

Ricardo de Almeida Falbo (1964–2020)

Giancarlo Guizzardi ^{a,b,*}, João Paulo A. Almeida ^b, Monalessa Perini Barcellos ^b,
Renata Silva Souza Guizzardi ^b and Vítor E. Silva Souza ^b

^a *Conceptual and Cognitive Modeling Research Group (CORE), Faculty of Computer Science,
Free University of Bozen-Bolzano, Italy*

E-mail: gguizzardi@unibz.it

^b *Ontology and Conceptual Modeling Research Group (NEMO), Computer Science Department,
Federal University of Espírito Santo, Brazil*

E-mails: jpalmeida@ieee.org, monalessa@inf.ufes.br, rguizzardi@inf.ufes.br, viktor.souza@ufes.br

Professor Ricardo de Almeida Falbo, a pioneer scientist exploring the relation between Ontology and Software Engineering, passed away on July 8, 2020, in Espírito Santo, Brazil. He is survived by his wife, Jocinéia Luzia Peterle Falbo, and his son Pedro Peterle Falbo.

Falbo was born in Rio de Janeiro, Brazil on September 21, 1964. He studied Mechanical Engineering, with graduate studies in Information Systems (System Analysis), Industrial Engineering, and Environmental Engineering (all of these at the Federal University of Espírito Santo (UFES), in Brazil). Despite his formal training in engineering, his professional interests soon led him to the world of software. After working as systems developer, he initiated a career as a lecturer in Computer Science. He then went to pursue a PhD in Computer Science at the Federal University of Rio de Janeiro (UFRJ), in which he addressed the problem of knowledge integration in software engineering tools (Falbo, 1998).

His engineering background has had a clear impact throughout his entire research and teaching career. Despite of his interest in theoretical work, he has always been drawn by the development of practical engineering tools that practitioners could use for problem-solving. Simplicity and usability have always driven his involvement in development efforts.

During his PhD studies, he studied logics and knowledge representation, and was introduced by one of his supervisors (Crediné Menezes) to the work of the philosopher Mario Bunge. At that time, he also came in contact with an emerging community of ontologies in Computer Science in the mid-1990s. From that point on, the backbone of his research career would develop in the interplay between ontologies and software engineering.

As an early ontologist, Falbo made seminal contributions to the area of what came later to be known as Ontology-Driven Software Engineering. These contributions include the creation of a network of ontologies capturing knowledge in a multitude of software engineering sub-domains. Moreover, by leveraging on these software engineering ontologies, he made contributions to developing methodological approaches for performing a number of software engineering activities, including a pioneering work in the area of Domain Engineering. Finally, still with the support of these ontologies, he led the development of a number of computational tools for supporting software engineering activities designed to support both automated reasoning as well as knowledge integration.

*Corresponding author: Giancarlo Guizzardi, Piazza Domenicani, Free University of Bozen-Bolzano, Italy. E-mail: gguizzardi@unibz.it.



Fig. 1. The NEMO Group (permanent staff): Vítor Souza (*standing*), **Ricardo Falbo**, João Paulo Almeida and Giancarlo Guizzardi (*seated, from left to right*), Monalessa Barcellos and Renata Guizzardi (*from left to right in the foreground*).

Falbo has also made several important contributions adapting mature techniques from Software Engineering to the then incipient area of Ontology Engineering. These contributions include the SABiO method for ontology engineering, as well as computational tools developed for supporting the development of ontologies following that method. Furthermore, by adapting the notion of generic process models, he proposed a practical approach that revived the (by then, forgotten) notion of Task Ontologies. Finally, once more drawing on the software engineering tradition, he contributed to conceptual clarification work in the area of Ontology Design Patterns, and proposed a seminal approach for developing Pattern Languages in this area.

Unswayed by buzzwords and fashion, Falbo consistently followed this research program, leading for many years a Laboratory for Software Engineering Research (LabES), and later co-founding the Ontology and Conceptual Modeling Research Group (NEMO) (see Fig. 1) at the Federal University of Espírito Santo (UFES), in Brazil, where he also became a Full Professor at the Department of Computer Science. In these initiatives, he was always a natural leader, combining intellectual sharpness and rigour, creativity, enthusiasm, kindness and humility, in a manner that is uncommon in science (as well as generally in life).

In his research career, Falbo inspired many colleagues and students, and established a network of collaborators in different countries. Together they produced results that are constantly used by scholars internationally. Earlier this year, two of us have edited a book (Almeida and Guizzardi, 2020) documenting the extent of his scientific contributions (some of which have been published in this journal and in FOIS proceedings, e.g., (Borlini Duarte et al., 2018; Ferreira de Souza et al., 2017; Borlini Duarte et al., 2016; Borges Ruy et al., 2014; Perini Barcellos et al., 2010)) as well as his overarching professional influence.

Despite these remarkable qualities as a researcher, Falbo used to say that if he had to choose between being a scientist, a practitioner, or a professor, he would chose the latter. This is because, he judged, in that way, he could perhaps have the chance of having a deeper and longer lasting influence on people. That certainly worked on us.

References

- Almeida, J.P.A. & Guizzardi, G. (Eds.) (2020). *Engineering Ontologies and Ontologies for Engineering: Celebrating Ricardo Falbo's Career*, ISBN:978-1393963035.
- Borges Ruy, F., de Almeida Falbo, R., Perini Barcellos, M. & Guizzardi, G. (2014). An ontological analysis of the ISO/IEC 24744 metamodel. In P. Garbacz and O. Kutz (Eds.), *Frontiers in Artificial Intelligence and Applications, Formal Ontology*

- in Information Systems – Proceedings of the Eighth International Conference, FOIS 2014*, September, 22–25, 2014, Brazil (Vol. 267, pp. 330–343). IOS Press.
- Borlini Duarte, B., Luiz de Castro Leal, A., de Almeida Falbo Giancarlo Guizzardi, R., Guizzardi, R.S.S. & Silva Souza, V.E. (2018). Ontological foundations for software requirements with a focus on requirements at runtime. *Applied Ontology*, 13(2), 73–105. doi:[10.3233/AO-180197](https://doi.org/10.3233/AO-180197).
- Borlini Duarte, B., Silva Souza, V.E., Luiz de Castro Leal, A., de Almeida Falbo, R., Guizzardi, G. & Guizzardi, R.S.S. (2016). Towards an ontology of requirements at runtime. In *Roberta Ferrario and Werner Kuhn, Editors, 9th FOIS (Formal Ontology in Information Systems)*. Frontiers in Artificial Intelligence and Applications Annecy, France, July 6–9, 2016 (Vol. 283, pp. 255–268). IOS Press.
- Falbo, R. (1998). *Knowledge Integration in Software Development Environments (Integração de Conhecimento em Ambientes de Desenvolvimento de Software, in portuguese)*. PhD thesis, Federal University of Rio de Janeiro (COPPE/UFRJ).
- Ferreira de Souza, É., de Almeida Falbo, R. & Lankalapalli Vijaykumar, N. (2017). Roost: Reference ontology on software testing. *Applied Ontology*, 12(1), 59–90. doi:[10.3233/AO-170177](https://doi.org/10.3233/AO-170177).
- Perini Barcellos, M., de Almeida Falbo, R. & Dal Moro, R. (2010). A well-founded software measurement ontology. In A. Galton and R. Mizoguchi (Eds.), *6th FOIS (Formal Ontology in Information Systems)*. Frontiers in Artificial Intelligence and Applications Toronto, Canada, May 11–14, 2010 (Vol. 209, pp. 213–226). IOS Press.