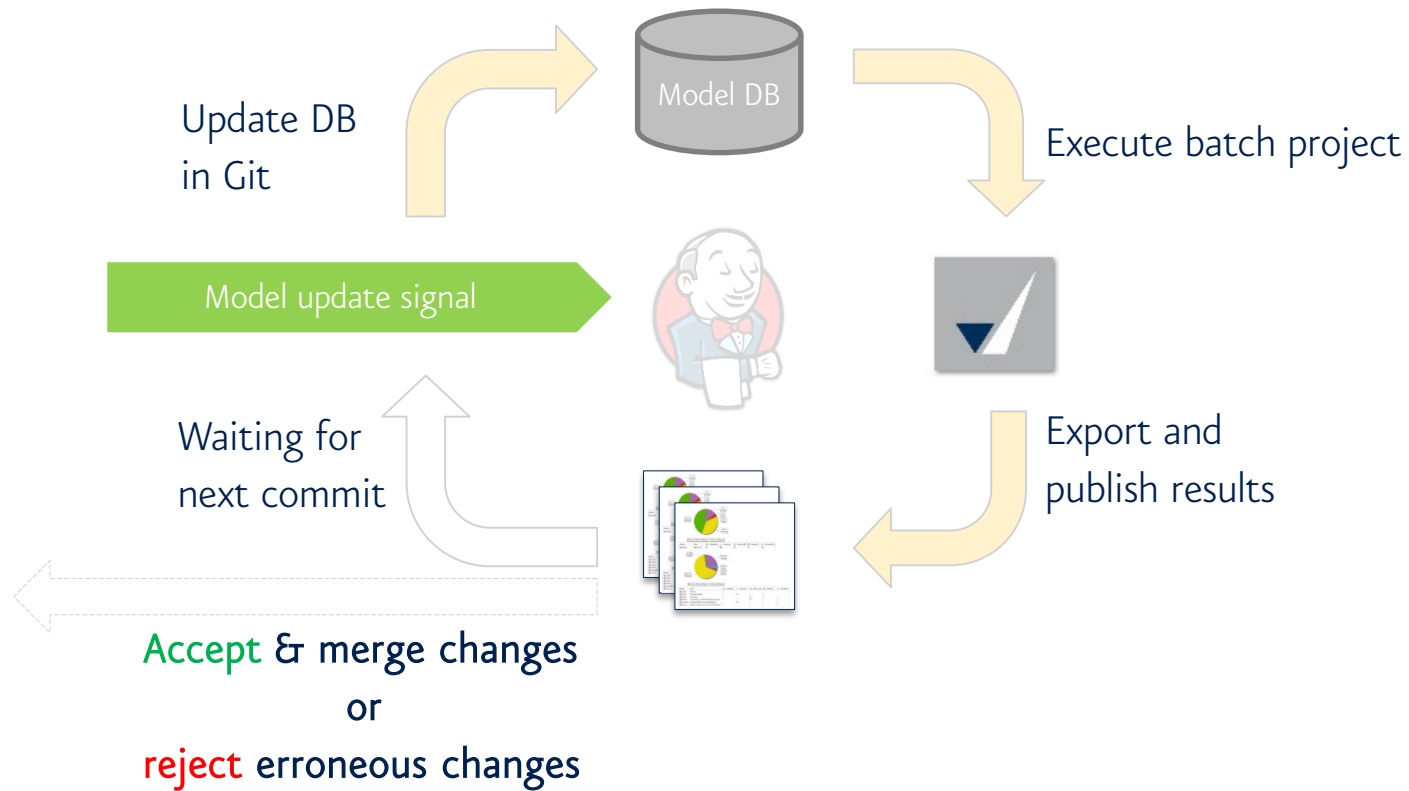
- Good practice
 - Right from the start & during entire modeling process
- When necessary
 - Before testing
 - At quality boundaries
 - Exchange between e.g. OEM and supplier
 - Change management, e.g. Git integration
 - Before code generation



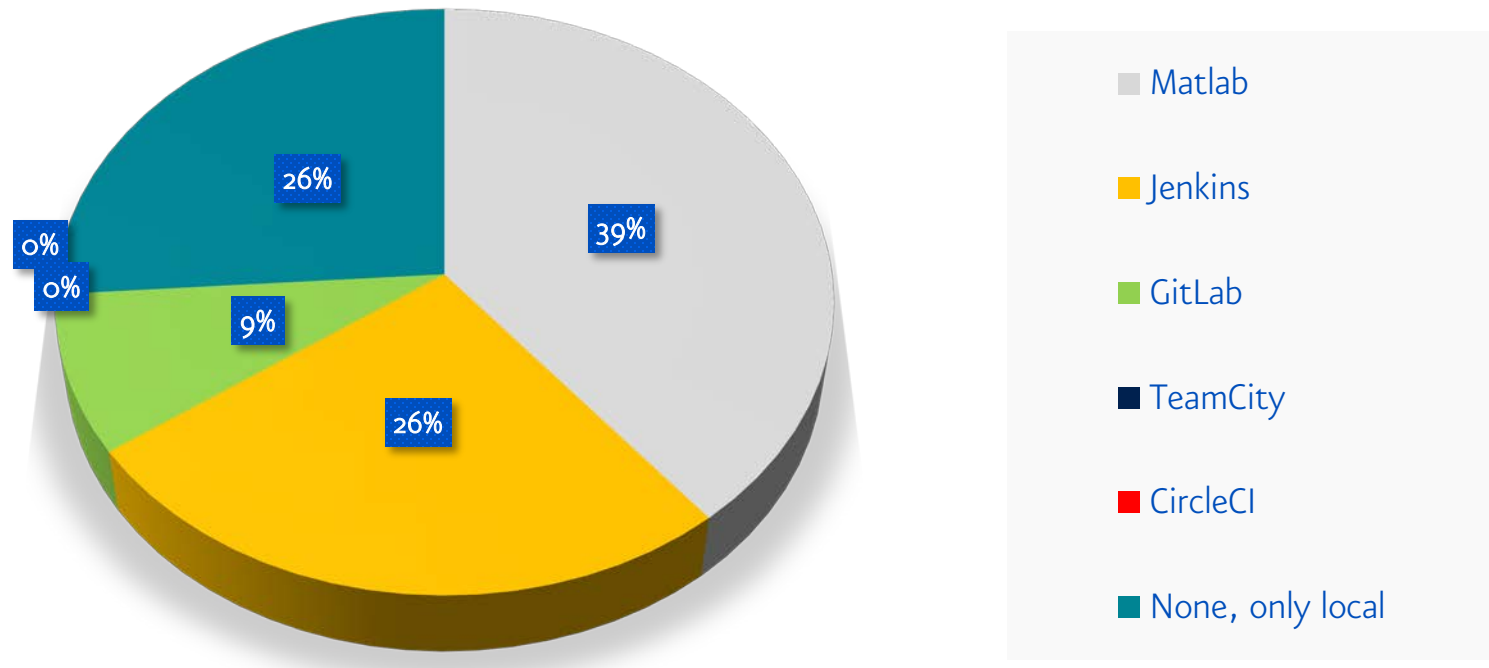
Your Feedback

19 answers as of July 7, 2020

Change management with versions control system and CI platform



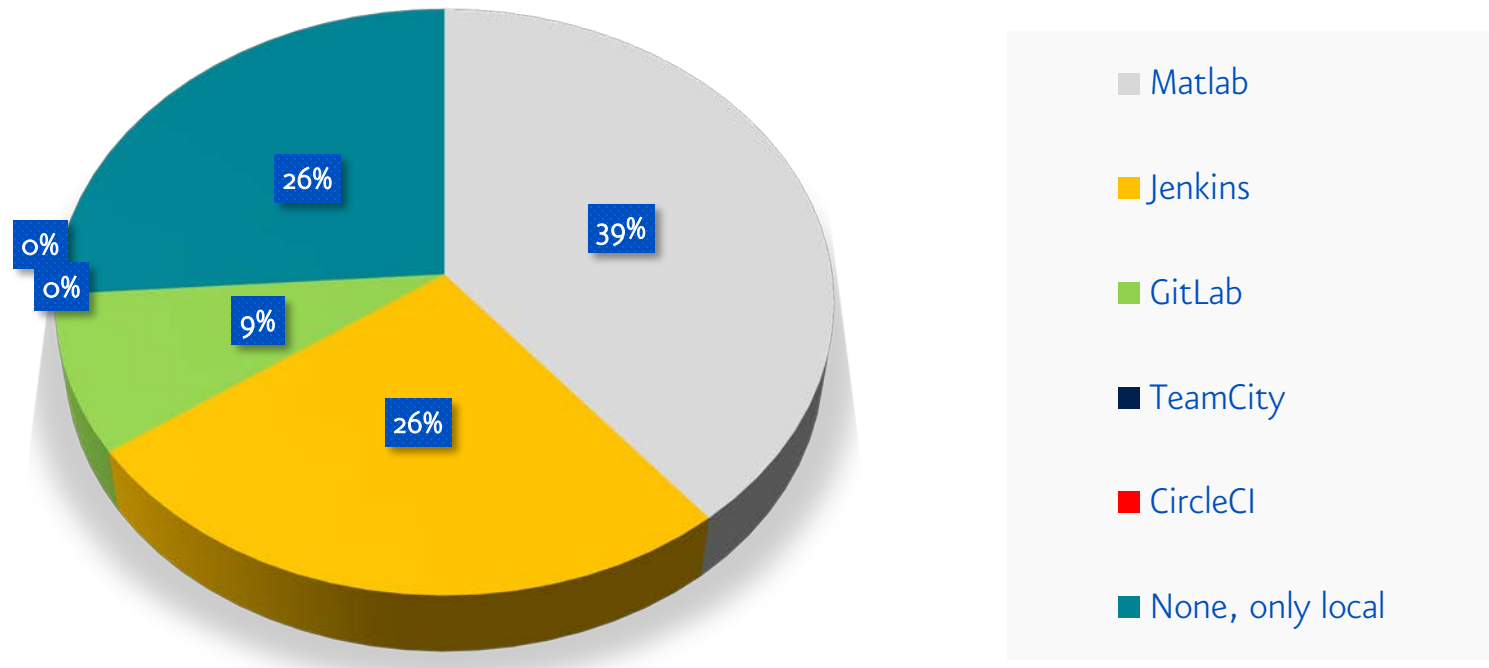
Which Continuous Integration environment do you use to test your software models?



Your Feedback

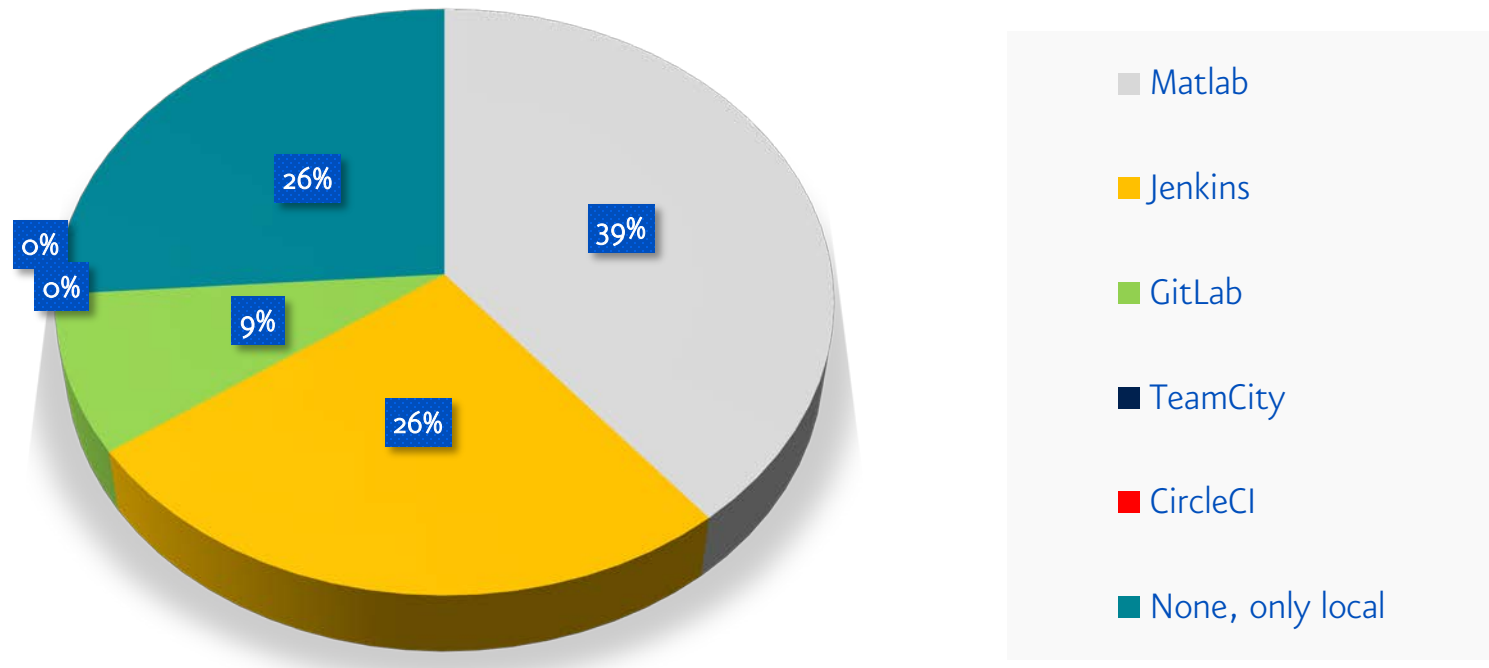
19 answers as of July 7, 2020

Which Continuous Integration environment do you use to test your software models?



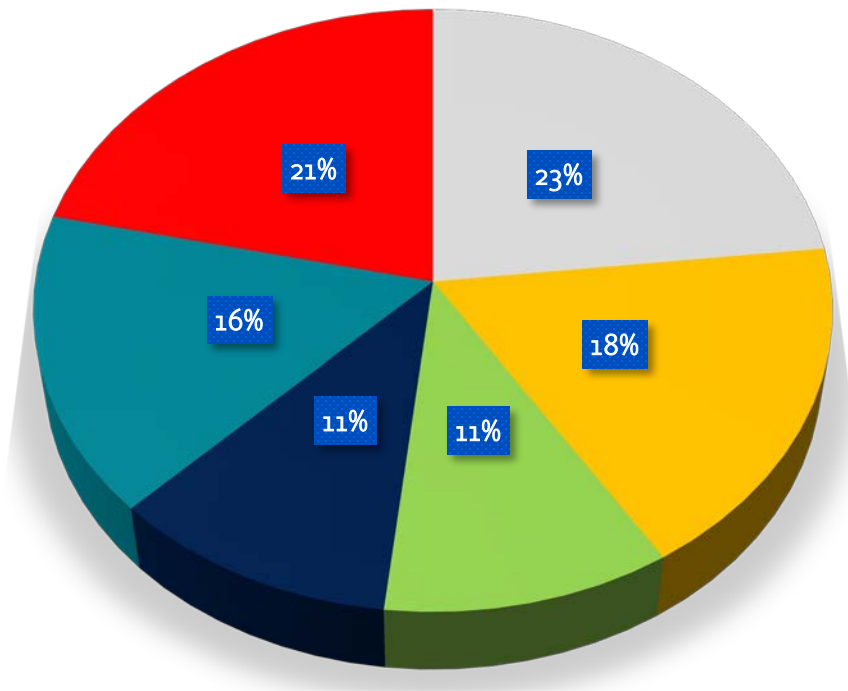
What are the reasons why you are not using CI?

Which Continuous Integration environment do you use to test your software models?



How long did it take to set up CI and to get it to work?

With which three aspects are you most likely to win developers over?



- Good layout and design
- Easy model architecture
- Safeguard strong data typing
- Visible signal flow
- Effective traceability & documentation
- Effect on generated code



Your Feedback

19 answers as of July 7, 2020

Live survey with mentimeter

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Code: 894134

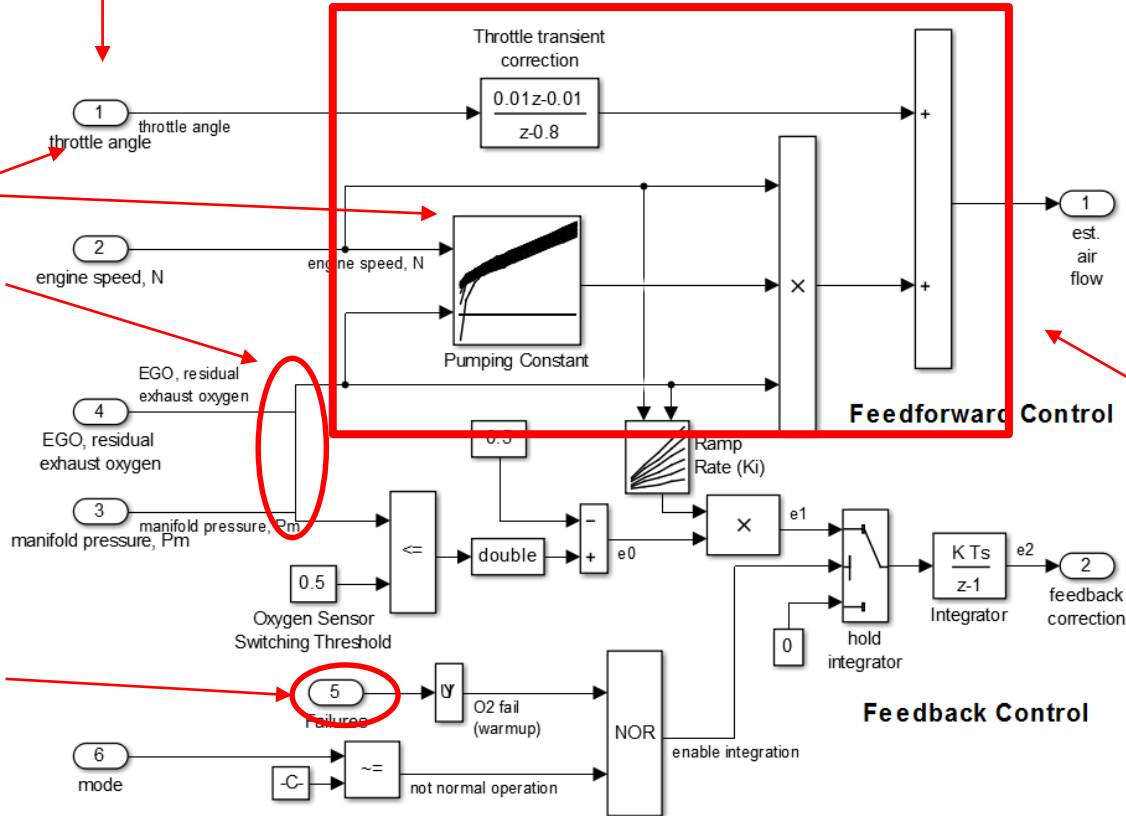
Usage of buses,
especially in upper model levels

Intake Airflow Estimation and Closed-Loop Correction

Color schemes

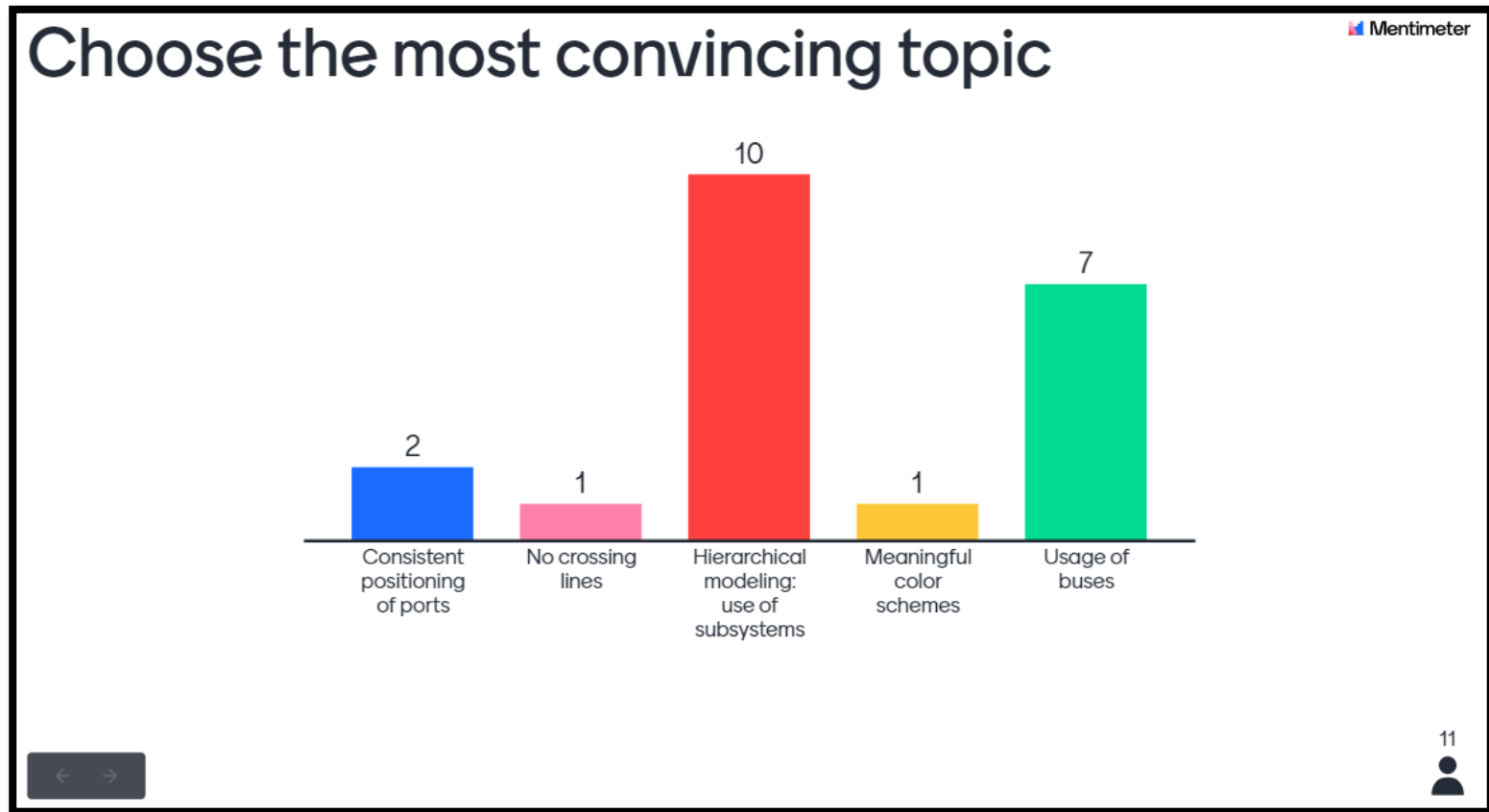
Crossing lines

Positioning of
ports



Hierarchical modeling:
use of subsystems

Live survey with mentimeter



- ▶ Effect on generated code
- ▶ Visible signal flow
- ▶ Effective traceability & documentation
- ▶ Strong data typing



Can you name examples of the above topics?



- prepare guideline set
- dedicated group of people
- integrate company owned guidelines



Ensure ease of use

- company-wide / centralized deployment
- automation of analyses & reporting



Set up team meeting

- to ensure team-wide acceptance
- show convincing guideline examples
- observe how the usage of guidelines increases confidence of clients
- take feedback



Process modification

- integrate regular analyses
- discuss static analysis related open points in your team reviews, e.g. comprehension of guidelines, specific findings



Happy Users!

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