FRIENDSHIP SYSTEMS and CAESES®



Continuous growth

- Growing team with 22 people right now
- Steady increase of revenue even during the pandemic
- Rising customer base in all fields
- Even stronger technical foundation with CAESES 5
- Very positive response to CAESES 5
 - Speed up through parallelization
 - Better usability via cleaner GUI



Common denominator Energy efficiency

Simulation-driven design (SDD)

- 2002: "Never heard of it!"
- 2007: "It worked for a double-ended ferry. But does it really work for a container carrier, too?"
- 2012: "We can do this by hand.
 And simulations are not reliable enough anyway."
- 2017: "Well, we would like to try it, too."
- 2022: "All of our designs undergo SDD."



J.C.R. Licklider, 1965

"People overestimate what can be done in one year, and underestimate what can be done in ten."

CAESES 5.1

- Released this summer
 - More documentation and new video platform
 - Easier access to design velocities
 - Bi-directional coupling of points
 - Dynamic object types



R&D and investments

- Four ongoing R&D projects
 - AutoPlan (EU project within MarTERA)
 - DEffProForm (German project financed by BMWK)
 - MariData (German project financed by BMWK)
 - SDD-fAMe (project within ProFIT)
- Upcoming EU project
 - RETROFIT55 (Horizon Europe)



AutoPlan | www.auto-plan.net





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DEffproForm







Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

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The research and development project 'DefProForm' aims at designing efficient ship propellers with unconventional form. Apart from the energy efficiency, which plays a crucial role in the design of propellers, focus is additionally set on the reduction of noise emissions. Unconventional new propeller designs may open up new possibilities for tackling these goals, thus reducing the energy consumption of ships.



Parametric modeling of tip rake propellers

New design approach for higher energy efficiency (AI)

MariData | maridata.org

Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

Forschungszentrum lülic



MariData | maridata.org





Federal Ministry for Economic Affairs and Energy

Supported by:

on the basis of a decision by the German Bundestag



Energy efficiency has always been a key concern for shipbuilding and shipping. Whereas in the past it was mainly economic reasons that motivated the search for a low power requirement for a ship, today ecological reasons and compliance with statutory regulations to reduce emissions are coming strongly to the forefront with at least equal weight. These concerns call for a consistent strategy of energy efficiency as well as a significant reduction of ships.

Support operators with better data and faster

SDD-fAMe within WvSC e.V. | wvsc.berlin



🗴 🗁 DeffProForm - designing efficier 🗴 🚍 ManData – Umfassende Technol 🗴 🕐 WvSC – Werner-von-Siemens Cr 🗴 🕂 D Autoplan N 14 Ġ Google 🦸 Jitsi | 🇳 Jitsi | management 🧳 Jitsi | devroom 🧳 Jitsi | support 🧳 Jitsi | paper 🧳 jitsi | manidata 🗳 Jitsi | autoplar Werner-von-Siemens Centre Home Projects Member About us de for Industry and Science Campus for industry & science The Wemer von Siemen Siemensstadt, one of Be Warpage compensation for additive manufacturing cooperation at the open h Via a CAESES plug-in for Siemens NX



SDD-fAMe within WvSC e.V. | wvsc.berlin



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| FOCUS TOPICS | | | ^ | | | | | | |
| Research & Development | | | | | | | | | |
| New Materials Additive Manufacturing 1 Digitalization | | | | | | | | | |
| At the moment materials for additive Additive manufacturing is a great opportunity for The production of the future is a digitalized | | | | | | | | | |
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| process is often uncertain. Therefore, this tonic some of the advantages. Therefore, we deal with sectional tonics of data analytics and | | | | | | | | | |

We research and develop new materials for additive manufacturing and test their

qualification for the corre

AM-compatible product design, development of AM machines and process monitoring for

topics create the necessary foundations to build on core technologies such as Adaptive

Substantial reduction of critical temperatures Modify arc length (circumference) and sectional areas

UROPÄISCHE UNION ronäischer Fonde für onale Entwicklung



Variable fillets



Current developments and additional cooperations

- Further improvement of Principal Component Analysis (PCA)
- More Artificial Intelligence (AI) and machine learning in optimization
- Easier modeling and cleaner projects
- Workspaces for dedicated workflows
- Tighter cooperation with CAD kernel developers since NVIDIA took over US-based SMS



Overarching strategy

Cooperate and bring cool stuff together instead of reinventing the wheel time and again

| CAD Features Turbo | Maritime Visualization | | CAESES - rt_test | × = • × |
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Work in progress Scheduled for next larger release

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N.B. This is the rising sun

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