An ISO/IEC/IEEE 42010 Annotated Bibliography

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Abstract

An annotated bibliography of papers, reports and books pertaining to ISO/IEC/IEEE 42010 (revision of the former IEEE Std 1471:2000). Originally prepared for ISO/IEC JTC1/SC7 WG42, the Architecture working group of the Systems and Software Engineering Subcommittee of ISO. It includes 1) items which were inspirations for the Standard; 2) items citing or about the Standard; and 3) items inspired by or built upon the Standard.
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[2] M. R. Barbacci, "Analyzing quality attributes," Column in SEI newsletter, The Architect, March 1999. http://www.sei.cmu.edu/library/abstracts/news-at-sei/architectmar99.cfm

> An eloquent argument for the need for specialized viewpoints in architectural description: "Unfortunately, in contrast to building architectures, we have yet to agree on what the appropriate software structures and views should be and how to represent them. One of the reasons for the lack of consensus on structures, views, and representations is that software quality attributes have matured (or are maturing) within separate communities, each with their own vernacular and points of view."

[3] L. Bass, J. Ivers, M. Klein, and P. Merson, "Reasoning frameworks," Software Engineering Institute, Carnegie Mellon, Tech. Rep. CMU/SEI-2005-TR-007, 2005. http://www.sei.cmu.edu/publications/documents/05.reports/05tr007.html

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[5] J. Bosch, "Software architecture: The next step," in *First European Workshop Software Architecture (EWSA 2004), St Andrews, UK, May 21–22, 2004. Proceedings*, ser. Lecture Notes in Computer Science, F. Oquendo, B. Warboys, and R. Morrison, Eds. Springer Berlin / Heidelberg, 2004, vol. 3047, pp. 194–199. http://dx.doi.org/10.1007/978-3-540-24769-2_14

[6] N. Boucké, "Composition and relations of architectural models supported by an architectural description language," Ph.D. dissertation, Katholieke Universiteit Leuven, October 2009.

Describes a framework and formalization of relations and compositions between architectural models (and views).

[7] N. Boucké, A. Garcia, and T. Holvoet, "Composing structural views in xADL," in *Early Aspects: Current Challenges and Future Directions*, ser. Lecture Notes in Computer Science, no. 4765, 2007, pp. 115–138.

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[10] H. Bowman, M. W. A. Steen, E. A. Boiten, and J. Derrick, "A formal framework for viewpoint consistency," in *Formal Methods in System Design*, 2002, pp. 111–166.

[11] M. Broy, M. Gleirscher, S. Merenda, D. Wild, P. Kluge, and W. Krenzer, "Toward a holistic and standardized automotive architecture description," *Computer*, vol. 42, pp. 98–101, 2009.

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[13] D. Chapon and G. Bouchez, "On the link between architectural description models and modelica analyses models," in *Proceedings 7th Modelica Conference, Como, Italy, Sep. 20-22, 2009*, 2009, pp. 784–789. http://www.ep.liu.se/ecp/043/092/ecp09430079.pdf

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[14] P. Clements, D. Emery, R. Hilliard, and P. Kruchten, "Aspects in architectural description: report on a first workshop at AOSD 2007," *SIGSOFT Software Engineering Notes*, vol. 32, no. 4, pp. 33–35, 2007.

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[18] F. S. de Boer, M. M. Bonsangue, J. Jacob, A. Stam, and L. der Torre, "A logical viewpoint on architectures," in *8th International Enterprise Distributed Object Computing Conference (EDOC 2004), 20-24 September 2004, Monterey, California, USA, Proceedings*. IEEE Computer Society, 2004, pp. 73–83.

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[20] R. M. Dijkman, "Consistency in multi-viewpoint architectural design," Ph.D. dissertation, University of Twente, 2006. http://www.utwente.nl/ewi/asna/research/Ph.D.%20Theses/dijkman-thesis.pdf

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[22] E. W. Dijkstra, "On the role of scientific thought," Reprinted in *Selected writings on computing: a personal perspective* (1982), 1974. http://www.cs.utexas.edu/users/EWD/transcriptions/EWD04xx/EWD447.html

The use of concerns in IEEE 1471 derives from the phrase *separation of concerns* in software engineering. The earliest use of this phrase appears to be in this 1974 paper by Dijkstra: "Let me try to explain to you, what to my taste is characteristic for all intelligent thinking. It is, that one is willing to study in depth an aspect of one's subject matter in isolation for the sake of its own consistency, all the time knowing that one is occupying oneself only with one of the aspects. We know that a program must be correct and we can study it from that viewpoint only; we also know that it should be efficient and we can study its efficiency on another day, so to speak. In another mood we may ask ourselves whether, and if so: why, the program is desirable. But nothing is gained—on the contrary!—by tackling these various aspects simultaneously. It is what I sometimes have called "the separation of concerns", which, even if not perfectly possible, is yet the only available technique for effective ordering of one's thoughts, that I know of. This is what I mean by 'focussing one's attention upon some aspect': it does not mean ignoring the other aspects, it is just doing justice to the fact that from this aspect's point of view, the other is irrelevant. It is being one- and multiple-track minded simultaneously."

[23] P. Eeles and P. Cripps, *The Process of Software Architecting*. Addison Wesley, 2010. http://processofsoftwarearchitecting.com

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