

Design for EcoValue of Smartphones

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My 'messages' are a result of **'REVERSE THINKING'**:

from **Supply side** to **Demand** side

from **'Eco' thinking** to **'Functionality'** thinking

from **tools to support Validation** to **tools to support Creativity**

Forms of EcoDesign

Traditional EcoDesign: Minimization of the Environmental impact over the lifecycle of products.

For validation 'emissions' (LCA) are dominating, not material criticality nor potential toxicity.

Modern EcoDesign (**EcoValue**):

Optimization of the (added) **Value**/environmental load **ratio**

For validation **money comes into the equation.**

Smartphones are perfect for the Ecovalue approach.

The Demand side, 'green' attitudes

	Overall	Men only	Men, higher education	Senior managers
Positive	43	34	34	34
Neutral	30	33	30	28
Negative	27	33	36	38

'Green' as such will not sell well, other benefits have to be offered in order to appeal to a **broad** public.

Benefit packages and functionality

Functionality

Physical functionality

(functions, size, weight)

Economic functionality

(price, life cycle cost)

Intangible functionality

(ease of use, health/safety)

Emotional functionality

(nice design, feel good)

Environmental Component

Smart material use

Cost of consumables incl energy, maintenance

Absence of toxics, battery issues

'Green', long life, recyclable

FUNCTIONALITY ANALYSIS!

Three types of buyers

In W-Europe, **average** for all electronic products:

1/3 Price buyers = lowest price for the physical function, no frills

1/3 Tech buyers = want latest technology, features etc

1/3 Quality buyers = want 'quality' and are prepared to pay for this

What is the situation for smartphones in country x,y,z?

Value \neq Price

Value is the totality of feelings, price is tangible money only.

If the value for the customer is bigger than the price: sales potential.

If the value for the customer is lower than the price: no sales potential

Total impact = Price obtained X Volume sold/Environmental impact

Strategy: **Maximize** Price (functionality) and Volume (tailor to customer profile) and **minimize** impact (Ecodesign) or **'combination strategies'**

Functionality analysis

- * Select best selling products in the relevant buyer group.
- * Look to the functionality attributes (in the four categories) and describe as quantitative as possible.
- * Look to the environmental attributes (E, M, P&T, CC and EoL) and express in W, kg, sec, % etc.

Brainstorm on this basis about what can be done to improve functionality and to lower environmental impact. (Pricing is a 'result')

Enablers for Functionality Enhancement/EcoDesign

Look for 'enablers': design cannot do the job all alone.

Enablers can be:

- Technology (production)
- Science (materials)
- Suppliers (smarter components and subassemblies)
- Software

Supporting Sales Volume

Quality Function Deployment: ask (prospective) users what they expect from functionality to be sold.

(note for environmental items there can be 'political correct answers')

Select a customer group and match functionality.

(if a broad public is to be addressed follow a 'three tier' approach)

Channel management with particular attention for Internet sales.

EcoDesign for emission reduction or EcoDesign for Resource Value?

Traditional EcoDesign as such has a focus on emission reduction because of the validation through LCA related methods.

The practical justification for this is that **energy** consumption is dominant.

For smartphones **materials** consumption is dominant.

The metrics for creativity and for validation will have therefore to change; the design approaches remain the same.

Resource indicator: a combination of an environmental component (from LCA), a geo/technical one and a supply risk one.

Whatever: go for the highest added value per amount of resources!

Increasing Resource value

Attention to any form of material application and its impact on functionality value.

Special attention for the issue why do first owner discard their products?
(clues for add-on businesses and services).

How much resource value does longer life/remanufacturing yield compared to the baseline of material recycling/parts harvesting?

(producing the 'secondary' kilograms involves much more load than bringing into a form or a function)

Why do first owners discard their products?

Irreparable breakdown → elimination of weak spots

Too costly repair → design for repairability

More functionality ambition → trade in-trade up + pre owned business

Changes in civil status → pre owned business

Do not like the product anymore → sell upgrades

Wear and Tear, outdated functionality → little potential

Experience for such businesses: the driver is chiefly money, a condition is availability of outlet channels, resource savings limited.

Evaluating options: EcoDesign Matrix

Options	Benefit for			Feasibility	
	Resource value	Business	Customer	Tech	Financial
#1					
#2					
#3					
#4					
#5					
#6					

Integration of Resource Value Options into Business Processes = managing the Internal Value Chain

- Strategy, business plans
- The product portfolio management
- The product creation process
- The supply chain management
- Marketing and Communication

This is a 'cultural growth process'

Use 'radical proposals' to create awareness and as a 'treasure grove'.

Conclusions

Reverse thinking: 'broad perspective first, zoom in to sustainability'

Ratio's (between 'money and green') like EcoValue to assess idea's.

Priority setting among idea's according to stakeholder interests.

Integration is a cultural growth process.