



# CatchyName: A MEVN-based Cloud Application for Incidence Figures and Vaccination Progress


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**Abstract**—This paper demonstrates an example of a technical report in computer science or software engineering, based on the `cs-techrep` L<sup>A</sup>T<sub>E</sub>X class. The example is intended for beginners, e.g., undergraduate students. It contains a basic outline template and usually fills it with dummy text, but some sections are describing the intent of the outline template and its sections. Graphic exclamation marks highlight important remarks. { The abstract does neither mention a thesis in which context a technical report is written nor an institution or any other organizational aspects. It is a summary of the content of the technical report, thus, usually the objectives and architecture of a piece of software. Do NOT remove the abstract, this section is mandatory. Beginners should consider comparing their self-written abstract with the result of a generative AI that summarizes your content after you have written a nearly stable draft version. However, do not use a verbatim copy to replace your abstract, just use generative AI for inspirational purposes. Do NOT use special characters, symbols, or math in your title or abstract. Do NOT use cites in your abstract.}


**Index Terms**—template; lorem ipsum.

## I. INTRODUCTION AND OBJECTIVES | FUNCTIONAL REQUIREMENTS | PROBLEM STATEMENT

The `cs-techrep` formatting is adopted both from IEEE [1] and IARIA [2] styles. The `cs-techrep` L<sup>A</sup>T<sub>E</sub>X class is based on IEEEtran class [3]. In addition, be aware of the supplementary IARIA editorial rules [4]  that provide a beginner-friendly set of further advices. It is recommended to use a grammar tool, e.g., the LanguageTool [5] browser plugin in combination with Overleaf [6].

The title of your paper should not exceed two lines . In exceptional cases, three lines might be allowed. A four-line-title is absolutely forbidden (hint: use the longer form in the abstract).

For capitalization of titles and section headings, use a web tool like Capitalize My Title  with the option `chicago` for capitalization rules by Chicago Manual of Style (CMOS).

The pipe symbol “|” in the section headings represents alternatives! Choose one and remove the others . The selectively provided quoted terms are special German alternatives. You may deviate from the structure of this example document and its exemplary section headings.

The problem statement needs to be written from perspective of a subject-matter expert (“Fachkonzept”). Like an elevator

pitch / mission statement  and NOT from a technical perspective.

## II. OPTIONAL: RELATED WORK | STATE OF THE ART | METHODS | DATA ACQUISITION

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## III. ARCHITECTURAL GOALS

Provides (1) a visualization of the external systems and users with which the system interacts (“Kontextabgrenzung”), (2) the most important technical and organizational preconditions (“Rahmenbedingungen”), (3) quality/non-functional requirements (“Qualitätsziele”), and/or (4) architectural style design decisions with formative patterns of the solution (“Architekturstil”) as well as (5) the applied programming language(s).

## IV. ARCHITECTURE OF CATCHYNAME | RESULTS | STRUCTURAL DESIGN | “BAUSTEINSICHT”

### A. Technology Stack | Overall System

Provides (1) design decisions based on the previously defined requirements and (2) a visualization of the functional structure at top level including relationships (“Grobe Zerlegung”), thus, gives an overview on modules, frameworks, and middleware.

In discussions of multi-tier architecture, layer is often used interchangeably – and mistakenly – for tier. They aren’t the same. A “layer” refers to a functional division of the software, but a “tier” refers to a functional division of the software that runs on infrastructure separate from the other divisions. The Contacts app on your phone, for example, is a three-layer application, but a single-tier application, because all three layers run on your phone.

In discussions concerning multi-tier architecture, the term “layer” is frequently misused interchangeably with “tier”, despite their distinct meanings. A layer denotes a functional partition within the software, whereas a tier signifies a functional division that operates on separate infrastructure from other divisions/tiers. For instance, the Camera app or Settings app on your phone exemplifies a three-layer application but remains a single-tier application since all three layers run on your phone.

#### B. Presentation Tier | Frontend

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#### C. Application Tier | Backend | “Anwendungskern”

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#### D. Data Tier | Persistence

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#### E. Optional: Infrastructure and Deployment | Distribution Perspective | “Verteilungssicht”


Provides (1) information about configuration, exact software versions, SBOM, DevOps, Cloud, AWS, and others. Should add (2) security-related considerations or disclaimers. Could include (3) a software bill of materials (SBOM), at least for the major libraries or frameworks.

## V. DISCUSSION | EVALUATION | LESSONS LEARNED | IMPEDIMENTS

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## VI. CONCLUSION AND FUTURE WORK | “FAZIT UND AUSBLICK”

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## REFERENCES

- [1] IEEE. *Conference Template and Formatting Specifications*. 2018. URL: <https://www.ieee.org/content/dam/ieee-org/ieee/web/org/conferences/Conference-template-A4.doc>.
- [2] IARIA. *Formatting Rules*. 2014. URL: <http://www.iaria.org/formatting.doc>.
- [3] Michael Shell. *How to Use the IEEEtran L<sup>A</sup>T<sub>E</sub>X Class*. 2015. URL: [http://mirrors.ctan.org/macros/latex/contrib/IEEEtran/IEEEtran\\_HOWTO.pdf](http://mirrors.ctan.org/macros/latex/contrib/IEEEtran/IEEEtran_HOWTO.pdf).
- [4] IARIA. *Editorial Rules*. 2009. URL: <https://www.iaria.org/editorialrules.html>.
- [5] LanguageTooler GmbH. *LanguageTool: AI-based grammar checker*. URL: <https://languagetool.org/overleaf>.
- [6] Digital Science UK Limited. *Overleaf*. URL: <https://www.overleaf.com>.
- [7] Lukas Rupp, Franziska Rubenbauer, and Christoph P. Neumann. *CloudDice: Ein React-basiertes Kniffel-Würfelspiel*. Tech. rep. CL-2024-14. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.11229.83686.
- [8] Fabian Heindl, Paul Brand, Daniel Reichert, and Christoph P. Neumann. *SkillIssue: A MERN-based Low-Latency Multi-User Game for Displaying True Skill With Your Friends*. Technical Reports CL-2024-12. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.32201.35686.

- [9] Bernhard Gailer, Timo Gräf, Maria Lyoteva, Tsvetan Stanchev, Apporva Bhoir, and Christoph P. Neumann. *GoalGuru: A React- and FastAPI-based Cloud Application for Predicting Soccer Games Outcome*. Technical Reports CL-2024-11. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.18779.58407.
- [10] Sebastian Weidner, Jonas Hermann, Nils Bayerl, Dominik Schwagerl, Timon Spichtinger, and Christoph P. Neumann. *InfluenzaConnect: Eine React- und Flask-basierte Webanwendung für Influencer-Marketing*. Technische Berichte CL-2024-10. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.25490.47041.
- [11] Lukas Hirsch, Johannes Küffner, Denis Tomazi, and Christoph P. Neumann. *NanoVend: Ein Cloud-native E-Commerce-Backend als Baukasten für mittelständische Unternehmen*. Technische Berichte CL-2024-08. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.12068.69761.
- [12] Andreas Hecht, Linus Heise, Oliver Kneidl, Eva-Maria Maurer, and Christoph P. Neumann. *StockSentinel: AI-Powered Web Tool for Analyzing the Markets Perception of Stocks*. Technical Reports CL-2024-07. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.20457.30564.
- [13] Amos Asmerom, Daniel Reichert, Fabian Heindl, and Christoph P. Neumann. *ConnectIfYouCan: A MERN-based Web Game for Competitive Two Player Matches*. Technical Reports CL-2024-06. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.27168.19200.
- [14] Viktor Hense, Johannes Lindner, Lukas Mrosek, and Christoph P. Neumann. *Geodigens: A Web Application for Intuitive and User-friendly Work with Geopandas*. Technical Reports CL-2024-04. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.13746.41929.
- [15] Juliana Kühn, Nikolett Rácz, Raffael Friedl, Maximilian Lippmann, and Christoph P. Neumann. *MunchMunch: Eine MERN-basierte kulinarische Web-Anwendung für verbessertes User Engagement beim Entdecken neuer Gerichte und Rezepte*. Technische Berichte CL-2024-02. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2024. DOI: 10.13140/RG.2.2.23812.74883.
- [16] Paul Brandl, Manuel Kalla, Dominik Panzer, Kevin Paulus, Manuel Pickl, Franziska Rubenbauer, Berkay Yurdaguel, and Christoph P. Neumann. *NeunerIn: Eine MEVN-basierte Webanwendung zum kompetitiven Kartenspielen*. Tech. rep. CL-2023-11. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2023. DOI: 10.13140/RG.2.2.33933.31209.
- [17] André Kestler, Antonio Vidos, Marcus Haberl, Tobias Döbmeier, Tobias Lettner, Tobias Weiß, and Christoph P. Neumann. *Computer Vision Pipeline: Eine React- und Flask-basierte Webanwendung zur No-Code-Bildverarbeitung mit Cloud-Deployment*. Tech. rep. CL-2023-08. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2023. DOI: 10.13140/RG.2.2.23866.98248.
- [18] Jakob Götz, Uwe Kölbel, Maximilian Schlosser, Oliver Schmidts, Jan Schuster, Philipp Seufert, Fabian Wagner, and Christoph P. Neumann. *Nautical Nonsense: Eine Phaser3- und FastAPI-basierte Webanwendung für Schiffe-Versenken mit Cloud-Deployment*. Tech. rep. CL-2023-07. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2023. DOI: 10.13140/RG.2.2.17156.09601.
- [19] Lukas Feil, Stefan Reger, Timon Spichtinger, Manuel Pickl, Gian Piero Cecchetti, Alexander Hammer, Berkay Yurdagül, and Christoph P. Neumann. *Torpedo Tactics: Eine MEVN-basierte Webanwendung für Schiffe-Versenken mit Cloud-Deployment*. Tech. rep. CL-2023-06. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2023. DOI: 10.13140/RG.2.2.22608.69120.
- [20] Rebecca Kietzer, Baran Baygin, Carl Küschall, Jonathan Okorafor, Luca Käsmann, Michael Zimmet, Michael Ippisch, and Christoph P. Neumann. *Stockbird: Eine React-basierte Webanwendung mit serverless Cloud-Deployment zur Analyse des Einfluss von Tweets auf Aktienkurs-Schwankungen*. Tech. rep. CL-2023-04. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2023. DOI: 10.13140/RG.2.2.32675.02083.
- [21] Christian Rute, Alex Müller, Alexander Rudolf Wittmann, Arthur Zimmermann, David Nestmeyer, Julian Tischlak, Matthias Wolfinger, and Christoph P. Neumann. *FancyChess: Eine Next.js-basierte Cloud-Anwendung zum Schachspielen*. Tech. rep. CL-2023-03. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2023. DOI: 10.13140/RG.2.2.19253.24802.
- [22] Anastasia Chernysheva, Jakob Götz, Ardian Imeraj, Patrice Korinth, Philipp Stangl, and Christoph P. Neumann. *SGDb Semantic Video Game Database: Svelte- und Ontotext-basierte Webanwendung mit einer Graphen-Suche für Videospiele*. Tech. rep. CL-2023-02. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, Mar. 2023. DOI: 10.13140/RG.2.2.11272.60160.
- [23] Johannes Horst, Manuel Zimmermann, Patrick Sabau, Saniye Ogul, Stefan Ries, Tobias Schotter, and Christoph P. Neumann. *OPCUA-Netzwerk: Angular- und FastAPI-basierte Entwicklung eines OPC-UA Sensor-Netzwerks für den Heimbereich*. Tech. rep. CL-2023-01. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, Mar. 2023. DOI: 10.13140/RG.2.2.22177.79209.
- [24] Alexander Ziebell, Anja Stricker, Annika Stadelmann, Leo Schurrer, Philip Bartmann, Ronja Bäumel, Ulrich Stark, and Christoph P. Neumann. *Wo ist mein Geld: Eine MERN-basierte Webanwendung für gemeinsame Ausgaben mit Freunden oder Kollegen*. Tech. rep. CL-2022-11. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2022. DOI: 10.13140/RG.2.2.28888.67847.
- [25] Bastian Hahn, Martin Kleber, Andreas Klier, Lukas Kreussel, Felix Paris, Andreas Ziegler, and Christoph P. Neumann. *Twitter-Dash: React- und .NET-basierte Trend- und Sentiment-Analysen*. Tech. rep. CL-2022-07. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2022. DOI: 10.13140/RG.2.2.15466.90564.
- [26] Tobias Bauer, Fabian Beer, Daniel Holl, Ardian Imeraj, Konrad Schweiger, Philipp Stangl, Wolfgang Weigl, and Christoph P. Neumann. *Reddit: Eine SvelteKit- und ElasticSearch-basierte Reddit Sentiment-Analyse*. Tech. rep. CL-2022-06. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2022. DOI: 10.13140/RG.2.2.32244.12161.

- [27] Florian Bösl, Helge Kohl, Anastasia Chernysheva, Patrice Korinth, Philipp Porsch, and Christoph P. Neumann. *Explosion Guy: Cloud-basiertes Matchmaking für einen graphischen Bombenspaß*. Tech. rep. CL-2022-05. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2022. DOI: 10.13140/RG.2.2.18822.34882.
- [28] Dominik Smrekar, Johannes Horst, Patrick Sabau, Saniye Ogul, Tobias Schotter, and Christoph P. Neumann. *OTH-Wiki: Ein Angular- und FastAPI-basiertes Wiki für Studierende*. Tech. rep. CL-2022-04. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2022. DOI: 10.13140/RG.2.2.25533.23526.
- [29] Johannes Halbritter, Helge Kohl, Lukas Kreussel, Stephan Prettnner, Andreas Ziegler, and Christoph P. Neumann. *Graphvio: Eine Graphdatenbank-Webanwendung für integrierte Datensätze von Streaminganbietern*. Tech. rep. CL-2022-01. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, Mar. 2022. DOI: 10.13140/RG.2.2.12111.46244.
- [30] Tobias Bauer, Albert Hahn, Lukas Kleinlein, Nicolas Proske, Leonard Wöllmer, Andrei Trukhin, and Christoph P. Neumann. *Covidash: Eine MEAN-Variation-basierte Webanwendung für Inzidenz-Zahlen und Impffortschritt in Deutschland*. Tech. rep. CL-2021-06. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2021. DOI: 10.13140/RG.2.2.33921.84321.
- [31] Cameron Barbee, Tim Hoffmann, Christian Piffel, Tobias Schotter, Sebastian Schuscha, Philipp Stangl, Thomas Stangl, and Christoph P. Neumann. *FireForceDefense: Graphisches Tower-Defense-Spiel mit Kubernetes-Deployment*. Tech. rep. CL-2021-05. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2021. DOI: 10.13140/RG.2.2.20500.07048.
- [32] Egidia Cenko, Madina Kamalova, Matthias Schön, Christoph Schuster, Andrei Trukhin, and Christoph P. Neumann. *Med-Planner: Eine Angular- und Django-basierte Webanwendung um ärztliche Termine übersichtlich zu verwalten*. Tech. rep. CL-2021-04. Ostbayerische Technische Hochschule Amberg-Weiden, CyberLytics-Lab an der Fakultät Elektrotechnik, Medien und Informatik, July 2021. DOI: 10.13140/RG.2.2.19409.71528.