Introduction to CAD-IT Korea

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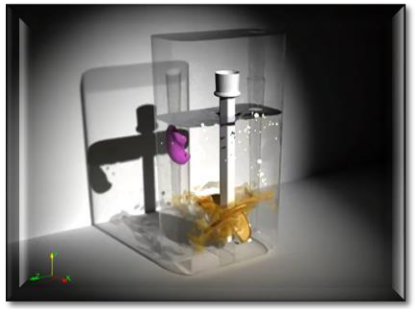
CAD-IT Korea

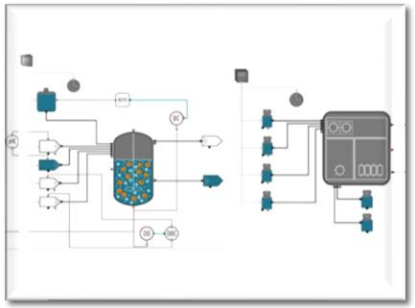
Mission : To facilitate innovation and to lower product development costs through the application of multi-physics engineering and System simulation.

Multi-Physics



- Innovation comes from engineering design
- Holistic design studies are the only cost-effective approach for engineering design

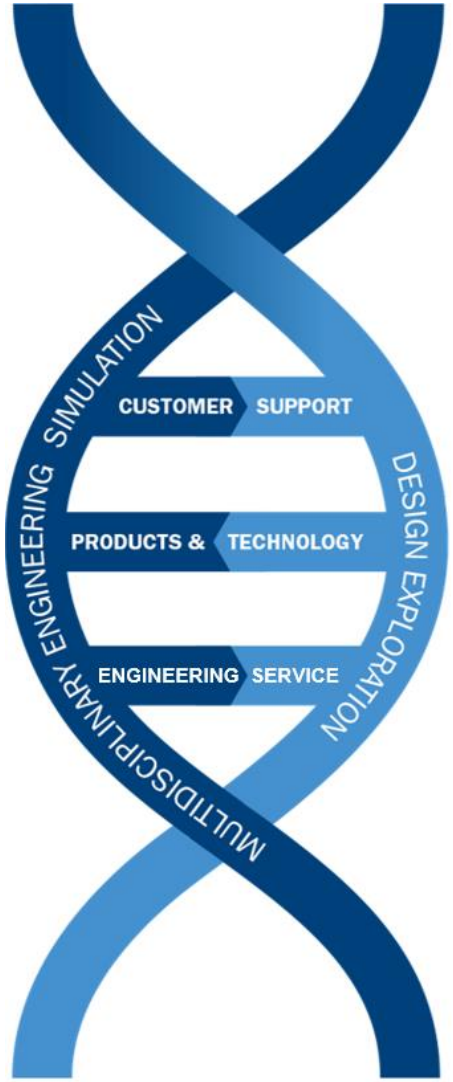
System Engineering



- Shortened early stages of design
- Optimized system and increased performance
- Enhanced reputation for expertise and knowledge in the marketplace

Cross Industry

- Bioengineering, Automotive, Aerospace, Electronics, Semi-conductor, Chemistry, Energy and Defense, and so on.
- Significant investment in technology development



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바이오 반응기 내의 유동현상을 실시간으로 정확하게 시뮬레이션 할 수 있는

M-STAR CFD는 GPU와 Lattice-Boltzmann 방법을 기반으로 한 전산유체역학 소프트웨어입니다.

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M-Star Clients

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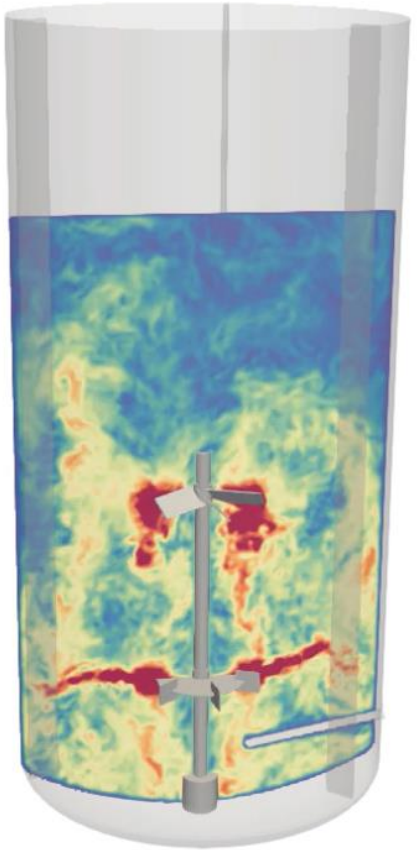
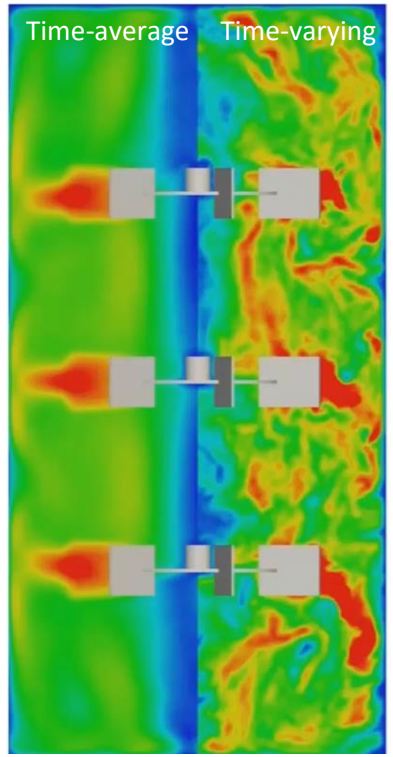
M-Star CFD is…used in scale-up and scale down operations





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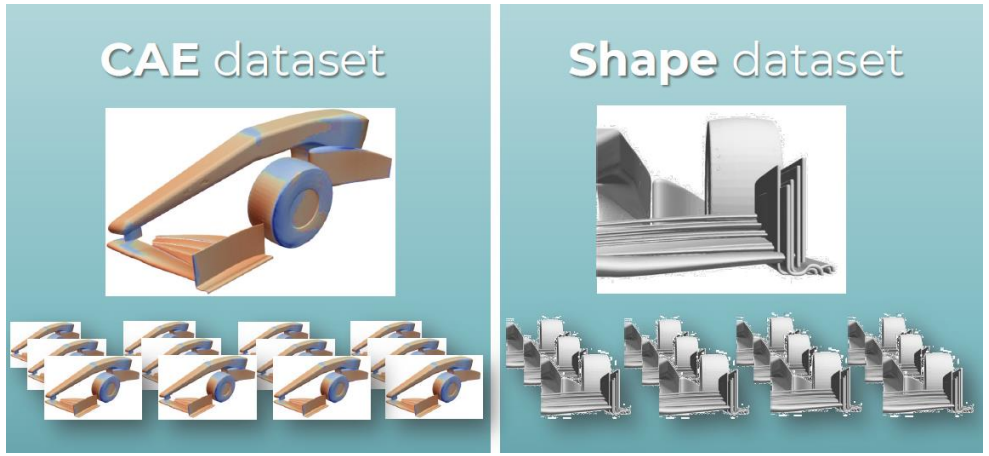
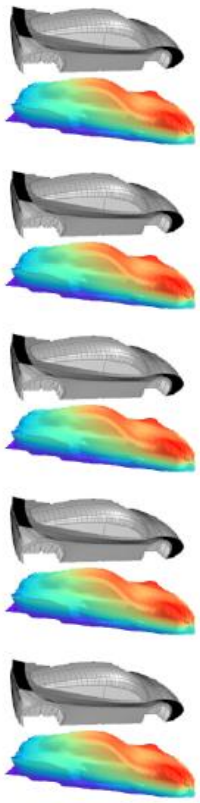
Neural Concept Shape (AI – Deep learning)



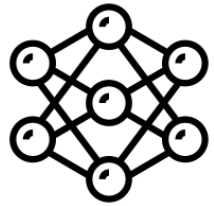
surface data, volume data, local
or global numbers

raw data - with Neural Concept Shape, no CAD parametrization needed

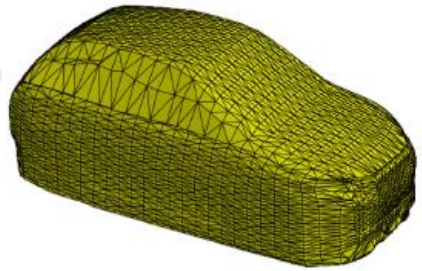
Geometric CNNs Neural Concept Shape (Model)



Input / Dataset
50 ~ 10,000 simulations

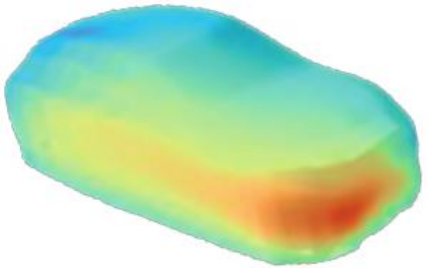


Model



Shape

50 ms



Prediction
real-time (≈ms)

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STAR-CCM+

통합 다중 물리역학 솔루션

STAR-CCM+

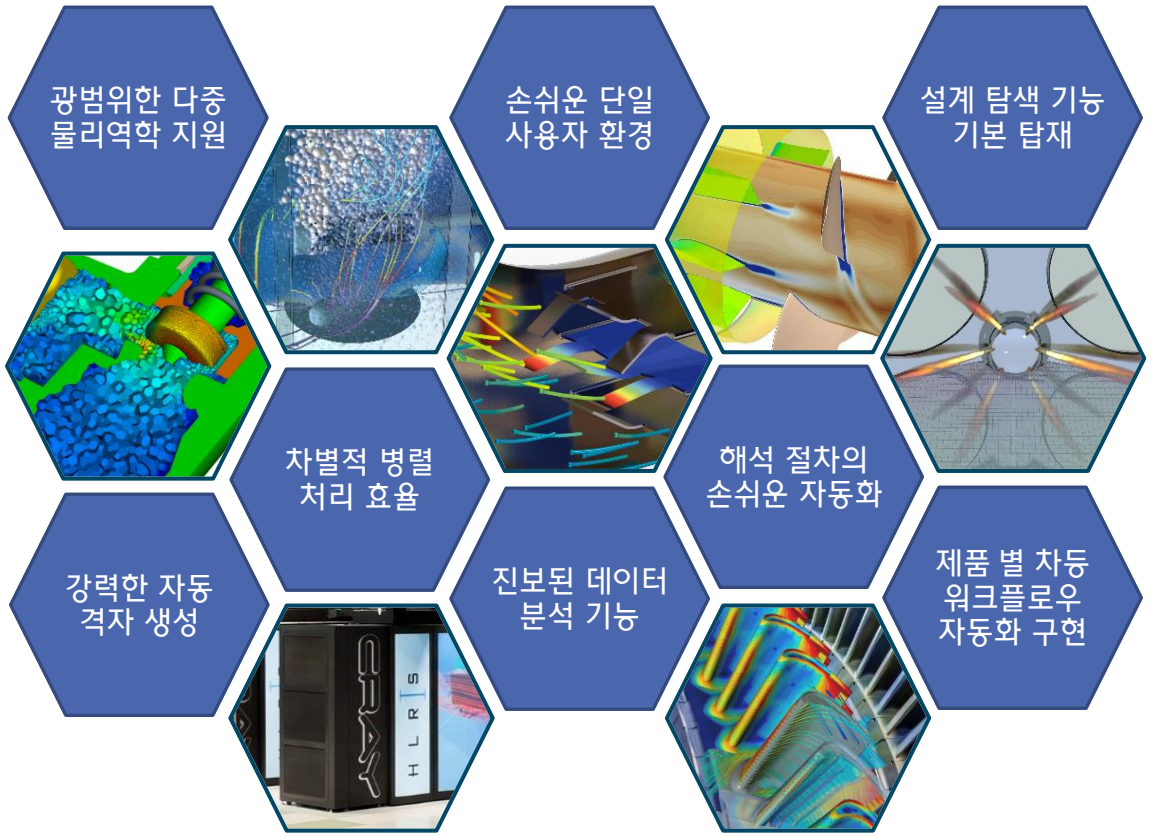
SIEMENS
Ingenuity for life

STAR-CCM+는 **유체 역학**, **고체 역학**, **유체 구조물 상호 작용**, **열 전달**, **입자 역학**, **화학 반응**, **전기 화학**, **전자기학**, **음향** 및 **유동학**을 위한 시뮬레이션 솔루션입니다. 다양한 다중 물리 현상이 복합적으로 나타나는 실제 현상을 정밀하게 분석할 수 있습니다.

시뮬레이션 전문가로부터 일반 설계 엔지니어까지 모두 사용할 수 있는 **자동화 된 워크플로우**를 제공하고 있습니다. 손쉬운 사용자 환경이 가장 큰 장점입니다.

STAR-CCM+를 사용하면 효율적으로 제품성능을 예측할 수 있고 제품 설계 프로세스를 처음부터 끝까지 안내하는 엔지니어링 정보를 확보할 수 있습니다.

Engineer Innovation



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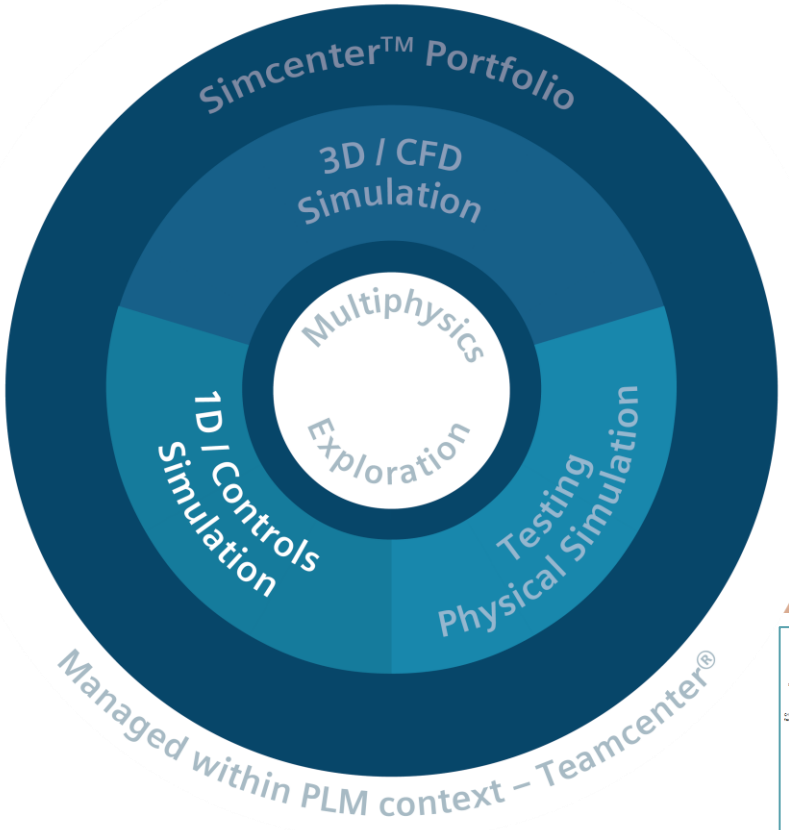
AMESIM - Multi-Physics & Multi-Domain & System Integration

시스템 단위 성능 예측 해석 소프트웨어



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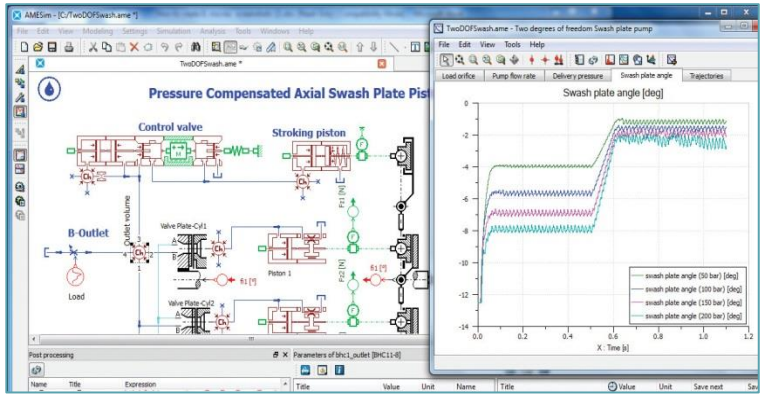
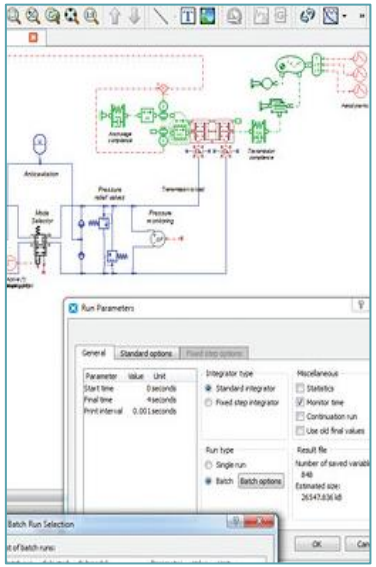
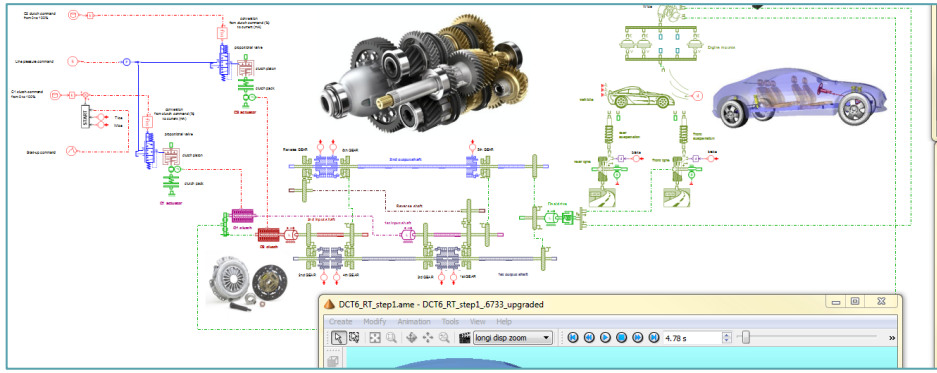
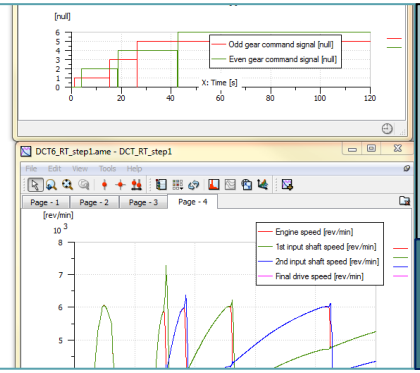
Simcenter Amesim









Collaboration & workflow

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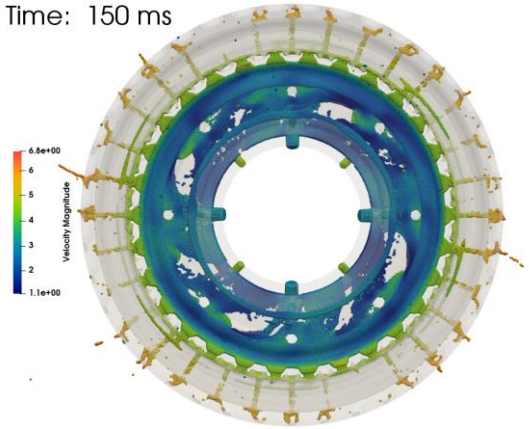
SPH-FLOW

The **SPH-flow** solver is based on the SPH method



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Specific **characteristics** of the **SPH (Smoothed Particles Hydrodynamics)** method

Navier-Stokes-based

The exact Navier-Stokes equations are solved (like the Finite Volume method, but unlike the Lattice-Boltzmann method)

Meshless

Fluid is not described by a complex (un)structured mesh, but by a set of particles interacting with each others

Lagrangian

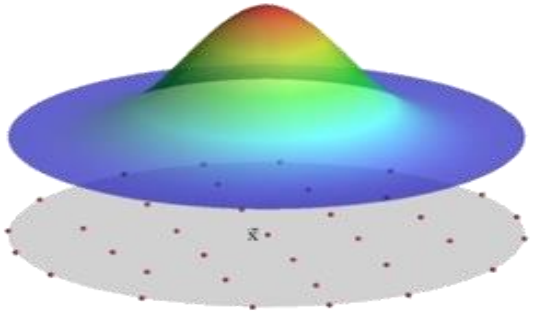
Particles are straight-forwardly advected with the fluid flow.
No need for convective term modeling (and associated errors)

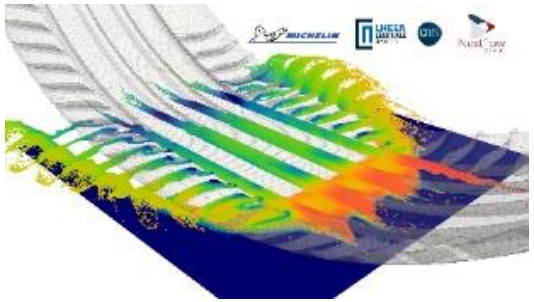
Free-surface inherently defined

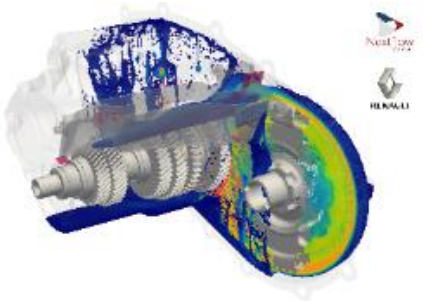
Fluid/fluid interfaces are naturally followed, even when one of the fluids is not modeled.
No needs for complex free-surface boundary conditions (and associated errors)

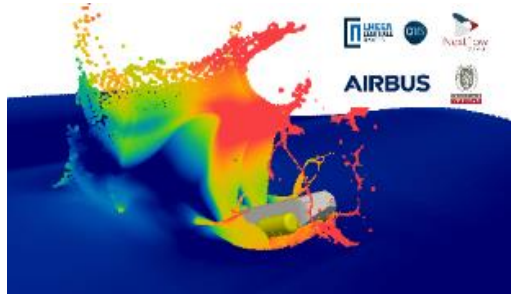
Explicit formulation

Time marching scheme is explicit, making method suitable for fast changing flows (impact, coupling…)









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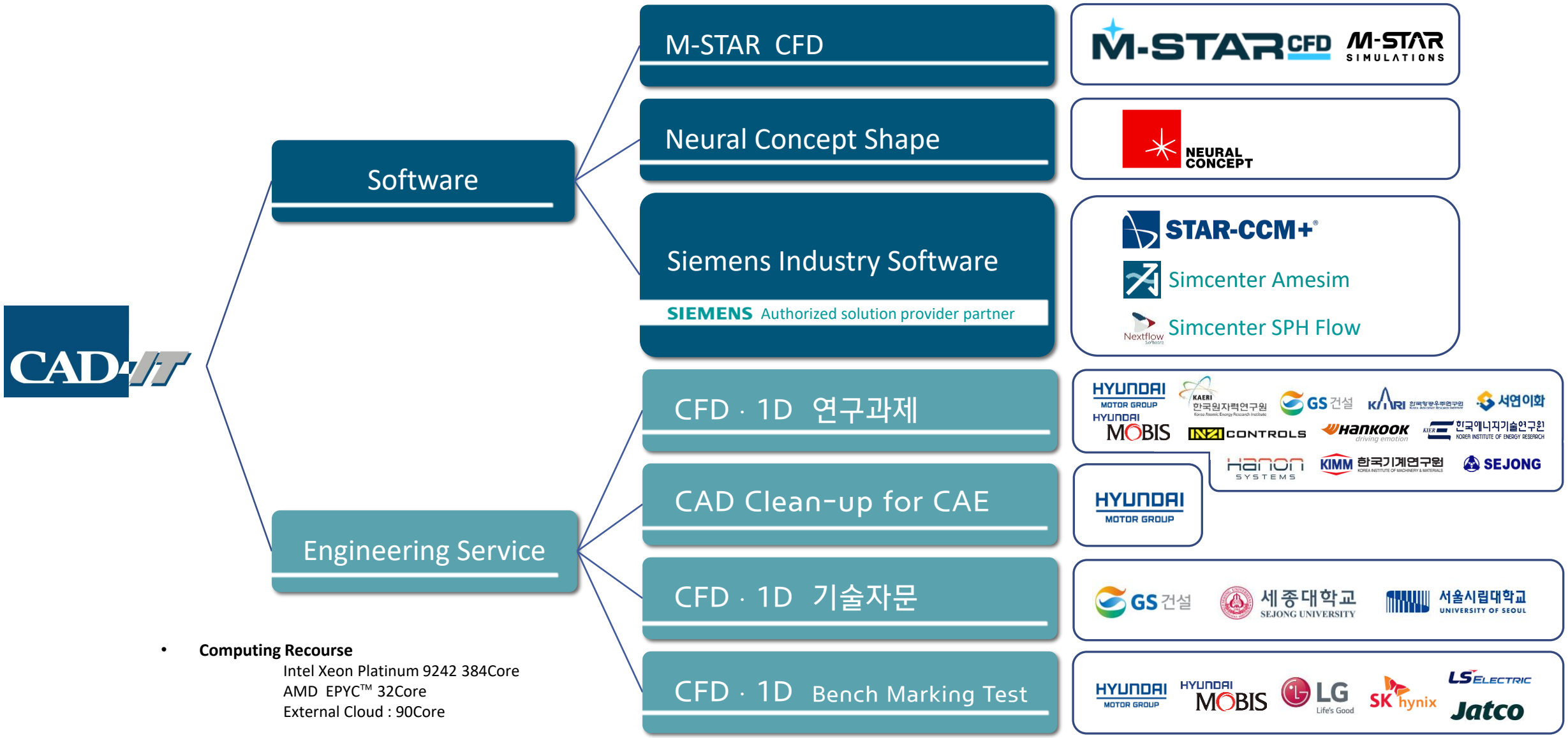
CAD-IT Korea Business Area



- **Computing Recourse**
  Intel Xeon Platinum 9242 384Core
  AMD EPYC™ 32Core
  External Cloud : 90Core

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