Plastic Garbage Can

Background of plastic pollution

99% of plastic cause climate change.

91% of plastic are not recycled.

83% of tap water samples contain plastic.

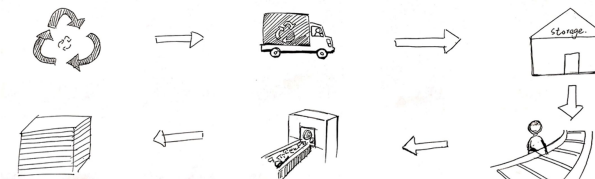**25%** of fish have plastic in their gut.

Problem Statement

• Over the last ten years we have produced more plastic than during the whole of the last century.
• 50 percent of the plastic we use, we use just once and throw away.
• Enough plastic is thrown away each year to circle the earth four times.
• We currently recover only five percent of the plastics we produce.
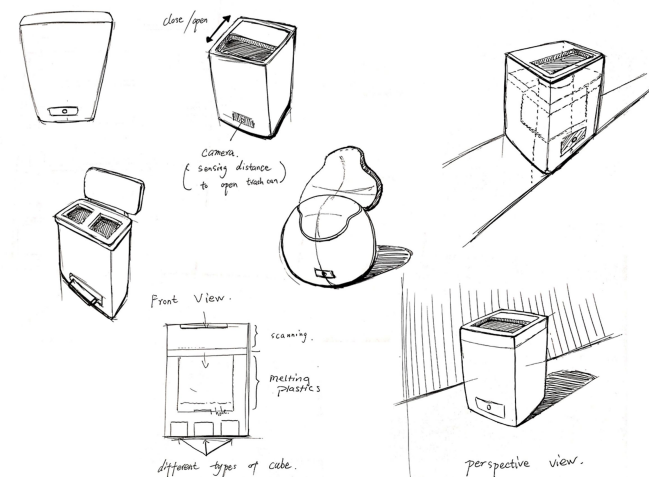• To Design a system to recycle plastic.

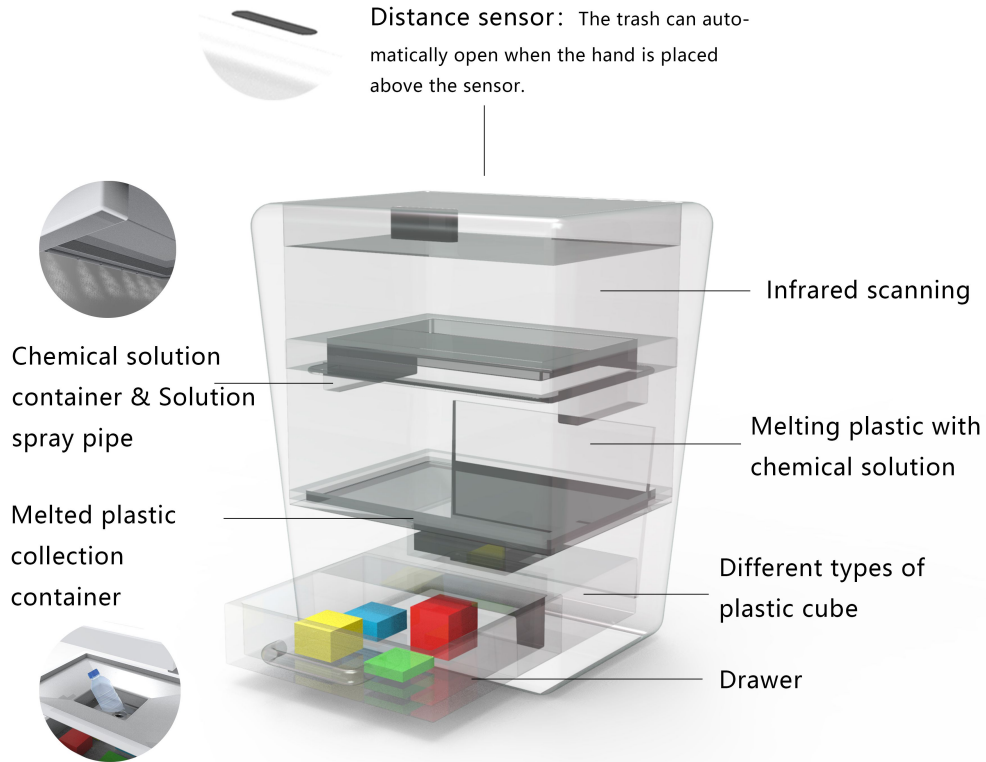## Ideation: Plastic recycling steps

recycle → transport → storage → sorting → manufacture → new plastic

Sketch:

close/open

camera
(sensing distance to open trash can)

Front View.

scanning.

melting plastics

different types of cube.

perspective view.

Rendering:

Distance sensor: The trash can automatically open when the hand is placed above the sensor.

Infrared scanning

Chemical solution container & Solution spray pipe

Melting plastic with chemical solution

Melted plastic collection container

Different types of plastic cube

Drawer

Situation Ⅰ: User just put one plastic in.
Solution: Using the corresponding chemical solvent to dissolve.

Situation Ⅱ: User put many kinds of plastic in.
Solution: Using the first chemical solvent (p-Xylene) to melt No.1,2,4,5 plastic. Then using the second chemical solvent (THF) to melt No.3 plastic to form a mix plastic cube.

Chemical Solution which melt plastic

1 PETE

2 HDPE

4 LDPE

5 PP

} p-Xylene

3 PVC

} THF/tetrahydrofuran

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