

Where and What do Software Architects blog?

An Exploratory Study on Architectural Knowledge in Blogs, and their Relevance to Design Steps

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Abstract: Software engineers share their architectural knowledge (AK) in different places on the Web. Recent studies show that architectural blogs contain the most relevant AK, which can help software engineers to make design steps. Nevertheless, we know little about blogs, and specifically architectural blogs, where software engineers share their AK. In this paper, we conduct an exploratory study on architectural blogs to explore their types, topics, and their AK, in which we applied both qualitative and quantitative research methods. Moreover, we determine the relevance of architectural blogs to make design steps. Our results support researchers and practitioners to find and re-use AK from blogs.

Data Availability: <https://github.com/m-a-m-s/Explore-Architectural-Blogs>

The full paper of this extended Abstract has been published in [SGA23].

Keywords: software architecture; architecture knowledge; blogs

1 Summary

Software engineers need *architectural knowledge* (AK) [KLV06] to make reasonable architectural design decisions (e.g., during the steps of the Attribute Driven Design (ADD)). While AK is critical for design steps, it is rather challenging to find AK. To address this problem, researchers have recently explored AK in software repositories and on the Web. In our previous study [So21], we found evidence that software engineers share their AK in technical articles within blogs (i.e. *architectural blogs*) [So21]. Such blogs showed to be the most relevant source on the Web to perform architectural tasks, and the richest source of AK concepts, compared to other sources (e.g. Stack Overflow) [So21].

In this paper, we aim to *explore the types and topics of architectural blogs, as retrieved by Web search engines, and their relevance for software engineers during certain design steps*. This allows us to provide an overview of architectural blogs, which can be used by researchers and practitioners to find and re-use AK from architectural blogs. To achieve

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our aim, we empirically analyzed the dataset of architectural blogs [So21], and applied grounded theory and topic modeling to explore the types and topics of architectural blogs. Finally, we applied statistical analysis to identify the relevance of topics to the ADD steps.

We provide below an overview on the results of each research question:

(RQ1) *What types of architectural blogs do Web search engines retrieve?*

Software engineers share their AK in different types of blogs with different hosting and authorship policies. However, Google search results contain architectural articles mostly from community blogs, followed by technology vendor blogs, and then personal blogs.

(RQ2) *What kind of topics are discussed in the different types of architectural blogs?*

Listing, elaborating, evaluating, and comparing architectural solutions present the majority of AK (68%) in architectural blogs. Also, *architectural patterns, component design and principles* are discussed in the majority (46%) of architectural blogs, followed by discussions on *technologies* and their implementations (38%). Our analysis showed that *using LDA in combination with AK ontology* identifies reasonable architectural topics that correspond and complement the qualitative topics. Each *type of blog* from RQ1 is specialized in one or two topics.

(RQ3) *How relevant are the topics of architectural blogs as retrieved by Web search engines to support practitioners follow the ADD steps?*

Practitioners evaluate the relevance of topics differently for each design step, and Google results are different among the ADD steps: For *Identify design concepts* and *Select design concepts*, topics on comparing solutions, and achieving quality attributes are most relevant. But Google cannot distinguish highly relevant topics, and retrieves low relevant topics. For *Instantiate architecture elements*, topics on elaborating and evaluating solutions such as patterns, and how to design are most relevant; Google retrieves articles on patterns, but misses other highly relevant topics.

Literatur

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