



## How SoundCloud scales

Alexander Grosse  
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**“Youtube for Audio”**

# Fakten



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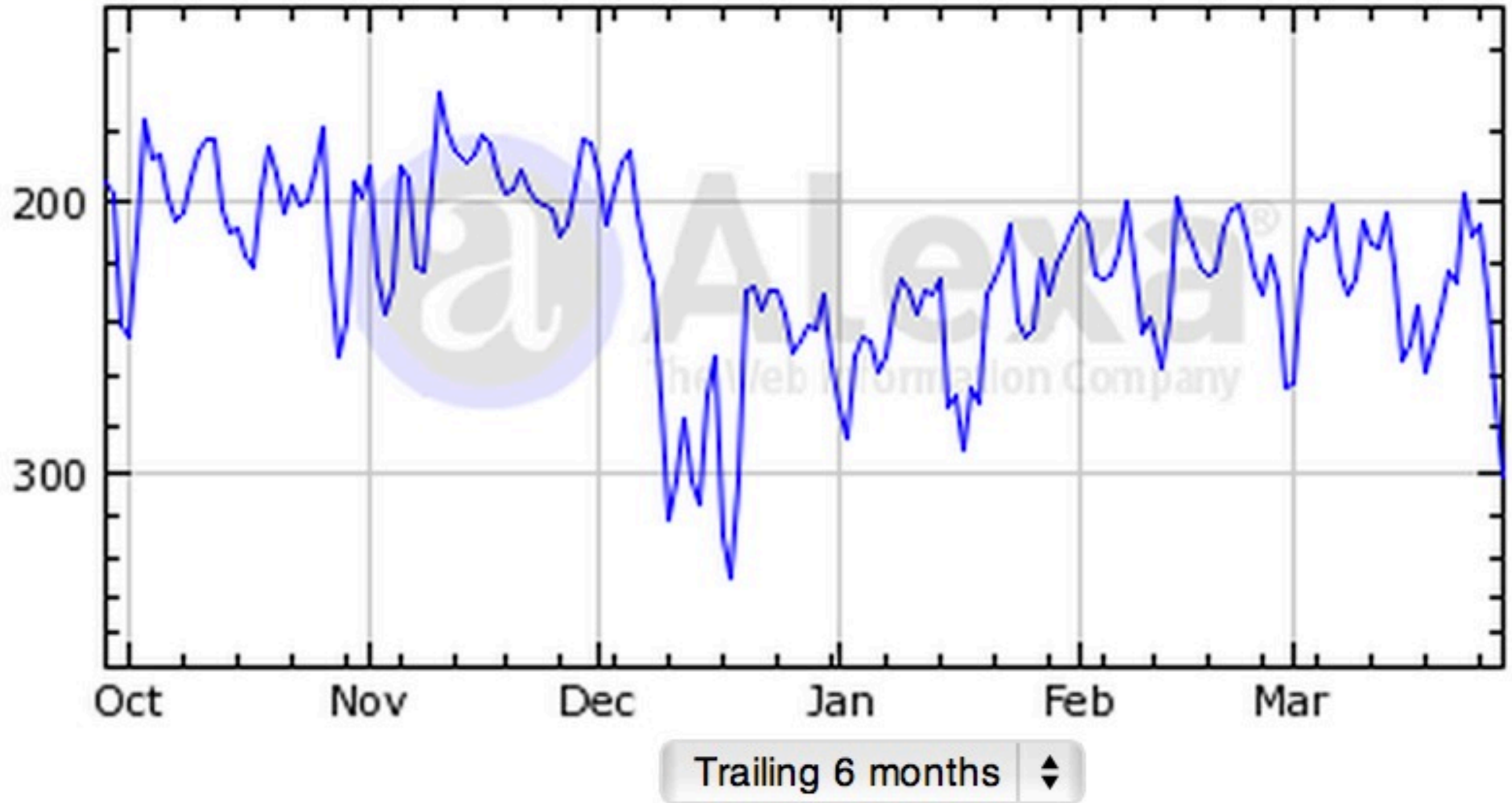
# Fakten

- Alexa Ranking (233)
- Employees (190) - 80 engineers
- 4 office locations (Berlin, London, San Francisco, Sofia)
- >35 million registered users
- partners (BBC, CNN)
- > 10.000 Apps



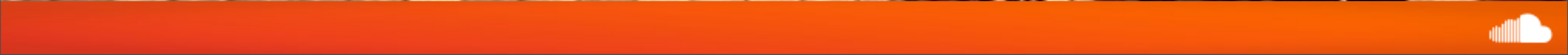
# Daily Traffic Rank Trend

[soundcloud.com](https://soundcloud.com)



# How SoundCloud scales





# Organization

# Technology



# What is the foundation?





# Principles





# Principles

Top-Down vs. Bottom-Up



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Top-Down vs. Bottom-Up

Trust



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How to react to mistakes



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Continuous Improvement



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Top-Down vs. Bottom-Up

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How to react to mistakes

Continuous Improvement

Innovation



# Top-Down vs. Bottom-Up

- Flat Hierarchies? Everybody has them...
- Engineering teams responsible for architecture (not architecture teams)
- Influence on the product



# Trust

- Deployment
- Change Management
- Process
- Time for “technical debt”



# Reaction to mistakes

- What will be changed if a mistake happens?





# Innovation

- R&D Department?
- Only Product?



# SoundCloud's basic principles



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- No dedicated QA roles



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- No dedicated QA roles
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- Team Building (Rotation, constant changes)
- Hacker Time
- Continuous Improvement
- Move fast and break things





# No QA

**Does that mean we don't test?**



**“You build it - you run it”**



# Flat Hierarchy



# Innovation

# Hacker Time



# CONTINUOUS DELIVERY



# Continuous Improvement

**Retrospectives**

**Post Mortems** (Projekte)



# Mistakes...



# Scrum? Kanban? Process?





**What is the most  
important thing you have  
to do so that this works?**





???



???

# Initial Culture



**???**

**Initial Culture**

**Hiring!!!**





# SoundCloud Hiring Process



**How does it look like in  
reality?**





# Organisation



HTML5

Mobile (native)

other

VI

API

Search

T&S

Payment

Partner

Tools

Data

Activ.

Delivery

Platform

System Engineering (Berlin / SF)



How do we structure teams?

**cross functional?**



Do teams stay the same?

**Change!**



# Technology



# **Ruby/Scala/Go/Clojure/ Javascript**



# Scale Horizontally/ Vertically?



# Rails->Mysql

# RabbitMQ->Cassandra

<http://backstage.soundcloud.com/2012/08/evolution-of-soundclouds-architecture/>





# MySQL

- 7 Master, 9 slaves, 900GB data
- Additional slaves in EC2
- Master Peak is 15K IOPS writes, 45k reads
- one slave lags intentionally 1 hour behind
- Je nach Konsistenzanforderung wird Slave oder Master gewählt (für reads - unterstützt read-only mode)



# Cassandra

- 3 Cluster
- 88 Nodes
- 15 TB of data
- up to 70K reads/sec



# **Hadoop Elastic Search Proprietary Spam Detection**



# ElasticSearch

**80 Mio Docs (gaining 1 Mio every 6 days)**

**175 QPS (gaining 15 QPS every month)**



# Hosted in S3/EC2 and physical DCs



# Outages





# Post Mortems





# Summary

- Move fast and break things
- Don't get slow because you fear to make mistakes



**backstage.soundcloud.com**



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**We are hiring!**

[www.soundcloud.com/jobs](http://www.soundcloud.com/jobs)

