GOOD HEALTH WALES 2017
ARTS FOR HEALTH AND WELLBEING SYMPOSIUM
IECHYD DA CYMRU 2017
SYMPOSIWM Y CELFYDDYDAU AR GYFER IECHYD A LLES

DESIGN *for* HEALTH

Dr Sean Jenkins
Matthew Bellis

School of Design & Applied Arts

Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Swansea
College *of* Art
Founded 1853

Swansea College of Art
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: Partnerships with Healthcare

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Abertawe Bro Morgannwg University Health Board

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Hywel Dda University Health Board

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Caerdydd a'r Fro
Cardiff and Vale University Health Board

CEREBRA
Working wonders for children with brain conditions

med-co group

DSA
Design for Successful Ageing

isd
Sefydliad Dylunio Cynaliadwy
Institute for Sustainable Design

LECKEY

DTR Medical

Rocialle

PHOENIX
SPECIALIST PRODUCTS

HAEMAIR

CALON
Cardio-Technology

nomad

Start-Bee Creative!

bsi.

JCM
24 hour postural care

RECLINERS
COMMITTED TO QUALITY & SERVICE

innoture
MEDICAL TECHNOLOGY

Eastgate Dental Laboratory
Makers of Beautiful Teeth
Established in 1989

Ask inside for details
Safe place

Swansea College of Art : Academic & Technical Expertise

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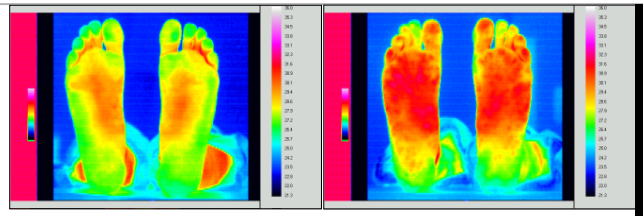
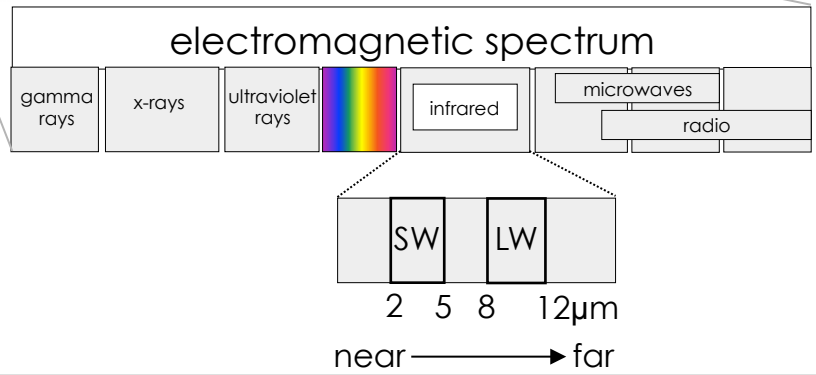
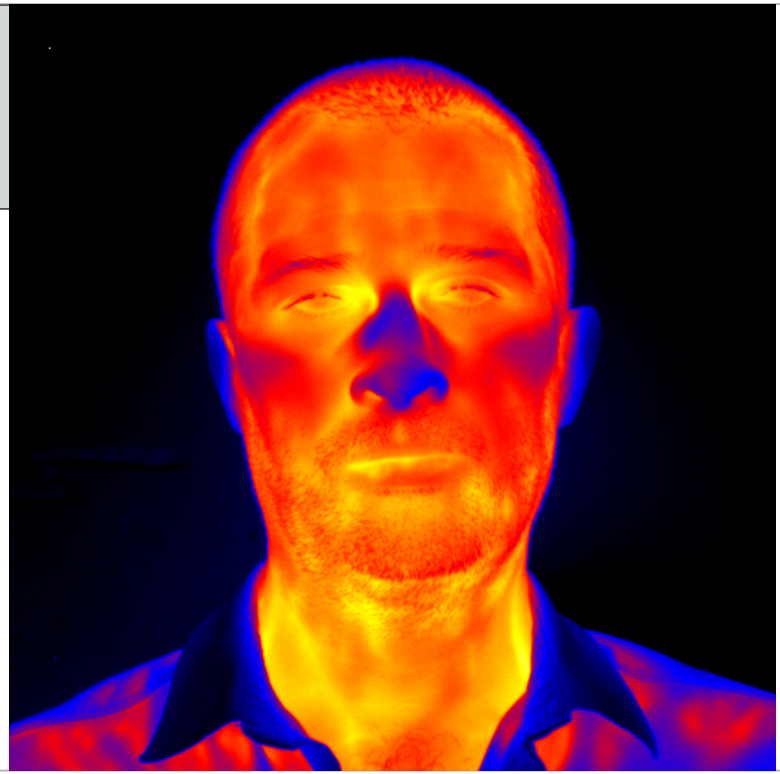
capture	• User Centered Design Research • 3D Scanning & IRT
convert	• 3D Computer Aided Design • Simulation, Analysis & Testing
create	• Product Design Innovation • Product Prototyping

Infrared Thermography

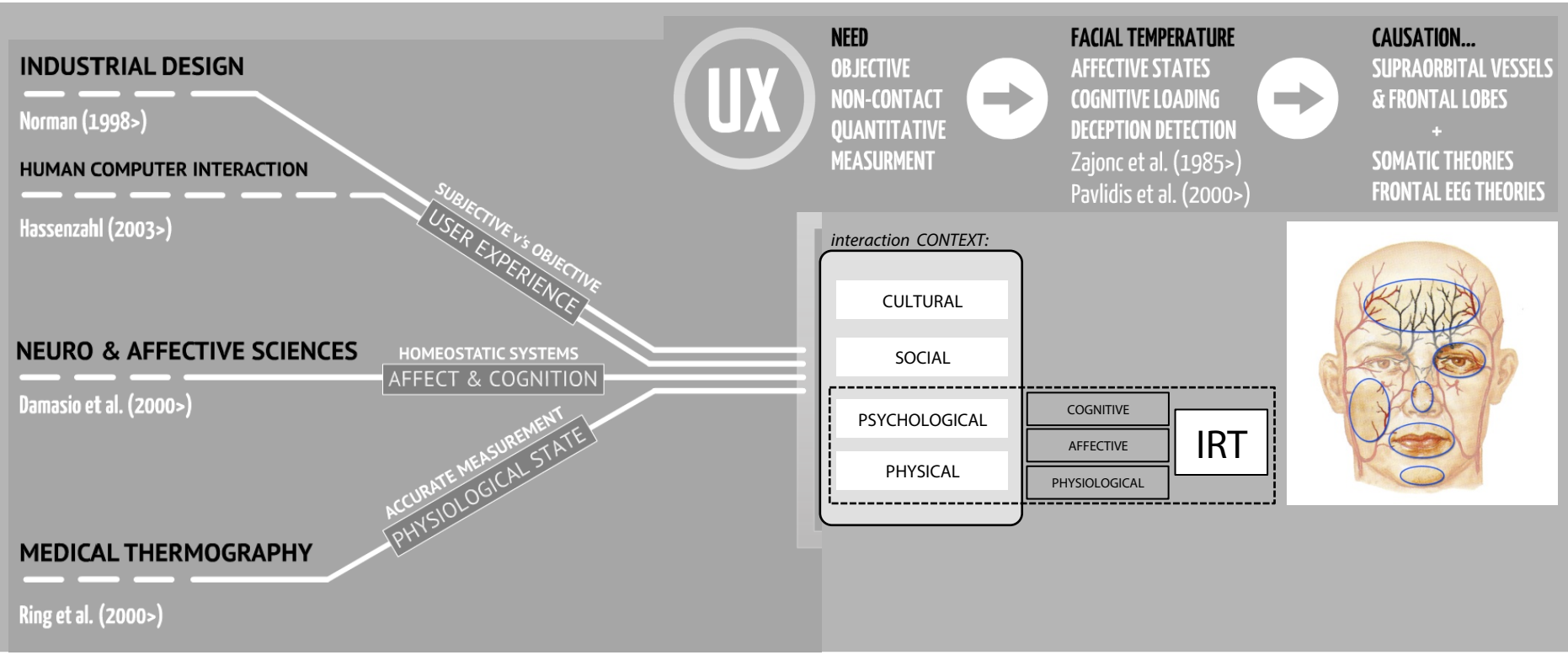






a technique used to visualise and measure infrared radiant energy

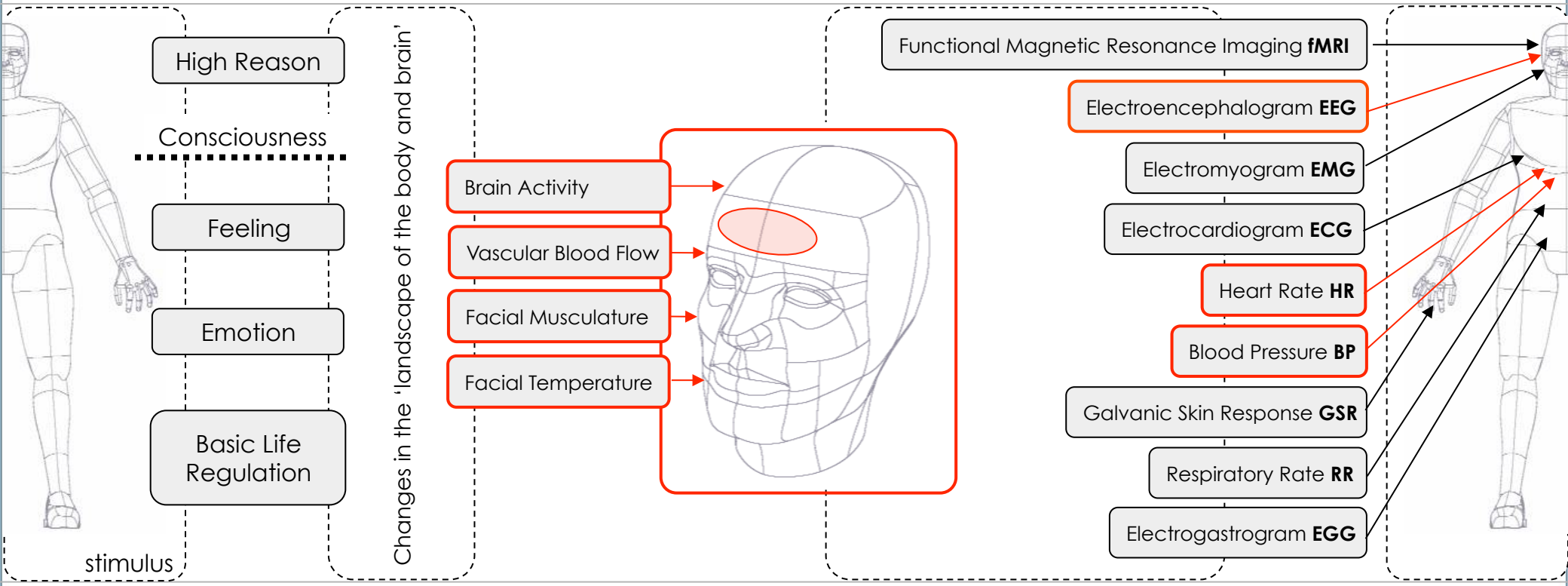
Thermographic Measurement of UX



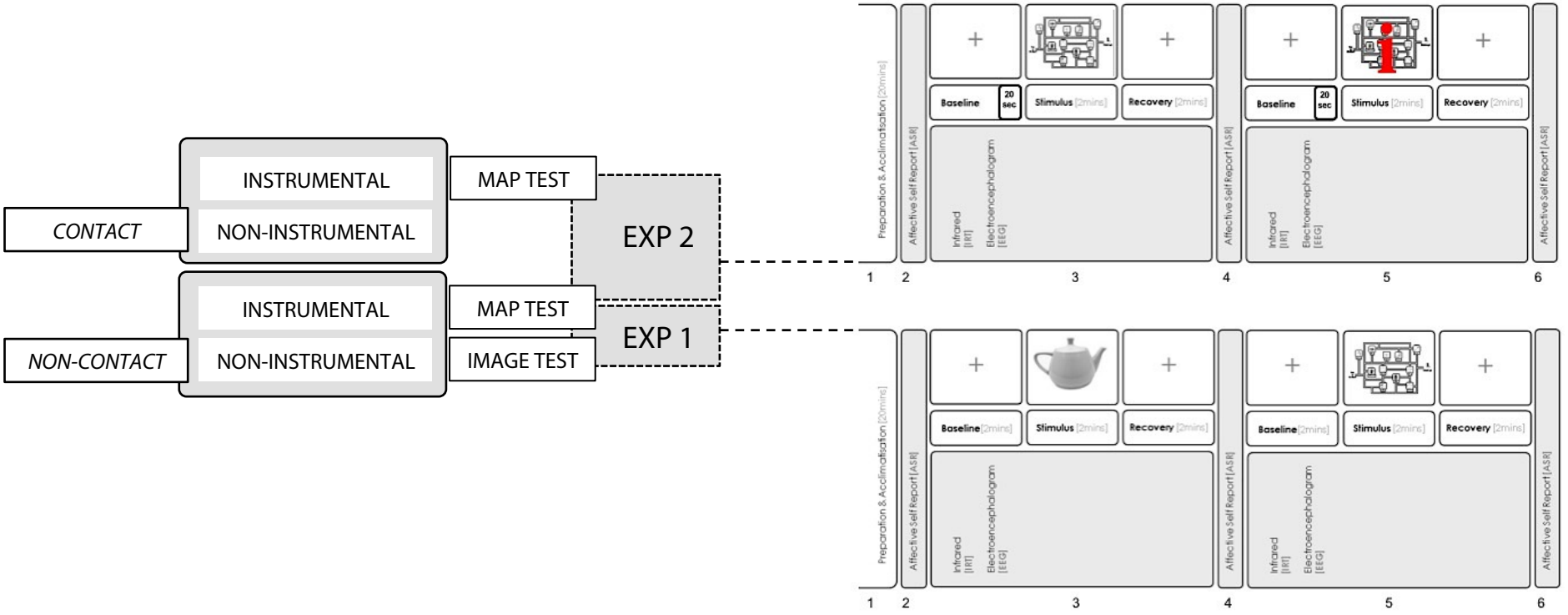
"…emotions are part of the mechanism of homeostatic regulation"

Damasio (2000)

Measures of Cognition and Affect



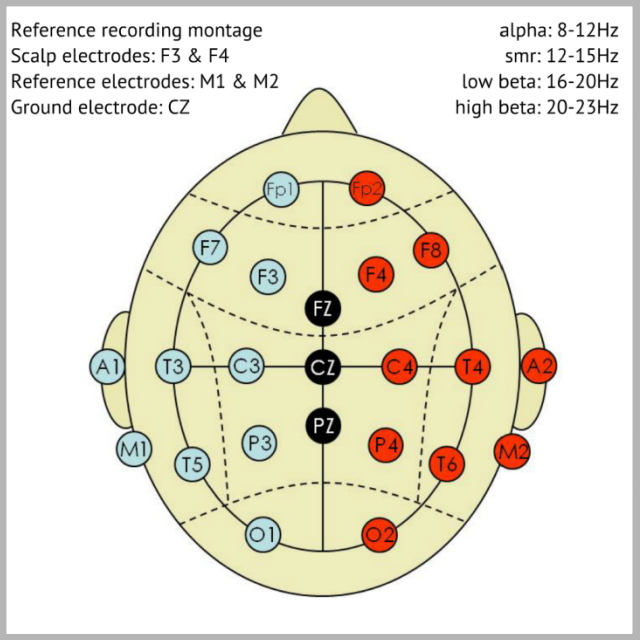
Empirical model of Product Interaction



Between Methods Triangulation

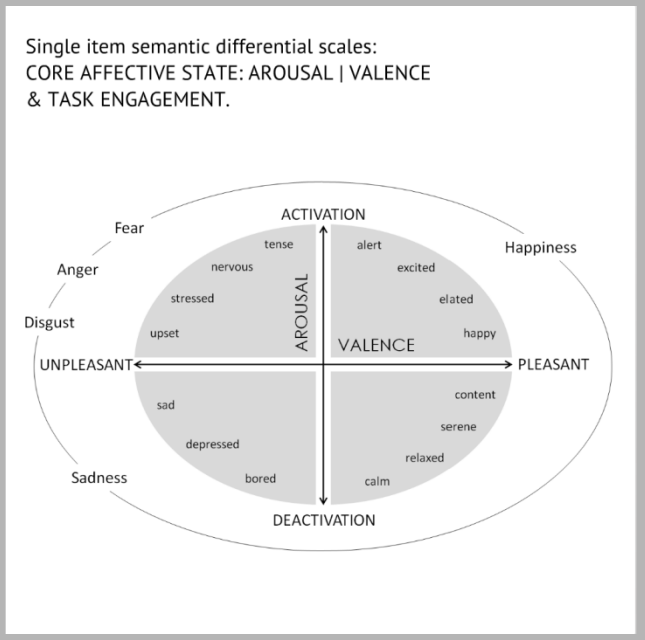
Infrared Thermography [IRT]

Non-contact objective measure



Electroencephalogram [EEG]

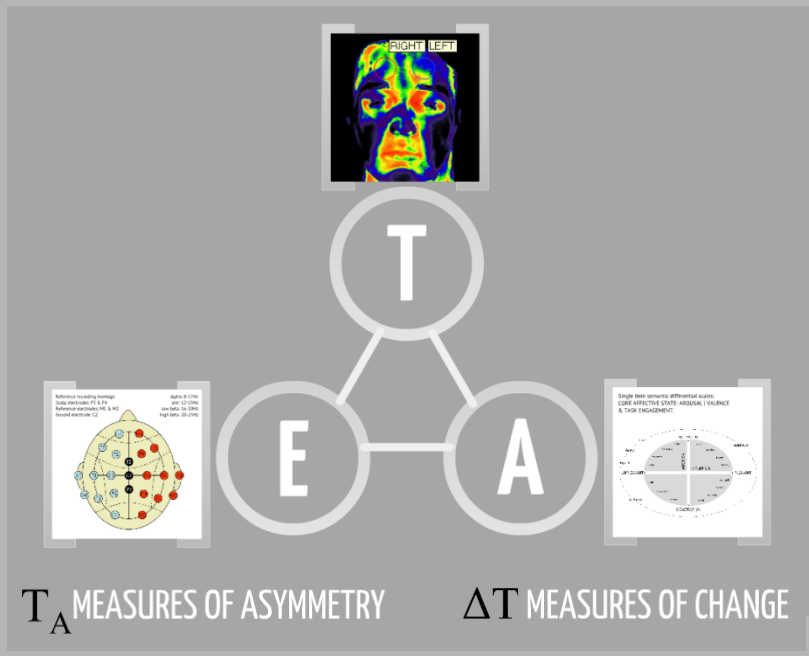
Contact objective measure

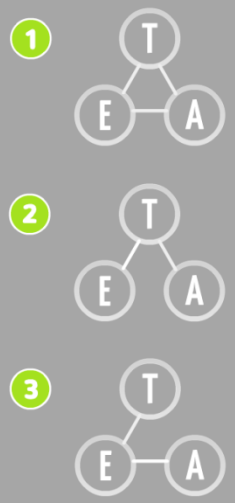


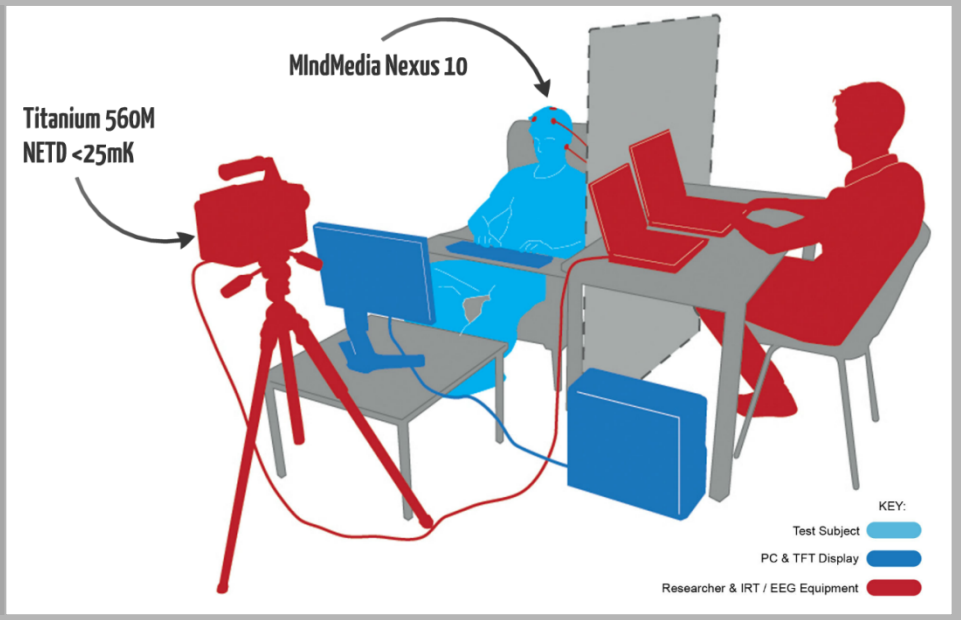
Affective Self Report [ASR]

Subjective measure

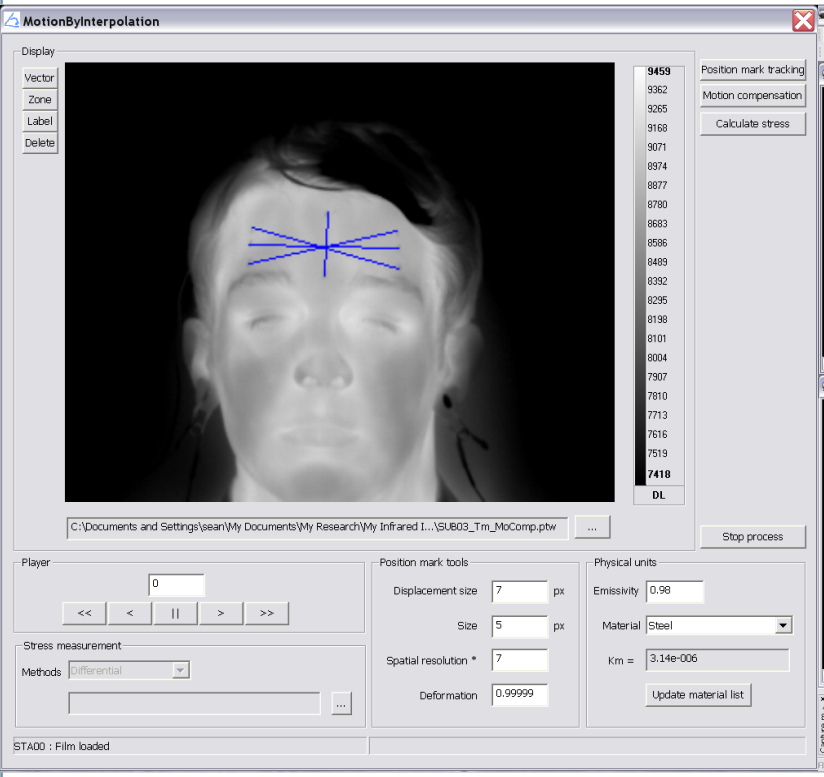
Between Methods Triangulation

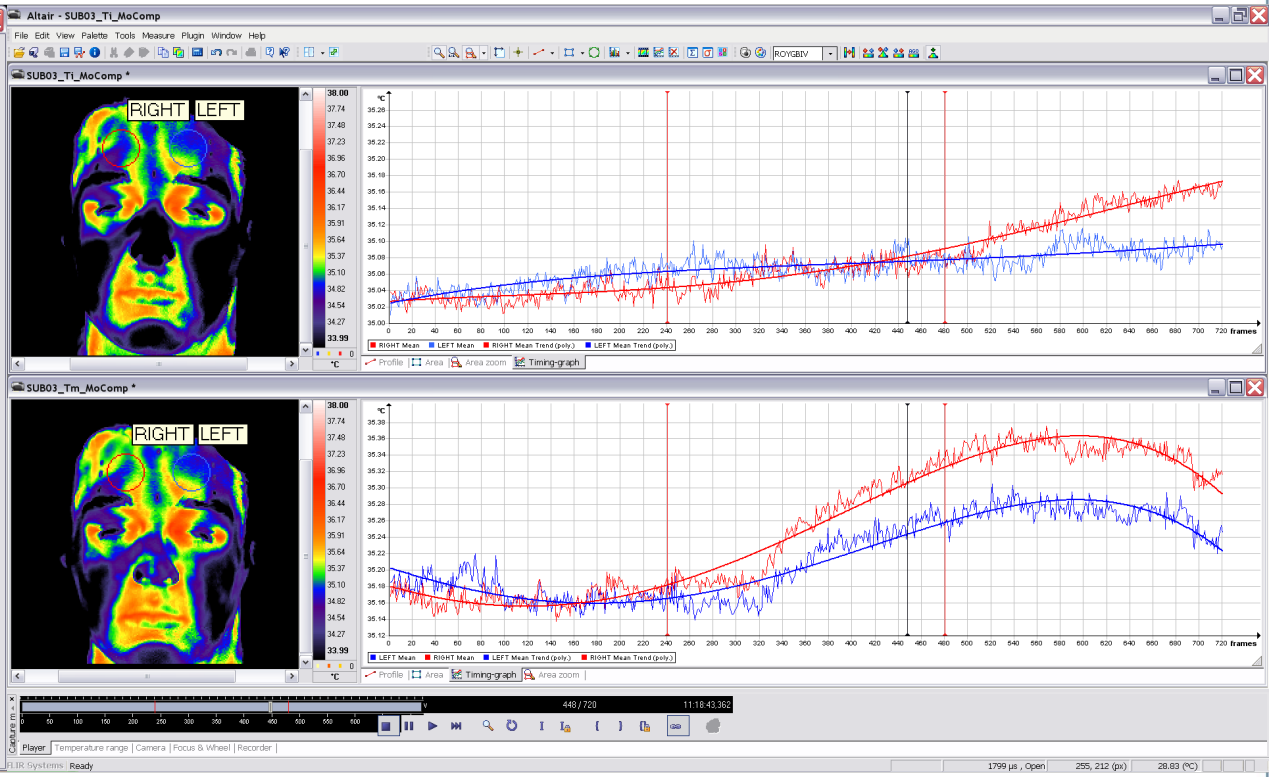




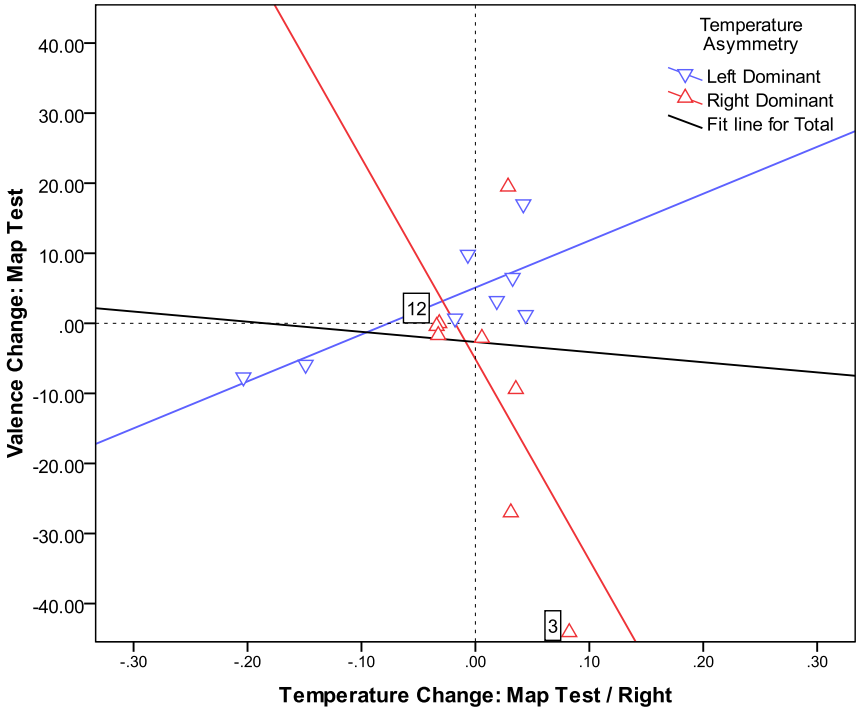


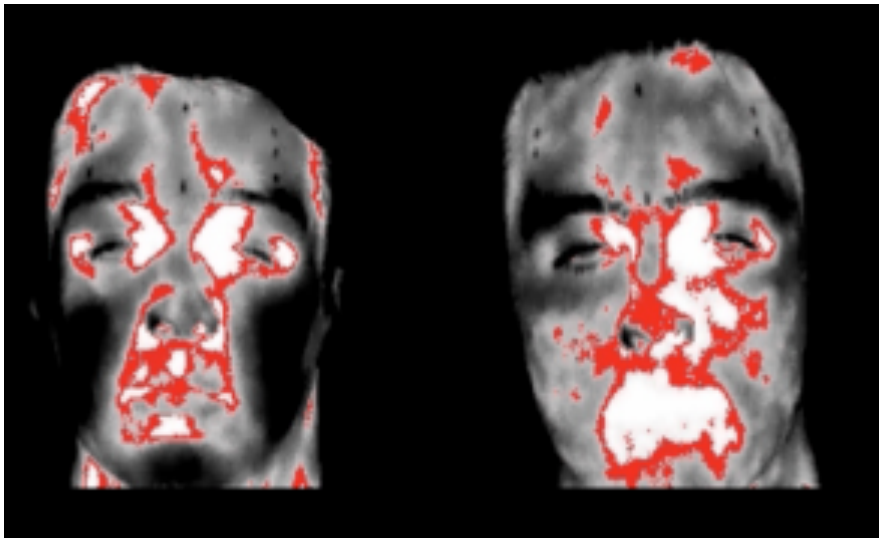
Motion Compensation and Analysis





Thermographic Measurement of UX



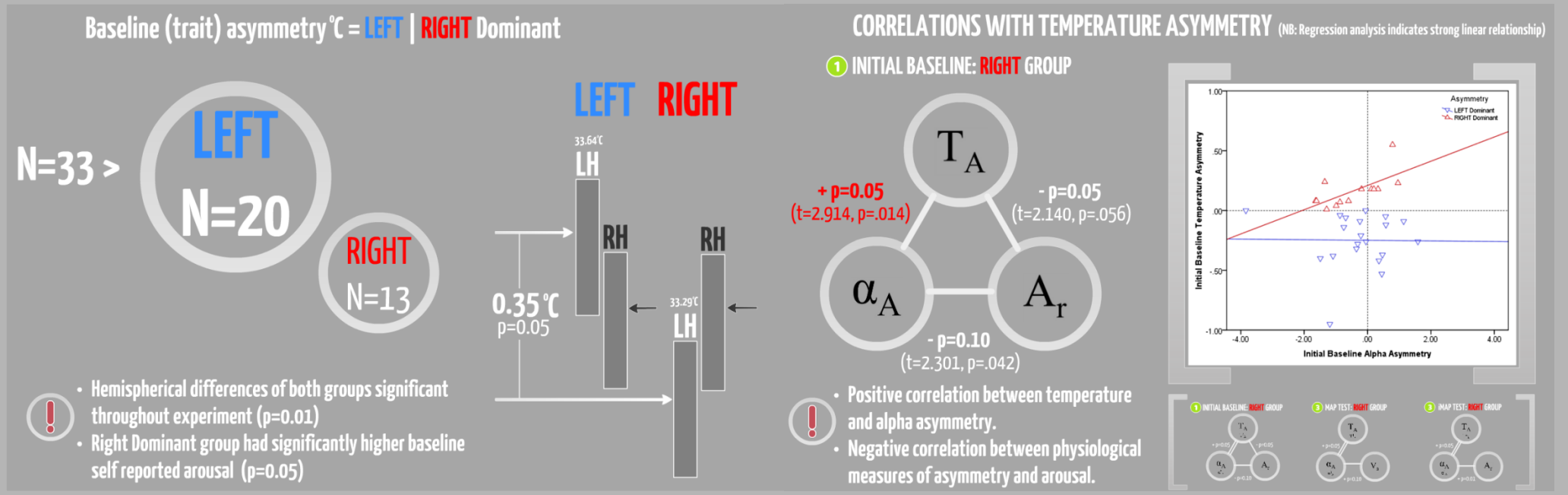


SUBJECT 3
High arousal
High engagement
Negative valence

SUBJECT 12
Low arousal
Low engagement
Positive valence

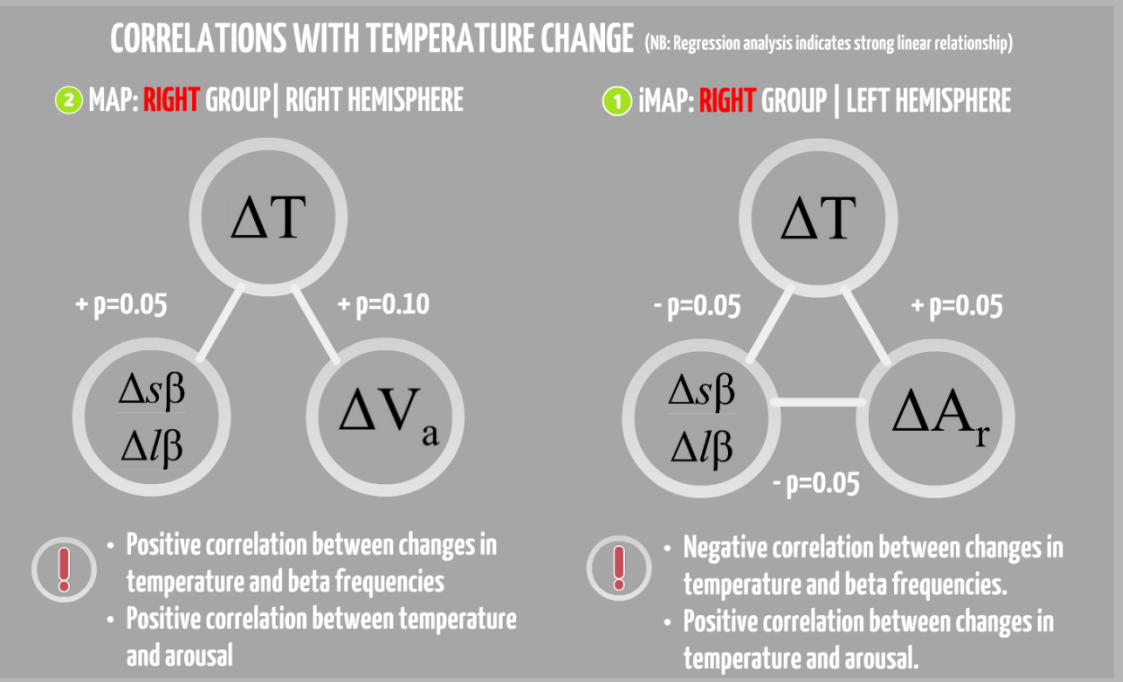
Jenkins, Brown & Rutterford (2009)

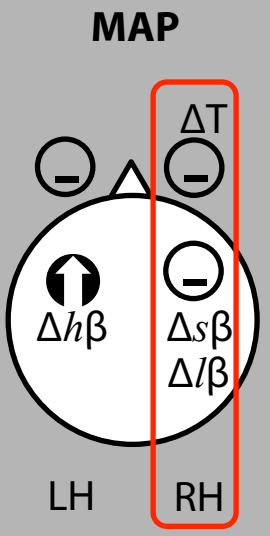
Thermographic Measurement of UX

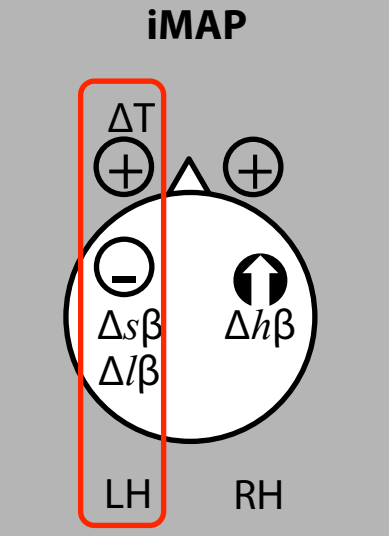


Jenkins & Brown (2014)

Thermographic Measurement of UX





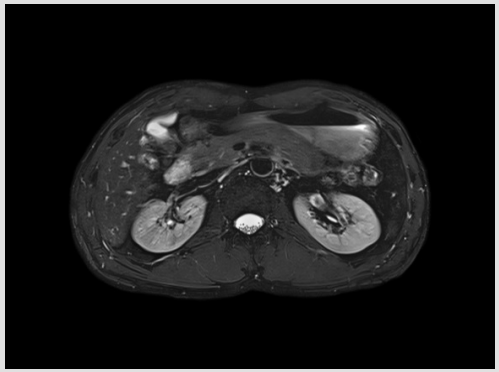


Thermographic Measurement of UX

- Tonic Supraorbital Temperature Asymmetry = LEFT | RIGHT Dominant 'TYPES'
  Indicates that population samples are more complex than previously considered...
- Temperature asymmetry is an index of underlying trait frontal EEG activation and autonomic balance which appears to moderate cognitive and affective reactivity to stimuli...
- Tonic trait influences nature of response to the level of interaction and the effectiveness of measurement

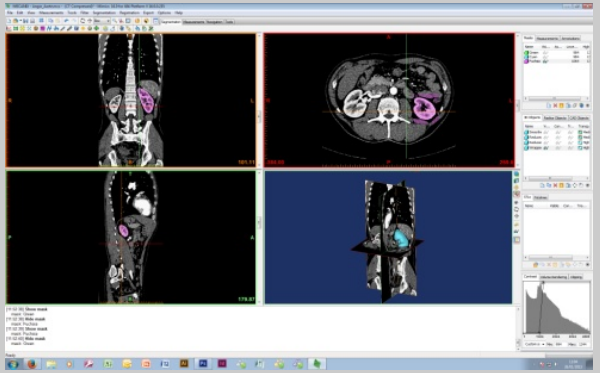
Capture | Convert | Create

capture



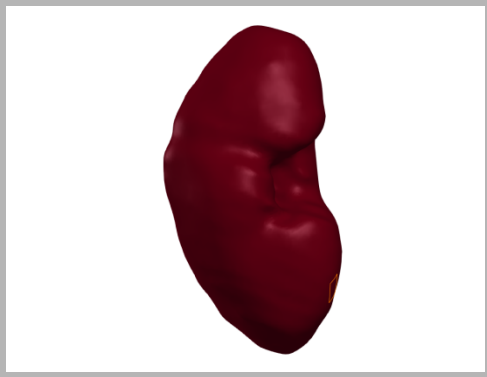
Magnetic Resonance Imaging
Structured Light Scanning
Photogrammetry & IRT

convert



Materialise Mimics
Solidworks /
Autodesk Fusion 360

create

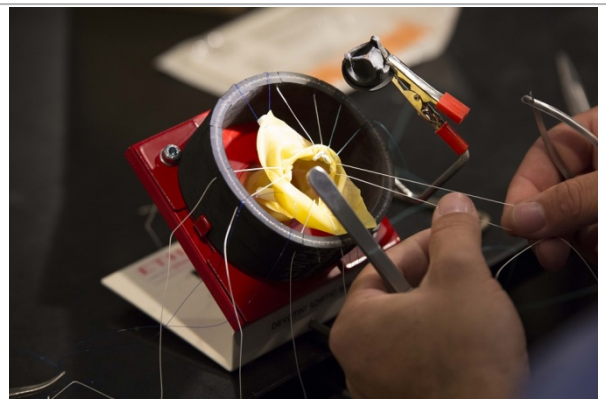


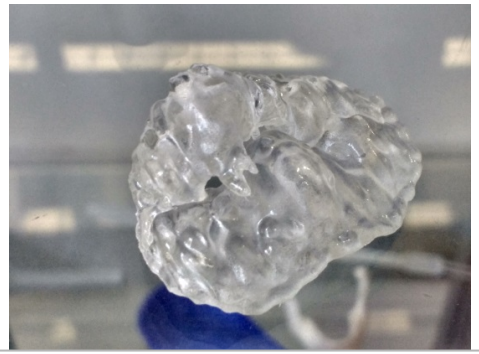
Selective Laser Sintering
Multijet Printing
Fused Deposition Modelling

“all healthy bodies are alike, each unhealthy body is unhealthy in its own way”

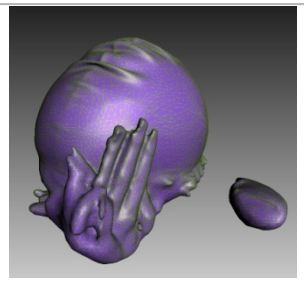
Lieberman D. E. 2013

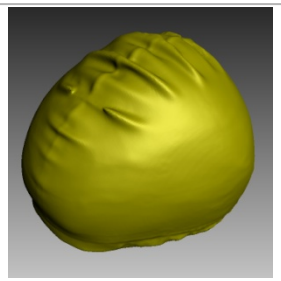
Heart Surgery Training Aid

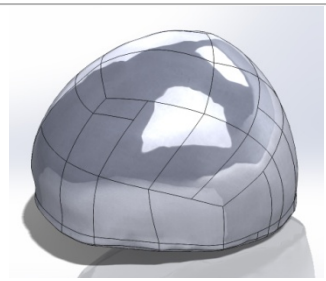




Bespoke Riding Helmet

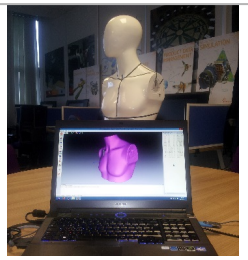


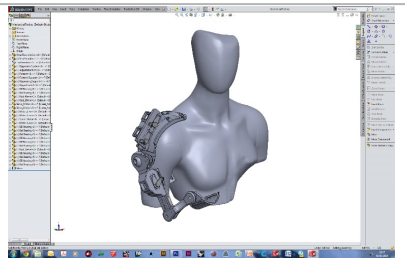


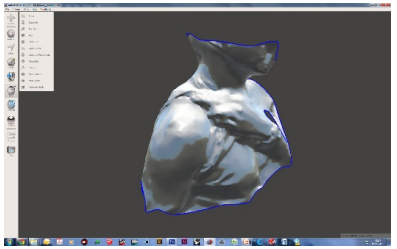


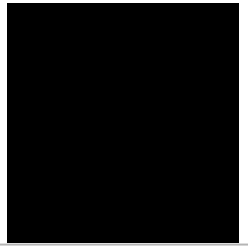
Collaboration with : PROMOVE A2B WITH DIGNITY

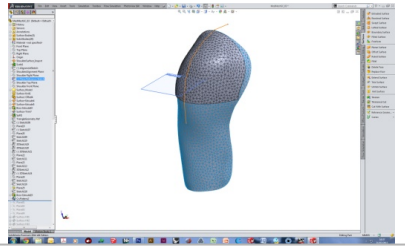
Collaboration with : PRO MOVE A2B WITH DIGNITY











Respiratory healthcare + design research

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol
Hywel Dda
University Health Board

Prince Philip Hospital, Clinical Research Centre

Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

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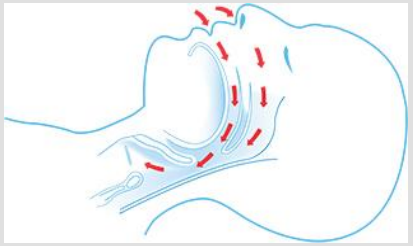
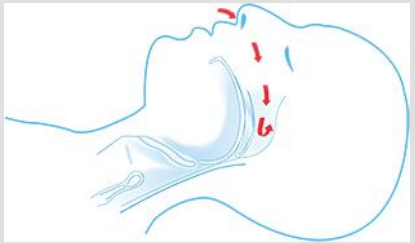
re:DRAW
RESPIRATORY DESIGN RESEARCH WALES

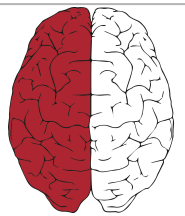
Obstructive Sleep Apnoea

Regular Breathing

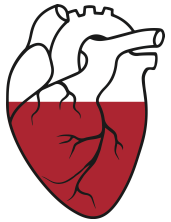


Cessation Breathing

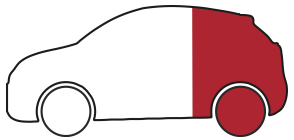




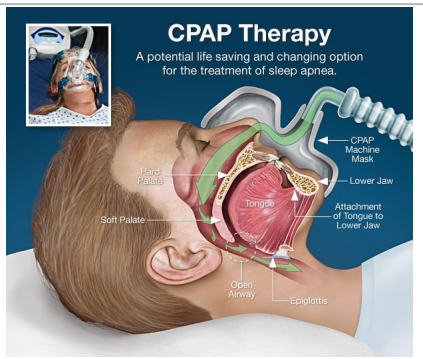
49%



46%



31%



RAND EUROPE

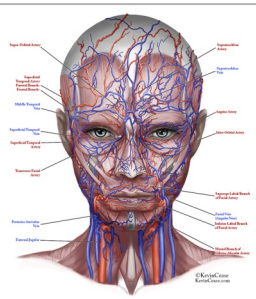
200,000 work days lost = £40 billion UK Economy (1.86% GDP)

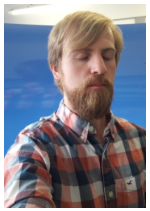
Obstructive Sleep Apnoea

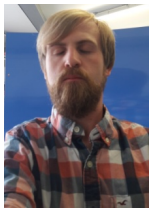
Problems with current treatment:

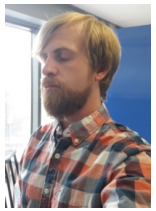
- **30% non-compliance**
- **Human – Mask Interface**
- **Mask leaks**
- **Dry eyes, nose and mouth**
- **Pressure Ulcers and Abrasions**
- **Awakenings**
- **Claustrophobia and Anxiety**
- **20 masks for 7 billion people**

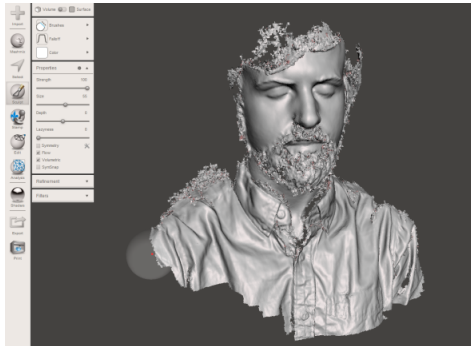
User Informed Generative Design





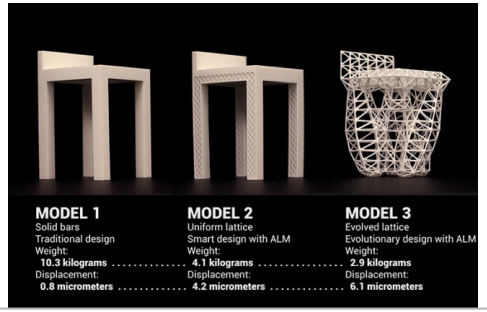


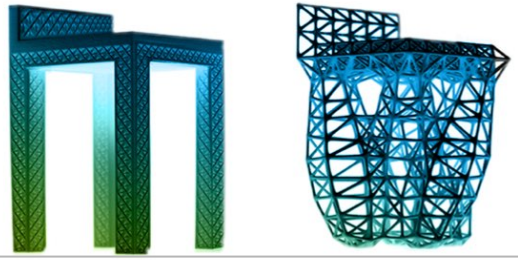




FROM
20 SIZES FOR
7 BILLION PEOPLE

TO
7 BILLION SIZES
FOR
7 BILLION PEOPLE





THANK YOU

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