

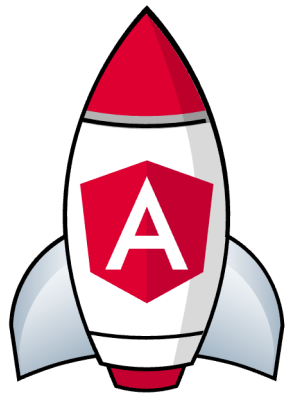


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# Angular Performance Optimization

By & with Alex Thalhammer

# About me ...



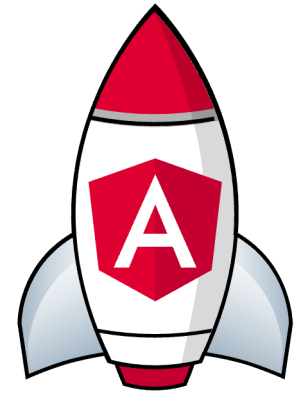
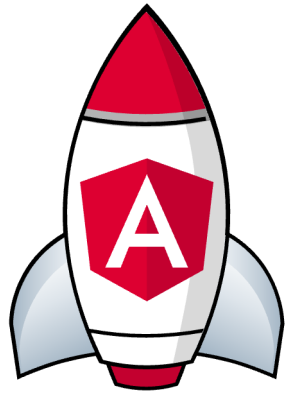
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# My office 😊



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Hi, it's me → @LX T 

<https://alex.thalhammer.name/>

- **Alex Thalhammer** from Graz, Austria (since 1983)
  - Angular Software Tree GmbH (since 2019)
- WebDev for 22+ years (I've come a long way baby)
- WordPress Dev (Web, PHP & jQuery, 2011 - 2017)
- **Angular Dev** (Web, TS, Rx since 2017 - NG 4.0.0 😊)
- **Angular Evangelist, Coach & Consultant** (since 2020)
  - Member of Angular Architects

<https://www.angulararchitects.io/>



# About you ...



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# Tell us sth about yourself

- Hi, my name is ...
- I currently work on ...
- A good performance is ...
- My goal(s) for the next 2 days is (are) ...



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# Pollings

- OS
  - Mobile OS?
- Browser
- IntelliJ/WebStorm vs VS Code
- ?



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# Tell us sth about your team / projects

- Before I tell you sth about our workshop 😊



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# About this workshop ...

# My Goals

Every participant should

- understand the ***importance*** of good performance
- know how to ***measure*** the performance
- know how to ***tweak*** the performance
- become a ***performance evangelist*** in her/his project/team/company

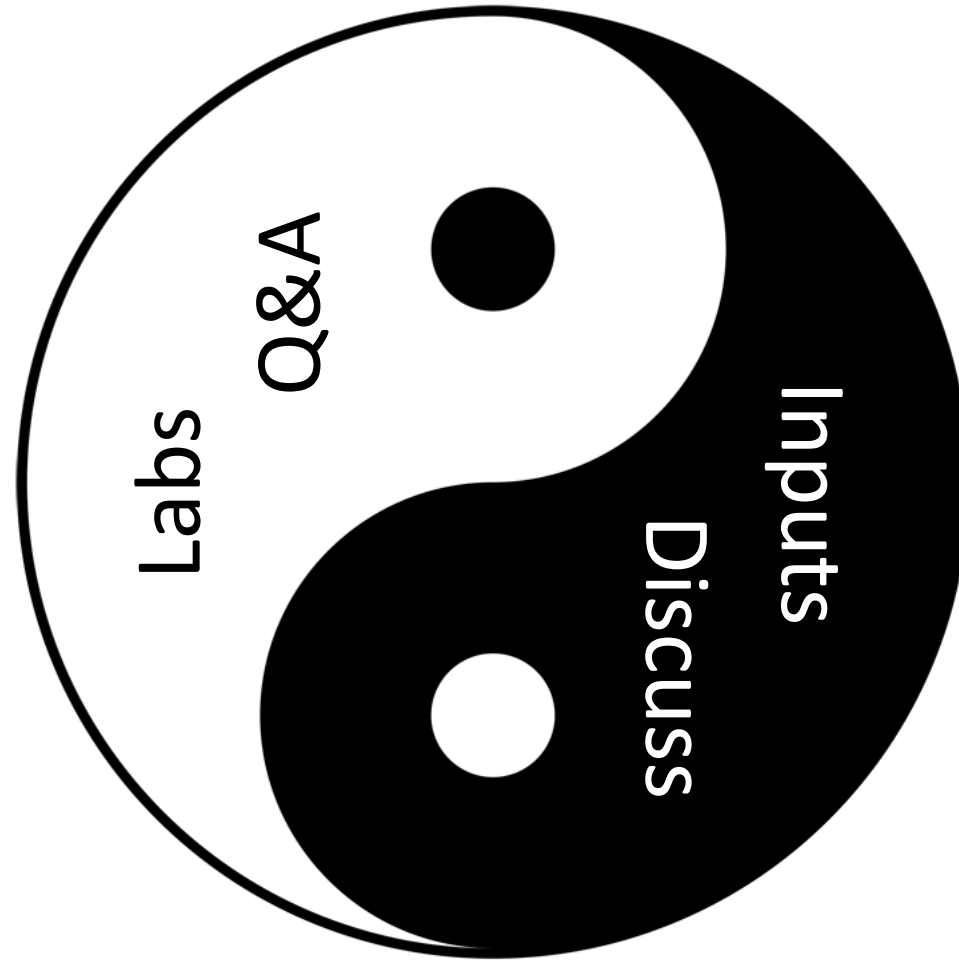


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# Didactics



# We work together I

- Don't hesitate to interrupt me at **ANY TIME**
  - Questions
  - Remarks or
  - Feedback 😊
- Somebody else might have the same **question**
  - Be a hero and ask it
    - Seriously, it makes the workshop better for all of us 😊



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# We work together II

- Remote: Please turn your camera on ***ALL THE TIME***
  - Necessary for me to get your feedback
  - This will also improve the workshop for all 😊

# Timetable (approx.)

- 09:00 – 12:20 (incl. 20m ☕ break)
- 1hr 🍲 break
- 13:20 – 16:40 (incl. 20m ☕ break)
- Including expected delay we will end at 17:00 latest 🏁
- 17:00 special Q&A (today only)



# What is Performance?

- What did you say?
- **Web performance** refers to the speed in which web pages are downloaded and displayed on the user's web browser. **Web performance optimization (WPO)**, or **website optimization** is the field of knowledge about increasing web performance.  
-- [https://en.wikipedia.org/wiki/Web\\_performance](https://en.wikipedia.org/wiki/Web_performance)

# Why Performance Optimization?

- According to *Facebook*, when people have to wait too long for a webpage to load, they're more likely to abandon the page all together.
- According to *Google*, 40% of visitors will abandon a website if it takes longer than 3 seconds to load
- According to *Amazon*, 0.1s less loading time results in around 1% more sales



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# Angular Performance Optimization

We distinguish between

- Initial load performance (classical web performance)
- Runtime performance (during usage, e.g. scrolling frame rate)

# Topics / Days

0: Intro, UAAO-  
Framework &  
Audit Tools

2: Runtime  
Performance

1: Initial Load  
Performance

3: Further  
Topics &  
Feedback

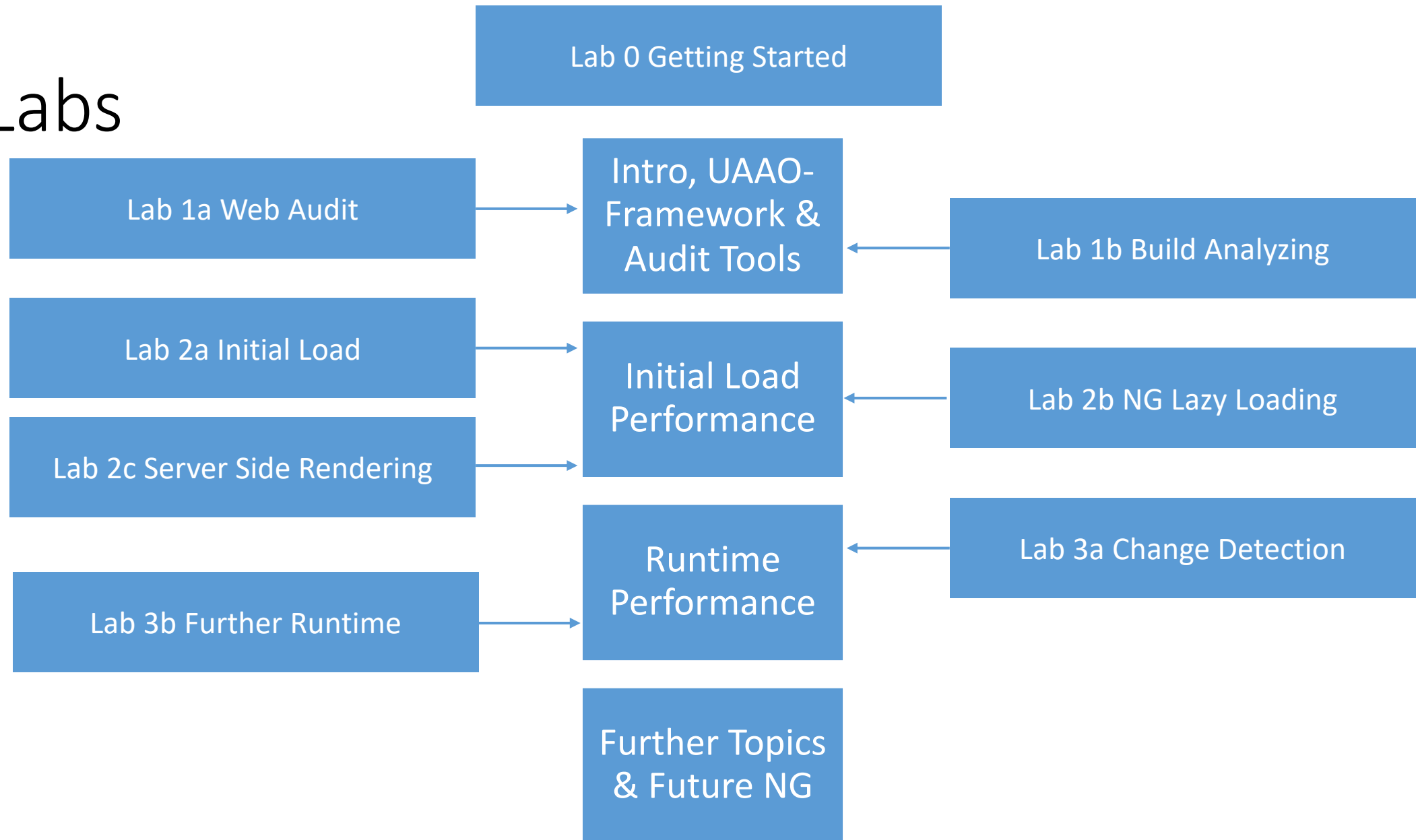


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# Labs



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# Setup for Labs I

- NodeJS version **18.13.x** (and higher 18) or 20.9.x (and higher 20)
  - NodeJS version 14 dropped in NG 16, version 16 dropped in NG 17

## Actively supported versions

This table covers [Angular versions under active support](#).

ANGULAR	NODE.JS	TYPESCRIPT	RXJS
17.0.x	^18.13.0    ^20.9.0	>=4.9.3 <5.3.0	^6.5.3    ^7.4.0
16.1.x    16.2.x	^16.14.0    ^18.10.0	>=4.9.3 <5.2.0	^6.5.3    ^7.4.0
16.0.x	^16.14.0    ^18.10.0	>=4.9.3 <5.1.0	^6.5.3    ^7.4.0
15.1.x    15.2.x	^14.20.0    ^16.13.0    ^18.10.0	>=4.8.2 <5.0.0	^6.5.3    ^7.4.0
15.0.x	^14.20.0    ^16.13.0    ^18.10.0	~4.8.2	^6.5.3    ^7.4.0

## Try "node -v"

Windows / Linux: Use NVM 😊

Mac Users: Use Homebrew 🍺



# Setup for Labs II

- Git
  - Personally I like to use Sourcetree
- IDE: VS Code (free) or IntelliJ/WebStorm (not free, but better IMHO)
  - Personally I prefer IntelliJ/WebStorm
- Chrome (or Chromium based alternative)
  - Other browsers are okay for private matters

# Recommendations

- Use prettier
  - especially for .ts files
- Use ESLint
  - in your IDE of choice and/or from terminal
- Use Git
  - we recommend to at least commit after every lab
  - easier switching back and forth with my solution

# Starter Kit

- Incl. Slides
- And Labs (exercises)
- Clone from <https://github.com/L-X-T/ng-performance-standalone>



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# Ready for Takeoff!

- What are your questions?