UNIVERSIDAD NACIONAL DE COLOMBIA

ECONOMIA CIRCULAR HACIA I 4.0

AUTOMATIZACION SUSTENTABLE

DISEÑO DIPP Y MANUFACTURA SOSTENIBLE

Laboratorio Fábrica Experimental LABFABEX UN

Grupo de investigación en nuevas tecnologías de diseño, manufactura y automatización DIMA UN

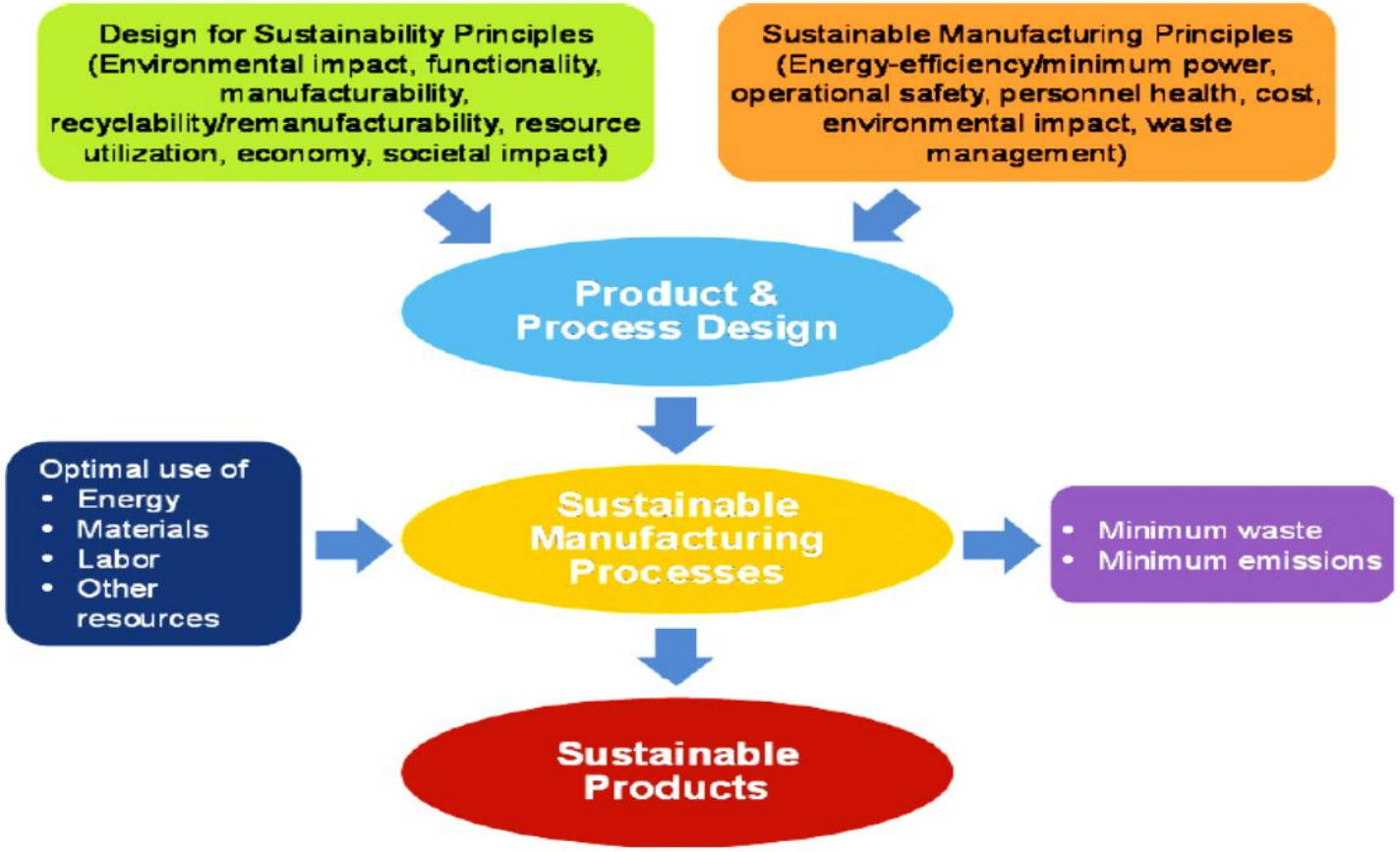
Por Profesor Ernesto Córdoba Nieto

Marzo del año 2022

FUENTE

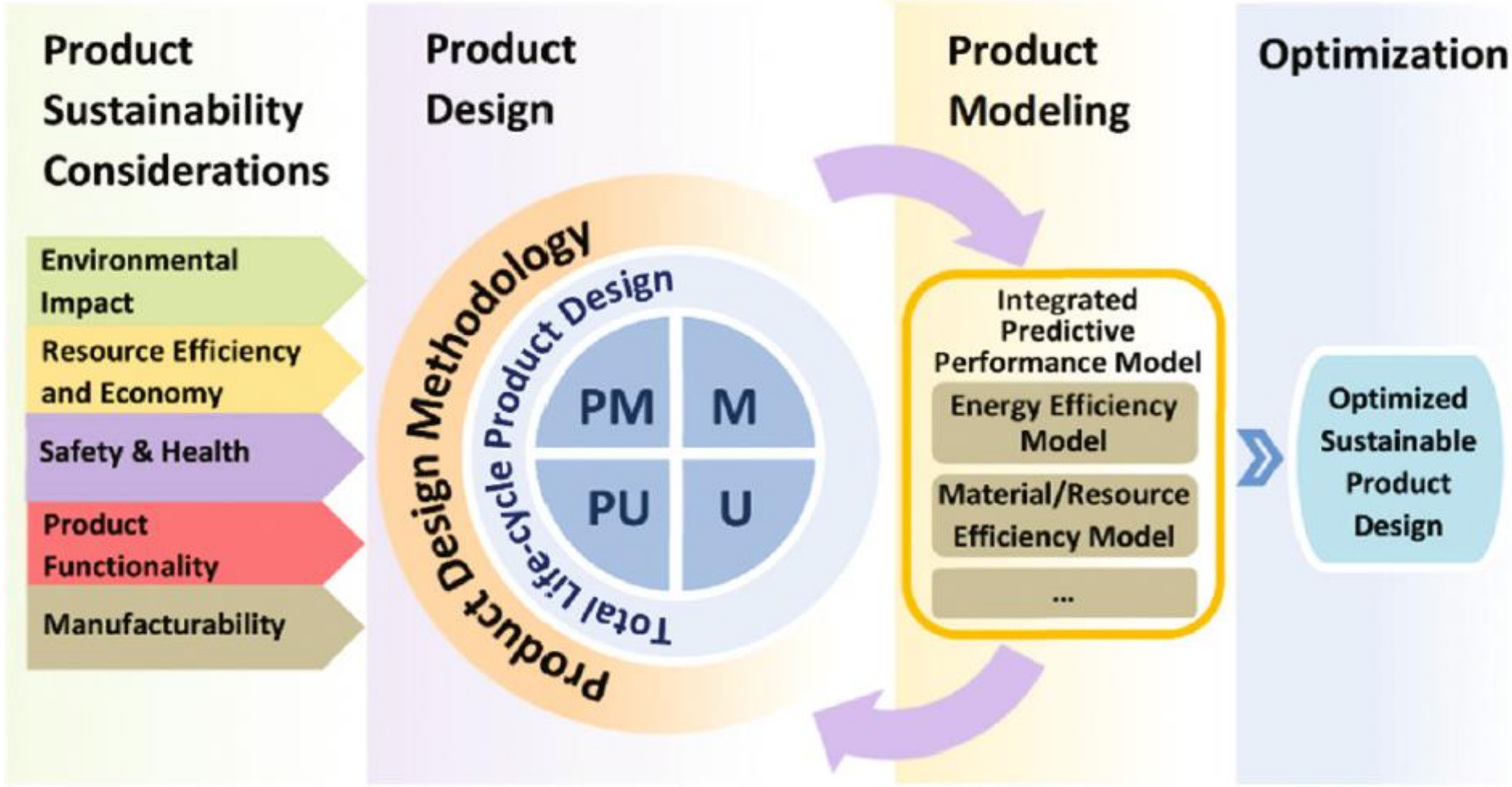
METODO DIPP-SOSTENIBLE

Metrics-based Integrated Predictive Performance Models



Methodology for producing sustainable products from sustainable processes

CICLO PROCESO DEL DISEÑO SOSTENIBLE



PARADIGMA 6R DE LA INDUSTRIA SOSTENIBLE ECONOMIA CIRCULAR

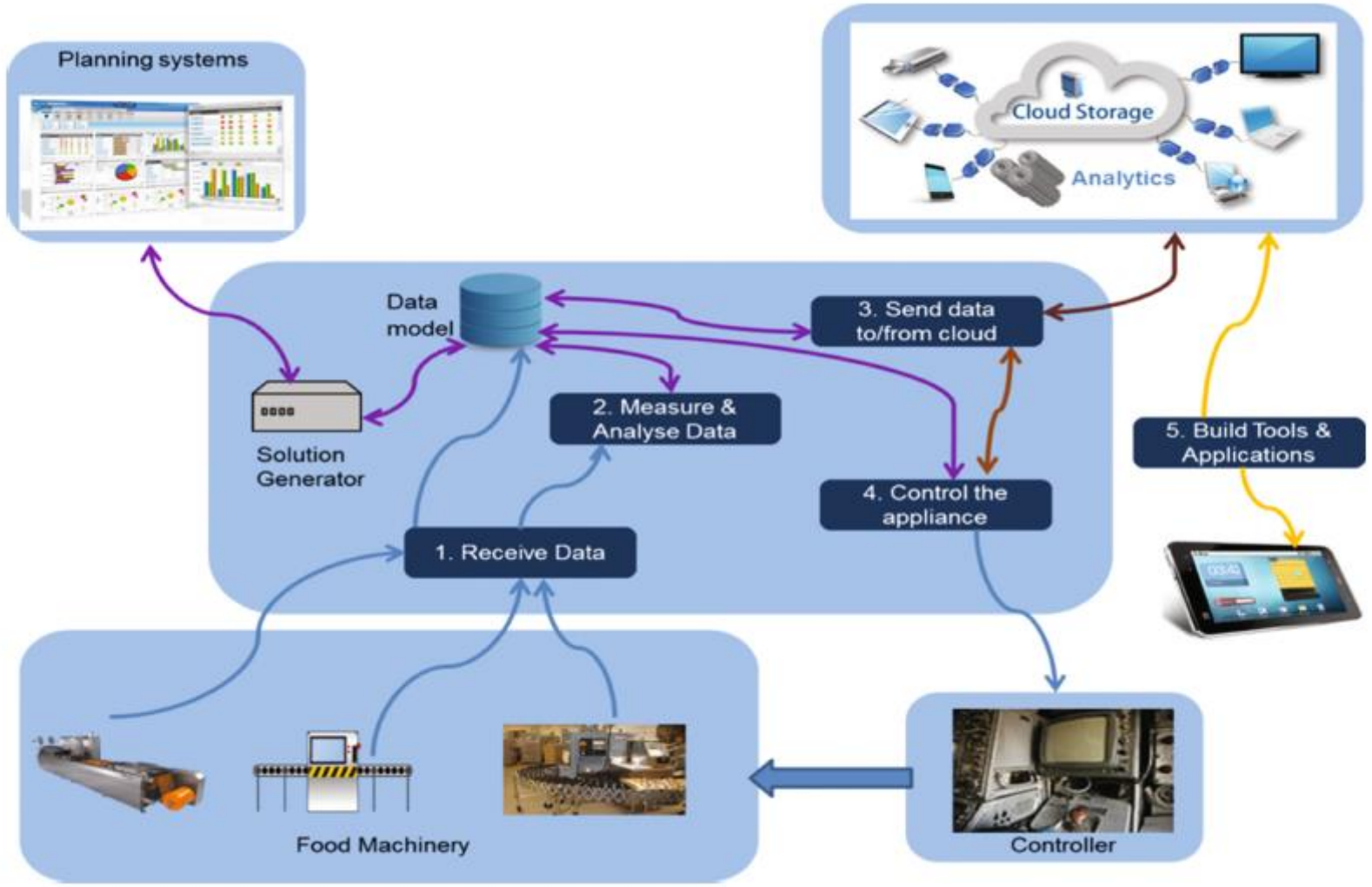
Clusters / 6R Elements	Product Sustainability													
	Economy			Environment					Society					
	Initial investment	Direct/indirect costs & overheads	Benefits & losses	Material use & efficiency	Energy use & efficiency	Other resources use & efficiency	Waste & emissions	Product EoL	Product quality & durability	Functional performance	Product EoL management	Product safety & health impact	Product societal impact regulations & certification	
Reduce	x	x	x	x	x	x	x	x			x	x	x	
Reuse	x		x	x	x	x	x	x			x			
Recycle			x	x			x	x			x		x	
Recover				x			x	x			x		x	
Redesign		x		x	x	x	x	x	x	x	x	x	x	
Remanufacture				x	x	x	x	x			x			

MANUFACTURA SOSTENIBLE

OBJETIVOS Y METAS DIRECTORES

- Reducing *energy consumption*
- Reducing *waste*
- Reducing *material utilization*
- Enhancing *product durability*
- Increasing *operational safety*
- Reducing *toxic dispersion*
- Reducing *health hazards/Improving health* conditions
- Consistently improving *manufacturing quality*
- Improving *recycling, reuse and remanufacturing*
- Maximizing the use of *sustainable sources of renewable energy*

ENTORNO BASE MANUFACTURA-INDUSTRIA 4.0



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