

European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - *EuNetAir*

COST Action TD1105

WGs and MC Meeting at LINKOPING, 3 - 5 June 2015

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Year 3: 1 July 2014 - 30 June 2015 (*Ongoing Action*)

“KOMPETITIVE INTELLIGENCE” – A NEW METHOD FOR THE IDENTIFICATION AND ASSESSMENT OF TECHNOLOGICAL ALTERNATIVES

Tiziano Montecchi

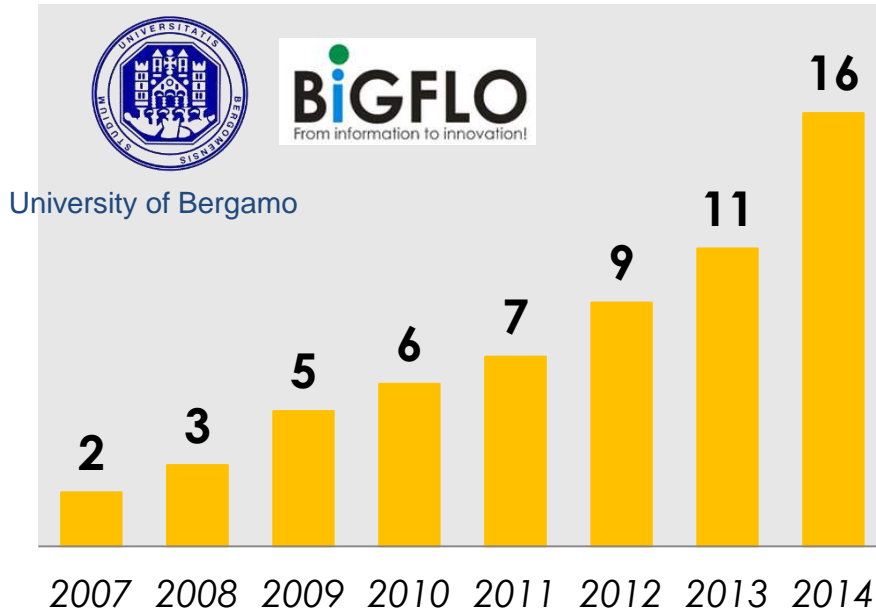
Function in the Action: SIG

University of Bergamo/Bigflo, Italy

 **cost**
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY



Research and company group



➤ experts in TRIZ and IP services
(>10 ys experience with companies)

- 4 (assistant and full professor)
- 7 PhD students and post –doc
- 1 assistant researcher
- 2 Software experts
- 1 Industrial Designer (from India)
- 1 salesman

BiGFLO
From information to innovation!

Spin-off of
the University of
Bergamo
founded in 2013





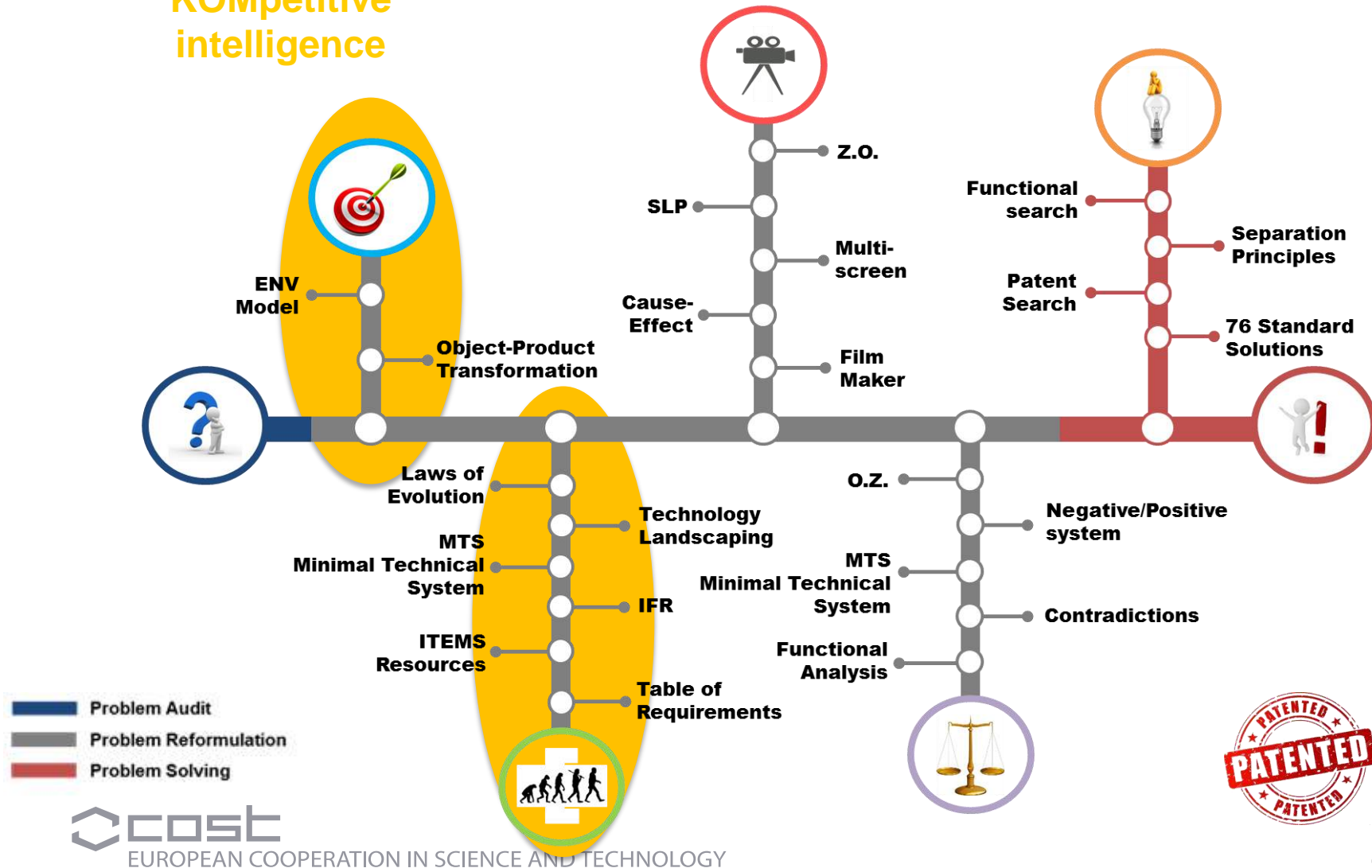
Outline

- **Context and goal of the methodology**
- **Methodology steps**
- **Examples of KOMpetitive Intelligence**
- **KOMPAT for searching alternative technologies**
- **Conclusions**

TRIZ steps for product innovation

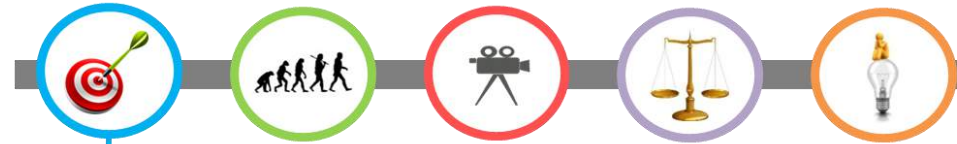
**Innovate
the product
in 5 steps!**

**KOMpetitive
intelligence**



Identification of product requirements

1. Functional overview



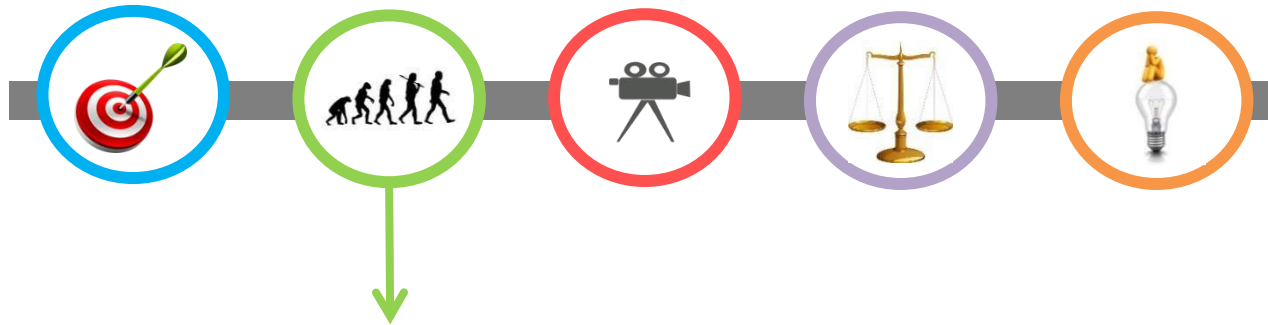
- Focus on main functions, and potential new functions
- Analyze product environment, especially the object on which the system acts
- A list of general requirements adapted to the specific system under investigation are then extracted



On which of these requirements the innovation activity should be focused?

Ranking the requirements

2. Innovation Strategy

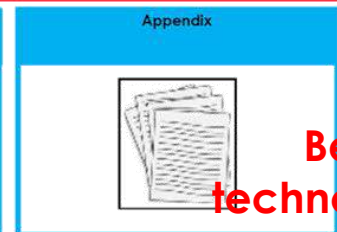
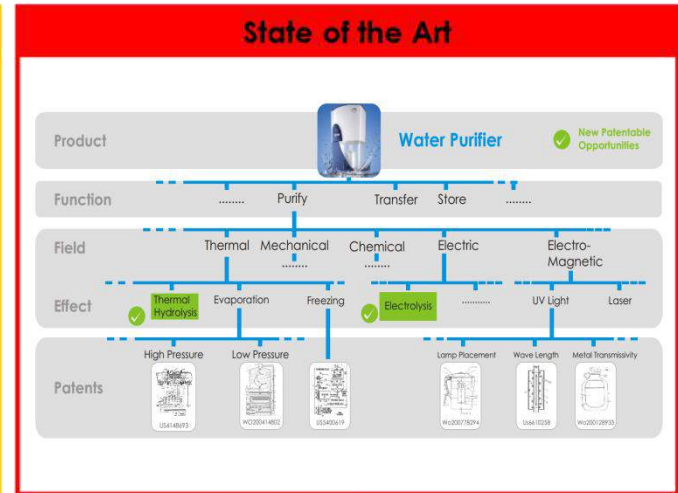
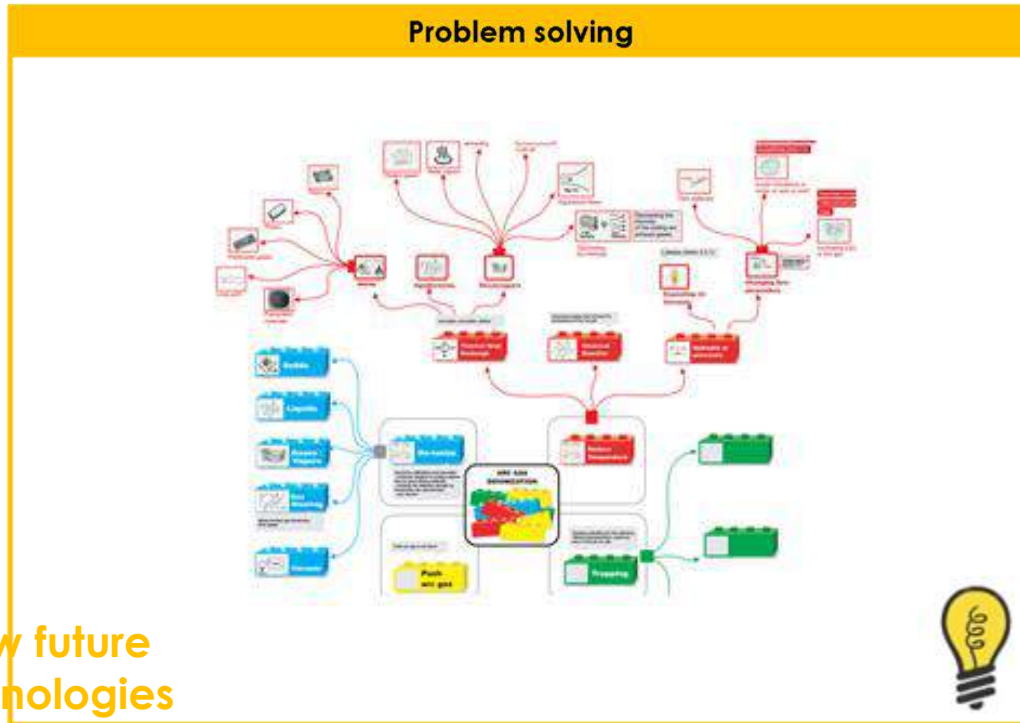
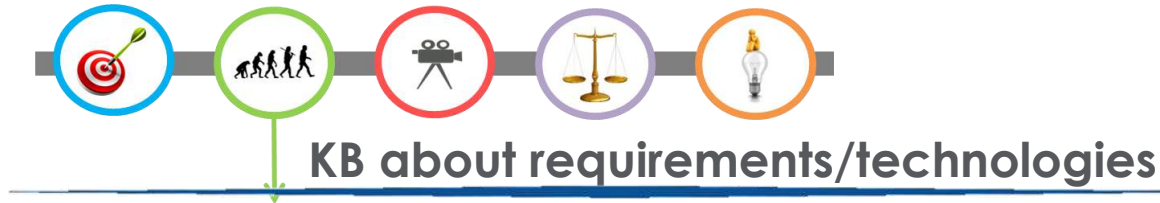


- Weight all requirements in terms of market potential combining Technical/Marketing/Design points of view
- **FIX the Innovation strategy:** Quantify how each requirement has to be improved (or not) according to its market potential



Knowledge search for supporting audit phase

2. Innovation Strategy



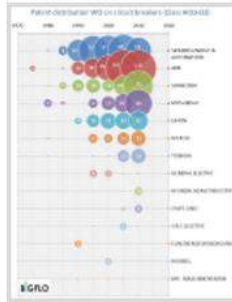
Best technologies available

Patent survey

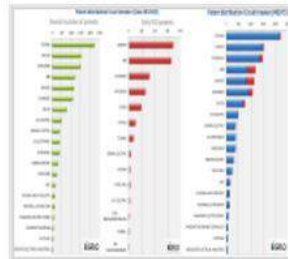
Time distribution of TOP assignees



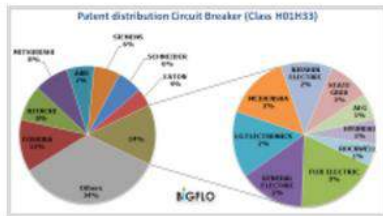
WO Time distribution of TOP assignees



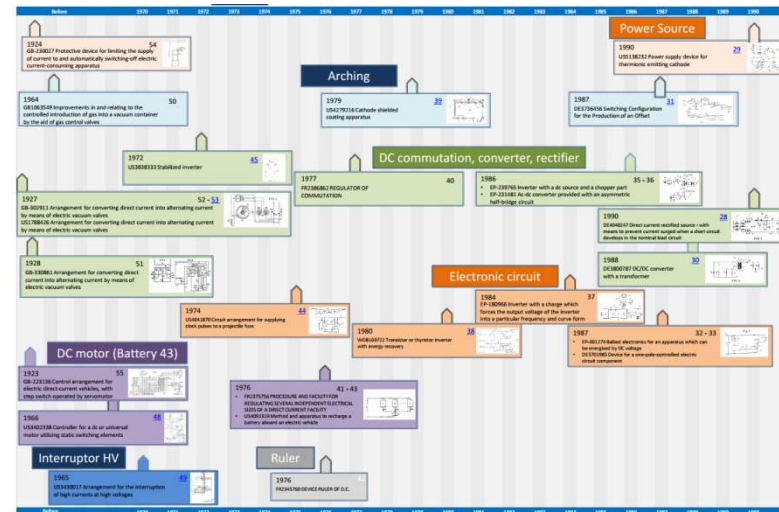
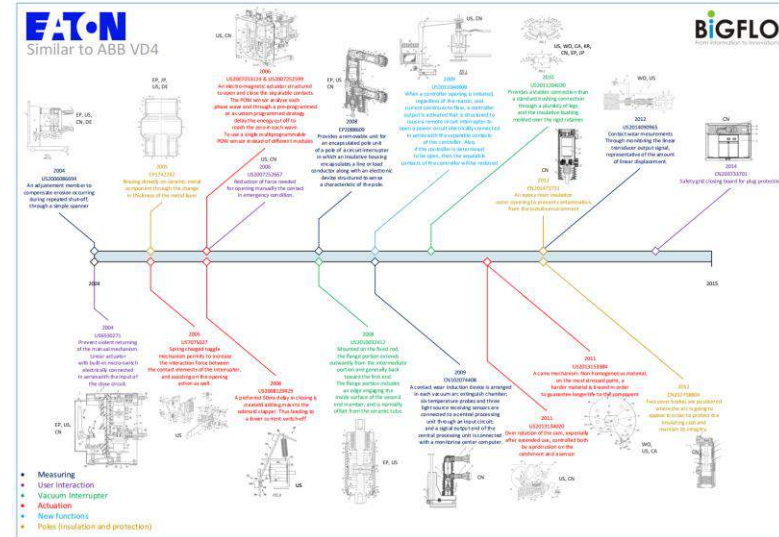
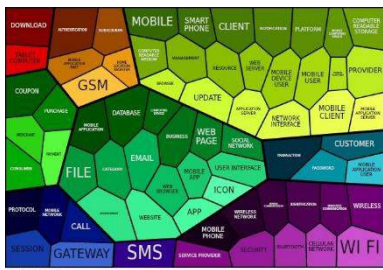
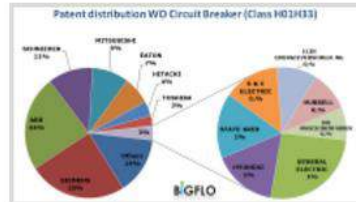
TOP assignees WO vs. All



% TOP assignees

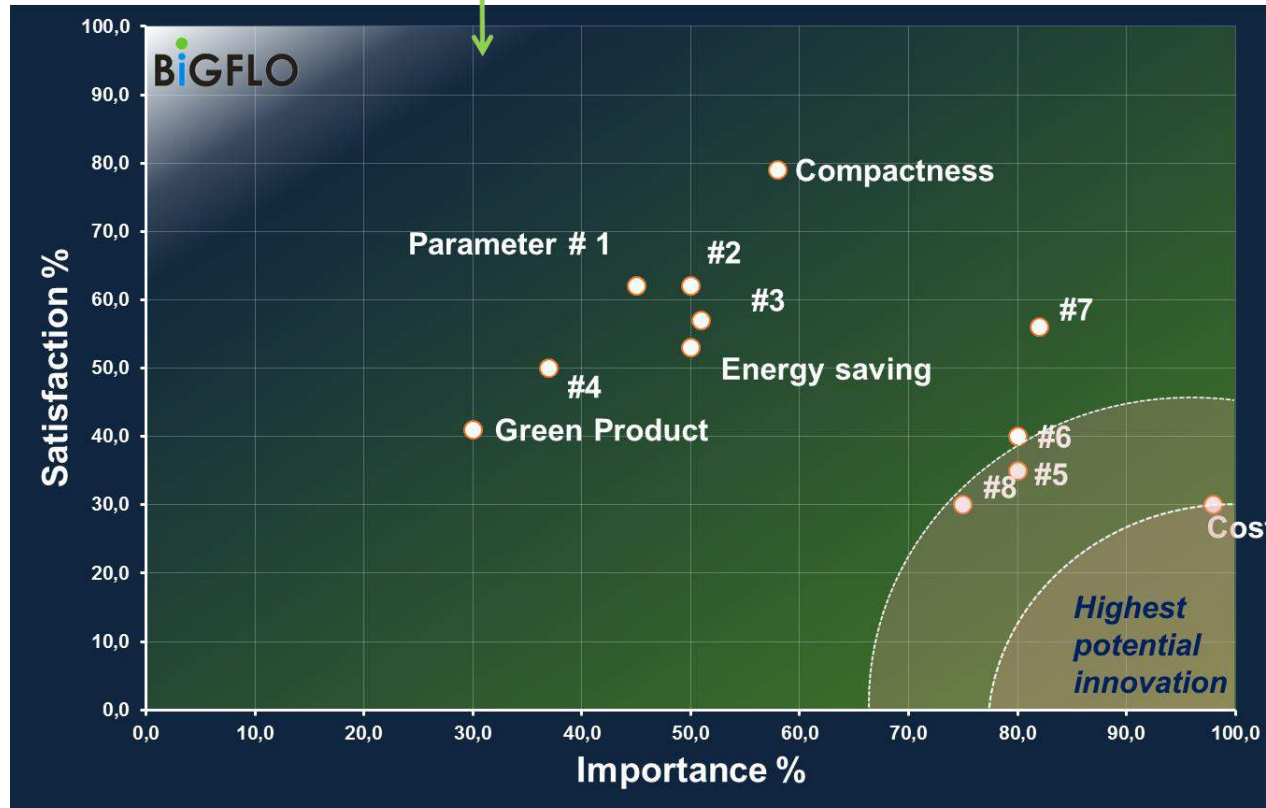
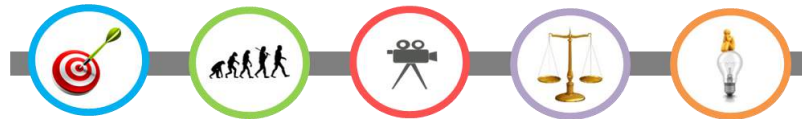


WO % TOP assignees



Market Potential - Innovation Strategy

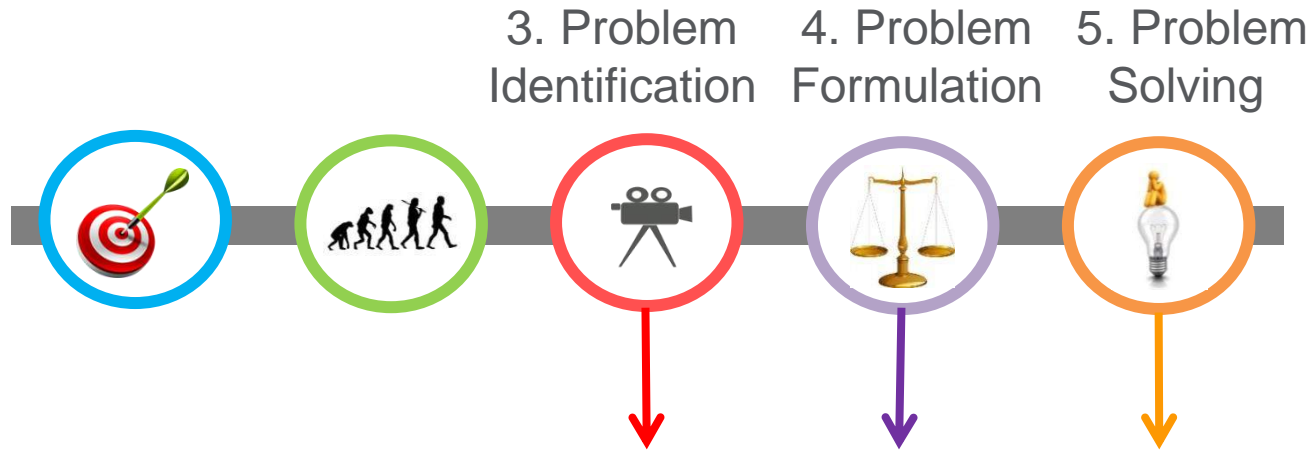
2. Innovation Strategy



The experts evaluations are visualized and compared in this graph.

Select requirements with highest market potential

Problem Solving steps



Use TRIZ tools for:

- Identify all the alternative problem solving directions
- Select one
- Formulate the contradiction
- Overcome the contradiction
- Evolve the solution to ideality
- Patent it



IDEAS

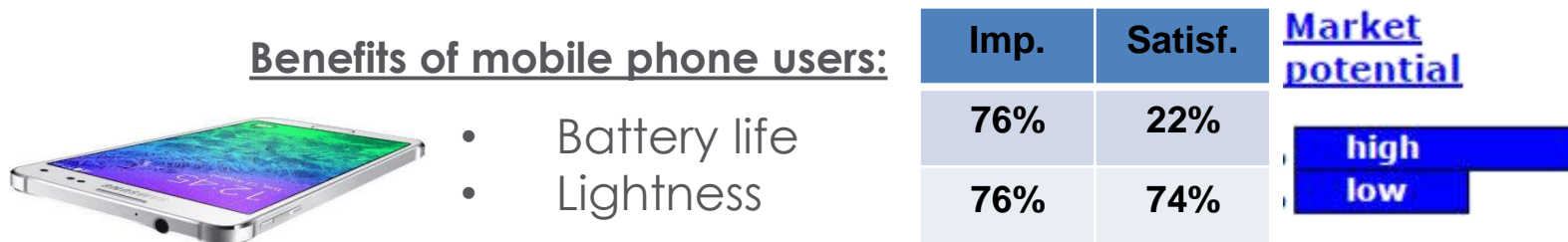


Importance and Satisfaction definitions

Our analysis deliver two statements for each requirements:

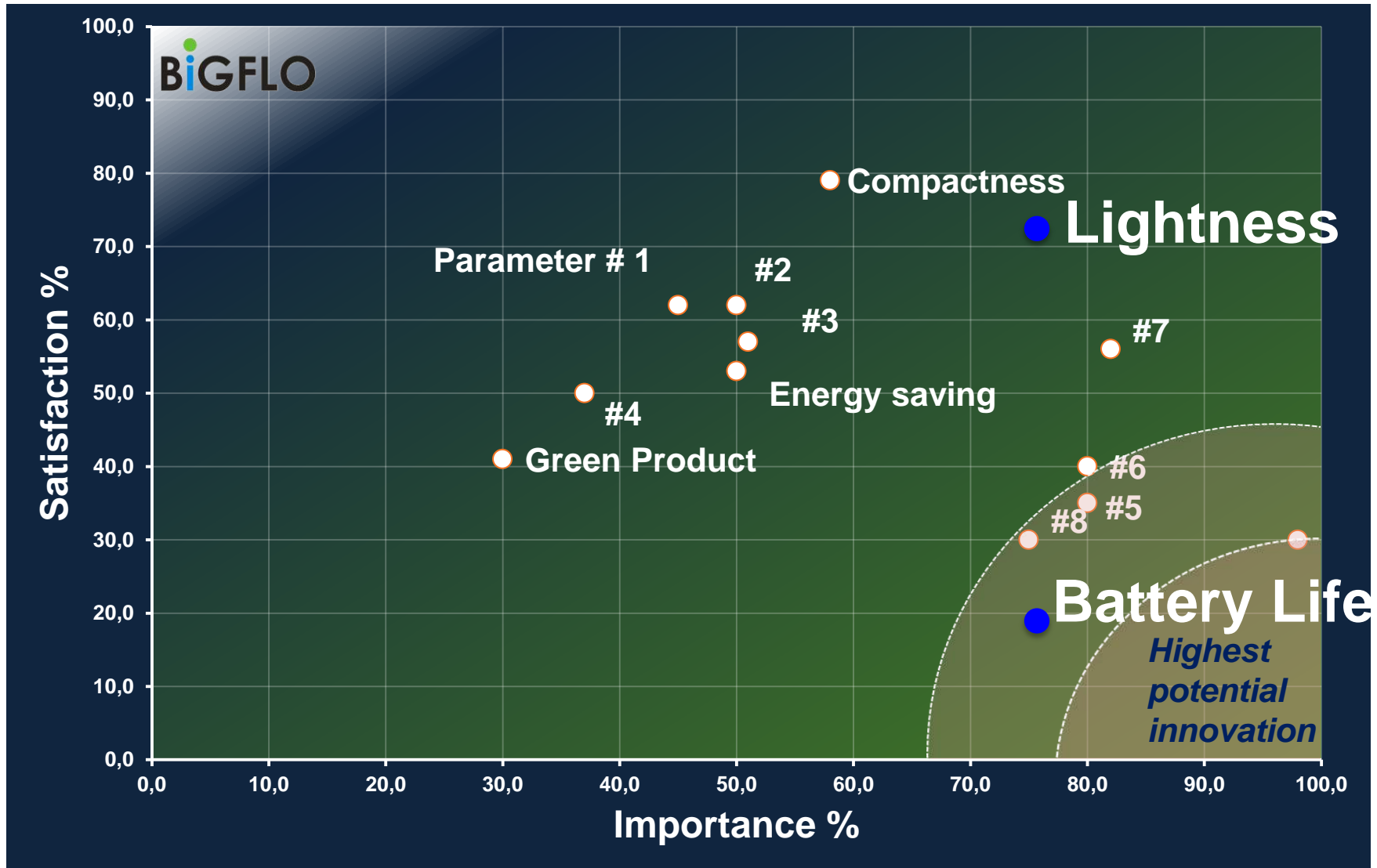
1. The **IMPORTANCE** degree to influence the customer (valued by R&D, quality, Marketing, etc.); All company investments are taken into account.
2. The **SATISFACTION** degree to which a requirement is fulfilled through existing product -(valued only by marketing or VOC)

Importance and satisfaction help to calculate the **market potential** of the benefit as a decisive factor of customer value.



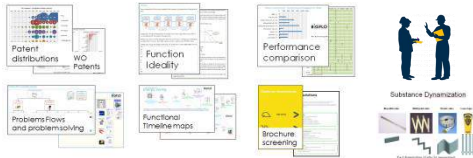
Market potential = F (Importance, Satisfaction)

Market Potential - Innovation Strategy

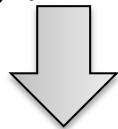


Importance and Satisfaction evaluation

Importance



Product positioning:
patent intelligence,
competitor brochures
screening, R&D/Marketing
AUDIT, Design/TRIZ perspective



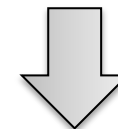
Estimation of Importance

	Overall Importance %	Overall Satisfaction %	Market Potential Ulwick
Energy Consumption	50,0	53,0	14,7
Green Product	30,0	41,0	11,9
Compactness	58,0	79,0	13,7
Versions	82,0	56,0	20,8
Customization	80,0	40,0	22,0
Lightness	45,0	62,0	12,8
Diagnostic	75,0	30,0	22,0

Satisfaction



AUDIT with Marketing staff

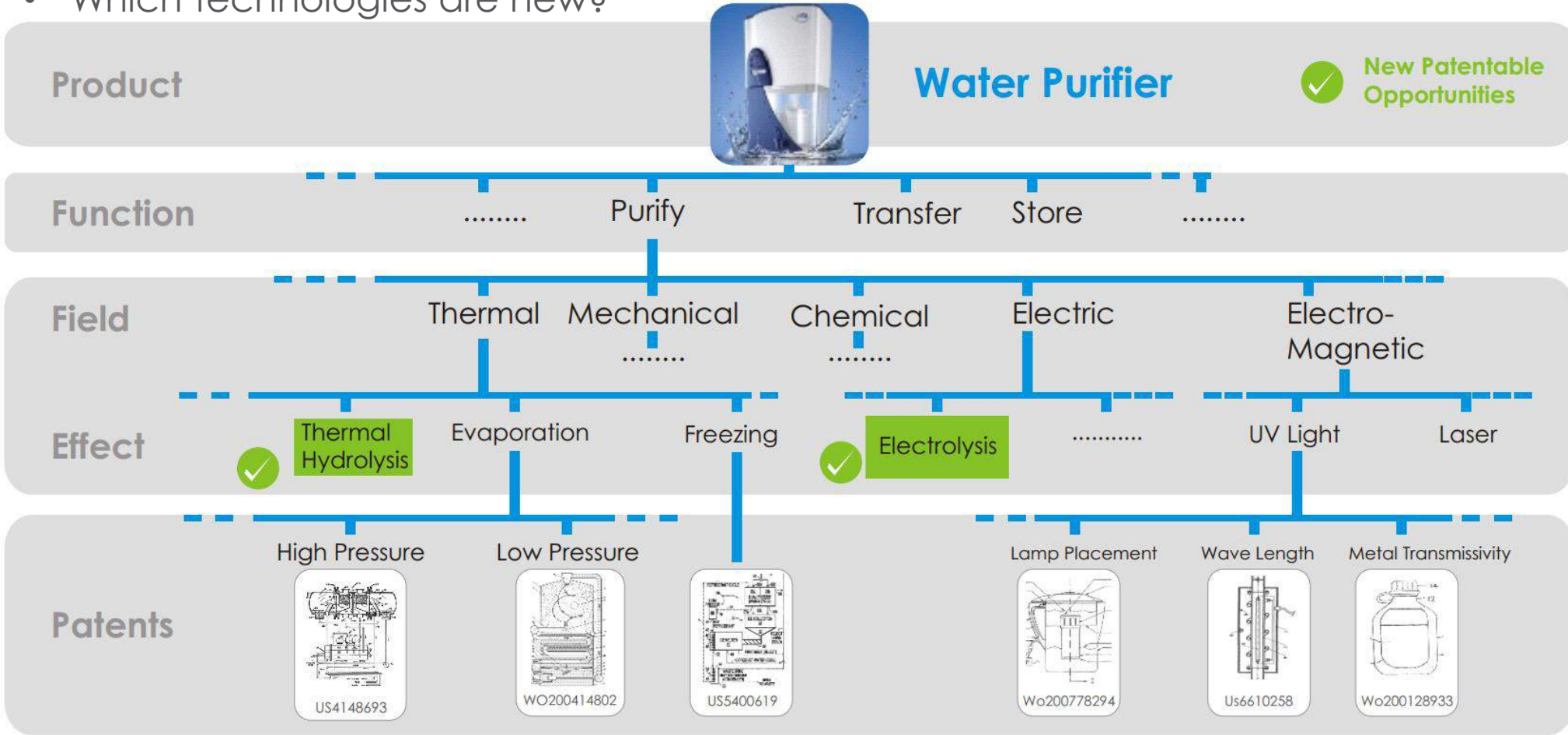


Estimation of clients' satisfaction


	Overall Importance %	Overall Satisfaction %	Market Potential Ulwick
Energy Consumption	50,0	53,0	14,7
Green Product	30,0	41,0	11,9
Compactness	58,0	79,0	13,7
Versions	82,0	56,0	20,8
Customization	80,0	40,0	22,0
Lightness	45,0	62,0	12,8
Diagnostic	75,0	30,0	22,0

Technology map & Problem Solving

- Which technologies are present at the state of the art to purify water?
- Which technologies are new?



KOMPAT[®] a semantic knowledge search engine


KOMPAT Input Expansion Filtering Search Analyze ? 

Effects

sterilize ✓ contact ✓

Search

Chemical




Zoom

Chemical

- Combustion (5)
- Reaction (5)
- Reduction (4)
- Oxidation (3)
- Suspension (3)
- Electrolysis (2)
- Precipitation (2)
- Absorption (1)
- Adsorption (1)
- Composting (1)
- Diffusion (1)

Electric-magnetic




Zoom

Electric-Magnetic

- Electrolysis (2)
- Absorption (1)
- Dispersion (1)
- Electroplating (1)
- Interference (1)
- Laser (1)
- Radiation (1)
- Birefringence (0)
- Electrochromism (0)
- Iridescence (0)
- Luminescence (0)
- Maser (0)

Thermal




Zoom

Thermal

- Combustion (5)
- Heating (4)
- Cooling (3)
- Boiling (2)
- Evaporation (2)
- Condensation (0)
- Creaming (0)
- Cryolysis (0)
- Crystallisation (0)
- Deposition (0)
- Melting (0)

Acoustic




Zoom

Acoustic

- Cavitation (1)
- Ultrasound (1)
- Doppler Effect (0)
- Infrasound (0)
- Reverberation (0)

Mechanical




Zoom

Mechanical

- Balance (2)
- Compression (2)
- Displacement (2)
- Gravity (2)
- Welding (2)
- Abrasion (1)
- Cavitation (1)
- Depressurization (1)
- Explosion (1)
- Extrusion (1)
- Erosion (1)

Others



Zoom

Others

- Corrosion (2)
- Electric Arc (2)
- Agitation (1)
- Convection (1)
- Electrical Resistance (1)
- Hardness (1)
- Saturation (1)
- Capacitance (0)
- Casimir Effect (0)
- Coagulation (0)
- Deflagration (0)

Conclusions

KOMpetitive Intelligence methodology:

- is a systematic methodology to foster the ability of experts to identify and assess technological alternatives
- Based on quantitative and objective data.
- Strategic knowledge about available and future technologies
- allows engineers and decision makers to have a comprehensive and fast overview on the situation, increasing awareness and consistency of decision making.
- has been already tested and adopted by multinational corporations.

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Thank you for your attention

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