

Part 4 Two Decades at Bosch

Connecting Boilers and Taming Big Data

Part 4 of 7: Lollar - Simplicity &
Fundamentals Conquer Scale

§ 1/11: Recap Pivotal Times in Plochingen

IoT Vision Agile Awareness Part 3

- ⚙ Inspired by early IoT & REST APIs.
- ⚙ My journey then led to Lollar, Germany, with a fascinating **IoT challenge**.

§ 2/11: The Challenge Connecting Boilers

IoT Data Acquisition from UK Boilers to Germany

⚙️ Task: Connect boilers in the UK to the internet and acquire data in Lollar.

⚙️ With a futuristic team, we had them **connected within the first week!**

§ 3/11: The Solution Elegant Integration

Leveraging Observer Pattern Not a Full Overhaul

- ⚙ With few libraries...
- ⚙ ...and leveraging the Observer pattern in Java within the existing application...
- ⚙ ...we started receiving a **big data**.

Voila!

§ 4/11: Next Hurdle Managing Data Growth

Rapidly Growing Time Series
Data Pre Cloud Hadoop Era

- ⚙ Accessing and managing this data became the next challenge.
- ⚙ This was before widespread cloud solutions or readily available Hadoop.

§ 5/11: Initial Approach Scale Up

Investing in a Powerful Server in Feuerbach

⚙️ We initially tried to "scale up" with a powerful server.

⚙️ Despite this, **performance issues persisted** as data volumes exploded.

§ 6/11: Back to Basics Yet Again

Database Design Indexing Query Optimization

- ⚙ Time to meticulously re-evaluate:
- ⚙ Database design, indexing strategies, join operations.
- ⚙ Now dealing with **millions of rows daily**.

§ 7/11: The Solution Daily Partitions Big O

Optimizing Application Logic for Scale

- ⚙️ Created **daily partitions** based on dates.

- ⚙️ Rigorously optimized application logic based on **Big O complexity**.

- ⚙️ Results were astounding!

§ 8/11: The Success Story

5 Million Writes Per Day on a Single Server

⚙️ We successfully managed 5 million writes/day on one server.

⚙️ Once, a 3rd party server outage led to **17M+ writes** post-recovery.

⚙️ Our system handled it **flawlessly**.

No downtime.

We made history at Bosch!

§ 9/11: The Mantra Keep it Simple Stick to Basics

Skillful Architecture

Thoughtful Design

Fundamentals

⚙️ Proved that skillful architecture, design, and adherence to fundamentals...

⚙️ ...could achieve remarkable results, even with limited resources.

§ 10/11: Beyond Data Acquisition Analytics

Visualizing Data Detecting Outliers Trends Spikes

- ⚙ Created a product to visualize incoming data streams.

- ⚙ Wrote dozens of scenarios for early data analytics.

- ⚙ Curiosity led to Twitter API experiments, learning UX/Big Data from the best, leading to Hadoop proficiency.

§ 11/11: Early IoT Suite and Future Proofing

PoCs Feedback Data Growth Calculator

- ⚙ Used early Bosch IoT Suite for PoCs, providing feedback for its evolution.

- ⚙ Created an "IoT Data Growth Calculator" in Excel, shared widely.

- ⚙ **Next Up (Part 5):** Alliances, Analytics, and the Rise of Scaled Agile.

- ⚙ Stay tuned!

Series: Two Decades at Bosch (Part 4 of 7)

Connecting Boilers & Taming Big Data Lollar

Part 1: Early Days & First Innovations

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Part 2: Vehicle Diagnostics & Personal Growth (Santa Barbara)

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Part 3: Oracle Migration & NextGen Platform (Plochingen)

Access Part 3 PDF

**Part 4: Connecting Boilers & Taming Big Data (Lollar)
(Current)**

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Part 5: Alliances, Analytics & Scaled Agile Rise

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Part 6: Germany, SAFe & Championing Simplicity (2019-2023)

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Part 7: Reflections, The Pivot & Future Vision

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Simplicity Conquers Scale!

How Have Fundamentals Helped You Tame Complexity?

LinkedIn: <https://www.linkedin.com/in/amitabhrjha/>



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Keep it Simple, Stick to Basics - a powerful mantra.

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