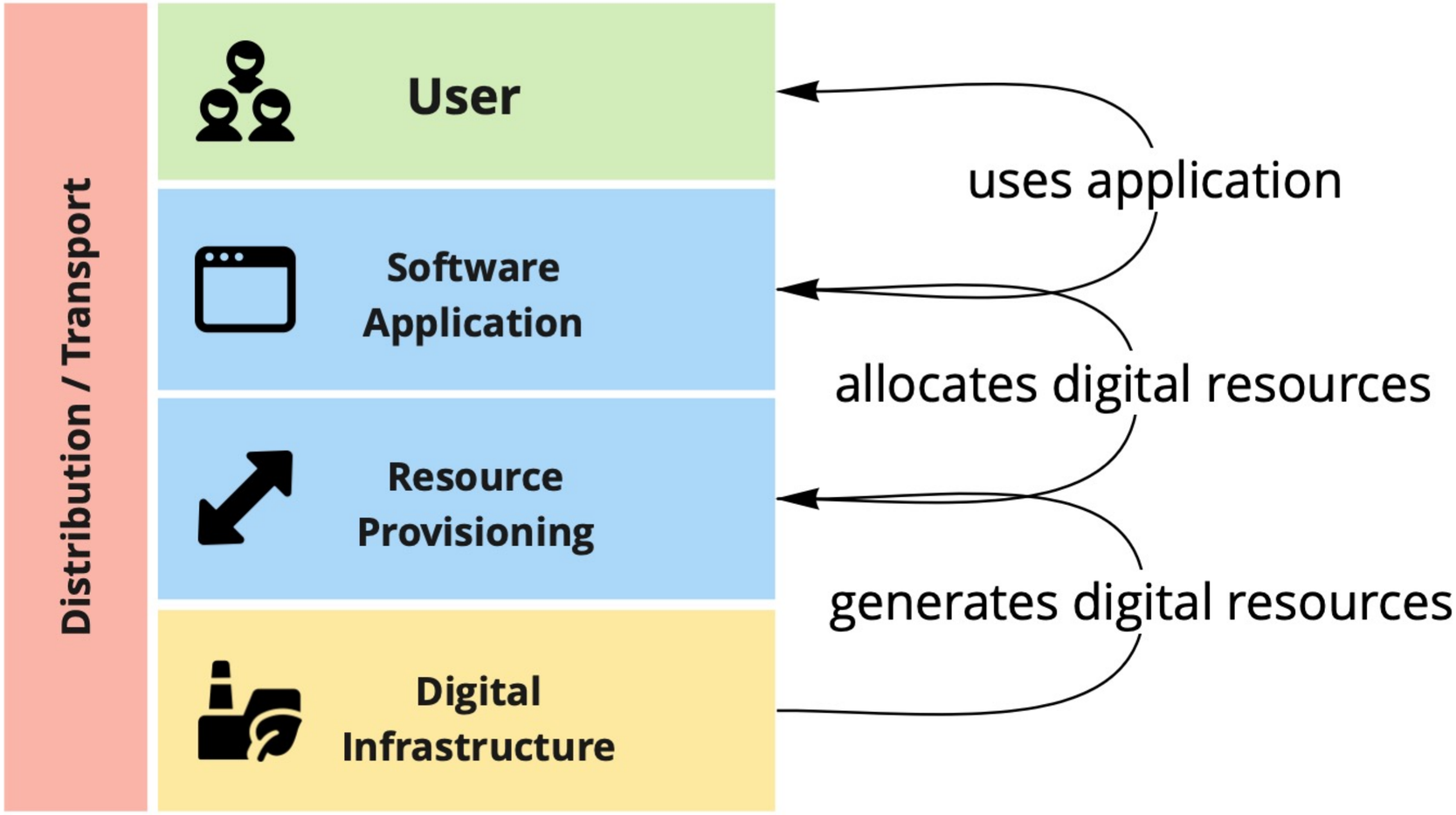
Why is measuring so difficult?

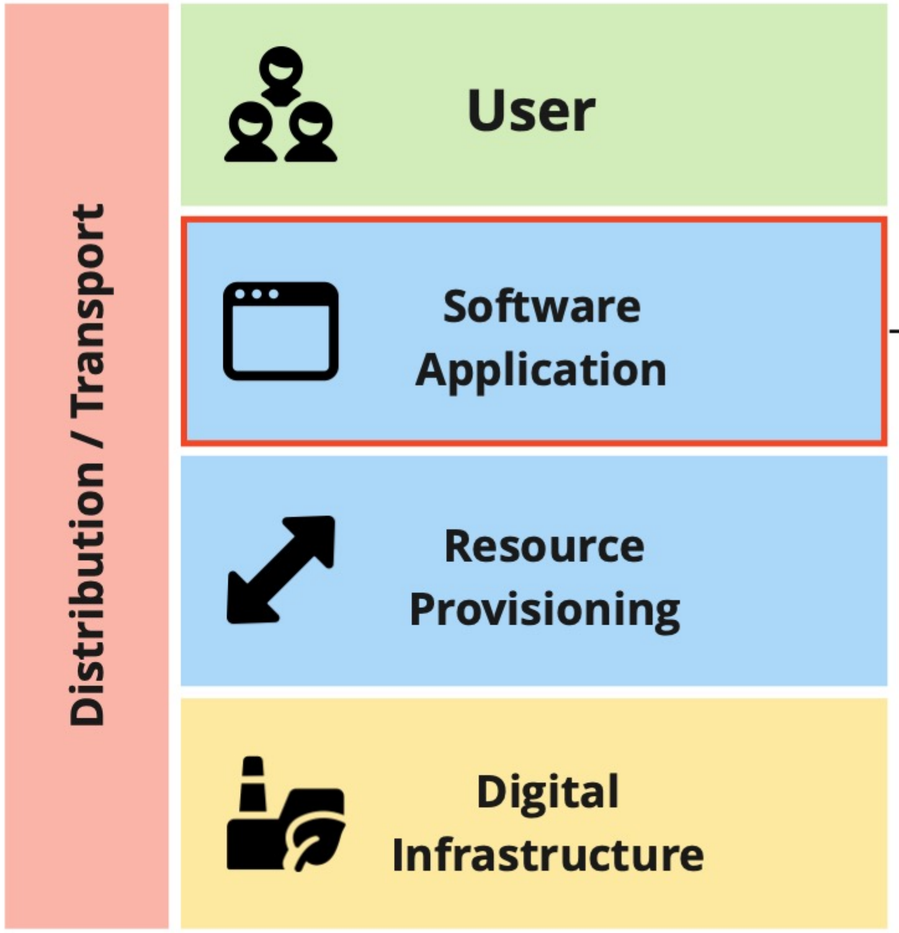
IT = Celebrating Complexity

Data Centers = Part of the IT ecosystem

Measuring becomes simple(r) when you aknowledge that all IT systems work the same.



So what's the footprint of the digital economy? The total impact of resources consumed by applications.



Total Footprint = Total Environmental Impact of resources consumed by software applications.

SDIA

There is a difference between reducing resource use and environmental impact of the resource.

Reducing resource use = **efficiency**

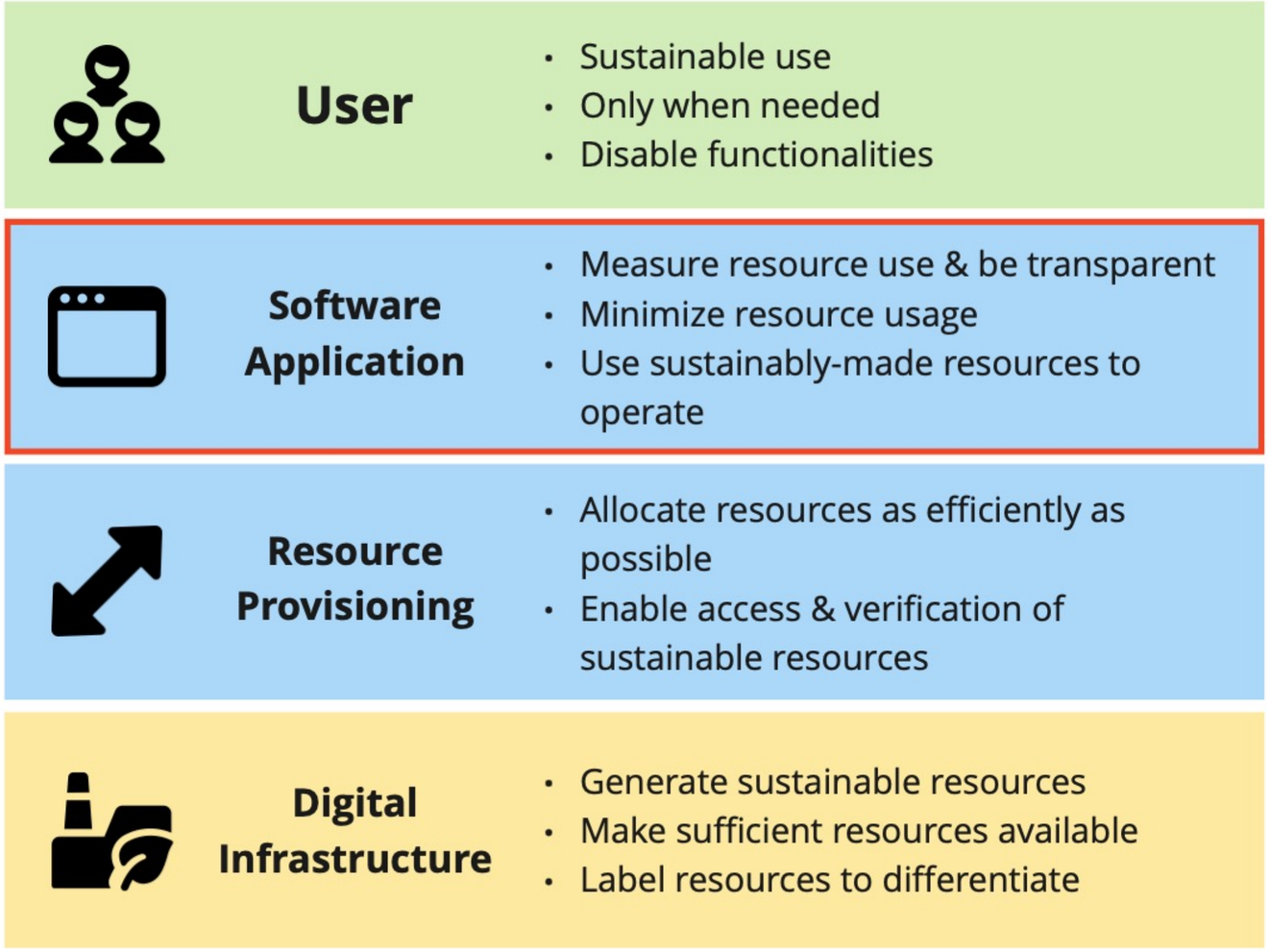
Reducing environmental impact =
less/no damage on the environment

Now, who is responsible for the environmental impact of the resources generated, allocated & used?

User	• Sustainable use • Only when needed • Disable functionalities
Software Application	• Measure resource use & be transparent • Minimize resource usage • Use sustainably-made resources to operate
Resource Provisioning	• Allocate resources as efficiently as possible • Enable access & verification of sustainable resources
Digital Infrastructure	• Generate sustainable resources • Make sufficient resources available • Label resources to differentiate

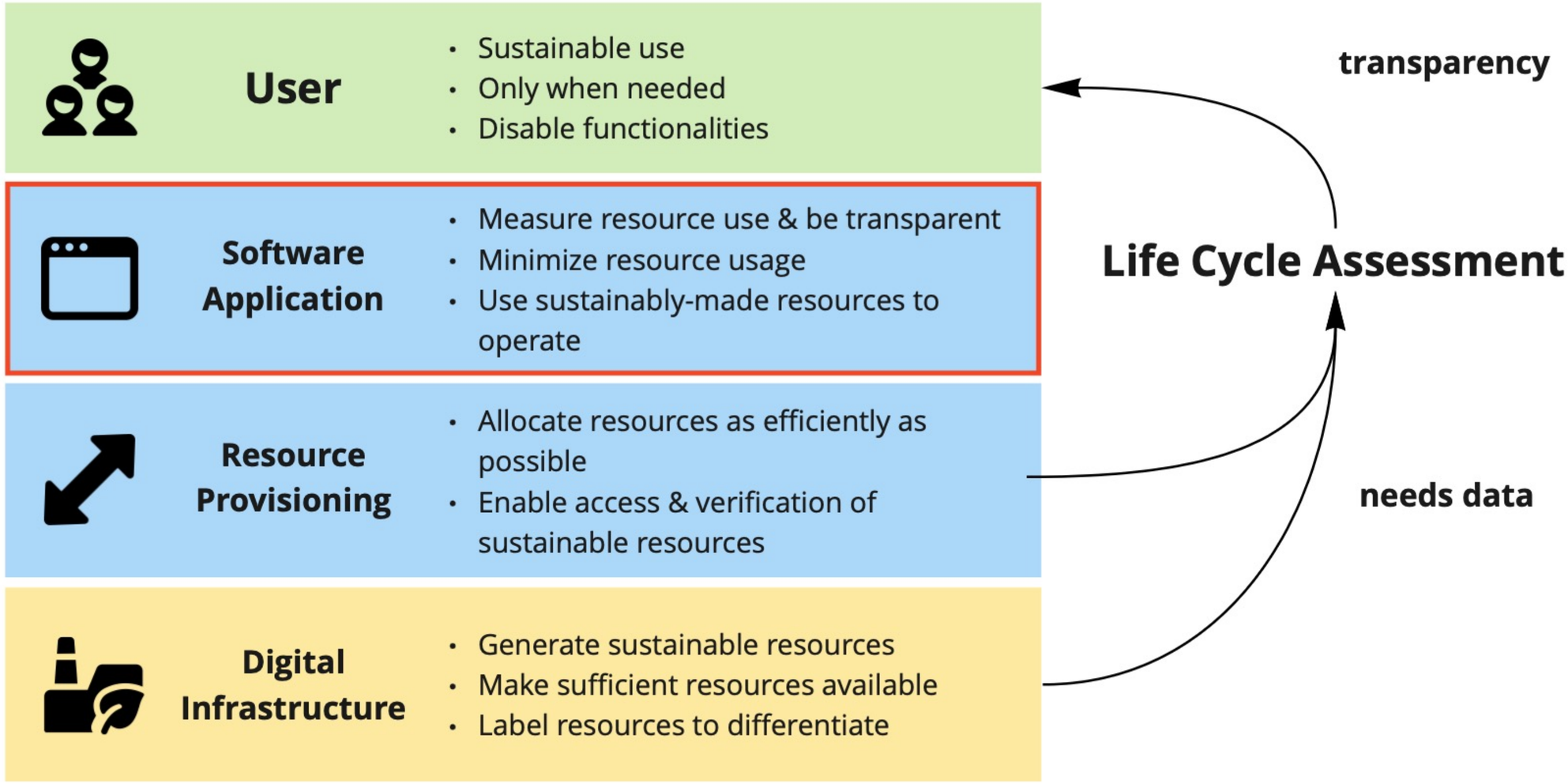
SDIA

It's the software application that is responsible for the resource use & measuring environmental impact



SDIA

Measuring the environmental impact already has a metrics & method: Life Cycle Assessment

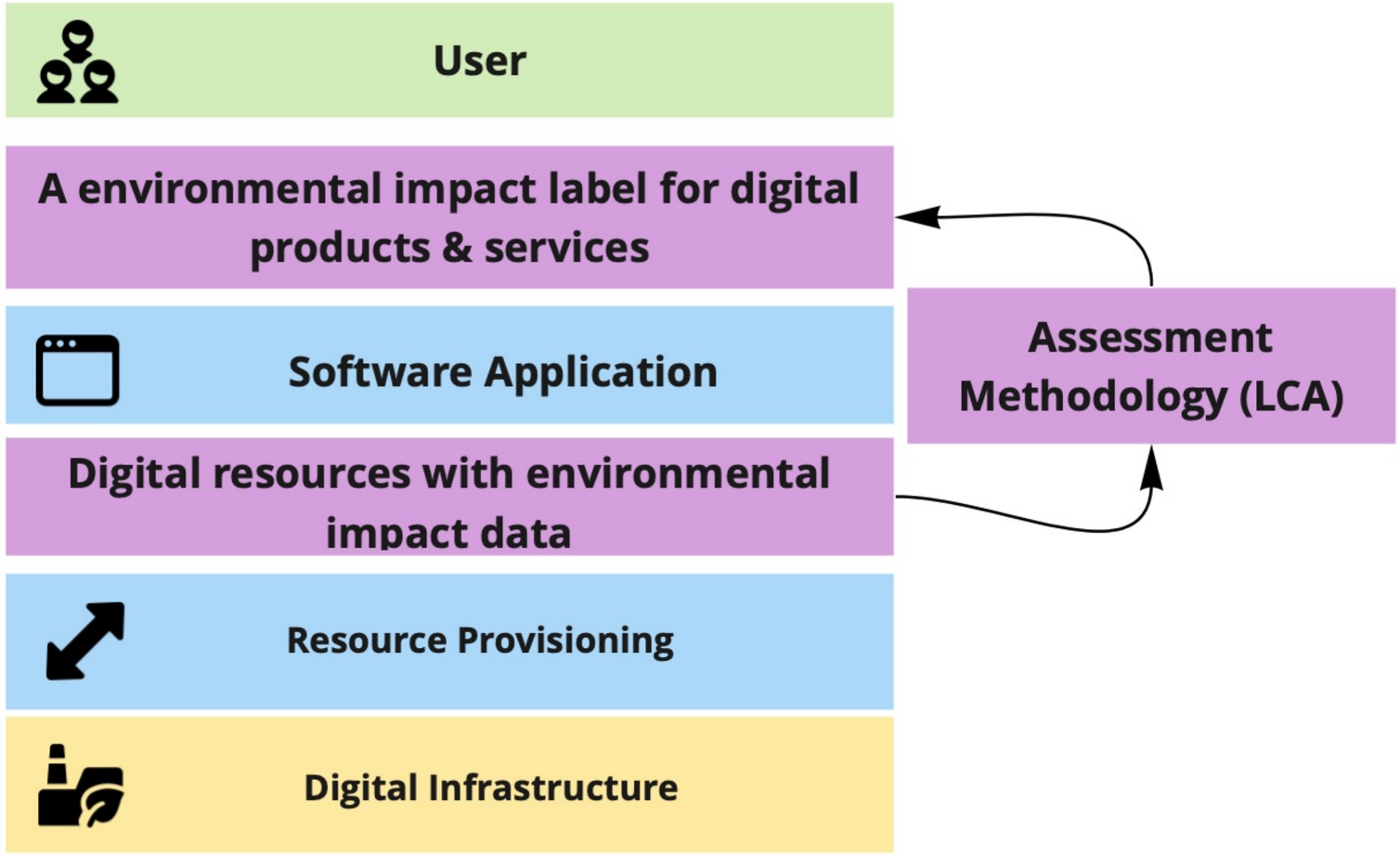


Measuring the environmental impact already has a metrics & method: Life Cycle Assessment

Environmental	Impact category / indicator	Unit
	Climate change – total, fossil, biogenic and land use	kg CO2-eq
	Acidification	kg mol H+
	Eutrophication – freshwater	kg PO4-eq
	Eutrophication – marine	Kg N-eq
	Eutrophication – terrestrial	mol N-eq
	Depletion of abiotic resources – minerals and metals	kg Sb-eq
	Depletion of abiotic resources – fossil fuels	MJ, net calorific value
	Human toxicity – cancer, non-cancer	CTUh
	Ecotoxicity (freshwater)	CTUe
Parameters that describe resources used	**Parameter**	**Unit**
	Primary renewable energy (materials)	MJ
	Primary renewable energy (energy)	MJ
	Primary renewable energy (total)	MJ
	Primary non-renewable energy (materials)	MJ
	Primary non-renewable energy (energy)	MJ
	Primary non-renewable energy (total)	MJ
	Use of fresh water	m3
	Use of renewable secondary fuels	MJ
	Use of non-renewable secondary fuels	MJ

Other environmental information: Waste type	**Indicator**	**Unit**
	Hazardous waste disposed	kg
	Non-hazardous waste disposed	kg
Other environmental information: Output flows	**Indicator**	**Unit**
	Components for re-use	kg
	Materials for recycling	kg
	Materials for energy recovery	kg

What do software applications need to make a life cycle assessment?



And that's what we are working on at the SDIA:

Adapting the Life Cycle Assessment methodology for digital products & services (software)

A environmental impact label for digital products & services

A label for sustainably produced digital resources with environmental impact data attached

Capacity building towards IT & infrastructure

Sustainability is driving business now - will you lead or will you follow?