

# The Modern Tool to Easily Integrate the System Dimension in your Design

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The release 6.1 of Portunus - system simulator solution - features a number of new models and functionalities.

Portunus has been designed for "mixed-mode, multi-domain" simulations of coupled analogue and digital systems. It comes with a versatile and highly user-friendly graphical user interface allowing for the application of combined modeling approaches such as networks, block diagrams, equation systems and state machines.

Since interoperability is a key point in the design process, Portunus supports standards such as VHDL-AMS, SPICE and offers data import links to the software packages Motor-CAD, InCa3D and SPEED. Connectors for the GOT-It optimizer and I-sight® as well as an OLE interface allow for seamless integration of Portunus simulations into design flows.

Co-simulation interfaces for Flux® and Simulink® complete the analysis options offered by Portunus: in transient analysis, users can integrate a Finite Element model designed with Flux or a model designed with Simulink into a mechatronic system designed with Portunus. Thus, co-simulation increases models' accuracy by using dedicated tools, and extends Portunus' interoperability.

A bundle of new features developed for Portunus 6.1 expand user opportunities.

## XML interface

The newly-developed XML interface provides powerful means for the automated generation of models to be simulated by Portunus. It features an easy-to-read syntax as shown in the following example, where a resistance of 2 Ohm is connected to the network nodes "N1" and "GND":

```
<MODEL Type=>R> Name=>R2>
<NODESNC>
<NODENC Name=>R> Val=>2> Dir=>In> />
</NODESNC>
<NODESC>
<NODEC Name=>N1> Net=>N1> />
<NODEC Name=>N2> Net=>GND> />
</NODESC></MODEL>
```

There are two possible scenarios for the integration of XML code:

### » Sub-Models defined by XML Code

XML models can be inserted into a Portunus schematic in the same way as graphical sub-systems, VHDL-AMS models or SPICE net lists. In doing so, the XML model defines a sub-level in the hierarchical system model and may provide interfaces in terms of conservative and non-conservative nodes.

### » XML System Descriptions

XML system models can be used as alternatives to the system descriptions contained in Portunus schematic files. In this case, the XML code has to comprise the entire system description by means of model instantiations and parameterisations together with information about simulator settings and output requests. As the OLE interface of Portunus fully supports the handling of XML system descriptions, the whole design flow from model generation to result analysis can be done without a single manual user intervention under Portunus.

### » Export of stand-alone models

Another new development, the so-called "Stand-alone Model Export", makes it possible to create a stand-alone Windows application that includes the content of one or more Portunus system models (\*.ecd files). This stand-alone application can be run by any users without the need for a Portunus license and therefore at no cost to them.

The "Stand-alone Model Export" is a comfortable way of sharing models with partners. The stand-alone application can be generated in a few clicks.

With it, partners may change model parameters and run simulations. However, they cannot save their changes.

The link below points to a sample file generated by the "Stand-alone Model Export". It comprises an actuator model built using tables created with Flux.

[ftp://ftp.cedrat.com:/perm/Portunus/Runtime.zip](http://ftp.cedrat.com:/perm/Portunus/Runtime.zip)

### » R, L, C matrix models for EMC analysis

The Portunus model libraries have been enhanced by new components to model inductive, capacitive or resistive couplings between system components by means of coupling matrices. An open file format allows for the import of coupling coefficients from field solvers.

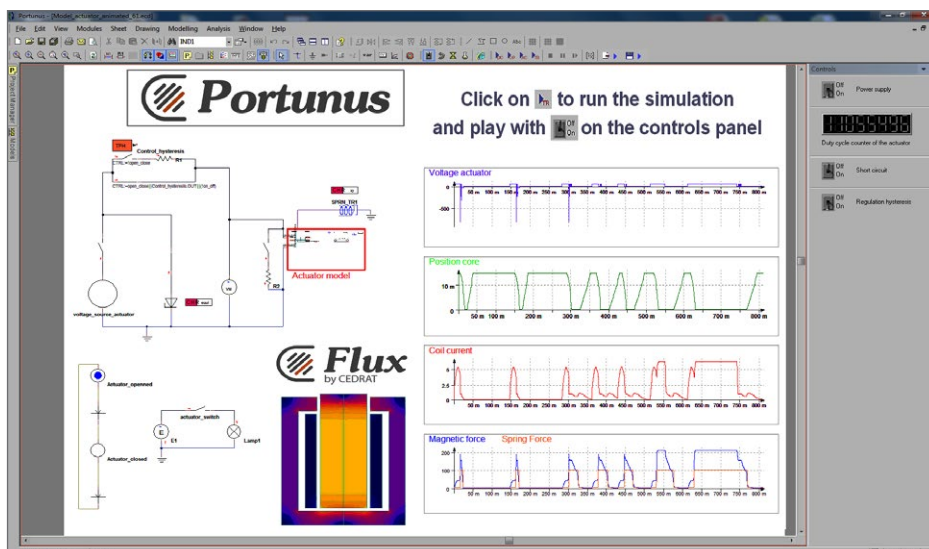


Figure 1: Stand-alone application of an actuator model.

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# Portunus

A typical application for these models is the analysis of EMC properties for power electronic systems. The screenshot below shows a Portunus schematic with an EMC model of a frequency inverter. The displays show the results of a frequency sweep together with envelop and limit curves (figure 2).

## More features

In addition to the new features described above, Portunus 6.1 comes with more new models and other enhancements:

- The model of a power electronic switch (transistor + free-wheeling diode) has been further developed and now offers the option of creating user-defined parameter sets.
- A new heat sink model based on data sheet tables has been added to the Thermal Library.
- More comprehensive automation of the design process is made possible by new functions of the OLE interface.
- Models defined by the user may now get their dedicated parameter dialogs ("wizards") as Portunus 6.1 comes with a new interface allowing these dialogs to be coded in C++.

## Conclusion

Portunus 6.1 continues to expand its interoperability with the new implementation of an XML interface and the possibility of sharing Portunus projects with anybody via the generation of a stand-alone application. The philosophy of Portunus development is to open more and more this mechatronic simulation tool and help you in your collaborative projects. This software is able to propose designers several levels of modeling, different modeling approaches, efficient post-processing and tools to manage a project from specifications to prototype.

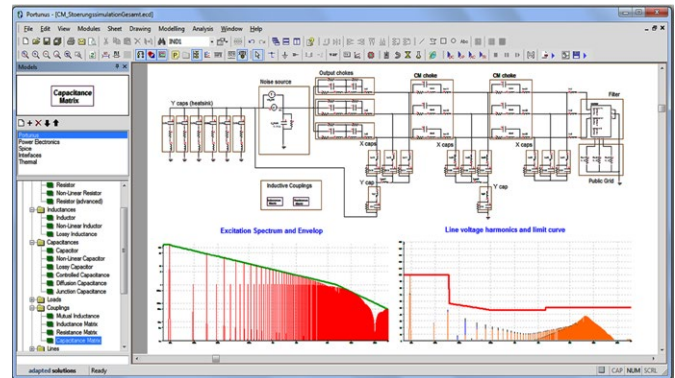


Figure 2: Portunus results.

## Evaluate Portunus System Simulator for FREE

<http://www.cedrat.com/en/software-solutions/downloads/portunus-demo-version.html>



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