

2019


4. INDUSTRIA IRAULTZA
4th REVOLUCION INDUSTRIAL / 4th INDUSTRIAL REVOLUTION

TEKNOLOGIA, IRAUNKORTASUNA ETA BALIOAK
TECNOLOGIA, SOSTENIBILIDAD Y VALORES
TECHNOLOGY, SUSTAINABILITY AND VALUES

Kursaal Jauregia • Donostia • San Sebastián

**INTERNATIONAL
CONGRESS ON
VOCATIONAL
TRAINING**

EKAINA / JUNIO / JUNE 5 - 6


A man with grey hair, wearing a dark suit, white shirt, and dark tie, is speaking at a podium. He is looking down at a document on the podium. The background is a blue screen with a white geometric pattern of interconnected lines and dots. The podium has a sign that reads "EUSKADI".

Iñigo Urkullu

Lehendakaria

President of the Government of the Basque Country.

EUSKADI

A man in a dark suit and tie is speaking on a stage. He is wearing a lapel microphone and has his hands clasped. Behind him is a large blue screen displaying a presentation slide. To the left, another man in a suit is standing near a whiteboard. The stage is lit with blue light, and there are spotlights on the floor.

Jorge Arévalo

Viceconsejero de Formación Profesional,
Departamento de Educación del Gobierno Vasco

TECNOLOGÍA
MANUFACTURERA
FTI BALANZ

REVOLUCIÓN
INDUSTRIAL



• La fuerza que nos permite pasar de la confrontación que supone pasar del asegurar y no arriesgar a la creatividad y la innovación, a través de la confianza y la convicción, se llama cooperación

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The time is right



WFCP

World Federation of
Colleges and Polytechnics

Craig Robertson

Chair, World Federation of Colleges and Polytechnics

CEO, TAFE Directors Australia

San Sebastian
June 2019

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BASQUE COUN

New technology will lead to Job losses



- The World Bank (2016), anticipated advances in automation threaten 45-57% of all jobs in the United States.
- The White House's Council of Economic Advisors projects that automation will affect 83% of jobs paying \$20 an hour or less.
 - AI researchers on average expect to see AI outperforming humans at translating languages by 2024, driving a truck by 2027, and working in retail by 2031, although with considerable variation - Grace et al (2017)

The Solution: Applied Research as a learning tool

- Innovation and entrepreneurship needs new skills and attributes.
- Applied research fulfils three roles.

1

- Creates the teaching and training moment
- Prepares students for the uncertainty of work and change

2

- Assists firms to innovate at low cost and low risk

3

- Connects the institute to real-world problems
- Helps faculty maintain currency

Promising Practices in American Community Colleges

Meeting the Needs of All Students

- Career & Guided Pathways
- Standardized Core Curriculum
- Industry Recognized Credentials
- Credit for Prior Learning/Prior Learning Assessment
- Work-Based Learning
 - Apprenticeships
- Innovative Learning Platforms
 - Live On Line
- Non-Credit to Credit Pathways
- Achieving the Dream



Annette Parker,
*Director General of the South
Central College Minnesota*



INTE
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Centres of Vocational Excellence Fostering local "Skills ecosystems"



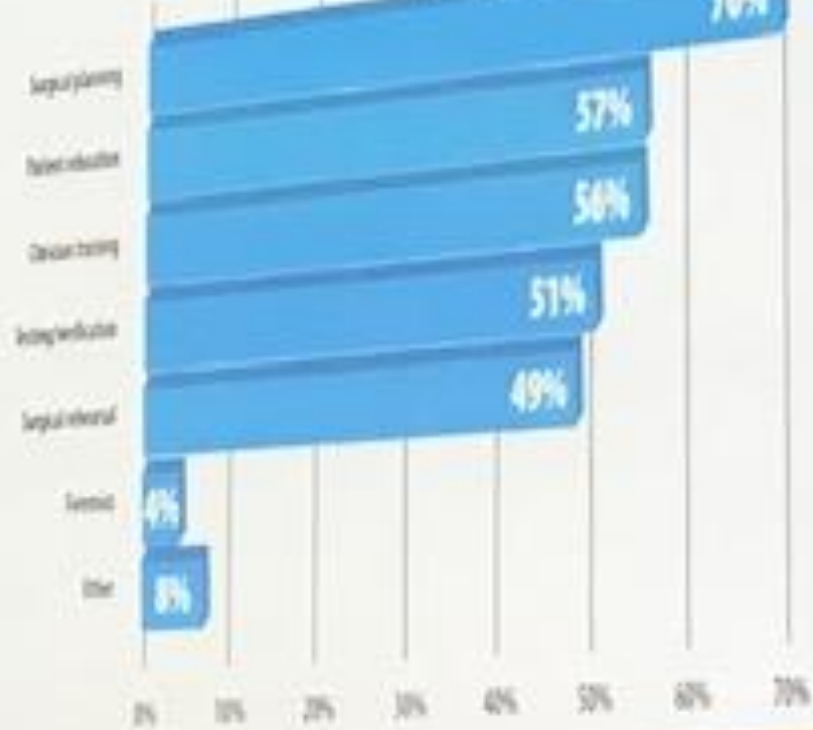
Bringing together:

- Policy makers
- Companies
- Chambers
- VET institutions
- Universities of applied science
- Research centres
- Employment services/agencies
- Regional development agencies
- Professional or sector associations



TEKNOLOGIA,
JASANGARRITASUNA
ETA BALIOAK

Medical Additive
Manufacturing/
3D Printing
Annual Report
2018



EUSKADI
BASQUE COUNTRY

The Role of 3D Printing in the Nuss Procedure: Three-Dimensional Printed Model-Assisted Nuss Procedure

Kuan-Hsun Lin, MD, Yi-Jhih Huang, MD, Hsiang-He Hsu, MD, PhD,
Shih-Chun Lee, MD, Hsu-Kai Huang, MD, Ying-Yi Chen, MD, Hung Chang, MD, PhD,
Jia-En Chen, BS, and Tsai-Wang Huang, MD, PhD
Division of Thoracic Surgery, Department of Surgery, and Department of Radiology, Tri-Service General Hospital, and School of Public
Health, National Defense Medical Center, Taipei, Taiwan, Republic of China

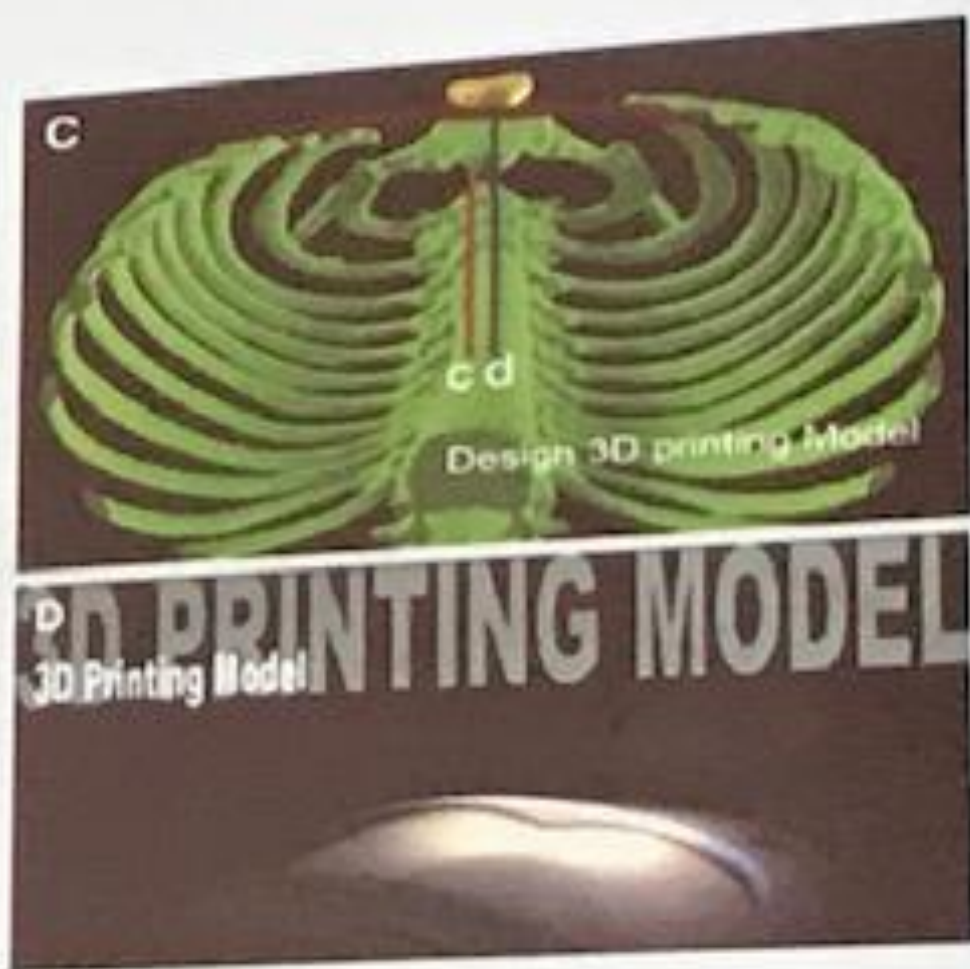
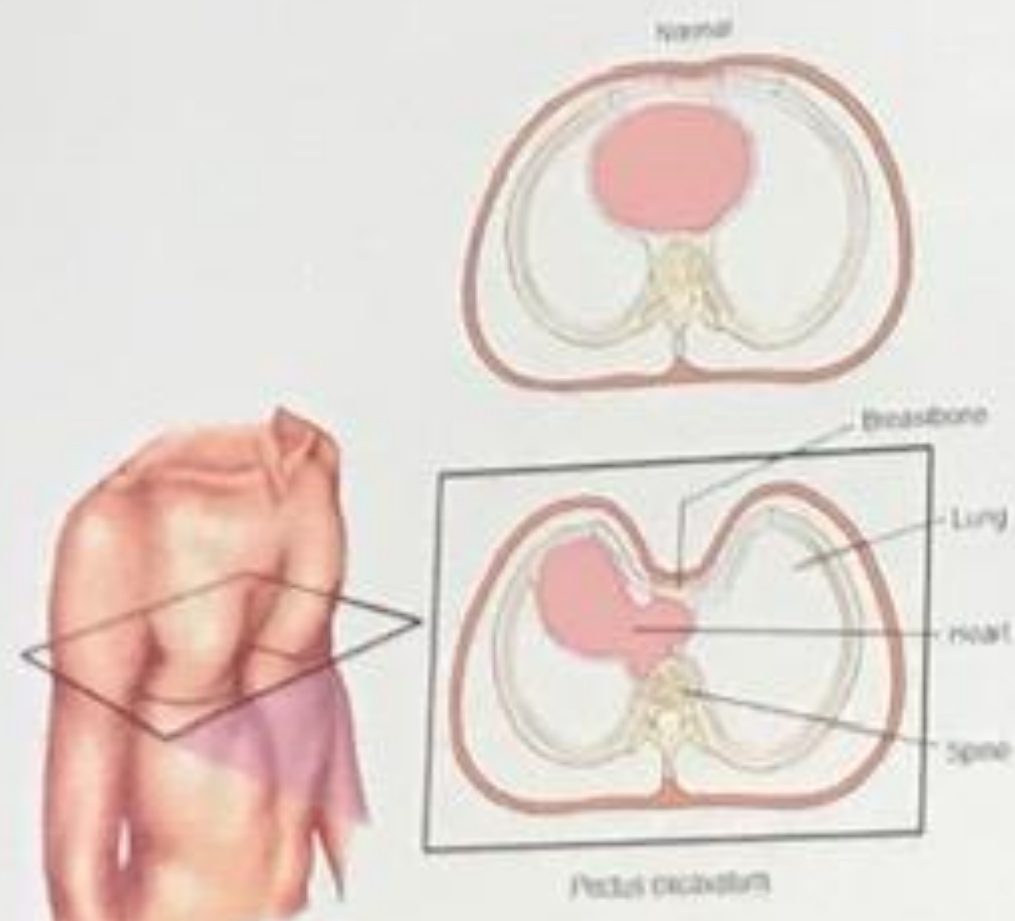
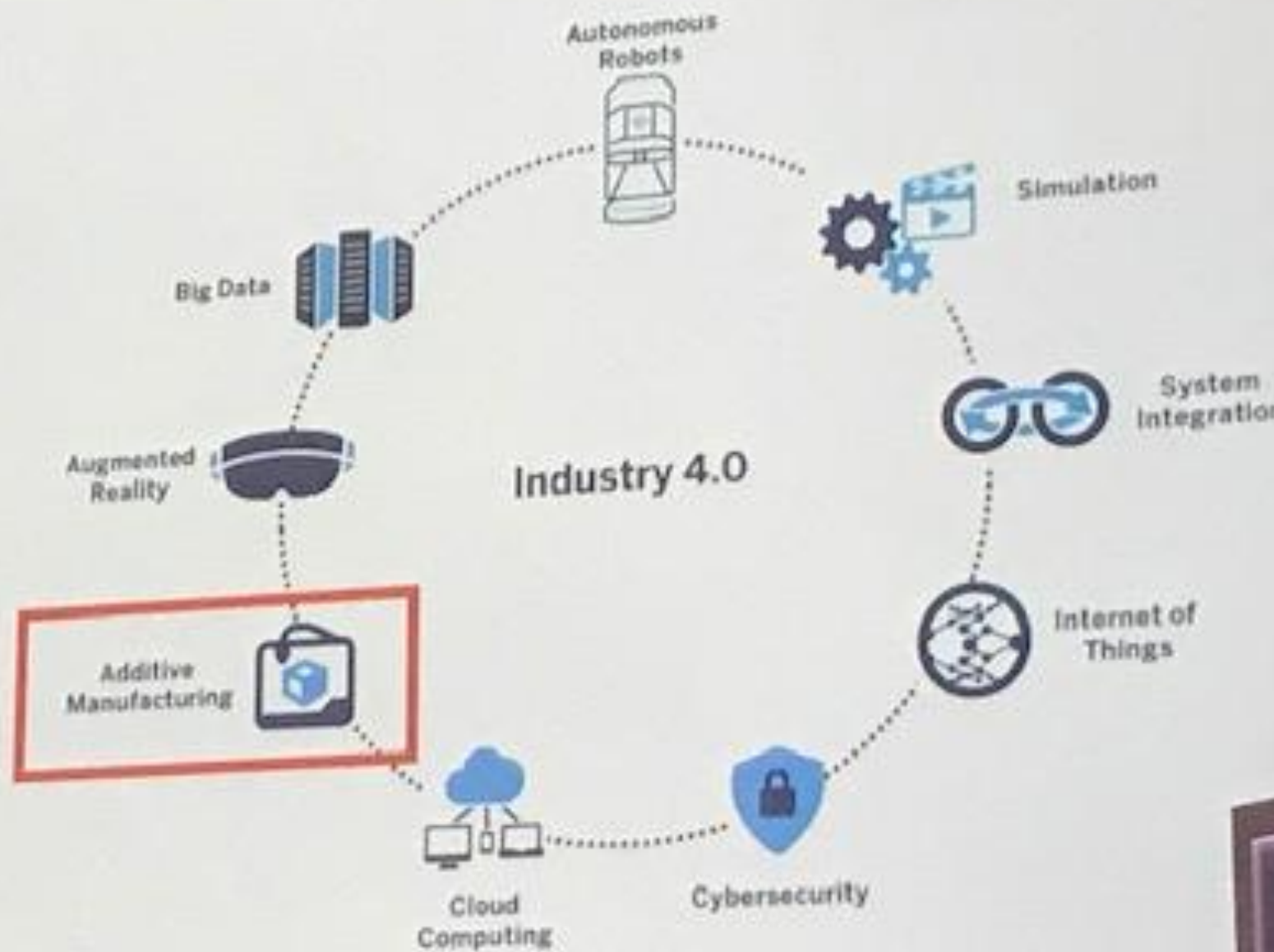


Fig 1. Demonstration of the design of the three-dimensional 3D model of the pectus bar. (A) Measurement indices using computer tomography. The maximum transverse chest diameter (cd) was divided

Industry 4.0

*"Industry 4.0 will involve the technical integration of **cyber-physical systems** into manufacturing and logistics and the use of Internet of Things and Services in industrial processes."*

Definition by: [Industry 4.0 working group in Germany](#)



How to overcome the skills-gap

- Integrate Additive Manufacturing into existing Curricula
- Hands-On Workshops
- Innovation Center(s) on campus or in schools
- Partnerships with Industry

Tknika
LHRI APLIKATUTAKO IKERKETA ETA BERRIKUNTZAKO SAEKO ZENTROA
CENTRO DE INVESTIGACIÓN E INNOVACIÓN APLICADA DE LA FP DEL PAÍS VASCO
BASQUE CENTRE OF RESEARCH AND APPLIED INNOVATION IN VET



**AACHEN CENTER
FOR ADDITIVE
MANUFACTURING**



Tknika



Gorka Modrego, Additive Manufacturing





**Marijo Barriola,
Biosciences and Sustainability**





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