**Entering Town
FEANTM**

**Research, Development
Camping, Horse Trails**

**population virtual
Welcome**

FNSS

General Dynamics

Old Rancher

Mercedes-Benz

Taylor – Town Riding Center

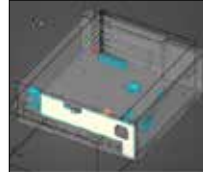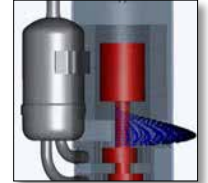**Seppi/Marta - OASYS**

Jenson - DFE Tech

Marco - MeDiTATe
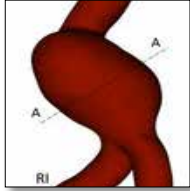
Metin - OZEN Engineering

Markus - CADFEM

Marko - SCALE

Sabyl – Dog Healh - LS-DYNA
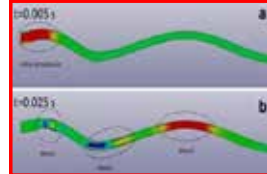
R & K Information

FEA NOT TO MISS & MORE

Editors: (alpha order) Anthony, Art, Brett, Marnie, Marsha, Sabyl, Shweta, Taylor

Jr. Editors: Rheannon and Kensington (yes, she likes pink)

Town Pretend to be Editors:
The Old Rancher   **No one in town knows his name. You yell "Hey, Old Rancher."**
The Old Pilot   **No one in town knows his name. You yell "Hey, Old Pilot."**
The Old Racer   **No one in town knows his name. You yell "Hey, Old Racer."**
     They are all brothers - strange family

Contact us at: feaanswer@aol.com
Attribution: **Map Vector & town vector graphics are courtesy of vecteezy**

We will always remember

R & D - Camping - Town Map

Horse Trail ⟶   Yield right of way to horses

R & D Technology

Business Park Plaza

RV CAMPING
Park in any vacant camping site

Library

TOWN HALL

CADFEM

DFETECH

OZEN

d3VIEW

Oasys

GITTENS consulting

rescale

ENGINSOFT

Lawrence Livermore National Laboratory

Fire & Police Depts.
Dal   Poli

Coffee Shop
News
Marsha & Marnie

SIMQ

Wake Forest University School of Medicine

HOSPITAL
Research

rbf

MEDITATE

Auto Race track & Auto Industry

Petting Zoo

Old Rancher

Taylor Riding Center

Elect/Water. & Sewage Treatment Plant Facilities

Table of contents

- · **The individuals mentioned are the persons we wish to thank.**
- · **The above doesn't imply that they are the author, with a particular company, or department**

Table of contents

_____

AND right here you have two fast notifications:

M3d FEA Free to download & use at home. MSC/NX/AutoDesk/Nastran Modeller.. **Added** DXF Layer ID. Basic DXF file export for 2d Lines, Circles and ARCs.

Optimization of Sail Settings Using RBF Mesh Morphing,' Saverio Ramirez

In this **Thesis** Saverio explored the application of mesh morphing in the field of sailing.

Welcome to our Town Hall Meeting & Announcements

Town Hall Meeting

Park Cars behind building
Park Tractors behind cars
Tie horses to hitching rails

Free coffee & Protein bars? Who brought those?

The town consists of individuals who are passionate about finding solutions, as well as caring about animals and children.

Town Gossip is at the local coffee shop.
Pets are welcome. Horses, pet goats stay outside.

We welcome Taylor, a new town editor. Taylor will concentrate on software used in the physics and engineering involved in horse riding and horse events.

1. **We updated our town map.** The Research Hospital was missing an important resident. MeDiTATe, the Medical Digital Twin for Aneurysm prevention and Treatment.

2. **We requested over river transport for emergencies for equipment**
   Who purchased The OTTER? We agree that it is a bridge and ferry system - Move The Otter System from the parking lot - See airport.

3. **We asked for volunteers to bring M. Booker on route 10 to the meeting.**
   Who purchased the M10 Booker. Move it to the airport & stop buying military solutions!

4. **We are doing our town preparedness assessment**
   The above led us to Alan from a neighboring town. Alan will assist us setting up a CERT Program for a town disaster. All countries & towns need CERT – See Bulletin Board

5. **The vote had passed to keep this blog down to 35 pages.** We failed. WHY you ask? YOUR FAULT! You have to many interesting articles/ideas we don't want to miss!

Article:
SCALE GmbH - Find out how Rescale's partnership with Scale is simplifying simulations.

Article:
Bosch develops particularly quiet heat pumps with simulations - To integrate this topic into the development process, a Bosch team has developed a simulation solution.

R & K Bulletin Board:
- Alan - Cert Information
- Engineers without Borders
- Arup
- NDMS Italy

Research Hospital:
Maria Nicole Antonuccio & Francesco Bardi - Fabrication of deformable patient-specific AAA models by material casting techniques

My Physics Café: CAE Analyst and a passionate blogger

CAE Compass: My Top 8 Hilarious Posts on LinkedIn - For the past 3 years, I've been actively sharing my insights/experiences on LinkedIn and many of these posts have gained significant traction. (over 100k views!) Interestingly, a common theme among these posts is their focus on CAE and Engineering basics.
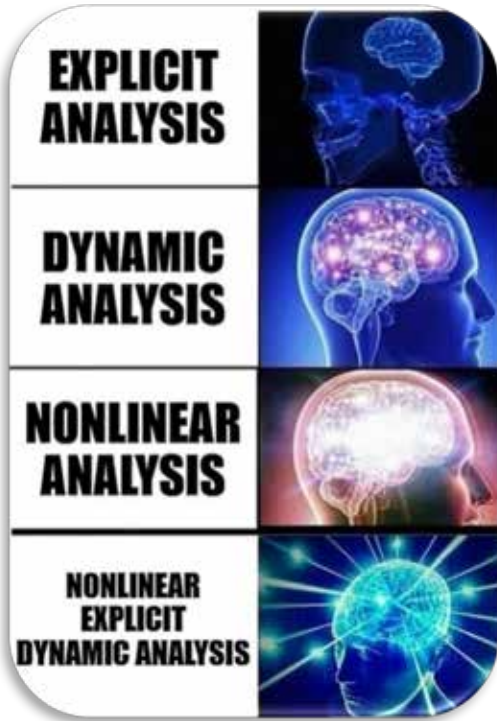
I've gathered all of my best posts into this well-structured, value-adding article AKA - **8 Valuable Lessons in CAE.** This compilation aims to provide engineers with tips to overcome technical challenges, doubts and myths while working in the field of CAE.

Article EXCERPTS: Do you ever find complex CAE terms overwhelming?

Well, the solution is simple: break them down into parts & try to grasp what each term means. (Divide & rule)

Take Crash analysis, for example.

- We call it dynamic because it deals with moving objects where inertial effects come into play.
- Next, we label it as nonlinear because we capture the nonlinearity in material, geometry or contact.
- Lastly, we tag it as explicit because we rely on a specialized (explicit) solver to solve it.

So crash analysis is the art of tackling Nonlinear-Explicit-Dynamic problems or a way of predicting how things behave during a crash!

...Time to debunk another very common misconception!

CAE is not a magic wand that instantly solves everything, it's a tool that amplifies our problem-solving capabilities.

- Human being's expertise, creativity & critical thinking are essential elements that breathe life into simulations.
- CAE, at its core, empowers engineers to navigate intricate challenges, unravel design complexities & optimize solutions.

It's our profound understanding of engineering principles, our ability to interpret results & our innovative thinking that turn data into actionable insights!

- Remember, computers are incredible assistants, but they're only as brilliant as the minds behind them.

CAE is a tool for reducing the reliance on physical prototypes, NOT eliminating physical tests entirely.

- The strength of CAE lies in its ability to provide insights & predictions about product behavior under various conditions by reducing costly iterations.
- However, it can't capture every aspect of real-world complexity, making physical tests indispensable!
- Physical tests, on the other hand, #validate & verify the accuracy of CAE results, ensuring that our digital models align with reality.

Remember, it's not about choosing between CAE & physical tests. It's about leveraging the strengths of both to drive product design & innovation.

Andrea's Sales & Marketing Café

Sales, Marketing, Technology – what's your love, like, dislike ranking?

Gittens Consulting - Your product or service is technically better than the competition, but your sales and growth don't reflect your technical advantage. On the contrary, the results are even behind the successes of the competition and you wonder why.

Does the above sound familiar?

Don't worry! You are like many other engineers. You love technology and you are often one step ahead of the competition, because of your trend-setting solutions. Development and excellent servicing always gets your time, attention and has highest priority. This is not only because it is very important; it is also, because you feel completely comfortable with these tasks.

Experience has shown that many engineers, technicians and scientists feel rather uncomfortable when it comes to marketing or sales tasks. Every now and then, activities are carried out out of necessity or sporadically, because everybody knows that some sales and marketing has to be done. For many it's not the loved or liked part in business, it's a must and somewhat disliked task.

Eventually, competition make two things different:
- have a positive sales and marketing mindset
- have a marketing strategy and a concrete implementation plan that is pursued purposefully and regularly monitored for success.

The good news: you can have it, too.

Gittens Consulting assists you with a holistic Fit-for-Market concept that helps selling and marketing your services and products. The concept comprises of individual services custom-tailored to your company, starting with a unique strategy, planning feasible and aligned activities and choosing the right tools for your sales and marketing automation.

Andrea Gittens, (Andrea Gittens on LinkedIn) successfully worked in business development of technically innovative products and services of international companies for more than 25 years. Her recipe for success is a strategy-oriented approach, spiced with easy-to-implement solutions and garnished with coordinated measures in sales and marketing for more visibility and steady growth.

News from Livermore, CA - LLNL website: "…An instrument designed and built by Lawrence Livermore National Laboratory (LLNL) researchers departed Earth in October on a two-billion-mile, nearly six-year journey through space to explore a rare, largely metal asteroid."
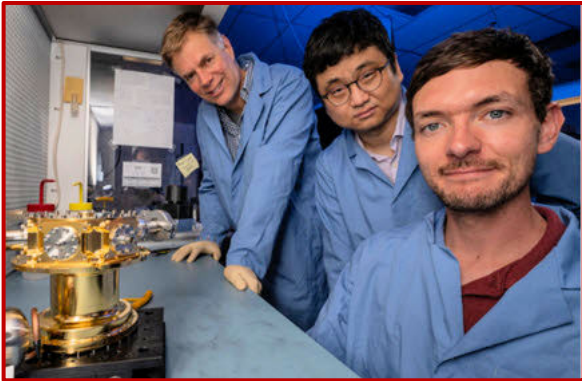
[**Lab instrument now on two-billion-mile journey to the metallic asteroid Psyche**](#) by Stephen Wampler

LLNL physicist Morgan Burks (at left) is joined by his team members (from right) — physicist Geon-bo Kim and nuclear engineer Nathan Hines — in looking over a prototype of the gamma-ray spectrometer they designed and built for a more than two-billion-mile journey to the metallic asteroid Psyche.

EXCERPT

The Livermore high-purity germanium (HPGe) gamma-ray sensor is an essential part of a larger gamma-ray spectrometer (GRS) built in collaboration with researchers from Johns Hopkins Applied Physics Laboratory (JHAPL) in Laurel, Maryland. It is part of a suite of instruments set to make the first-ever visit to Psyche, the largest metal asteroid in the solar system. The Psyche mission is led by Arizona State University (ASU).

A SpaceX Falcon Heavy rocket carrying NASA's Psyche spacecraft lifted off from the Kennedy Space Center.

"Psyche is scientifically interesting because it is thought to be a planetary core, a remnant of a collision during the early stages of the development of the solar system," said LLNL physicist Morgan Burks, who heads the Lab team. "We believe that exploration of the Psyche asteroid could increase our understanding of the hidden cores of Earth, Mars, Mercury and Venus."

Psyche mission principal investigator Lindy Elkins-Tanton of ASU noted that the exploration of Psyche will permit scientists to "literally visit a planetary core — the only way humankind ever can."

Lab scientists worked with collaborators from the JHAPL to combine the Lab HPGe gamma-ray sensor into the GRS and integrate it with additional components for the spaceflight mission.

More gamma-ray spectrometers coming - The LLNL instrument is the second HPGe gamma-ray sensor designed and built by LLNL for space exploration within the past nearly 20 years. Two more such sensors are now being designed and built by LLNL researchers for future space exploration missions.

"In collaboration with Johns Hopkins APL, we've become the world experts in gamma-ray spectroscopy for planetary science," Burks said. "We are helping to open up a new era in nuclear spectroscopy for space applications."

DFE-tech: Two webinars on our YouTube Channel that will assist you with learning:
Ansys Motor-CAD: Electromagnetic Analysis for BPM Motor
Ansys Mechanical: (Basic Nonlinear Analysis)

Both webi
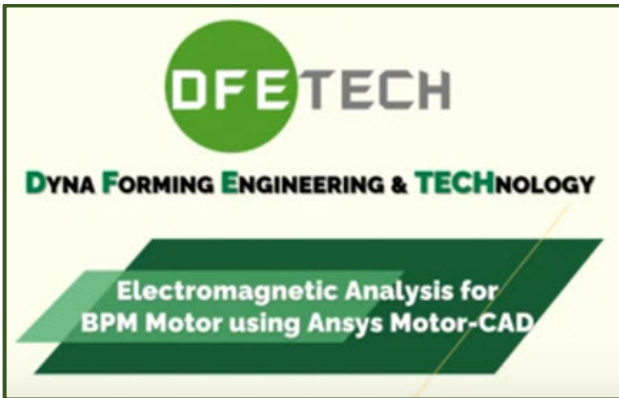
Ansys Motor-CAD : Electromagnetic Analysis for BPM Motor

The audience will be able gain insights into simulating electric motors using Ansys Motor-CAD.

Key Takeaway:
- Familiarize with Ansys Motor-CAD modelling tools for designing the geometry and winding
- How to assign materials and calculation in Ansys Motor-CAD
- How to generate the field plots, output data and graph in Ansys Motor-CAD

Ansys Mechanical Webinar (Basic Nonlinear Analysis)

The audience will be able to learn the fundamental skills required to unlock the potential of nonlinear solutions in Ansys Mechanical.

Key Takeaway:
- Understand the underlying technology and control the solution algorithms used to implement nonlinear solutions in Ansys Mechanical
- Describe the three fundamental types of nonlinearities in Ansys Mechanical: large deflection, connections and materials.

CADFEM India YouTube Simulations:

Keep up to date with the following simulations.

You are invited to visit and learn on our YouTube Channel.

Designed to revolutionize the simulation process. Imagine a world where you can effortlessly provide inputs for geometry, working directory, mesh size, and the magnitude of force.

No more complex setups.
No more hours of manual labor.

Emag and Thermal analysis of E-Motor using Ansys MotorCAD

Exploring the CADFEM Hyderabad Office: Innovation Hub for Engineering Simulation

Join us in celebrating the grand inauguration of our brand-new office in Hyderabad, a significant milestone in our commitment to advancing engineering excellence.

SCALE GmbH – **Find out how the partnership with Rescale is simplifying simulations**.

Marko Thiele, SCALE GmbH, a simulation data expert answers questions about the importance of Simulation Data Management (SDM) and the growing need in our complex world, in an interview by RESCALE.

Rescale - Discover the future of computational engineering

Q&A with Marko Thiele

The rapidly expanding use of complex digital simulations to design and test new products is generating massive amounts of data that need to be strategically managed. In an effort to further automate and simplify how computational engineering teams use simulations and manage their data, Rescale has recently formed a partnership with Scale, a leading simulation process and data management (SDM) company with strong roots in the German automotive manufacturing industry.

Thanks to this partnership, users of the Scale SDM platform can now instantly access high performance computing (HPC) service in the cloud. With one click, engineers can automatically start new simulations that run on Rescale's multi-cloud HPC infrastructure.

What is SDM and what key challenges does it solve? Marko Thiele: SDM stands for "simulation data management." Some also use the term "SPDM" where the P stands for "process." We still prefer to refer to it as "SDM," since in our opinion this already includes the processes. That is a very important concept because what you are managing is not only the data but also the processes surrounding the simulation, both the preprocessing work and the post-processing analysis and management.

The data part of SDM is typically files based, usually solver input files. This data can be about 3D geometry or various physical parameters related to the simulation, such as material parameters, friction parameters, or timing parameters, really any kind of functional data which is needed to create the simulation.

The process part involves various processes surrounding the simulation. This starts with pre-processing, which usually involves changing the input parameters in some way to explore how the simulation output might change. You change the parameters, such as the physical stress on an object to see how it responds—testing the product under various conditions.

Simulation processes also involve scripts which do the post-processing of the raw simulation result data by extracting key values, curves, pictures, videos, etc.—whatever you need from the simulation.

The value of SDM is that all these processes and the resulting data are kept together with the source simulation data because the data and the processes are very tightly related.

Why is "process" so important for simulation data management? Marko Thiele: Initially, teams focused on the data part, which missed out on the process part, and that really proved to greatly limit the reproducibility of simulations. In other words, without all the process information, it was very hard for engineering teams to go back to a simulation and review how it was initially created.

So six months or a year later, engineering teams couldn't look at a simulation and understand how the team arrived at a given simulation result. You still had the input files, but you didn't have all the process scripts anymore in the right versions to recreate a runnable simulation. Teams also had trouble finding new results from related tests with the simulation, as well as building new simulations based on the old data.

So over time, engineering teams realized they needed to keep the processes close to the data and keep all the versions of a simulation data connected with the processes.

What are the trends driving the growing need for simulation data management? Marko Thiele: The need for SDM is driven by both the growing complexity of modern products, as well as the growing sophistication of simulations. This is certainly the case for our major automotive customers.

Thanks to continually increasing computational power, simulations are becoming more complex and, hence, generating a lot more data to manage. Teams are also running many more simulations than in the past, making the tracking of all those versions increasingly challenging.

For example, in the automotive industry many more parts of a vehicle are undergoing digital simulations testing. There are literally thousands of parts to track and test, and each part has to be modeled and then combined into larger parts systems.

It seems hard to imagine, but in the early days of digital simulations in the automotive industry, usually one engineer was in charge of running simulations for an entire vehicle. Now you have an entire team working on just the design of car seats or the suspension system, etc.

All of these engineers need to bring their individual simulation data together. Each team needs to see what the other teams are doing at any point in time. One engineer should be able to easily use a simulation created by another engineer to explore other facets of the design.

Another aspect of SDM is on the process side. There are certain very complex computer-aided engineering tasks that require highly specialized skills. Maybe only one or two engineers in a company have the skills to program these simulations. But by making scripts available in the SDM, everyone else can easily run these complex simulations. This democratizes and scales the process from just one or two engineers to hundreds of engineers.

In what other ways is the use of computer-aided engineering evolving? Marko Thiele: Another trend that relates directly to our partnership with Rescale is regarding the new generation of engineers.

Until recently, engineers needed to not only know how to use the tools to create digital models and run simulations, but they also had to be technically adept to set up high performance computing batch jobs to run the simulations. This required knowing things like how to connect to servers, submit a job to a queueing system, or boot up HPC cloud services. But engineers ultimately just want to focus on their work rather than spend their time setting up and maintaining HPC systems. And, given the wide-spread adoption of graphical user interfaces and low-code development tools, today's engineers are accustomed to using modern, intuitive tools to automate repetitive tasks and reduce technical complexities.

They just want to work on their simulation data. Submitting a job should be as easy as possible—one button to click on. And now they literally have that capability on the SCALE.sdm platform. Thanks to our partnership with Rescale, they can click one button to set up a batch job and run a simulation on the Rescale multi-cloud HPC platform. The engineer never needs to leave our software environment. And once the simulation concludes, all simulation result data is automatically transferred to our SDM system and the relevant post-processing tasks are executed automatically. This is clearly the future of computational engineering. Organizations like Scale and Rescale are working to standardize, automate, and unify simulation processes and their data so R&D teams can focus on creating innovative products rather than spending their time chasing data, grappling with technical issues, or managing computing systems and software. This new partnership is a great next step in that evolution.

CADFEM: The Bosch Home Comfort Group (formerly Bosch Thermotechnology) is a leading European supplier of sustainable and energy-efficient solutions for heating, cooling and process heat, including intelligent energy management from a single source. The focus is on the heat pump, because electrification is the most important step towards achieving climate targets. However, the noise development is to be strongly limited in order to secure a high quality of life for users and their surroundings.

The article on the website offers the choice for English translation
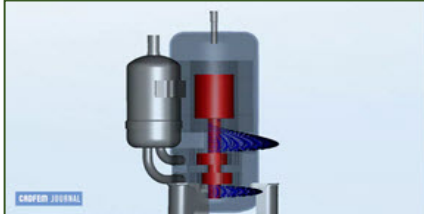
How Bosch develops particularly quiet heat pumps with simulations - In order to integrate this topic into the development process, **a Bosch team has developed a simulation solution in cooperation with Tribo Technologies, CADFEM and Ansys**

Less compressor vibration with reduced measuring effort - It was clear to all those involved that the compressor vibrations played a large part in the noise generation within the heat pump. However, in experimental investigations it was not always possible to examine in detail what happens inside the compressor. This should be achieved by means of multi-body simulations (MKS) with Ansys Motion.

Several objectives were pursued. On the one hand, the understanding of compressor excitation should be deepened and expanded in order to be able to make a more accurate noise prediction when using the heat pumps. On the other hand, the 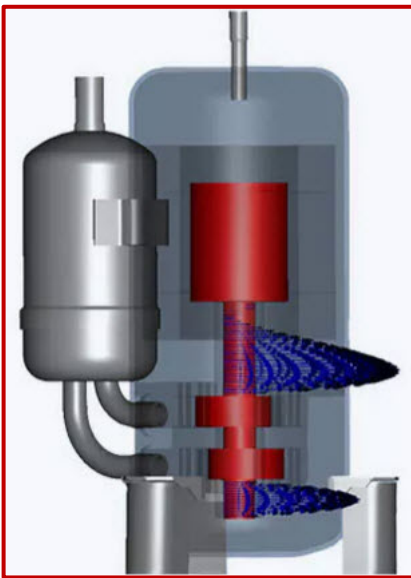aim was to reduce the not insignificant measurement effort. An additional challenge was that the connections in the compressor are only difficult or not at all to be traced in terms of measurement. "As Ansys Mechanical is already being used in FE simulation in our department, it has been offered to use Ansys Motion for multi-body simulation," explains Anja Thielecke, who is doing her doctorate at the Bosch Home Comfort Group in the engineering application system area on acoustics. "These calculations can be controlled by Ansys Workbench just like Ansys Mechanical. Consequently, with little effort, FMD analyses can also be carried out with low effort."

Picture: Double oven compressor of a heat pump from Bosch Home Comfort: With Ansys Motion, slide bearing forces are simulated

Simulation shows plain bearings "under the magnifier" - The plain bearings play a decisive role in the vibration behaviour of the compressors. **Consequently, a simulation solution was searched to calculate these bearings in detail. Tribo-X inside Ansys, a software developed by CADFEM together with Tribo Technologies for coupling hydrodynamics and FEM, already offers this option in Ansys Mechanical. The add-in comprehensively maps the behaviour of gliding shafts in all its complexity, for example to calculate plain bearing coefficients, bearing deformations, write-downs or cavitation.**

Visit the website for the video and to learn Tribo-X inside Ansys at a glance - Bearing damage can be predicted and avoided by the correct dimensioning of the plain bearing...In the video you will learn how shape and position deviations (e.g. Shaft-inside, assembly fault) on the lubrication gap height as well as the wear in the plain bearing and allow it to be avoided constructively.

Quoted from DYNAmore Nordic, "We have a tradition of supporting MSc students who use LS-DYNA in their thesis work. During this year's spring semester, we had the joy of working together with Ida Moen from the University of Stavanger, Norway. In her work, "Analysis of a Ship-Bridge Collision at Nordhordaland Bridge."

"In her thesis work Ida employed the power of LS-DYNA to study the effect of ship collisions on the structural integrity of the floating pontoons that hold up this deep-water bridge. Her work studied several impact scenarios, in conjunction with a potential technique of strengthening the pontoons using carbon fiber reinforced polymer."
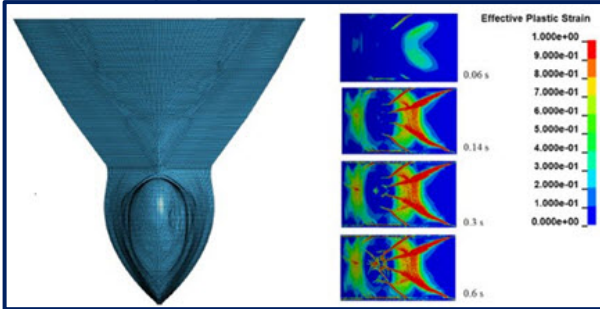
Analysis of a ship-bridge collision at Nordhordland Bridge pdf is available on the website
 by Ida Moen, University of Stavanger

Faculty of Science and Technology Master's Thesis
   The spring semester, 2023
   Supervisor at UiS: Associate Prof. Yanyan Sha
   Co-supervisor: Mathias Eidem

A structural impact analysis is carried out using the software LS-DYNA to assess whether the pontoons of the bridge can endure the previously determined impact load level. Five different scenarios are simulated in the analysis.

Abstract - The Nordhordland Bridge, a floating bridge located in Norway, spans a length of 1246 meters and was completed in 1994. Over the years, the bridge has experienced two instances of ship collisions so far, resulting in minor damage. Considering the advancements in ship collision risk assessment, ship impact analysis, and changes in ship traffic, a reassessment of the original design requirements for the bridge is undertaken. The main objective of this research is to determine if the prestressed reinforced concrete pontoons of the bridge have the strength to withstand accidental loading from a ship collision. As ship collisions pose a significant risk to the structural integrity of floating bridges, it is important to state the capacity of the pontoons. The impact of a ship collision can cause severe damage to the pontoons, leading further to a potential collapse of the bridge.

A structural impact analysis is carried out using the software LS-DYNA to assess whether the pontoons of the bridge can endure the previously determined impact load level. Five different scenarios are simulated in the analysis. A head-on impact in the centre of the pontoon, with and without a strengthening sheet of Carbon Fibre Reinforced Polymer (CFRP) of different thicknesses. A head-on impact off the centre of the pontoon, towards one of the internal concrete walls in the pontoon and a glancing blow will be analysed.

The results of the analysis indicate that the current pontoon design does not possess sufficient structural capacity to withstand the loads from a head-on ship impact, which amounts to approximately 25 MJ of impact energy. Additionally, it is evident that the extent of damage varies considerably depending on the specific location of the ship's bow impact with the pontoon. The results with the CFRP sheet strengthening the pontoon wall indicate a positive trend, suggesting that the approach employed may have a beneficial effect on the capacity.

The findings from the analysis reveal that the pontoons, which form the foundation of the bridge, are particularly vulnerable to ship impacts and do not possess adequate capacity to meet present-day requirements…

Oasys: GSA - Project Overview - The Las Vegas High Roller opened in 2014 as the largest observation wheel in the world (it is now the second largest, after the Ain Dubai (Dubai Eye). The High Roller is 550 ft. tall and features a circular rim formed of a single tube supporting 28 spherical cabins.   **We'd like to thank Associate Structural Engineer, Mary Ferguson & Sr. Structural Analyst, Marc Tatarsky at Arup for sharing this work with us.**

© Arup – observation wheel size comparison.
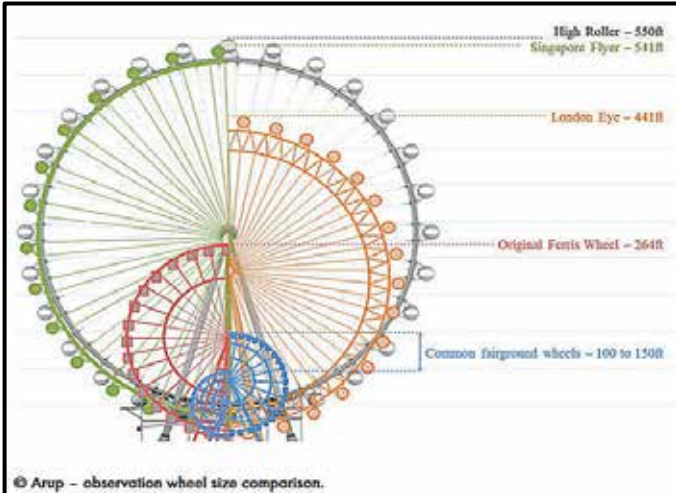
Las Vegas High Roller observation wheel – intricate analysis and design using Oasys GSA

Each cabin can hold up to 40 people, who can partake in several themed entertainment experiences throughout a 30-minute ride. Located in the heart of the infamous Las Vegas strip, the attraction is across the street from Caesars Palace hotel, at the end of the LINQ promenade.

It was important to select the appropriate analysis software to design this complex structure. Oasys GSA was chosen as the primary structural analysis software as it allowed Arup Engineers the ability to analyse many unique design considerations.

© Arup – construction sequence showing key stages.
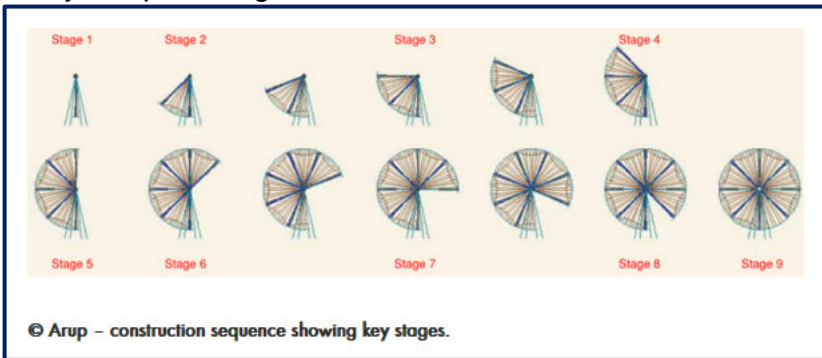
How Oasys proved invaluable - Oasys GSA allowed the engineers to study various construction sequences to confirm that the wheel could be built. The Vegas High Roller was ultimately constructed in an upright position like that of the Singapore Flyer. The permanent foundations were constructed first, then the support legs and props were erected, followed by the hub of the wheel. The rim was constructed section by section.

The immense size of the wheel and the narrow footprint of the site presented challenges for the design team. Foundation location options were limited due to the site constraints between an existing road, a monorail, and an active storm culvert. Ultimately the hub of the wheel was supported using four inclined legs with a single transverse brace founded across the road. GSA was integral in determining the right geometry for the site.

The wheel had many unique design considerations that could only be studied with a software that allowed for custom design cases and atypical geometry.

GSA was used to analyse the different operating conditions, such as when the rim is free to rotate or when it is fixed to the support structure to prevent rotation. The team was able to alter the end fixity of members in different analysis stages (e.g., changing from pinned to fixed) to mimic the real conditions the elements would face.

The intense climate of the Las Vegas desert meant that thermal loading was significant. With long slender elements, the expansion or contraction of each component greatly affected the design of the wheel.

GSA allowed the design team to understand the dynamic characteristics of the wheel to ensure adequate passenger comfort in wind events. It also facilitated the study of differential settlement between the supporting legs to determine the resulting displacements and stresses within the structure.

GSA analysis determined the flexibility of the wheel and how much the rim could be straightened by adjusting the pretension in individual cables. Along with careful detailing, this analysis allowed for maximum adjustability in the field and helped achieve exceptionally tight construction tolerances. Buckling of the single-element rim and the nonlinearity of the cable tension was also determined using GSA. Using the eigen value buckling method, the engineers were able to identify additional forces and moments generated by buckling modes.

© Arup – contours of horizontal component of node deflections under dead load before completing the rim.	© Arup – contoured deflection under dead load with applied jacking force.
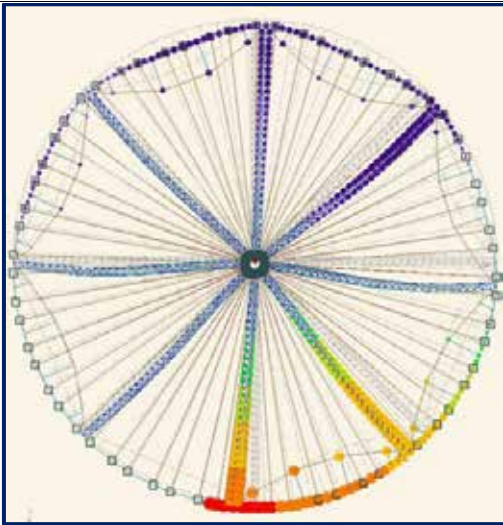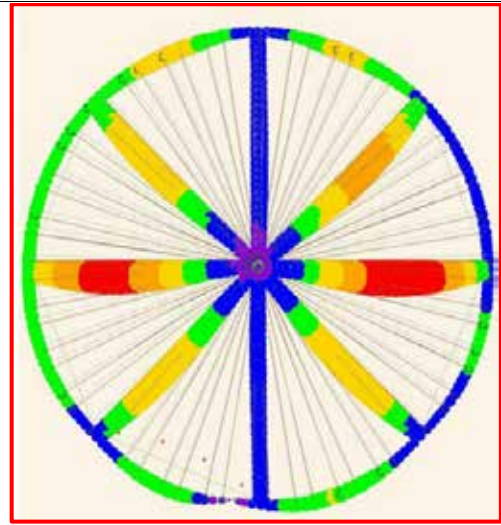
This project has inspired other similar designs and digital workflows used within Arup due to the accuracy and reliability of GSA analysis and design capabilities considering this composite structure.

OZEN Engineering: the blog by Adel Benleulmi demonstrates EMC Plus advanced capability to compute field statistics for any imported near-field source file. In the demonstration is the step-by-step workflow for analyzing the radiated electric fields, specifically produced by an imported near-field source from SIwave within EMC Plus.

Enclosure demo on YouTube

EMC Plus: PCB in Enclosure Demo
Posted by: Adel Benleulmi
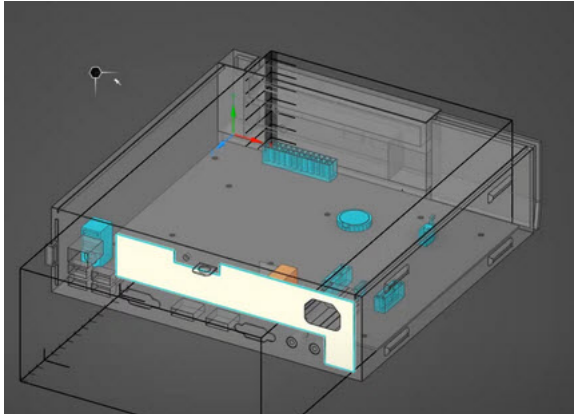
Overview - The following model is a computer case, which you can find within the software examples. The workflow includes the following steps:

· Defining the simulation domain
· Defining the near-field source
· Defining and assigning material properties
· Creating the probes
· Meshing the model, and running the simulation

Excerpt - EMC Plus: YouTube PCB in Enclosure Demo

Hi there! This video shows the workflow for analyzing the radiated electric fields generated by an imported near-field source from SIwave in EMC Plus.

At Ozen Engineering Inc. (www.OzenInc.com) we help engineers learn how to use different Ansys products to solve and model Multiphysics problems using industry leading CAE technologies.

As an Ansys Elite Channel Partner, we will be happy to deliver an update to your company related to the latest ANSYS software release.

We are located in Silicon Valley (Northern California). In addition to educating engineers on different Mechanical, Electrical, and Digital Twin Software products, we have been providing consulting services for different industries

We have expertise in Ansys software including: Discovery – Sherlock –Twin Builder – Digital Twin – Medini – SCADE – MotorCAD – Granta – Speos – optiSLang – HFSS – SIwave – Maxwell

The website has the complete information

d3VIEW: Introducing our tutorial section - learning at your own pace. The tutorials are no fee, review as many times as you want. Learning d3VIEW, will give you the option to visualize, mine and analyze the data quickly in order to enable faster and better decisions. It provides the ability for out-of-the box data extraction, transformations and interactive visualizations

Join me and learn the below tutorials, one of the many resources we offer at no fee:

7. Tutorial videos¶

7.1. Curve Digitization - Workflows has the ability to digitize and create usable curve plot from an image of a curve. The demonstrates how it is done can be viewed in this section on the website.

7.2. Video Analyzer Worker - Video Analyzer worker helps to analyzer extract information from test videos which can be further used to compare simulations.

7.3. Workflow-Simlytiks Mapper - Workflow => Simlytiks is a new feature that is now available in PPT Reporter worker. It includes the mapping of any workflow input/output to Simlytiks to provide full configuration dynamically.

7.4. Text Parameterize worker -How to create parameters in Text parameterize worker.

7.5. Tasks -Task application in d3VIEW allows users to create tasks, assign them to other users and visualize them in a timeline visualized format. Tasks are similar to JIRA Tickets where we can create a Task, assign them to the user, select Priority, add due date/Files and description to the Task created.

7.6. Parallel Chart - Parallel chart is a simple and powerful way to visualize multiple dimensions and the relationships between them in one single view. d3VIEW allows fast rendering of large rows of data with ability to change color, thickness opacity to uncover insights in data. Lets take a quick view of the supported features using a sample dataset.

7.7. GENERIC OPTIMIZER - Generic Optimizer is workflow which needs only the Input Dyna file for the execution and the optimization. This workflow also includes steps like selecting Templates, Target Curves etc. and has a PPT output reporter. The below video shows how to execute a Generic Optimizer Workflow. For additional questions about how to navigate the d3VIEW platform, please feel free to email our team at: support@d3view.com.

7.8. Transitions/ Animate To - In Simlytiks we have new option called 'Animate To' for the Visualizations. The purpose of the Animate To/Transitions is to show the same data in different visualizations. For example We can show or Animate Parallel chart to Bar chart , Parallel chart to Radar chart , parallel chart to Scatter plot etc.

7.9. Group Statistics Visualization - New Visualization called Group statistics is added in Simlytiks which renders the group-based charts and show the characteristics. The charts such as Pivot table, Single box-plot for each dimension and color by group for continuous and stacked bar chart for categorial color by group, Single parallel chart showing all dimensions and color by group, Single bubble chart and Circle pack showing the groups.

7.10. Import New data to saved dataset - How to import new data to saved Dataset.

7.11. Time History Prediction - How to Execute the Time History Prediction.

At our monthly town meeting we vote to acknowledge a resident of the town.
This page is to bring you a few articles that you may have missed.

Prof. Marco Evangelos Biancolini
University of Rome "Tor Vergata"
Principal Investigator of the MeDiTATe project

MeDiTATe, the Medical Digital Twin for Aneurysm prevention and Treatment, establishes a Marie Curie European Industrial Doctorate to deliver an innovative doctorate programme for 14 Early Stage Researchers.

Each of the fellows works on an Individual Research Project to deliver a comprehensive framework of simulation and imaging technologies targeted at industrial and clinical-translation to accelerate the process of personalized cardiovascular medical procedures, validated through an integrated experimental programme to improve patient care.

MeDiTATe, the Medical Digital Twin for Aneurysm
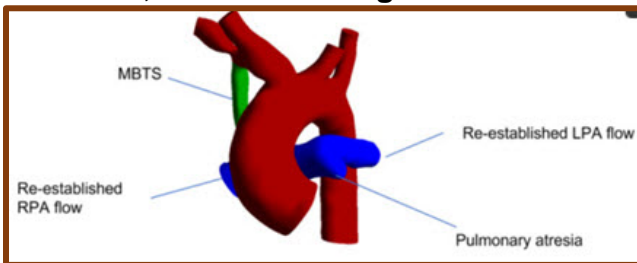
The Hemodynamic Effect of Modified Blalock–Taussig Shunt Morphologies: A Computational Analysis Based on Reduced Order Modeling
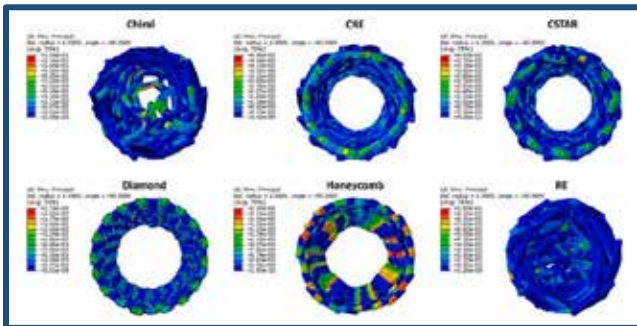
Potential of auxetic designs in endovascular aortic repair
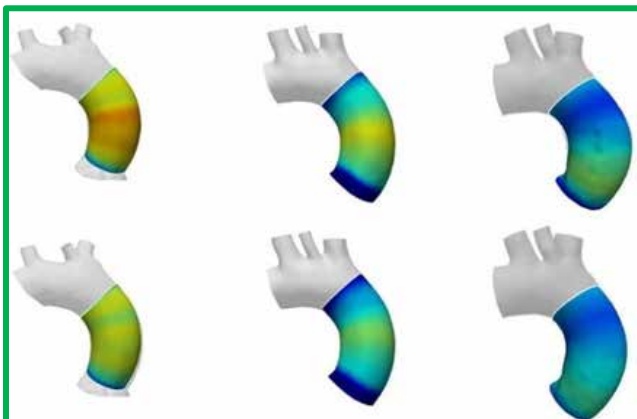
An image-based approach for the estimation of arterial local stiffness in vivo

Taylor: Engineering software and physics are an integral part of all horse activities. Join me monthly with interests and insights into the world of horses.

Effects of Jumping Phase, Leading Limb, and Arena Surface Type on Forelimb Hoof Movement
C.Rohlf, T Garcia, L. Marsh, E. Acutt, S. leJeune, S. Stover

Univ. of California-Davis & Univ. of Pennsylvania

Figure 2. Photograph of hoof extension bar including: (a) A rectangular hoof block which remained rigidly attached to the hoof wall throughout the study period; (b) a hoof wand with kinematic markers to track hoof rotation and translation.

Simple Summary - The mechanical behavior of arena surfaces has been identified as a contributor to injuries of performance horses. Evidence of excessive fetlock extension in association with stiff surfaces has propelled the installation of synthetic surfaces in performance horse arenas to reduce injury risk. However, the effect of arena surface properties on hoof slide during show jumping has not been widely studied. Therefore, this study measured the forelimb hoof motion of horses during takeoff and landing from a 1.1 m jump using a high-speed video motion capture system on five dirt and seven synthetic surfaces. Hoof slide was not significantly different between dirt and synthetic surfaces, but it was greater at takeoff than at landing and greater for the leading limb than for the trailing limb. These results indicate that horses are able to compensate for the effect of surface differences on hoof slide at a moderate jump height.

How to care for a blind horse.

Meet Minow who had to have both eyes removed due to infection behind the eyes. The eyes were removed at different times to give Minow time to get used to loss of vision. A main thing to remember is to talk while working around any blind horse or being in their vicinity. It is important that the horse knows your location for not only his safety but yours. Minow is quite happy and does enjoy trotting in the round pen.

I'm getting ready for the winter – I've been storing sunflower seeds. Mom puts sunflower seeds on the ground and I stuff them in my mouth and store them. Then she yells about a budget and is not putting more sunflower seeds down. Then she says terrible words, but she gets me more sunflower seeds.

Taylor is helping exercise Quincy & Dusty. Mom is putting the miniature horses on a low-starch diet! I hope my sunflower seeds are low in starch - I'm not giving them up! I wonder if Mom is going to give up her cookies!	Allan advised, "When Your New Rescue Dog is Former Infantry...He loves digging holes. And then sitting in them staring at everybody," I wanted to hire the dog to dig a hole. Mom said that we do enough damage. Wrong – he dug a lookout! I wanted a lookout.
Mom screamed, "SNAKE!" The Squirrel CERT team raced to assist. I yelled, "DON'T kill it, it has little legs!" Mom was looking at it's tail then thought the body rings were a snake! Our job isn't easy – time for sunflower seeds! Another disaster averted!	Mom said, "Look at the next pasture & strive to be different like the one cow." I didn't want to hurt her feelings and explain that the squirrels on the ranch are one color! Moooooo Moooooo – We squirrels have no idea what that means – I looked on my google translator and told Mom it means give the squirrels more sunflower seeds!

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Computer simulation of syringomyelia in dogs

Syringomyelia is a pathological condition in which fluid-filled cavities (syringes) form and expand in the spinal cord.

Syringomyelia is often linked with obstruction of the craniocervical junction and a Chiari malformation, which is similar in both humans and animals.

S. Cirovic, R. Lloyd   The Centre for Biomedical Engineering, University of Surrey, Guildford, UK
Jelena Jovanovik   Fitzpatrick Referrals, Eashing, Halfway Lane, Goadalming, , UK
Holger A. Volk   Clinical Science and Services, Royal Veterinary College, Hatfield, UK
Clare Rusbridge   The School of Veterinary Medicine, University of Surrey, Guildford, UK

Abstract – Background: Some brachycephalic toy breed dogs such as Cavalier King Charles Spaniels (CKCS) are particularly predisposed. The exact mechanism of the formation of syringomyelia is undetermined and consequently with the lack of clinical explanation, engineers and mathematicians have resorted to computer models to identify possible physical mechanisms that can lead to syringes. We developed a computer model of the spinal cavity of a CKCS suffering from a large syrinx. The model was excited at the cranial end to simulate the movement of the cerebrospinal fluid (CSF) and the spinal cord due to the shift of blood volume in the cranium related to the cardiac cycle. To simulate the normal condition, the movement was prescribed to the CSF. To simulate the pathological condition, the movement of CSF was blocked.

Results - For normal conditions the pressure in the SAS was approximately 400 Pa and the same applied to all stress components in the spinal cord. The stress was uniformly distributed along the length of the spinal cord. When the blockage between the cranial and spinal CSF spaces forced the cord to move with the cardiac cycle, shear and axial normal stresses in the cord increased significantly. The sites where the elevated stress was most pronounced coincided with the axial locations where the syringes typically form, but they were at the perimeter rather than in the central portion of the cord. This elevated stress originated from the bending of the cord at the locations where its curvature was high.

Conclusions - The results suggest that it is possible that repetitive stressing of the spinal cord caused by its exaggerated movement could be a cause for the formation of initial syringes. Further consideration of factors such as cord tethering and the difference in mechanical properties of white and grey matter is needed to fully explore this possibility.

Bulletin Board - **Engineering is an important part of safety before, during & after a disaster.** **Alan, from a neighboring town, is helping FEANTM establish a CERT.** The Community Emergency Response Team (CERT) Program educates people about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations.

Using the training learned in the classroom and during exercises, CERT members can assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. CERT members also are encouraged to support emergency response agencies by taking a more active role in emergency preparedness projects in their community.

Engineers Without Borders' Disaster Response Program responds to recovery and reconstruction needs of communities affected by disasters. At the request of our in-country clients, our volunteers conduct engineering assessments and provide technical advisory services related to the immediate response and the medium to long-term reconstruction needs of the population. For natural disasters, they design and construct buildings meant to protect people during a disaster. For example, they design buildings that can withstand an earthquake.

Francisco and Anna meeting with military representatives

ARUP UK - **Lessons learned in an earthquake's aftermath**, Kelsey Eichhorn: **Disasters are never entirely natural; the risks inherent in our environment can be amplified or diminished by any number of factors, from culture to politics and economics**. Similarly, building back effectively after events like hurricanes and earthquakes is never a simple construction exercise. … Two Arup staff members traveled to Ecuador in the wake of April's 7.8-magnitude earthquake.

© Dipartimento della Protezione Civile – Italia

National disaster management system - Italy - **Italy is one of the most exposed countries to natural risks in the world (seismic, volcanic, tsunami, hydrogeological, hydraulic, and forest fires are the most relevant)**. Specific emergency plans are necessary to prepare the civil protection structures to face and manage an emergency…

Numerical simulations and calculations were carried out concerning water dumping out of the belly tank of a helicopter using the VOF (Volume of Fluent Model) model and mesh adaptation in ANSYS Fluent, and the effects of two parameters, the height of the tank above the ground and the wind speed, on the wake flow and water distribution were discussed. The results showed that for forward flight, the higher the forward flight speed, the less the average water depth on the ground.

MDPI - **Numerical Calculation and Analysis of Water Dump Distribution Out of the Belly Tanks of Firefighting Helicopters** , Tejun Zhou, Jiazheng Lu, Chuanping Wu, Shilong Lan

Abstract - Helicopters are more and more widely used for water dumping in fire extinguishing operations nowadays. Increasing attention is being paid to improving helicopter firefighting efficiency. Water distribution onto the ground from the helicopter tank is a key reference target to evaluate firefighting eff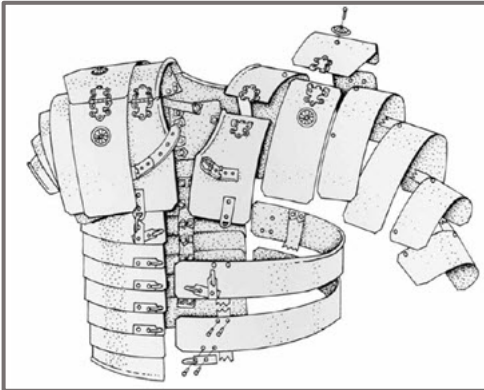iciency. Numerical simulations and calculations were carried out concerning water dumping out of the belly tank of a helicopter using the VOF (Volume of Fluent Model) model and mesh adaptation in ANSYS Fluent, and the effects of two parameters, the height of the tank above the ground and the wind speed, on the wake flow and water distribution were discussed.

The results showed that for forward flight, the higher the forward flight speed, the less the average water depth on the ground. Similar results were obtained for flight height. The average water depth was one order of magnitude less than in the cases of the corresponding hovering helicopter for a given wind speed. As for hovering flight, the higher the wind speed, the less the average water depth on the ground. The simulation results were basically consistent with the conclusions of water dump tests of fire-fighting equipment carried by helicopters. For example, when the helicopter flew at a forward flight speed of 15 m/s and the tank bottom was 30 m above the ground, the area covered by the dumped water would be 337.5 m2, and the average water depth accumulated per square meter would be 0.3 cm. This result was close to the 0.34 cm obtained under Hayden Biggs's test condition with a forward flight speed of 70 km/h and a height above the ground of 24 m.

1. Introduction - Forests in China cover an area of nearly two million square kilometers, accounting for nearly 20% of the country's land area. Forest fires occur frequently every year, causing extensive damage to natural resources, the ecological environment, and production facilities [1,2,3], and even sometimes causing heavy casualties. Therefore, it is very important to carry out proper monitoring, early warning, and forest fire suppression. During forest fire suppression, helicopters can rapidly reach the forest, where it is difficult for people to enter to extinguish the fire. The suppression achieved by the helicopter's water dumping on the fire line and the fire head reduces the intensity of effort by ground personnel against the fire and reduces the casualty rate. At present, firefighting departments in the United States, Canada, Russia, Japan, and other countries are equipped with many firefighting helicopters to execute tasks such as forest fire suppression and high-rise building firefighting [4,5]. Because the aviation industry in China started late, it has lagged behind the developed countries just mentioned in both research and development and the quantity of firefighting helicopters…

Analysis of the history of creation and improvement of personal protective equipment: from bronze armor to modern bulletproof vests

Oleh Strelko, State University of Infrastructure and Technologies, Kyiv, Ukraine Faculty Operation of Railway Transport/Dept. of Transport Technology and Process Control Traffic

Anatolii Horban, State University of Infrastructure and Technologies, Kyiv, Ukraine

Abstract. In this article, using real historical examples, the authors tried to trace the evolution of personal protective equipment. This has made it possible to perform a comparative historical analysis of the development of scientific research and industrial technologies, which made it possible to manufacture specific personal protective equipment in a certain historical period. Also in this review article, the authors have analyzed the stages of modern technologies that are currently used in the manufacture of various types of bulletproof vest. And given that the overwhelming majority of authors of publications devoted to the history of the creation of bulletproof vests write that: the bulletproof vest does not have a specific inventor, in this review article the authors also talk about specific, undeservedly forgotten now, the creators of the world's first officially patented prototypes of bulletproof vests for the police and VIP-persons, at the beginning of the 20 th century, who stood at the origins of the bulletproof vest industry. With the development of the industrial revolution and technological progress, new materials and production technologies have appeared, allowing the creation of more effective bulletproof vest. Bulletproof vest has become lighter and more effective over time, thanks to the use of new materials such as Kevlar, aramid fibers and ceramics. Thus, the history of the development of bulletproof vest includes the contribution of many scientists, engineers and inventors who have contributed to the improvement of protective armor over the years. In the article, the authors show that modern realities put forward new requirements for quality, weight and functional characteristics for design engineers and manufacturers of bulletproof vest.

The authors of the article analyze the main directions in which research work is currently underway…to improve bulletproof vests. The authors of the article show that in different countries of the world there are different standards and classifications for bulletproof vest. Each standard usually has its own classification, which determines the level of protection of bulletproof vest against specific types of threats, such as bullets, shrapnel or stab wounds. Therefore, the task of developing a single standard for modern bulletproof vest is important.

> "Thanks to the joint fast and successful rollout with Simq, we are able to integrate another product, Simq RPE, and make it available to our partners and customers via the IPS Case Designer."
> **Frank Reinauer / Head of Innovations and Production Biomaterials / KLS Martin Group**
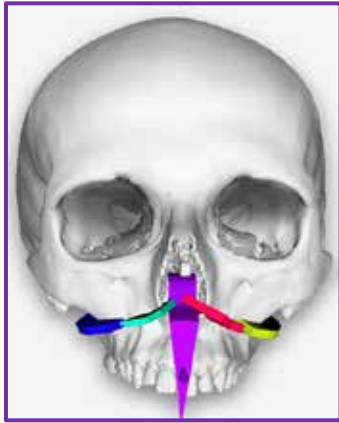
Empowering Orthodontics with Simq's innovative solution!

PDF is available on the website of the complete information with high resolution graphics.

The task - Rapid palatal expansion (RPE) is an orthodontic treatment of a narrow jaw. It is used for transversal expansion of the upper jaw. One risk of forced palatal expansion is that the upper jaw is expanded unevenly by the expansion device, the distractor, in over 55% of cases*. Thus, after the treatment, in 25% of the cases the patient even has a strongly asymmetrical face (more than 5 mm asymmetry). By means of patient-specific simulative surgical planning, suggestions for osteotomy guidance and a suitable drill and marking guide have to be made in order to guarantee a symmetrical facial shape after treatment (Figure 1).

Figure 1: Distractor Rapid Palatal Expander (RPE)

The solution - Our Simq RPE software supports the treating physician/orthodontist in treatment planning and considers the biomechanical behavior of the individual upper jaw. The surgical procedure is individually simulated, optimized, and digitally documented for each patient. Based on the existing patient scan, a three-dimensional model is generated for the simulation and the individual osteotomies are predefined.

The patient-specific numerical simulation is the core of the procedure. Here, the optimum symmetry is calculated based on the anatomy with different cutting lengths. The subsequent additively manufactured drill and marking guide transfers the planning to the operating room and serves as a template for the ideal osteotomies and the use of the distractor (Figure 2).

Figure 2: Distractor in upper jaw

The result - Simq's patented simulation-based planning of the surgical expansion of the maxilla allows the procedure to be specifically optimized, the trauma to be minimized and the risk of an asymmetrical opening of the maxilla to be virtually reduced.

…With the state-of-the-art, patient-specific procedure, the risk during surgery as well as of postoperative treatments can be brought to a minimum (Figure 3).

With this approach, the KLS Martin Group can add a patient-specific treatment and thus an additional service to its product (IPS® GNE).

MeDiTATe project:
　Maria Nicole Antonuccio　ESR14
　Francesco Bardi　　　　　ESR10

"Abdominal Aortic Aneurysm (AAA) is a balloon-like dilatation that can be life-threatening if not treated."
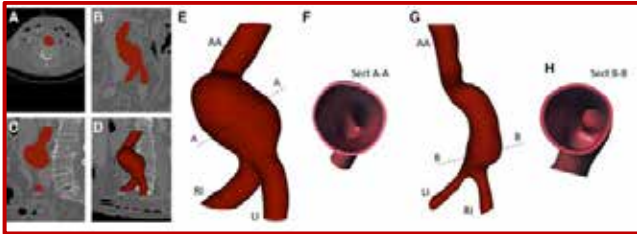
[Fabrication of deformable patient-specific AAA models by material casting techniques](#) –
MeDiTATe project: Maria Nicole Antonuccio (ESR 14) first author, Francesco Bardi (ESR10), Dr. Simona Celi (Ethic Coordinator), & Prof. Stéphane Avril (Research Coordinator)

Figure 1. Example of image segmentation in axial (A), coronal (B), longitudinal view (C), and segmentation result (D); 3D solid models (E, G) with related cross-sections (Sect) (F, H).

EXCERPTS: **Background**: Abdominal Aortic Aneurysm (AAA) is a balloon-like dilatation that can be life-threatening if not treated. Fabricating patient-specific AAA models can be beneficial for in-vitro investigations of hemodynamics, as well as for pre-surgical planning and training, testing the effectiveness of different interventions, or developing new surgical procedures. The current direct additive manufacturing techniques cannot simultaneously ensure the flexibility and transparency of models required by some applications. Therefore, casting techniques are presented to overcome these limitations and make the manufactured models suitable for in-vitro hemodynamic investigations, such as particle image velocimetry (PIV) measurements or medical imaging.

Methods: Two complex patient-specific AAA geometries were considered, and the related 3D models were fabricated through material casting. In particular, two casting approaches, i.e. lost molds and lost core casting, were investigated and tested to manufacture the deformable AAA models. The manufactured models were acquired by magnetic resonance, computed tomography (CT), ultrasound imaging, and PIV. In particular, CT scans were segmented to generate a volumetric reconstruction for each manufactured model that was compared to a reference model to assess the accuracy of the manufacturing process.

Results: Both lost molds and lost core casting techniques were successful in the manufacturing of the models. The lost molds casting allowed a high-level surface finish in the final 3D model. In this first case, the average signed distance between the manufactured model and the reference was (−0.2±0.2) mm. However, this approach was more expensive and time-consuming. On the other hand, the lost core casting was more affordable and allowed the reuse of the external molds to fabricate multiple copies of the same AAA model. In this second case, the average signed distance between the manufactured model and the reference was (0.1±0.6) mm. However, the final model's surface finish quality was poorer compared to the model obtained by lost molds casting as the sealing of the outer molds was not as firm as the other casting technique.

Conclusions: Both lost molds and lost core casting techniques can be used for manufacturing patient-specific deformable AAA models suitable for hemodynamic investigations, including medical imaging and PIV.

1. **Introduction**: An abdominal aortic aneurysm (AAA) is a vascular disease that occurs when the arterial lumen dilates permanently and irreversibly, and the aortic diameter exceeds 30 mm…
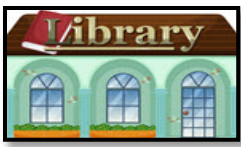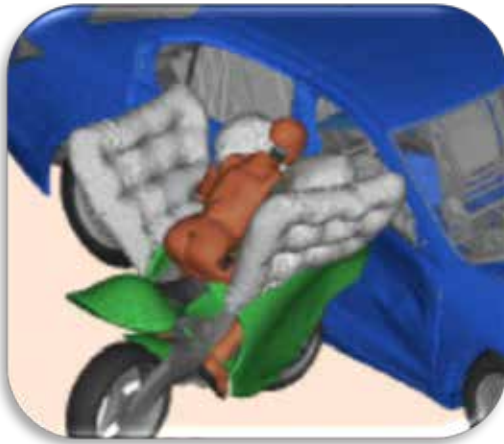
Efficient simulation strategy to design a safer motorcycle
Steffen Maier and Jörg Fehr

Institute of Engineering and Computational Mechanics
Univ. Stuttgart, Pfaffenwaldring 9, 70569 Stuttgart, Germany

"LS-DYNA provides a variety of material models"

Abstract - This work presents models and simulations of a numerical strategy for a time and cost-efficient virtual product development of a novel passive safety restraint concept for motorcycles. It combines multiple individual development tasks in an aggregated procedure. The strategy consists of three successive virtual development stages with a continuously increasing level of detail and expected fidelity in multibody and finite element simulation environments. The results show what is possible with an entirely virtual concept study—based on the clever combination of multibody dynamics and nonlinear finite elements—that investigates the structural behavior and impact dynamics of the powered two-wheeler with the safety systems and the rider's response. The simulations show a guided and controlled trajectory and deceleration of the motorcycle rider, resulting in fewer critical biomechanical loads on the rider compared to an impact with a conventional motorcycle. The numerical research strategy outlines a novel procedure in virtual motorcycle accident research with different levels of computational effort and model complexity aimed at a step-by-step validation of individual components in the future.

Excerpts – Introduction: A motorcycle accident is a very complex event where the rider and the motorcycle interact with many environmental factors. Due to the exposed position of the riders, the vehicle itself does not provide protection to the rider in the event of a collision with an accident opponent or a roadside structure. Instead, violent ejection of the rider from the motorcycle is a likely accident pathway when the vehicle suddenly comes to a standstill [1–3]. When striking objects in their path and the ground, the consequences are often severe or fatal for the involved riders. This results in an excessive risk that motorcycles are 25 times more deadly per kilometer traveled than passenger cars...

Stage 2: ...The rider interaction surfaces of the motorcycle cockpit are modeled further detailed as an FE model in the LS-DYNA software environment

Stage 3: ...The motorcycle, the already tuned passive safety systems equivalent to stage 1 and 2, the rider surrogate, and an accident opponent are modeled as full FE representations in LS-DYNA.

... LS-DYNA provides a variety of material models. To capture rate-dependent loading and hysteretic unloading of foams the material model *MAT_FU_CHANG _FOAM [54] is well suited. It is used for a wide variety of foam materials [55] and can be mapped with near test data.

Aisle "H" History

From the CADFEM website
by Dr.-Ing. Guenter Mueller, Founder of CADFEM GmbH.

"How it all started - Between 1959 and 1964, John Swanson studied engineering at Cornell University. He then began his professional career at Westinghouse Astronuclear Labs in Pittsburgh. Alongside his job, he worked on his PhD in Applied Mechanics between 1964 and 1966, at the University of Pittsburgh.

The Original Swanson Home Office in Elisabeth, PA, in 1970

Excerpt: 50 yrs. of ANSYS – the early years: 1970 to 1994

1970 - 1982 Swanson Analysis Systems, Inc. (SASI) - Being employed in the firm's computation department, John was responsible for analyzing components designed for nuclear power plants. An FEM (finite element method) program for an IBM 7094 computer that was able to solve 75 equations stood at their disposal for the purposes of static and axisymmetric problems.

As Westinghouse was not interested in software development, John Swanson resigned from his permanent position and then worked for them as a consultant until the point at which he founded his own company, Swanson Analysis Systems, Inc. (SASI), in 1970. The office was located at John's house in Elisabeth, PA, in the Pittsburgh area.

The first version of his FEM program was called ANSYS Rev. 2, and this ran on Control Data computers (the CDC 6500 and the 6600). The program provided solutions for linear and nonlinear structural analysis and dynamics, and for stationary and non-stationary heat transfer. John started with Rev. 2 because he believed no one would trust a program referred to as Version 1. The first commercial software agreement was concluded with his erstwhile employer, Westinghouse.

The 10th anniversary of SASI, in 1980

During the initial years, John was responsible for everything from development to after-sales service and customer support. The first employees (the "original five") were Lauralee Wagner, Suzanne Batt, Gabe DeSalvo, Peter Kohnke, and Roger Ehrlich. ANSYS Rev. 3 was released in 1977; it was a completely new version, being modular and interactive, with emphasis being laid on the fact that "…the user could generate some meaningful plots." An office building was erected in 1978 in Houston, PA. Even back then, they used the excess heat produced by the computers to heat the building. By 1980, after ten years of being in business, SASI had 25 employees.
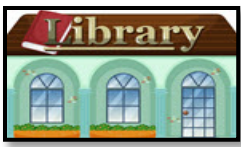
1982 – SASI and ANSYS Support Representatives (ASRs) - In 1982, Version 4.0 came onto the market with significant new functions: PREP (pre and post processor) 7, used for entering data and evaluation of results, featuring: interfaces to CAD (computer-aided design) programs, its own parameter language, optimization functions – even at that point in time – and modules for acoustics, electromagnetics, and coupled fields (electro-magnetic and thermomechanical). Even new materials, such as composites were supported.

SASI wanted to focus on software development, so the ANSYS Support Representatives (ASR) network was developed to deal with software marketing, customer support, and training. By 1983, the number of representatives had grown to seven in the USA and Canada and three in Europe. Guenter Mueller had been one of these representatives since 1982. It was their job to sell the software, offer local support and training, and acquire new clients – while SASI retained control of the licensing agreements.

By then, SASI had 40 employees and had racked up more than 200 installations of ANSYS. In 1984, the number of installations had risen to over 300 – 75 of which were in Europe and 15 of which were in Germany. Sales reached 10 million US dollars. This rapid growth led John Swanson to change the business model.

ANSYS support representatives in 1983, at the first ANSYS International Conference, in Pittsburgh | left to right: Jim Radochia, Larry Doroucher, Bill Jones, Herve DeBaeker, Günter Müller, Stewart Morrison (STRUCOM), Roger Chang, Mark Rodamaker, Steve Kensinger. In front: John Swanson

Continue on the CADFEM Website for great additional pictures of the history of ANSYS

RheKen,

Town investigative reporter

I am AI and live on a small ranch on the outskirts of the town
I use chatGPT for assistance.
Investigate: "What happened to the fence?"

November

The Rancher & the Secretary are arguing the coffee shop about bicycles and tractors?

I need a hot coffee! I'll head on over to listen in on their argument.

We know what happened to the bicycle tires. The Rancher let the air out, but can you hold a tractor hostage?

Dec will continue with the shooting gallery – the fence issue had to be resolved!

Once Upon a Time, The Secretary was a hard-working woman who took pride in her land. She had a long-standing agreement with The Rancher that he would keep his cows fenced so they wouldn't wander onto her property.

One day, while plowing her fields, The Secretary accidentally ran her tractor through The Rancher's fence. She immediately knew she was in trouble. When The Rancher arrived, he was furious and demanded The Secretary pay for the broken fence. The Rancher claimed she did it on purpose to get even with him for the time he accidentally deflated her bicycle tires. The Secretary argued that ramming through his fence with her tractor was an accident and that she shouldn't have to pay.

The Rancher wouldn't hear it. He grabbed the keys to The Secretary's tractor and said he would keep it until she paid for the fence. The Secretary was furious. She had no money to spare but couldn't afford to lose her tractor. She yelled, "You old coot. Don't think I'm going to be forgiving like I always am. I'm not too fond of your Rhubarb pie. Do you have any? Maybe I need a slice to remember how much I don't like it!"

Days passed, and the argument between the two neighbors only escalated. The police discussed the arguing at the Town Hall Monthly Meeting. The Rancher and Secretary explained what transpired, but everyone ran out of the meeting, grabbing coffee and a doughnut on the way out.   The Town Supervisor put on a headset and listened to music while The Rancher and Secretary argued.

Finally, The Secretary caved and paid to have the fence repaired. But she wasn't about to let The Rancher get the last word. So, she took matters into her own hands and painted the portion of the fence she had run through a bright shade of pink. (She'd paid for that portion of his fence - therefore she felt she owned it)

The Rancher was shocked when he saw it, but The Secretary smiled. From that day on, the "pink fence" became a local landmark, and people from all countries often stopped to take photos of it.

And this is the end – or is it? We still have the shooting match barreling down the pike

The world's first public two-car electric crash test by Mercedes-Benz

YouTube - An Electrifying collision Crash test history in the making

Demonstrating safety in an unprecedented crash test: Mercedes-Benz is the world's first automaker to publicly conduct a frontal offset crash of two electric vehicles that simulates a real-life accident scenario common on rural roads.

Excerpt from the website - Real-life crash test: Mercedes-Benz electric vehicles are every bit as safe as all other models from the brand with the star

european Release - Not Adapted for the U.S. Market

With the world's first public crash test involving two fully electric vehicles, Mercedes-Benz is going above and beyond not only the legal requirements but also those of the ratings industry. Euro NCAP stipulates a frontal impact test using a 1,400 kg (3,086 lbs) trolley with an aluminum honeycomb barrier replicating the front of another vehicle. In accordance with the specifications, the test vehicle and the trolley collide with an overlap and at a speed of 50 km/h (31 mph). Mercedes-Benz, however, used two real vehicles, an EQA and an EQS SUV, which are significantly heavier at approximately 2.2 and 3 tonnes (2.4 and 3.3 tons) respectively. In addition, both models were faster, each going 56 km/h (35 mph), which meant that the overall crash energy was considerably higher than required by law. The vehicles' extensive deformation following the collision may seem alarming to the non-expert. For the Mercedes-Benz engineers, however, it shows that the vehicles were able to effectively absorb the energy of the collision by deforming. As a result, the passenger safety cell of both electric models remained intact and the doors could still be opened. In an emergency, this would make it possible for occupants to exit the vehicle on their own or for first responders and rescue personnel to reach them. The high-voltage system in the EQA and the EQS SUV switched off automatically during the collision.

The crash test at the Group's Technology Center for Vehicle Safety in Sindelfingen demonstrates Mercedes-Benz's real-life safety philosophy: To make cars that hold up not only in defined crash test scenarios, but also in real-life accidents. The test scenario involving a speed of 56 km/h (35 mph) and 50 percent frontal overlap corresponds to a type of accident common on rural roads, for example during a failed overtaking maneuver. The speed selected for the test takes into account that, in a real-life accident, the drivers would still try to brake before the worst case of a collision.

…
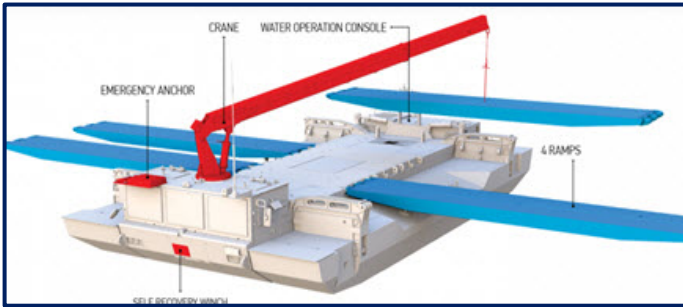
The OTTER is a bridge and ferry system designed for safe and fast transport of combat and logistic military vehicles in river crossing operations. The OTTER system can also be used in natural disasters such as floods...**The OTTER design is certified according to NATO standards, and satisfies all up-to-date NATO requirements such as defined river states, deployment and transportation.**

Rapid assault wet gap crossing at lowest logistic burden and saline operation capabilities are other significant advantages of the system. Exceptional road and off-road performance: its all-wheel 8x8 driveline, central tire inflation and adjustable ride height control features provide an incomparable off-road driving performance and speed especially on loose, muddy and rough terrains.

YouTube - M10 Booker: Anytime, Anywhere - **M10 Booker in action: Watch the U.S. Army's new tracked combat vehicle move and fire during testing in 2023. General Dynamics Land Systems** ... will deliver the combat vehicle recently named the M10 Booker. The Booker has commonality with the Abrams SEPv3 turret systems and is designed with larger-caliber main gun growth capability to provide protected firepower and unmatched lethality to Infantry Brigade Combat Teams (IBCTs).

The Booker features add-on armor panels and under-vehicle IED protection, plus proven ammunition compartmentalization for crew safety. Its high power-to-weight ratio and hydro-pneumatic suspension provide outstanding speed and cross-country maneuverability. The Booker is built to meet all transport mode specifications...

US Airforce Picture of the Month

The United States Air Force Air Demonstration Squadron "Thunderbirds" perform in Huntington Beach, Calif., Sept. 30, 2023. The Thunderbirds headlined the Pacific Air Show, one of the largest air shows across the United States that attracts millions of spectators.

(U.S. Air Force photo by Staff Sgt. Dakota Carter)

The new Center for Bionic Intelligence Tübingen Stuttgart

Biointelligent systems for diagnosis and treatment of everyday neurological and mental disorders.

The new Center for Bionic Intelligence Tübingen Stuttgart (BITS) aims to optimize the interaction between humans and technical systems in a fundamentally new way.

[Pict.: Ctr. for Bionic Intelligence Tübingen Stuttgart (BITS)

Scientists from the University of Stuttgart, the University of Tübingen, the Max Planck Institute for Intelligent Systems and the Max Planck Institute for Biological Cybernetics are conducting research on intelligent bionic systems that will aid understanding and treatment of certain diseases of the central nervous system. Diagnoses will become more accurate, treatments more efficient and the illnesses more tolerable. Those affected by such disorders already use orthoses or communication aids. However, these systems cannot fully adapt themselves to the needs of the patient or the environment in order to fully compensate limitations or restore failed bodily functions. In interdisciplinary projects, BITS members develop individually tailored medical aids.

Bionic systems can be found almost everywhere in everyday life: A Velcro fastener on a backpack is inspired by the burdock, suction cups are modeled on the form of an octopus tentacle. Both inventions are based on phenomena from the animal and plant world. Researchers at the University of Stuttgart, the University of Tübingen, the Max Planck Institute for Intelligent Systems and the Max Planck Institute for Biological Cybernetics are taking this one step further: Their vision is to optimize interaction between humans and technical systems so that, by using various signals and intelligent physical principles, the technical system is able to provide support when humans need it. The users are in control at all times.

"We want to push the boundaries of what has been possible until now," says Professor Syn Schmitt, BITS spokesperson at the University of Stuttgart. "With bionic systems, such as novel robotic prostheses, we aim to create new intelligent diagnostic and treatment options that offer support in everyday life for patients with physical and neurological limitations."

Diagnosis and treatment: Smart, flexible and ethical - Technical assistance systems are already being used for therapeutic purposes, but they fall far short of the efficiency and flexibility that would be required to replace missing or impaired functions, or to support the diagnosis and treatment of complex mental disorders. The scientists of the newly founded BITS are jointly researching the development of bionic systems to adapt them to meet patients' individual needs, to compensate for impaired motor function in the everyday lives of those affected, and to support diagnostic and rehabilitation procedures. Social and ethical dimensions are considered from the very beginning.

"The goal is to develop alternatives that work perfectly for individuals," adds Professor Martin Giese, BITS spokesperson at the University of Tübingen. "Forging efficient interactions between people and technology,

requires not only optimal data and information processing, but also the exploitation of intelligent physical principles in people and the technical system."

The challenge here is to design technical components that interact with the nervous systems and muscular apparatus in a highly efficiently way and that adapt flexibly and individually to the patient's position. "To do this, we rely on functional materials that respond to different body-specific stimuli," adds Professor Sabine Ludwigs, also a BITS spokesperson at the University of Stuttgart.

Interdisciplinary collaboration: From biomedicine to robotics and computer science - The key to success is interdisciplinary cooperation between experts from different fields, such as biomedicine, neuromechanics, materials science, soft and biorobotics, physics, electrical engineering, social science, ethics, neuroscience, and computer science. "Each and every member of our team is an expert in their field," says Schmitt. "We try to transfer all this knowledge into workable solutions that allow people to interact with technical systems on multiple levels. We believe that affected individuals will benefit from such systems, and that science will gain a better understanding of humans."

The research work within BITS encompasses everything from robotic orthoses that function as an everyday aid for people with muscle tremors, for example, to wearable sensors to improve diagnostics for obsessive-compulsive disorders, to so-called in-body micro- and nano-robots that can transport drugs specifically to the brain or enable new forms of brain stimulation. "At BITS, we want to build on previous successes and strengthen our collaborations to permanently establish intelligent systems in medicine, treatment and rehabilitation," emphasizes Giese.

About the Center for Bionic Intelligence Tübingen Stuttgart - At the interdisciplinary research center BITS, approximately 50 scientists have been engaged in various projects since May 2023. BITS members bring together wide-ranging expertise from a variety of disciplines, including biomedicine, neuromechanics, materials science, soft and biorobotics, physics, electrical engineering, social science, ethics, neuroscience and computer science. The research work is intended to contribute to the technical implementation of bionic systems and help to establish these in the medical sector. This will significantly reduce the ever-increasing social burden of mental and neurological disorders, as well as individual suffering. To this end, BITS combines the complementary expertise of the Universities of Stuttgart and Tübingen and the Max Planck Institutes for Intelligent Systems and Biological Cybernetics. BITS is part of Cyber Valley, Europe's largest research consortium in robotics and artificial intelligence.

See website for Expert Contact information for:

Prof. Dr. Syn Schmitt, University of Stuttgart, Institute for Modelling and Simulation of Biomechanical Systems,
Prof. Sabine Ludwigs, University of Stuttgart, Institute of Polymer Chemistry
Prof. Martin Giese, University of Tübingen, Section for Computational Sensomotorics,

The Old Cattle Rancher's Ranch

No one knows his name.
You yell, "HEY, old rancher."

Agriculture, Animals, Soil, Equipment, Cattle, and whatever he wants.

Right Picture – My dog, Scout, & my horse, Cowboy

November

Our town photographer, **Ed Helwig**, has some great pictures of a barrel racing event. A horse and rider run a cloverleaf pattern around preset barrels in the fastest time.

Thank you for joining me on my monthly visits to museums.

The Dodge Bradesh

The Swope's Cars of Yesteryear Museum features vehicles ranging from the early 1900's to the 1960's in a variety of makes and models in both original condition and restored condition.

After years of planning and nine months of construction, Swope`s Cars of Yesteryear opened in May 1999. The collection consists of sixty magnificent machines of the past, all museum quality…Our museum allows car fans and collectors to admire the progression of automobiles over time. Our collection includes antique cars like the 1914 Model T and the 1925 Pierce Arrow to classics like the 1969 Chevrolet Camaro and the 1956 Thunderbird. **Not only do we have a great display of our collection for public viewing, but we also sell antique cars for the more passionate collectors.**

1961 Metropolitan

1957 Buick Super V8 Riviera Hardtop

1956 Thunderbird

1955 Dodge Custom Royal Lancer

1955 Desoto Firedome Hardtop

1955 Chrysler New Yorker Deluxe Hardtop

FEA Not To Miss & More

Please come back soon!

Buildings & campsites are available

Goodbye from Marsha/Molly & Friend

A favorite picture – my horses and Kyle the coyote that adopted living with them. I did tell him that a coyote can't be in the barn - then I find him waking up from sleeping in the stall with the mini horses. Since the horses didn't care if he was with them, I ignored that he's a coyote.

We will always remember. Our Town Always Salutes:

- Our US military, NATO and Friends of the US & NATO - First Responders, Police, Fire Fighters EMT's, Doctors, Nurses, ALL!
- We salute engineers, scientists, developers, teachers AND students because without them we would not have technology.