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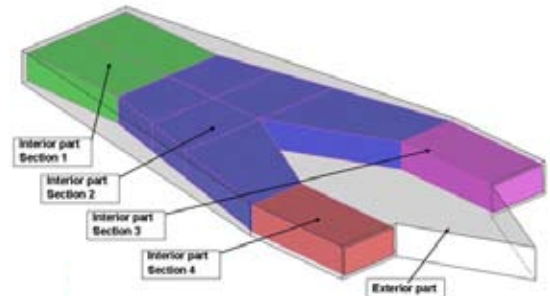
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## Efield® 5.1 released

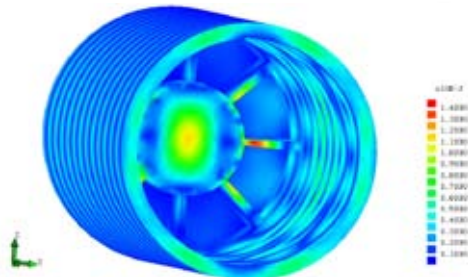
Efield® announces that its new product release Efield® 5.1 is now shipping. This Efield release includes many improvements of existing features but also some new important capabilities.

Major improvements of this release include:

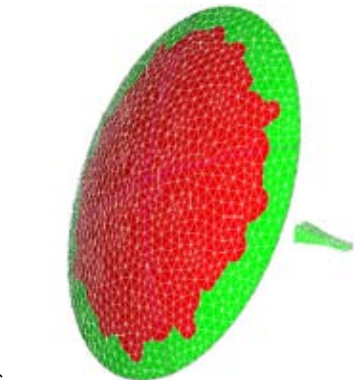
- Efield frequency-domain tool for cavity RCS computation using an efficient and flexible domain decomposition and multi-method approach. [Read More >>](#)



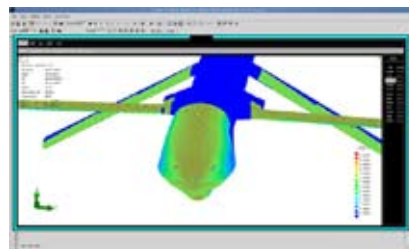
*Efield cavity RCS tool*



- Waveguide mode excitation ports included in the Efield frequency-domain hybrid MLFMM-PO solver. Drastic reduction in computational time is achieved using the MLFMM-PO solver for reflector antenna analysis. At the current date Efield is the only commercial software with a MLFMM-PO solver. [Read More >>](#)



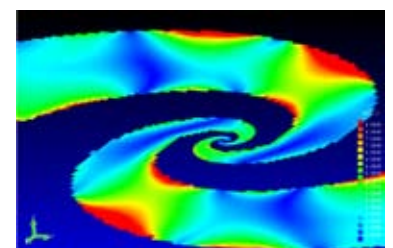
*Waveguide mode excitation port in MLFMM-PO simulation*



*PO simulation of UAV at 10GHz*

- Significantly faster standalone PO simulation for radar cross section applications. The Efield PO solver is based on triangular surface mesh and NURBS geometry representation to determine which parts of the geometry that are illuminated or not.

- Lumped circuits elements in the finite element region in the FDTD-FEM solver included in Efield 5.1. The hybrid FDTD-FEM solver now presents a very powerful toolbox for detailed antenna analysis. [Read More >>](#)



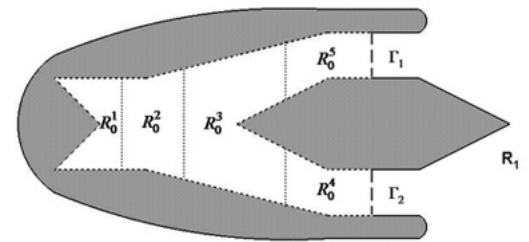
*Planar logarithmic spiral antenna*

## Efield® cavity RCS tool

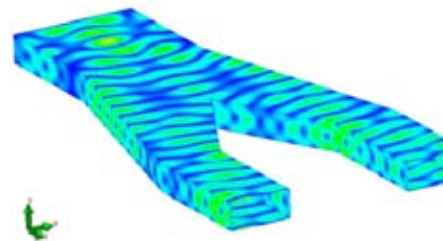
**The Efield Cavity RCS tool can compute cavity RCS of open ended cavities such as air intakes and exhausts.**

“In traditional methods a geometric or electromagnetic modification requires a new computation of the complete geometry.”

Efield has very efficient tools dedicated to RCS analysis of very large open ended cavities such as air intakes and exhausts. RCS of the total target including the cavity can be computed using the Efield MoM, MLFMM and PO solvers or with a very efficient and flexible domain decomposition method available in Efield

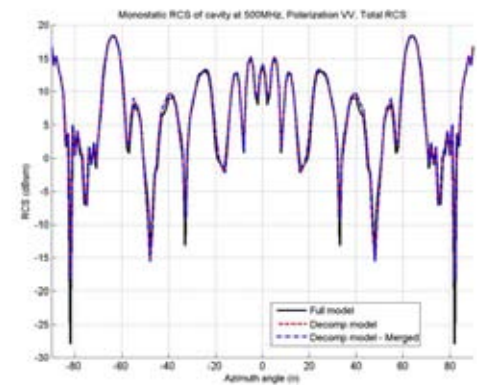


*Cavity domain decomposition*



*Surface currents of cavity*

that significantly reduces the computation time compared to traditional methods. If design changes or parametric investigation are done only the modified domains needs to be re-computed, the other ones are simply re-used. In traditional methods a geometric or electromagnetic modification requires a new computation of the complete geometry. [Read More >>](#)



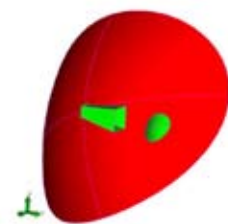
*Monostatic RCS of cavity*

“At the current date Efield is the only commercial software with a MLFMM-PO solver. Drastic reduction in computational time can be seen in for example reflector antenna analysis”

## Efficient reflector antenna simulation using the Efield® MLFMM-PO solver

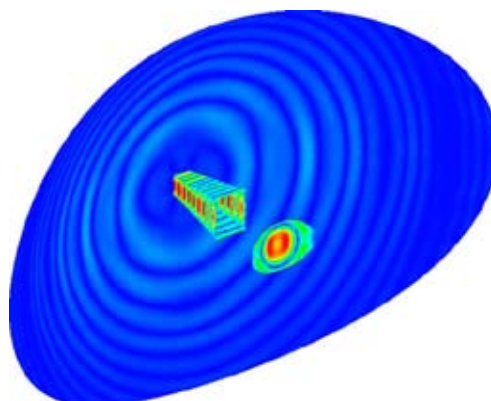
**At the current date Efield is the only commercial software with a MLFMM-PO solver. Drastic reduction in computational time can be seen in for example reflector antenna analysis.**

The MLFMM-PO solver uses a domain decomposition of the problem into a MLFMM domain and a PO domain. Tools are included in Efield to set up the domain

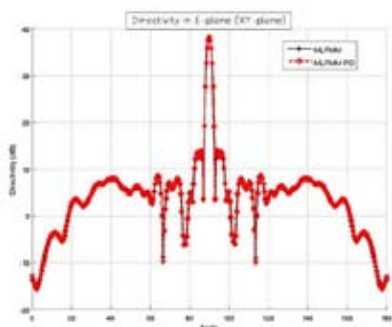


*MLFMM-PO domain decomposition*

decomposition including user defined or curvature based decompositions. In the Efield 5.1 release waveguide mode excitation ports are included in the MLFMM-PO solver making it to a very powerful tool for reflector antenna analysis. When using the



Surface currents of Cassegrain antenna



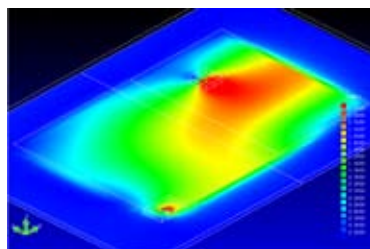
Directivity of Cassegrain antenna

MLFMM-PO large savings in memory and solution time are achieved since we instead of solving the whole problem with MLFMM solve a smaller MLFMM problem and the remaining with PO. [Read More >>](#)

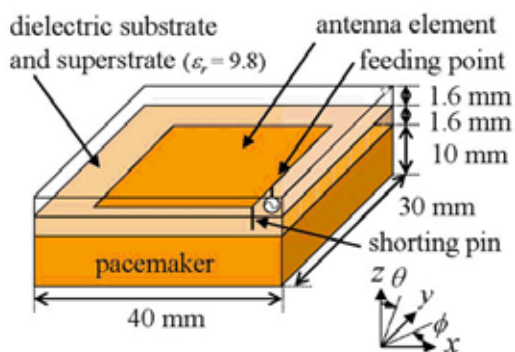
## Lumped circuits in the Efield® FDTD-FEM solver

**Efield® is the first commercial software vendor offering a combined FDTD-FEM solver allowing unstructured grids for modeling complex geometries and small details, together with a structured grid for the rest of the domain.**

Efield 5.1 introduces lumped circuit elements in the FEM region of the Efield hybrid FDTD-FEM solver. The new functionality includes resistive voltage and current source excitations as well as detailed modeling of passive elements using RLC loads. Together with existing models for waveguide ports and thin wires the Efield hybrid FDTD-FEM solver now presents a very powerful toolbox for detailed antenna analysis in many application areas. [Read More >>](#)



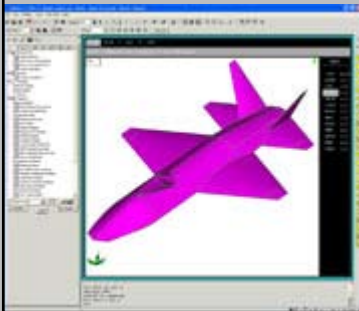
“Efield® is the first commercial software vendor offering a combined FDTD-FEM solver allowing unstructured grids for modeling complex geometries and small details, together with a structured grid for the rest of the domain”



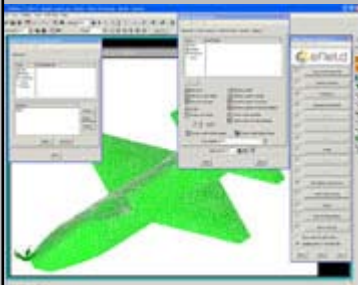
Implanted PIFA model

An example of the usefulness of the Efield® FDTD and Efield® hybrid FDTD-FEM methods in bio-electromagnetic simulations is a simulation of an implanted PIFA for a cardiac pacemaker. [Read More >>](#)

### Geometry modeling and repair



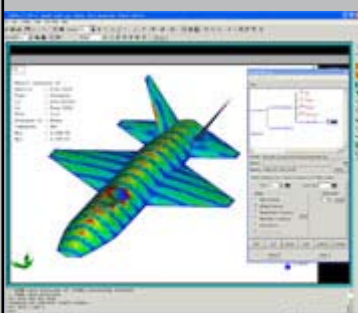
### Mesh generation and solver GUI



### Run manager



### Result visualization



## Efield® 5.1 release notes

Efield® announces that its new product release Efield® 5.1 is now shipping. This Efield release includes many improvements of existing features but also some new important capabilities.

#### Improvements in Efield frequency-domain solvers:

- Efield frequency-domain tool for cavity RCS computation using an efficient and flexible domain decomposition and multi-method approach.
- Waveguide mode excitation ports included in the Efield frequency-domain hybrid MLFMM-PO solver.
- Significantly faster standalone PO simulation for radar cross section applications.
- Load compensation of input impedance and scattering matrices when using sources with loads.
- Out-of-core (disc) storage for MLFMM and MLFMM-PO right hand sides reducing memory need for particularly monostatic RCS computations.

#### Improvements in Efield time-domain solvers:

- Lumped circuits (RLC) including voltage and current sources earlier only available in the FDTD region is now also available in the FEM region in the FDTD-FEM solver.
- Automatic termination of time-stepping at a user-defined tolerance.
- Intermediate savings of DFT results.
- Arbitrary number of angular intervals for far-field computation.
- Octree storage of twinkles (greatly reduces pre-processing times for large problems).
- Waveguide mode excitation made more compact to reduce simulation times.
- Radiated power computation given a user-defined distance to the outer boundary.
- Radiated power results for wires and lumped circuits.
- Improved handling of multiple dielectrics in FDTD.

#### Improvements in Efield pre- and post-processing:

- Conversion tool from NetCDF to ASCII text file.
- Improved large file support with NetCDF 3.6.
- Windows 64-bit interfaces.
- Extended verbose output and timings.

## About Efield®

Efield® provides a unified electromagnetic simulation environment making both time and frequency domain methods available through the same user interface. Efield® makes the powerful concept of hybrid methods easy to use in both in time and frequency domain. Hybrid methods makes it possible to use an accurate numerical method in only the part of the simulation domain where it is really needed, and a less costly method in the rest of the domain. Efield® offers an environment for High Performance Computing with carefully parallelized solvers for distributed and shared memory multi-processor architectures. Powerful CAD interfaces streamline the design process, making reuse of existing CAD models easy. In this way we enable electromagnetic simulations for applications you have only dreamt of before.

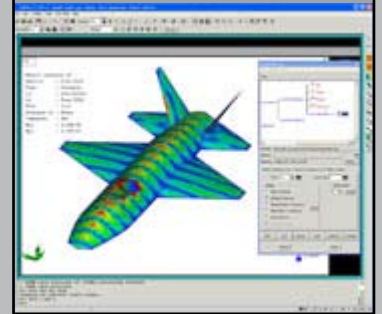
Take a look at our web site [www.efieldsolutions.com](http://www.efieldsolutions.com). There you can find more information and download a white paper describing our products in detail. Also, please forward this message to those of your colleagues who are interested!

## Efield® a complete simulation environment for 3D electromagnetics

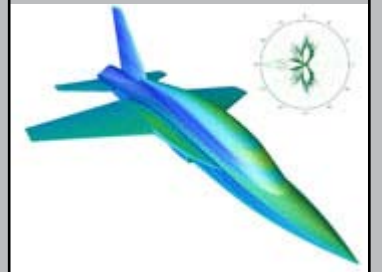
Efield® offers software for 3D analysis of a wide range of electromagnetic applications such as:

- **Antenna design:** All kind of antennas including horn, reflector, wire and microstrip antennas as well as broadband antennas and antenna arrays.
  - **Antenna integration:** Radiation pattern and coupling of installed antennas on large platforms such as aircraft or ships.
  - **Microwave design:** Typical applications includes design of filters, connectors and couplers.
  - **EMI/EMC interaction:** Analysis of a wide range of EMC/EMI problems including shielding and coupling.
  - **Scattering & radar cross-section:** RCS analysis of structures such as aircraft, ships, air-intakes and antennas.
- Efield® has the solution to every stage of the analysis including:
    - Integrated environment including user friendly GUI
    - CAD import of all major formats
    - Fixing and repair of complex CAD models
    - Model building
    - Efficient and high quality meshing
    - Unique solver technology in both time- and frequency-domain including full wave, approximative and hybrid techniques
    - Unparalleled execution performance on single PC's or parallel processing on multiprocessor computers
    - Flexible and high quality post-processing including graphing of results as well as visualization of surface currents, near fields and far fields.

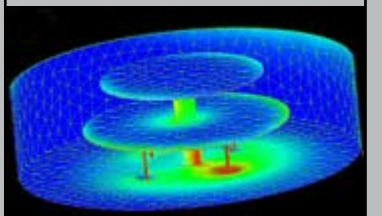
### Efield Electromagnetic Solver Suite



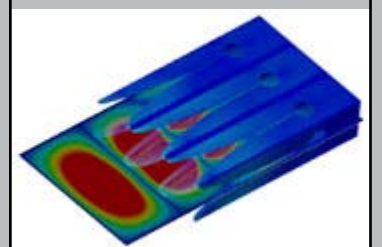
### RCS and Scattering



### Antenna Design



### Microwave Design



### EMC and EMI

