Diseño Centrado En Las Personas

Factores Humanos
en la
Industria Aeroespacial

Diego M Garcia
Medicina Aeroespacial
Factores Humanos

Disclaimer

INDUSTRIA 1.0

1784

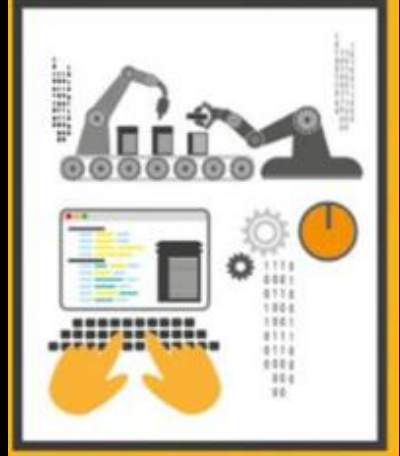
1ª
REVOLUCIÓN INDUSTRIAL
Introducción de equipos de producción mecánicos impulsados por agua y la energía del vapor.

INDUSTRIA 2.0

1870

2ª
REVOLUCIÓN INDUSTRIAL
Introducción de la electricidad y del petróleo como fuente energética para la producción masiva (cadena de producción y concepto de división del trabajo en tareas).

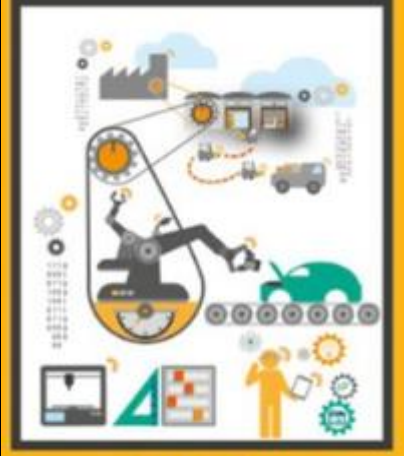
INDUSTRIA 3.0



1970

3ª
REVOLUCIÓN INDUSTRIAL
Automatización de la producción basada en el uso de sistemas electrónicos y Tecnologías de la Información (TIC).

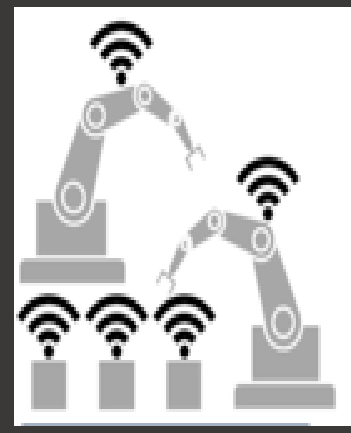
INDUSTRIA 4.0



2011

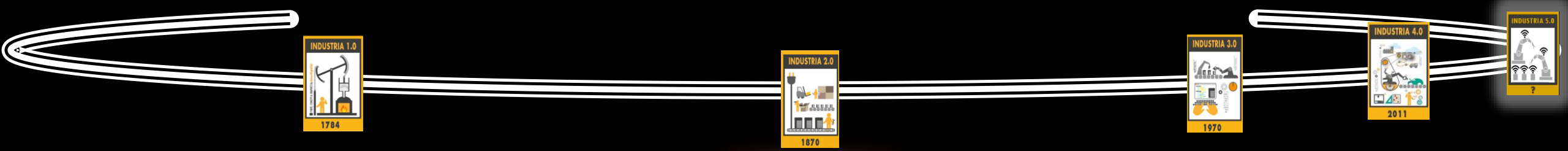
4ª
REVOLUCIÓN INDUSTRIAL
Producción automatizada e interconectada basada en el uso de sistemas físicos cibernéticos (cyber phisical systems – CPS).

INDUSTRIA 5.0

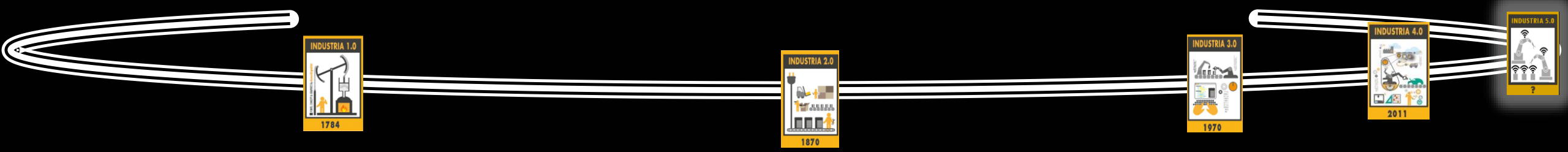


?

5ª
REVOLUCION INDUSTRIAL
Singularidad



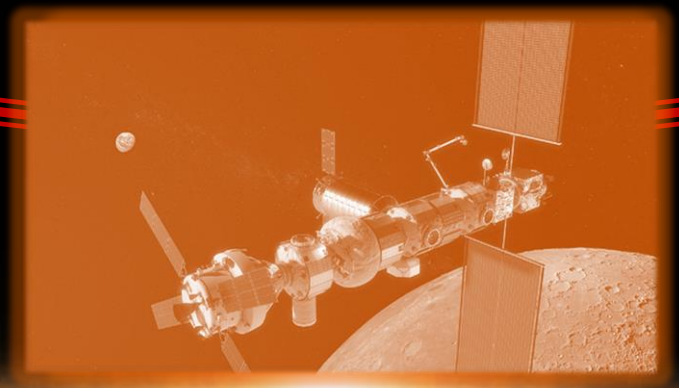
Humans ON the loop



Humans IN the loop

Humans ON the loop

Humans OUT the loop

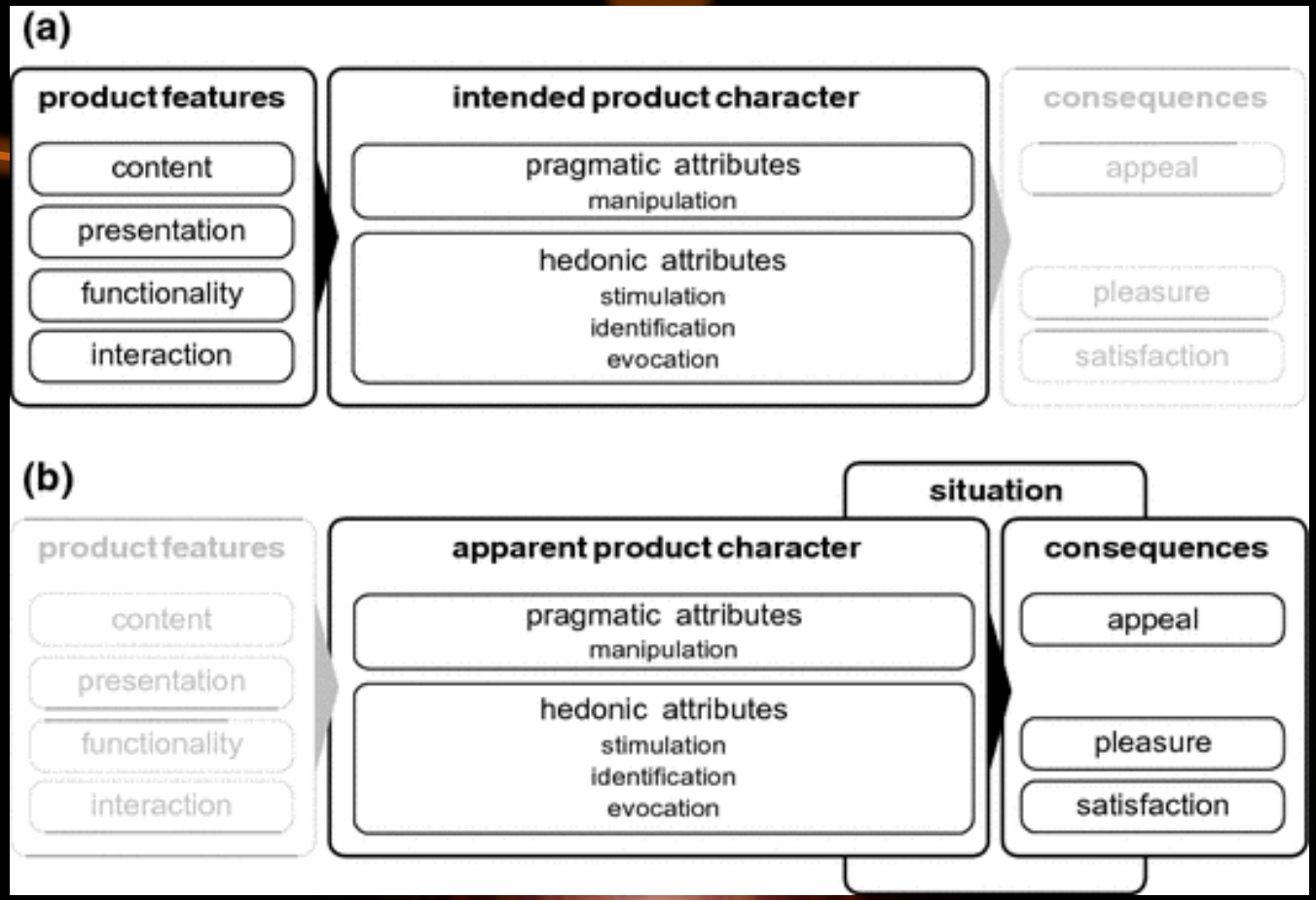


Personas

-Perfiles
-Niveles
- Personal – Profesional - Tecnico
- Tareas y objetivos

Usability.gov, [U.S. Department of Health & Human Services]

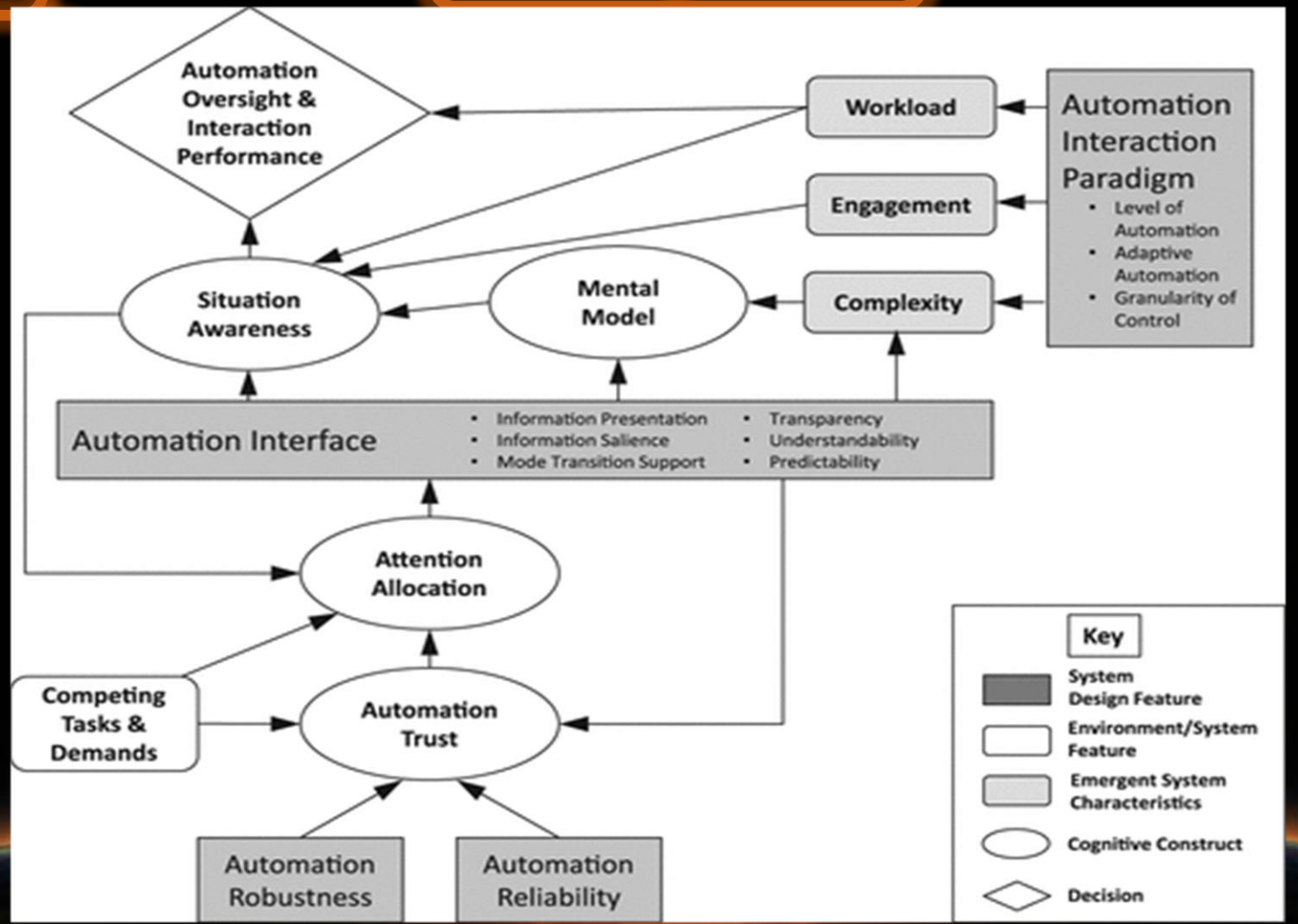
Experiencia del Usuario (UX)



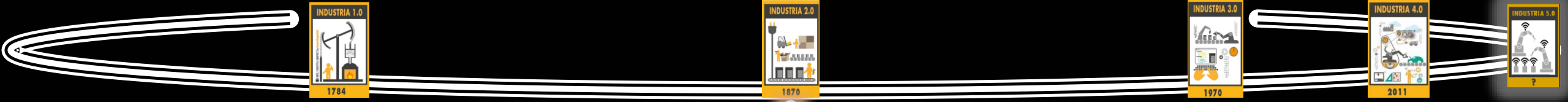
Hassenzahl M. (2018) The Thing and I: Understanding the Relationship Between User and Product. In: Blythe M., Monk A. (eds) Funology 2. Human–Computer Interaction Series. Springer, Cham

Experiencia del Usuario (UX)

Automatizacion (LoA)



Endsley, M. R. (2018). Level of Automation Forms a Key Aspect of Autonomy Design. *Journal of Cognitive Engineering and Decision Making*, *12*(1), 29–34. https://doi.org/10.1177/1555343417723432



Representacion de Realidad AR/VR

Ergonomia

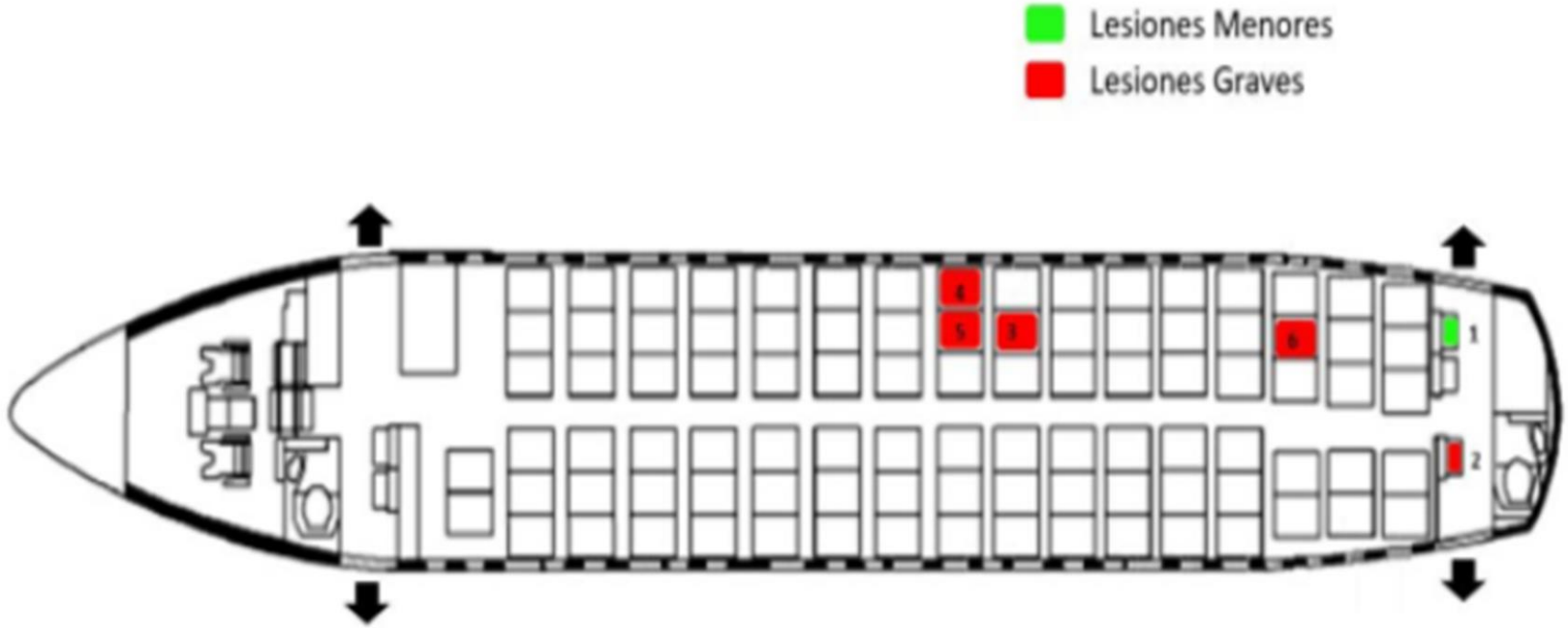


Figura 18. Distribución aproximada de lesiones menores y graves en aeronave CP 2933

Cultural dimensions

High
Ind
Mas
High
Long

Low
Col
Fem
Low
Short

BasicMed

Starting MAY 1 2017

You can fly without an FAA medical certificate IF you meet BasicMed requirements.

You Can Fly Under BasicMed if

- Your aircraft is authorized to carry no more than six occupants
- Your aircraft has a maximum certificated takeoff weight of no more than 6,000 pounds
- You carry a valid U.S. driver's license while flying
- You carry no more than five passengers
- You fly within the United States, at less than 18,000 feet MSL, and don't exceed 250 KIAS
- You do not operate for compensation or hire
- You have held any level of FAA medical certificate that was valid after July 14, 2006

Learn more at FAA.gov/go/BasicMed

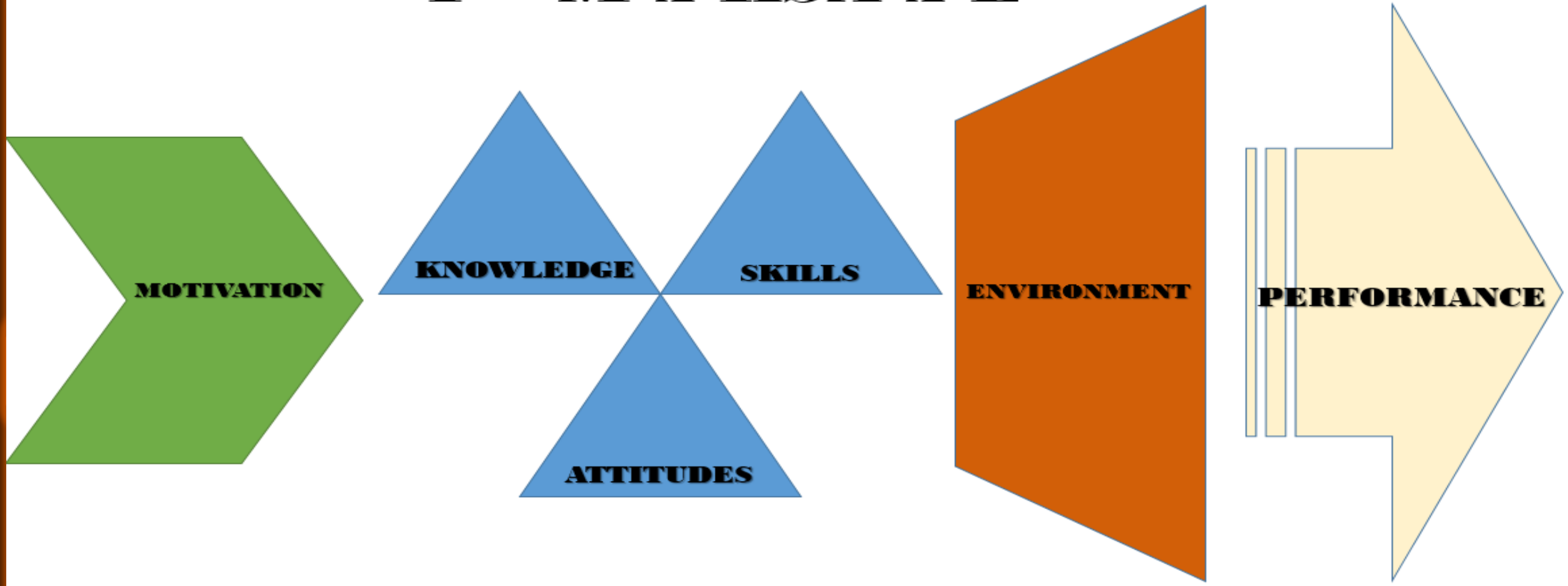
Federal Aviation Administration

- Operators.
- Regulators.

Fisiologia Aeroespacial

sentacion
Realidad
R/VR

P= M x KSA x E



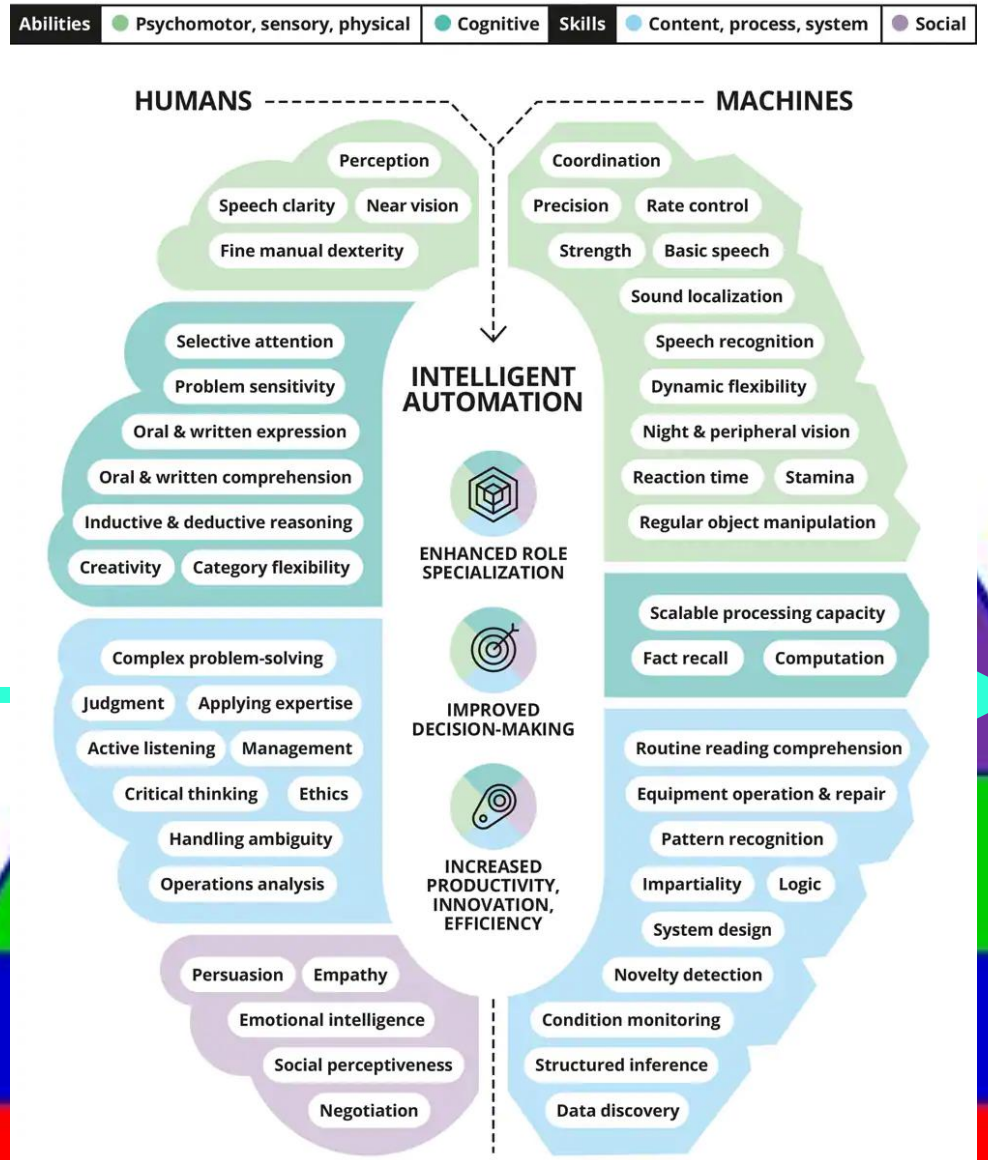
Effective Training: Strategies, Systems and Practices, 5 rd Edition. Chapter Three P. Nick Blanchard and James W. Thacker. PERFORMANCE (P). MOTIVATION (M). KNOWLEDGE, SKILLS, AND ATTITUDES (KAS). ENVIRONMENT (E). P = M x KSA x E. Factors Determining Human Performance.

Decision Errors | Skill-Based Errors | Perceptual Errors | Routine Violations | Exceptional Violations

ABC
(Habilidades, Comportamientos y Cognicion)

Figure 1. A new mind-set for the no-collar workforce

Humans and machines can develop a symbiotic relationship, each with specialized skills and abilities, in a unified workforce that delivers multifaceted benefits to the business.



Sources: Deloitte LLP, *Talent for Survival: Essential skills for humans working in the machine age*, 2016; Deloitte LLP, *From brawn to brains: The impact of technology on jobs in the UK*, 2015; Jim Guszcza, Harvey Lewis, and Peter Evans-Greenwood, *Cognitive collaboration: Why humans and computers think better together*, Deloitte University Press, January 23, 2017; Carl Benedikt Frey and Michael A. Osborne, *The Future of Employment: How Susceptible are Jobs to Computerisation?*, University of Oxford, September 17, 2013; O*NET, US Department of Labor.

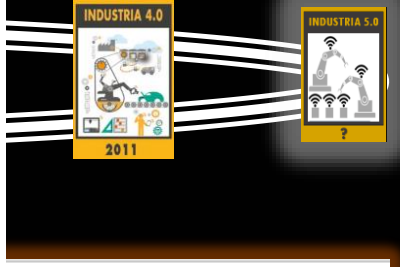
Complex

Simple

Abstract

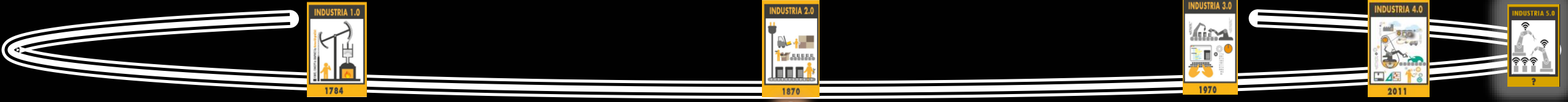
Concrete

Bloom's Taxonomy of Learning



FORMANCE

CE (P).
rmance.



Experiencia del Usuario (UX)

Automatizacion (LoA)

Ergonomia

Representacion de Realidad AR/VR

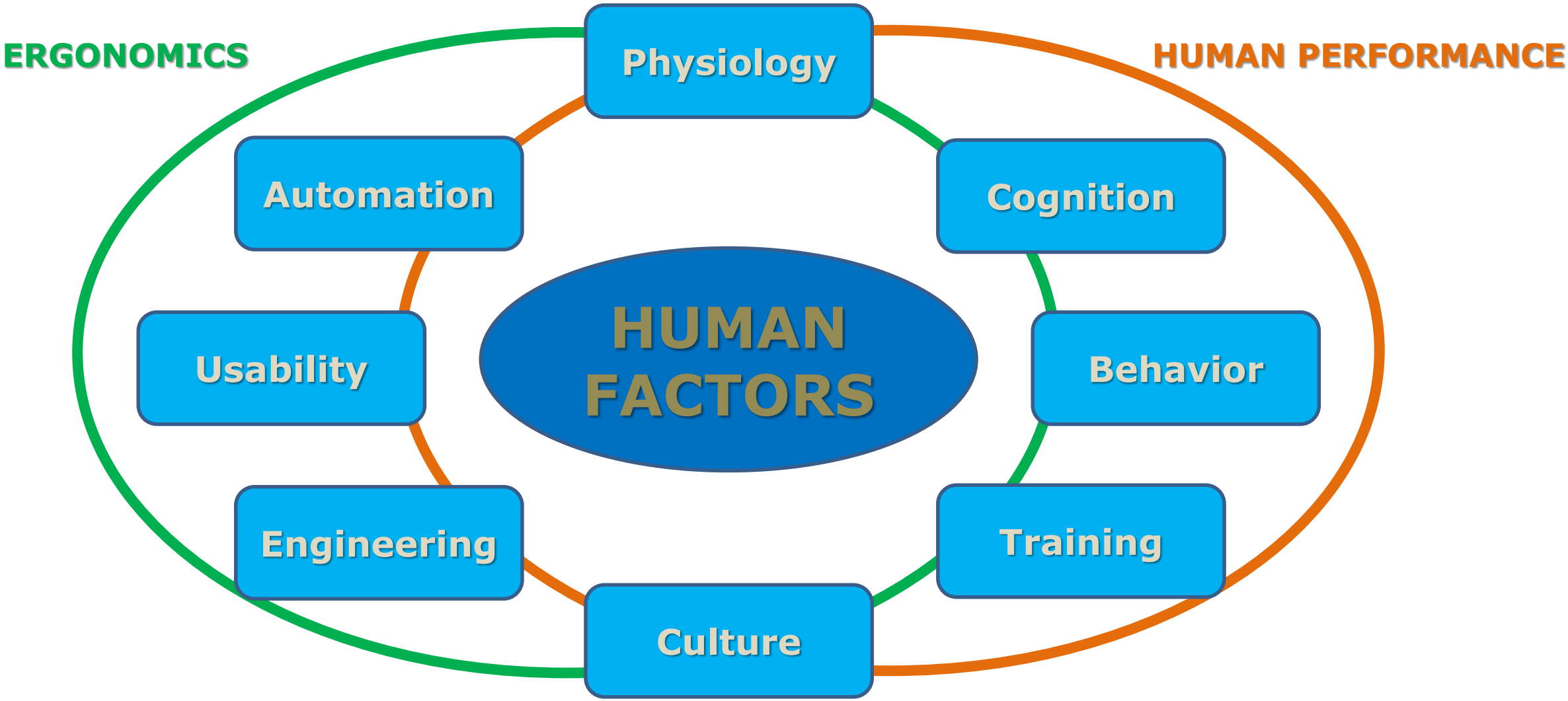
Cultura

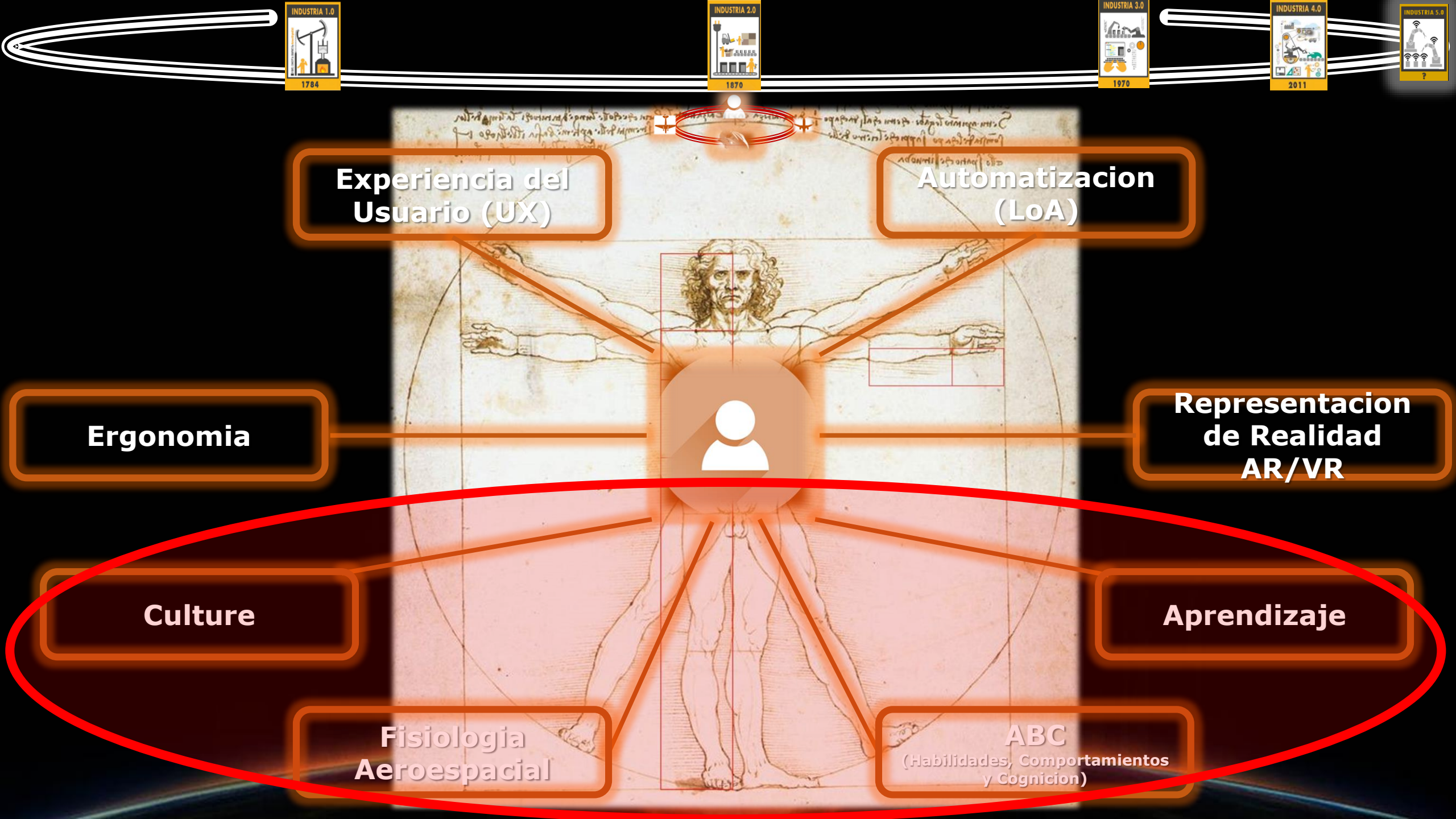
Aprendizaje

Fisiologia Aeroespacial

ABC
(Habilidades, Comportamientos y Cognicion)

What the HHFF??

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(Habilidades, Comportamientos y Cognicion)

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GRACIAS

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garcid40@erau.edu