



FEA Not to Miss & More - Eclectic & Innovative
September 2023 **ISSN 2694-4707**

Monthly Town Hall Meeting
Engineering, Research, Interests
www.feantm.com

Bulletin Board



Turkish Aero



Northrop



Autoliv



Wake Forest



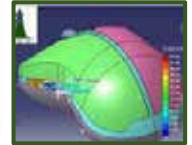
Andrea – Sales/Mktg. Cafe



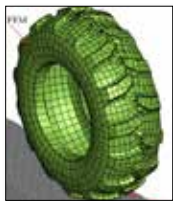
Ed - Long Foundation



Jenson - DFE Tech



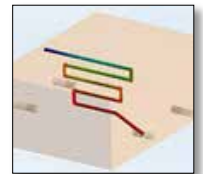
Rancher - Xinjiang Univ



Metin - OZEN



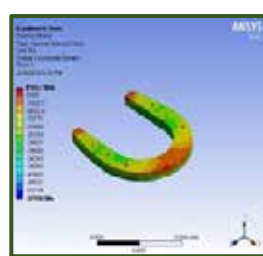
Markus - CADFEM



Squirrel's news in a nutshell



Sabyl - UOS - Horseshoes



M&M News - Boise State



FEA not to miss a/k/a (FEANTM) a collective of individuals who exchange information
Welcome to reading information that we find interesting. This is a hobby, no compensation.

Legal - the shortened version (town attorney will be upset BUT it was too long to read)

Town: We believe in our effort to advance knowledge and to share information.

We believe this constitutes a "fair use" of the material under Title 17 USC. Section 107."

All products belong to their respective company or individual. We provide a URL disclosing the source wherein the information was found.

Copyright is retained by the product's respective company or individual, and links are provided to that company or individual.

...no association/ownership either way, nor that the company or individual

DISCLAIMER

"FEANTM is not responsible for any errors or omissions or for the results obtained from the use of the enclosed material.

Contains links to other Web Sites ("Linked Sites"). The Linked Sites are not under the control of FEANTM not responsible for the contents of any Linked Site updates etc.

..."as is" with no guarantee of completeness, accuracy, timeliness, or the results obtained from using this information from the URL's provided.

Opt-Out

If any company wishes to opt-out, send a request - Marsha at feaanswer@aol.com.

...from that point onward, you are removed - yes you can always come back.

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

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



Parking & Coffee is free.

R & D - Camping - Town Map

Horse Trail

Yield right of way to horses



- **Logos displayed represent companies/academia/research with solutions for today's world.**
- If you wish to have yours removed, kindly inform us at feanswer@aol.com.
- Proceeds from the auction of your building will be allocated to the coffee budget.
- The map is subject to change - building sites will be rotated accordingly.



Table of contents

The copyright is reserved by the respective individual or company. The links will provide the URL for information & higher-resolution graphics/videos.

- 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

Page 03 Town Map – Welcome and move to our new technology business park – free coffee!

September Town Hall Meeting Rooms

07	Abhinav	CAE Engineer's Toolkit
08	Andrea	Sales & Marketing Cafe: Digitization and automation
09	Brett	Updates: LS-DYNA & the 14th European LS-DYNA conference
10	Ed	Is Putting Your Feet on the Dashboard Really a Big Deal?
11	Jenson	Dimensional Engineering - 3DCS
12	Madhukar	CADFEM Highlights & History
13	Markus	By Dr.-Ing. Jörg Neumeyer, Electricity instead of gas for higher energy efficiency?
14	Marnie	Software News: BETA CAE Systems, the release of the v24.0.0
15	Marta	IIHS Unveils New Validation Test for Spec2 Barrier.
16	Metin	Workflow for Battery Module Thermal Simulation with Ansys,
17	Shweta	High Performance Computing, Submit, Monitor and Visualize Jobs

Town Hall News Rooms

Animal Health		
18	Sabyl	Univ. of Sumatera Utara - Static simulation to horse shoes alternative materials based basic polymeric foam reinforced fiberglass with ANSYS software
News in a Nutshell		
19	Squirrel	Two new managing directors at CADFEM Germany GmbH Dr.-Ing. Matthias Hörmann & Josef A. Overberg.
Bulletin Board - Rheannon & Kensington		
20	R & K	Kaizenat - Vertebrate Systems - CAD-Experts - Vassmaan Engineering - DLR
Fire Department – News from Dal the Dalmatian		
21	Dal	AI Can Accurately Predict Potentially Fatal Cardiac Events in Firefighters - Training a machine-learning model with real-life data from firefighters was key
Police Department – News from Poli the Police Dog – Accidents & Research		
22	Poli	Finite element analysis of car frame frontal crash using lightweight materials



Table of contents

The copyright is reserved by the respective individual or company.

Research Hospital

23	Wake Forest	Development of Subject-Specific Proximal Femur Finite Element Models Of Older Adults with Obesity to Evaluate the Effects of Weight Loss on Bone Strength
24	SIMQ	What is a Digital Twin?
25	MeDiTATe	Prediction of guidewire-induced aortic deformations during EVAR: a finite element and in vitro study

Library

26	U. of Stuttgart	Development and verification of a physiologically motivated internal controller for the open-source extended Hill-type muscle model in LS-DYNA
----	------------------------	------------------------------------------------------------------------------------------------------------------------------------------------

RheKen, the town AI reporter

27	RheKen	Investigate: "Who can fly a plane?"
----	---------------	-------------------------------------

Automotive and/or Racing Information

28	Autoliv	Airbags Safety Solutions – A solution that works in a fraction of a second
----	----------------	----------------------------------------------------------------------------

Airport – Aerospace – Military

29	News	TURKISH AEROSPACE - NORTHROP GRUMMAN - USAF
----	-------------	---------------------------------------------

M & M Educational News (Please send in your news URL's for us to look at)

30	Boise State	Boise's backyard astronauts
----	--------------------	-----------------------------

Cattle Rancher – Whatever he wants

32	Xinjiang Univ	Numerical Simulations of the Driving Process of a Wheeled Machine Tire on a Snow-Covered Road
----	----------------------	-----------------------------------------------------------------------------------------------

Secretary – Virtual Tours

33	Museum	Helicopter Museum
----	---------------	-------------------

Supervisor Blog, Gossip & Goodbye Page

34	Supervisor	How we got to the vote to demolish parts of the town
----	-------------------	------------------------------------------------------

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 & chocolate & more chocolate

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.

Welcome Guest Andrea covering Andrea's Sales & Marketing Cafe

Welcome Editor Brett, covering ANSYS/LS-DYNA, conferences, applications, news

Welcome Editor Sabyl with a new area of interest. The animal health field.

If you have a paper/simulation contact feaanswer@aol.com subject Sabyl.

The Univ. of Sumatera Utara a/k/a OSU - Static simulation to horse shoes alternative materials based basic polymeric foam reinforced fiberglass with ANSYS software

1. The residents & guests voted to demolish and rebuild a new town.

Our new editors have diversified and new interests. Explanation is on the last page.

We demolished - We will slowly rebuild.

2. The town older adults are reading research.

Research Hospital: "Development of Subject-Specific Proximal Femur Finite Element Models of Older Adults with Obesity to Evaluate the Effects of Weight Loss on Bone Strength."

3. New Town Law: Feet remain on the floor of all moving vehicles!

Article by Ed - Is Putting Your Feet on the Dashboard Really a Big Deal?

4. Marnie and Marsha (yes, us) are hosting a new area - educational news.

5. New additions: News in a Nutshell by Squirrel, Police by Poli on crash, Fire Dept. by Dal



M&M Educational:

Boise's backyard astronauts - if you were going to create technology to be used by astronauts where would you go to test it? Boise, Idaho!



Article:

D3VIEW eliminates the tumult of managing and sustaining your HPC system by efficiently standardizing and tracking computation.



Announcement:

IIHS Unveils New Validation Test for Spec2 Barrier, and the Oasys LS-DYNA team had positive results.



Article:

By Dr.-Ing. Jörg Neumeyer, Electricity instead of gas for higher energy efficiency?

**My Physics Café: CAE Analyst and a passionate blogger**

Do you love challenges? Often when we start working on a project, we require a combination of certain tools handy along with an FEA software. To solve any complex problem effectively, we need to take care of even the smallest details, avoid making silly mistakes and complete the task at hand within a set timeline.



CAE Engineer's Toolkit - For a CAE engineer, having the right tools at your disposal is necessary for a smooth and seamless workflow.

From excel templates to simulation checklists, through this article, I will provide all the necessary things a CAE engineer must have while working on a problem.

Excerpts from the website – please visit the website for the full explanation of each section below:

1) Diary or a Notepad: Now, you may find this funny but believe me, a diary is the most important and practical tool you must have at all times. CAE Engineers are problem solvers, and no problem can be solved with a software alone.

2) Material Data sheets: I assume you are well aware about how important it is to model a material accurately in FEA. If not, no need to worry. First let's explore where you can find the material input details like technical data sheets or Specs.

3) Excel templates for common FEA calculations: When it comes to complex calculations like shear force of beams, moment of inertia of sections, strains in I-shaped columns, it is not possible to memorize all the formulas every time and recall them during tough times.

4) Unit conversion tools: NASA lost a Mars Orbiter (around \$125 million) due to an error in unit conversion! No matter how good you are with hand calculations, you can often feel confused whether you have converted all the quantities into required units correctly. If the project timeline is strict, you may do unit conversions in a hurry and end up screwing up the whole analysis.

5) CAE Engineer's Checklist: Whether it is Pre-processing or model setup, Solving or Post-processing, checklists are mandatory to use during all 3 stages.

6) Revamp your fundamentals: CAE is a vast field and as I mentioned earlier, it is impossible to recall all the concepts every time you work on different types of challenges. You might need to revise the respective concepts before starting the work.

Each numbered item above is fully explained on the website with examples and additional resources.



Andrea’s Sales & Marketing Café

Who doesn’t digitize – loses in time and revenue.

The right tools save time & money; the wrong ones cost you both!



Gittens Consulting - Digitization and automation are well-known drivers in product development of any industry. Simulation software, process automation, digital twins and many more digital solutions have become gamechanger par excellence in engineering.

Where else can we see the rise of digitization and automation similarly impactful? It is becoming more pronounced, particularly within the realms of sales and marketing. In today's business landscape, these aspects have transitioned from being optional to essential for any company aiming to thrive and maintain long-term viability.

Especially smaller enterprises can leverage substantial advantages. Through the strategic implementation of appropriate tools, these companies can attain remarkable levels of support and efficiency, effectively alleviating operational burdens.



Amidst a multitude of options available in the market, the process of selecting an appropriate tool can swiftly turn overwhelming, potentially resulting in avoidable expenses that consume both your time and finances. However, by adopting a well-defined strategy and opting for the suitable tools, you open the door to comprehensive advantages: your intended audience can effortlessly discover your offerings, gravitating towards your business naturally. In tandem, you conserve valuable time and employee resources, which can be redirected to other critical areas.



Gittens Consulting assists your enterprise in its Fit-for-Market journey with a holistic concept that helps selling and marketing your services and products.

The Fit-for-Market concept comprises of individual services tailored to your company, from building a unique strategy with aligned sales and marketing plans, feasible activities and applicable tools for automation and digitization.

All components of the Fit-For-Market concept build on each other, but can also be adapted and combined individually as needed.

Andrea Gittens, ([Andrea Gittens on LinkedIn](#)) managing director of Gittens Consulting, 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.



Updates: LS-DYNA New Area & the 14th European LS-DYNA conference

The ANSYS website has an area dedicated to the LS-DYNA community.

The area for LS-DYNA is home to a number of resources, information and links.

A visit to the website: [ANSYS/LS-DYNA Dedicated Area on the ANSYS Website](#)

This new area on the ANSYS website has manuals, software downloads and is dedicated to the LS-DYNA community. Additionally you can find tutorials, How To guides, frequently asked LS-DYNA questions, illustrative examples, conference papers, and has a material model selector.



Additionally, don't miss out on the 14th European Conference

[The 14th European LS-DYNA Conference is the 18th and 19th of October](#)

Among the sponsors at the conference are:

OASYS – LS-DYNA Environment – Platinum Sponsor,

“We are thrilled to announce our sponsorship of the highly anticipated 14th European LS-DYNA Conference, hosted by DYNAmore, an Ansys Company. Meet the team at our dedicated booth, where you can discuss and share your thoughts with our team and CAE experts. This conference will feature presentations from our experts on their latest research topics and workshops that guide you to unlock the full potential of the Oasys Suite and LS-DYNA.”

Among the silver sponsors are: **JSOL Corp.** **Applus+ DatapointLabs** **BETA CAE Systems**



[YouTube - Innovations, Trends and Technology](#)

Don't miss viewing the DYNAmore, an ANSYS Company, YouTube video for a walk through of what you can look forward to at the LS-DYNA conference being held in Baden-Baden. Get ready to meet experts in the industry and enjoying speaking with your colleagues while learning new applications and new technology.



Director Health, Safety, Environmental Compliance @ Long Foundation Drilling Co.

Is Putting Your Feet on the Dashboard Really a Big Deal?

Yes, this is a big deal – and it is based on fact, not myth.



Putting your feet up on the dashboard is a common habit for many people, and in a minor accident, it may not be a big deal. But if you suffer a major impact in this position, it could lead to serious injuries.

Why could it lead to serious injuries? Because your dashboard contains an explosive airbag that will inflate in a fraction of a second upon impact. If your foot or any other part of your body is resting against the dashboard, the airbag deployment has the potential to cause catastrophic injuries.

Numerous crash tests have determined that putting your feet on the dashboard can lead to horrific injuries, including fractures, dislocations, and completely shattered bones.

In 2017, the Road and Maritime Services Crashlab in Sydney, Australia, tested this exact scenario. When the vehicle collided with walls at 70 kilometers per hour, the crash test dummy suffered severe injuries when its feet were placed on the dashboard before impact. Interestingly, the legs and feet did not suffer the most severe injuries. The engineers noted that this sitting position caused the dummy to slide down lower in the chair, placing the seatbelt in a dangerous position and causing serious internal organ damage during crashes. Data scientists noted that many potential injuries were possible in this scenario, including:

- Ruptured bowels
- Torn aortas
- Severed spinal columns

He noted that these injuries were more than capable of killing or paralyzing victims. The impact from the airbag pushes the feet away and upward, pulling the upper body lower into the chair and exposing the internal organs to significant damage.

Studies show that women are much more likely to suffer these types of injuries, as they are more likely to sit in the passenger seat rather than behind the driving wheel. Passengers are more likely to put their feet up on the dashboard – especially during long road trips.



The sergeant and Go Safe Casualty Reduction Lead for Heddlu Dyfed Powys Police in Wales shared the image to his Twitter account in a bid to discourage passengers sitting this way.

Sgt Ian Price said: "Here is an X-ray of horrific injuries sustained to the front seat passenger who had their feet on the dashboard at the time of a collision."

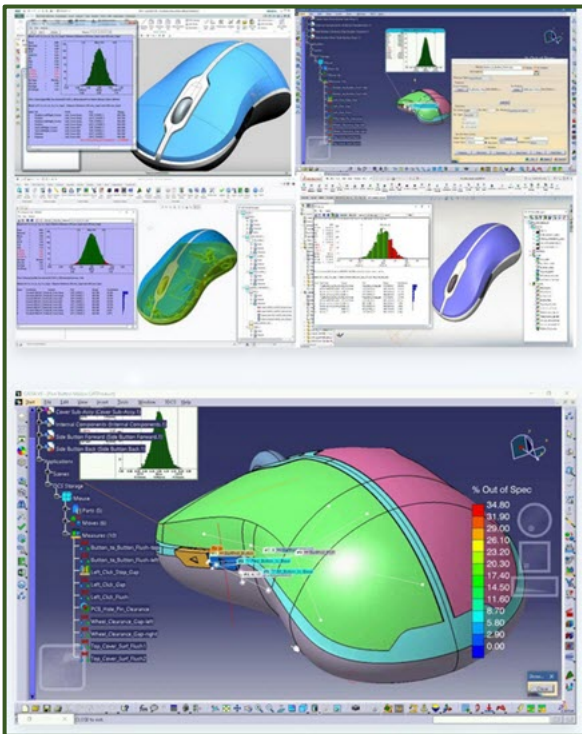
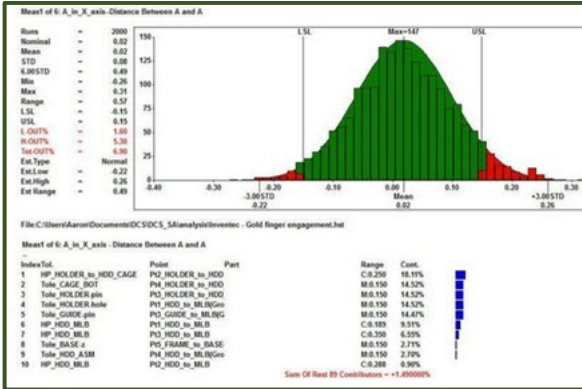
The Xray shows: The right femur is completely dislocated from the acetabulum. It protrudes through the thigh muscle. The left femur is completely broken in half.

DO NOT RIDE IN A VEHICLE UNLESS YOUR FEET ARE ON THE FLOOR!



DFE-tech: 3DCS - Tolerance analysis software that is fully integrated into Siemens NX / CATIA V5/ PTC Creo /SOLIDWORKS and CAD Neutral MultiCAD

It enables designers and engineers to define, test, and modify dimensional product and process requirements in a NX / CATIA V5/ PTC Creo /SOLIDWORKS digital environment before processing.



Dimensional Engineering - 3DCS - Visit our website for complete information - the following is a small excerpt

3DCS Variation Analyst enables manufacturers to quickly evaluate GD&T, assembly tools, and assembly sequences before launching production to fully estimate design, manufacturing, and assembly robustness. Making full use of 3DCS tolerance analysis can reduce the development cost of new products that are quickly brought to market and improve the performance of existing manufactured products. To put it simply: 3DCS assists designers in clearly predicting the Cpk of important product measurement targets during the design phase, analyzing and optimizing product portfolio tolerances.

Analyst: 3DCS Variation Analyst (Siemens NX / CATIA V5/ PTC Creo /SOLIDWORKS based) it is an integrated solution, users can not only activate 3DCS workbenches from within the modelling solution, they can use many of its inbuilt functionality to support their modelling.

3DCS Variation Analyst Multi-CAD is a standalone CAD neutral software system. It is used for modelling variation that is caused by part tolerances as well as manufacturing and assembly processes. Using Transmagic conversion software, 3DCS Multi-CAD works with native CAD files (.prt, CAD

VPG Suite is a virtual proving ground software solution designed to assist engineers in understanding genuine system performance across a range of conditions and streamlining early-stage system-level validation.

eta VPG Suite DFE TECH

PERFORM CRASH TESTING AND SAFETY-RELATED SIMULATIONS TO MEET REGULATIONS

- Crash Test Simulation
- Pedestrian Protection
- Airbag Deployment
- Leverages LS-DYNA

ETA Channel Partner (ASEAN)

sales.sg@dfc-tech.com
sales.th@dfc-tech.com
sales.ph@dfc-tech.com
sales.id@dfc-tech.com
sales.vn@dfc-tech.com



CADFEM Highlights:

- CADFEM India History
- My YouTube video that sheds light on the awe-inspiring advancements in The Indian Space Policy.
- Submission of Papers Open Until November 30th, 2023



[CADFEM India History](#) - From humble beginnings to becoming the fastest-growing tech company in India...Join us as we delve into the fascinating chapters...including our investments in new spaces, and new technologies, that lay the foundation for our groundbreaking digital labs in the future.

Here, every experiment unfolds virtually through simulation solutions, revolutionizing how we innovate.



[YouTube](#) – Unlocking boundless opportunities with Dr.-Ing. Madhukar Chatiri, CEO of CADFEM India on DD News at SMOPS 2023 Bengaluru, who sheds light on the game-changing benefits of this policy for Indian private companies.

According to Dr.-Ing. Madhukar, this long-awaited policy has opened doors to unprecedented opportunities. From building satellites and rockets to data collection and dissemination, the private sector can now actively contribute to the entire space value chain.

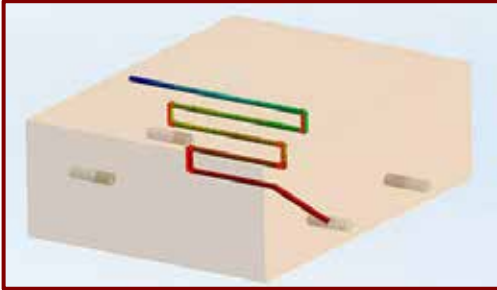
Submission of Papers Open Until November 30th, 2023. - Experience the CADFEM Conference, a Two-Day Event on April 10-11, 2024, held at the prestigious Darmstadtium in Darmstadt, Germany. Be part of this exceptional gathering.



[Call For Papers](#) - On the two days of the conference, you can expect six main topics with keynotes from international speakers as well as a CADFEM Area with plenty of space for discussions and talks. You can then deepen the professional exchange at the evening event on the first day of the conference.



CADFEM: Article by: Dr.-Ing. Jörg Neumeyer, “A very efficient heating option in manufacturing processes is offered by electrical or electromagnetic power supply. But can electricity completely replace fossil fuels? It is widely held that you should never change a running system, but how can you improve a system if you aren’t allowed to change it?”



Traditional glass processing with flame | © Adobe Stock

Excerpt [Electricity instead of gas for higher energy efficiency](#)

Article by: Dr.-Ing. Jörg Neumeyer

Conventional processes certainly have their historically grown legitimacy, but it can be worthwhile to question the status quo in order to further improve functioning processes and/or save costs.

A running process with glass: Maybe you have it next to you on the table right now: a glass bottle with a drink. This glass, which keeps your drink from spilling all over the table, was once produced in a glassworks. For this purpose, suitable raw materials (e.g., quartz sand) or even glass fragments from used glass containers are brought to very high temperatures above the melting point and finally melted down into a homogeneous mass. Small portions of this molten mass are placed in molds, where they are shaped into their final form and cooled back down to room temperature.

To achieve these high temperatures within the glass melt, fossil fuels are burned, and the thermal energy released is transferred to the glass via convection and radiation.

This process has been working for centuries with coal/coke and nowadays in large industrial plants mainly with gas. Today, however, it’s no secret that these fossil forms of energy are becoming increasingly scarce and correspondingly more expensive – not to mention the negative environmental impact. Optimization potentials must therefore be identified in order to make the process more efficient.

Continued on the website

- Can electricity replace gas?
- Is it possible to switch from gas to electricity?
- Electrical or thermal? Not, both!

Author

CAE ENGINEER



Dr.-Ing. Jörg Neumeyer

**Updates: From the BETA CAE Systems Website: Release Announcement**

About this release: BETA CAE Systems announced the release of a major version v24.0.0 of its product line, featuring ANSA, EPILYSIS, META, KOMVOS, and FATIQ.



BETA CAE Systems announces the release of the v24.0.0 of its software suite - This new release empowers engineers with enhanced simulation capabilities to address the growing complexity of design requirements, in demanding industrial sectors. With a strong focus on process acceleration, the release delivers high-performance tools, innovative features, and optimized methods tailored for diverse industries.

Experience the unparalleled power of Engineering Simulation like never before! Do not miss:

- The evolution of Extended Reality in ANSA and META.
- The groundbreaking algorithms for Mapblock Decomposition and Subdivision surface modeling, as well as our novel solutions for Hexablock - Tubular Modeling.
- The new, faster and more robust CFD meshing algorithm for the anisotropic mesh treatments and core surface mesh areas.
- The significant AMLS and SOL200 enhancements, coupled with optimized memory management in EPILYSIS.
- The enriched capabilities for Electromagnetics simulations with ASERIS in ANSA and META.
- The implementation of Human Body Models tool in META for the calculation of Ribs Fracture Risk for GHBM, SAFER, and THUMS models.
- The most powerful, yet user-friendly desktop client for Simulation Process and Data Management, stemming from the adjoined forces of KOMVOS and SPDRM.
- The enhanced calculation methods and analysis set-up in FATIQ.

Excerpt - New version Highlights - Solutions for every stage of product development with ANSA

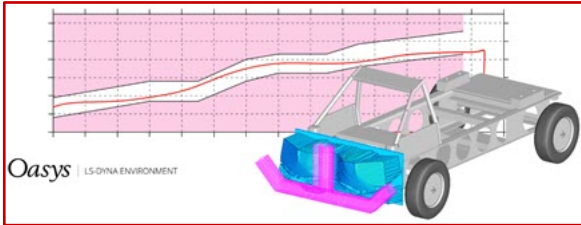
New Meshing algorithms are introduced in the new release, leading to top-notch results, coupled with efficiency and minimized turnaround time. In specific, Mapblock Decomposition offers automatic decomposition into mappable sub-volumes, whereas identification and editing of Revolute FE Solids is now feasible via a dedicated functionality. Furthermore, a significant speed-up of middle mesh by distributing subparts workload has taken place in this release, all through a complete process managed by ANSA DM.

In a similar manner, placing the focus on CFD, a new, faster and more robust CFD meshing algorithm for the anisotropic mesh treatments and the core surface mesh areas has been implemented in Batch Mesh, coupled with an option to compare multiple batch mesh sessions to pinpoint different settings or synchronize selected mesh parameters. Furthermore, Size Field functionality specifies different maximum length at each box corner point and exports iso-surfaces out of the built Size Field and a new, semi-automatic tool allows for the creation of boxes for tubular models in the field of Hexablock - Tubular Modeling...

Please visit the site for complete information.



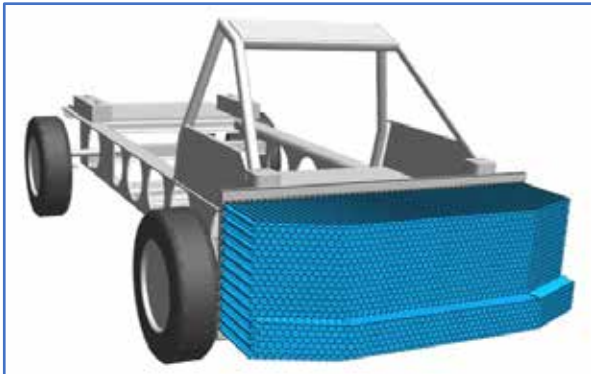
Oasys: Oasys LS-DYNA's IIHS Spec2 model passed the new T-shaped impactor validation test successfully! Our Shell element model delivered accurate results for the new regulatory load case, setting new standards for automotive safety simulations. The Insurance Institute for Highway Safety (IIHS) has recently introduced a new test to validate their Spec2 barrier.



[IIHS Unveils New Validation Test for Spec2 Barrier](#)

Oasys LS-DYNA team members conducted a thorough analysis of our current IIHS Shell Spec2 model against this new test condition, with positive results.

The model was developed as a Shell element model, providing a more accurate representation of the physical barrier. Our current model (version 1.2.1) performed effectively for the new regulatory load case, generating results that consistently align with the defined corridors. The Oasys LS-DYNA IIHS Spec2 model has successfully passed the stringent new T-shaped impactor validation test, showcasing the robustness and reliability of the model.



[Arup Cellbond Barrier Models - A range of robustly validated finite element models for LS-DYNA.](#)

***NEW* IIHS (Specification 2.0) Side Impact Barrier** - This new specification barrier model has been developed as a Shell element model which provides a more accurate representation of the physical model. All information on this page relates to this new specification Shell element model. The previous specification model (Solid element type) is still available. Please get in touch for more information.

Upgraded Test Protocol - The specifications used for the development of the IIHS Side Impact Moving Deformable (MDB) Barrier 2.0 Specification described here have been taken from 'Side Impact Crashworthiness Evaluation Moving Deformable Barrier 2.0 Specification',...



Rory Bradshaw, Arup

[Top Tip Videos](#) - Rory Bradshaw is the creator behind the monthly Top Tips... With a strong background in Civil, Structural, Environmental, and Mechanical Engineering, Rory is a graduate of Cambridge University. His passion for innovative engineering solutions led him to become a user of the Oasys LS-DYNA software, which he utilises across consultancy projects at Arup...he has made it his mission to simplify complex software functionalities for users through engaging video content.

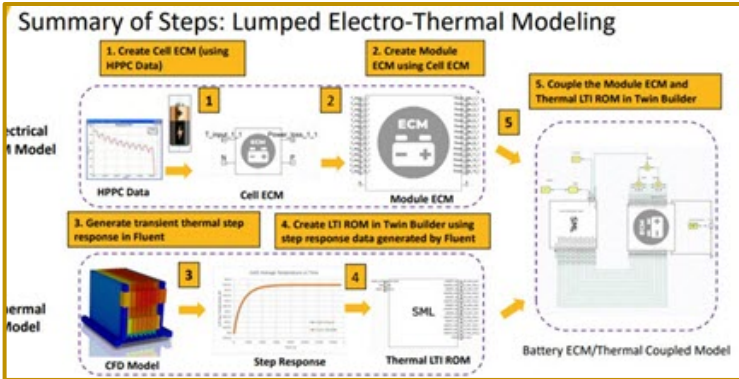


By Pedro Negrette, Arup

12:30 BST on 09/27/23 webinar from the Oasys Showcase Series: **[Seismic modelling with the use of Oasys LS-DYNA Environment](#)** - suitable for all of those interested in how seismic projects can be developed within the Oasys LS-DYNA Environment... Key highlights: LS-DYNA capabilities for seismic applications, for example progressive collapse, seismic tools in Oasys THIS, etc. (Pedro is a Civil Engineer with a background in Structural Engineering based in Arup Madrid.)



OZEN Engineering: Learn how to build a thermal model for an automotive battery module. The tools to be used are Ansys Fluent and TwinBuilder. A reduced order model (ROM) will be utilized to tie detailed 3D thermal information to the system model.



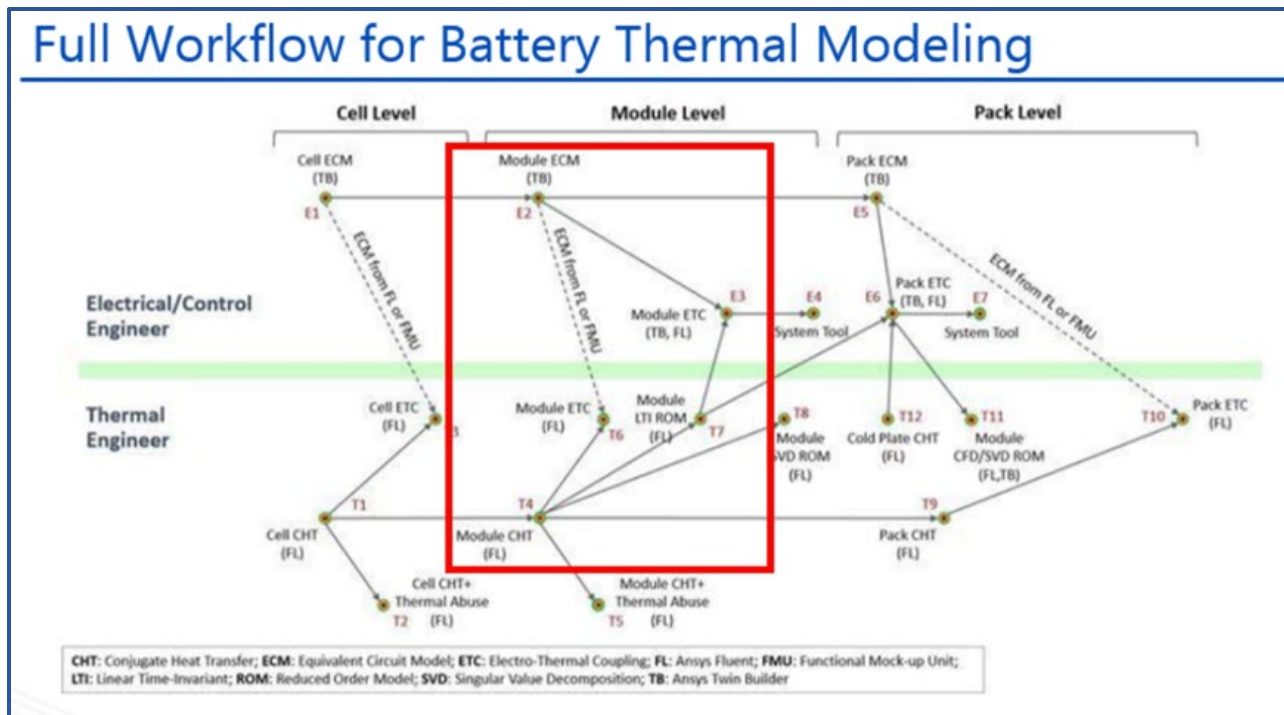
The modeling strategy is shown above.

Workflow for Battery Module Thermal Simulation with Ansys

by Mert Berkman –

In this blog we are going to learn how to build a thermal model for an automotive battery module. The tools to be used are Ansys Fluent and TwinBuilder. A reduced order model (ROM) will be utilized to tie detailed 3D thermal information to the system model.

Ansys has been spending a lot of effort on easy, accurate and efficient modeling of batteries. The chart below shows the workflow for thermal analyses.



In this particular model, we have covered the Modules inside the red box. The 30-minute webinar video below provides step-by-step instructions to build and execute a thermal model for a 4p1s battery module. Ansys CFD's powerful thermal modeling capabilities make it a trusted tool for designing automotive batteries.

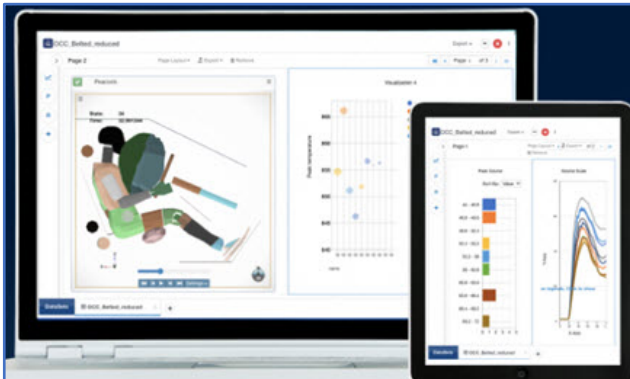
The website has the complete information



d3VIEW: d3VIEW has over 12 different applications integrated on the platform for premium data investigating and managing. This month I'm showcasing HPC

d3VIEW is your one, complete platform for all your data needs.

D3View is complete with individual applications that work symbiotically to make the process smooth

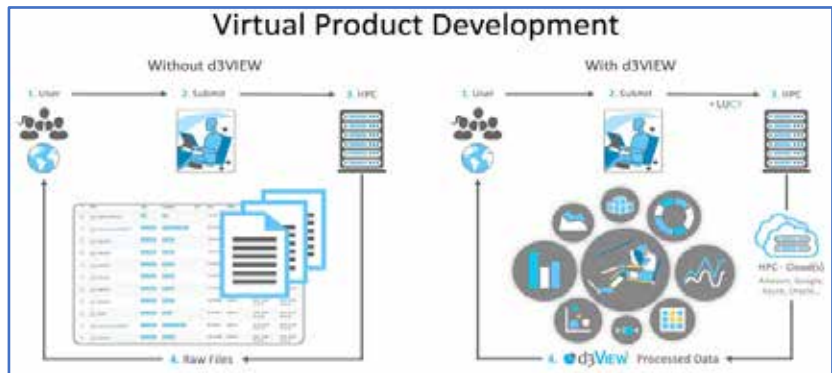


High Performance Computing Submit, Monitor and Visualize Jobs

HPC Job Submission: With high performance comes more aptitude to keep the system running smoothly.

d3VIEW eliminates the tumult of managing and sustaining your HPC system by efficiently standardizing and tracking computation.

Visit our website for the Introduction Video d3View High Performance Computing. Additionally videos and full graphics can be found on the website



Continued on the website

- **HPC Integration:** HPC resource utilization y with web-based configuration and customization.
- **HPC Configuration:** Submit simulations...
- **Simulation Submission:** Our job submission setup makes configuring jobs simple and smooth.
- **Customize your submission** based on HPC servers, meta data, compute resource...
- **Mid-Run Simulation Data Extraction:** View intermediate or preview data ...
- **Resource Monitoring:** Click on the HPC server status visualization ...
- **Simulation Interactions:** Abort or Stop your job with a simple click. ...
- **Job Submission Tracking:** Use the HPC jobs app to keep track of all you job submissions...
- **HPC Management with Turings Application:** Explore an extensive summary and visualization of your servers, how they are being used, which users are using them and much more.
- **Maximize Your HPC Productivity:** With the importance of data-driven decisions, expediting these processes derives better business solutions.



New in the top management:
Dr.-Ing. Matthias Hörmann & Josef A. Overberg.

Two new managing directors at CADFEM Germany GmbH

Dr.-Ing. Matthias Hörmann
Josef A. Overberg,

CADFEM Germany GmbH has expanded its management board with two new members as of July 1, 2023.

The appointment of the two long-standing employees not only stands for continuity, but also for the further development of the well-known simulation and Ansys specialist from Grafing into a provider of pioneering digital engineering.

With the appointment of Dr.-Ing Matthias Hörmann, born 1971, and Josef A. Overberg, born 1980, as new managing directors alongside Matthias Alberts, Dr.-Ing. Jürgen Vogt and Erke Wang, CADFEM Germany GmbH is setting the course for the future.

Both Matthias Hörmann and Josef A. Overberg can look back on a long tenure at CADFEM where they have become well acquainted with the workforce, customers and markets. They also bring a great deal of knowledge and experience from numerous customer projects to the table when it comes to linking simulation and digitalization in the product lifecycle. Digital engineering is a topic that could not be more current and in which CADFEM has enormous expertise.

Simulation and Digital Engineering

Digital Engineering is more than simulation, because the holistic approach in every respect makes technical design and analysis processes more agile, accurate, reliable, and interactive. Through data management solutions, automation, workflows, and customization, CADFEM makes simulation technology an integral part of a tailored and digitized product development architecture for and together with its customers.



April 10-11, 2024 - [Call For Papers](#) – To be held at the prestigious Darmstadtium in Darmstadt, Germany.

Additional Conferences in 2024

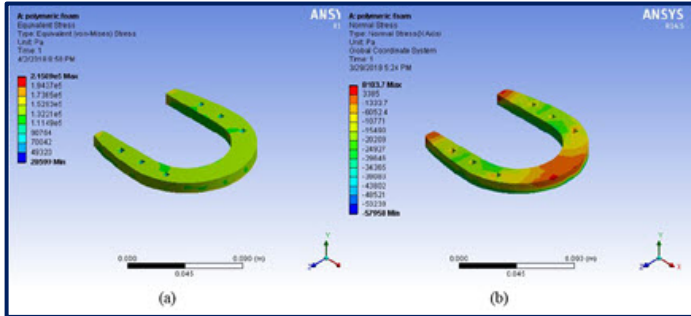
- 06/06/2024 France
- 06/13/2024 Switzerland Rapperswil



Sabyl – Animal Health

Paper by The Univ. of Sumatera Utara. Also known as USU it is located in the city of Medan in North Sumatra, Indonesia.

We used Finite Element Method (FEM) calculations based on ANSYS software



Article [Static simulation to horse shoes alternative materials based basic polymeric foam reinforced fiberglass with ANSYS software](#)

The Journal of Physics: Conference Series - The article is Open access

REK Siregar

Student of Master Program in Mechanical Engineering, Universitas Sumatera Utara

B. Syam

Faculty of Engineering, Universitas Sumatera Utara

B. Wirjosentono

Faculty of Mathematics and Natural Sciences Universitas Sumatera Utara

M. Muttaqin

Master of engineering, Dept. Mech. Eng., Faculty of Engi., Universitas Sumatera Utara

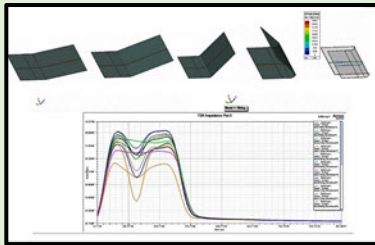
Excerpts

Abstract - The software will involve the value of the material properties. Then, will used to simulate the manufacture of horse shoe, when the horse stood silent, for fiberglass reinforced polymer materials and compared with the usual materials for horse shoe, the Mild Carbon Steel (A36) so that will be obtained which is the best between the two materials. In this simulation work, the horse shoe receives a load of 500 kg. From this simulation we will obtain Equivalent Stress, Normal Stress on each axis (X, Y, Z) from the loading direction experienced by horse shoes. Equivalent equivalence values of 0.21509 MPa polymeric foam while Mild Carbon Steel (A36) 0.1034 MPa and normal polymeric foam voltage values for X-axis 0.016426, Y - 0.007111 and Z 0.0695, while Normal Stress from Mild Carbon Steel (A36) for X axes 0.02233, Y 0.0204 and Z 0.047. The simulation results provide an understanding of the normal force resistance of polymeric foam materials for Mild Carbon Steel (A36) materials, whereas for polymeric foam materials the equivalent stress is superior to Mild Carbon Steel (A36)

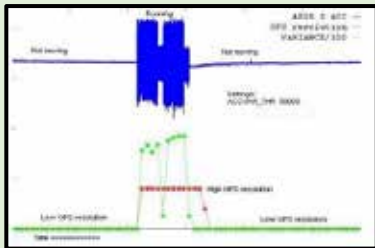
4. Conclusion - An element model based on ANSYS software is used to study the effect of stress experienced. From finite element method simulation when used material properties equation in engineering data and material model which design resembles original. In horse shoe loading for polymeric foam material has superior equivalent stress value of mild carbon steel material that is 0.21509 MPa and 0,103 MPa, for normal stress in certain direction polymeric have weakness that is on Y -0.007111MPa axis while mild carbon steel 0.0204 MPa.

**Bulletin Board - Information Notices**

We hope you visit the links and find them interesting.



Kaizenat Technologies Pvt. Ltd. YouTube [Unveiling Flexible Circuit Impedance Changes with Ansys HFSS](#) - by Mr. Deekshith Application Engineer. Flexible circuits offer versatility, but do you know that their electrical performance can shift with movement? With the help of Ansys HFSS we can explore how The TDR impedance plot is varied with these changes. As we carefully bend the flex PCB, we observe intriguing fluctuations in impedance caused by changes in geometry, material properties, and signal pathways.



Vertebrate Systems LLC - remote sensor equipment for tracking animal movements. [The NA distributor](#) of various equipment types for different environments. Vertebrate has worked with avian and mammal tracking equipment for 25+ years.



CAD-Experts - [Mechanical Engineering Company](#). Beyond the field of mechanical engineering, we are active in the field of industrial and mechanical design. We specialize in Sheetmetal design and we can offer plenty of applications



Vassmaan Engineering Consultancy,
[Design & Manufacturing Svcs.](#)

"YOU DREAM IT we THINK IT" - "WE MAKE IT as YOU NEED IT"
Tooling expertise ranges from designing and building sort run prototype tooling to making tooling to produce millions of parts



[Scientists tame dreaded aviation phenomenon](#)

UAV with built-in active flutter suppression system. A team of international researchers has succeeded in overcoming one of the greatest challenges in aviation: they have actively suppressed the dreaded phenomenon of flutter with a sophisticated control system.



Article on the NIST website was located using You.com a search engine offering personalized search.



[AI Can Accurately Predict Potentially Fatal Cardiac Events in Firefighters](#)
Training a machine-learning model with real-life data from firefighters was key.

In this 2013 photo, nurse scientists Becki Vincent & Mary Carey from the U. of Rochester collect electrocardiogram data from a firefighter at the Dewey Ave. Firehouse in Rochester, NY. Now, a decade later, researchers at NIST, Rochester & Google have used this data to train an AI model to predict cardiac events. Credit: Karen O'Hern/U. of Rochester School of Nursing

Firefighters regularly risk their lives in dangerous situations, but most deaths on duty are not directly caused by fire or smoke inhalation. Instead, approximately 40% of on-duty fatalities come from sudden cardiac death. Now, researchers at the National Institute of Standards and Technology (NIST) and their colleagues have used a form of AI known as machine learning to accurately identify abnormal cardiac rhythms in firefighters. **The researchers hope their work will eventually lead to a portable heart monitor that firefighters could wear to catch early warning signs of heart trouble and prompt them to seek medical attention before it's too late.** The team, which includes researchers from NIST, the University of Rochester and Google, published its results in the Fire Safety Journal. **Sudden cardiac death claimed the lives of 36 firefighters on duty in 2022, according to the National Fire Protection Association.** Sudden cardiac death occurs when an irregular heart rhythm causes the heart to stop pumping blood, most commonly due to a heart attack. Sudden cardiac events kill on-duty firefighters at twice the rate of police officers and four times the rate of other emergency responders.

“Year after year, sudden cardiac events are by far the number one killer of firefighters,” said NIST researcher Chris Brown. “Cardiac events also cause career-ending injuries and long-term disabilities.”



A group of career firefighters from Rescue Company No. 1 in Buffalo, New York, after a fire call. These firefighters wore electrodes to measure electrocardiogram data (ECG) over a 24-hour period. Credit: Mary Carey, University of Rochester School of Nursing

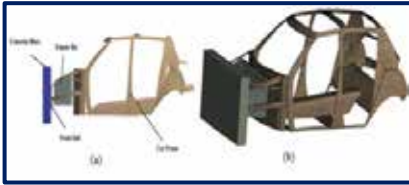
Firefighters work in remarkably strenuous environments, carrying heavy objects, climbing stairs, and enduring extreme temperatures with a limited ability to cool off.

And while they may experience significant discomfort, reports have shown that firefighters often try to push through these situations without realizing they may be at risk for sudden cardiac death. To address this issue, the NIST researchers got in touch with colleagues from the University of Rochester School of Nursing. A decade ago, Rochester researcher Mary Carey and her colleagues collected 24 hours of electrocardiogram (ECG) data from each of 112 firefighters, who had electrodes strapped to their chests. The ECG data encompassed 16-hour on-duty shifts and eight-hour off-duty shifts during which the firefighters engaged in their daily activities such as answering fire and medical calls, exercising, eating, resting and sleeping.

“The firefighter data we collected is so unique,” said Rochester co-author Dillon Dzikowicz. “Having robust data is essential to move our work forward and protect firefighters.” The researchers then used machine learning and the Rochester dataset to build what they call the Heart Health Monitoring (H2M) model. They trained H2M with 12-second segments of a large portion of the ECG data. Individual heartbeats in the ECGs were classified as normal beats or abnormal beats indicative of irregular heart rhythms such as an atrial fibrillation or ventricular tachycardia. **Continued on the website**



Town & Highway Safety: The European New Car Assessment Program conditions and offset test was used in a commercial software LS-DYNA and Insurance Institute for Highway Safety.



Finite element analysis of car frame frontal crash using lightweight materials - Journal of Eng. Res. - Volume 11, Iss. 1, 03/2023, 100007

U. Idrees, S. Ahmad, I Alam Shah, M. Talha, R. Shehzad, M. Amjad,
Dept. of Mech. Eng. Int'l Islamic Univ., Pakistan

S. Koloor

Inst. for Structural Eng., Dept. of Civil Eng. and Env. Sciences, U. der Bundeswehr München, Germany
Inst. for Nanomaterials, Adv. Tech. & Innovation, Technical University of Liberec, , Czech Republic

Abstract

The safety of human lives is compromised posed by heavy traffic causing car accidents across the globe. Keeping into consideration such threats; the incorporation of safety features has remained one of the key priorities of auto manufacturing firms as preventive measures. But unfortunately, the graph of casualties due to collisions/accidents is on an increasing trend. The problem attracts the attention of researchers to propose an optimal material for manufacturing auto frames to bring down the ratio of threat to human lives to the best possible level. In the current study analysis of the crash of an auto frame with the frontal plane, the wall has been undertaken by assigning lighter material 'AL-7075T6' as per standards of NHTSA in the Explicit code of ANSYS. The aluminum alloy has a higher strength-to-weight ratio which eventually affects the fuel consumption of the vehicle. As per standard, the simulations were carried out with different velocities and different obstructions. The effect of the impact velocity of the vehicle on the passenger zone was analyzed. The deformation in the passenger zone gets increased with the rise of the impact velocity. However, this deformation does not exceed the critical limit to hurt the passenger.

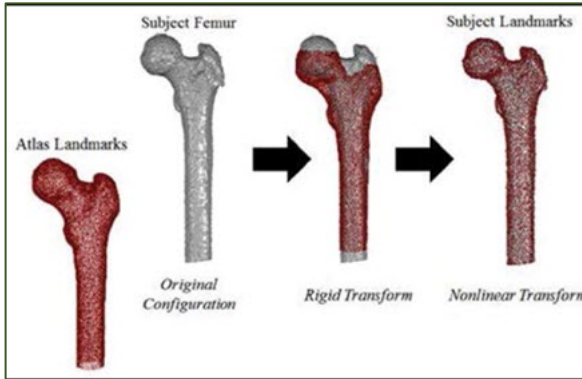
Excerpts: It was concluded that computational car simulation has the advantage to find the optimum orientations, angles, and distances in a more cost-effective manner than physical destructive testing [8]. George mason university in collaboration with CCSA (Centre for Collision Safety Analysis) researched car design using LS-Dyna with FE simulations.

Results and discussion: ...**Three simulations were performed at different velocities using ANSYS LS-DYNA as a simulation tool** and various configurations of energy dissipation and transfer are discussed.

Scope of future research...As car crash simulations are gaining popularity day by day because they are less economical and easier to work on instead of real-life destructive testing. Hence, future researchers may use this FE model for further simulations which include the frontal offset, roll-over test, roadside impact, and head-to-head crash test.

PubMed Free PMC Article. The full text of the article is freely available to the public.

Study background: Recommendation of intentional weight loss in older adults remains controversial, due in part to the loss of bone mineral density (BMD) known to accompany weight loss. While finite element (FE) models have been used to assess bone strength, these methods have not been used to study the effects of weight loss. The purpose of this study is to develop subject-specific FE models of the proximal femur and study the effect of intentional weight loss on bone strength.



Development of Subject-Specific Proximal Femur Finite Element Models Of Older Adults with Obesity to Evaluate the Effects of Weight Loss on Bone Strength

S L Schoell, A A Weaver, J D Stitzel

Dept. Biomedical Engr., Wake Forest School of Med., USA.

D P Beavers

Dept. Biostatistical Sci., Wake Forest School of Med., USA.

Leon Lenchik

Dept. Radiology, Wake Forest School of Medicine, USA.

A P Marsh, W J Rejeski, K M Beavers

Dept. Health & Exercise Science, Wake Forest Univ., USA.

Methods: Computed tomography (CT) scans of the proximal femur of 25 overweight and obese (mean BMI=29.7 ± 4.0 kg/m²), older adults (mean age=65.6 ± 4.1 years) undergoing an 18-month intentional weight loss intervention were obtained at baseline and post-intervention. Measures of volumetric BMD (vBMD) and variable cortical thickness were derived from each subject CT scan and directly mapped to baseline and post-intervention models. Subject-specific FE models were developed using morphing techniques. Bone strength was estimated through simulation of a single-limb stance and sideways fall configuration.

Results: After weight loss intervention, there were significant decreases from baseline to 18 months in vBMD (total hip: -0.024 ± 0.013 g/cm³; femoral neck: -0.012 ± 0.014 g/cm³), cortical thickness (total hip: -0.044 ± 0.032 mm; femoral neck: -0.026 ± 0.039 mm), and estimated strength (stance: -0.15 ± 0.12 kN; fall: -0.04 ± 0.06 kN). Adjusting for baseline bone measures, body mass, and gender, correlations were found between weight change and change in total hip and femoral neck cortical thickness (all p<0.05). For every 1 kilogram of body mass lost cortical thickness in the total hip and femoral neck decreased by 0.003 mm and 0.004 mm, respectively. No significant correlations were present for the vBMD or strength data.

Conclusion: The developed subject-specific FE models could be used to better understand the effects of intentional weight loss on bone health.



Excerpt SIMQ - An exciting new technology trend that could revolutionize healthcare is the “digital twin”. Digital twin simply explained is a digital image of a physical object.

In healthcare, a Digital Twin can be defined in relation to a patient as one or more computational models that represent a dynamic digital representation of a real biological target (“artifact”) or aspect of a person’s physical condition.



What is a Digital Twin? What are the advantages of using a Digital Twin?

This technology has been established in manufacturing and industry for decades and is used to model and simulate real-world assets such as a machine or even an entire factory before they are built. These Digital Twins are used to predict failures, plan maintenance strategies, or even control operations in a changing environment. The goal is to computationally model these systems to develop and test them faster and cheaper compared to real-world environments. Digital Twins can thus be used to correct potential faults before they occur.

The concept of the Digital Twin is now emerging in healthcare, where it may become a key component of emerging personalized medicine and precision medicine.

The goal of Digital Twin models is to provide actionable insights and decision support across the healthcare system. By providing high-quality precision care, Digital Twin technology will enable massive personalization of disease prevention, diagnosis, treatment, and monitoring.

What is a Digital Twin used for in medicine?

Personalized medicine requires the integration and processing of large amounts of data. Digital Twins, i.e. high-resolution models of individual patients, enable, among other things:

- proactive health management for patients
- the optimization of therapies
- enable the prediction of treatment outcomes, and much more.

The vision: in the future, for example, surgeries can always be planned and performed in advance on a computer, or a drug delivery can be tested out digitally.adapted to their anatomy.

This allows therapies to be optimized, risks during operations to be avoided and costs for unnecessary interventions to be saved.

While a comprehensive digital model of a whole person is not yet a reality, various Digital Twin models have already been developed and tested. These include simulations of specific body parts or organs (e.g., heart or lungs), models of disease states (e.g., lung cancer), or simplified “avatar” representations of a person’s physical body. Digital Twins are typically created to provide decision support for specific clinical questions. The models can be used to simulate a variety of scenarios in silico, virtually test therapies or medical devices, and predict trends and outcomes. ... **Learn about Digital Twins on the website**

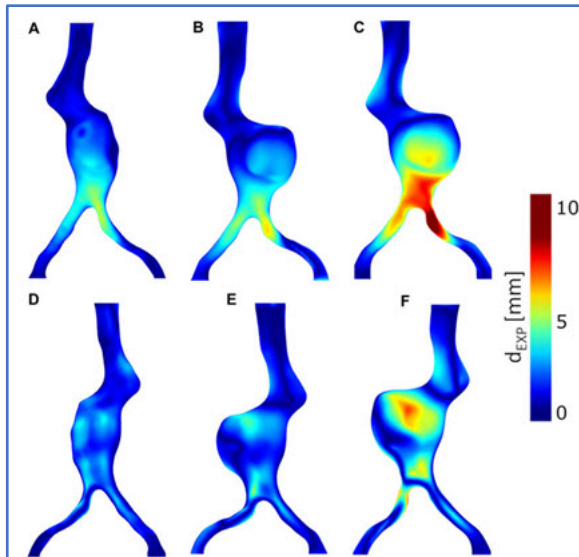
Nov. 30, 2023, 3:00 AM - 9:00 AM (your local time)

[Simq Conference 2023 - Digital Twin Simulation in Medicine](#)



MeDiTATe project: **Monica Emendi Early Stage Researcher 11**

A new paper “Prediction of guidewire-induced aortic deformations during EVAR: a finite element and in vitro study” has been published in the Frontiers in Physiology Journal.I.



[“Prediction of guidewire-induced aortic deformations during EVAR: a finite element and in vitro study”](#)

Pre-operative planning and intra-operative navigation of endovascular aneurysm repair (EVAR) are currently challenged by guidewire-induced deformations.

The abstract is as follows:

In this work we aim to predict the above-mentioned deformations by means of a validated finite element approach. Hence, three physical patient-specific models of increasing anatomical complexity, i.e., including the intraluminal thrombus (ILT) and calcifications, were manufactured. The numerical and experimental results were compared. A good agreement was found between the experimental and the computational studies, characterized by an increasing trend in deformations from a simplified model to a complete model (with ILT and calcifications). The presented computational approach, used in combination with tracking technology, can potentially display a continuously updated 3D anatomical map to the operator during EVAR, limiting the use of X-ray and contrast agent.

Excerpt from the paper - 2.4 Finite element simulation

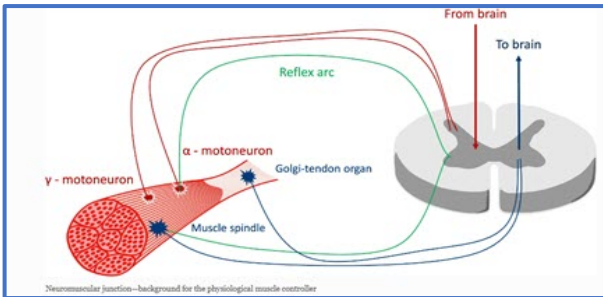
We herein performed an explicit FEA of the insertion procedure of the stiff guidewire using the commercial FE software LS-DYNA (Ansys, Canonsburg, Pennsylvania, United States).



Syn Schmitt, Professor at University of Stuttgart

"Thanks to Oleksandr and team, finally published!"

"I recommend to use this muscle model to simulate active human behavior in LS-DYNA."



Open Access Springer - [Development and verification of a physiologically motivated internal controller for the open-source extended Hill-type muscle model in LS-DYNA](#)

University of Stuttgart, Stuttgart, Germany

Oleksandr V. Martynenko, Fabian Kempter,
Christian Kleinbach, Lennart V. Nölle, Patrick Lerge,
Syn Schmitt & Jörg Fehr

Abstract: Nowadays, active human body models are becoming essential tools for the development of integrated occupant safety systems. However, their broad application in industry and research is limited due to the complexity of incorporated muscle controllers, the long simulation runtime, and the non-regular use of physiological motor control approaches. **The purpose of this study is to address the challenges in all indicated directions by implementing a muscle controller with several physiologically inspired control strategies into an open-source extended Hill-type muscle model formulated as LS-DYNA user-defined umat41 subroutine written in the Fortran programming language. This results in increased usability, runtime performance and physiological accuracy compared to the standard muscle material existing in LS-DYNA.** The proposed controller code is verified with extensive experimental data that include findings for arm muscles, the cervical spine region, and the whole body. Selected verification experiments cover three different muscle activation situations: (1) passive state, (2) open-loop and closed-loop muscle activation, and (3) reflexive behaviour. Two whole body finite element models, the 50th percentile female VIVA OpenHBM and the 50th percentile male THUMS v5, are used for simulations, complemented by the simplified arm model extracted from the 50th percentile male THUMS v3. The obtained results are evaluated additionally with the CORrelation and Analysis methodology and the mean squared error method, showing good to excellent biofidelity and sufficient agreement with the experimental data. It was shown additionally how the integrated controller allows simplified mimicking of the movements for similar musculoskeletal models using the parameters transfer method. Furthermore, the Hill-type muscle model presented in this paper shows better kinematic behaviour even in the passive case compared to the existing one in LS-DYNA due to its improved damping and elastic properties. These findings provide a solid evidence base motivating the application of the enhanced muscle material with the internal controller in future studies with Active Human Body Models under different loading conditions.

1 Introduction: The constantly growing number of vehicles being partially or highly automated requires a change in their research and development paradigm due to the implementation of advanced safety systems, which will ensure integrated safety in the future. More and more virtual modelling and testing procedures utilising different numerical methods are used in practice to cope with this need. Computational Human Body Models (HBMs) are considered an adequate representation of the vehicle occupants during these procedures (van Ratingen 2016; Östling et al 2019). **To satisfy the increasing demands for vehicle safety systems development, HBMs must replicate the behavior of living humans as closely as possible...**



RheKen

September

Town investigative reporter

I am AI and live on a small ranch on the outskirts of the town
I use chatGPT for assistance.

Investigate: "Who can fly a plane?"

The residents in the coffee shop heard that the retired pilot and the town secretary were asked to leave the town library.

They were arguing under a sign that said: "QUIET."



The Secretary was in the local library, boasting about her flying skills to anyone who would listen.

She claimed that she had flown a real plane before and that the simulation flight at the town fair would be a breeze.

Once upon a time, the small town of FEANTM was buzzing with excitement as the annual fair was just a few days away. One of the fair's highlights was the new ride, a simulated airplane that would take pilots on a thrilling adventure up in the sky. The Secretary boasted she was the best pilot. Yes, you did read that correctly that she boasted she was a pilot!

The Retired Pilot, sitting nearby, overheard her claims and couldn't help but intervene. He approached the Secretary, informing her that flying a real plane was far different from just operating a ride at an amusement park fair. The argument between the two escalated and soon became loud and heated. The librarian, who had tried to ignore the commotion, could no longer tolerate the disturbance and asked the two to leave.

As they left the library, the Secretary turned to the retired Pilot and challenged him to a bet. She bet that she could fly the simulator ride better than he could. Being the confident Pilot he was, the retired Pilot accepted the bet without hesitation. On the fair's day, the Secretary and retired Pilot boarded the simulator, eager to prove their worth. The ride began, and to everyone's surprise, the Secretary was doing a fantastic job, effortlessly flying the simulator (She has one on her computer at home – the new 3D type!) The retired Pilot, not having flown in years since he retired, was having a difficult time with the new simulator headset.

When the ride was over, the Secretary emerged from the simulator with a triumphant smile, while the retired Pilot stepped out, looking a bit embarrassed. The Secretary reminded the retired Pilot of their bet, and he grudgingly admitted that she had won. You could hear him cursing the new type of 3D headset!

His brother, The Rancher, glared at the Secretary (well, that's not new for him to do). The Secretary and the retired Pilot went their separate ways, and the retired Pilot had learned never to judge someone based on their profession but what games, videos and new dang software they had at home. The Secretary had a lot of skills and a heck of a lot of software at home.

Later that day in the town square, the Secretary and Rancher were chatting with the Pilot. The Pilot was sharing his flying experiences. The town residents were sitting around listening with interest. The Secretary glanced over at her bicycle. Suddenly she screamed at The Rancher, "You old coot, you let the air out of my bicycle tires. I challenge you right now to a shooting contest?" The residents ran out of the town square. The retired Pilot jumped up and hid behind the town fountain. **SOMEONE YELLED INCOMING!**



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

We learned why airbags are important thanks to the Autoliv website.

From the website: "Even in today's high-tech vehicles, airbags provide added safety protection and work best in combination with seatbelts. Autoliv is recognized as the industry's foremost leader in airbag manufacturing technology."



[Autoliv Safety Solutions – A solution that works in a fraction of a second](#)

Frontal Airbags saves lives and reduce injuries: Driver and passenger airbags provides an energy-absorbing cushion between the vehicle's occupants and the steering wheel, instrument panel and windshield. The driver airbag reduces fatalities in frontal crashes by approximately 25% (for belted drivers) and reduces serious head injuries by over 60%. The passenger airbag reduces fatalities in frontal crashes by approximately 20% (for belted occupants).



Knee airbags reduce leg injuries: Knee airbags, which deploy from a vehicle's lower dashboard, distribute the impact forces on an occupant's legs, thereby reducing leg and knee injuries. Additionally, they are designed to control the movement of the occupant so that the driver and passenger airbags can provide optimal protection.



Side airbags reduce chest injuries: Side airbags are usually located in the seat, and inflate between the occupant and the door. These airbags reduce the risk of chest injuries by approximately 25%. With dual-chamber side airbags, both the pelvis and the chest areas are protected which further reduces the risk of serious injuries in side-impact crashes.



Side-Curtain airbags reduce head injuries

Side-curtain Airbags deploy from the roof line above the side window to provide cushioning between the occupants' heads and the window or incoming hard objects. These airbags reduce the risk of life-threatening head injuries in side impacts by approximately 50%.



Front Center airbag enhances front-row protection

Front center airbag can prevent front-row passengers from colliding with each other during side impacts. The airbag deploys in the space between the driver and passenger seats and offers protection in far-side collisions.



TURKISH AEROSPACE, WITH GREAT SUCCESS, HAS RISEN NINE RANKS AT ONCE IN THE LIST!

In the "Defense News Top 100," based on defense sales of the previous year and considered the world's most prestigious defense industry list, which publish annually by the United States-based military publishing organization Defense News, Turkish Aerospace has ascending rankings by nine which takes place from 67th to 58th place in 2022.

...With the recently completed first flights of HÜRJET Advanced Jet Trainer and ATAK II Multirole Heavy Combat Helicopter, the ongoing ground tests of the KAAN Turkish Fighter, which will meet the sky in December, Turkish Aerospace is rapidly climbing higher ranks in the league of the world's most valuable companies of defense industry.



Northrop Grumman Corporation in partnership with the U.S. Air Force, successfully completed an integrated airborne mission transfer (IAMT) demonstration with the B-2 Spirit at Whiteman Air Force Base as part of the ongoing modernization efforts incorporating digital engineering.

Northrop Grumman's B-2 Capabilities Enhance its Digital Communications - IAMT delivers an advanced capability that enables the B-2 to complete a digital, machine-to-machine transfer of new missions received in flight directly into the aircraft.

US Airforce Picture of the Month



Spirit in Iceland - Two U.S. Air Force 393rd Expeditionary Bomb Squadron pilots approach a B-2 Spirit during Bomber Task Force 24-4 in Keflavik, Iceland, Aug. 15, 2023. BTF operations are U.S. Strategic Command's means of conducting Dynamic Force Employment in support of the National Defense Strategy.

**U.S. Air Force photo by:
Tech. Sgt. Heather Salazar**



Marsha - Marnie, Ph.D

Boise State University News (full pictures please visit the university website)

Photo by Priscilla Grover



Excerpt [Boise's backyard astronauts](#) **If you were going to create technology to be used by astronauts on the moon, where would you go to test it for that otherworldly experience? Your test site would need to be extremely dry and have volcanic materials, stark lighting conditions and a unique geology. Hmm...wait, I've got it: Boise, Idaho!**

In May 2023, members of Boise State's NASA Spacesuit User Interface Technologies for Students (S.U.I.T.S) team, NASA Micro-g Neutral Buoyancy Experiment Design Teams (Micro-g NExT) and Autonomous Robotic Systems team developed an augmented reality display, an extended reality informatics system and used mini 'moon rovers' to test their capabilities for the upcoming Artemis missions to the south pole of Earth's moon.

But get this: their technology was tested by Reid Wiseman, a NASA astronaut and commander of the Artemis II mission, NASA astronaut Dottie Metcalf-Lindenburger and Greg Whitney, a NASA Flight Director.

Far out.



Landing on the Moon (in Steve's Backyard): On May 12, 2023, the students and NASA personnel met at the home of Boise State distinguished educator and retired astronaut Steve Swanson. **Traditionally, SUITS testing is carried out in Houston, Texas at Johnson Space Center. But this year, Swanson offered a new challenge to his students: to recreate the testing locally so that more students from other teams could participate and get hands-on experience working with real astronauts. The challenge was met with a resounding 'Yes.'**

Photo by Priscilla Grover : NASA Astronaut Dottie Metcalf-Lindenburger looking for geological features and rocks of interest, complete with soil samples.

"In the Artemis missions that we're going to start launching in 2024, the objective is to get humans on the south pole of the moon. We're looking to start a long-term, sustained human presence to do research, to learn how to work off of the earth in the deep space environment," said Wiseman.

So to make his backyard as moon-like as possible, Swanson and his students first worked to rig bright lights at eye-level to simulate the sun at a low angle on the lunar South Pole.

During the fall and spring semesters, students in the SUITS project developed information displays using head mounted augmented reality devices, which superimpose digital information over a real environment to assist astronauts conducting spacewalks during NASA's Artemis missions.

For astronauts conducting extravehicular activities (EVAs) on the moon—such as performing tech maintenance or collecting lunar geology samples for study—it is critical to test this technology in both harsh lighting and pitch black conditions to ensure the information is clearly visible to the astronauts, said Benedicto Villanueva, a junior in the Games, Interactive Media and Mobile Technology program.

Marsha - Marnie, Ph.D

“Given the extra light, it makes it harder for stuff to be seen in the HoloLens, or sometimes your gesture tracking isn’t as good as it is in a normally-lit environment,” Villaneuva said.

During the two-hour simulation, the astronauts wore the displays and followed the mission directives coming from Mission Control (Swanson’s garage-based team). They also used the Autonomous Robotic Systems team’s rovers to explore 100 square meters of terrain, and collect soil and rock samples, just as the first woman and first person of color will do in the upcoming Artemis missions.

Wiseman was impressed by the students’ ability to collect the astronauts’ feedback about strengths and flaws of their system and perfect their technology in real time.

“Dr. Swanson has got a great team out here,” Wiseman said. “It’s really neat to see these young students using their creativity, using their minds and using modern technology to rapidly prototype and iterate their design.”

At Mission Control (in Steve’s Garage) Meanwhile in Swanson’s garage, NASA Flight Director Greg Whitney and the mission control student team offered directives to the astronauts outside, and incorporated challenges to test the technology’s limits and capabilities in a real operating environment.

“One of the things that I really think best describes mission control is just a team of problem solvers,” Whitney said. “Everyone has their technical area that they’re experts in, but they have to all come together and try to solve a common goal. I think one of the really important things to always remember is that everyone has something to bring to the team, and it’s really just trying to find that unique ability that will help make this whole thing successful.”

Senior GIMM major Trice Dayrit has been part of the NASA SUITS projects at Boise State for three and a half years now, but this was the first year that she took on the role of project manager. In doing so, she discovered her own unique ability that could make the whole team more successful.

“What’s been especially cool about NASA suits this year is people have really wanted to jump in. People would be texting me all the time asking ‘What do you want me to do? And I’d be like, ‘This is awesome! Everyone really wants to contribute.’ And for me, personally, I realized I want to be a project manager. I decided to start taking some project management classes at Boise State because of this,” Dayrit said. “It’s been great to watch the team build and grow during this whole process,” said Swanson. **“I’m really proud of this team, and I’m also happy they get to actually work with real NASA employees, astronauts, flight directors and experience what that’s like. I hope they take a little pride in the success of what they’ve worked on and what they’ve done.”**



Photo by Sean Evans

For complete information and graphics visit their website

Left to right, front row – Joshua Fernando, Aaron Smith, Brady Williamson, Natalie Ayala, Trice Dayrit, Marc Frances, Dottie Metcalf-Lindenburger, Reid Wiseman, Steve Swanson, Karen Doty, Ben Villaneuva.
Back row – Nuha Akhtar, Stella Bristol, Chuck Burnell, Greg Whitney, Tom Voccola, Daniel Lambert, Akiyah Tullis, Elias Willerup, Alex Smith, David Auner.



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.**

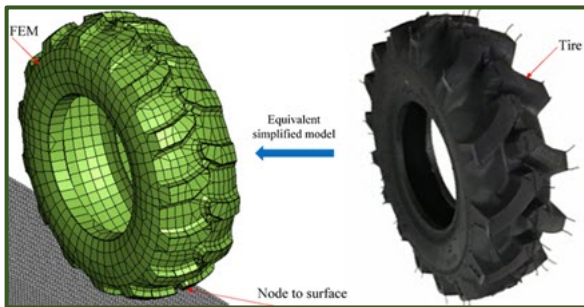
Right Picture – My dog, Scout, & my horse, Cowboy

September



Where I live, we have snow! Tires are of utmost importance. The temperature drops below zero – From where I live you can see the beautiful Northern Lights. I found this paper interesting, since we have that problem when it snows.

Quoting from paper: "Wheeled machines, such as agricultural tractors, snowplows, and wheeled mobile robots, usually work on icy or snow-covered roads. Therefore, it is very important to study the driving and slip resistance of the tires of these machines.



MDPI EXCERPT [Numerical Simulations of the Driving Process of a Wheeled Machine Tire on a Snow-Covered Road](#)

Di Wang, Hui Wang, Yan Xu, Jianpin Zhou, and Xinyu Sui
Dept. of Mech. Engineering, Xinjiang Univ., Urumqi China

Abstract: In this paper, we investigate the driving behavior of tires on snow-covered terrain by means of numerical simulations. A high-fidelity snow-covered road model is established, and smoothed particle hydrodynamics (SPH) and the finite element method (FEM) are employed to account for the behaviors of the snow layers and the pavement, respectively. We use the node-to-surface algorithm for the contact interactions between the snow and the pavement. The SPH parameters for the snow are calibrated by means of a triaxial compression experiment. A simplified tire model is established as well, using the FEM, and the effectiveness of the model is demonstrated via comparisons with the experimental data in terms of stiffness. Finally, the tire driving performance on the snow-covered road is simulated, and the influence of the tire surface configuration, external load, inflation pressure, and snowpack compression on the tire traction behaviors is systematically investigated.

1. Introduction: Machines such as agricultural tractors [1,2], snowmaking machines, snowplows [3], wheeled mobile robots [4], and even airplanes often travel along snow-covered roads. Thus, in the operating process of such wheeled machinery, operational or driving security is a critical issue. Slippery, snow-covered surfaces are one of the main causes of operational failures. Research indicates that when a wheeled machine spins on snowy ground, the snow tends to stick to the front of the mechanism. Furthermore, traveling on snow-covered ground can reduce the friction coefficient of the tires with respect to the road [5,6] and make them more likely to slide.

The tire is the only part of a wheeled machine that transfers power to the ground. The running of a wheeled machine depends on the quality of the tire tread and the materials that interact with the tire, for example, water, snow, and ice [7,8]. Series researchers have studied the running behavior of tires on snow-covered roads by means of numerical computation...

Continued on the open access MDPI website



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



The American Helicopter Museum & Education Center - Mission is to preserve rotary-wing aviation history, educate society on helicopters and their missions & inspire future generations.

We will collect, preserve, research, publish and exhibit objects, artifacts and documents relating to the origins and development of rotary-wing aircraft.



Supervisors Gossip & Goodbye Page - Come Back Soon - September



The question: “How did we decide to demolish and rebuild?”

We had people move out, and new people move in.

- **There were new interests in software, TBI/strokes, educational and other news.**
- **Then someone yelled to share/consolidate pages (not sure that will last, but we’re trying it.)**
- **We still have no page limit but decided to rebuild slowly to meet new interests.**
- **WAIT! You thought I wouldn’t gossip? WRONG!**
- **Feel free to send me any ideas, papers, URLs, or interests.**

AND below is my cactus and a bee – BZZZZZZZZZZ



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.**