FEA Not to Miss & More - Eclectic & Innovative

October 2023 ISSN 2694-4707

Monthly Town Hall Meeting
Engineering, Research, Interests

www.feantm.com

Turkish Aero

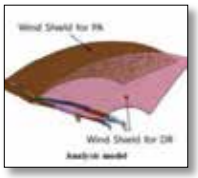
Norwegian AF

Applus+IDIADA

Asterom Canes

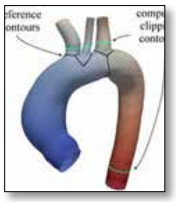
Andrea – Sales/Mktg. Cafe

Marnie - Enginsoft Expertise

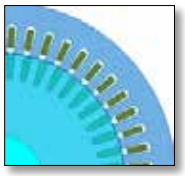


Jenson - DFE Tech

Marco - MeDiTATe

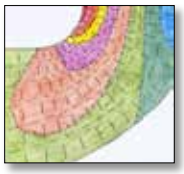


Metin - OZEN Engineering



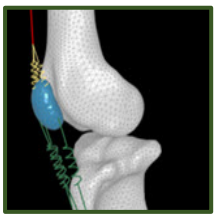
Guenter - CADFEM

Library
History - FEM



Shweta – d3VIEW

Sabyl - canine medial patellar



Marko - SCALE

FEA not to miss a/k/a (FEANTM) **a collective of individuals who exchange information**
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…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

R & D Technology
Business Park Plaza

RV CAMPING
Park in any
vacant camping site

TOWN HALL

Library

CADFEM · OFETECH · DOZEN · 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

Research
Vacancy Bldg. 4

Auto Race track
& Auto Industry

Petting Zoo

Old Rancher

Elect/Water. &
Sewage Treatment
Plant Facilities

- **Logos displayed represent companies/academia/research with solutions for today's world.**
- If you wish to have yours removed, kindly inform us at **feaanswer@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.

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- **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**

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Secretary – Virtual Tours

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.

October? How did we already get to pumpkin month!

I want to thank all of those people in virtual land for helping me with ideas how to continue the town meeting and news. Without your input this was getting a tad stale and boring to continue. WAIT – not as boring as baking or cooking, SO we will always do FEANTM!

Now, on to new topics. DO NOT MISS in our library, The history of the finite element method by our friend Dr.-Ing. Guenter Mueller. Marsha WAVING, Hi, Guenter!

And Marko Thiel won an award! Way to go Marko!

Then we can all go to Andrea's Marketing Café for coffee and it is free. No, I don't mind coffee competition - I can drink her free coffee!

My October chit-chat: Norwegian Air Force landed an F-35 on a Highway! I have trouble parking the tractor in the garage - they land an F-35 on a highway. BUT, can that Pilot back-up a tractor into a garage?

Reminder - The technical agenda is now LIVE for the North American LS-DYNA User Forum - Deadline to register is October 27, 2023 – See Brett's page on events

Article:

Our presentation at this year's NWC23 won the Best Presentation Award! SDM system demonstrated with LEGO® models

Article:

Introducing LUCY: Our LUCY is a CLI and GUI Based Data Publisher for d3VIEW and no additional license is required with d3VIEW.

Library:

History of the Finite Element Method by Dr.-Ing. Guenter Mueller. How FEA was developed at UC Berkeley

Research Hospital:

M. A. Scarpolini – Enabling supra-aortic vessels inclusion in statistical shape models of the aorta: a novel non-rigid registration method

My Physics Café: CAE Analyst and a passionate blogger

The thrill of jumping out of a plane at up to 120 mph and free falling for several seconds is not to be understated. Skydiving is one of the oldest and most exciting sports in the world, and it continues to attract thrill seekers from all over the globe.

Sky is not the limit. Drag force is! A skydiver's trajectory from 30,000 feet will resemble a parabolic curve. But if you were to drop a rock off a cliff, you will notice that it falls straight down. This is because the gravitational force from the Earth on the rock is greater than the force of air resistance.

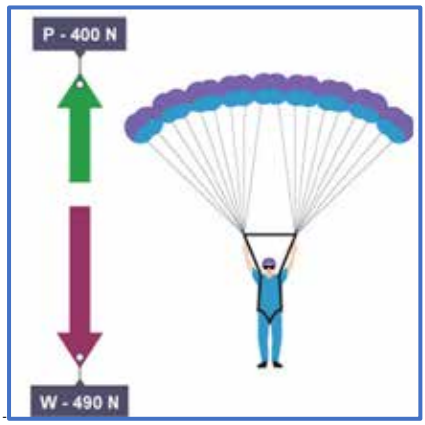
The rock will fall straight to the Earth and strike the ground at its terminal velocity. So why does a skydiver reach terminal velocity and not plummet to the ground straight away?

Falling is governed by the law of universal gravitation which states that two objects attract each other with a force that is proportional to the product of their masses and inversely proportional to the square distance between them.

This pull of gravity experienced by a skydiver is approximately 10 m/s^2. (The earth's surface gravity is 9.8 m/s^2). Since the skydiver is also falling towards the earth, and is moving at the same speed as the earth's surface, there is no friction, and thus the skydiver will fall at a steady rate.

The terminal velocity of a skydiver is approximately 130 mph (210 kph). The reason for this is that at about 75 mph (120 kph) the body experiences a force equal to its weight (acceleration due to gravity) which means that from that point on, its speed will remain constant.

The force due to wind resistance (known as drag force) depends on the skydiver's shape and the cross ectional area of the object. The drag force is proportional to the square of the skydiver's speed. Higher friction and the force of lift acting on the parachute also limit the speed.



When a diver jumps from an airplane, he/she accelerates rapidly toward the Earth as he/she drops through the sky until his speed levels out at a constant velocity. The smaller the surface area of his/her body that faces the wind, the faster he'll go. A skydiver will often perform various acrobatics by shifting around in any number of directions to move against and with the wind.

Typically such maneuvers will bring a skydiver down to speeds of around 120 miles per hour in the spread-eagle position but winds can take him up over 200 miles per hour if he orients his body with his head pointed down.

When he pulls his parachute cord and opens up, a larger drag force slows down his fall, bringing him slowly but safely to earth.

To summarize, skydivers perform a variety of acrobatics to control their movement from place to place and make sure that they are always headed in the direction they want to go.

Andrea's Sales & Marketing Café

Sales and marketing are like playing Tetris:
Understand - Plan - Implement – Execute - Win

GITTENS consulting

Gittens Consulting - Starting a Tetris game without knowing the rules or how any of the button's function to influence the performance of the game (e. g. rotating/dropping, left/right movements) leads to failure.

Game-determining influences like personal practice and experience, right entry level and good timing will make a difference. The good alignment of all factors is crucial for success or defeat in the game. **The same is true for sales and marketing activities.**

A good strategy outlines the way to reach a goal. It is guideline to align activities and eliminates sheer activism, which only cost time, money and waste resources.

Interrelationships and procedures in sales and marketing are very similar to the Tetris game.

- First, it is important to define the 'rules of the game' applicable to your company. That is to develop a strategy and define measurable goals for sales and marketing campaigns.
- Second, once the strategy is in place, actionable plans for sales and marketing activities can be chosen. Important decision-making criteria taking into account effort, cost, time and available resources. With your goal in mind align activities before entering the playing field to execute.
- Finally, make sure success is measured against previously defined success parameters (KPI) and should be transparent for you at any time.

Gittens Consulting assists your enterprise 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.

Time to schedule 2024 event & conference dates and not miss 2023.

Don't miss this month October 18 & 19th The 14th European LS-DYNA Conference

2023

The technical agenda is now LIVE!
Don't miss the North American LS-DYNA User Forum.

This year's agenda is packed with over 50 LS-DYNA technical user presentations, keynotes, and developer sessions across a wide range of exciting industry topics. Discover the latest trends in crash safety, aerospace, batteries, drop test, NVH, metal forming, materials, computing and more.

[View the full agenda]
Register for free today!
Space is limited.
Deadline to register is Oct. 27, 2023.

Presenting companies include:
Ansys, Toyota, General Motors, National Inst. of Aviation Research, Stellantis, Honda, Ford, Canoo, AWS, Magic Leap, Borgwarner, ARRK, BETA CAE, Arup, Humanetics, Detroit Engineered Products and more.

Oct. 18 &19 The 14th European LS-DYNA Conference
Papers not to miss

- **S. Bala** (**d3View**) – 1) NHTSA Test Data Analytics - Lessons learned and Data Insights, Battery Performance Evaluation using Workflows for Tests and Simulations with AI, 2) Updates on Workflow based Material Calibration for Metals, 3) Thermo-Plastics, Elastomers and Joining in d3VIEW with AI
- **H. Patel, B. Crone** (**Arup**) -Multi-stage Analysis Approach to Low-Speed Vehicle Impacts using the *SENSOR Keywords
- **S. Hayashi, S. Hiroi, N. Shimizu** (**JSOL**) - A New Model Reduction Method for Vehicle Crash Simulation

2024

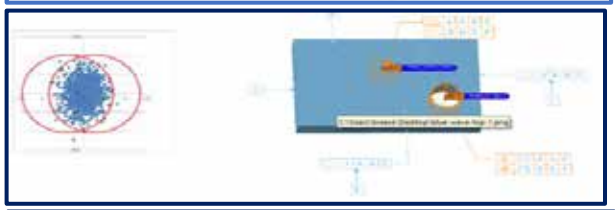
CADFEM
Simulation Conferences
EMPOWERING DIGITAL ENGINEERING

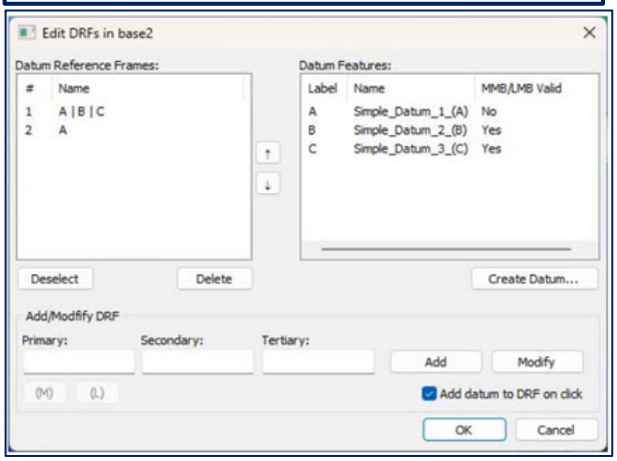
April 10-11 CADFEM - Call For Papers through Nov. 30th
To be held at the Darmstadtium in Darmstadt, Germany.

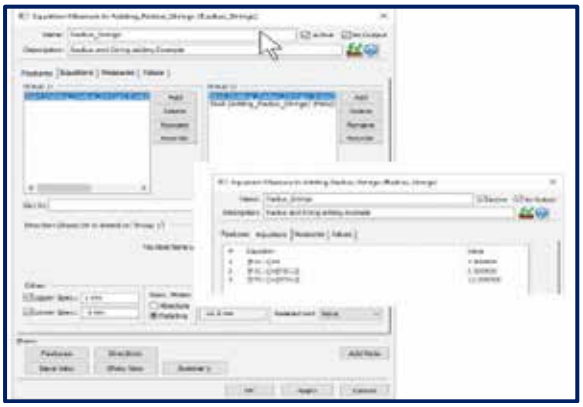
Additional Conferences in 2024
06/06/2024 France
06/13/2024 Switzerland Rapperswil

DFE-tech: 3DCS - Tolerance analysis software

Every year DCS strives to release one major release of 3DCS Variation Analyst Software packed with new features and quality-of-life improvements for users. This year's release, the much-anticipated Version 8.0, contains an extraordinary number of updates and new features.







Part 1 is Loaded with New Features.
Let's Explore Part 1

3DCS Version 8.0 has been Released!

It will be shown in 4-Part Series.

PART 1

Internal Orientation & Form

- Default Orientation and Form, if no refinement is present
- Global setting and override per individual

GD&T to Multiple DRFs

- Previously in 3DCS, it was only possible to deviate relative to one DRF. Now, multiple DRFs can be applied to a feature like the example shown below. Note this is currently only supported for Profile and Position

Edit/Create DRF Interface

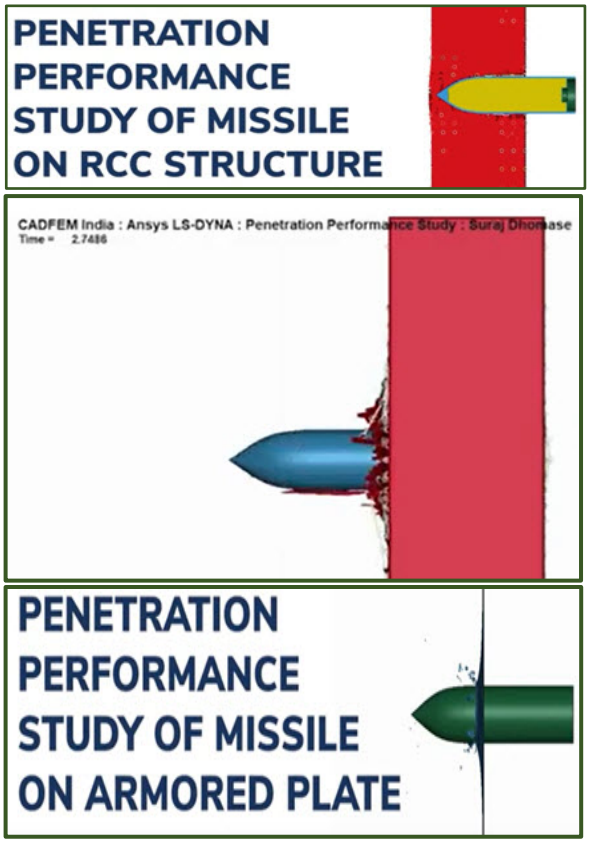
- Rearranged the DRFs and available Datum fields.
- Datum Features shows available Datum Shift from the available Datums.
- Select the created DRF to modify and, if available, apply Datum Shift, or
- Create a new DRF with the modifier. Only MMB/LMB Datums will allow (M) or (L) to added.

Equation Measure Custom Interface

- Calculates Equations based Measurements without a User dll
- Easy to use interface

Visit our website for complete update information

CADFEM India YouTube Simulation: **Projectile penetration performance is a critical aspect in fields such as defense, engineering, and material science**. **This research employs LS-DYNA, a powerful simulation tool, to model and analyze the behavior of projectiles impacting various target materials**. The objective is to offer a detailed understanding of how different projectiles interact with distinct materials, leading to advancements in projectile design and target protection strategies



Simulation & Analysis of Projectile Penetration Performance on Various Target Materials using LSDYNA

Methodology

- **Model Setup**: Virtual models of projectiles and target materials will be created in LS-DYNA, accurately representing their geometric and mechanical properties.
- **Material Characterization**: Material properties, including density, elasticity, and failure criteria, will be defined within the LS-DYNA simulation framework.
- **Impact Simulation:** Simulations will be conducted to replicate projectile impact scenarios, capturing factors like velocity, angle of impact, and target material response.
- **Data Collection:** The simulation outputs will provide data on penetration depth, stress distribution, deformation patterns, and energy dissipation.

The insights gained from this study will have practical applications in several industries. Defence and military sectors can use the information to optimize projectile designs for improved armour penetration.

Engineering industries can benefit by understanding the response of materials to high-velocity impacts, aiding in the design of impact-resistant structures. Additionally, the findings can contribute to the development of more accurate simulation models and material models within LS-DYNA.

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.

Marko Thiele - SCALE GmbH- Did you know that our presentation at this year's NAFEMS World Congress (NWC23) won the Best Presentation Award.

Additionally, in the July edition of BENCHMARK magazine by NAFEMS, SCALE was in the spotlight in its cover story. **SCALE – IT Solutions for CAE.**

SDM system demonstrated with LEGO® models – Using LEGO® car models, we demonstrate how these models were virtually developed and simulated. In doing so, we emphasize the advantages and versatile possibilities that SDM systems offer in modern product development.

The cover story provides an in-depth insight in our SDM solution's applicability within the domain of virtual product development.
(the link to the cover story is provided on our website)

Background: In the cover story, we dive deep into the capabilities of our SDM solution in the realm of virtual product development. Using LEGO® car models, we showcase how these models were virtually developed and simulated, highlighting the advantages and versatile possibilities that SDM systems bring to modern product development.

Abstract Excerpt: **PDF(English) - Virtual product development with an SDM-System demonstrated by playing with LEGO - Dipl.-Ing. M. Thiele, Dr. G. Geißler (SCALE GmbH, Germany)**

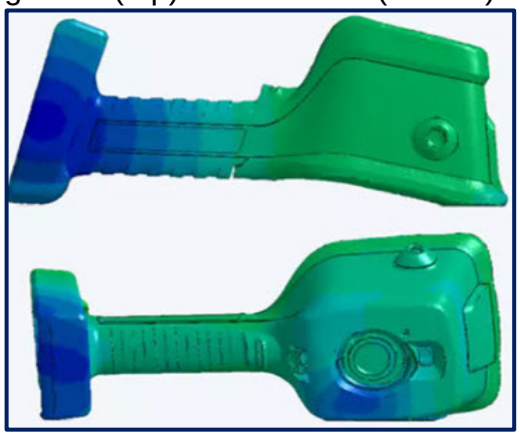
CAE processes are an integral part of virtual product development since they allow to assess the product properties without expensive physical prototypes. Setting up a continuous CAE-process, which involves every aspect, is a complex task. It usually involves managing the requirements for the desired product, working with CAD data to create a virtual prototype, meshing the geometry for preparing the finite element analysis, dealing with a multitude of sparse CAE solver files to create actual simulation runs, submitting jobs to the HPC or cloud for solving and subsequent monitoring of the simulation runs, handling the result files, deriving key-results and finally creating reports for the simulations. For real world car development projects, where hundreds of experts must work and collaborate in such a process, this can be an overwhelming task.

To explain the basic principles how such a workflow could look like, we created an example using simple LEGO® car models. With this we are going to show how requirements and targets as well as milestones are defined upfront and based on these requirements how a prototype can be created using a CAD system and how CAE-models are derived from the CAD data for different simulation disciplines. For the purpose of this demonstration, we will showcase crash and car to car simulations as well as a CFD example and how to manage these simulations in the SDM system. With respect to the results, we will explain how key-values, curves, pictures and movies can be extracted automatically and used for interactive web reports. Furthermore, we show how to generate a design of experiments directly within the SDM system and how tools for data analysis can be used on all data gathered within the SDM system. Another aspect of this process is the seamless integration of physical test results for analysis and validation purposes. Finally, the key results will be compared to the initially set target values to monitor whether the requirements are already met. With the outcome of the assessment, another development cycle can be started to improve on requirements that are not fulfilled until the final product is ready for delivery.

The goal of this presentation is to give a small excurse into the complexity of virtual product development and how SDM systems can help to manage the challenges by using simplified example models.

CADFEM: The thermal imaging camera from Dräger, which was developed for use by firefighters, makes it easier to find your way around and locate people at the scene of an emergency. This is especially true in difficult visibility conditions due to fire, smoke and darkness. **Dräger commissioned CADFEM with the explicit simulation of a drop test in Ansys LS-Dyna for a thermal imaging camera used by the fire dept.**

Total deformation on impact on the ground (top) and rebound (bottom)



Depending on the impact position, different deformation states result.

Excerpt - [Drager - Drop test simulation of a thermal imaging camera Explicit simulation with Ansys LS-DYNA]

Sector: Consumer goods/durable goods, Medical technology
Specialist field: Structural mechanics

Task - The thermal imaging camera from Dräger, which was developed for use by firefighters, makes it easier to find your way around and locate people at the scene of an emergency. This is especially true in difficult visibility conditions due to fire, smoke and darkness. During use, the camera is frequently subjected to impact loads. Despite a protective rubber jacket, the plastic housing of the thermal imaging camera has to withstand strong mechanical loads.

Solution - In order to check whether the camera can meet the high requirements, a drop from a height of two meters was simulated with the ANSYS LS-DYNA software (drop test). The load in the housing determined with explicit simulation during the impact period was analyzed for five different drop positions. The modeling of the complex interior of the camera was done with rigid bodies, taking into account the real centers of gravity, mass inertias and the possible contact situations. For the rubber casing, a hyperelastic material model was used to represent large deformations. The plastic casing was meshed using tetrahedra with rotational degrees of freedom, which provide a good approximation of the stiffness and at the same time allow the meshing of complex injection-molded components.

Customer Benefit - By means of the explicit simulation of a drop test, the following advantages could be achieved:

- a simple and cost-effective prediction of the deformation behavior for various impact positions,
- the rapid identification of highly stressed areas, and
- the creation of a load-adapted geometry based on easy-to-implement variant studies.

Related products and training offers

From Enginsoft Expertise: A wiper generally has three speed levels and it uses a variable motor to maintain the specific speed even if there are substances (e.g. water, snow, dust, etc.) on the windshield. **This condition was modelled using PIDCTL in ANSYS LS-DYNA.**

Fig. 1 - Severe weather condition and various wiper types

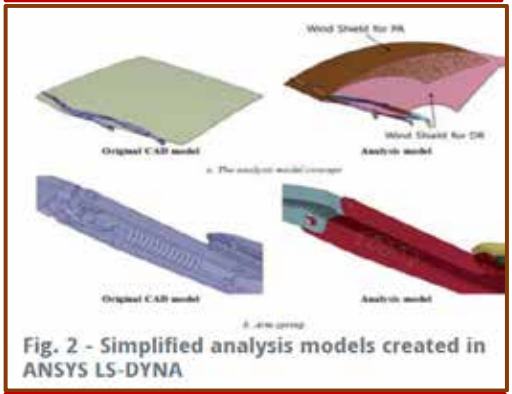


Fig. 2 - Simplified analysis models created in ANSYS LS-DYNA


Fig. 3 - Assembled primary parts and linkage system

Digitizing a process to standardize the analysis and evaluation of windshield wiper performance

TAE SUNG collaborates with DY Auto to develop dedicated software Newsletter EnginSoft Year 16 n°3 - By DuChan Kim,TAE SUNG Software & Engineering

Abstract - This technical article describes a project that was undertaken by TAE SUNG Software and Engineering, in collaboration with DY AUTO in Korea, to establish a computerized process to conduct three-dimensional real-scale analysis of any of the three types of windshield wiper currently in use, and to establish a specific standard for evaluating wiper performance.

It describes the procedure that was followed to model wiper performance, to collect data about that performance in terms of friction, wiping speed and contact pressure, and to develop a user-friendly pre- and post-processor for the developed program to facilitate the creation of analytical models to evaluate wiper performance and to analyze the results.

The purpose of a vehicle wiper is to clear the windshield of the car to ensure visibility for the driver during precipitation. The main variables to consider for vehicle wiper design are to ensure driver visibility, remove foreign substances such as water, snow, dust, etc. from the windshield, and prevent windshield damage. While various ideas have been proposed to substitute them, the existing wiper systems currently remain in use.

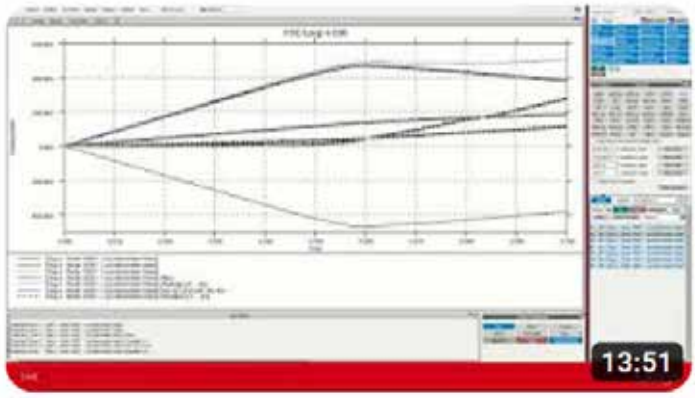
There are three types of windshield wiper currently in use:

- the conventional type, consisting of a simple shaped part and joint;
- the hybrid type with an integrated yoke and cover;
- and the flat type which eliminates the yoke and adheres to the windshield using vertebra.

Fig.1 shows the three types of wiper and the driver's view during precipitation. This project was carried out in collaboration with DY AUTO (auto.dy.co.kr) in Korea. Rather than conducting the performance assessment using traditional empirical methods, the project required results related to friction, wiping speed and contact pressure (chattering, incomplete wiping, etc.). An analytical process was established that can be generally used to evaluate the performance of the three types of wipers. Since a post-processor is also required to verify wiper quality assessment, the project also developed, for the convenience of users, a pre-processor and a post-processor within a program to build analytical models and analyze the results. The project is updated annually. … **visit the site for** Analysis Model - Analysis Results - Conclusion

Oasys: The Oasys LS-DYNA Environment is both versatile and tailor-made.

Benefit from pre- and post-processing software designed specially to work with LS-DYNA, and turn it towards a host of different applications.



Our Channel Not To Miss the present and past videos

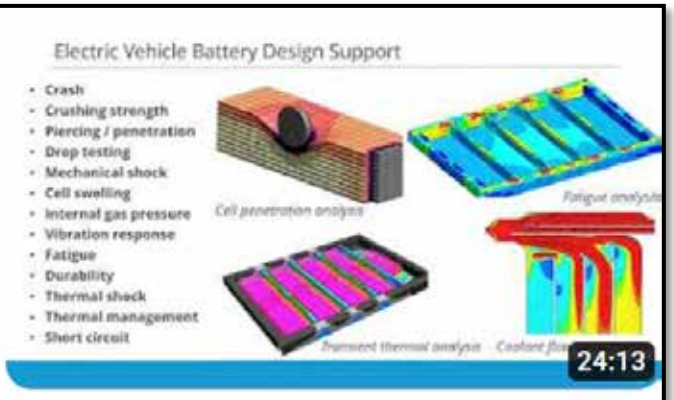
Top Tip:
Performing Curve Operations on Oasys T/HIS

Did you know that you can perform many operations on curves in Oasys T/HIS?

GUI Builder in the Oasys LS DYNA Environment

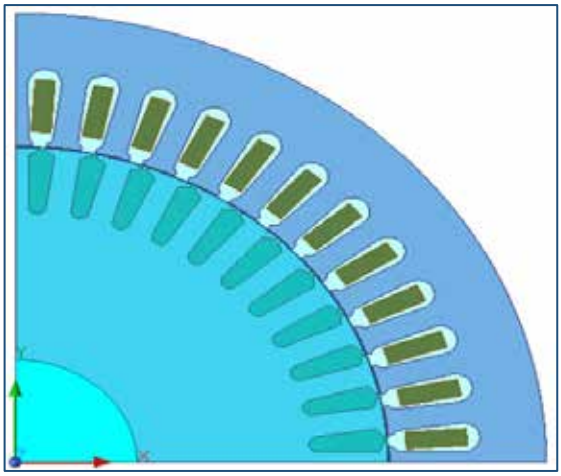
Top Tip: How to extract max and min countour values from Oasys REPORTER

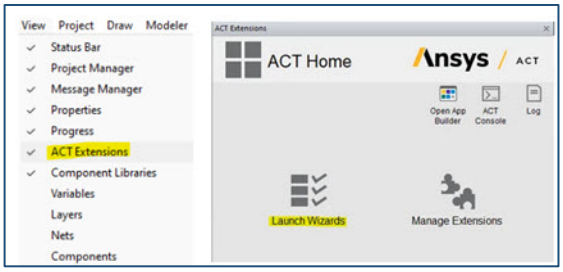
Workshop: Streamlining the Automotive CAE Workflow with Oasys Software

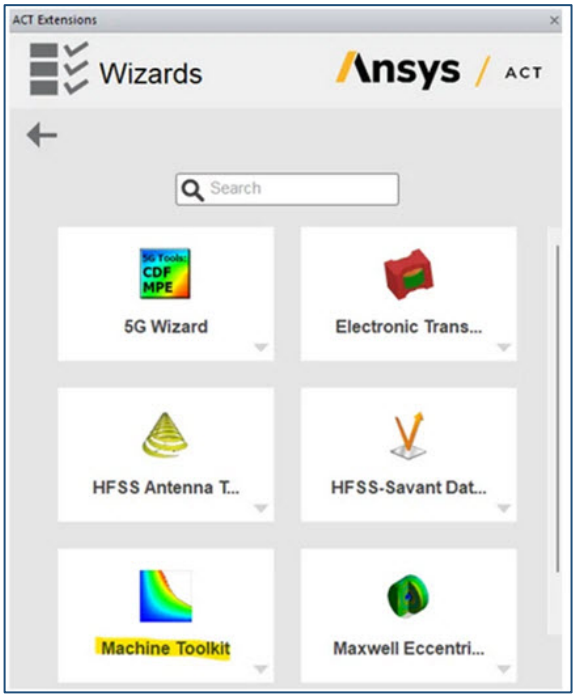


Oasys Showcase Series: EV CAE Solutions

OZEN Engineering: In the blog by David A. Giglio, he explains that this blog is a continuation of "Ansys Maxwell: 3PH Induction Motor - Force and Thermal Coupling"







Ansys Maxwell - 3PH Induction Motor - Part 2 - Machine Toolkit ACT, Posted by: David A. Giglio, PhD, PE

In this blog I show how the Ansys Machine Toolkit ACT is used to develop Torque vs Speed curves, a family of performance curves, including the Efficiency Map, to evaluate the performance of a 3PH induction motor modelled in Ansys Maxwell.

ANSYS ACT - MACHINE TOOLIT ACT

Torque Speed Curves (TSCs) can be developed in Maxwell without using the ACT, but using the ACT facilitates the process to get the TSCs easier and quicker. The Ansys Machine Toolkit is an "Ansys Customization Toolkit" and it is used to develop a family of Torque vs Speed curves, including Efficiency Maps, to evaluate the performance of motors modelled in Ansys Maxwell. The toolkit is capable of evaluating the machines below:

- Induction Machines
- Switched Reluctance Machines
- Synchronous Machines (SMs)
  - Permanent magnet machines (PMSM)
  - Synchronous reluctance machines (SynRM)
  - Wound-rotor synchronous machines (WRSM)

It is possible for a user to use scripting to develop Machine Toolkit for other types of machines but this will not covered in this blog.

A 3PH Induction Motor in Maxwell will be evaluated but must be solved first before running the Machine Toolkit so the simulation data could be used by the toolkit to develop the Torque vs Speed curve and Efficiency Map.

To open the wizard go to the "View" tab and check "ACT Extensions. In the ACT Extensions dialog box that appears select "Launch Wizards", and then select "Machine Toolkit".

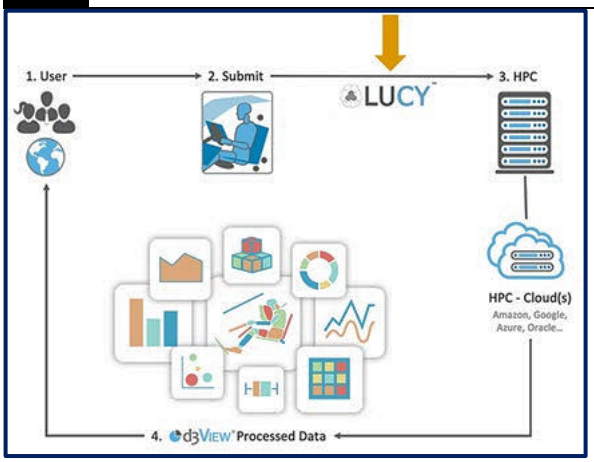
The website has the complete information

d3VIEW: Introducing LUCY - named after the fossil: By standing up movement was freed to accomplish essential tasks.

D3View recognizes that by freeing movement you save valuable time to concentrate on your tasks and projects. Lucy reduces IT workload.

Our LUCY is a CLI and GUI Based Data Publisher for d3VIEW. A great benefit is that it doesn't require an additional license with d3VIEW. LUCY is ready to start.

L	**Launches** the Python C++ code which is responsible for the extraction and several automation tasks on the back end. **LUCY was envisioned and initially developed in 2012 and released its first version in 2016.**
U	**Unfolds** the ability to track, submit, and process jobs. Lucy is responsible for preview, publisher, submit, and job execution.
C	**Completes** after the post-processing is finished. Lucy's Publisher pushes all resulting data back to d3VIEW. It then applies any d3VIEW response templates that have been configured.
Y	**Your** one-stop is Lucy, allowing you to concentrate on the needed data for your project or task.



LUCY - Some quick facts you should know.

Lucy is the backbone of d3VIEW. Lucy, included as part d3VIEW enhances the ability to track, submit, and process jobs. Lucy is responsible for preview, publisher, submit, and job execution.

LUCY is a Python C++ code responsible for the extraction and several automation tasks on the back-end, such as handling job submission, solving, monitoring, post-processing, and publishing.

- Lucy comes by default as a python executable self installer, that is built with the intention of reducing IT workload.
- Lucy runs on any OS to read, extract, analyze and publish data to d3VIEW. It can also submit, track and post-process simulations and test results to d3VIEW.

Let's take a moment to see how the typical Lucy workflow would be for the user.

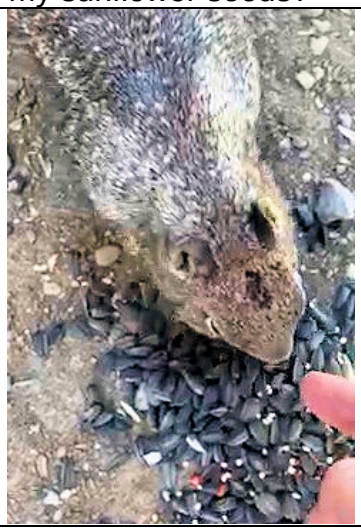
You would submit a job to d3VIEW via Lucy or the d3VIEW web app. A simulation is then created in d3VIEW. At this point, we meet Lucy - d3VIEW now uses Lucy to schedule an HPC job corresponding to the simulation created.

Once the scheduler allows the job to run, Lucy drives the solver, pushing files back at a scheduled interval using the Preview functionality. Preview also generates real-time graphs to determine how the simulation is progressing.

When the solver finishes Preview completes. It's time for Lucy to run the configured post-processing.

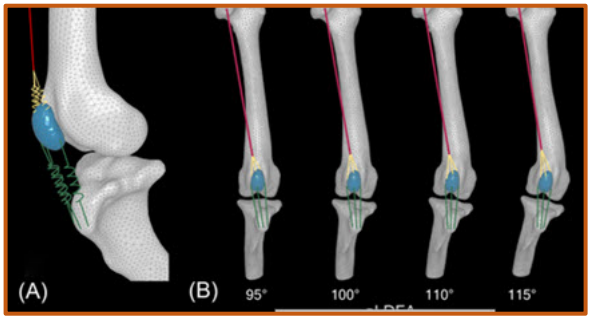
Finally, after the post-processing finishes, Lucy's Publisher pushes all resulting data back to d3VIEW and applies any d3VIEW response templates that have been configured.

Town Supervisor - The steps to boop Dinky on the nose. Dinky finally let me boop his nose, or her nose. Either way it's a squirrel nose. Yep, you can tell someone is retired and living to many years out in the county when they feel accomplishment because they can boop a squirrel on its nose.

First, I fed Dinky sunflower seeds. He now has something he can research and concentrate on. He thinks, "hmmmmm, sunflower seeds!"	Slowly you add more food so your hand is moving and since he is an engineer squirrel he is thinking about optimization of his food, "HMMMMM, MOM has more food!"
	
NOW, here is where it gets tricky – You don't want Dinky to think you are getting close to steal his food. You don't want him to think, "hmmm Mom is going to take my sunflower seeds?"	I just keep speaking to him while he thinks, "Hmmm, I wish Mom would stop speaking so I can concentrate on eating. She's always speaking!" AND, we go in for the nose boop!!!!
	

WARNING! DO not try this at home – you need to be a highly skilled Squirrel Nose Booper! Yes, I have just proved that I need a new hobby & have spent to many hours out in the sun.

Sabyl – Animal Health - … **In the present study, only the rectus femoris muscle was modeled with a beam element with Hill's muscle model-based material (Material 156-MUSCLE), provided by LS-DYNA,** …The mechanical behavior of the patellofemoral joint models was analyzed using Explicit FEM Multi Flexible Body dynamic analysis - LS-DYNA



Biomechanical analysis of canine medial patellar luxation with femoral varus deformity using a computer model - Femoral varus deformities complicating the realignment of the quadriceps muscles are frequently associated with medial patellar luxation (MPL) in dogs. Therefore, distal femoral osteotomy (DFO) is recommended in dogs affected with severe MPL and a distal femoral varus deformity.

J. Lee, H. Sim, J. Jeong, S. Jeong, H. Lee - Dept. Vet. Surgery, College Veterinary Medicine, CNU, ROK
S. Kim - Dept. Vet. Clinical Sciences, College of Veterinary Medicine, Purdue Univ, West Lafayette, USA
Seokjo Yang - Dept. Mechatronics Engineering, College of Engineering, CNU, ROK

Abstract – Background: The presence of an anatomic lateral distal femoral angle (aLDFA) of ≥ 102° has been anecdotally recommended as an indication for performing corrective DFO in large-breed dogs. However, the effect of a femoral varus deformity on MPL has not been scientifically evaluated. We aimed to evaluate the influence of a femoral varus deformity on MPL using a finite element method based computer model.

Three-dimensionally reconstructed computed tomographic images of a normal femur from a Beagle dog were deformed using meshing software to create distal varus deformities… **….**Medial patellar luxation (MPL) is a common orthopedic disease of the canine stifle [1]. MPL is considered a developmental disorder because it mostly occurs after birth or early in life without trauma, although the underlying etiopathogenesis remains unclear [2, 3]. It has been suggested that coxa vara and a small anteversion angle are the underlying causes of MPL, as they lead to the medial displacement of the quadriceps femoris muscle, which results in skeletal deformities such as distal femoral varus, femoral torsion, a shallow trochlear groove, the medial displacement of the tibial tuberosity, and internal rotation of the tibia…
….**The finite element method (FEM) is a computer-based modeling and simulation technique that has been used for the evaluation of procedures and conditions in orthopedics, such as different types of implants, surgical techniques, and pathologies [15]. In FEM, a complex geometric shape is modeled as a mesh of simpler structures (finite elements), each having appropriate biological material properties, such as the appropriate density and modulus of elasticity of muscle and bone [16]. Therefore, FEM is suitable for parametric analyses in which the effect of specific parameters are investigated in a controlled manner [16]. FEM has been widely used in human medicine as an alternative to cadaveric and in vivo biomechanical experiments** [17,18,19]. Recently, FEM has also been increasingly frequently used in veterinary medicine [20, 21].

Bulletin Board - Why is this here in the news?

In February a town resident had a stroke. He refused to use a cane! He balanced along the walls, furniture, but ignored 3 different canes our supervisor purchased. FINALLY, he is proud to use a cane! That deserved a page!

Asterom – in the Ukraine - A Handcrafted Work of Art - All our canes and walking sticks are handcrafted by skilled craftsmen in a small family workshop. The highest quality is our passion. We use only first-grade materials and time-tested methods, paying a lot of attention to every detail to make the best fashionable canes ever. **Add more comfort, personality, and style to your everyday life. You deserve it! Our wooden canes for men and women will change your perception of walking canes.**

NOW, the secretary, rancher, AND pilot want one!
Guess which one one the secretary wants?

…The main aim of the research was to test different configurations of a staircase smoke removal system, which is a crucial aspect of safe evacuation in high-rise buildings. The system consisted of an air supply fan with adjustable capacity and roof discharging vents, among others. In addition to these analyses, the test room was equipped with measurement devices, which allowed for the detailed analyses of compartment fire development. The experiments required the permanent presence of a fire brigade to ensure the appropriate safety level for the staff and material assets.

An Experimental and Numerical Study on Fire Spread in a Furnished Room

Małgorzata Król, Faculty of Energy & Environmental Engineering, Silesian Univ. of Tech., Konarskiego, Gliwice, Poland
Aleksander Król, Faculty of Transport &Aviation Engineering, Silesian Univ. of Technology, Krasińskiego, Katowice, Poland

The test room was prepared on the 5th floor of a 9-story abandoned office building (Figure 1). The room was connected to the staircase through a short corridor with a remotely controlled door.

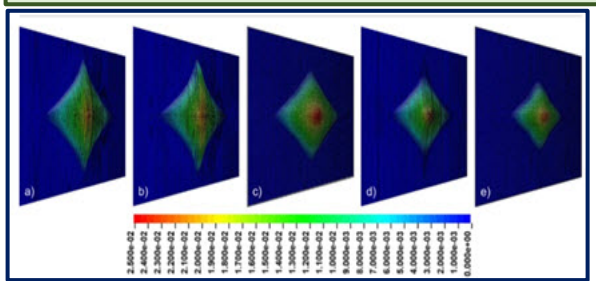
Abstract - Excerpts - The main objective of this research was to examine the development of fire in a furnished room in a typical high-rise building. This work was part of research on the fire safety of building occupants. It included two controlled fires in which a standard sofa in a room was set on fire. Several thermocouple trees were arranged in the test room and the temperature was continuously recorded. Additionally, each fire test was videotaped for further analysis. Since an unexpected forepeak of the temperature course was observed, special attention was paid to explain this phenomenon.

For this purpose, numerical models of fire development in a furnished room were built using the well-recognized software package, ANSYS Fluent and Fire Dynamic Simulator (FDS). The numerical research was focused on fire spread over a single piece of furniture, the sofa. The data recorded in real experiments were used to tune and validate the numerical models. **The results of the Fluent numerical simulation were consistent with the recorded experimental data and proved that after the initial growth, there was a critical phase of fire development in which the fire might almost snuff or flare again**…

Introduction - … When considering a fire developing in a compartment, it should be remembered that its course is determined by the availability of air and fuel....

…In the present study, fire tests were carried out in a room, which was enclosed in panels with high fire resistance. Six thermocouple trees were placed inside the room to measure the temperature during the tests. Additionally, the fire tests were recorded on video….

Police Protection: Kevlar helps absorb the impact and reduce or stop penetration to the torso by firearm-fired projectiles and fragmentation from explosions. In a bulletproof vest, also known as a ballistic vest or a bullet-resistant vest this can save lives. In the below paper a numerical analysis of the impact of the 9x19 mm FMJ Parabellum projectile **on the selected variant of the ballistic package were carried out in the LS-Dyna software.**



Numerical and experimental investigation of the ballistic performance of hybrid woven and embroidered-based soft armour under ballistic impact

Maciej Gloger, Zbigniew Stempien, Justyna Pinkos
Inst. of Arch. of Textiles, Lodz University of Tech., Poland

Abstract - One approach to developing more effective soft body armour is to modify the structure of the ballistic packages. Typically, soft ballistic packages are formed as a multilayer system composed of woven fabrics or flexible unidirectional sheets, also in hybrid combinations. It should be noted that relatively little is known about ballistic packages composed of embroidered structures. This article presents the results of numerical and experimental studies of the ballistic efficiency of packages composed of para-aramid embroidered structures and woven fabrics fixed at all four edges after firing with a 9x19 mm FMJ Parabellum projectile at an impact velocity of 380 m/s. Numerical modelling was used both to assess the ballistic efficiency of the packages in various hybrid constructions and to optimize the structure of the most efficient hybrid construction of the package. Based on the results of numerical and experimental studies, it was shown that hybrid packages containing fabrics on the impact side of the projectile and structures embroidered on the back are significantly more efficient than the reverse combination. The optimization carried out showed that the most efficient package should contain a number of woven layers equal to twice the number of penetrated layers on the projectile impact side.

Rex Receives Body Armor Donation - State Parks K-9

California State Parks Gold Fields District

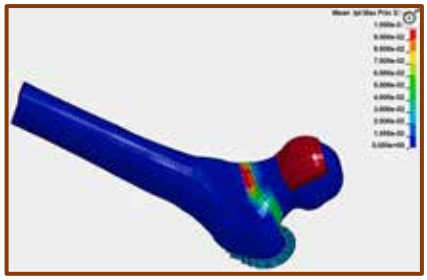
K-9 Rex has received a bullet and stab protective vest, thanks to a charitable donation from non-profit organization Vested Interest in K9s, Inc. K-9 Rex's vest was embroidered with the sentiment "This gift of protection provided by Vested Interest in K9s, Inc."

K-9 Rex and his handler, State Park Peace Officer Alex Lucero, patrol Folsom Lake State Recreation Area, a park unit of the Gold Fields District. In addition to being trained to find and apprehend uncooperative suspects while protecting his handler, other officers and the public, K-9 Rex is also certified in narcotics, tracking and evidence recovery.

The full text is available Science Direct.

Over the past decade, severe obesity [body mass index (BMI) ≥40 kg/m2] prevalence has steadily increased in the United States, with recent estimates showing 11% of middle-aged (40–59 years) and 6% of older (60+ years) adults affected…

Finite-element (FE) modeling-derived bone strength - Subject-specific FE models of the proximal femur at baseline, six, and 12 months will be developed. … …Bone strength and fracture risk will be estimated with simulated tests of a sideways fall … **Simulations will be performed using the LS-Dyna implicit FE solver …where bone strength will be defined as the peak force between the impactor and the femoral head.**



Strategies to reduce the onset of sleeve gastrectomy associated bone loss (STRONG BONES): Trial design and methods

Joshua R. Stapleton, Jamy D. Ard, Daniel P. Beavers, Lori S. Cogdill, Adolfo Z. Fernandez, Marjorie J. Howard, Jamie N. Justice, S. Delanie Lynch, Jovita J. Newman, Ashley A. Weaver, Kristen M. Beavers

Background - Despite recognized improvements in obesity-related comorbidities, mounting evidence implicates surgical weight loss in the onset of skeletal fragility. Sleeve gastrectomy (SG) is the most commonly performed bariatric procedure and is associated with 3–7% axial bone loss in the year following surgery. Bisphosphonates are FDA-approved medications for the prevention and treatment of age-related bone loss and may represent a strategy to reduce bone loss following SG surgery.

Introduction - [1] Bariatric surgery is increasingly utilized to treat severe obesity, with the sleeve gastrectomy (SG) procedure accounting for ~60% of all bariatric procedures. [2] Although SG is effective at reducing weight and comorbidities associated with obesity, evidence suggests a 3–7% concomitant reduction in areal bone mineral density (aBMD). [3] Reviews of fracture risk secondary to bariatric procedures indicate a higher likelihood of fracture. [[4], [5], [6]] In recognition of this clinical conundrum, the American Society for Metabolic and Bariatric Surgery (ASMBS) issued a position statement in 2020 calling for additional randomized data to better determine optimal interventions and treatments aimed at minimizing fracture risk in bariatric surgery patients. [7]

Once-monthly risedronate [8] is an oral bisphosphonate prescribed to prevent and treat bone loss [[8], [9], [10]] by decreasing osteoclast activity, thereby slowing bone resorption. …. The pilot trial makes use of short-term therapy during the most active weight loss phase to minimize patient exposure and the cost of therapy. An appropriately powered trial will support updates to postoperative care for SG patients, [22] while also providing a unique platform to investigate mechanisms of bone-muscle crosstalk. [7,22]

4. Conclusion - While the benefits of bariatric surgery on weight and cardiometabolic health are significant and well-described, consideration of negative effects on lean mass including bone loss is important, particularly among older surgical patients. Results from this study will provide insight into the efficacy of risedronate use for attenuation of musculoskeletal tissue loss in this patient population. Along with the potential to influence clinical practice, mechanistic data exploring the counteractant effects of bisphosphonate therapy on SG-induced musculoskeletal loss will contribute to the growing field of bone-muscle crosstalk.

On November 30th the SIlMQ Conference is taking a new approach. Their new hybrid approach will afford you the flexibility to attend both online and at the offices of KLS Martin. Don't miss Mark Palmer, M.D., Ph.D. Senior Chief Technologist for Healthcare at Ansys (former Medtronic) and Holger Willems Co-founder and CEO of Relu.

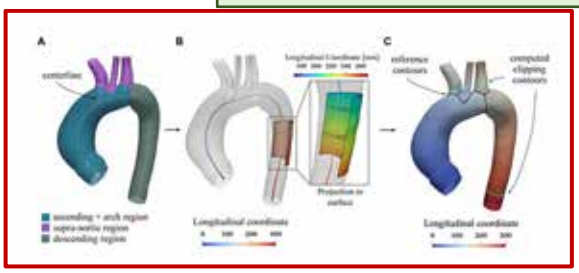
Simq Gmb Conference Information - The Simq Conference is for the use of simulation and digital twins in the field of medicine and medical technology. It presents practical and cross-domain solutions and ideas to drive the digital transformation in healthcare and to extend and sustainably improve existing processes or process chains with the help of simulation.

- Clinicians are welcome to attend hands-on workshops in the morning!
- The conference will be held in English.
- The morning - In the morning, there will be hands on workshops exclusively for physicians. Here you can test our software solutions and get insights into the clinical application of digital twin simulation tools.
- From noon - From noon on we invite all other interested parties to the KLS Martin World. In the exhibition area you can have a look at different products and software solutions, network and afterwards watch the conference in the auditorium.
- The Simq Conference with representatives from industry, research and clinics will be broadcast live from the auditorium starting at 2 pm.
- Event Location - KLS Martin World in Tuttlingen, Germany. The building, with a total area of around 1,500 square meters, features an auditorium with state-of-the-art media technology, workshop rooms, an exhibition area, various networking opportunities and a cafeteria.

SPEAKERS

MeDiTATe project: **Martino Andrea Scarpolini, ESR 09**

In this work, we have presented a novel non-rigid registration algorithm for the development of SSMs able to solve the correspondence optimization problem for complex anatomical structures. The novelty of the algorithm lies in its unique approach of integrating the regularization term within the optimization process, rather than appending it to the objective function.



Enabling supra-aortic vessels inclusion in statistical shape models of the aorta: a novel non-rigid registration method

Authors: (affiliations are listed on the website)
Martino Andrea Scarpolini, Marilena Mazzoli, Simona Celi

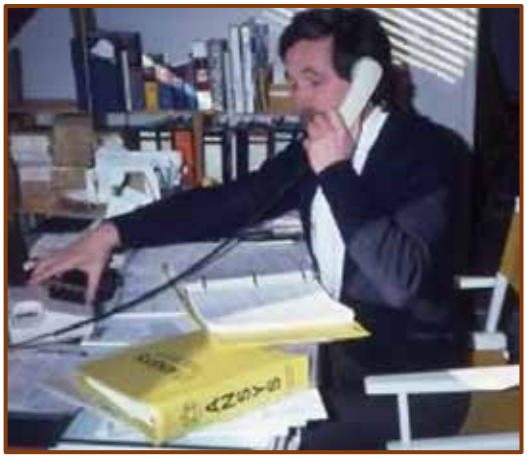
FIGURE 2. Selected template geometry and longitudinal coordinate system based on the centerline.

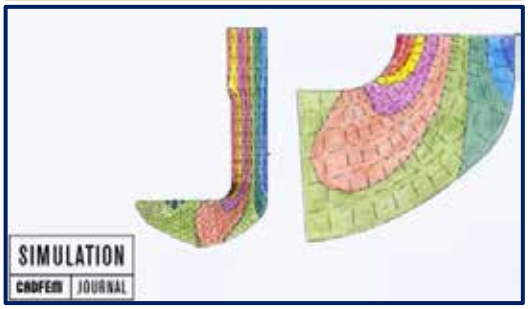
Statistical Shape Models (SSMs) are well-established tools for assessing the variability of 3D geometry and for broadening a limited set of shapes. They are widely used in medical imaging due to their ability to model complex geometries and their high efficiency as generative models. The principal step behind these techniques is a registration phase, which, in the case of complex geometries, can be a critical issue due to the correspondence problem, as it necessitates the development of correspondence mapping between shapes. The thoracic aorta, with its high level of morphological complexity, poses a multi-scale deformation problem due to the presence of several branch vessels with varying diameters. Moreover, branch vessels exhibit significant variability in shape, making the correspondence optimization even more challenging. Consequently, existing studies have focused on developing SSMs based only on the main body of the aorta, excluding the supra-aortic vessels from the analysis. In this work, we present a novel non-rigid registration algorithm based on optimizing a differentiable distance function through a modified gradient descent approach. This strategy enables the inclusion of custom, domain-specific constraints in the objective function, which act as landmarks during the registration phase. The algorithm's registration performance was tested and compared to an alternative Statistical Shape modeling framework, and subsequently used for the development of a comprehensive SSM of the thoracic aorta, including the supra-aortic vessels. The developed SSM was further evaluated against the alternative framework in terms of generalisation, specificity, and compactness to assess its effectiveness.

EXCERPTS - Introduction: Diagnosis and risk stratification of aortic diseases are primarily based on medical imaging techniques which allow the analysis of the anatomy and structure of the heart and vessels. The aortic aneurysm is a disease characterized by an enlargement of the diameter of the aorta. The maximum aortic diameter is the main criterion to understand whether an elective repair is needed to avoid fatal complications, such as rupture or dissection (Erbel et al., 2014)….This algorithm optimizes a differentiable distance function through a modified gradient descent with a combinatorial Laplacian regularization term, which allows the inclusion of specific constraints in the objective function...Our method is firstly described and then tested on a dataset of healthy and aneurysmatic thoracic aortas.

Materials and methods - A population of 47 patients (15 females and 32 males; age 65.7 ± 13 years) was considered for this study; 26 were scheduled for surgical thoracic aortic aneurysm treatment, while the remaining 21 were control subjects not affected by aortic diseases...

Don’t miss this article from the CADFEM website by our friend, Guenter Mueller. Dr.-Ing. Guenter Mueller, Founder of CADFEM GmbH, “FEM simulations play their part in the production development process by assisting the user at an early stage to assess whether the essential requirements have been met and to ensure that they are fulfilled.”





Guenter Mueller, “the finite element method has been with me all my life. May 1982, I started the Company for Computer-aided Analysis in Civil and Mechanical Engineering, based at my home office.”

Excerpts **The history of the finite element method. Berkeley - home of the finite element method** -
by Dr.-Ing. Guenter Mueller, Founder of CADFEM GmbH

Questions regarding what lies at the heart of such simulations and of how the associated mathematics developed and came to be applied may never have crossed the mind of today’s computational engineers – and they may never have even heard anything about such matters. The following provides a brief overview of where it all began and of the historical development of the finite element method, giving due regard to Berkeley, which played a significant role in its development… Ray W. Clough of the University of California coined the term “finite element method” and, along with John H. Argyris of Imperial College, London, and Stuttgart Technical University, he is considered the inventor of the finite element method.

Definition / Foundations - The finite element method allows the suitability of products to be checked via the medium of a computer screen before they are ever built; it also permits the required changes to be implemented both quickly and cheaply. Engineers are interested in determining in advance how buildings, vehicles, machines, and products will behave in certain load scenarios. When building a bridge, for example, engineers want to know whether the structure will be able to support its own weight or an imposed load or whether it will be able to withstand gusts of wind or earthquakes. They would want a newly developed clothes iron to heat up as evenly and as quickly as possible. Lifting magnets need to generate magnetic fields that are strong enough to produce the desired forces. When it comes to micropumps, it is the internal flow conditions that are of interest….

Numerical approximation methods - Differential equations can be solved using either analytical or numerical methods. While analytical solutions are appropriate for straightforward academic purposes, when it comes to the diverse – and generally complex – problems relating to real-world situations, it is only numerical methods of approximation that are worth considering. Two approaches were developed along these lines: the finite difference method and the variational method…The historical development of the finite element method - The development of the finite element method began in the mid 1950s at various universities, though it mainly occurred at the University of California, Berkeley, the University of Wales, Swansea, and at University of Stuttgart. The University of Stuttgart was, and remains, one of the leading research institutes in the field of numerical simulation. **Continue on the website for all information**

I'm AI and live on a small ranch on the outskirts of the town
I use my parents, chatGPT for story assistance.

Investigate – Why is the Secretary angry at a horse?

The Secretary was yelling at Sabyl, our animal health editor.

It's time to investigate exactly what the horse did to warrant all this yelling!!

The Horse that caused the secretary to yell!

Once upon a time in the quiet town of FEANTM, nestled amidst rolling hills and lush meadows, a new editor had taken the helm at the local newspaper. Her name was Sabyl, and by day, she worked as a skilled veterinary technician with an unwavering passion for animals.

One sunny morning, as Sabyl was tending to her daily chores at the veterinary clinic, she received a peculiar phone call. It was the Town Secretary, her voice tinged with a mixture of annoyance and fear. She claimed that Sabyl's horse, Minow, was giving her evil eyes whenever she passed by him.

Sabyl, who had raised Minow from a colt and knew him better than anyone else, couldn't help but chuckle at the notion. She tried to explain to The Town Secretary that it was impossible for Minow to give anyone evil looks, but her efforts only seemed to exacerbate the situation.

The Town Secretary was growing increasingly upset, her voice rising with each passing moment. "I'm telling you, Sabyl, that horse of yours is out to get me! I can feel his malevolence!" she exclaimed.

Maintaining her composure, Sabyl gently explained the situation. "Secretary, Minow had to have his eyes removed due to an eye disease. He's perfectly fine without them and has adapted remarkably. He can be ridden and knows his way around his paddock."

Intrigued, The Secretary approached Minow, her eyes narrowing as she scrutinized the horse. To her shock, she realized that Sabyl was telling the truth. Minow indeed had no eyes, yet he stood there calmly, seemingly unperturbed by her presence.

Unwilling to let go of her initial impression, The Town Secretary muttered in a nasty tone, "Well, just because he doesn't have eyes doesn't mean he can't think evil thoughts!"

Sabyl couldn't help but burst into laughter at the absurdity of the situation. She patted Minow affectionately on his neck and replied, "Trust me, Secretary, Minow is as gentle as they come. He wouldn't hurt a fly, let alone think evil thoughts."

With that, Sabyl turned and walked away, leaving The Secretary to ponder the amusing encounter. As the days passed, the secretary couldn't shake off the memory of her unfounded fear. It gnawed at her until she finally decided to approach Sabyl with a humble apology.

"I'm sorry, Sabyl," The Secretary admitted. "I let my imagination get the best of me. Minow is indeed a remarkable horse, and I should have trusted your judgment."

Sabyl smiled warmly and accepted the apology graciously. In a surprising turn of events, she offered to teach The Secretary how to ride Minow. The secretary, initially reluctant, agreed to give it a try.

Under Sabyl's patient guidance, The Secretary and Minow formed an unlikely bond. The horse's steady gait and unshakeable calmness provided The Secretary with a newfound sense of serenity. As she learned to trust Minow, her fear transformed into admiration, and eventually, love for the remarkable horse who had once been misunderstood.

In FEANTM Town, Sabyl's tenure as the town's newspaper editor continued, but her role as Minow's advocate and the bridge between him and the once-fearful town secretary became a heartwarming tale of redemption and understanding in this charming, animal-loving community.

Now, if you think this will keep the Town Secretary from yelling at another resident, you're wrong. Remember last month she challenged the Old Rancher to a shooting contest! Yes, folks, that did take place with a lot of town folks hiding. SO, tune in next month for the outcome of the shooting gallery challenge.

Below is Minow the horse that caused it all AND Quincy giving the evil eye!

Quincy giving the secretary the evil eye!!!!
And yes, he thinks how he can steal food!

The FISITA World Congress has recognized one of the papers presented by Applus+ IDIADA during the event. The paper, signed by Marina Roche, Pablo Cano, César Guillén and Daniela de Lima and Pedro Maroto, from the IDIADA Powertrain team, describes an innovative methodology to generate a virtual model of a Fuel Cell Electric Vehicle (FCEV) using only experimental test data from a real vehicle.

Using in-house data analysis tools, the team is able to identify the characteristics of the vehicle's components and energy management strategies to create a validated simulation model with an error of less than 3% in hydrogen consumption. The simulation platform covers all key aspects of an FCEV, from the fuel cell and balance-of-plant components, to the high-voltage battery, the electric motor and the vehicle model itself.

The platform allows vehicle behaviour to be simulated in different contexts and driving conditions to virtually assess how variations in control and components affect vehicle performance and energy consumption. In addition, this virtual model runs faster than in real time, enabling efficient optimization of the energy management strategy over longer routes.

Applus+ IDIADA: A key partner in the development of automotive hydrogen technologies

This research is part of Applus+ IDIADA's investment in new measurement capabilities and complete instrumentation of hydrogen vehicles, as well as in advanced simulation tools for the virtual development of fuel cells. All this with the goal of positioning Applus+ IDIADA as a key partner in the development of this technology and in the training of new professionals.

During FISITA, Applus+ IDIADA presented a total of 27 technical papers in various fields, such as ADAS, homologation, powertrain, safety, simulation, among others; as well as six focused on the braking industry within the framework of EuroBrake. All the technical papers will be available on FISITA's website library.

Excerpt - **Norwegian F-35 landed on a highway in Finland**
Never before has the Lockheed Martin F-35A fighter jet landed on a highway. On Thursday afternoon in September, two Norwegian F-35As landed on a highway in Tervo, Finland. *(Photo: Ole Andreas Vekve, Norwegian Armed Forces)*

This is a milestone, not only for the Norwegian Air Force, but also for the Nordic countries and for NATO. This demonstrates our ability to execute a concept of dispersal. Fighter jets are vulnerable on the ground, so by being able to use small airfields – and now motorways – increase our survivability in war. In addition, this is also a demonstration of the exciting development we have initiated within the military-air cooperation in the Nordic region, Major General Rolf Folland, Chief of the Royal Norwegian Air Force says. *(Major General Rolf Folland, Chief of the Royal Norwegian Air Force. Photo: Eivind Byre, Norwegian Armed Forces)*

Complete information and pictures – visit the website

Important for NATO and Norway - The F-35 combat aircraft holds unique characteristics that make it one of the best combat aircraft ever built. The F-35 can operate from many bases and locations, but the limitations are related to how long the aircraft can operate without resupply of weapons, fuel and technical ground support.

Finland became a NATO member earlier this year and is an important partner for the Norwegian Air Force.

— Finland has been a close partner for a long time, and now also an ally. Their straight and wide motorways means that we can further develop our concept for dispersal, Folland says.
— The aim of the concept is to make it more challenging for an enemy to take out our aircraft when on ground. If such a concept is to work we must map out all possibilities, and practice them, says Folland.

"Hotpit refueling" - The fighter jets landed around 03:00 PM Norwegian time on a motorway in Tervo, after taking part in joint training with Finnish F-18s.

— The Air Forces in the Nordic countries have shown great initiative for increased Nordic cooperation, and have come a long way. This landing is a very good example of this, and shows that the Nordic countries soon can operate together as one coordinated force, says the Norwegian Defence Chief, general Eirik Kristoffersen.

Immediately after landing, refueling was carried out with the engines running - a so-called "hotpit refueling". Shortly after the F-35s took off and were ready for new missions.

— With Finland's entry into NATO and Sweden's imminent membership, the Nordic countries have a particular responsibility for developing and coordinating NATO's deterrence in the northern regions, says Norwegain Defence Minister Bjørn Arild Gram.

TUSAS – YouTube Video - HÜRJET, the star of the future, performed a historical flight demonstration

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Lockheed Martin and U.S. Navy Demonstrate Submarine-Launched Ballistic Missile - Navy marks final planned test of Lockheed Martin-built submarine-launched ballistic missile from an OHIO-class submarine, extending record of success

On September 27 Lockheed Martin (NYSE: LMT), supporting the U.S. Navy, marked the successful launch of one Trident II D5 Life Extension Fleet Ballistic Missile (FBM).

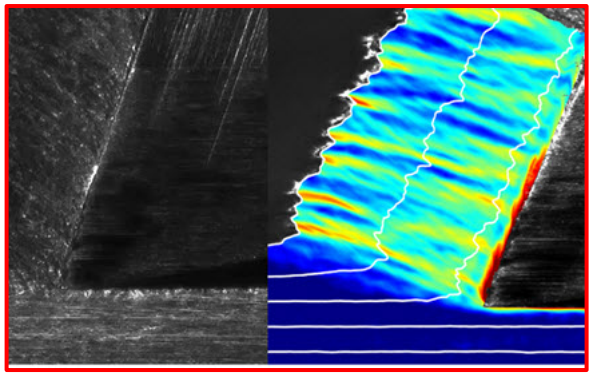
The Navy conducted Demonstration and Shakedown Operation-32 (DASO-32) launching an unarmed missile from the Pacific Ocean off the coast of California.

The D5 missile, built and upgraded by Lockheed Martin for the Navy, is the most advanced ballistic missile in the world and is currently aboard U.S. OHIO-class and UK VANGUARD-class submarines. The three-stage, solid-propellant, inertial-guided ballistic missile can travel a nominal range of 4,000 nautical miles and carries multiple independently targeted reentry vehicles.

US Airforce Picture of the Month

Dedication pass - An F-35A Lightning II flown by Maj. Kristin Wolfe, 388th Fighter Wing F-35A Demonstration Team commander, performs a dedication pass during an airshow over Kleine Brogel Air Base, Belgium, Sept. 8, 2023. The F-35 Demo Team comprises approximately 15 Airmen, including the pilot and commander, pilot safety officers, superintendent, team chief, maintenance Airmen, aircrew flight equipment specialists and public affairs personnel.

(U.S. Air Force photo by Staff Sgt. Thomas Barley)



Excerpts from Texas A&M News: Staying sharp: Researchers turn to an everyday shop tool to study material behavior - By Jennifer Reiley

YouTube - Example of metal cutting tool

Researchers at Texas A&M University are taking a traditional manufacturing tool — metal cutting — and developing a more accessible method for understanding the behavior of metals under extreme conditions.

This side-by-side photo shows how researchers can see different behaviors of metal when it is cut. As the gray knife the right of both photos scrapes a layer of the metal's surface, a high-speed camera and computer program capture how the metal is being cut with a knife. The digital filter on the right side demonstrates the deformation of the metal. | Image: Courtesy of Dr. Dinakar Sagapuram

Metal cutting – scraping a thin layer of material from a metal's surface using a sharp knife (not unlike how we scrape butter) – might not be the first thing that comes to mind for studying material properties. However, Drs. Dinakar Sagapuram and Hrayer Aprahamian, assistant professors in the Wm Michael Barnes '64 Department of Industrial and Systems Engineering, wanted to see if the process could predict material behavior under various deformation conditions. Their team included Harshit Chawla, an industrial and systems engineering doctoral student, and Dr. Shwetabh Yadav, an assistant professor at the Indian Institute of Technology Hyderabad.

"The knowledge of how materials deform and fail under harsh mechanical conditions is vital for studying and developing various technological applications, including manufacturing processes, crash testing of vehicles and impact testing for defense-related applications," **Chawla** said.

Because the cutting process involves locally shearing or deforming the metal to extreme levels under high rates, the team hypothesized that it could provide fundamental information on the material's strength, resistance to plastic deformation or irreversible shape change.

"The research opens a new and interesting application for metal cutting as a 'property test' that material scientists and physicists can use to test their theories," **Sagapuram** said. "The number of mathematical theories of metal plasticity under high strain rates far outstrips the experimental data. So, the property information obtained using metal cutting can test which theories are valid and which are not."

The team uses a high-speed camera to observe how metals deform and shear when they encounter a sharp cutting tool and then use this information to deduce their basic property information. A significant challenge, however, lies in obtaining intrinsic material properties from the visual high-speed imaging data. While metal cutting is not Aprahamian's area of expertise, the partnership with Sagapuram has generated new ideas and numerical techniques. "An important aspect of this research is to establish mathematical optimization techniques that guarantee global optimality, thereby achieving the best possible solution," Aprahamian said. "Otherwise, you might obtain solutions that seem satisfactory, but they don't accurately describe the material."

Metal cutting's advantages over the testing methods used today are that it is simple and can produce a range of conditions that are difficult to achieve using conventional tests but are important from the standpoint of various engineering applications.

"We're excited about the prospect of using cutting as a convenient method to determine material properties that are now obtained only with considerable difficulty," Sagapuram said. "Because it is so simple, in principle, anyone with access to a machine shop can now obtain material data without sophisticated testing capabilities."

The team recently published their work in the Proceedings of the Royal Society A journal, with another paper on the numerical techniques in the works. A grant from the National Science Foundation supports the research.

Sagapuram said the team recently started collaborating with the Los Alamos National Laboratory, supported by the Texas A&M University System National Laboratories Office, to cross-compare their data with the more established material dynamic strength testing platforms available on-site at the lab. These studies will contribute to validating the method and verifying whether different experiments on the same metal provide consistent data.

Aprahamian said their work to develop mathematical techniques also has potential applications outside material characterization.

"My group is extending some of these algorithms and techniques to the health care field, where we are using global optimization tools to construct robust screening strategies," Aprahamian said. "This can be used to prevent future outbreaks and improve screening for infectious diseases among the population."

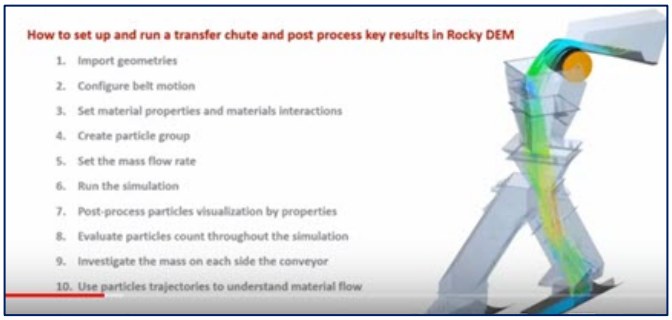
Chawla said the research has allowed him to work in a field that’s interested him for years.

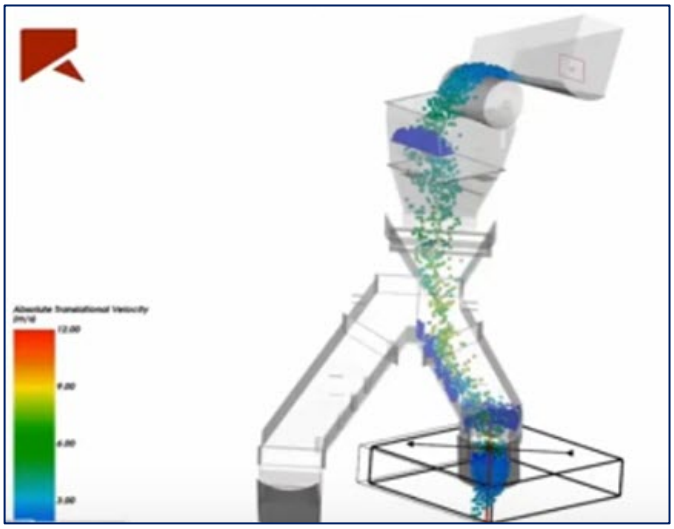
“It was interesting to study the mechanics of the metal cutting process using innovative experimental techniques,” Chawla said. “Getting to closely observe the material deformation during cutting, especially at a microscopic level at high frame rates, was fascinating.”

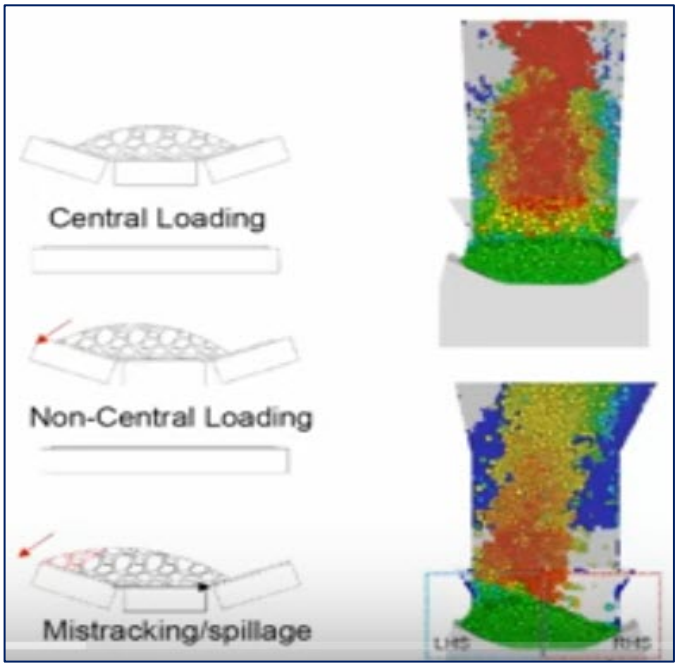
No one knows his name.
You yell, "HEY, old rancher."

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

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







Conveyors and chutes [YouTube 15 min Webinar]

Guilherme Hanauer de Lima, M. Sc.

Conveyors and chutes are used in almost all industries, including mining, agricultural, food, chemical, pulp and paper. They ensure material flow, reduce operational costs, and increase reliability.

Our on-demand 15-minute learning session will bring you up-to-date on the latest in computational simulation using Discrete Element Modeling (DEM)

By using DEM simulation, companies can reduce the chances of chute clogging, find the ideal operating conditions for higher production efficiency, and evaluate material accumulation inside the chute, and more.

In this 15-minute webinar, you will learn how to set up and run a transfer chute and post-process key results in Rocky DEM, a powerful software that can simulate many types of conveyors and chutes.

My Virtual Travel Outing

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

Exhibit - The Aviation Unmanned Vehicle Museum (AUVM) is a collection of incredible, rare, drones and artifacts. was founded by retired Lt. Col. Harold (Red) Smith - SECURITY CLEARANCE: Top Secret/ Special Access.

Our mission is to honor the men and women in our military and the private sector that paved the way for remotely piloted vehicles, more commonly known today as DRONES. AUVM strives to educate the public about the beginning history and uses of unmanned aircraft vehicles (UAV's).

Supervisors Goodbye Page - Come Back Soon - October

Goodbye from Marsha/Molly & Friend

Two of my older favorite pictures to share.

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.