



UNIVERSIDAD
NACIONAL
DE COLOMBIA

ECONOMIA CIRCULAR HACIA I 4.0

AUTOMATIZACION SUSTENTABLE

DISEÑO DIPP Y MANUFACTURA SOSTENIBLE



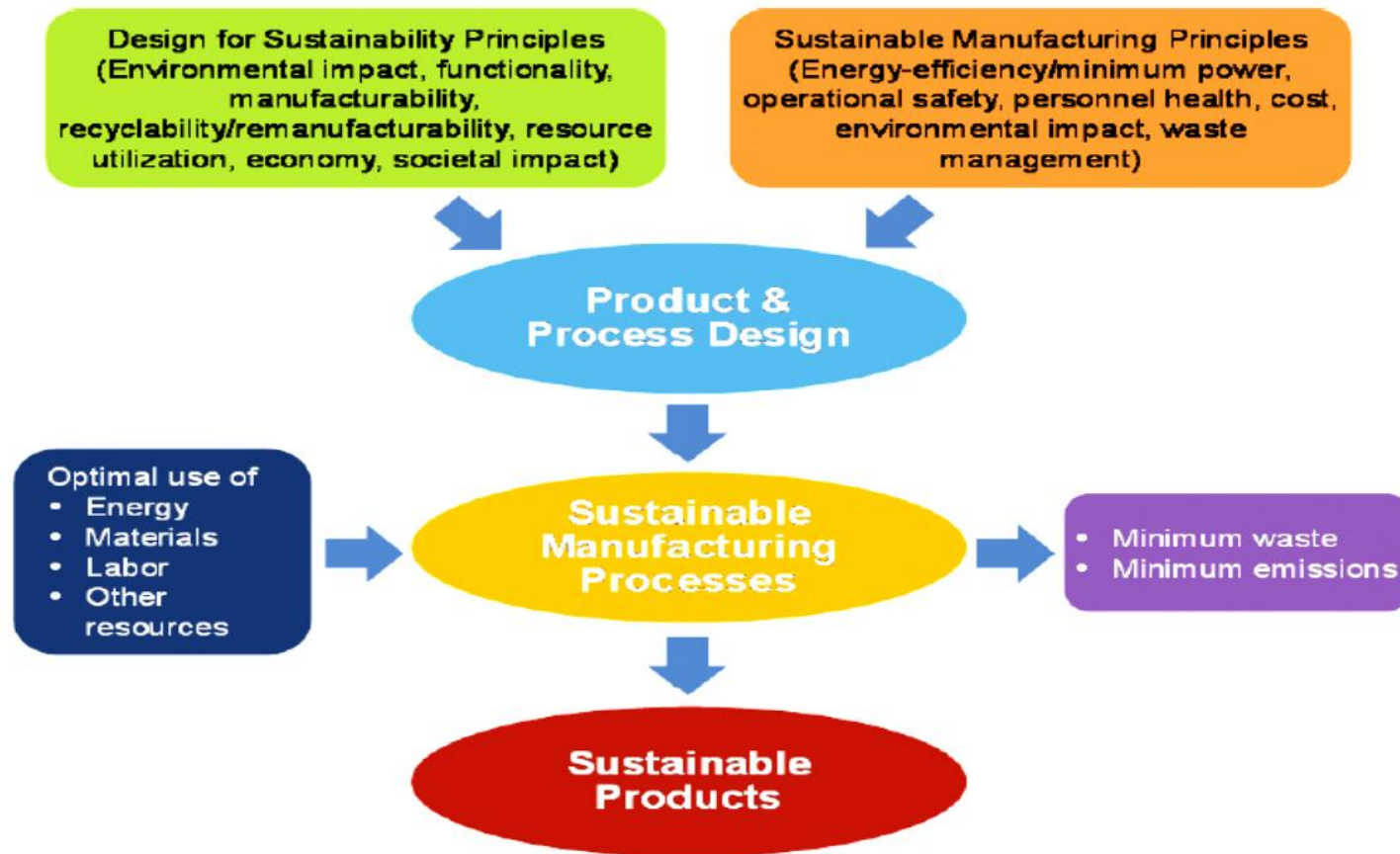
*Laboratorio Fábrica
Experimental
LABFABEX UN*



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

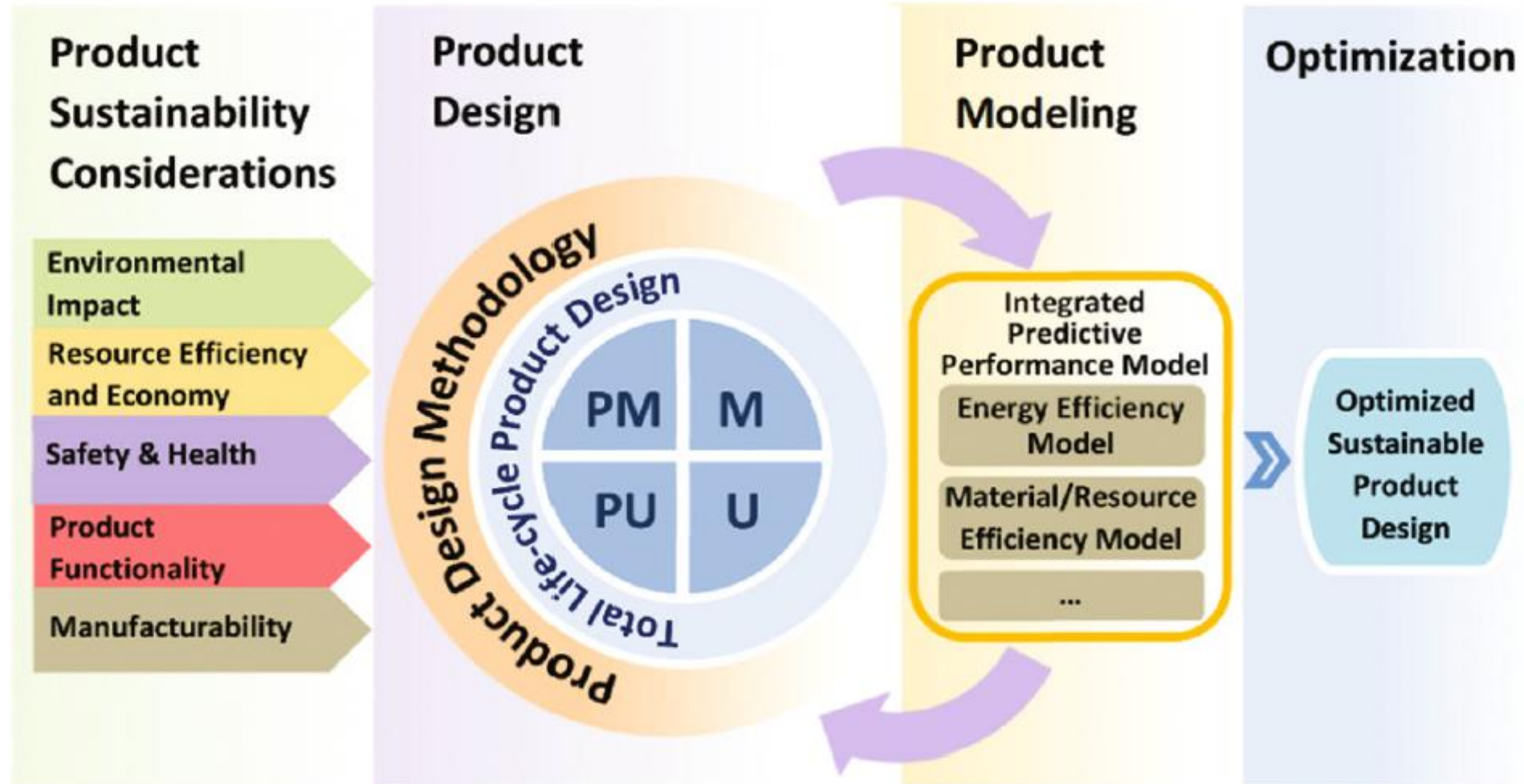
METODO DIPP-SOSTENIBILE

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

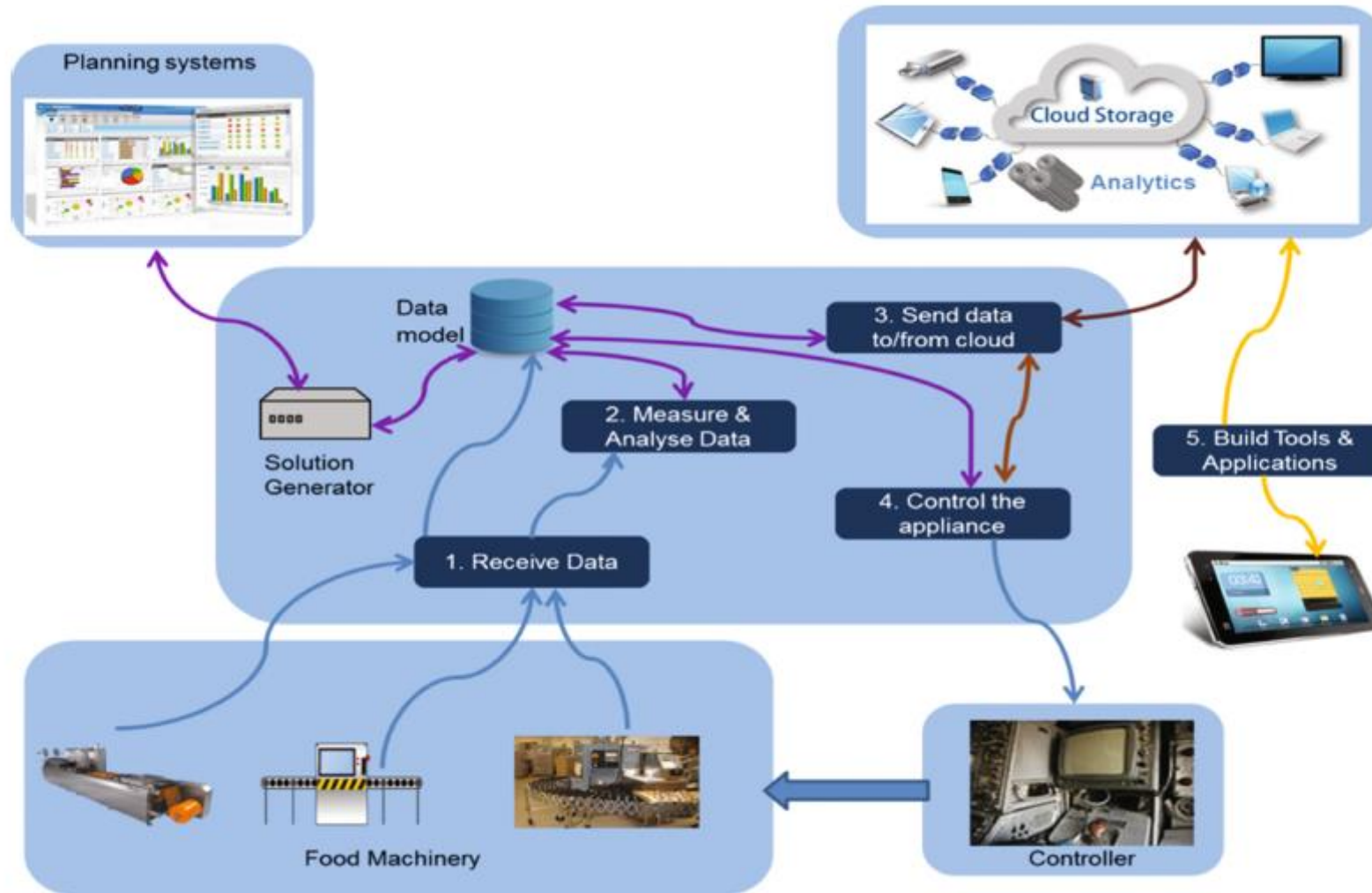
Clusters 6R Elements		Product Sustainability												
		Economy			Environment					Society				
		Initial investment	Direct/indirect costs & overheads	Benefits & losses	Material use & efficiency	Energy use & efficiency	Other resources use & efficiency	Waste & emissions	Product EoL	Product quality & 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





Construyendo nación con identidad y soberanía sostenible

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