

# BIN IT!

## The Intelligent Waste Management System

### Topic



Around the globe, more and more litter is being thrown away carelessly or dumped illegally in streets, in public spaces or in nature. *Littering* and the wrong waste disposal respectively affect adversely the public order, lead to higher costs for the cleaning teams and to a diminished quality of life for society. This emerging trend has to be given due attention and appropriate measures have to be launched to counter it.

### Concept



In many countries, state authorities have been working on concepts to give incentives against *littering* and the incorrect waste disposal. But often these campaigns tend to fall on deaf ears in society because the waste management is often organised in a far too complicated way and there are not enough incentives for a social, economic and ecological waste management. This is the reason why we have developed an innovative idea that allows city authorities to tackle the problem at its roots, this means on the street or at other neuralgic places, there where *littering* is most obvious.

### Waste Management with the Aid of Cooperating Objects

The technology is mainly based on *four Cooperating Objects*.



#### Waste

All different kinds of consumption goods like *packages of fast food restaurants, tetra packages, bottles, jam jars, cans, batteries, etc.* get equipped with standardised *RFID-Tags* in the factory when they are produced.



#### Bin / Recycling Collection Point

The *bins* and *Recycling Collection Containers* are inwardly provided with a *reader* and a *writer*. The “normal” *bins* are distributed all over the cities as usual. All objects, with or without *RFID-Tag*, that are not meant to be recycled can be dumped there. The *Recycling Collection Points* are allocated at central and highly accessible locations, but they do not have the same geographical distribution density as the “normal” *bins*.

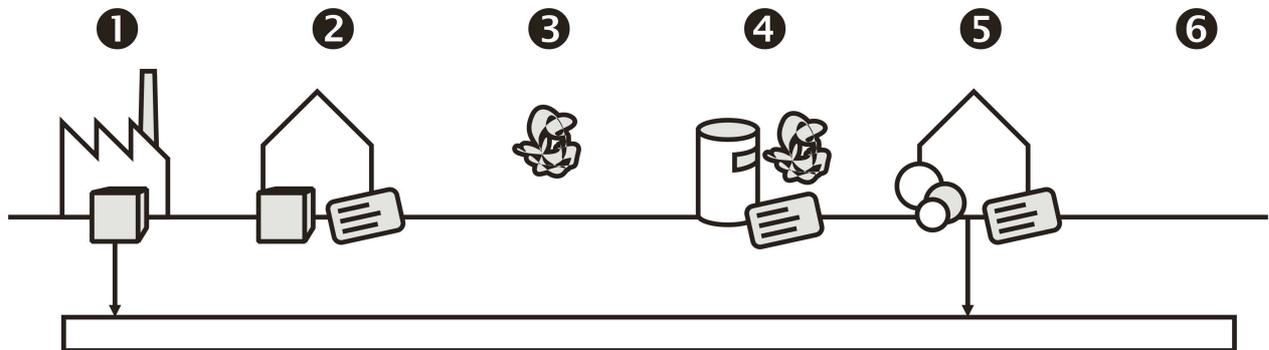


#### Collection Card

The person who disposes the waste is in possession of a writeable *Collection Card*. Is he or she throwing an object in a *bin* or disposing recyclable material at a *Recycling Collection Point*, the *reader* identifies it and a certain deposit will be credited to his or her *Collection Card* by the *writer*. But if he or she, for example, is throwing waste without an *RFID-Tag* or recyclable waste in a “normal” *bin*, no money will be transferred. This system can be expanded by defining which waste can be dumped in which *bin* or *container*. The more products get equipped with a *RFID-Tag*, the more efficient it is.



*Refund Station* At the explicit *Refund Stations* or in the *fast food restaurants* and at retail the amount collected with the *Collection Card* can be refunded.



- 1 The product gets equipped with a standardised *RFID-Tag* and the number is registered in a *global directory*.
- 2 The product is bought by a consumer. The consumer receives a *Collection Card*.
- 3 The product is used and waste is produced.
- 4 The waste is dumped in a *bin* or at a *Recycling Collection Point*. A certain amount will be transferred to the *Collection Card*.
- 5 The amount that is on the *Collection Card* is refunded at the *Refund Station*. The number is removed from the *global directory*.
- 6 This cycle recurs at any time. The *Collection Card* can be used further on.

### Problems of Feasibility



- Problems of feasibility could occur in the field of the protection of *data privacy*, that is why we consider it as important to save only *impersonal data* on the *Collection Card*. This makes the *Collection Card* transferable from one person to another. But as a next step we can also imagine that people will be registered via the *Collection Card* when they buy a certain product. Like that people who dump litter illegally could get fined.
- To organise this *Waste Management System* efficiently it is important that many enterprises participate. *Fast Food Restaurants* (Mc Donald's, Burger King, KFC, etc.) that often suffer from their bad image concerning waste disposal management could profit a lot.
- To prevent the abuse by the reuse of a certain object to get the deposit transferred several times, the *reader* has to be installed inside the *container*, so that the rubbish is not identified until it is inside the *container* and cannot be taken out again.
- Whether the producer or the consumer has to pay the deposit is a controversial question as well. Concerning this matter, there are two possibilities. Either the client pays the amount of the deposit when he or she buys the item in terms of a tax rate (*Polluter Pays Principle*) or the producer pays it. But the latter alternative is unlikely to happen without a price markup, unless the collecting card is linked to a customer retention system.

## Relevance



On the whole, this visionary scenario is easily realisable and modifiable. It draws on all of the *three pillars of sustainability*.

### *Social Sustainability*

In general, the appropriate disposal of waste is of very high importance for society. The sensitisation of society for a sustainable treatment of the environment is an indicator of the prosperity of a country and it helps to strengthen the well being of its population. The *Intelligent Waste Management System* generates a certain climate on the street that influences the waste offenders in a positive way. We can also imagine that certain persons would be attempted to collect the waste of others.

### *Economic Sustainability*

The immense costs of waste disposal that the state has to pay can be reduced by a systematic waste management policy. In states like Singapore, that maintain a very repressive policy, this system could lead to a rethinking. In addition, the producers profit from the lower production costs by the reuse of recyclable materials. But also the consumer side should be recompensed for the proper use of the *Waste Management System* by selective financial incentives. A *Win-Win Situation* should be established.

### *Ecological Sustainability*

The use of the *Intelligent Waste Management System* stops the further contamination of our environment and combats the exploitation of *non-renewable resources*.

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