Lasse Laaksonen

Total Material Refinery™

The Sustaining Solution
for Solid and Liquid Waste Management

Based on Antti Leinonen's Biorefinery Concept

lassella@hotmail.fi **www.compunication.fi**

Lasse Laaksonen

Nepal experience since 1995 continuously

lassella@hotmail.fi
Phone +358 45 135 2646
CEO at Compunication Ltd
CEO at Global Ballon Ltd

Career:

Banks, Insurance, Ericsson Programatic, Tieto, KPMG, FCG International, New Africa Technology Holdings NATH/ Intec, Iocore-Sentera, Compunication, Global Ballon

Major customers and sectors:

KPMG, Nokia, Logica, Pöyry, FCG, Veho (Mercedes Benz, Honda, BMW, Fiat), Fortum, Nepal Telecom, Helsinki Metropolitan, PTT Finland, Sonera, Securitas, Ministries, Fujitsu, Hospitals, Medical, Clinical, Chemical & Physical, Psychological Research, Education, Logistics

Expert in:

Indian culture coaching, ICT architecture and projects, Waste and material management, TEKES & Finland Foreign Ministry funding, Lean management and other management coaching, Project management

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Companies

Compunication

- Systematized Total Material Refinery™
- Developed ICT
- Active in India and SAARC
- Coaches Europeans for India co-operation (biz + culture)
- Coaches Indians for Europe co-operation (biz + culture)
- Invented the franchise model

Bioste

- Invented Biorefinery™
- Innovations on all waste/ energy biological questions
- Active in Africa and Middle East
- Knows thoroughly European environmental issues
- Invented the sustaining joint venture model
- Invented viable financing models

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Do not waste your waste

If you could convert waste to diamonds, why would you not do it?

Cullinan – Star of Africa

- While, you have to clean your city first – and somebody shall pay for that
- So you will get the material
- Then you use the material in the best viable way
- Do not apply just partial or ideologically daft processes, but calculate the whole picture
- Input, Process, Output; volumes + money; revenues + cost
- Subvention available

- For one city – For 1000 cities

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Daft ideas

(DAFT = stupid, silly)

- Make new **dumps** – Nope! They are obsolete mafia + municipal corrupt business only. You can re-use waste 96% and rest is just good material under the next road to be built.
- **Avoid plastic** bags – Nope! They convert 60% to best diesel – or even, you can use plastic just as plastic
- **Segregate** carefully the waste at homes and at neighbourhoods to: paper, cardboard, energy, bio, metal, glass, hazard, diverse etc etc. – Nope! Nobody can do it but in Switzerland and Fairy land; good sorters are very very cheap and effective
- **Burn** the waste – Nope! You need more external fuel than are the outputs, right way = biogasification
- Manage the solid waste and **waste water separately**, because of history - Nope! They are interconnected thru each other; one's output is another's input, etc.
- Make **big process centres** – Nope! Make small decentralized units to avoid logistics problems and to make project sizes manageable
- You can get huge profits from the waste **without subsidies** - Nope! You must have subsidy to make the business viable and then you will have the best solution for any criteria.l

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Sustaining waste policy

- There is no waste, only valuable material; zero waste
- The demand, price and costs define, what you really should do; this is not a blind ideology
- Do not create waste
- Re-use good materials of waste most efficiently
- Recycle, plastic is best as plastic, paper as paper, wood as wood.
- Do not lose energy in open combosting, use anaerobic, closed method.
- Do not burn waste too much or inefficiently, thus losing its energy and valuable material
- Burn only hazardous waste or gas
- Integrated solid and liquid waste treatment
- Use also fertilizers and ash efficiently
- Do everything decentralized

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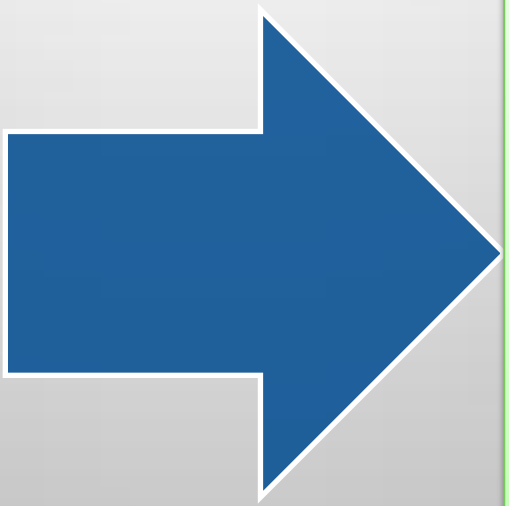
Purpose

From Suffering

Input
- Waste
- Dirty city



To Enjoyment

Output
- Clean and healthy city
- Electricity
- Gas
- Fuel
- Rare metals
- Fertilizers
- Ash
- Debris
- Fleece
- 3D materials
- Diamonds

Create → Collect/Buy → Refinery → Sell/Deliver

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Process

Households, companies, government, hotels, factories, restaurants, ships etc. create waste and also other material for our input.

A garbage collector fetches the material and we buy the material from the collector/ transporter.

- City collecting is done from cities
- Ocean collecting is done from oceans (e.g. plastic waste)

The refinery (black box) comprises several equipment for:

- Crunch
- Segregate
- Burn?
- Convert to diesel
- Convert to biogas
- Convert to electricity
- Convert to fertilizers
- Convert to fleece
- Convert to 3D printing materials
- Convert to diamonds
- Treat own polluted water
- Take care of hazard waste.

We sell and deliver the useful products to the market/ channels and we manage that the city gets clean

How?

1. Method
2. Technical feasibility
3. Cost-Benefit
4. Funds
5. Projects
6. Agreements

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PROCESS IS TRULY AVAILABLE - I

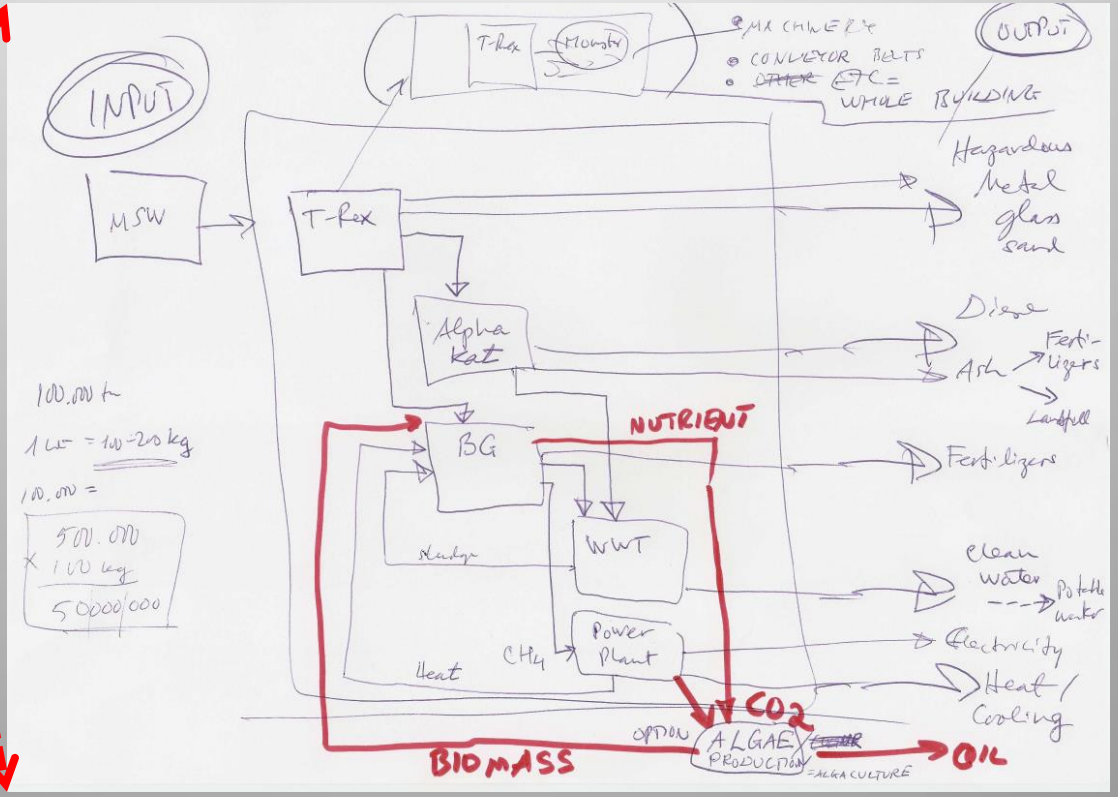
Create

Collect/Buy

Refinery

Sell/Deliver

First draft for the Biorefinery of Bioste



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PROCESS IS TRULY AVAILABLE - III

Create

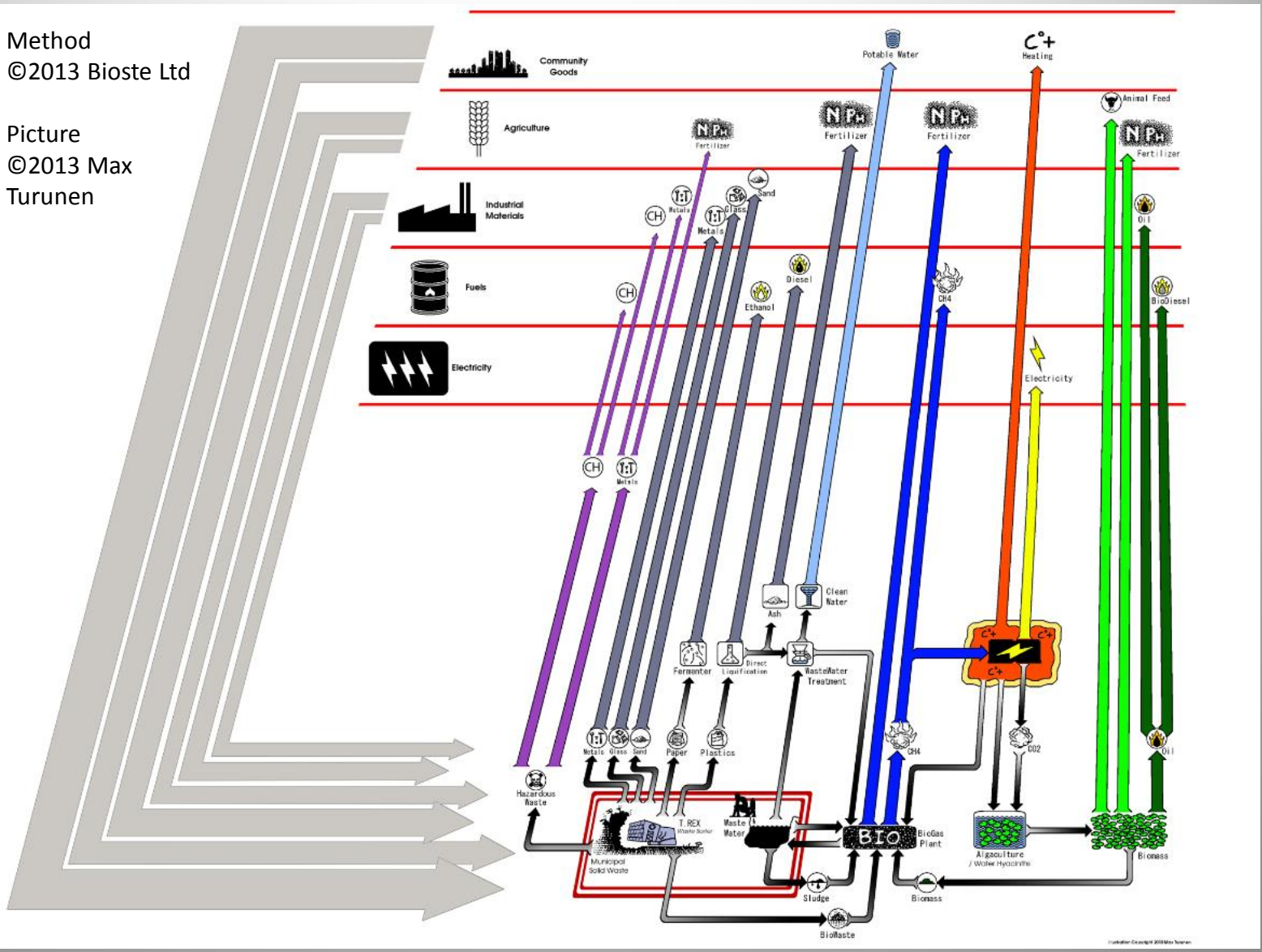
Collect/Buy

Refinery

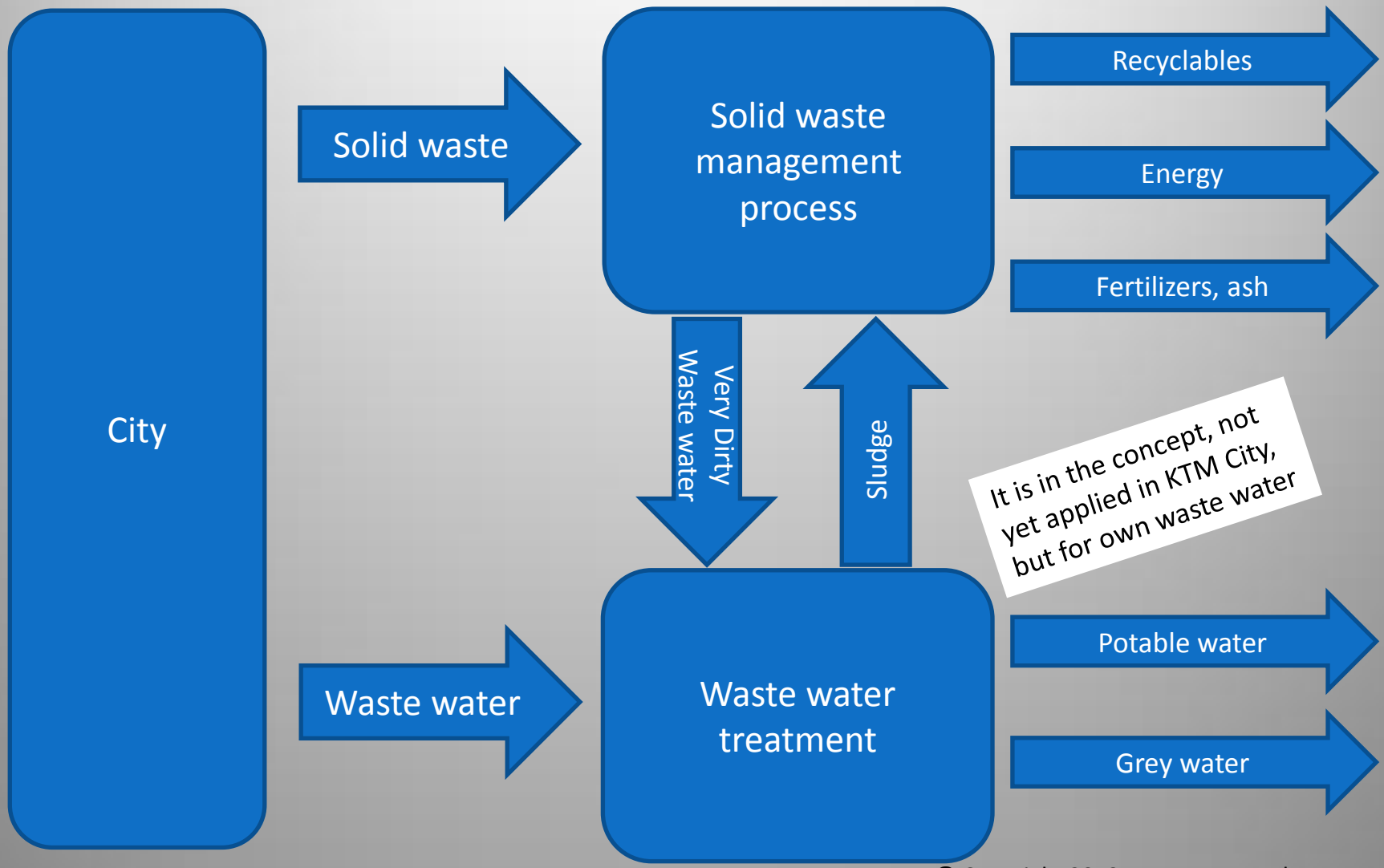
Sell/Deliver

Method
©2013 Bioste Ltd

Picture
©2013 Max Turunen



Don’t forget waste water treatment



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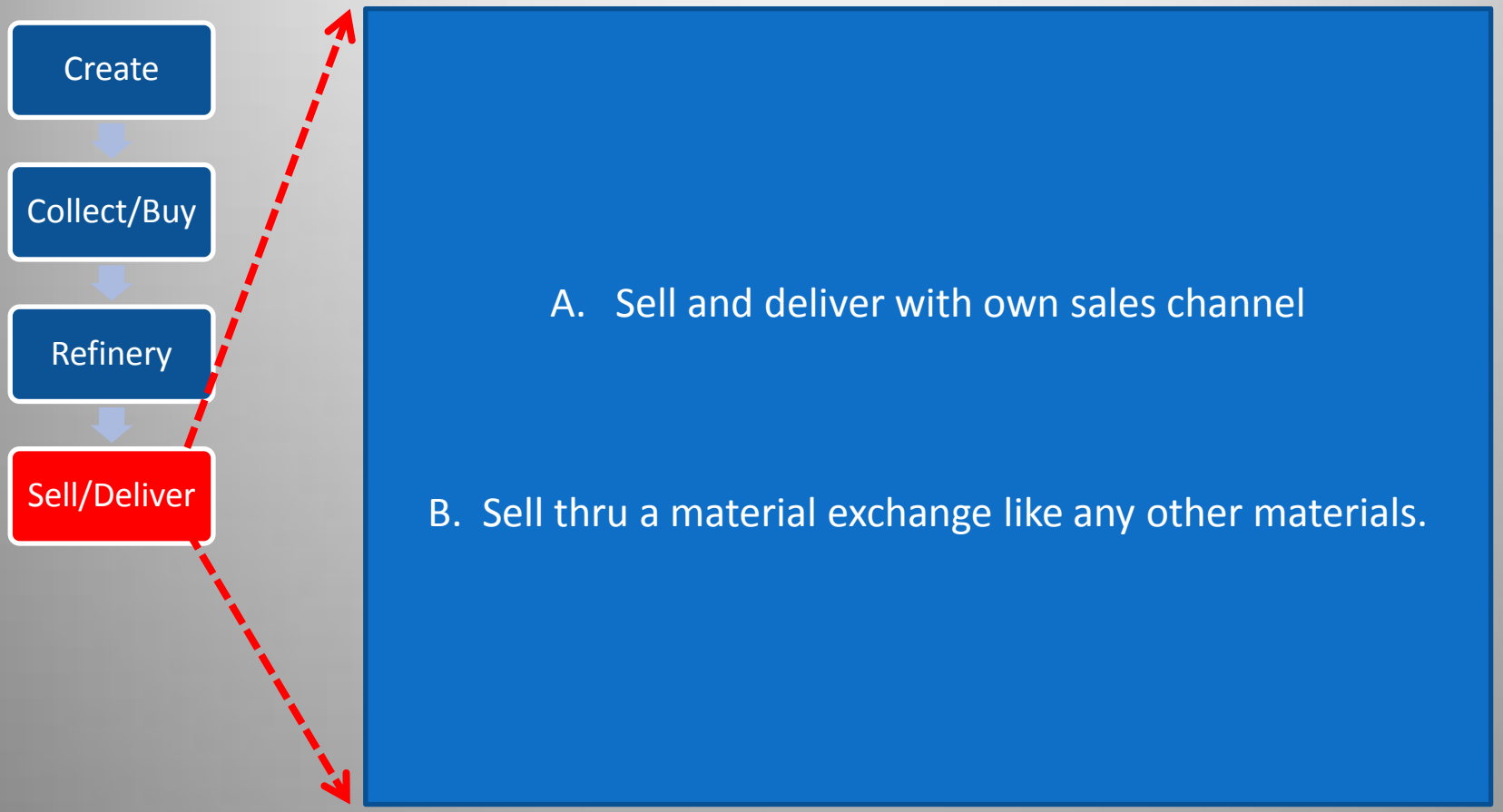
PROCESS IS TRULY AVAILABLE - III



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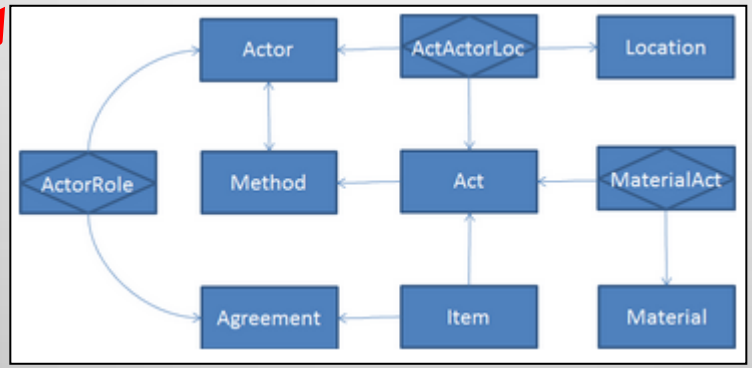
ICT SOLUTION IS TRULY AVAILABLE

Create

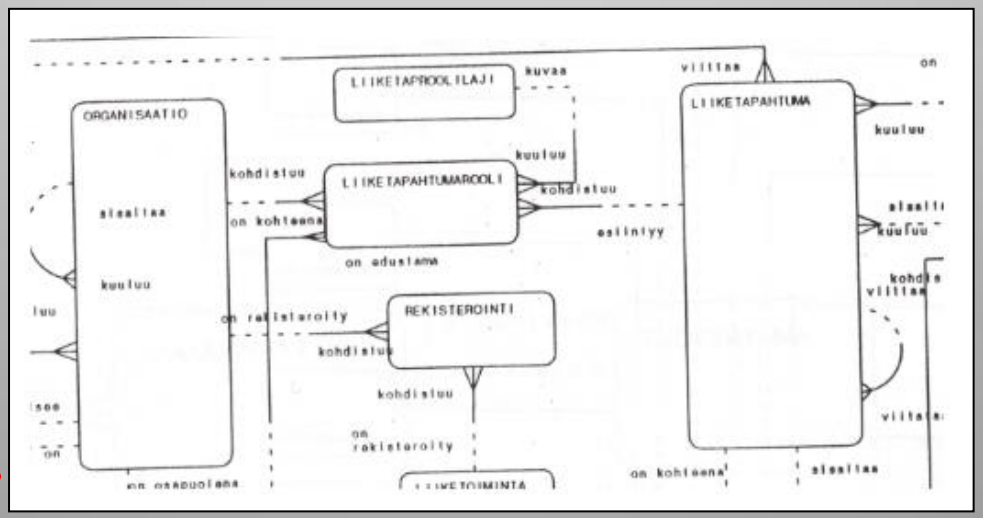
Collect/Buy

Refinery

Sell/Deliver



Our highly abstracted ICT model



Our truly implemented ICT solution in EU ESSI Best Practice Programme

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Critical Success Factors

Create → Collect/Buy → **Refinery** → Sell/Deliver

- Only **fairly paid waste** will come from the riverbanks to the refinery
  - Do pay and pay only for good quality material
  - Have a clear process for non-useful waste
- Only **top quality refinery** will work longer than in demonstration only
  - BAT - Best Available Technology
  - Excellent management
  - Excellent company values
  - Excellent maintenance
- Only **politically wanted** process is meaningful
  - BEP – Best Environmental Practice
  - Stakeholders' direct and indirect benefits
  - Benefits for all
- Only **viable and fair** process is worth investing and operating
  - Markets will buy the products
  - There is a strong commitment for paying for the clean and healthy city
  - We are not greedy.

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PRIN™ - INformation

Create → Collect/Buy → **Refinery** → Sell/Deliver

Operative Information

- Purchases, collectors, sources, materials
- Processing functions and parameters
- Sales, channels, customers, prices
- Own waste costs

Strategic information

- Politics
- Taxes and subsidies
- Gate fees and sanctions
- Pollution fees and sanctions
- Equipment costs and availability
- Social responsibilities
- Profit usage

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Business scale models

Kathmandu City

• Cities (one site) • Metropolitans, potential up to 10 sites • States / Counties, potential up to 40 sites	Straight forward feasibility – plan and build, operate , transfer (PPP and MCPPP)
• Nations, potential up to 300 cities x sites • Globe, potential up to 1000+ cities x sites	Special cloning schemata - franchising manuals, training and commissioning programme

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VIABILITY FOR A CITY

Waste per person per day	Volume	Unit Price/ Costg	Price/ Cost	Comply criteria
Fractions Distribution (array)				
Must have				
Goal 1				Y
Goal 2				Y
Goal n				Y
Revenues				
Product 1				
Product n				
Costs				
Fixed				
Material				
Management				
Labor				
Subsidy				
Waste taxes/ gate fees				
Margin				
ROE				
ROI				
Cost / volume				

The sheet shows tentative sales and costs of a waste refinery. The margin gaps shows the need for subsidies in the form of gate fees etc. The numbers are drafts and shall not be understood to be binding. In a feasibility study the figures shall be verified with true data. Liquid waste is not shown it the template. Parameters and formulas are IPR of Compunication Ltd and Bioste Ltd.

lassella@hotmail.fi

VIABILITY FOR AN INVESTOR (TEMPLAT

All money figures are Euro (€)

Kathmandu City

Solid waste per person	0,5	kg/d						
People in the city/ site area			100.000	200.000	500.000	1.000.000	2.000.000	5.000.000
Waste/d		ton						
Waste/a								
Sales/a								
Diesel								
Electricity								
Fertilizers								
Services								
Other								
Sales total								
Costs/a								
Material								
Management								
Other wages								
Energy + other operational								
Depreciations								
Costs total								
Margin								
Margin required	25 %		1.000.000	1.500.000	2.000.000	2.500.000	3.750.000	7.500.000
Margin gap (if negative)								
	Investment							
Investment	Equity							
	Loans							
ROE	without subsidy							
Subsidy (gate fee, tax etc.)								
Margin with subsidy								
ROE	**with subsidy**		**25 %**	**25 %**	**25 %**	**41 %**	**76 %**	**114 %**

Top Confidential
IPR of Compunication Ltd and Bioste Ltd

Note: This analysis will be improved largely when applying the sales method thru material exchange

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VIABILITY FOR A FRANCHISING "CHAIN" INVESTOR

Norm = 10 million Euro investment for each case as equity
Based on one company/ site for years 1,....10
Prices are in Euros

Year	1	2	3	4	5	6	7	8	9	10
Licence fee	IPR of Lasse Laaksonen, thru Compunication Ltd, Helsinki									
Handbook										
Training										
Support										
ICT systems										
TOTAL										
New companies										
Old companies										
Revenue from new	750.000	1.500.000	3.750.000	7.500.000	15.000.000	37.500.000	45.000.000	52.500.000	60.000.000	67.500.000
Revenue from old	0	750.000	2.250.000	6.000.000	13.500.000	28.500.000	66.000.000	111.000.000	163.500.000	223.500.000
Revenue total	750.000	2.250.000	6.000.000	13.500.000	28.500.000	66.000.000	111.000.000	163.500.000	223.500.000	291.000.000
Cumulated total revenue	750.000	3.000.000	9.000.000	22.500.000	51.000.000	117.000.000	228.000.000	391.500.000	615.000.000	906.000.000

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CALL US FOR:
TOTAL MATERIAL REFINERY ™)

Our services comprise

- Consulting and advising
- Education
- Contracting
- Operations

BAT BEP solutions only.

For success in the phases

- Visioning
- Feasibility
- Business plan
- Detailed design
- Physical solutions
- ICT solutions
- Financing
- Implementing
- Procurement
- Operations.

Lasse Laaksonen +358-45-1352646
lassella@hotmail.fi
www.compunication.fi

We also operate thru our agents