ATLANTIC VENTURES

FullStack Challenge

2025

Welcome

You made it to the next step. A Full Stack challenge.

Time frame until the next meeting.

Expectation:

- One Slide per section
- 3 Minute presentation, each slide
- 3.5 Minutes discussion, each slide

Ideal:

- Show max 4 slides, one for each of the four sections.
- Show some working code for B. No full implementation, 2-3 endpoints, but running code,
- Spend max 4 hours

Part A - API Design

Design an IoT platform for a fleet management and asset tracking system

- Create architecture diagram covering edge devices, connectivity, cloud etc.
- Outline main components and dataflow
- Describe at least five REST APIs for tracking location, sensors etc.
- Describe API documentation and testing strategy

(1-2 slides)

Part B - Coding Challenge

Choose your language / framework:

- Java
- Node.js
- Python
- your choice

Implement ONE key platform capability:

- Option 1: Geofencing API
- Option 2: Data Ingest

Features:

- Sensor data validation and normalization
- Persistence with time-series database
- Kubernetes deployment config

Part C - Conceptual

You are building a task management application that allows users to create projects and add assignees. The product owner asks you to implement a feature to calculate the total task load for each assignee across projects so the team can distribute work fairly.

- Describe your technical approach to this requirement focusing on:
    - Database schema additions needed
    - API endpoint logic to calculate totals
    - Considerations for performance as projects and tasks scale
    - Alternative architecture strategies if totals cannot be calculated fast enough
    - In your response, clearly explain the pros/cons and make any reasonable technical assumptions required. Code snippets are encouraged but not required.

Part D - General Questions

Answer the following:

- Explain considerations for database sharding
- Discuss the use of caching to improve performance
- Compare MVC vs Microservices architecture
- Explain edge vs cloud computing tradeoffs
- Compare long polling vs websockets
- What are considerations for operating globally distributed IoT platforms?

Instructions

Organize your submission clearly. Code should follow standards and have documentation. Conceptual responses should use specific examples where possible. You will be evaluated on your API modeling, working code, database, security, performance and architecture understanding.

Atlantic Ventures - Leadership Team

Jens Kocab
Founder & Managing Partner

- former Head of Digitalisation at Linde MH & Viessmann
- Senior executive with proven track record in global, industrial organisations
- Deep skills in corporate innovation, digital strategy and change management

Dr. Carlo Velten
Founder & Managing Partner

- former Co-Founder of Cloudflight and CEO of Crisp Research
- Experienced advisor, technology entrepreneur and investor
- Strong skills in digital strategy, cloud operations and venture building

Dr. Stefan Ried
Founder & Managing Partner

- former VP Forrester Research, CTO at multiple software vendors, Market-Strategy@Cloudflight
- Senior executive with proven track in technology-driven organisations
- Two decades experience in building digital platforms and ecosystem innovations