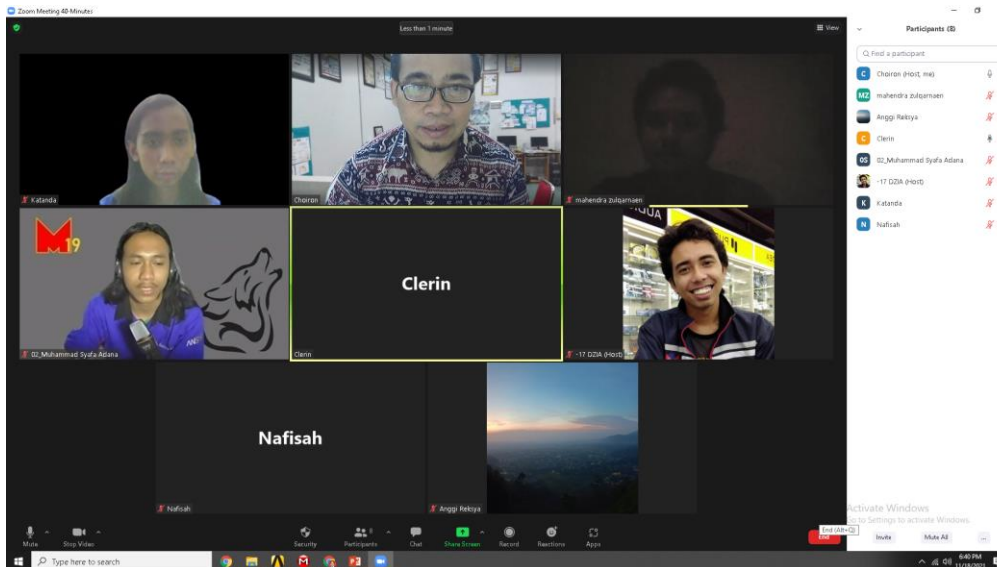




# Diskusi Project Lab **SPRS**

18 November 2021



## DESIGN & SYSTEM ENGINEERING LABORATORY

MECHANICAL ENGINEERING DEPARTMENT BRAWIJAYA UNIVERSITY MALANG  
Jl. MT. Haryono 147 Malang (651) 849143, Fax: 102681

### PRODUCT


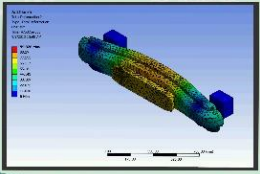

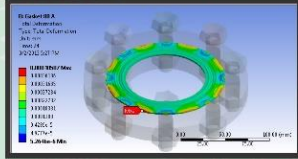
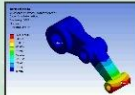
- COMPUTER SIMULATION TRAINING (FINITE ELEMENT & FINITE VOLUME METHOD, CAD/CAM, STRESS ANALYSIS, FLUID FLOW, etc)
- TRAINING & TEACHING AID PRODUCTION (PLC - PNEUMATIC)
- STUDY GROUP FOR RESEARCH, THESIS & SCIENTIFIC COMPETITION

### FACILITIES

- COMPUTER I7 + PRINTER
- FESTO & SCHNEIDER PLC, SMART RELAY
- CONVEYOR & PNEUMATIC TEACHING AID
- RESEARCH - THESIS POSTER
- COMFORTABLE ROOM


### RESEARCH

STRESS ANALYSIS : CRASH TEST, HELM IMPACT TEST  
OPTIMUM DESIGN : METAL GASKET, BIOMEDICAL  
METAL FORMING & METAL CUTTING SIMULATION  
FRACTURE MECHANIC & FATIGUE  
HEAT TRANSFER & FLUID FLOW  
AUTOMATIC CONTROL & MANUFACTURING SYSTEM  
COMPOSITE MODELLING



### CONTACT PERSON :

HEAD OF DESIGN AND ENGINEERING SYSTEM LABORATORY  
Dr. Eng. MOCH. AGUS CHOIRON, ST., MT  
HP. 0821 3924 9937  
EMAIL : agus\_choiron@ub.ac.id



# Program Kerja (Rapat 30 April 2021)

1. Pelatihan ANSYS
2. Lomba dan Presentasi pada Seminar Nasional/Internasional
3. Mensukseskan Project Lab (Target 2024 Produk Crash box SPRS)

**Training  
ONLINE**

**Presenter Seminar**

Skripsi Dzia

Latihan Project Crash Box

Develop Kasus

**Database Riset  
Crash Box**

Master Procedure Setting Solving Crash Box

1. Setting Volume dan berat Impactor berpengaruh
2. Disarankan Fix tumpuan
3. Komparasi LSDyna – Explicit Dynamic perlu diperbaiki

**Manajemen Lab**

Akses PC dengan Anydesk

Akuisisi alat 3D Printing dari elmes atau beli baru

# Program Kerja (kondisi saat ini)

1. Project ANSYS :
  - a. Covid-19 (mahasiswa Pimnas UB)
  - b. Mixing Process (FTP)
2. Lomba dan Presentasi pada Seminar Nasional/Internasional
3. Mensukseskan Project Lab
  - a. Target 2024 Produk Crash box SPRS
  - b. Medical Research

## Presenter Seminar

Skripsi Delia : Seminar Nasional KNEP Bali

Skripsi Aulia : 1<sup>st</sup> International Youth Conference

Database Riset  
**Crash Box**

Database Buku **Training + New Training**  
(Modul AIM, Mixing)

## Manajemen Lab

Akses PC dengan Anydesk

Ruang 3D Printing (3D printing elmes + SPRS baru)

Keamanan Jaringan Listrik

# 2<sup>nd</sup> Road Map Riset Crash Box (Lab. SPRS Teknik Mesin UB)

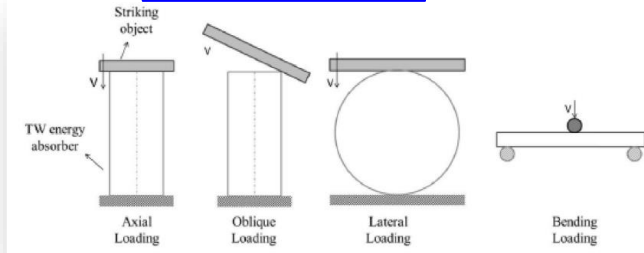
**Top View**



**Side View**



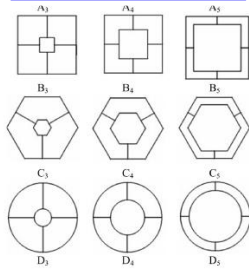
**Pengujian**



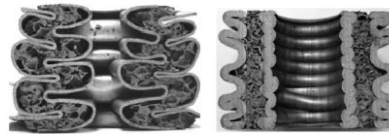
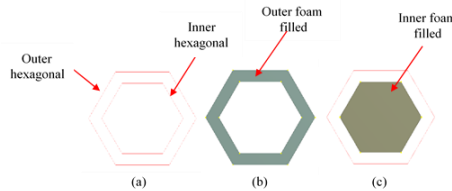
**MY STUDY**



**Multi Cell**



**Foam Filled**



**Material**

**Logam**

**Composit**

**Hybrid**

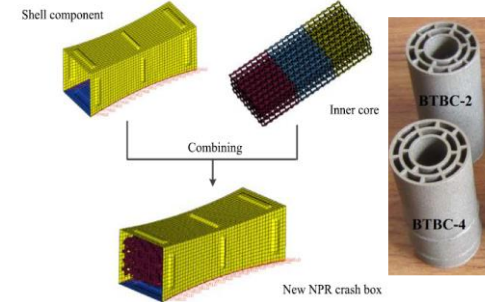


**Inspirasi Alam**

**Bambu**

**Tulang**

**Binatang**



**Optimasi**

**Taguchi**

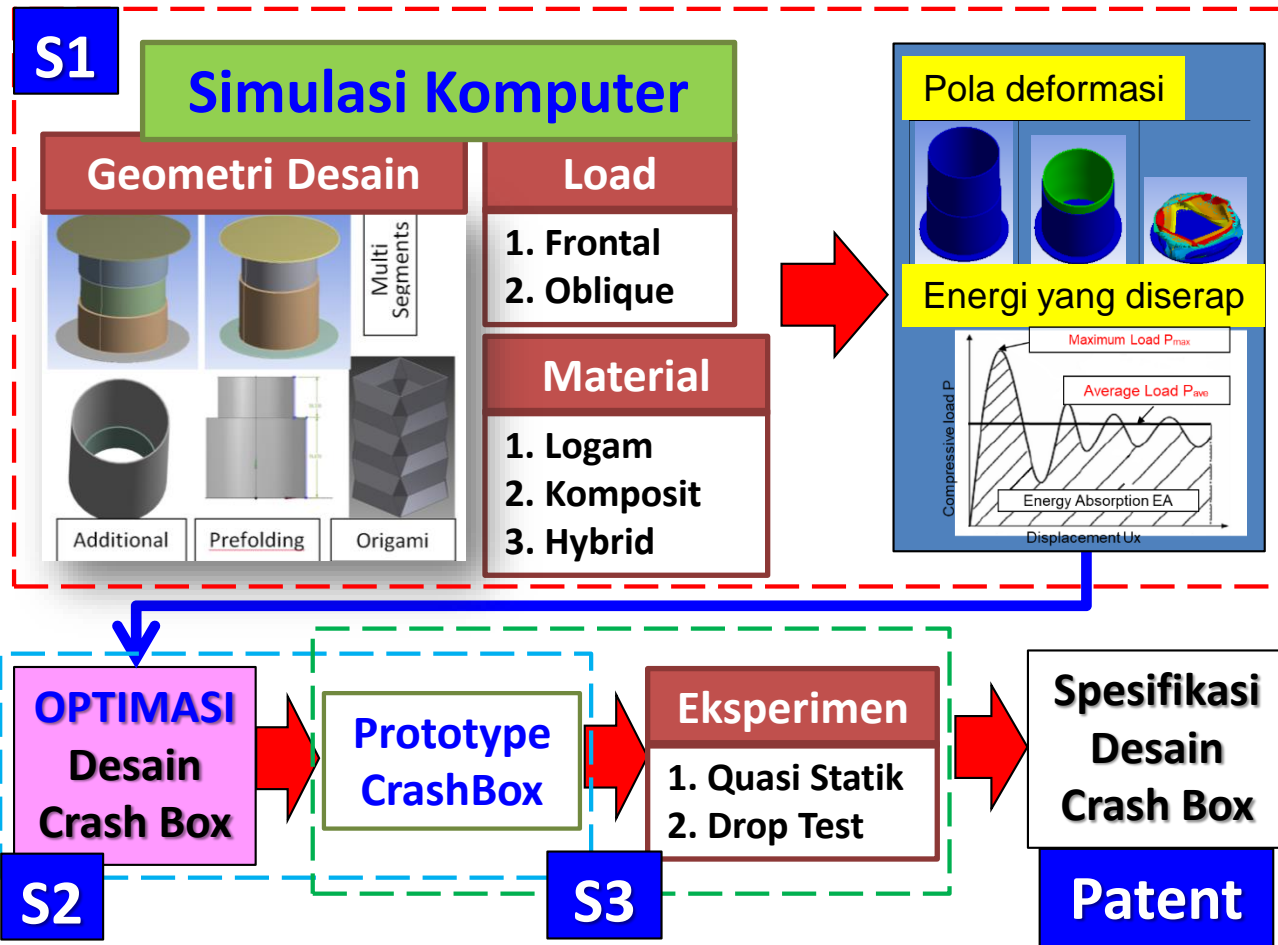
**RS**

**Multi Objective**

**Manufaktur dengan 3D Printing**

# Road Map Riset Crash Box

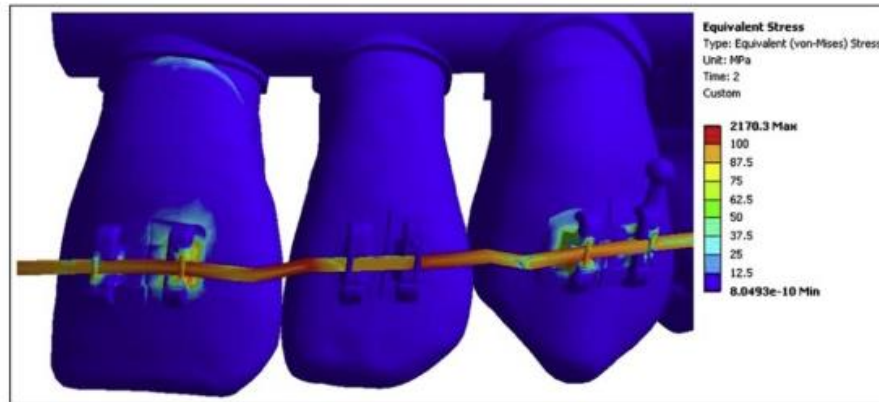
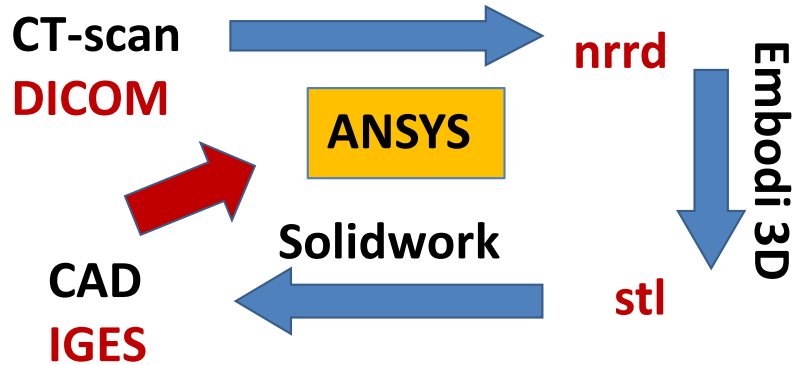
(Lab. SPRS Teknik Mesin UB)



- Rekayasa desain dengan simulasi komputer membantu desainer untuk mendapatkan variasi bentuk crash box yang mampu meningkatkan kemampuan penyerapan energi tabrak.
- Performa penyerapan energi ini bisa diamati pada pola deformasi yang menghasilkan lipatan (folding) yang simetri.
- Penelitian lanjut adalah melakukan optimasi desain yang akan dibuat prototype sehingga dapat diuji performanya dengan Uji Experimental



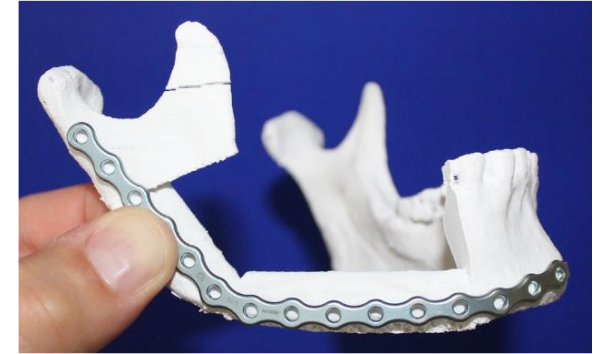
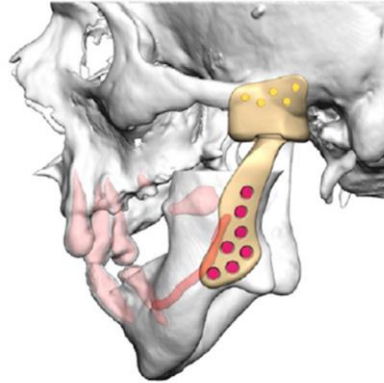
# Kerjasama dengan Medical



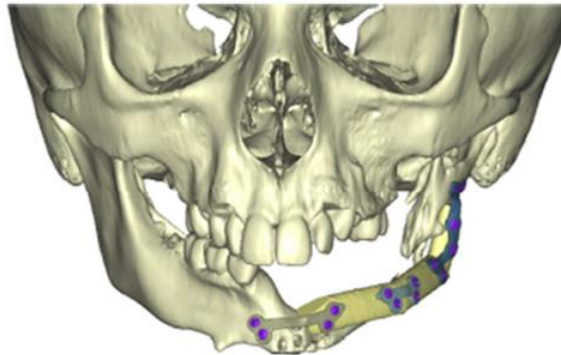
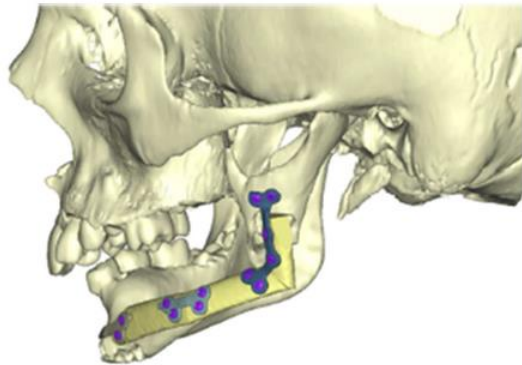
**Fig 3.** Equivalent (von Mises) stress (MPa) at the end of the first step with the contact deactivated and the wire displaced into the bracket slot. High stresses are seen in the central incisor and canine brackets.

# Kerjasama dengan Medical

Virtual design (left) and peroperative view (right) of a custom-made total temporomandibular joint prosthesis (Biomet1, Warsaw, IN, USA) on the left side for the joint reconstruction after resection of the ankylosis block



3D printed anatomic model of a mandible with virtual planning of a reconstruction by means of a fibular free flap on the right side. Pre-shaping of the osteosynthesis plate. The plate will be sterilized before use and will help peroperatively not only for the stabilization of the flap but also for the positioning of the osteotomized bone segments



Pediatric mandibular reconstruction by means of a rib graft stabilized by mean of custom-made osteosynthesis plates : Virtual planning of the reconstruction