

# Supplementary Material

## Artefact Derivation

- [1] Artery, G. and Spain, M. de (2011), “Integrating the Life-cycle Process Utilizing SysML”, *INCOSE International Symposium*, Vol. 21 No. 1, pp. 597–609. DOI: 10.1002/j.2334-5837.2011.tb01228.x.
- [2] Cao, Y., Xu, J., Liu, Y., Ye, X. and Zhao, J. (2019), “Automated generation of control logic from system design based on SysML and the IEC 61499 Function Block”, *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, Vol. 233 No. 14, pp. 2547–2565. DOI: 10.1177/0954405419842021.
- [3] Clark, T., Rabelo, L. and Yazici, H. (2017), “Extending SysML Models to Enable Automatic Generation of Fault Trees”, in Coperich, K., Cudney, E. and Nembhard, H.B. (Eds.), *Industrial and Systems Engineering Conference 2017, 20-23 May 2017, Pittsburgh, Pennsylvania, USA*, Curran Associates Inc, Red Hook, NY, pp. 1085–1090. DOI:
- [4] Dahlweid, M., Brauer, J. and Peleska, J. (2015), “Model-Based Testing: Automatic Generation of Test Cases, Test Data and Test Procedures from SysML Models”, in *SAE Technical Paper Series, SEP. 22, 2015*, SAE International 400 Commonwealth Drive, Warrendale, PA, United States. DOI: 10.4271/2015-01-2553.
- [5] Faria, J.M., Shafik, M. and Silva, N. (2009), “Practical Results from the Application of Model Checking and Test Generation from UML/SysML Models of On-Board Space Applications”, in Ouwehand, L. (Ed.), *Proceedings of DASIA 2009, data systems in aerospace, 26 - 29 May 2009, Istanbul, Turkey*, ESA Communication Production Office, Noordwijk. DOI:
- [6] Gauthier, J.-M. (2013), “Test Generation for RTES from SysML Models: Context, Motivations and Research Proposal”, in *2013 IEEE Sixth International Conference on Software Testing, Verification and Validation, 18.03.2013 - 22.03.2013, Luxembourg, Luxembourg*, IEEE, pp. 503–504. DOI: 10.1109/ICST.2013.83.
- [7] Girard, G., Baeriswyl, I., Hendriks, J.J., Scherwey, R., Müller, C., Höning, P. and Lunde, R. (2020), “Model based Safety Analysis using SysML with Automatic Generation of FTA and FMEA Artifacts”, in Baraldi, P., Di Maio, F. and Zio, E. (Eds.), *Proceedings of the 30th European Safety and Reliability Conference and 15th Probabilistic Safety Assessment and Management Conference, 01.11.2020 - 05.11.2020*, Research Publishing Services, Singapore, pp. 5051–5058. DOI: 10.3850/978-981-14-8593-0\_4941-cd.
- [8] Haley, T., Cerenzia, J., Diederich, D. and Friedenthal, S. (2008), “Using SysML and UML To Develop and Implement Interoperable System Components for Engagement Simulations”, *INCOSE International Symposium*, Vol. 18 No. 1, pp. 1011–1022. DOI: 10.1002/j.2334-5837.2008.tb00859.x.

- [9] Hecht, M., Baum, D. and Betser, J. (2019), "Automated Failure Modes and Effects Analysis using SysML for Industrial Computer Network Reliability and Cybersecurity", in *2019 IFIP/IEEE Symposium on Integrated Network and Service Management (IM)*, 8-12 April, Arlington, Virginia, USA, IEEE, Piscataway, NJ, pp. 500–514. DOI:
- [10] Hecht, M., Chuidian, A., Tanaka, T. and Raymond, R. (2020), "Automated Generation of FMEAs using SysML for Reliability, Safety, and Cybersecurity", in *2020 Annual Reliability and Maintainability Symposium (RAMS)*, 27.01.2020 - 30.01.2020, Palm Springs, CA, USA, IEEE, pp. 1–7. DOI: 10.1109/RAMS48030.2020.9153708.
- [11] Hecht, M., Dimpfl, E. and Pinchak, J. (2014), "Automated Generation of Failure Modes and Effects Analysis from SysML Models", in *2014 IEEE International Symposium on Software Reliability Engineering Workshops*, 03.11.2014 - 06.11.2014, Naples, Italy, IEEE, pp. 62–65. DOI: 10.1109/ISSREW.2014.117.
- [12] Helle, P. (2012), "Automatic SysML-based safety analysis", in Ober, I. (Ed.), *Proceedings of the 5th International Workshop on Model Based Architecting and Construction of Embedded Systems*, 30 09 2012 30 09 2012, Innsbruck Austria, ACM, New York, NY, USA, pp. 19–24. DOI: 10.1145/2432631.2432635.
- [13] Herzig, S.J.I., Karban, R., Brack, G., Michaels, S.B., Dekens, F. and Troy, M. (2018 - 2018), "Verifying Interfaces and generating interface control documents for the alignment and phasing subsystem of the Thirty Meter Telescope from a system model in SysML", in Angeli, G.Z. and Dierickx, P. (Eds.), *Modeling, Systems Engineering, and Project Management for Astronomy VIII*, 10.06.2018 - 15.06.2018, Austin, United States, SPIE, p. 29. DOI: 10.1117/12.2310184.
- [14] Horber, D., Li, J., Grauberger, P., Schleich, B., Matthiesen, S. and Wartzack, S. (2022), "A model-based approach for early robustness evaluation – Combination of Contact and Channel Approach with tolerance graphs in SysML", in *DS 119: Proceedings of the 33rd Symposium Design for X (DFX2022)*, 22 and 23 September, The Design Society. DOI: 10.35199/dfx2022.18.
- [15] Jamro, M. (2014), "Automatic generation of implementation in SysML-based model-driven development for IEC 61131-3 control software", in *2014 19th International Conference on Methods and Models in Automation and Robotics (MMAR)*, 02.09.2014 - 05.09.2014, Miedzyzdroje, IEEE, pp. 468–473. DOI: 10.1109/MMAR.2014.6957399.
- [16] Khan, A.M. and Rashid, M. (2016), "Generation of SystemVerilog Observers from SysML and MARTE/CCSL", in *2016 IEEE 19th International Symposium on Real-Time Distributed Computing (ISORC)*, 17.05.2016 - 20.05.2016, York, United Kingdom, IEEE, pp. 61–68. DOI: 10.1109/ISORC.2016.18.
- [17] McLellan, J.M., Maier, J.R.A., Fadel, G.M. and Mocko, G.M. (2009), "Generating Design Structure Matrices and Domain Mapping Matrices using SysML", in Kreimeyer, M., Maier, J., Fadel, G. and Lindemann, U. (Eds.), *Proceedings of the*

- [18] Mhenni, F., Nguyen, N. and Choley, J.-Y. (2014), “Automatic fault tree generation from SysML system models”, in *2014 IEEE/ASME International Conference on Advanced Intelligent Mechatronics, 08.07.2014 - 11.07.2014, Besacon, IEEE*, pp. 715–720. DOI: 10.1109/AIM.2014.6878163.
- [19] Ouerdi, N., Azizi, M., Ziane, M., Azizi, A., Lanet, J. and Savary, A. (2014), “Security Vulnerabilities Tests Generation from SysML and Event-B Models for EMV Cards”, *International Journal of Security and Its Applications*, Vol. 8 No. 1, pp. 373–388. DOI: 10.14257/ijisia.2014.8.1.35.
- [20] Saqui-Sannes, P. de and Apvrille, L. (2019), “Test Sequence Generation From Formally Verified SysML Models”, 19th February, Stuttgart, Germany. DOI:
- [21] Schlecht, S. and Alt, O. (2007), “Strategien zur Testfallgenerierung aus SysML Modellen”, in Bleek, W.-G., Schwentner, H. and Züllighoven, H. (Eds.), *Software Engineering 2007: Beiträge zu den Workshops der Fachtagung des GI-Fachbereichs Softwaretechnik, 27. - 30.03.2007, Hamburg*, Ges. für Informatik, Bonn, pp. 101–106. DOI:
- [22] Xu, Y. and Wu, L. (2019), “An Automatic Test Case Generation Method based on SysML Activity Diagram”, *IOP Conference Series: Materials Science and Engineering*, Vol. 563 No. 5, p. 52075. DOI: 10.1088/1757-899X/563/5/052075.
- [23] Yin, Y., Xu, Y., Miao, W. and Chen, Y. (2017), “An Automated Test Case Generation Approach based on Activity Diagrams of SysML”, *International Journal of Performability Engineering*. DOI: 10.23940/ijpe.17.06.p13.922936.

## Execution

- [24] Amisshah, M., Toba, A.-L., Handley, H.A. and Seck, M. (2018), “Towards a framework for executable systems modeling: an executable systems modeling language (ESysML)”, in *Mod4Sim '18: Proceedings of the Model-driven Approaches for Simulation Engineering Symposium, 15.-18.04.2018, Baltimore, MD, USA*, Society for Modeling and Simulation (SCS) International, pp. 1–12. DOI:
- [25] Badreddin, O., Abdelzad, V., Lethbridge, T. and Elaasar, M. (2016), “fSysML: Foundational Executable SysML for Cyber-Physical System Modeling”, in *Proceedings of the 4th International Workshop on the Globalization Of Modeling Languages co-located with ACM/IEEE 19th International Conference on Model Driven Engineering Languages and Systems (MODELS 2016), October 4th, Saint Malo, France*, CEUR Workshop Proceedings, pp. 38–51. DOI:
- [26] Dahmann, J., Markina-Khusid, A., Doren, A., Wheeler, T., Cotter, M. and Kelley, M. (2017), “SysML executable systems of system architecture definition: A working example”, in *2017 Annual IEEE International Systems Conference (SysCon), 24.04.2017 - 27.04.2017, Montreal, QC, Canada*, IEEE, pp. 1–6. DOI: 10.1109/SYSCON.2017.7934816.

- [27] Fernández, M.R., Alonso, I.G. and Casanova, E.Z. (2017), “Improving the Interoperability in the Digital Home Through the Automatic Generation of Software Adapters from a SysML Model”, *Journal of Intelligent & Robotic Systems*, Vol. 86 No. 3-4, pp. 511–521. DOI: 10.1007/s10846-016-0419-z.
- [28] Godart, P., Gross, J., Mukherjee, R. and Ubellacker, W. (2017), “Generating real-time robotics control software from SysML”, in *2017 IEEE Aerospace Conference, 04.03.2017 - 11.03.2017, Big Sky, MT*, IEEE, pp. 1–11. DOI: 10.1109/AERO.2017.7943610.
- [29] Hossein, M., Hemmat, A., Mohamed, O.A. and Boukadoum, M. (2016), “Towards code generation for ARM Cortex-M MCUs from SysML activity diagrams”, in *2016 IEEE International Symposium on Circuits and Systems (ISCAS), 22.05.2016 - 25.05.2016, Montreal, QC*, IEEE, pp. 970–973. DOI: 10.1109/IS-CAS.2016.7527404.
- [30] Huang, J., Khallouli, W., Holly A. H., H., Edmonson, W., Ahmed, T. and Kibret, N. (2021), “Semantic Mapping from SysML to FRP: to Enable Executable and Verifiable Systems Design”, in *2021 IEEE International Systems Conference (Sys-Con), 15.04.2021 - 15.05.2021, Vancouver, BC, Canada*, IEEE, pp. 1–7. DOI: 10.1109/SysCon48628.2021.9447075.
- [31] Jankevicius, N. (2016), “Resource Analysis and Automated Verification for the Thirty Meter Telescope using Executable SysML Models”, in Mayerhofer, T., Langer, P., Seidewitz, E. and Gray, J. (Eds.), *Proceedings of the 2nd International Workshop on Executable Modeling co-located with ACM/IEEE 19th International Conference on Model Driven Engineering Languages and Systems (MODELS 2016), October 3, Saint-Malo, France*, CEUR Workshop Proceedings, pp. 2–4. DOI:
- [32] Nguyen, N., Mhenni, F. and Choley, J.-Y. (2018), “AltaRica 3.0 code generation from SysML models”, in Haugen, S., Barros, A., van Gulijk, C., Kongsvik, T. and Vinnem, J.E. (Eds.), *Safety and Reliability – Safe Societies in a Changing World*, CRC Press, London, pp. 2435–2440.
- [33] Schuetz, D., Legat, C. and Vogel-Heuser, B. (2014), “MDE of manufacturing automation software — Integrating SysML and standard development tools”, in *2014 12th IEEE International Conference on Industrial Informatics (INDIN), 27.07.2014 - 30.07.2014, Porto Alegre*, IEEE, pp. 267–273. DOI: 10.1109/INDIN.2014.6945519.
- [34] Vogel-Heuser, B., Schuetz, D., Frank, T. and Legat, C. (2014), “Model-driven engineering of Manufacturing Automation Software Projects – A SysML-based approach”, *Mechatronics*, Vol. 24 No. 7, pp. 883–897. DOI: 10.1016/j.mechatronics.2014.05.003.
- [35] Wilking, F., Sauer, C., Schleich, B. and Wartzack, S. (2022), “SysML 4 Digital Twins – Utilization of System Models for the Design and Operation of Digital Twins”, *Proceedings of the Design Society*, Vol. 2, pp. 1815–1824. DOI: 10.1017/pds.2022.184.

## Model Simulation

- [36] Amálio, N., Payne, R., Cavalcanti, A. and Woodcock, J. (2016), “Checking SysML Models for Co-simulation”, in Ogata, K., Lawford, M. and Liu, S. (Eds.), *Formal Methods and Software Engineering, Lecture Notes in Computer Science*, Vol. 10009, Springer International Publishing, Cham, pp. 450–465.
- [37] Bagnato, A., Brosse, E., Quadri, I. and Sadovykh, A. (2016), “SysML for Modeling Co-simulation Orchestration over FMI: the INTO-CPS Approach”, *Ada User Journal*, Vol. 37 No. 4, pp. 215–218. DOI:
- [38] Bankauskaite, J. and Morkevicius, A. (2018), “An Approach: SysML-based Automated Completeness Evaluation of the System Requirements Specification”, Kaunas, Lithuania. DOI:
- [39] Bock, C., Barbau, R., Matei, I. and Dadfarnia, M. (2017), “An Extension of the Systems Modeling Language for Physical Interaction and Signal Flow Simulation”, *Systems Engineering*, Vol. 20 No. 5, pp. 395–431. DOI: 10.1002/sys.21380.
- [40] Chabibi, B., Nassar, M. and Anwar, A. (2019), “SimulML: A DSML for Simulating SysML Models”, *Journal of Computing Science and Engineering*, Vol. 13 No. 1, pp. 17–31. DOI: 10.5626/JCSE.2019.13.1.17.
- [41] Gross, J. and Mukherjee, R. (2015), “Integrating Multibody Simulations With SysML”, in *Volume 6: 11th International Conference on Multibody Systems, Non-linear Dynamics, and Control, 02.08.2015 - 05.08.2015, Boston, Massachusetts, USA*, American Society of Mechanical Engineers. DOI: 10.1115/DETC2015-48095.
- [42] Hause, M. and Pugnetti, F. (2012), “Simulation of an Electric Utility Network and Control System in SysML”, *INCOSE International Symposium*, Vol. 22 No. 1, pp. 1573–1587. DOI: 10.1002/j.2334-5837.2012.tb01423.x.
- [43] Huang, E., Ramamurthy, R. and McGinnis, L.F. (2007), “System and simulation modeling using SYSML”, in *2007 Winter Simulation Conference, 09.12.2007 - 12.12.2007, Washington, DC, USA*, IEEE, pp. 796–803. DOI: 10.1109/WSC.2007.4419675.
- [44] Jagla, P., Jacobs, G., Siebrecht, J., Wischmann, S. and Sprehe, J. (2021), “Using SysML to Support Impact Analysis on Structural Dynamics Simulation Models”, *Procedia CIRP*, Vol. 100, pp. 91–96. DOI: 10.1016/j.procir.2021.05.015.
- [45] Kruse, B. and Shea, K. (2016), “Design Library Solution Patterns in SysML for Concept Design and Simulation”, *Procedia CIRP*, Vol. 50, pp. 695–700. DOI: 10.1016/j.procir.2016.04.132.
- [46] Kwon, K. and McGinnis, L.F. (2007), “SysML-based Simulation Framework for Semiconductor Manufacturing”, in *2007 IEEE International Conference on Automation Science and Engineering, 22.09.2007 - 25.09.2007, Scottsdale, AZ, USA*, IEEE, pp. 1075–1080. DOI: 10.1109/COASE.2007.4341777.

- [47] Lasalle, J., Peureux, F. and Fondement, F. (2011), "Development of an automated MBT toolchain from UML/SysML models", *Innovations in Systems and Software Engineering*, Vol. 7 No. 4, pp. 247–256. DOI: 10.1007/s11334-011-0164-1.
- [48] Lin, J.T., Huang, E., Shih, P.-H. and Chiu, C.-C. (2015), "Airport baggage handling system simulation modeling using SysML", in *2015 International Conference on Industrial Engineering and Operations Management (IEOM), 03.03.2015 - 05.03.2015, Dubai*, IEEE, pp. 1–10. DOI: 10.1109/IEOM.2015.7093764.
- [49] Liston, P., Kabak, K., Dungan, P., Byrne, J., Young, P. and Heavey, C. (2010), "An Evaluation of SysML to Support Simulation Modeling", in Robinson, S., Brooks, R., Kotiadis, K. and Der Zee, D.-J. (Eds.), *Conceptual Modeling for Discrete-Event Simulation*, CRC Press, pp. 279–307.
- [50] Liu, Y., Irudayaraj, P., Zhou, F., Jiao, R.J. and Goodman, J.N. (2014), "SysML-based model driven discrete-event simulation", in *Moving integrated product development to service clouds in the global economy: Proceedings of the 21st ISPE Inc. International Conference on Concurrent Engineering, September 8-11, 2014 ; [held at the Beijing Jiaotong University, China ; CE2014, Advances in transdisciplinary engineering*, IOS Press, Amsterdam, pp. 617–626.
- [51] Meng, C., Kim, S., Son, Y.-J. and Kubota, C. (2013), "A SysML-based simulation model aggregation framework for seedling propagation system", in *2013 Winter Simulations Conference (WSC), 08.12.2013 - 11.12.2013, Washington, DC, USA*, IEEE, pp. 2180–2191. DOI: 10.1109/WSC.2013.6721595.
- [52] Morkevicius, A. and Jankevicius, N. (2015), "An approach: SysML-based automated requirements verification", in *2015 IEEE International Symposium on Systems Engineering (ISSE), 28.09.2015 - 30.09.2015, Rome, Italy*, IEEE, pp. 92–97. DOI: 10.1109/SysEng.2015.7302739.
- [53] Nikolaidou, M., Kapos, G.-D., Dalakas, V. and Anagnostopoulos, D. (2012), "Basic guidelines for simulating SysML models: An experience report", in *2012 7th International Conference on System of Systems Engineering (SoSE), 16.07.2012 - 19.07.2012, Genova*, IEEE, pp. 95–100. DOI: 10.1109/SYSoSE.2012.6384172.
- [54] Nikolaidou, M., Kapos, G.-D., Tsadimas, A., Dalakas, V. and Anagnostopoulos, D. (2015), "Simulating SysML models: Overview and challenges", in *2015 10th System of Systems Engineering Conference (SoSE), 17.05.2015 - 20.05.2015, San Antonio, TX, USA*, IEEE, pp. 328–333. DOI: 10.1109/SYSOSE.2015.7151961.
- [55] Ouchani, S. and Lenzini, G. (2015), "Generating attacks in SysML activity diagrams by detecting attack surfaces", *Journal of Ambient Intelligence and Humanized Computing*, Vol. 6 No. 3, pp. 361–373. DOI: 10.1007/s12652-015-0269-8.
- [56] Tamura, Y., Nishigaki, H., Miyoshi, K., Huang, H. and Kawata, S. (2012), "A proposal of Home Continuity Plan service system, modeling by SysML and validating by discrete event simulation", in IEEE (Ed.), *2012 Proceedings of SICE Annual Conference (SICE), 20-23 August 2012, Akita, Japan*, IEEE, Place of publication not identified, pp. 137–144. DOI:

- [57] Tsadimas, A., Kapos, G.-D., Dalakas, V., Nikolaidou, M. and Anagnostopoulos, D. (2014), “Integrating simulation capabilities into SysML for enterprise information system design”, in *2014 9th International Conference on System of Systems Engineering (SOSE), 09.06.2014 - 13.06.2014, Adelaide, SA*, IEEE, pp. 272–277. DOI: 10.1109/SYSOSE.2014.6892500.
- [58] Yuze, L., Jun, C., Baomin, W. and Zhaoxing, L. (2022), “SysML-Based Simulation Study on Sand Volume Display Control Logic of Sand Spreading System of EMU”, in Liang, J., Jia, L., Qin, Y., Liu, Z., Diao, L. and An, M. (Eds.), *Proceedings of the 5th International Conference on Electrical Engineering and Information Technologies for Rail Transportation (EITRT) 2021, Lecture Notes in Electrical Engineering*, Vol. 867, Springer Singapore, Singapore, pp. 766–775.

### **Model Synchronization**

- [59] Giese, H., Hildebrandt, S. and Neumann, S. (2010), “Model Synchronization at Work: Keeping SysML and AUTOSAR Models Consistent”, in Engels, G., Lewerentz, C., Schäfer, W., Schürr, A. and Westfechtel, B. (Eds.), *Graph Transformations and Model-Driven Engineering, Lecture Notes in Computer Science*, Vol. 5765, Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 555–579.
- [60] Giese, H., Hildebrandt, S. and Neumann-Paulick, S. (2009), “Towards Integrating SysML and AUTOSAR Modeling via Bidirectional Model Synchronization”, 22.-24.04.2009, Braunschweig. DOI:
- [61] Li, H., Tian, L. and Vogel-Heuser, B. (2019), “Automatic Synchronization of Mechanical CAD Models and a SysML-based Mechatronic Model using AutomationML”, in *2019 IEEE International Conference on Systems, Man and Cybernetics (SMC), 06.10.2019 - 09.10.2019, Bari, Italy*, IEEE, pp. 3343–3350. DOI: 10.1109/SMC.2019.8913908.
- [62] Plateaux, R., Penas, O. and Louni, F. (2019), “Use of a Pivot Diagram in SysML to Support an Automated Implementation of a MBSE Design Methodology in an Industry 4.0 Context”, in Fonseca i Casas, P., Sancho, M.-R. and Sherratt, E. (Eds.), *System Analysis and Modeling. Languages, Methods, and Tools for Industry 4.0, Lecture Notes in Computer Science*, Vol. 11753, Springer International Publishing, Cham, pp. 81–98.
- [63] Schumacher, T. and Inkermann, D. (2022), “Heterogeneous models to Support Interdisciplinary Engineering - Mapping Model Elements of SysML and CAD”, *Procedia CIRP*, Vol. 109, pp. 653–658. DOI: 10.1016/j.procir.2022.05.309.
- [64] Wan, W., Cheong, H., Li, W., Zeng, Y. and Iorio, F. (2016), “Automated transformation of design text ROM diagram into SysML models”, *Advanced Engineering Informatics*, Vol. 30 No. 3, pp. 585–603. DOI: 10.1016/j.aei.2016.07.003.

[65] Zhong, S., Scarinci, A. and Cicirello, A. (2023), “Natural Language Processing for systems engineering: Automatic generation of Systems Modelling Language diagrams”, *Knowledge-Based Systems*, Vol. 259, 110071. Published online 11/03/2022. DOI: 10.1016/j.knosys.2022.110071.

## Model Transformation

- [66] Abdulhameed, A., Hammad, A., Mountassir, H. and Tatibouet, B. (2014), “An Approach based on SysML and SystemC to Simulate Complex Systems”, in *Proceedings of the 2nd International Conference on Model-Driven Engineering and Software Development, 07.01.2014 - 09.01.2014, Lisbon, Portugal*, SCITEPRESS - Science and Technology Publications, pp. 555–560. DOI: 10.5220/0004809205550560.
- [67] Abdulhameed, A., Hammad, A., Mountassir, H. and Tatibouët, B. (2014), “An Approach Combining Simulation and Verification for SysML using SystemC and Up-paal”, Paris/France, available at: <https://hal.science/hal-01234020>. DOI:
- [68] Al shboul, B. and Dorina, P.C. (2019), “Pattern-based transformation of SysML models into fault tree models”, November 2019. DOI:
- [69] Alonso, I.G., Fuente, M.P.A.G. and Brugos, J.A.L. (2009), “Using Sysml to Describe a New Methodology for Semiautomatic Software Generation from Inferred Behavioral and Data Models”, in *2009 Fourth International Conference on Systems, 01.03.2009 - 06.03.2009, Gosier, Guadeloupe, France*, IEEE, pp. 210–215. DOI: 10.1109/ICONS.2009.50.
- [70] Ameer-Boulifa, R., Lugou, F. and Apvrille, L. (2019), “SysML Model Transformation for Safety and Security Analysis”, in Hamid, B., Gallina, B., Shabtai, A., Elovici, Y. and Garcia-Alfaro, J. (Eds.), *Security and Safety Interplay of Intelligent Software Systems, Lecture Notes in Computer Science*, Vol. 11552, Springer International Publishing, Cham, pp. 35–49.
- [71] Ando, T., Yatsu, H., Kong, W., Hisazumi, K. and Fukuda, A. (2014), “Translation rules of SysML state machine diagrams into CSP# toward formal model checking”, *International Journal of Web Information Systems*, Vol. 10 No. 2, pp. 151–169. DOI: 10.1108/IJWIS-02-2014-0004.
- [72] Araújo, C., Batista, T., Cavalcante, E. and Oquendo, F. (2021), “Generating Formal Software Architecture Descriptions from Semi-Formal SysML-Based Models: A Model-Driven Approach”, in Gervasi, O., Murgante, B., Misra, S., Garau, C., Blečić, I., Taniar, D., Apduhan, B.O., Rocha, A.M.A.C., Tarantino, E. and Torre, C.M. (Eds.), *Computational Science and Its Applications – ICCSA 2021, Lecture Notes in Computer Science*, Vol. 12951, Springer International Publishing, Cham, pp. 394–410.
- [73] Ashari, A., Sari, A. and Wardhana, H. (2021), “An Extended Rule of the SysML Requirement Diagram Transformation into OWL Ontologies”, *International Journal*



- [74] Balestrini-Robinson, S., Freeman, D.F. and Browne, D.C. (2015), “An Object-oriented and Executable SysML Framework for Rapid Model Development”, *Procedia Computer Science*, Vol. 44, pp. 423–432. DOI: 10.1016/j.procs.2015.03.062.
- [75] Bank, D., Blumrich, F., Kress, P. and Stoferle, C. (2016), “A systems engineering approach for a dynamic co-simulation of a SysML tool and Matlab”, in *2016 Annual IEEE Systems Conference (SysCon), 18.04.2016 - 21.04.2016, Orlando, FL, USA*, IEEE, pp. 1–6. DOI: 10.1109/SYSCON.2016.7490534.
- [76] Barbau, R., Bock, C. and Dadfarnia, M. (2019), “Translator from Extended SysML to Physical Interaction and Signal Flow Simulation Platforms”, *Journal of research of the National Institute of Standards and Technology*, Vol. 124, pp. 1–3. DOI: 10.6028/jres.124.017.
- [77] Barbau, R., Bock, C. and Dadfarnia, M. (2021), “Translator from Extended SysML to Physical Interaction and Signal Flow Simulation Platforms, Version 1.1”, *Journal of Research of the National Institute of Standards and Technology*, Vol. 126. DOI: 10.6028/JRES.126.027.
- [78] Batarseh, O. and McGinnis, L.F. (2012), “SysML to Discrete-event Simulation to Analyze Electronic Assembly Systems”, in *TMS/DEVS '12: Proceedings of the 2012 Symposium on Theory of Modeling and Simulation - DEVS Integrative M&S Symposium, 26.-29.03.2012, Orlando, Florida*, SCS/ACM, 48:1–48:8. DOI:
- [79] Berrachedi, A., Ioualalen, M. and Hammad, A. (2021), “Towards the Formal Modeling Methodology of WSN through the Transformation of SysML into DSPNs”, in *Proceedings of the 11th International Conference on Simulation and Modeling Methodologies, Technologies and Applications, 07.07.2021 - 09.07.2021, Online Streaming, --- Select a Country ---*, SCITEPRESS - Science and Technology Publications, pp. 83–91. DOI: 10.5220/0010549200830091.
- [80] Berrani, S., Hammad, A. and Mountassir, H. (2013), “Mapping SysML to modelica to validate wireless sensor networks non-functional requirements”, in *IEEE (Ed.), 2013 11th International Symposium on Programming and Systems (ISPS), 4/22/2013 - 4/24/2013, Algiers, Algeria*, IEEE, pp. 177–186. DOI: 10.1109/ISPS.2013.6581484.
- [81] Bocciarelli, P., D'Ambrogio, A. and Fabiani, G. (2012), “A Model-driven Approach to Build HLA-based Distributed Simulations from SysML Models”, in *Proceedings of the 2nd International Conference on Simulation and Modeling Methodologies, Technologies and Applications, 28.07.2012 - 31.07.2012, Rome, Italy*, SCITEPRESS - Science and Technology Publications, pp. 49–60. DOI: 10.5220/0004059900490060.
- [82] Bocciarelli, P., D'Ambrogio, A., Giglio, A. and Gianni, D. (2013), “A SaaS-based automated framework to build and execute distributed simulations from SysML models”, in *2013 Winter Simulations Conference (WSC), 08.12.2013 -*

11.12.2013, Washington, DC, USA, IEEE, pp. 1371–1382. DOI:  
10.1109/WSC.2013.6721523.

- [83] Bombieri, N., Ebeid, E., Fummi, F. and Lora, M. (2013), “On the Reuse of Heterogeneous IPs into SysML Models for Integration Validation”, *Journal of Electronic Testing*, Vol. 29 No. 5, pp. 647–667. DOI: 10.1007/s10836-013-5409-5.
- [84] Bombieri, N., Ebeid, E.S.M., Fummi, F. and Lora, M. (2012), “On the Reuse of RTL IPs for SysML Model Generation”, in *2012 13th International Workshop on Microprocessor Test and Verification (MTV)*, 10.12.2012 - 13.12.2012, Austin, TX, USA, IEEE, pp. 54–59. DOI: 10.1109/MTV.2012.10.
- [85] Bouquet, F., Gauthier, J.-M., Hammad, A. and Peureux, F. (2012), “Transformation of SysML Structure Diagrams to VHDL-AMS”, in *2012 Second Workshop on Design, Control and Software Implementation for Distributed MEMS*, 02.04.2012 - 03.04.2012, Besancon, France, IEEE, pp. 74–81. DOI: 10.1109/dMEMS.2012.12.
- [86] Café, D.C., dos Santos, F.V., Hardebolle, C., Jacquet, C. and Boulanger, F. (2013), “Multi-paradigm semantics for simulating SysML models using SystemC-AMS”, in Morawiec, A. (Ed.), *Proceedings of the 2013 Forum on Specification & Design Languages (FDL 2013)*, 24 - 26 September, Paris, France, IEEE, Piscataway, NJ. DOI:
- [87] Café, D.C., Hardebolle, C., Jacquet, C., dos Santos, F.V. and Boulanger, F. (2014), “Discrete-Continuous Semantic Adaptations for Simulating SysML Models in VHDL-AMS”, *MPM@MoDELS*, Vol. 1237, pp. 11–20. DOI:
- [88] Caltais, G., Leitner-Fischer, F., Leue, S. and Weiser, J. (2017), “SysML to NuSMV Model Transformation via Object-Orientation”, in Berger, C., Mousavi, M.R. and Wisniewski, R. (Eds.), *Cyber Physical Systems. Design, Modeling, and Evaluation, Lecture Notes in Computer Science*, Vol. 10107, Springer International Publishing, Cham, pp. 31–45.
- [89] Caltais, G., Leue, S. and Singh, H. (2020), “Correctness of an ATL Model Transformation from SysML State Machine Diagrams to Promela”, in *Proceedings of the 8th International Conference on Model-Driven Engineering and Software Development*, 25.02.2020 - 27.02.2020, Valletta, Malta, SCITEPRESS - Science and Technology Publications, pp. 360–372. DOI: 10.5220/0008968303600372.
- [90] Çam, S., Görür, B.K., Ledet, J., Oğuztüzün, H. and Yilmaz, L. (2020), “Transformation from SysML to RePast and Back”, *Procedia Computer Science*, Vol. 170, pp. 845–850. DOI: 10.1016/j.procs.2020.03.146.
- [91] Cao, Y., Liu, Y., Fan, H. and Fan, B. (2013), “SysML-based uniform behavior modeling and automated mapping of design and simulation model for complex mechatronics”, *Computer-Aided Design*, Vol. 45 No. 3, pp. 764–776. DOI: 10.1016/j.cad.2012.05.001.

- [92] Cao, Y., Liu, Y., Huang, B., Huang, G. and Ye, X. (2021), "Transformation from System Design Models in SysML to Executable IEC 61499 Function Block Models", in *2021 6th International Conference on Control, Robotics and Cybernetics (CRC)*, 09.10.2021 - 11.10.2021, Shanghai, China, IEEE, pp. 200–206. DOI: 10.1109/CRC52766.2021.9620168.
- [93] Cao, Y., Liu, Y. and Paredis, C.J. (2011), "System-level model integration of design and simulation for mechatronic systems based on SysML", *Mechatronics*, Vol. 21 No. 6, pp. 1063–1075. DOI: 10.1016/j.mechatronics.2011.05.003.
- [94] Cawasji, K.A. and Baras, J.S. (2018), "SysML Executable Model of an Energy-Efficient House and Trade-Off Analysis", in *2018 IEEE International Systems Engineering Symposium (ISSE)*, 01.10.2018 - 03.10.2018, Rome, IEEE, pp. 1–8. DOI: 10.1109/SysEng.2018.8544402.
- [95] Chabibi, B., Anwar, A. and Nassar, M. (2015), "Towards an alignment of SysML and simulation tools", in *2015 IEEE/ACS 12th International Conference of Computer Systems and Applications (AICCSA)*, 17.11.2015 - 20.11.2015, Marrakech, Morocco, IEEE, pp. 1–6. DOI: 10.1109/AICCSA.2015.7507216.
- [96] Chabibi, B., Douche, A., Anwar, A. and Nassar, M. (2016), "Integrating SysML with Simulation Environments (Simulink) by Model Transformation Approach", in *2016 IEEE 25th International Conference on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE)*, 13.06.2016 - 15.06.2016, Paris, France, IEEE, pp. 148–150. DOI: 10.1109/WETICE.2016.39.
- [97] Chang, C.-H., Lu, C.-W., Yang, W.P., Chu, W.C.-C., Yang, C.-T., Tsai, C.-T. and Hsiung, P.-A. (2014), "A SysML Based Requirement Modeling Automatic Transformation Approach", in *2014 IEEE 38th International Computer Software and Applications Conference Workshops*, 21.07.2014 - 25.07.2014, Vasteras, Sweden, IEEE, pp. 474–479. DOI: 10.1109/COMPSACW.2014.80.
- [98] Chu, C., Yin, C., Su, S. and Chen, C. (2022), "Synchronous Integration Method of System and Simulation Models for Mechatronic Systems Based on SysML", *Machines*, Vol. 10 No. 10, p. 864. DOI: 10.3390/machines10100864.
- [99] Da Silva Melo, M., M. S. França, J., Oliveira Jr., E. and S. Soares, M. (2015), "A Model-driven Approach to Transform SysML Internal Block Diagrams to UML Activity Diagrams", in *Proceedings of the 17th International Conference on Enterprise Information Systems*, 27.04.2015 - 30.04.2015, Barcelona, Spain, SCITEPRESS - Science and Technology Publications, pp. 92–101. DOI: 10.5220/0005372700920101.
- [100] Deng, F., Yan, Y., Gao, F. and Wu, L. (2019), "Modeling and Simulation of CPS based on SysML and Modelica (S)", in *Proceedings of the 31st International Conference on Software Engineering and Knowledge Engineering*, July 10-12, 2019, KSI Research Inc. and Knowledge Systems Institute Graduate School, pp. 15–19. DOI: 10.18293/SEKE2019-167.
- [101] Fan, H., Liu, Y., Liu, D. and Ye, X. (2016), "Automated generation of the computer-aided design model from the system structure for mechanical systems

- based on systems modeling language”, *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, Vol. 230 No. 5, pp. 883–908. DOI: 10.1177/0954405414560619.
- [102] Foures, D., Albert, V. and Pascal, J.-C. (2011), “Activitydiagram2petrinet Transformation-based model in accordance with the OMG SysML specifications”, in *25th European Simulation and Modelling Conference- ESM'2011, October 24-26, Guimaraes, Portugal*, eurosis, pp. 429–433. DOI:
- [103] Foures, D., Albert, V., Pascal, J.-C. and Nketsa, A. (2012), “Automation of SysML activity diagram simulation with model-driven engineering approach”, in Wainer, G. and Mosterman, P. (Eds.), *TMS/DEVS '12: Proceedings of the 2012 Symposium on Theory of Modeling and Simulation - DEVS Integrative M&S Symposium, 26 - 30 March, Orlando, Florida, USA*, Curran, Red Hook, NY, 11:1–11:6. DOI:
- [104] Fu, C., Liu, J., Yu, H. and Xu, W. (2020), “A Visual transformation method of SysML model to Modelica model”, *Journal of Physics: Conference Series*, Vol. 1684 No. 1, p. 12058. DOI: 10.1088/1742-6596/1684/1/012058.
- [105] Fragal, V.H., Silva, R.F., Gimenes, I.M.S. and Oliveira Júnior, E.A. (2013), “Application Engineering for Embedded Systems - Transforming SysML Specification to Simulink within a Product-Line based Approach”, in *Proceedings of the 15th International Conference on Enterprise Information Systems, 04.-07.07.2013, Angers, France*, SCITEPRESS - Science and and Technology Publications, pp. 94–101. DOI: 10.5220/0004402600940101.
- [106] Gauthier, J.-M., Bouquet, F., Hammad, A. and Peureux, F. (2013), “Verification and Validation of Meta-model based Transformation from SysML to VHDL-AMS”, in *Proceedings of the 1st International Conference on Model-Driven Engineering and Software Development, 19.-21.02.2013, Barcelona, Spain*, SCITEPRESS - Science and and Technology Publications, pp. 123–128. DOI: 10.5220/0004317601230128.
- [107] Gauthier, J.-M., Bouquet, F., Hammad, A. and Peureux, F. (2015), “A SysML Formal Framework to Combine Discrete and Continuous Simulation for Testing”, in Butler, M., Conchon, S. and Zaïdi, F. (Eds.), *Formal Methods and Software Engineering, Lecture Notes in Computer Science*, Vol. 9407, Springer International Publishing, Cham, pp. 134–152.
- [108] Gauthier, J.-M., Bouquet, F., Hammad, A. and Peureux, F. (2015), “Tooled Process for Early Validation of SysML Models Using Modelica Simulation”, in Dastani, M. and Sirjani, M. (Eds.), *Fundamentals of Software Engineering, Lecture Notes in Computer Science*, Vol. 9392, Springer International Publishing, Cham, pp. 230–237.
- [109] Gezer, D., Unver, H.O., Tascioglu, Y., Celebioglu, K. and Aradag, S. (2013), “Design and simulation of a SCADA system using SysML and Simulink”, in *2013 International Conference on Renewable Energy Research and Applications (ICRERA), 20.10.2013 - 23.10.2013, Madrid, Spain*, IEEE, pp. 1058–1062. DOI: 10.1109/ICRERA.2013.6749909.

- [110] Giertzsch, F., Eichmann, O.C., Hintze, H. and God, R. (2022), "An approach for a simulation-based analysis of business processes using the systems modeling language (SysML)", in Kühn, T. and Sousa, V. (Eds.), *Proceedings of the 25th International Conference on Model Driven Engineering Languages and Systems: Companion Proceedings, 23 10 2022 28 10 2022, Montreal Quebec Canada*, ACM, New York, NY, USA, pp. 331–340. DOI: 10.1145/3550356.3561535.
- [111] GLobe, J. (2007), "Using SysML to Create a Simulation Conceptual Model of Basic ISR Survivability Test Thread", in *Spring Simulation Interoperability Workshop 2007, March 25-30, Norfolk, Virginia, USA*, Curran, Red Hook, NY, pp. 356–363. DOI:
- [112] Gutierrez, A., Chamorro, H.R., Jimenez, J.F., Villa, L.F.L. and Alonso, C. (2015), "Hardware-in-the-loop simulation of PV systems in micro-grids using SysML models", in *2015 IEEE 16th Workshop on Control and Modeling for Power Electronics (COMPEL), 12.07.2015 - 15.07.2015, Vancouver, BC, Canada*, IEEE, pp. 1–5. DOI: 10.1109/COMPEL.2015.7236466.
- [113] Haley, T. and Friedenthal, S. (2008), "Assessing the Application of SysML to Systems of Systems Simulations", in *Simulation Interoperability Workshop Spring 2008, 14 - 18 April, Providence, Rhode Island*, Curran, Red Hook, NY, pp. 651–662. DOI:
- [114] Hammad, A., Mountassir, H. and Chouali, S. (2013), "Combining SysML and Modelica to Verify the Wireless Sensor Networks Energy Consumption", in *Proceedings of the 1st International Conference on Model-Driven Engineering and Software Development, 19.-21.02.2013, Barcelona, Spain*, SCITEPRESS - Science and Technology Publications, pp. 198–201. DOI: 10.5220/0004319601980201.
- [115] Hammad, A., Mountassir, H. and Chouali, S. (2013), "An approach combining SysML and modelica for modelling and validate wireless sensor networks", in Oquendo, F., Avgeriou, P., Cuesta, C.E., Maldonado, J.C., Nakagawa, E.Y., Drira, K. and Zisman, A. (Eds.), *Proceedings of the First International Workshop on Software Engineering for Systems-of-Systems - SESoS '13, 02.07.2013 - 02.07.2013, Montpellier, France*, ACM Press, New York, New York, USA, pp. 5–12. DOI: 10.1145/2489850.2489852.
- [116] Hörl, M., Hochwallner, M., Dierneder, S. and Scheidl, R. (2012), "Integration of SysML and Simulation Models for Mechatronic Systems", in Moreno-Díaz, R., Pichler, F. and Quesada-Arencibia, A. (Eds.), *Computer Aided Systems Theory – EUROCAST 2011, Lecture Notes in Computer Science, Vol. 6928*, Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 89–96.
- [117] Huang, E., McGinnis, L.F. and Mitchell, S.W. (2020), "Verifying SysML activity diagrams using formal transformation to Petri nets", *Systems Engineering*, Vol. 23 No. 1, pp. 118–135. DOI: 10.1002/sys.21524.
- [118] Jarraya, Y., Soeanu, A., Debbabi, M. and Hassaine, F. (2007), "Automatic Verification and Performance Analysis of Time-Constrained SysML Activity Diagrams",

in *14th Annual IEEE International Conference and Workshops on the Engineering of Computer-Based Systems (ECBS'07)*, 26.03.2007 - 29.03.2007, Tucson, AZ, USA, IEEE, pp. 515–522. DOI: 10.1109/ECBS.2007.22.

- [119] Jieshi, S., Cong, C., Bingfei, L. and Qing, Z. (2021), “Co-simulation of SysML and Simulink/Modelica Using FMI”, in *32nd Congress of the International Council of the Aeronautical Sciences (ICAS 2021)*, September 6-10, 2021, Pudong Shangri-La, Shanghai, China, International Council of Aeronautical Sciences (ICAS), Bonn, Germany, pp. 3–13. DOI:
- [120] Johnson, T., Kerzhner, A., Paredis, C.J.J. and Burkhart, R. (2012), “Integrating Models and Simulations of Continuous Dynamics Into SysML”, *Journal of Computing and Information Science in Engineering*, Vol. 12 No. 1. DOI: 10.1115/1.4005452.
- [121] Kapos, G.-D., Dalakas, V., Nikolaidou, M. and Anagnostopoulos, D. (2014), “An integrated framework for automated simulation of SysML models using DEVS”, *SIMULATION*, Vol. 90 No. 6, pp. 717–744. DOI: 10.1177/0037549714533842.
- [122] Kapos, G.-D., Dalakas, V., Tsadimas, A., Nikolaidou, M. and Anagnostopoulos, D. (2014), “Model-based system engineering using SysML: Deriving executable simulation models with QVT”, in *2014 IEEE International Systems Conference Proceedings*, 31.03.2014 - 03.04.2014, Ottawa, ON, Canada, IEEE, pp. 531–538. DOI: 10.1109/SysCon.2014.6819307.
- [123] Kapos, G.-D., Tsadimas, A., Kotronis, C., Dalakas, V., Nikolaidou, M. and Anagnostopoulos, D. (2021), “A Declarative Approach for Transforming SysML Models to Executable Simulation Models”, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, Vol. 51 No. 6, pp. 3330–3345. DOI: 10.1109/TSMC.2019.2922153.
- [124] Kawahara, R., Dotan, D., Sakairi, T., Ono, K., Nakamura, H., Kirshin, A., Hirose, S. and Ishikawa, H. (2009), “Verification of embedded system's specification using collaborative simulation of SysML and simulink models”, in *2009 International Conference on Model-Based Systems Engineering*, 02.03.2009 - 05.03.2009, Herzeliya and Haifa, Israel, IEEE, pp. 21–28. DOI: 10.1109/MBSE.2009.5031716.
- [125] Kim, S.H. (2014), “Automating building energy system modeling and analysis: An approach based on SysML and model transformations”, *Automation in Construction*, Vol. 41, pp. 119–138. DOI: 10.1016/j.autcon.2013.10.018.
- [126] Kinoshita, S., Nishimura, H., Takamura, H. and Mizuguchi, D. (2014), “Describing Software Specification by Combining SysML with the B Method”, in *2014 IEEE International Symposium on Software Reliability Engineering Workshops*, 03.11.2014 - 06.11.2014, Naples, Italy, IEEE, pp. 146–151. DOI: 10.1109/ISSREW.2014.66.

- [127] Kirchner, A., Oetjens, J.-H. and Bringmann, O. (2018), "Using SysML for Modeling and Code Generation for Smart Sensor ASICs", in *2018 Forum on Specification & Design Languages (FDL)*, 10.09.2018 - 12.09.2018, Garching, IEEE, pp. 5–16. DOI: 10.1109/FDL.2018.8524051.
- [128] Kölbl, M., Leue, S. and Singh, H. (2018), "From SysML to Model Checkers via Model Transformation", in Del Gallardo, M.M. and Merino, P. (Eds.), *Model Checking Software, Lecture Notes in Computer Science*, Vol. 10869, Springer International Publishing, Cham, pp. 255–274.
- [129] Kotronis, C., Tsadimas, A., Kapos, G.-D., Dalakas, V., Nikolaidou, M. and Anagnostopoulos, D. (2016), "Simulating SysML transportation models", in *2016 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, 09.10.2016 - 12.10.2016, Budapest, Hungary, IEEE, pp. 1674–1679. DOI: 10.1109/SMC.2016.7844478.
- [130] Kotronis, C., Tsadimas, A. and Nikolaidou, M. (2021), "Providing Designers with Automated Decision-Making within SysML Models to Promote Efficient Model-Based Systems Design", in *2021 IEEE International Systems Conference (SysCon)*, 15.04.2021 - 15.05.2021, Vancouver, BC, Canada, IEEE, pp. 1–8. DOI: 10.1109/SysCon48628.2021.9447083.
- [131] Li, Q., Cao, Z. and Huang, T. (2022 - 2022), "Modeling hybrid systems based on combination of SysML and Modelica", in Sheng, W. and Yan, Y. (Eds.), *International Conference on Computer Network Security and Software Engineering (CNSSE 2022)*, 25.02.2022 - 27.02.2022, Zhuhai, China, SPIE, p. 37. DOI: 10.1117/12.2640833.
- [132] Li, X. and Liu, J. (2016), "A method of SysML-based visual transformation of system design-simulation models", *Journal of Computer-Aided Design & Computer Graphics*, Vol. 28 No. 11, pp. 1973–1981. DOI:
- [133] Liu, Y.S. and Yuan, W.Q. (2012), "Automatic Integration of System-Level Design and System Optimization Based on SysML", *Applied Mechanics and Materials*, 249-250, pp. 1154–1159. DOI: 10.4028/www.scientific.net/AMM.249-250.1154.
- [134] Lugou, F., Li, L.W., Apvrille, L. and Ameer-Boulifa, R. (2016), "SysML Models and Model Transformation for Security", in *Proceedings of the 4th International Conference on Model-Driven Engineering and Software Development*, 19.02.2016 - 21.02.2016, Rome, Italy, SCITEPRESS - Science and Technology Publications, pp. 331–338. DOI: 10.5220/0005748703310338.
- [135] Mahboob, A., Husung, S., Weber, C., Liebal, A. and Krömker, H. (2019), "The Reuse of SysML Behaviour Models for Creating Product Use Cases in Virtual Reality", *Proceedings of the Design Society: International Conference on Engineering Design*, Vol. 1 No. 1, pp. 2021–2030. DOI: 10.1017/dsi.2019.208.
- [136] Maurya, A. and Kumar, D. (2021), "Translation of SysML diagram into mathematical Petri net model for quantitative reliability analysis of airbag system", *International Journal of Vehicle Design*, Vol. 86 No. 1/2/3/4, p. 18. DOI: 10.1504/IJVD.2021.122249.

- [137] McGinnis, L. and Ustun, V. (2009), "A simple example of SysML-driven simulation", in *Proceedings of the 2009 Winter Simulation Conference (WSC)*, 13.12.2009 - 16.12.2009, Austin, TX, USA, IEEE, pp. 1703–1710. DOI: 10.1109/WSC.2009.5429169.
- [138] Medimegh, S., Pierron, J.-Y. and Boulanger, F. (2018), "Qualitative Simulation of Hybrid Systems with an Application to SysML Models", in *Proceedings of the 6th International Conference on Model-Driven Engineering and Software Development*, 22.01.2018 - 24.01.2018, Funchal, Madeira, Portugal, SCITEPRESS - Science and Technology Publications, pp. 279–286. DOI: 10.5220/0006535202790286.
- [139] Mentré, D. (2016), "SysML2B: Automatic Tool for B Project Graphical Architecture Design Using SysML", in Butler, M., Schewe, K.-D., Mashkoor, A. and Biro, M. (Eds.), *Abstract State Machines, Alloy, B, TLA, VDM, and Z, Lecture Notes in Computer Science*, Vol. 9675, Springer International Publishing, Cham, pp. 308–311.
- [140] Morelli, M. (2015), "Automated generation of robotics applications from simulink and SysML models", in Wainwright, R.L., Corchado, J.M., Bechini, A. and Hong, J. (Eds.), *Proceedings of the 30th Annual ACM Symposium on Applied Computing*, 13 04 2015 17 04 2015, Salamanca Spain, ACM, New York, NY, USA, pp. 1948–1954. DOI: 10.1145/2695664.2695882.
- [141] Morozov, A., Mutzke, T. and Ding, K. (2021), "Automated Transformation of UML/SysML Behavioral Diagrams for Stochastic Error Propagation Analysis of Autonomous Systems", *ASCE-ASME J Risk and Uncert in Engrg Sys Part B Mech Engrg*. DOI: 10.1115/1.4051781.
- [142] Mueller, W., He, D., Mischkalla, F., Wegele, A., Larkham, A., Whiston, P., Peñil, P., Villar, E., Mitas, N., Kritharidis, D., Azcarate, F. and Carballeda, M. (2011), "The SATURN Approach to SysML-Based HW/SW Codesign", in Voros, N., Mukherjee, A., Sklavos, N., Masselos, K. and Huebner, M. (Eds.), *VLSI 2010 Annual Symposium, Lecture Notes in Electrical Engineering*, Vol. 105, Springer Netherlands, Dordrecht, pp. 151–164.
- [143] Nejati, S., Sabetzadeh, M., Arora, C., Briand, L.C. and Mandoux, F. (2016), "Automated change impact analysis between SysML models of requirements and design", in Zimmermann, T., Cleland-Huang, J. and Su, Z. (Eds.), *Proceedings of the 2016 24th ACM SIGSOFT International Symposium on Foundations of Software Engineering*, 13 11 2016 18 11 2016, Seattle WA USA, ACM, New York, NY, USA, pp. 242–253. DOI: 10.1145/2950290.2950293.
- [144] Ngo, V.H. and Soriano, T. (2012), "A model transformation process to realize controllers of ship autopilot systems by the specialized MDA's features with UML/SysML", in *2012 9th France-Japan & 7th Europe-Asia Congress on Mechatronics (MECATRONICS) / 13th Int'l Workshop on Research and Education in Mechatronics (REM)*, 21.11.2012 - 23.11.2012, Paris, France, IEEE, pp. 20–26. DOI: 10.1109/MECATRONICS.2012.6450983.



- [145] Nguyen, N., Mhenni, F. and Choley, J.-Y. (2020), "A Study on SysML and AltaRica Models Transformation", in *2020 IEEE International Systems Conference (SysCon)*, 24.08.2020 - 20.09.2020, Montreal, QC, Canada, IEEE, pp. 1–6. DOI: 10.1109/SysCon47679.2020.9275868.
- [146] Nikolaidou, M., Dalakas, V., Mitsi, L., Kapos, G.-D. and Anagnostopoulos, D. (2008), "A SysML Profile for Classical DEVS Simulators", in *2008 The Third International Conference on Software Engineering Advances*, 26.10.2008 - 31.10.2008, Sliema, Malta, IEEE, pp. 445–450. DOI: 10.1109/ICSEA.2008.24.
- [147] Ono, K., Nakamura, H. and Ishikawa, H. (2010), "A dynamic verification method of executable UML/SysML models with timed-functional constraints", *Computer Software*, Vol. 27 No. 2, pp. 33–49. DOI:
- [148] Pais, R., Barros, J.P. and Gomes, L. (2014), "From SysML State Machines to Petri Nets Using ATL Transformations", in Camarinha-Matos, L.M., Barrento, N.S. and Mendonça, R. (Eds.), *Technological Innovation for Collective Awareness Systems, IFIP Advances in Information and Communication Technology*, Vol. 423, Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 227–236.
- [149] Palachi, E., Cohen, C. and Takashi, S. (2013), "Simulation of cyber physical models using SysML and numerical solvers", in *2013 IEEE International Systems Conference (SysCon)*, 15.04.2013 - 18.04.2013, Orlando, FL, IEEE, pp. 671–675. DOI: 10.1109/SysCon.2013.6549954.
- [150] Papakonstantinou, N. and Sierla, S. (2013), "Generating an Object Oriented IEC 61131-3 software product line architecture from SysML", in *2013 IEEE 18th Conference on Emerging Technologies & Factory Automation (ETFA)*, 10.09.2013 - 13.09.2013, Cagliari, Italy, IEEE, pp. 1–8. DOI: 10.1109/ETFA.2013.6648057.
- [151] Paredis, C.J.J. and Johnson, T. (2008), "Using OMG'S SYSML to support simulation", in *2008 Winter Simulation Conference*, 07.12.2008 - 10.12.2008, Miami, FL, USA, IEEE, pp. 2350–2352. DOI: 10.1109/WSC.2008.4736341.
- [152] Paredis, C.J., Bernard, Y., Burkhart, R.M., Koning, H.-P. de, Friedenthal, S., Fritzson, P., Rouquette, N.F. and Schamai, W. (2010), "An Overview of the SysML-Modelica Transformation Specification", *INCOSE International Symposium*, Vol. 20 No. 1, pp. 709–722. DOI: 10.1002/j.2334-5837.2010.tb01099.x.
- [153] Patel, V.V., McGregor, J.D. and Goasguen, S. (2010), "SysML-based domain-specific executable workflows", in *2010 IEEE International Systems Conference*, 05.04.2010 - 08.04.2010, San Diego, CA, IEEE, pp. 505–509. DOI: 10.1109/SYSTEMS.2010.5482335.
- [154] Rahim, M., Hammad, A. and Boukala-loualalen, M. (2015), "Towards the Formal Verification of SysML Specifications: Translation of Activity Diagrams into Modular Petri Nets", in *2015 3rd International Conference on Applied Computing and Information Technology/2nd International Conference on Computational Science and Intelligence*, 12.07.2015 - 16.07.2015, Okayama, Japan, IEEE, pp. 509–516. DOI: 10.1109/ACIT-CSI.2015.97.

- [155] Rahman, M.A., Mizukawa, M., Phaoharuhansa, D. and Shimada, A. (2013), "Modelling and simulation of robotic systems using sysml", *International Journal of Modelling and Simulation*, Vol. 33 No. 3. DOI: 10.2316/Journal.205.2013.3.205-5797.
- [156] Rahman, M.A.A. and Mizukawa, M. (2013), "Model-Based Development and Simulation for Robotic Systems with SysML, Simulink and Simscape Profiles", *International Journal of Advanced Robotic Systems*, Vol. 10 No. 2, p. 112. DOI: 10.5772/55533.
- [157] Rao, M., Ramakrishnan, S. and Dagli, C. (2008), "Modeling and simulation of net centric system of systems using systems modeling language and colored Petri-nets: A demonstration using the global earth observation system of systems", *Systems Engineering*, Vol. 11 No. 3, pp. 203–220. DOI: 10.1002/sys.20095.
- [158] Salunkhe, S., Berglehner, R. and Rasheeq, A. (2021), "Automatic Transformation of SysML Model to Event-B Model for Railway CCS Application", in Raschke, A. and Méry, D. (Eds.), *Rigorous State-Based Methods, Lecture Notes in Computer Science*, Vol. 12709, Springer International Publishing, Cham, pp. 143–149.
- [159] Schoenherr, O., Moss, J.H., Rehm, M. and Rose, O. (2012), "A free simulator for modeling production systems with SysML", in *Proceedings Title: Proceedings of the 2012 Winter Simulation Conference (WSC), 09.12.2012 - 12.12.2012, Berlin, Germany*, IEEE, pp. 1–12. DOI: 10.1109/WSC.2012.6465090.
- [160] Schoenherr, O., Pappert, F.S. and Rose, O. (2014), "Domain Specific Simulation Modeling with SysML and Model-to-Model Transformation for Discrete Processes", in Fonseca i Casas, P. (Ed.), *Formal Languages for Computer Simulation*, IGI Global, pp. 267–304.
- [161] Schuetz, D., Aicher, T. and Vogel-Heuser, B. (2017), "Automatic generation of shop floor gateway configurations from systems modeling language", in *2017 IEEE International Systems Engineering Symposium (ISSE), 11.10.2017 - 13.10.2017, Vienna, Austria*, IEEE, pp. 1–8. DOI: 10.1109/Sys-Eng.2017.8088288.
- [162] Shinozaki, M., Mhenni, F., Choley, J.-Y. and Ming, A. (2017), "Reuse of SysML model to support innovation in mechatronic systems design", in *2017 Annual IEEE International Systems Conference (SysCon), 24.04.2017 - 27.04.2017, Montreal, QC, Canada*, IEEE, pp. 1–6. DOI: 10.1109/SYSCON.2017.7934709.
- [163] Sindico, A., Di Natale, M. and Panci, G. (2011), "Integrating SysML with Simulink using Open-source Model Transformations", in Kacprzyk, J. (Ed.), *Proceedings of 1st International Conference on Simulation and Modeling Methodologies, Technologies and Applications, July 29 - 31, Noordwijkerhout, The Netherlands*, SciTePress, Setúbal, pp. 45–56. DOI:
- [164] Song, C., Yang, K. and Xu, J. (2018), "Application of Executable SysML Technology in UCAV Formation Ground Attack", in Unknown (Ed.), *Proceedings of the 2018 2nd International Conference on Management Engineering, Software Engineering and Service Sciences - ICMSS 2018, 13.01.2018 - 15.01.2018, Wuhan*,

China, ACM Press, New York, New York, USA, pp. 212–216. DOI:  
10.1145/3180374.3181353.

- [165] Stancescu, S., Neagoe, L., Marinescu, R. and Enoiu, E.P. (2010), “A SysML model for code correction and detection systems”, in Biljanovic, P. (Ed.), *2010 proceedings of the 33rd International Convention MIPRO, 24 - 28 May 2010, Opatija, Croatia*, IEEE, Piscataway, NJ, pp. 189–191. DOI:
- [166] Szmuc, W. and Szmuc, T. (2018), “Towards Embedded Systems Formal Verification Translation from SysML into Petri Nets”, in *2018 25th International Conference "Mixed Design of Integrated Circuits and System" (MIXDES), 21.06.2018 - 23.06.2018, Gdynia*, IEEE, pp. 420–423. DOI: 10.23919/MIXDES.2018.8436870.
- [167] Theobald, M. and Tatibouet, J. (2019), “Using fUML Combined with a DSML: An Implementation using Papyrus UML/SysML Modeler”, in *Proceedings of the 7th International Conference on Model-Driven Engineering and Software Development, 20.02.2019 - 22.02.2019, Prague, Czech Republic*, SCITEPRESS - Science and Technology Publications, pp. 250–257. DOI: 10.5220/0007310702500257.
- [168] Tsadimas, A., Kapos, G.-D., Dalakas, V., Nikolaidou, M. and Anagnostopoulos, D. (2016), “Simulating simulation-agnostic SysML models for enterprise information systems via DEVS”, *Simulation Modelling Practice and Theory*, Vol. 66, pp. 243–259. DOI: 10.1016/j.simpat.2016.04.001.
- [169] Verries, J., Paludetto, M. and Sahraoui, A.-E.-K. (2008), “From Design with SYSML to VHDL-AMS Simulation”, in *ESM'2008 The 2008 European Simulation and Modelling Conference, October 27-29, 2008, Le Havre, France*, eurosis. DOI:
- [170] Wang, R. and Dagli, C.H. (2008), “An Executable System Architecture Approach to Discrete Events System Modeling Using SysML in Conjunction with Colored Petri Net”, in *2008 2nd Annual IEEE Systems Conference, 07.04.2008 - 10.04.2008, Montreal, QC, Canada*, IEEE, pp. 1–8. DOI: 10.1109/SYS-TEMS.2008.4518997.
- [171] Wang, R. and Dagli, C.H. (2011), “Executable system architecting using systems modeling language in conjunction with colored Petri nets in a model-driven systems development process”, *Systems Engineering*, Vol. 14 No. 4, pp. 383–409. DOI: 10.1002/sys.20184.
- [172] Wardhana, H., Ashari, A. and Kartika, A. (2020), “Transformation of SysML Requirement Diagram into OWL Ontologies”, *International Journal of Advanced Computer Science and Applications*, Vol. 11 No. 4. DOI: 10.14569/IJACSA.2020.0110415.
- [173] Weyprecht, P. and Rose, O. (2011), “Model-driven development of simulation solution based on SysML starting with the simulation core”, in Yilmaz, L. and Wainer, G. (Eds.), *Theory of modeling & simulation: DEVS Integrative M&S Symposium 2011, 3 - 7 April 2011, Boston, Massachusetts, USA*, Curran, Red Hook, NY, pp. 189–192. DOI:

- [174] Wilking, F., Sauer, C., Schleich, B. and Wartzack, S. (2022), "Integrating Machine Learning in Digital Twins by utilizing SysML System Models", in *2022 17th Annual System of Systems Engineering Conference (SOSE), 07.06.2022 - 11.06.2022, Rochester, NY, USA*, IEEE, pp. 297–302. DOI: 10.1109/SOSE55472.2022.9812700.
- [175] Xinquan, W., Xuefeng, Y., Xingchan, L. and Yongzhen, W. (2022), "Simulating hybrid SysML models: a model transformation approach under the DEVS framework", *The Journal of Supercomputing*. DOI: 10.1007/s11227-022-04654-6.
- [176] Zhang, Y., Hoepfner, G., Berroth, J., Pasch, G. and Jacobs, G. (2021), "Towards Holistic System Models Including Domain-Specific Simulation Models Based on SysML", *Systems*, Vol. 9 No. 4, p. 76. DOI: 10.3390/systems9040076.
- [177] Zhou, S., Cao, Y., Zhang, Z. and Liu, Y. (2018), "System Design and Simulation Integration for Complex Mechatronic Products Based on SysML and Modelica", *Journal of Computer-Aided Design & Computer Graphics*, Vol. 30 No. 4, p. 728. DOI: 10.3724/SP.J.1089.2018.16520.

### **Semantic Integration**

- [178] Barbieri, G., Kernschmidt, K., Fantuzzi, C. and Vogel-Heuser, B. (2014), "A SysML based design pattern for the high-level development of mechatronic systems to enhance re-usability", *IFAC Proceedings Volumes*, Vol. 47 No. 3, pp. 3431–3437. DOI: 10.3182/20140824-6-za-1003.00615.
- [179] Bareiss, P., Schuetz, D., Priego, R., Marcos, M. and Vogel-Heuser, B. (2016), "A model-based failure recovery approach for automated production systems combining SysML and industrial standards", in *2016 IEEE 21st International Conference on Emerging Technologies and Factory Automation (ETFA), 06.09.2016 - 09.09.2016, Berlin, Germany*, IEEE, pp. 1–7. DOI: 10.1109/ETFA.2016.7733720.
- [180] Berardinelli, L., Biffi, S., Lüder, A., Mätzler, E., Mayerhofer, T., Wimmer, M. and Wolny, S. (2016), "Cross-disciplinary engineering with AutomationML and SysML", *at - Automatisierungstechnik*, Vol. 64 No. 4, pp. 253–269. DOI: 10.1515/auto-2015-0076.
- [181] Brahmi, R., Hammadi, M., Aifaoui, N. and Choley, J.-Y. (2021), "Interoperability of CAD models and SysML specifications for the automated checking of design requirements", *Procedia CIRP*, Vol. 100, pp. 259–264. DOI: 10.1016/j.procir.2021.05.064.
- [182] Chouali, S. and Hammad, A. (2011), "Formal verification of components assembly based on SysML and interface automata", *Innovations in Systems and Software Engineering*, Vol. 7 No. 4, pp. 265–274. DOI: 10.1007/s11334-011-0170-3.
- [183] Espinoza, H., Cancila, D., Selic, B. and Gérard, S. (2009), "Challenges in Combining SysML and MARTE for Model-Based Design of Embedded Systems", in Paige, R.F., Hartman, A. and Rensink, A. (Eds.), *Model Driven Architecture - Foundations*

- [184] Feldmann, S., Kernschmidt, K. and Vogel-Heuser, B. (2014), “Combining a SysML-based Modeling Approach and Semantic Technologies for Analyzing Change Influences in Manufacturing Plant Models”, *Procedia CIRP*, Vol. 17, pp. 451–456. DOI: 10.1016/j.procir.2014.01.140.
- [185] Kanthabhabhajeja, S., Berglund, J., Falkman, P. and Lennartson, B. (2013), “Interface between SysML and Sequence Planner Language for Formal Verification”, *INCOSE International Symposium*, Vol. 23 No. 1, pp. 918–932. DOI: 10.1002/j.2334-5837.2013.tb03063.x.
- [186] Kernschmidt, K., Barbieri, G., Fantuzzi, C. and Vogel-Heuser, B. (2013), “Possibilities and challenges of an integrated development using a combined SysML-model and corresponding domain specific models”, *IFAC Proceedings Volumes*, Vol. 46 No. 9, pp. 1465–1470. DOI: 10.3182/20130619-3-RU-3018.00391.
- [187] Kerzhner, A. and Paredis, C. (2011), “Combining SysML and Model Transformations to Support Systems Engineering Analysis”, 338 kB / Electronic Communications of the EASST, Volume 42: Multi-Paradigm Modeling 2010. DOI: 10.14279/tuj.eceasst.42.613.630.
- [188] Kim, H., Fried, D. and Menegay, P. (2012), “Connecting SysML Models with Engineering Analyses to Support Multidisciplinary System Development”, in *12th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference and 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Indianapolis, Indiana*, American Institute of Aeronautics and Astronautics, Reston, Virginia. DOI: 10.2514/6.2012-5632.
- [189] Laleau, R., Semmak, F., Matoussi, A., Petit, D., Hammad, A. and Tatibouet, B. (2010), “A first attempt to combine SysML requirements diagrams and B”, *Innovations in Systems and Software Engineering*, Vol. 6 No. 1-2, pp. 47–54. DOI: 10.1007/s11334-009-0119-y.
- [190] Morgan, D., Waldock, A. and Corne, D. (2012), “Efficient systems analysis by combining SysML and coevolution”, in *2012 7th International Conference on System of Systems Engineering (SoSE), 16.07.2012 - 19.07.2012, Genova*, IEEE, pp. 83–88. DOI: 10.1109/SYSoSE.2012.6384141.
- [191] Nigischer, C., Bougain, S., Riegler, R., Stanek, H.P. and Grafinger, M. (2021), “Multi-domain simulation utilizing SysML: state of the art and future perspectives”, *Procedia CIRP*, Vol. 100, pp. 319–324. DOI: 10.1016/j.procir.2021.05.073.
- [192] Polit Casillas, R. and Howe, S.A. (2013), “Virtual Construction of Space Habitats: Connecting Building Information Models (BIM) and SysML”, in *AIAA SPACE 2013 Conference and Exposition, September 10-12, San Diego, CA*, American Institute of Aeronautics and Astronautics, Reston, Virginia, 5508(1-19). DOI: 10.2514/6.2013-5508.

- [193] Schwede, L.-N., Winter, M., Lödding, H. and Krause, D. (2020), “Darstellung des Zusammenhangs von Produktarchitektur- und Produktionssystemgestaltung in SysML”, in *Proceedings of the 31st Symposium Design for X (DFX2020)*, 16-17 December 2020, The Design Society, pp. 41–50. DOI: 10.35199/dfx2020.5.
- [194] Shah, A.A., Paredis, C.J.J., Burkhart, R. and Schaefer, D. (2012), “Combining Mathematical Programming and SysML for Automated Component Sizing of Hydraulic Systems”, *Journal of Computing and Information Science in Engineering*, Vol. 12 No. 4. DOI: 10.1115/1.4007764.
- [195] Souza, F.G.R. de, Melo Bezerra, J. de, Hirata, C.M., Saqui-Sannes, P. de and Apvrille, L. (2020), “Combining STPA with SysML Modeling”, in *2020 IEEE International Systems Conference (SysCon)*, 24.08.2020 - 20.09.2020, Montreal, QC, Canada, IEEE, pp. 1–8. DOI: 10.1109/SysCon47679.2020.9275867.
- [196] Tueno Fotso, S.J., Mammari, A., Laleau, R. and Frappier, M. (2018), “Event-B Expression and Verification of Translation Rules Between SysML/KAOS Domain Models and B System Specifications”, in Butler, M., Raschke, A., Hoang, T.S. and Reichl, K. (Eds.), *Abstract State Machines, Alloy, B, TLA, VDM, and Z, Lecture Notes in Computer Science*, Vol. 10817, Springer International Publishing, Cham, pp. 55–70.