

## Seamless model interoperability for software design and analysis

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### ABSTRACT

Software development has now become a critical process that handles a plethora of sensitive and mission critical information that involves lives, money and time. As such, designing such a critical piece of software has become even more critical and requires a solid logical or mathematical analysis behind it to ensure the reliability of the software. Modelling is one of the preferred methods for software designers to express their design, especially through easy to use modeling languages such as UML (Unified Modelling Language). However the lack of formal analysis capabilities in UML makes it necessary for a redundant formal model to be created as well, in order to analyze the design. Model interoperability as referred to in this paper promotes the use of UML, to be paired seamlessly with a formal model that is capable in performing formal mathematical analysis on the software design.

### KEYWORDS

Model driven development; Model interoperability; Modelling; Petri net; Sequence diagram

### REFERENCES

1. (2007) *OMG Unified Modelling Language (UML)*.  
OMG Superstructure 2.1
2. Murata, T.  
Petri Nets: Properties, Analysis and Applications  
(1989) *Proceedings of the IEEE*, 77 (4), pp. 541-580.
3. Ameedeen, M.A., Bordbar, B.  
A model driven approach to represent sequence diagrams as free choice petri nets  
(2008) *Proceedings - 12th IEEE International Enterprise Distributed Object Computing Conference, EDOC 2008*, art. no. 4634772, pp. 213-221  
ISBN: 978-076953373-5

4. Amedeen, M.A.  
(2012) *A Model Driven Approach to Analysis and Synthesis of Sequence Diagrams*.  
Diss. University of Birmingham
  
5. Jie, T.W., Amedeen, M.A.  
A Model Driven method to represent Free Choice Petri Nets as Sequence Diagram  
(2015) *2015 4th International Conference on Software Engineering and Computer Systems, ICSECS 2015: Virtuous Software Solutions for Big Data*, art. no. 7333104, pp. 166-170.  
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