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Collaborative modeling approach for virtual prototype of complex systems

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Abstract

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Based on the system model language and high level architecture, a new approach of opened collaborative modeling and simulating is proposed for virtual prototype of complex systems. The new approach has the advantage of multidiscipline models integration and co-simulation in VPCS. In this approach, VPCS is divided into top model, federation model, and field component model. The scheduling mechanism of VPCS is analyzed. A virtual prototype of the flight control system of an unmanned aerial vehicle is carried out with the proposed approach. The simulation results demonstrate that the new approach can be effectively and efficiently used for modeling and simulation of multi-level, multi-granularity and multi-field VPCS.

Author keywords

Co-simulation; Complex system; High level architecture; SysML; Virtual prototype

Indexed keywords

Collaborative model; Cosimulation; High level architecture; Model and simulation; Scheduling mechanism; SysML; System modeling languages; Virtual prototype

Engineering controlled terms: Cobalt compounds; Flight control systems; Large scale systems

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References (17)

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Qian, X.-S., Yu, J.-Y., Dai, R.-W.

1

(1990) *Ziran*, 13 (1), pp. 3-10. Cited 158 times.

[View on Web](#)



Wainer, G., Liu, Q.

2

Tools for graphical specification and visualization of DEVS models

(2009) *Simulation*, 85 (3), pp. 131-158. Cited 8 times.

doi: 10.1177/0037549708101182



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Imsland, L., Kittilsen, P., Schei, T.S.

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(2010) *Modeling, Identification and Control*, 31 (3), pp. 107-121. Cited 4 times.
<http://www.mic-journal.no/PDF/2010/MIC-2010-3-3.pdf>
doi: 10.4173/mic.2010.3.3



[View at Publisher](#)

□ Alexandru, C., Alexandru, P.

4 **The virtual prototype of a mechatronic suspension system with active force control**

(2010) *WSEAS Transactions on Systems*, 9 (9), pp. 927-936. Cited 5 times.
<http://www.wseas.us/e-library/transactions/systems/2010/88-216.pdf>



□ Li, T., Li, B.-H., Chai, X.-D., Yan, X.-F.

5 **Meta modeling framework for complex product multidiscipline virtual prototyping**

(2011) *Jisuanji Jicheng Zhizao Xitong/Computer Integrated Manufacturing Systems, CIMS*, 17 (6), pp. 1178-1186. Cited 4 times.



□

6 Cited 2 times.

OMG. [2010-05-10]
<http://www.sysmfforum.com/docs/specs/OMGSysML-v1.1-08-11-01.pdf.2008.11.01/2010.05.10>



□ Constantine, J.A., Solak, S.

7 **SysML modeling of Off-the-Shelf-Option acquisition for risk mitigation in military programs**

(2010) *Systems Engineering*, 13 (1), pp. 80-94. Cited 6 times.
<http://www.interscience.wiley.com/cgi-bin/fulltext/122252513/PDFSTART>
doi: 10.1002/sys.20134



[View at Publisher](#)

□ OMG. UML2.2. (2009-02-04) [2010-01-05]

8 <http://www.omg.org/spec/UML/2.2/Infrastructure>



□ Liu, X.-H., Cao, Y.-F., Shen, C.-L.

9 **Model-driven high-level design and verification for complex reactive system**

(2009) *Xitong Fangzhen Xuebao / Journal of System Simulation*, 21 (14), pp. 4284-4287. Cited 3 times.



□ Wang, X.-C., Cao, Y.-F., Ding, M., Zhuang, L.-K., Wang, B., Yang, B.

10 **Complex system opened top-level modeling driven by meta object facility**

(2012) *Dianzi Keji Daxue Xuebao/Journal of the University of Electronic Science and Technology of China*, 41 (4), pp. 482-490.
doi: 10.3969/j.issn.1001-0548.2012.04.001



[View at Publisher](#)

□ Liu, X.-H., Cao, Y.-F.

11 **Flight control system digital prototype design technology supporting model-driven development**

(2011) *Jisuanji Jicheng Zhizao Xitong/Computer Integrated Manufacturing Systems, CIMS*, 17 (1), pp. 23-29. Cited 3 times.



[View at Publisher](#)

□ Wetter, M.

12 **Co-simulation of building energy and control systems with the building controls virtual test bed**

(2011) *Journal of Building Performance Simulation*, 4 (3), pp. 185-203. Cited 37 times.
doi: 10.1080/19401493.2010.518631



[View at Publisher](#)

Song, C., Wang, J., Jin, L.

13 **Study on the Composite ABS Control of Vehicles with Four Electric Wheels**

(2011) *Journal of Computers*, 6 (3), pp. 618-626. Cited 7 times.
<http://ojs.academypublisher.com/index.php/jcp/article/view/0603618626/2777>
doi: 10.4304/jcp.6.3.618-626



[View at Publisher](#)

Shu, H., Xu, Y., Chen, Q., Ren, K.

14 **Simulation on driving system used for differential steering of electric scooter**

(2011) *Transactions of Tianjin University*, 17 (2), pp. 103-106. Cited 3 times.
doi: 10.1007/s12209-011-1492-9



[View at Publisher](#)

Uygun, O., Öztemel, E., Kubat, C.

15 **Scenario based distributed manufacturing simulation using HLA technologies**

(2009) *Information Sciences*, 179 (10), pp. 1533-1541. Cited 7 times.
doi: 10.1016/j.ins.2008.10.019



[View at Publisher](#)

Liu, J., Zhou, Y.-Q., Qu, H.-M., Qu, B.

16 **Collaborative design environment for complex product based on HLA**

(2009) *Beijing Gongye Daxue Xuebao / Journal of Beijing University of Technology*, 35 (10), pp. 1320-1326.



Adak, M., Topçu, O., Oguztüzün, H.

17 **Model-based code generation for HLA federates**

(2010) *Software - Practice and Experience*, 40 (2), pp. 149-175. Cited 8 times.
<http://www.interscience.wiley.com/cgi-bin/fulltext/123228530/PDFSTART>
doi: 10.1002/spe.949



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