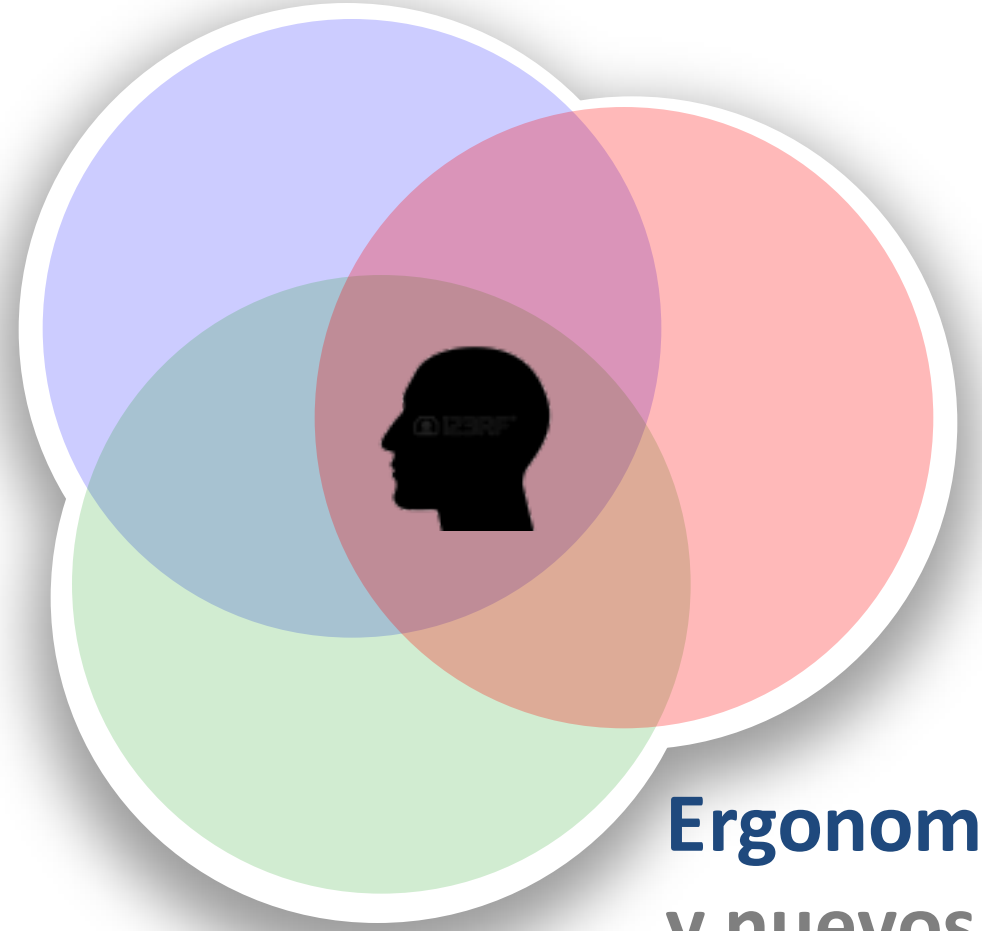


Ergonomia de interfaces
y nuevos retos para el diseño de interfaces hombre-máquina

pedro.arezes
nov.2015 | **UM**inho

Universidade do Minho

Campi

BRAGA

3ª ciudad más grande y la más antigua

aprox.180k habitantes

GUIMARÃES

La capital histórica de Portugal y “cuna” de la nación

aprox. 160k habitantes

Universidade do Minho

- una **nueva universidad**, creada en 1974

- alumnos
  - ~ 15,000 graduación
  - ~ 5,000 post-graduación (MSc. & PhD.)

- 1200 profesores

- 600 personal no docente

www.uminho.pt

THE world ranking 400

#372 UMinho

(+ U Lisboa)

THE 100 under 50 year

#64 UMinho

1st PT (out of 3)

CWTS Leiden Ranking

#401 UMinho

2st PT

Edificio de la Rectoría de UMinho @Braga

Castillo de Guimarães

Siglo XII

Guimarães

World Heritage site UNESCO (2001)
European Capital of Culture 2012
(candidatura para European Green Capital en2020)


AQUI
NASCEU
PORTUGAL


Hide the mini

Universidade do Minho
Escola de Engenharia
Departamento de Produção e Sistemas

- Escola de Arquitectura
- Escola de Ciências
- Escola de Ciências da Saúde
- Escola de Direito
- Escola de Economia e Gestão
- Instituto de Ciências Sociais

ESCOLA DE ENGENHARIA

- Escola Superior de Enfermagem
- Escola de Psicologia
- Instituto de Educação
- Instituto de Letras e Ciências Humanas

Universidade do Minho
Escola de Engenharia
Departamento de Produção e Sistemas

DEPARTAMENTO DE PRODUÇÃO E SISTEMAS

Departamento de Engenharia Mecânica

Departamento de Engenharia Civil

Departamento de Electrónica Industrial

Departamento de Engenharia Têxtil

Departamento de Engenharia Biológica

Departamento de Engenharia de Polímeros

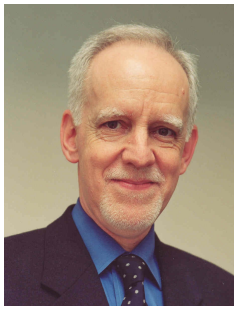
Departamento de Informática

Departamento de Sistemas de Informação

human engineering

human engineering

PEDRO AREZES
Professor
Industrial Engineer (PT)
M.Sc. Human Eng. (PT)
Ph.D. Industrial Eng. (PT)



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Inv. Professor
Chemical Engineer (PT)
M.Sc. Occupational Health (PT)
Ph.D. Production Eng. (PT)

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Assistant Prof.
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M.Sc. Manufacturing Eng. (UK)
Ph.D. Ergonomics (UK)

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Inv. Assistant Prof.
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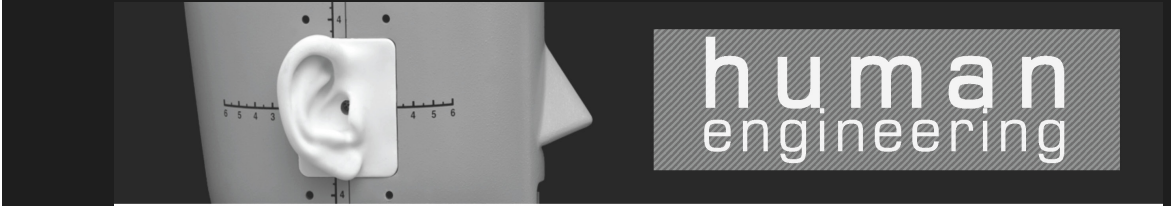
Ph.D. Production Eng. (PT)

ANA COLIM
Inv. Lecturer
Biology (PT)
M.Sc. Biology Eng. (PT)

PATRICIO CORDEIRO
Research Assist. & Lab Tech
Industrial Eng (PT)



Collaborators


Alba Lopes *
MSc student, Brazil


Amarria Dila *
Msc student, Indonesia


Ana Filipa Fernandes
MSc student


Ana Colim
PhD student, lecturer


Anna Sophia Piacenza
PhD student, Brazil


Delfina Ramos
PhD student


Diana Alves
MSc student


Diana Freitas
MSc student


Eliane Lago
PhD student


Fátima Carvalho
MSc student


Germana Pereira
MSc student


Hélia Fonseca
MSc student


João Silva
MSc student *


Hernani Neto
PhD student, FLUP


Ignacio Castellucci
PhD student, Chile


Isabel Loureiro
PhD student


José Araújo
MSc student


José Santos
MSc student *


Juliana Castro
MSc student


Leonildo Júnior
MSc student *


Liliana Gomes
MSc student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PhD student, Brazil


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MSc student *


Luis Franz
PhD student, Brazil *


Marcelo Pereira
Exchange col, Brazil *


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PhD student


Madalena Torres
PhD student


Matilde Rodrigues
PhD student


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MSc student


Nelson Costa
PhD student, Lecturer


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MSc student *


Olga Mateus
MSc student *


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PhD student


Patrício Cordeiro
Lab Coordinator


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PhD student


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MSc student *


Rosário Teixeira
PhD student


Rui Azevedo
PhD student *


Sandra Gonçalves
MSc student *


Sandra Lopes
MSc student


Susana Barbosa
MSc student *


Susana Costa
PhD student


Vanda Carrelhas
MSc student *


Wastony Bittencourt
PhD student, Brazil

Patrício Cordeiro
Lab Coordinator

Patrício Cordeiro
Lab Coordinator

Patrício Cordeiro
Lab Coordinator

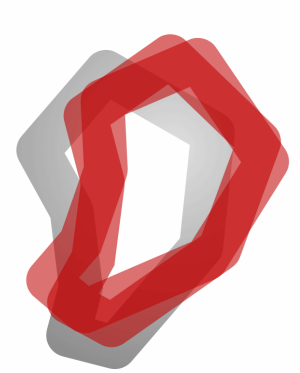
Patrício Cordeiro
Lab Coordinator

Patrício Cordeiro
Lab Coordinator


maturity evaluation
HEALTH & SAFETY


IDI
inclusão
digital
de invisuais


ergonomics
for Smal & Medium-sized Enterprises




Proj. nº 069API/06 da ACT
cargas


WAVE
Whole-body vibration
Assessment in VEihcles

Proyectos con la industria

ACAPO
ASSOCIAÇÃO DOS CEGOS E AMBLÍOPES DE PORTUGAL

MESQUITA
CONSTRUÇÃO CIVIL E OBRAS PÚBLICAS

Aurélio Martins Sobreiro & Filhos, SA

Camport

Continental

CHAM
CENTRO HOSPITALAR do ALTO MINHO SA

Critical

GESCARTÃO

HOSPITAL DE SÃO MARCOS
BRAGA

IPO FG
Porto, EPE

NAUTILUS

prevent

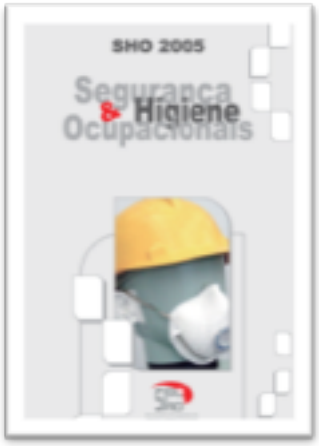

International Symposium
on Occupational Safety and Hygiene
Livro de Comunicações


SHO 2006
Segurança e Higiene Ocupacionais


SHO 2008
SHO 2008
Segurança e Higiene Ocupacionais
Occupational Safety and Hygiene


international symposium on
occupational safety and hygiene
segurança e higiene ocupacionais
sho2019
proceedings book
livro de actas


sho2012
Occupational Safety and Hygiene
Book of Abstracts


SHO 2005
Segurança & Higiene Ocupacionais


SHO2007
Segurança e Higiene Ocupacionais

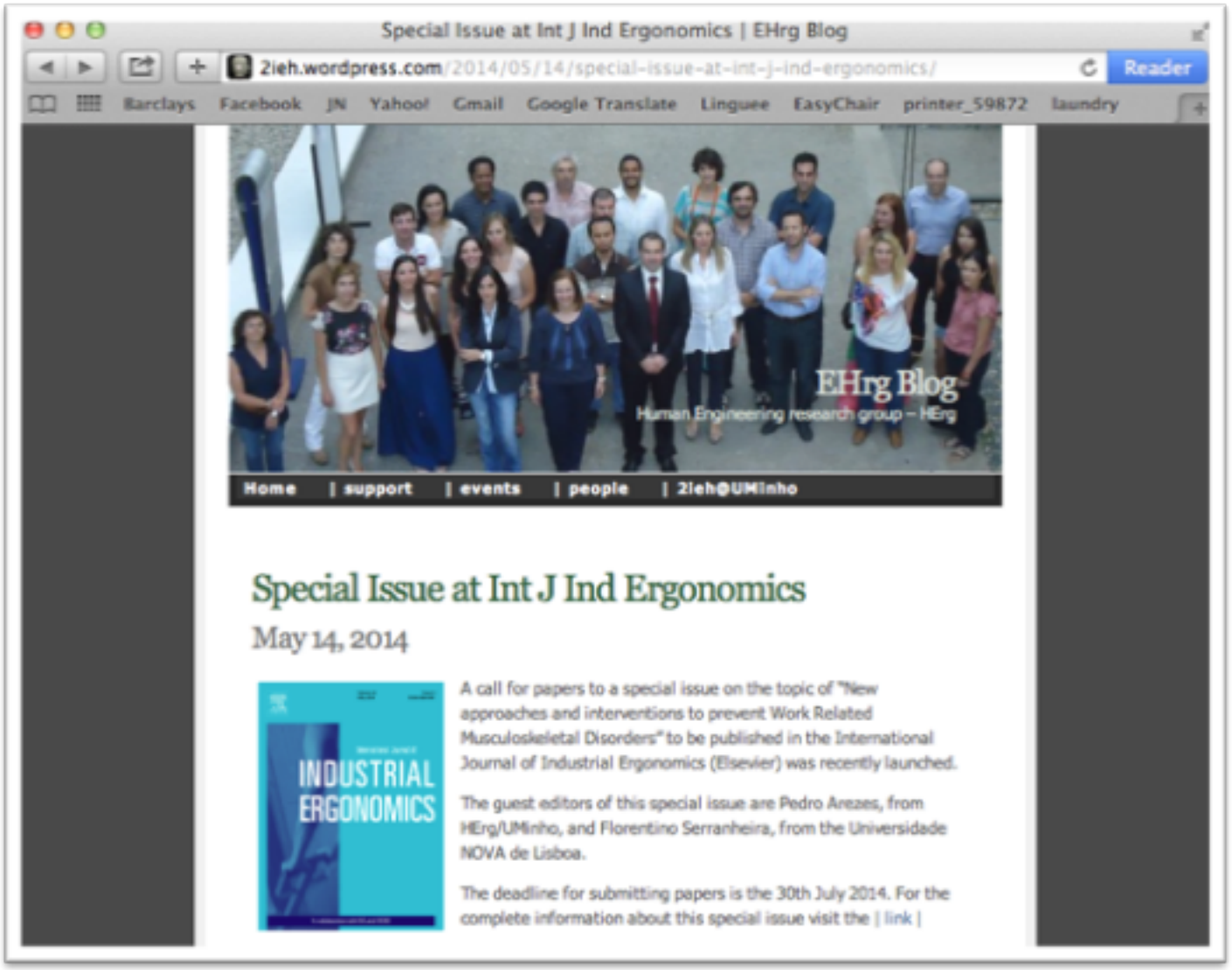

SHO 2009
Occupational Safety and Hygiene
Higiene Ocupacionais
RESUMOS
ABSTRACTS


sho2011
Occupational Safety and Hygiene
Segurança e Higiene Ocupacionais

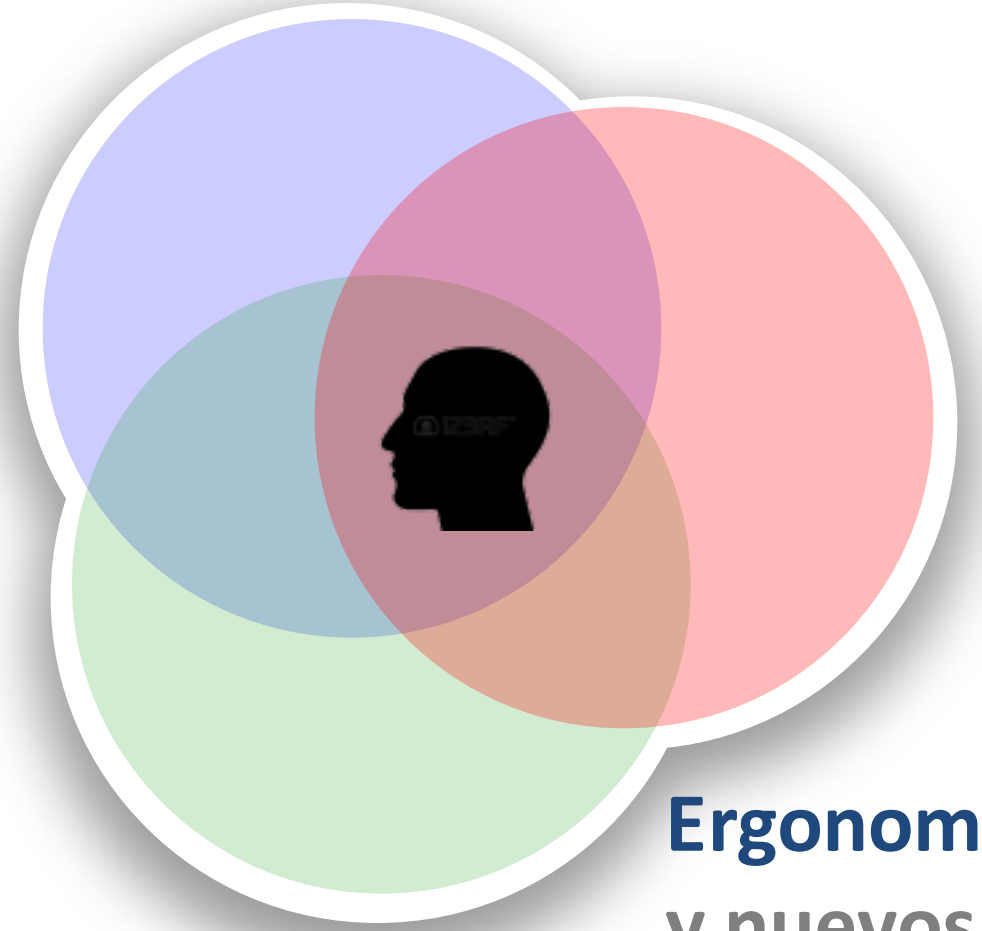

Occupational Safety and Hygiene
SHO2013

http://wos2015.net

www.sposho.pt/**sho2016**



http://2ieh.wordpress.com



Ergonomia de interfaces
y nuevos retos para el diseño de interfaces hombre-máquina

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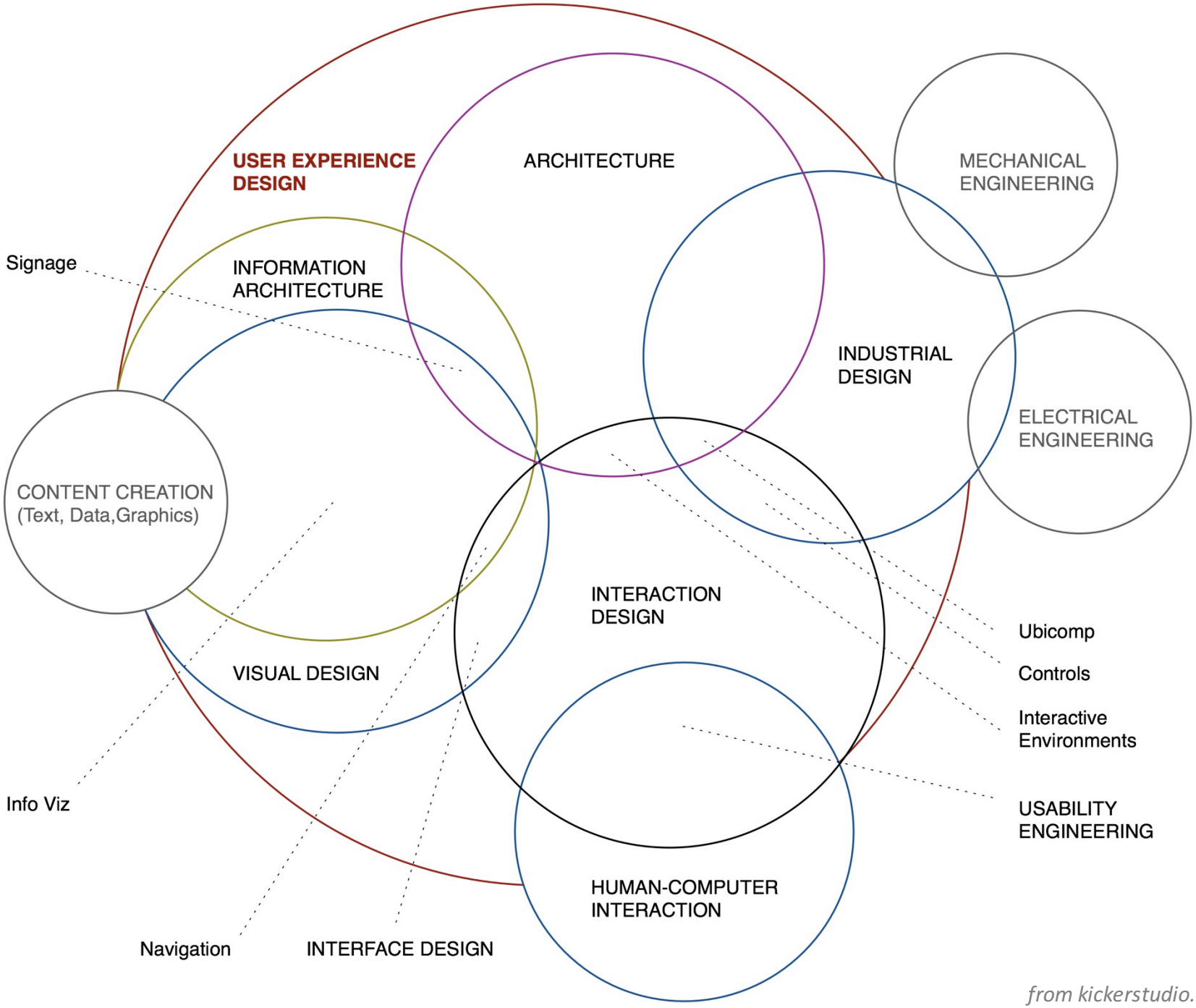
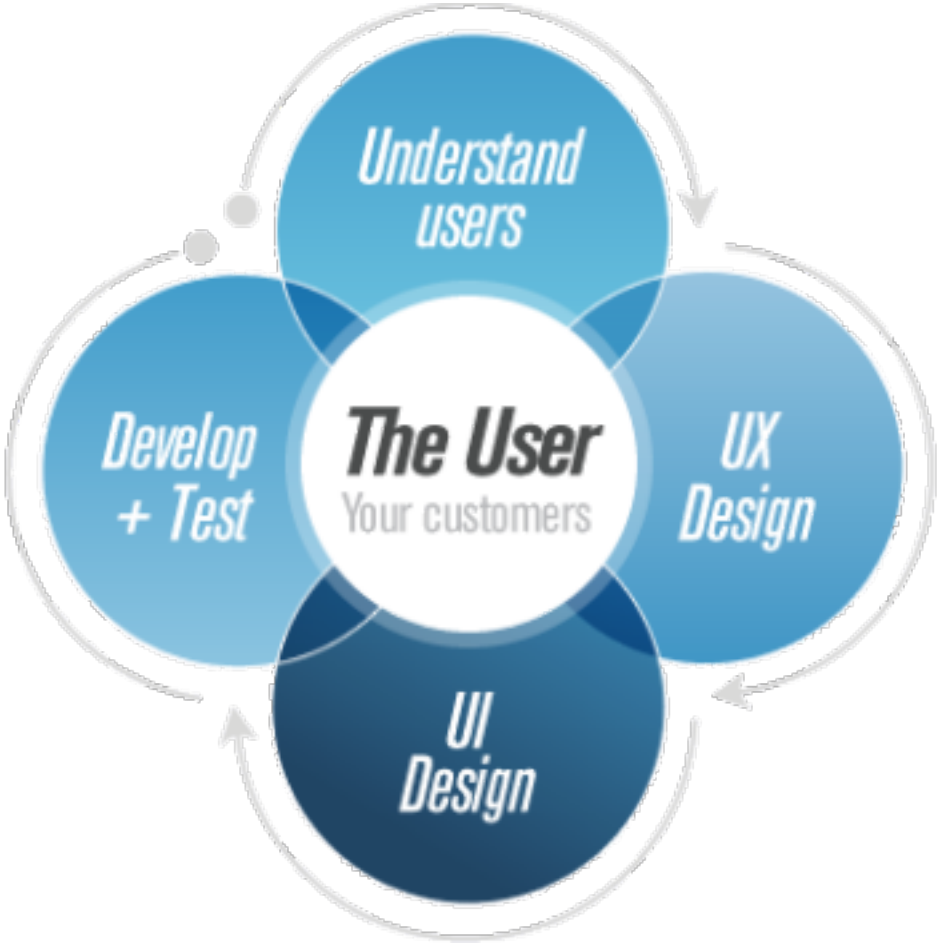
nov.2015 | **UM**inho



from kickerstudio.com/blog


Understand users
Develop + Test
The User
Your customers
UX Design
UI Design


ITALY
Asciugamani-Hand dryer

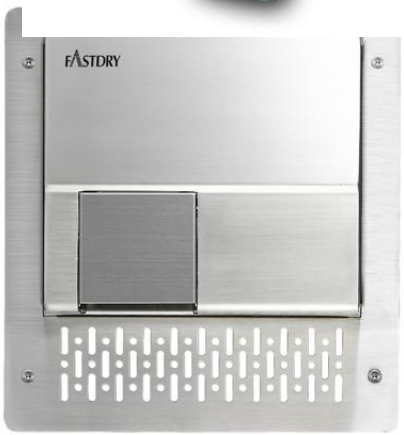

VAMA
ITALY
Asciugamani-Hand dryer


FASTDRY


VAMA
electronic


VAMA
ITALY


FASTDRY


FASTDRY

Ergonomia

- Antropometría
- Asiento y posturas en la conducción
- Antropometría de al cabina
- Acceso al habitáculo
- Alcances
- Diseño del panel
- Confort térmico
- Ruido y Vibraciones
- Tareas de navegación
- …

Futuro

- Nuevas tecnologías y nuevas interacciones
- Necesidad de más conocimiento en los campos de la fisiología y la psicología
- Evitar la sobrecarga

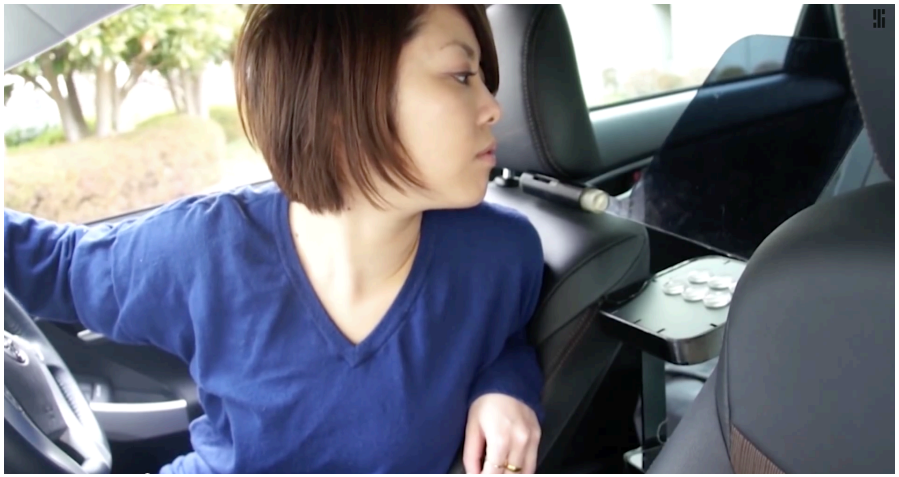

Social Media Changes the Game in Presidential Campaigns
Pulitzer Prize Winners
National Reporting

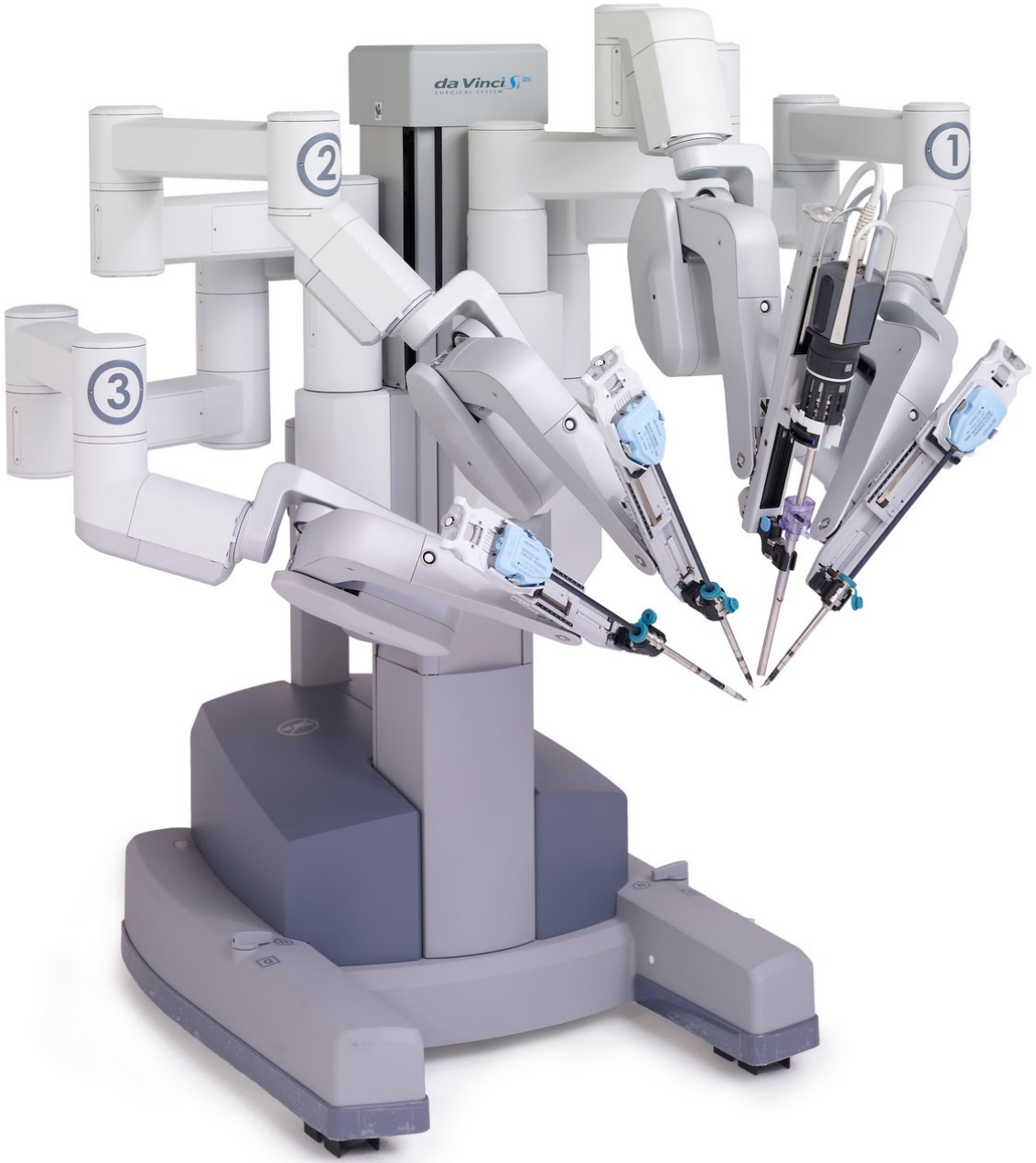

EyeLink II
SR Research Ltd


Communication
Andy Mitchell
555-740-5475
Calling
Accept
Decline
Beatrice
Justin
20.0°

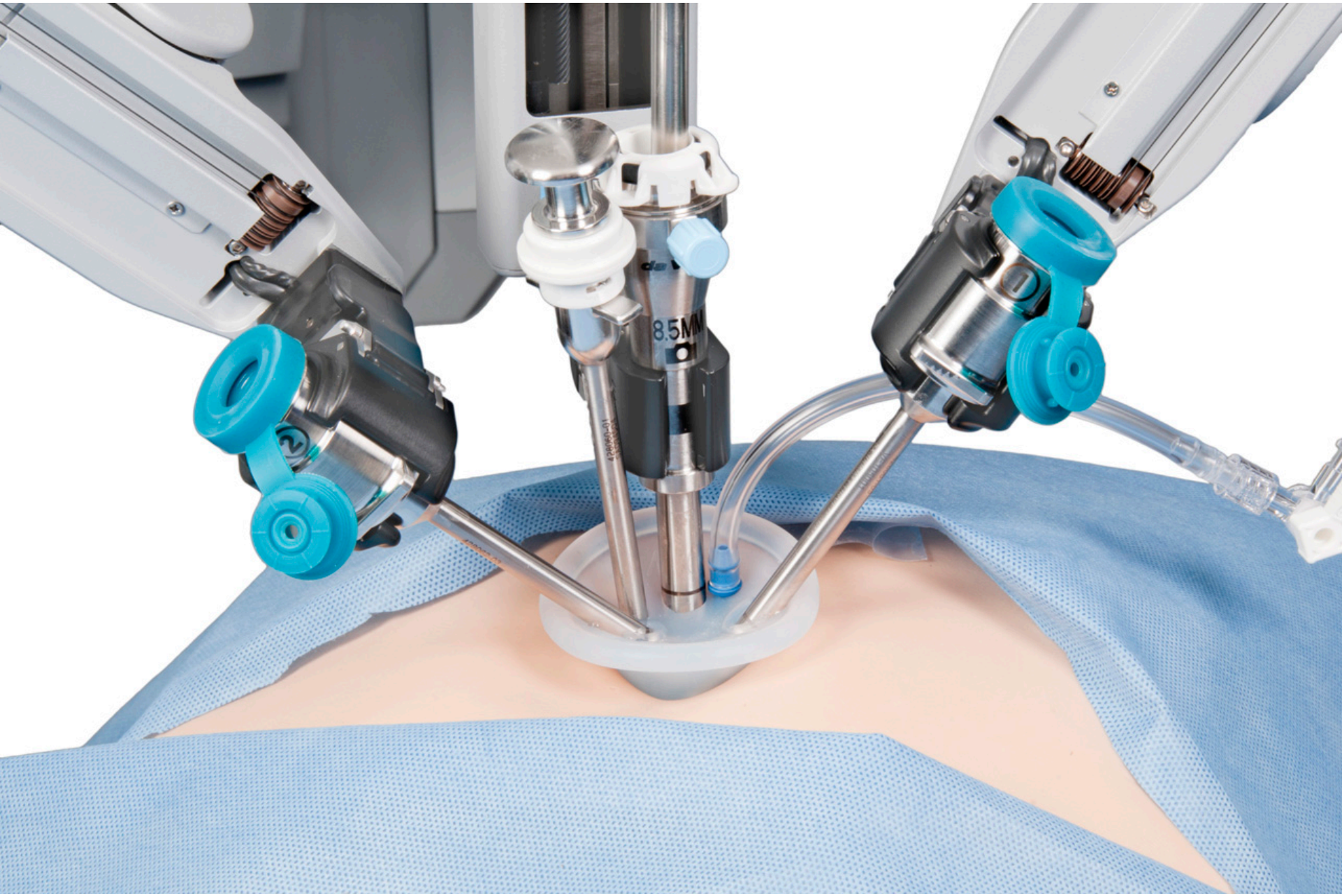
http://autoemotive.media.mit.edu/#home


TRANSPARENT BONNET
VIRTUAL PROTOTYPE IN TESTING
3
MPH
D



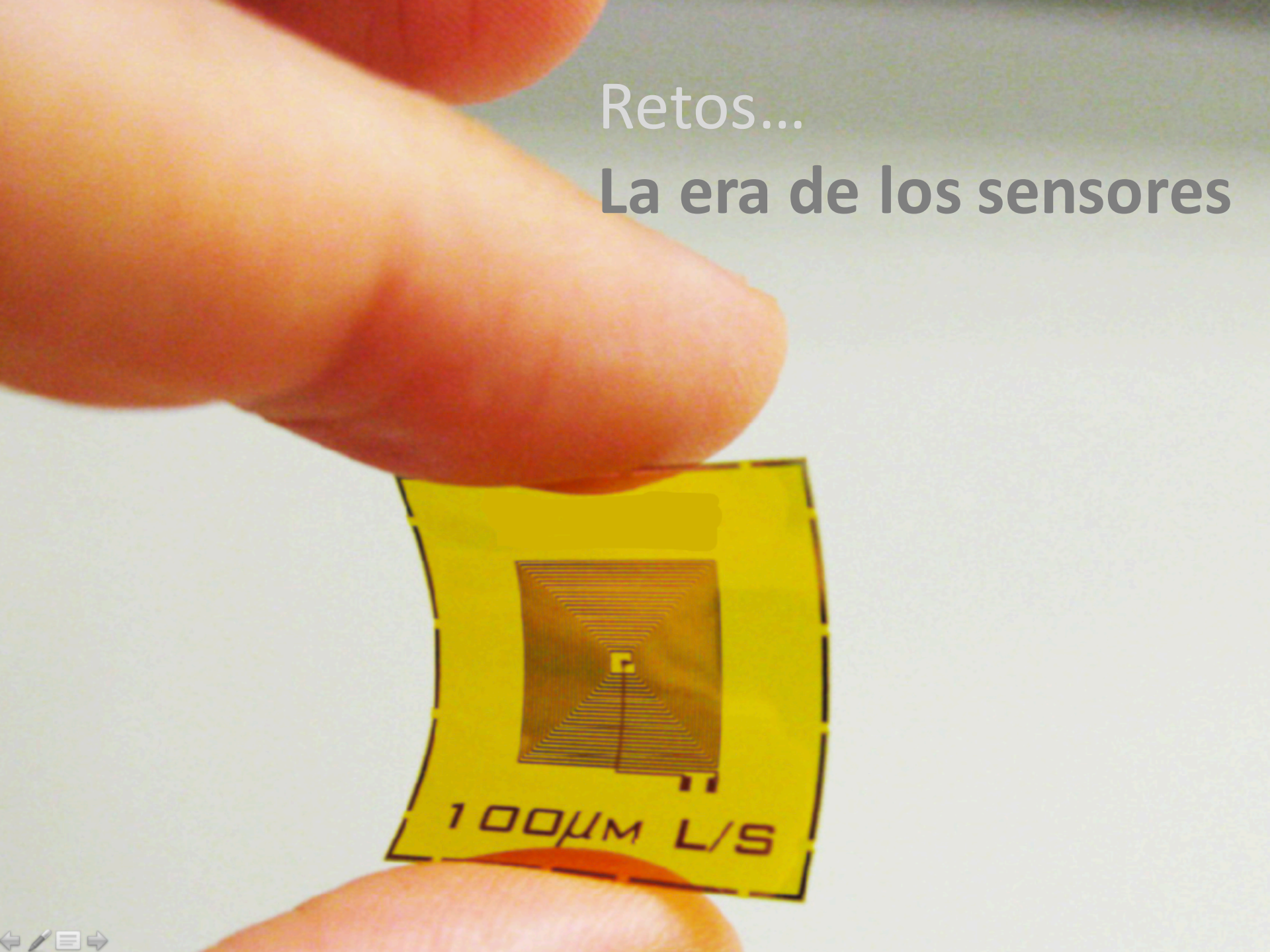

da Vinci S
SURGICAL SYSTEM
1
2
3


da Vinci Si
SURGICAL SYSTEM


8.5MM


10.7
0.4

Retos…
La era de los sensores



Brain-Machine Interfaces


FORTIS

- **Muchos más** que simples pantallas táctiles
- Sistemas críticos
- Intrusión, cuestiones éticos y preocupaciones cuanto a la privacidad

human engineering

Algunos proyetos de **doctorado en la EH**…

1. Prevencion de riesgos laborales
2. Ergonomia ocupacional
3. Ergonomia/Fatores humanos en el diseño de productos

Seguridad y Salud Laboral

- Risk assessment methodologies for nanoparticles
- Exposure quantification methods for exposure to cytotoxics
- Indicadores de exposição a risco simultâneo
- Modelos de definição de critérios de aceitabilidade de risco em PMEs
- Modelos de análise custo benefício em SHO
- Modelo de avaliação da maturidade da integração dos sistemas de gestão

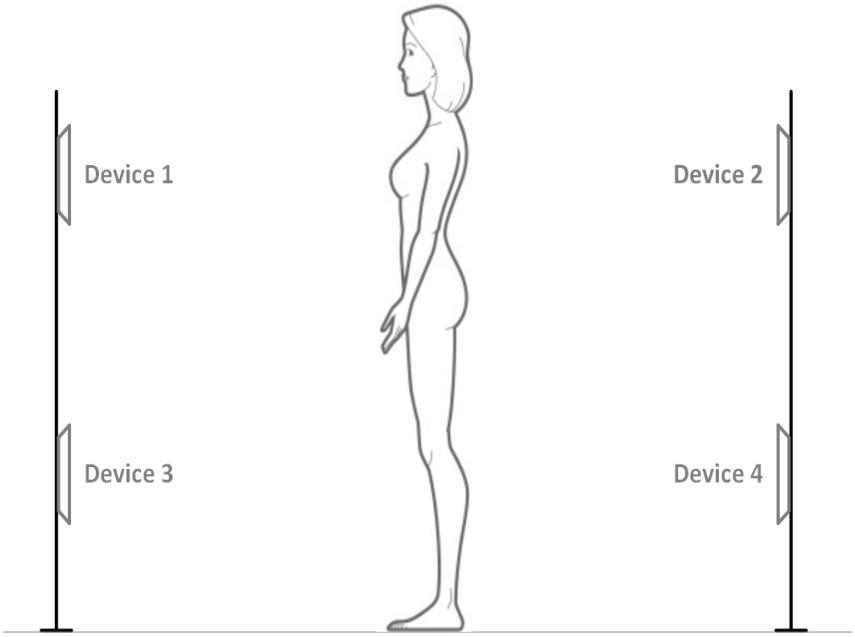
Ergonomia y trabajo

- LMEs em hospitais: combinação de métodos
- Manipulação de cargas em indivíduos obesos
- Modelo tridimensional de EEPT
- ....

Ergonomia/Fatores humanos en diseño de productos

- Usabilidade em Sistemas de e-learning
- Modelo de estimativa do uso de protetores auditivos em empresas industriais
- Mobiliário escolar e antropometria (PT e Chile)

El desarrollo de prendas sobre la base de los cambios antropométricos lo largo día de trabajo.

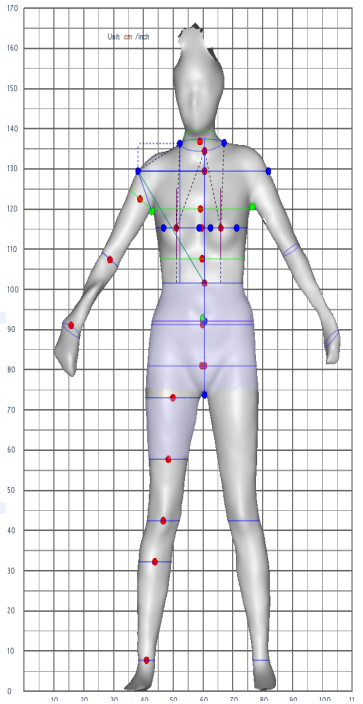


LANDMARKS MEASUREMENTS :

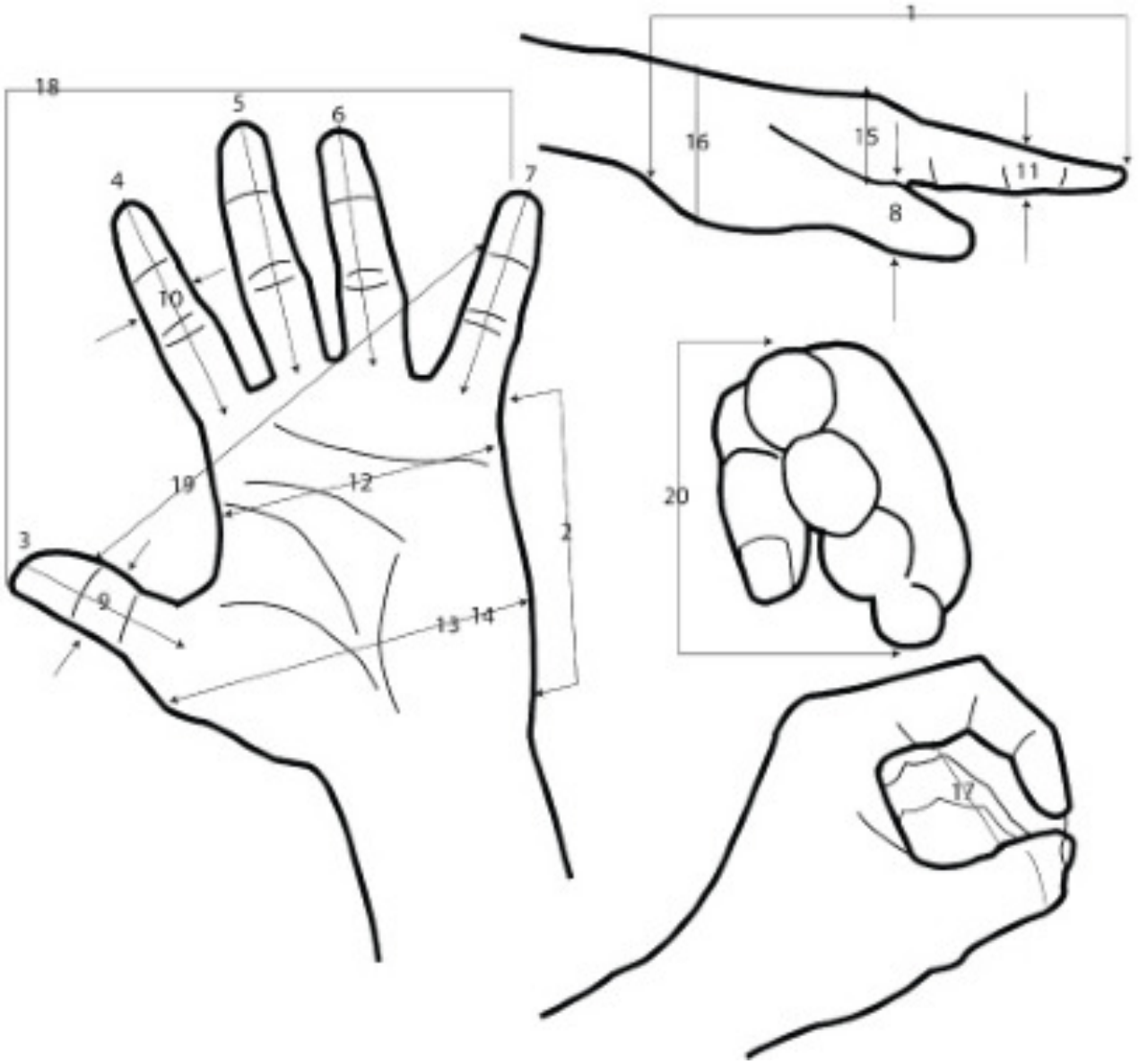
	Circumference	Width	Depth
1. Neck:	37.74	14.84	8.46
2. Shoulder:	97.13	43.74	14.25
3. Bust/Chest:	88.43	30.78	21.24
4. Waist:	68.77	27.08	15.49
5. Abdomen:	88.37	34.16	19.40
6. Hip:	98.47	36.73	21.63
7. Upper Thigh:	58.28	18.45	18.64
8. Mid Thigh:	39.45	13.19	12.25
9. Knee:	33.25	11.03	10.66
10. Calf:	33.87	11.09	10.43
11. Ankle:	22.24	5.60	8.15

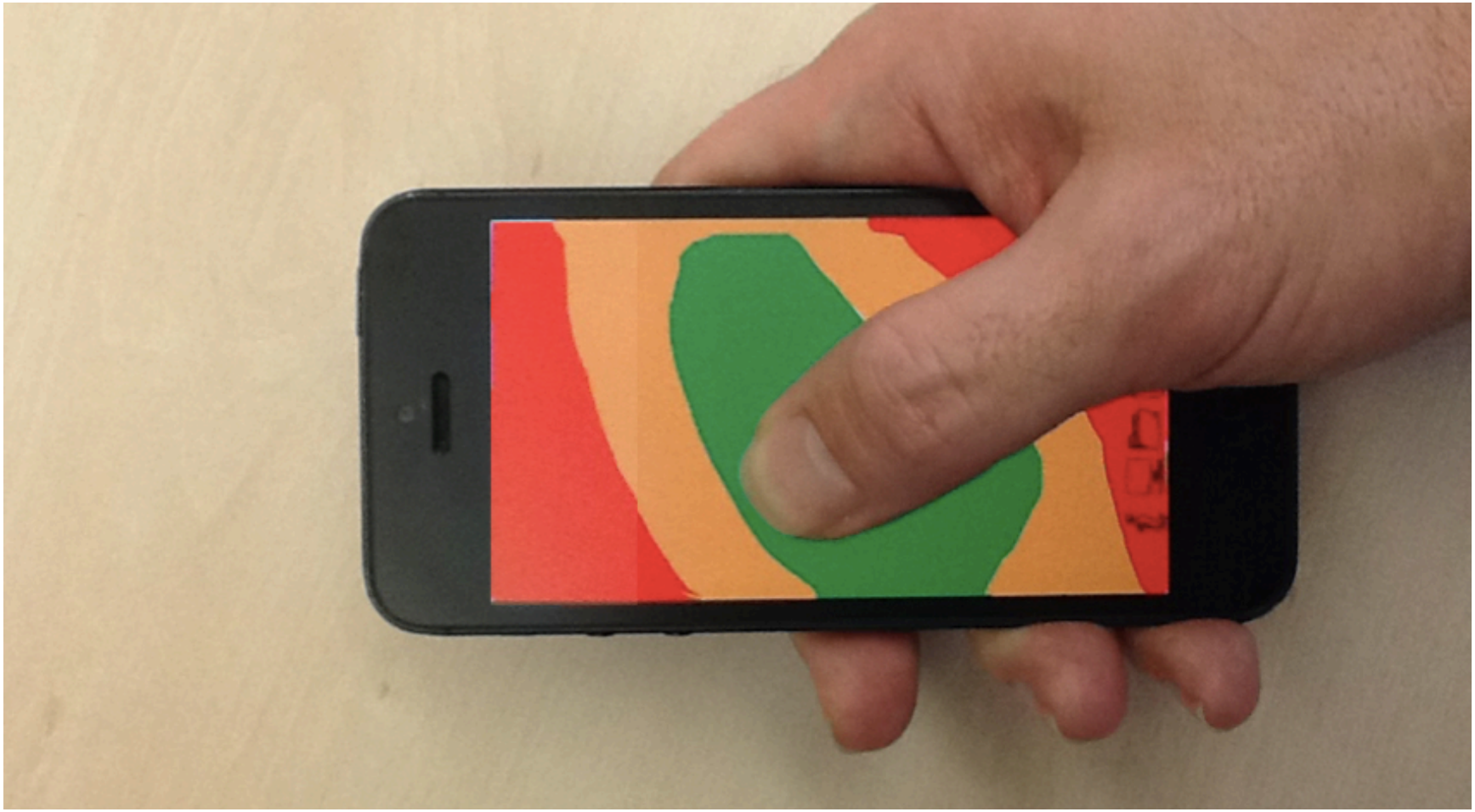
UPPER TORSO (bodice):

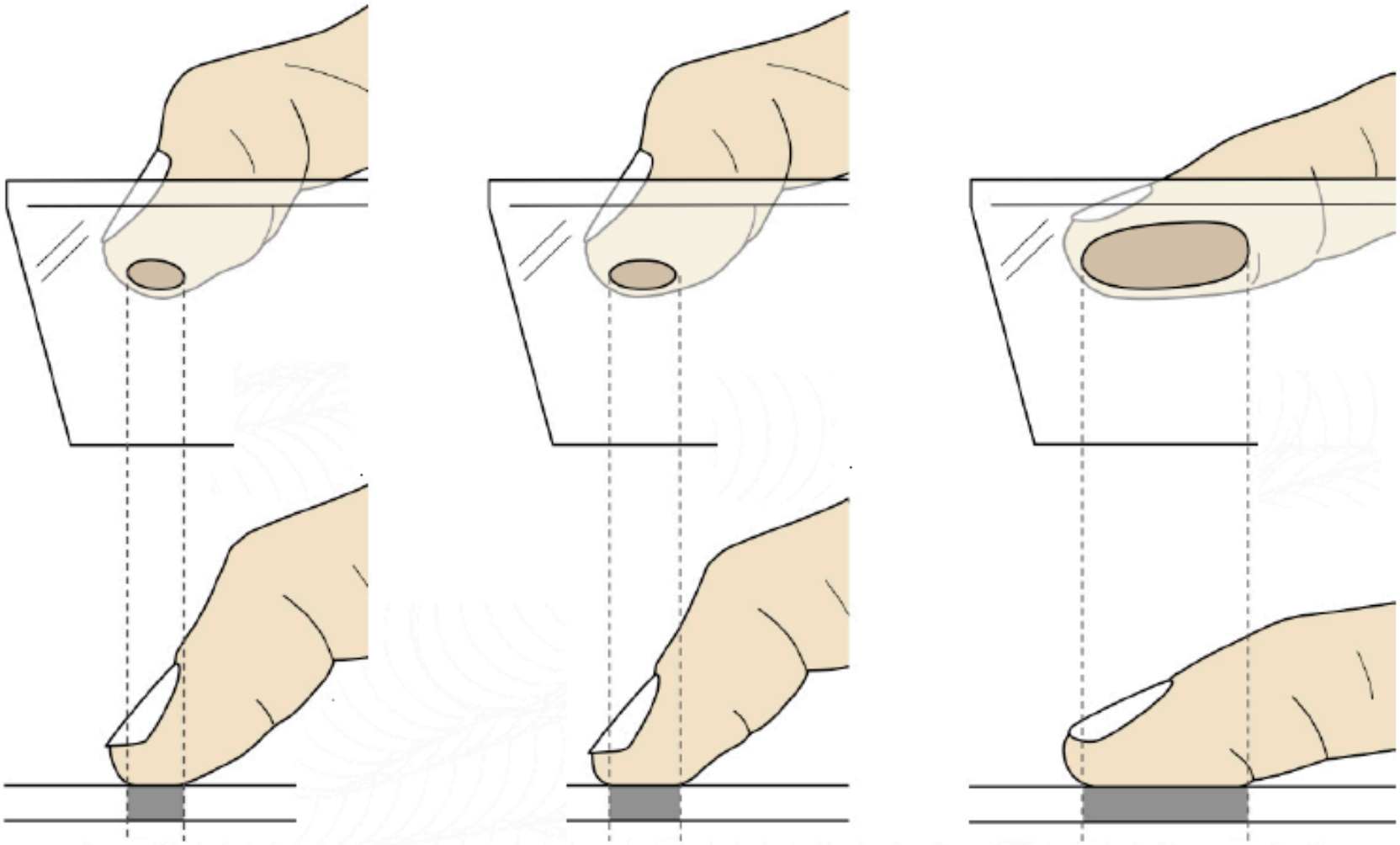
Neck:			
12. Collar/Middle-neck:	30.33		
13. Neck base:	37.14	43. Left Neck to Left Bust:	25.42
14. Front Neck height:	134.51	44. Right Neck to Right Bust:	24.26
15. Back Neck height:	137.52	45. Left Bust to Waist	13.96
16. Side Neck height:	136.34	46. Right Bust to Waist	13.97
Shoulder:		47. Bust Points Width:	14.89
17. Across Shoulder Front Length	24.09	48. Under Bust Circum:	71.87
18. Across Should Back Length:	25.48	49. Under Bust Height:	107.64
19. Right Shoulder Length:	17.57	50. Bust depth/radius:	212.38
20. Right Shoulder Slope:	6.87		
21. Right Shoulder Slope Angle:	26.20	FREEHAND MEASUREMENT:	
22. Left Shoulder Slope:	7.06	51.Girth:	0.00
23. Left Shoulder Slope Angle:	25.65	53. Linear distance:	0.00
Shoulder slope		54. Height:	0.00
24. Front:	41.45	56. Curve length:	57.28
25. Back:	39.07	57. Slope girth:	0.00
Chest:		58. Free cut torso girth:	0.00
26. Chest Circumference:	89.04	59. Free cut Left Arm girth:	0.00
27. Chest Height:	120.06	60. Free cut Right Arm girth:	0.00
28. Across Chest Length:	50.17	61. Free cut Left Leg girth:	0.00
29. Across Back Length:	38.87	62. Free cut Right Leg girth:	0.00
Bust:		63. Sliding slope girth:	0.00
30. Bust Circumference:	81.55	64. Sliding slope girth:	0.00
31. Bust Circumference(Contour):	88.43	65. Angle in X direction:	0.00
32. Bust Height:	115.34	66. Angle in Y direction:	0.00
33. Right Bust Prominence:	18.23	67. Angle in Z direction:	0.00
34. Left Bust Prominence:	15.23		
35. Right Upper Breast Angle:	28.85	Central Obesity Measurement:	
36. Right Lower Breast Angle:	23.66	68. W:	34.10
37. Right Breast Angle:	132.69	69. D:	9.32
38. Left Upper Breast Angle:	30.75	70. d:	-0.88
39. Left Lower Breast Angle:	25.02	71. A:	-41.09
40. Left Breast Angle:	129.97	72. A0:	547.39
41. Front Neck to Left Bust:	21.64	73. S1 (D/W):	0.2733
42. Front Neck to Right Bust:	22.51	74. S2 (A/A0):	-0.0751



Antropometria de la mano

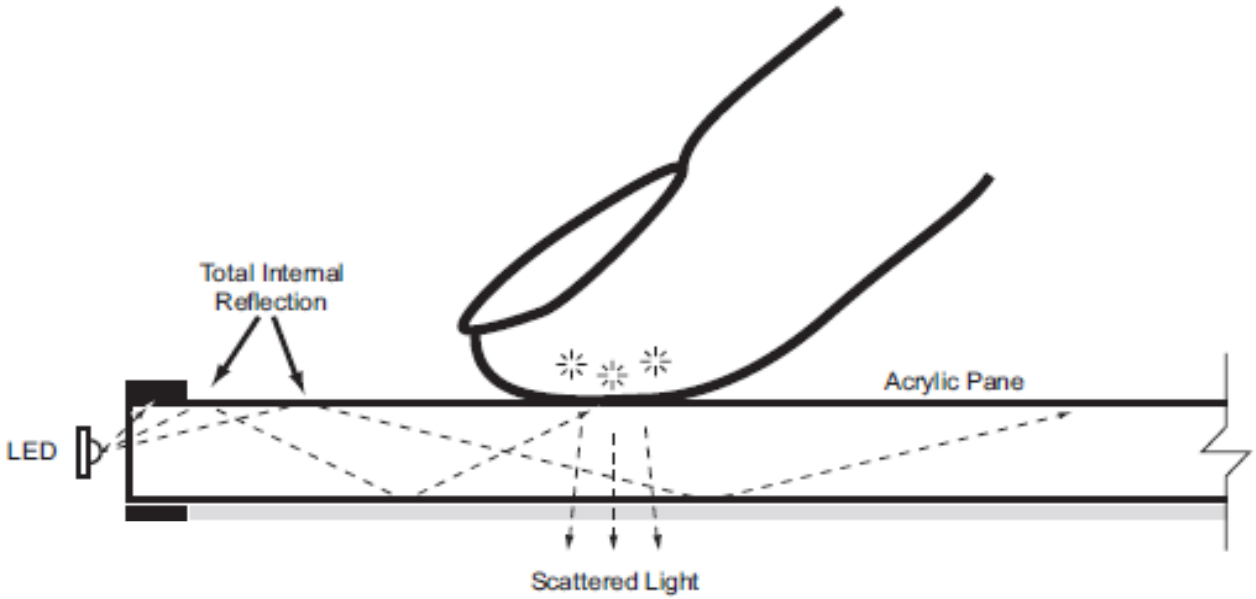






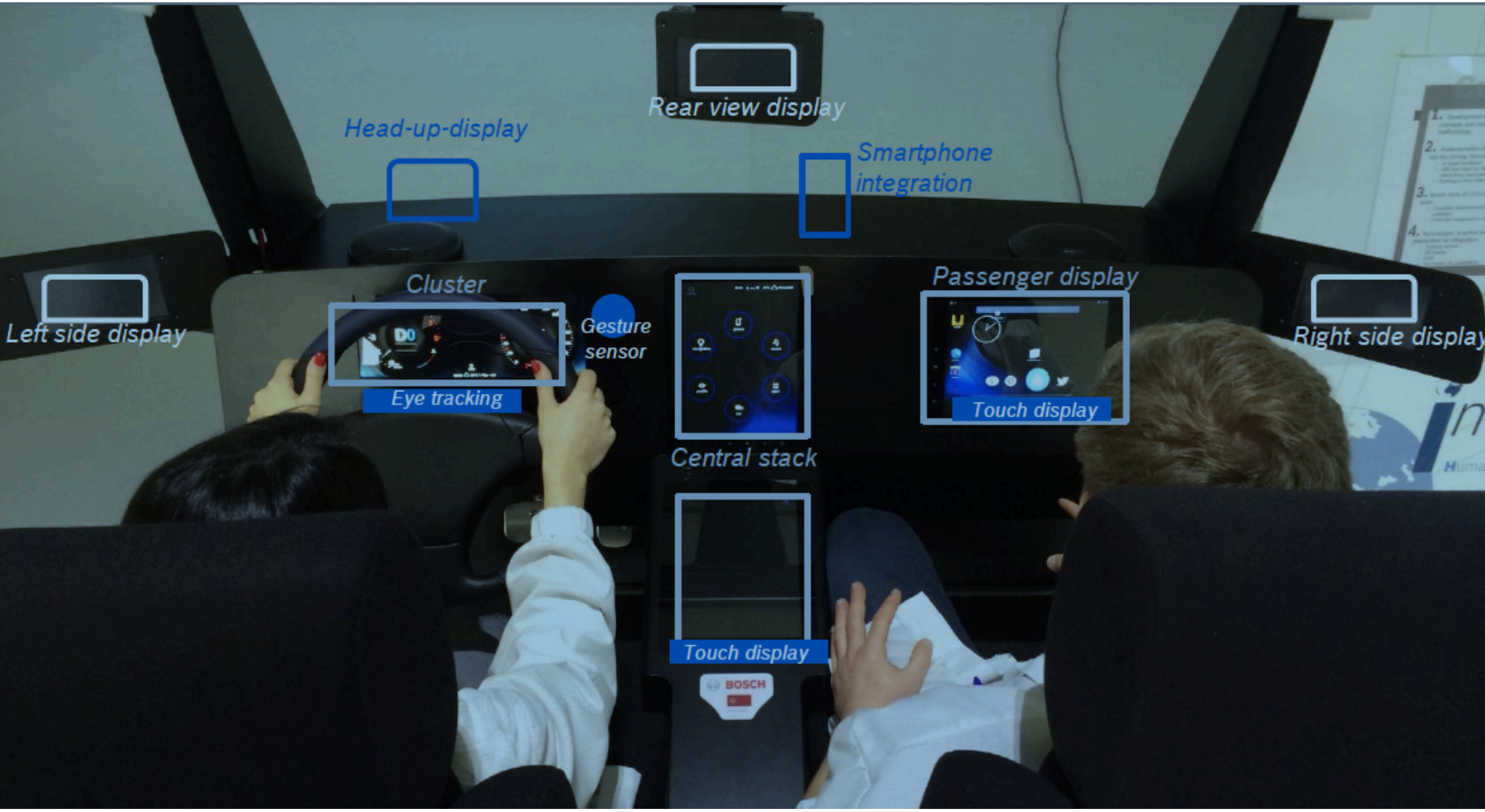
Boring et al.. (2012). *MobileHCI'12*

UMinho - antropometria de la mano



DSM – driving simulator mockup


D0
AC
BOSCH


Rear view display
Head-up-display
Smartphone integration
Cluster
Left side display
Gesture sensor
Passenger display
Right side display
Eye tracking
Central stack
Touch display
Touch display
BOSCH

human
engineering

muchas gracias

parezes@dps.uminho.pt