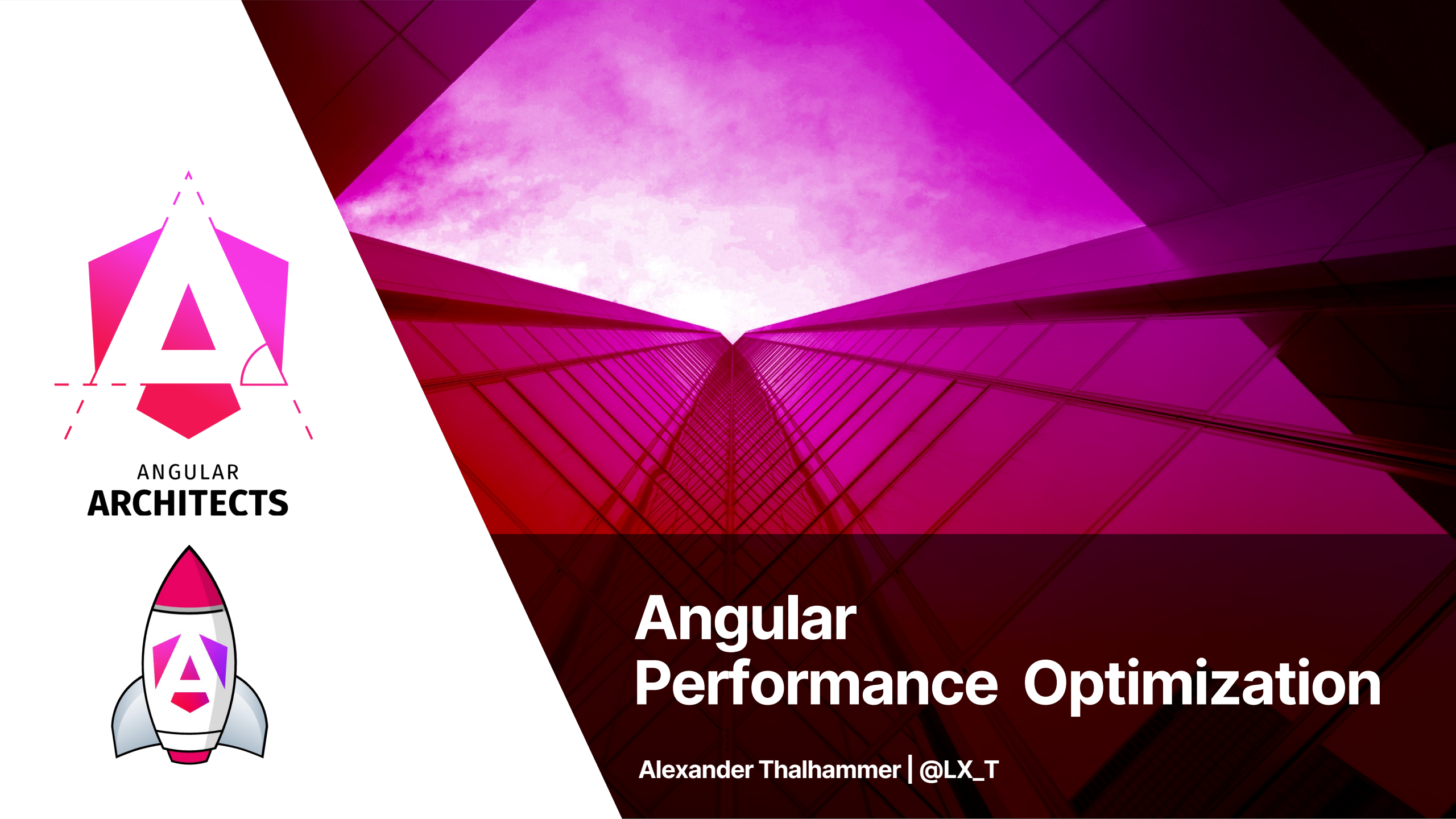

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Angular Performance Optimization

Alexander Thalhammer | @LX_T

About me

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About me ...


... my office

About me

Hi, it's me → @LX_T https://alex.thalhammer.name/

- **Alex Thalhammer** from Graz, Austria (est. 1983)
  - **Angular Software Tree** GmbH (est. 2019)
- Web Dev for 23 years (I've come a long way baby)
- 2011 - 2017 WordPress Dev (Web, PHP & jQuery)
- Since 2017 **Angular Dev** (Web, TS, Rx - NG 4.0.0)
- Since 2020 **Angular Evangelist, Coach** & **Consultant**
  - Member of **Angular Architects** https://www.angulararchitects.io/

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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 this workshop is (are) ...

About you

Let us know about your

- OS
  - Mobile OS?
- Browser
- IDE (IntelliJ/WebStorm vs VS Code)
- How big is your display?

Pollings

About your team / projects

– Before I tell you sth about our workshop ☺

Your work

About this workshop

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Every participant should

– understand the ***importance*** of performance

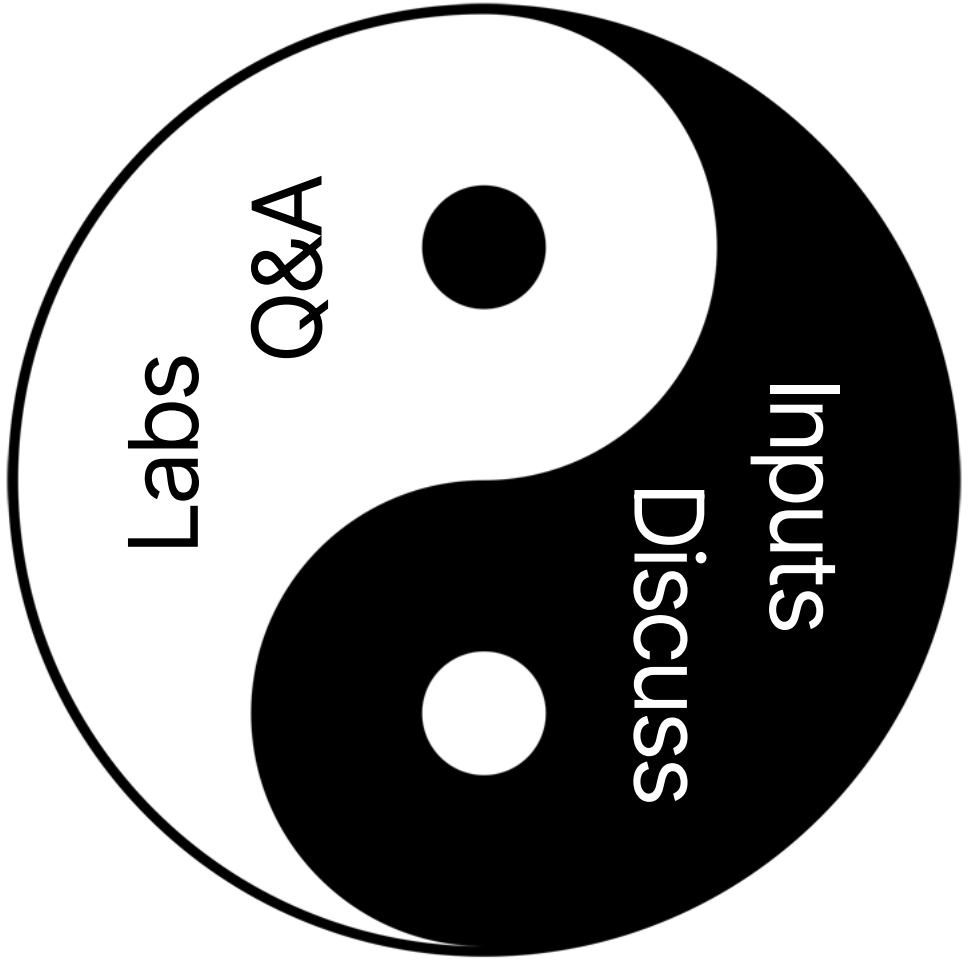
– know how to ***measure*** the performance

– know how to ***tweak*** the performance

– become a ***performance evangelist***
in her/his project/team/company

My goals

Didactics



We work together I

- Don't hesitate to interupt me at ***ANY TIME***
  - **Questions**
  - Remarks or
  - Feedback ☺

- Somebody else might have the same **question**
  - Be a hero and ask it

Workshop

We work together II

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

Workshop

Timetable (approximately)

- 08:30 – 13:00 (incl. 15-20m ☕ break)
- If there is delay we will end at 13:30 latest 🏁
- Today: Q&A afterwards, for all questions ☺

Workshop

Timetable (approximately)

- 14:00 – 18:30 (incl. 15-20m ☕ break)
- If there is delay we will end at 19:00 latest 🏁
- Today: Q&A afterwards, for all questions ☺

Workshop

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

Why Performance Optimization?

– According to *Amazon*, 0.1s less loading time results in around 1% more sales

– According to *Google*, 40% of visitors will abandon a website if it takes longer than 3 seconds to load

– Also 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

Angular Performance Optimization

We distinguish between

– Initial load performance (classical web performance)

– Runtime performance (during usage, e.g. scroll frame rate)

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Agenda

01: UAAO Framework

04: Initial Load - Lazy Loading & Deferrable Views

07: Runtime – Best Practices

02: Audit Tools

05: Initial Load - SSR & SSG

08: NG 16 & 17

03: Initial Load - Assets & Build

06: Runtime - Change Detection

09: Bonus & Conclusions

Labs

- 00: Getting Started
- 03: Initial Load - Assets & Build
- 06: Runtime - Change Detection
- 01: Web Performance Audit
- 04: Initial Load - Lazy Loading & Deferring
- 07: Runtime – Best Practices
- 02: Build Analysis
- 05: Initial Load - SSR & SSG
- 08: NG 16 & 17

Setup for Labs

- NodeJS version > 18.13.x or > 20.9.x
  - NodeJS 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"

Use NVM ☺

Mac Alternative: Use Homebrew 

Setup for Labs

- Git
  - Personally I used to use Sourcetree
    - looking to migrate to Tower | Fork | GitKraken | git extensions
- VS Code (free) | IntelliJ/WebStorm (better)
  - 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/


Ready for takeoff
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Workshop Updates

- NG 17
  - Deferrable Views Slides & Lab (brand new)
- Removed NX (1st p3rf workshop without NX!)
- New AA branding (all Slides restyled)

Disclaimer

- 00 Intro
- 01 UAAO Framework
- ☕ break
- 02 Audit Tools
  - Labs

Day 1

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- 03 Initial Load - Assets & Build
  - Lab
- ☕ break
- 04 Initial Load – Lazy Loading
  - Lab
- 05 Initial Load – SSR & SSG
  - Lab

Day 2

Day 3

- 06 Runtime - Change Detection
  - Lab
- ☕ break
- 07 Runtime - Best Practices
  - Lab
- 08 NG 16-17
  - Lab
- 09 Bonus & Conclusions