

The introduction of JMAG-Designer Optimization problem, using modeFRONTIER Direct Interface.

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Abstract :

Through connecting with JMAG-Designer, modeFRONTIER has contributed to many JMAG Users, providing Automation, statistical analysis using Design of Experience and Multi-Objective Optimization.

At the JMAG User's conference 2010, we have shown modeFRONTIER's JMAG-Designer Direct Interface.

This year, we want to show you two examples: (1) Motor shape multi objective optimization (torque: maximize, cogging torque: minimize) (2) Magnetization analysis, making the magnet curve of JMAG analysis correspond to the sin curve.

JSOL JMAG Users Conference 2011

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Agenda

- Company brochure
- Introduction of a coupling case
- Questions and answers



- Corporate name CD-adapco JAPAN Co.,LTD
- Foundation 1994/10/1
- Capital 10 million yen
- Number of employees 200 (as of October, 2011 including China and UK)
- Business facilities
 - Corporate headquarter 37th fl. 2-2-1-1 Yokohama landmark tower Minato-mirai Nishi-ku Yokohama city
 - Kansai branch office 3rd fl. Nippon Seimei Sannomiya-ekimae building 7-1-1 Onoe-dori cyuo-ku Kobe city
 - Chubu branch office 5th fl. EME Nagoya building 4-24-8 Meieki Nakamura-ku Nagoya city
 - <http://www.cdaj.co.jp>
 - CDAJ-UK (London)
 - CDAJ-China (Beijing and Shanghai)

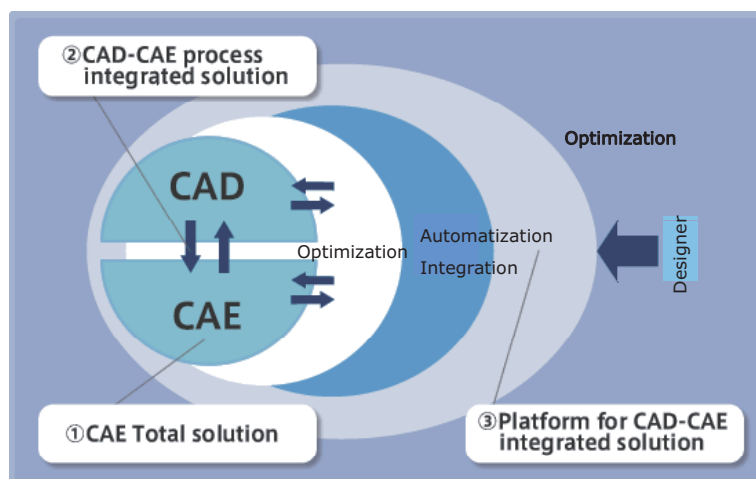


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CDAJ business domain

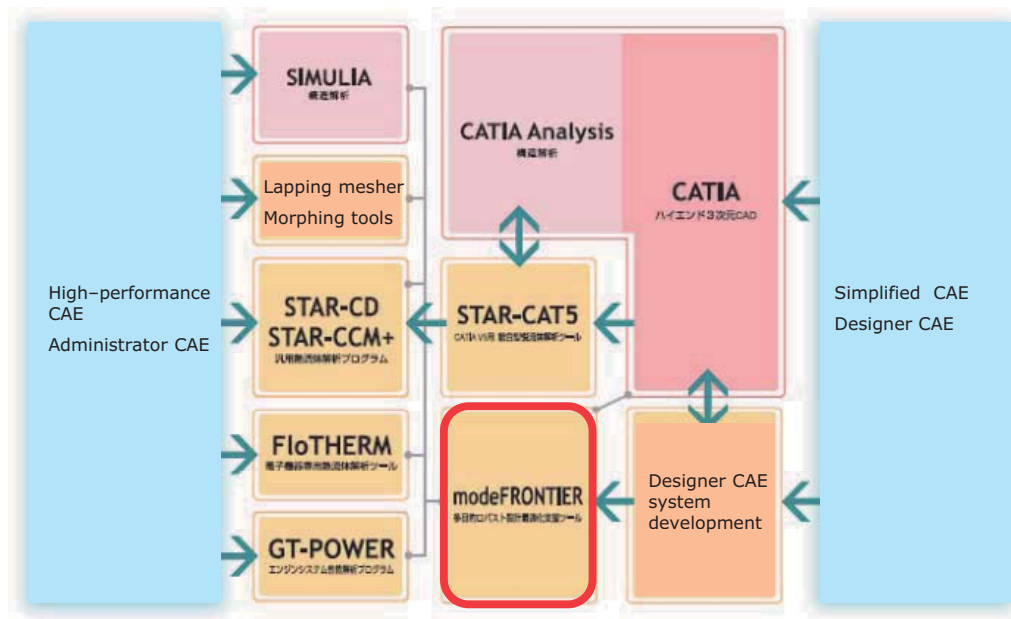
- (1) CAE region : CAE total solution
- (2) Region that bridge CAD and CAE :
CAD-CAE process integrated solution
- (3) Region for sharing between designers : Platform for CAD-CAE integrated solution



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Evolution of CDAJ CAE total solution

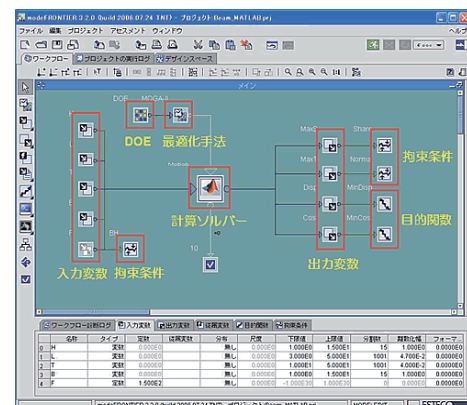
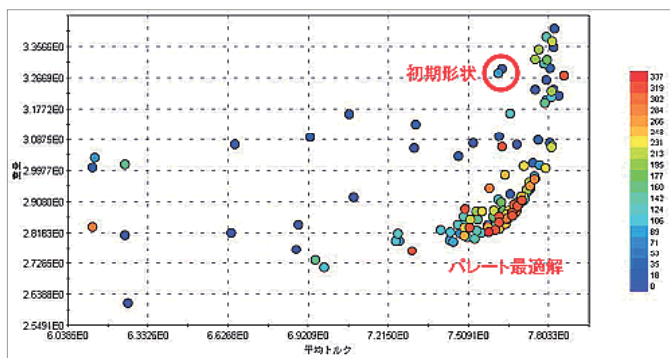


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Multipurpose robust design optimization support tool "modeFRONTIER"

- This is the **first** commercial robust optimization tool that **supports multipurpose function optimization**
- It is equipped with the latest **multipurpose optimization methods, result evaluation methods, and robust design methods**

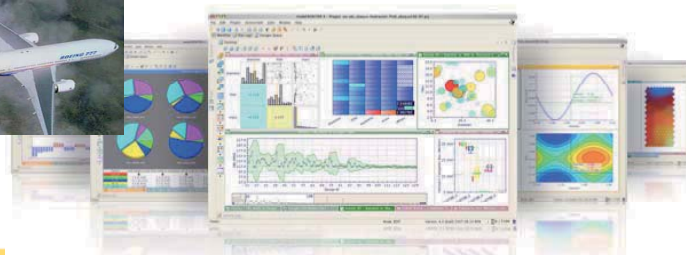
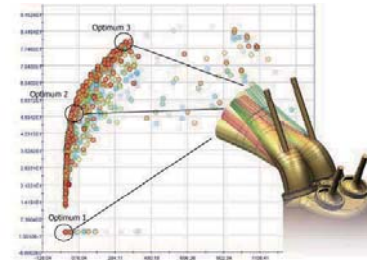


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What is modeFRONTIER?

- modeFRONTIER is a general and multipurpose optimization design support tool developed and distributed by ESTECO.
- The developer ESTECO is a company that specializes in optimization technology, and has their head office in Trieste, Italy
- They have over 200 domestic license sheets.



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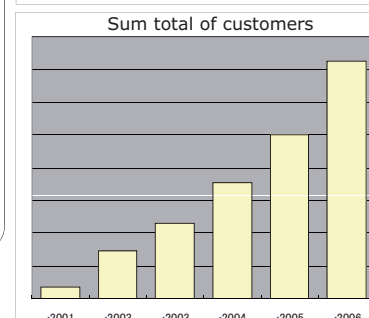
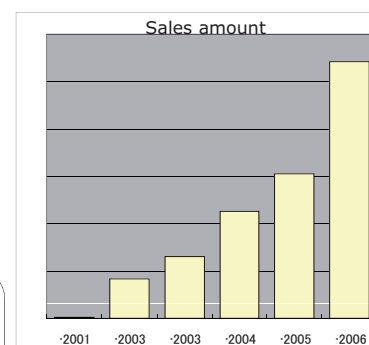
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Progress of modeFRONTIER

- modeFRONTIER has achieved couplings in many fields of major manufacturers as listed below.
 - Structure, fluid bodies, resin, forging, casting, machinery, control regulation, magnetic field, chemistry, safe crash, optics, MEMS, vibration, etc.
 - modeFRONTIER is accepted in a broad range of markets in all fields.



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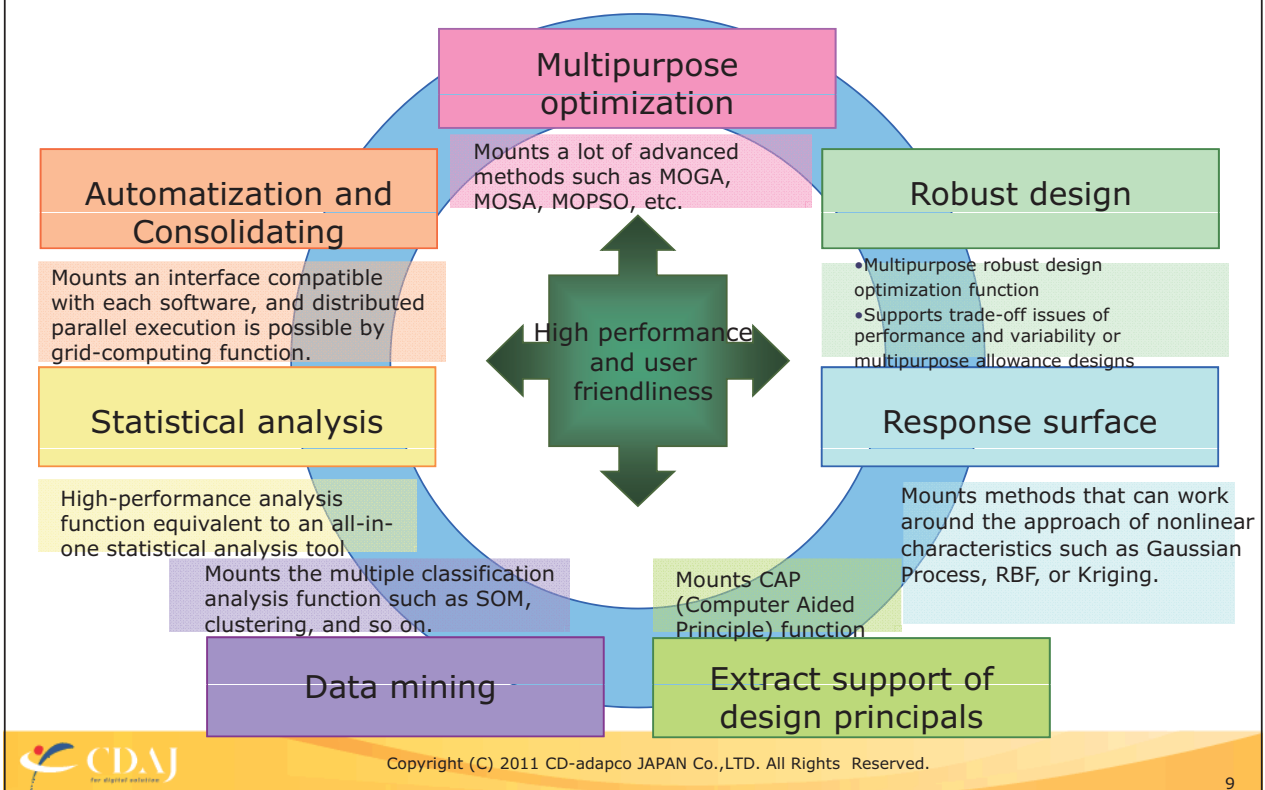
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Keywords of modeFRONTIER



Keywords of modeFRONTIER

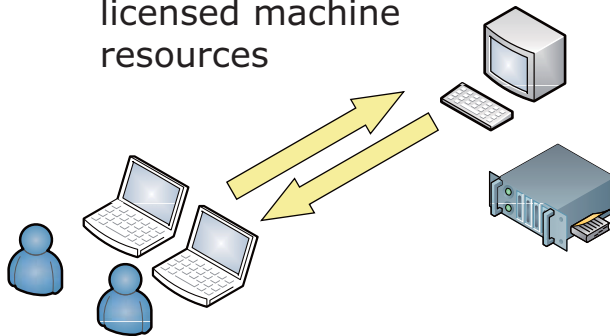


Coupling methods

■ Automatization

- Auto-execution of analysis with geometry modifications is possible during nights or on holidays.
- The computer auto-executes, so it is possible to avoid human error.

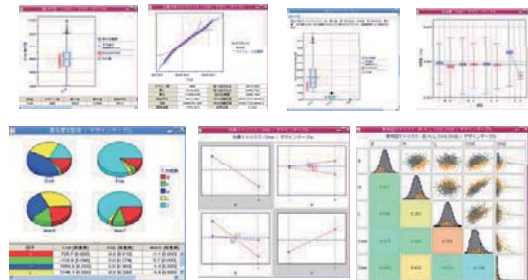
• Effective utilization of licensed machine resources



■ Utilizing the statistical processing function

- modeFRONTIER mounts various result process functions
- Contribution ratio analysis using t-test
- Multiple classification analysis functions such as principal component analysis, cluster analysis, and self-organizing maps

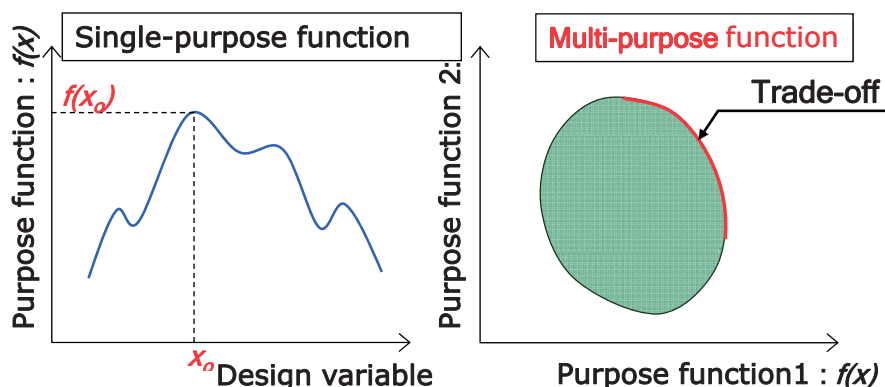
■ Understanding promotion of physical phenomenon



What is multipurpose optimization?

■ Optimization of multipurpose functions is ...

- Optimizing problems that have multiple objective functions
 - E.g: Improving one characteristic results in making another characteristic worse.
- It essentially takes the trade-offs from several objective functions.



Case explanation

#1 Torque maximization and cogging torque minimization involved with changing geometry.

Multi-purpose optimization cases

#2 A case of magnetization pattern optimization for a sine wave magnetic flux waveform.

**Please come see the
presentation for more details.**

