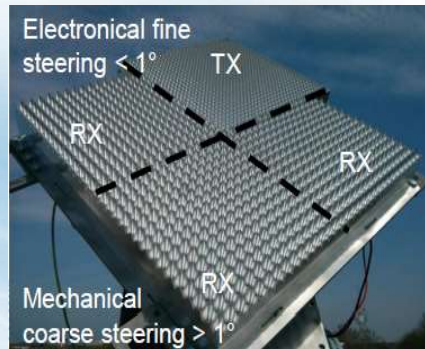
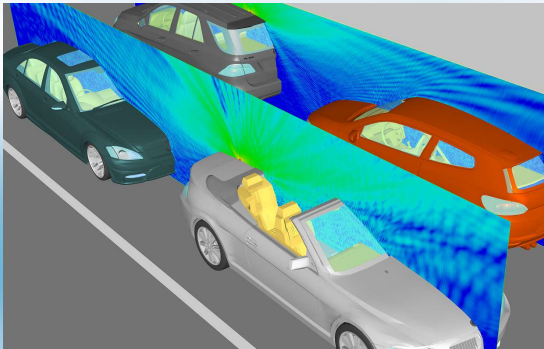




FDTD Electromagnetic Field Simulator

# EMPIRE XCcel TM

High-speed simulation of electromagnetic field



## Ultra-speed field simulator without GPU

**High-speed simulation**  
(100-fold speed-up)

**Large-scale simulation**  
(10-fold scale-up)

**Cost reduction**

### EMF simulator for a variety of purposes

Our simulator is used for various purposes, such as automotive electronics, antennas, semiconductors, general electronics equipment, and EMF exposure on humans.

### 100-fold increase in speed using XPU Technology

Using XPU Technology, we succeeded in 100-fold increase in speed of EMF simulation with multi-core processors such as CORE-i7. The maximum possible speed for parallel computers is 1000-fold speed-up.

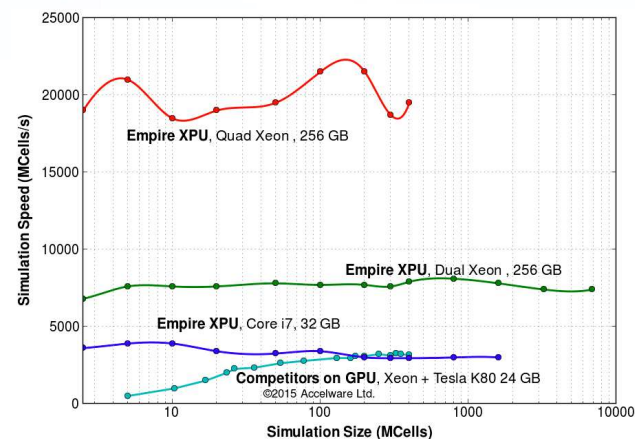
As our software doesn't use GPU memories, wave propagating at intermediate steps can be displayed. This process enables error detection and error correction simpler and faster.

### Unlimited large-scale analysis

As our software doesn't use GPU memories, the maximum use of machine capacity will be possible. Furthermore, massively parallel computing techniques overcome limitation of analysis size.

### Cost Reduction

Our software could substantially reduce machine cost, personnel expenses, man-hours required in connection with EMF simulation.

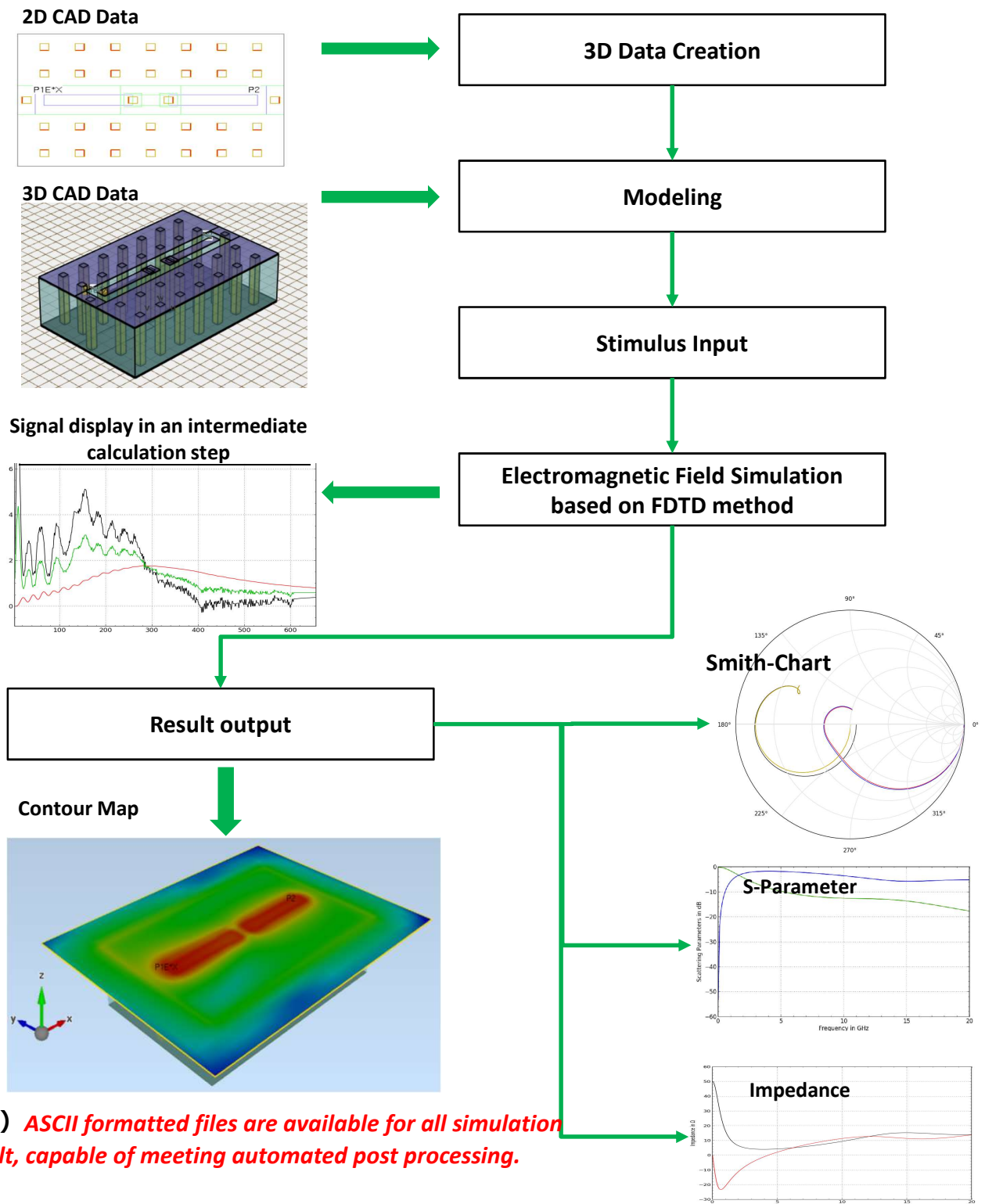


**Comparison with Competitor's Simulator**  
**(Speed vs Simulation Size)**

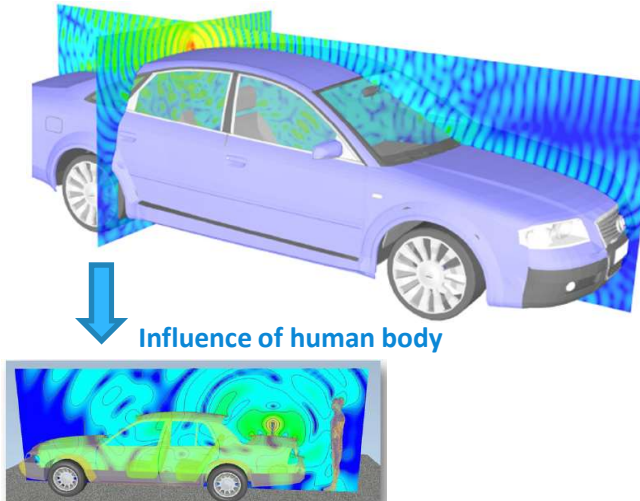
## Our Technology Overview

1. Electromagnetic behavior is computed via FDTD (Finite-Difference Time-Domain) method developed by IMST GmbH in Germany.
2. Using XPU-Technology, our software is able to simulate the transfer of about a billion cells per second with multi-core processors.
3. The maximum use of machine capacity and unlimited scale analysis will be possible.
4. Our software supports the following data type.
  - 2D CAD data (GDSII, DXF, Gerber, and ODB++)
  - 3D CAD data (STL, CATIA, PDF, XML, IGES, STEP, VDA-FS, NX DIRECT, DXF/DWG, INVENTOR, PARASOLID DIRECT, PROE / CREO, SOLIDWORKS DIRECT, SOLID EDGE DIRECT, and JT DIRECT)
  - HFSS
  - MW-Studio
5. We provide input/output ports for unique purposes, such as 3D model, material model, signal analysis, waveguide analysis, and cable analysis.
6. Our software meets the various needs of customers. It can be applied to various purposes, such as signal analysis, S-Parameter/Smith Chart/Angle pattern simulation, RLC circuit extraction, spatial distribution of electromagnetic field distribution, and heat transfer.

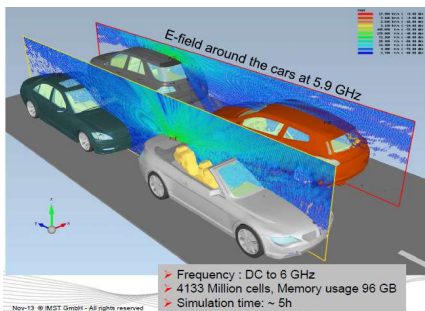
## Analysis Flow



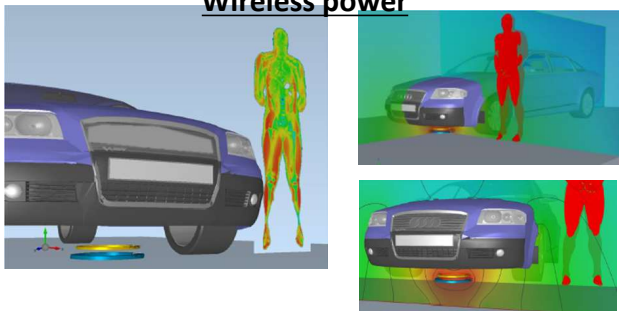
### Electric field variation of vehicle antenna



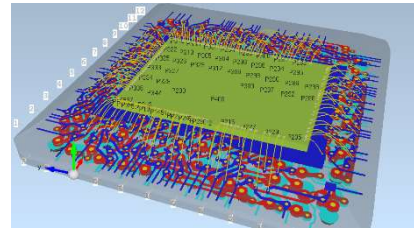
### Interference in Vehicle-to-Vehicle Communication Networks



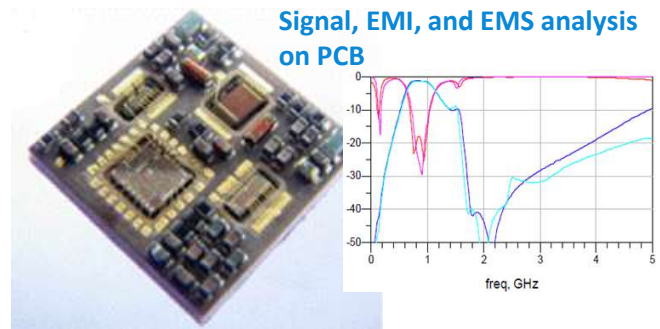
### Electromagnetic radiation from Wireless power



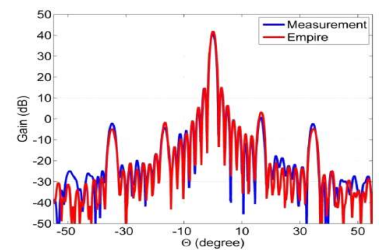
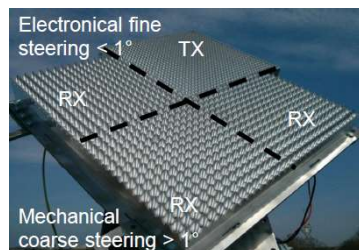
### Analysis for Electronic device



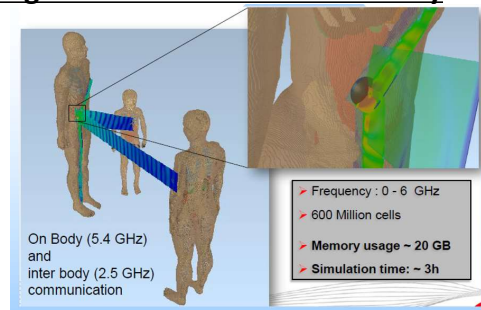
Field distribution and signal change in SIP and LISI



### Analysis of large-scale antenna



### Electromagnetic radiation of human body



## Simulation Services

Cloud computing based simulation services are available. We perform large-scale simulation with up to 1,000 cores / 6 Tera-bytes. We have enabled a quick and cheap simulation of electromagnetic behavior for 10 billion cells for the first time.

#### 1) Function of Cloud-Computer

50 Nodes are available per an electromagnetic field simulation. (1 node: Multicore machine on 20 cores and 120GB)

2) Our simulation expense reflects model formation fee, analysis condition set-up fee, machine rental fee (1 Node: 1500 yen/hr.), and report creating fee.

3) Technical consulting services to improve target product are also available. (\* requires extra fee)

Oscillated Recall Technology, Inc.

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