2 Fridges, 2 approaches:

1. Lo-Fi and **2. Hi Tech**,

both incredibly simple

1. Lo-Fi

Simplicity in terms of materials and availability:

A Whisky and Bicycle Pump Fridge

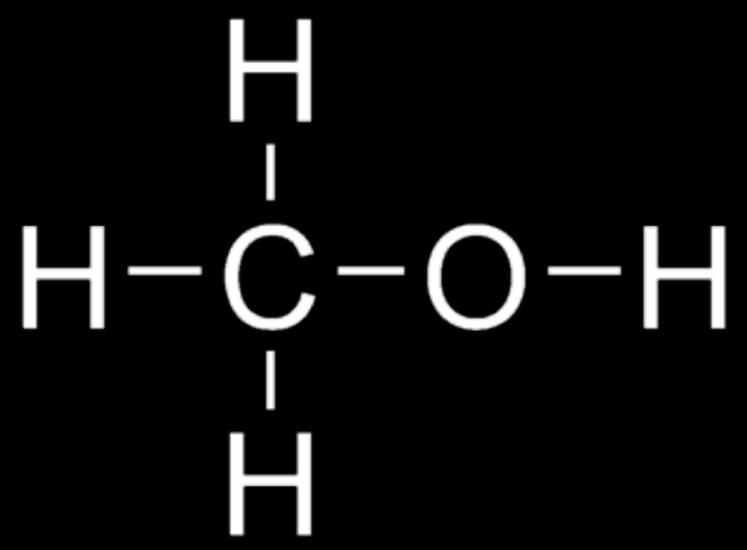
The problem: Most fridges are very simple mechanical devices, but they rely on electricity and use a refrigerant (freon) that is difficult to obtain and costly to dispose of.

Other approaches:

Refrigeration uses embodied heat in a phase change where **suitable refrigerants have phase change near standard room temperature and pressure**.

Modern manufacturing tolerances mean that the tradeoff of a less efficient, less toxic refrigerant is more attractive.

Most of these approaches use high temperatures or pressures (Ammonia fridges, Einstein Fridges).

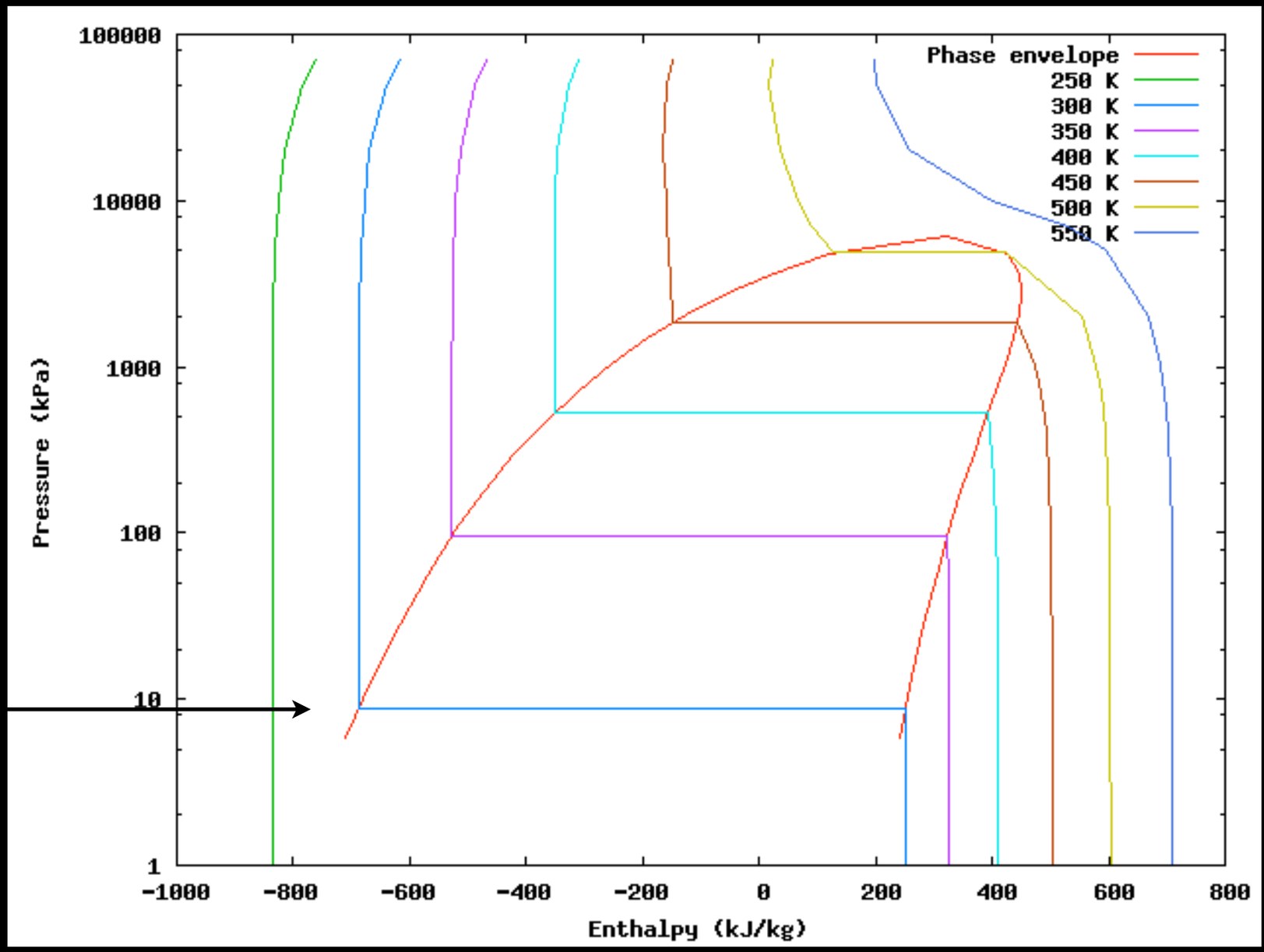


The Refrigerant

Fridges use a compressor. What if we looked at a low pressure environment, primed with a vacuum rather than a compressor and then adding energy via a simple piston such as a bicycle pump. In this case, **methanol is a viable refrigerant if the whole system operates at 0.1bar.**

ethanol pressure/ enthalpy

room temp



The pump

Bicycle pumps inflate through a tube but draw air in from all around, via a deliberately imperfect seal. We need a bicycle pump that can suck and which has a valve to move air in and out of the same system. This can be done with **a simple plastic attachment and two 1 way valves**

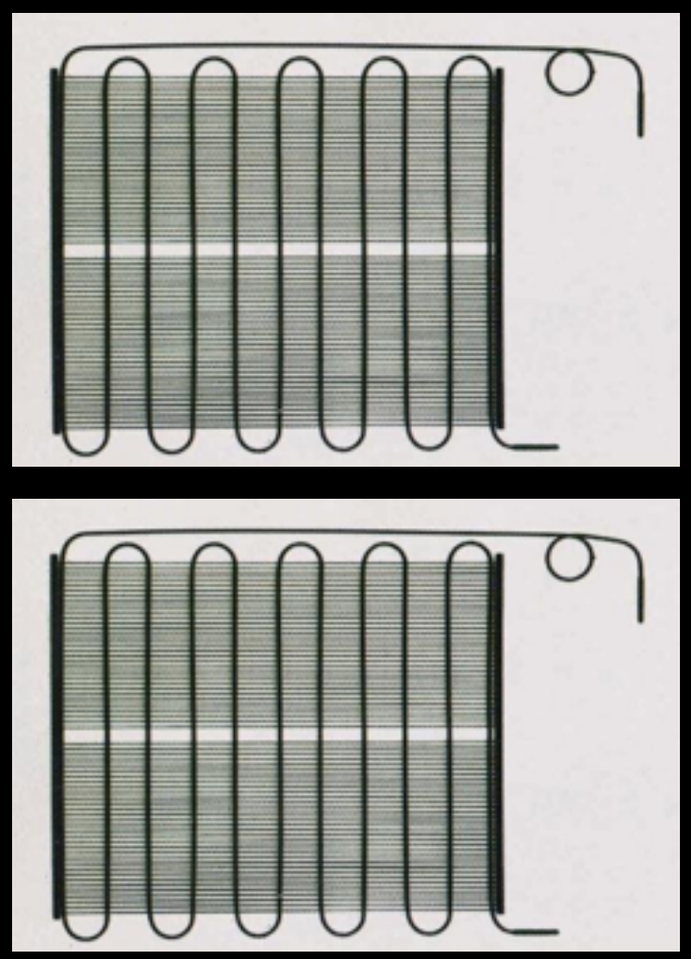
The solution: our proposal uses a low pressure obtainable with **an adapted bicycle pump** and high methanol content booze, such as **whisky**.

+

We bough the whisk(e)y and printed this 5c part, for a fridge that can be run anywhere, with readily available materials.

pump attachment and sealed whisky jar

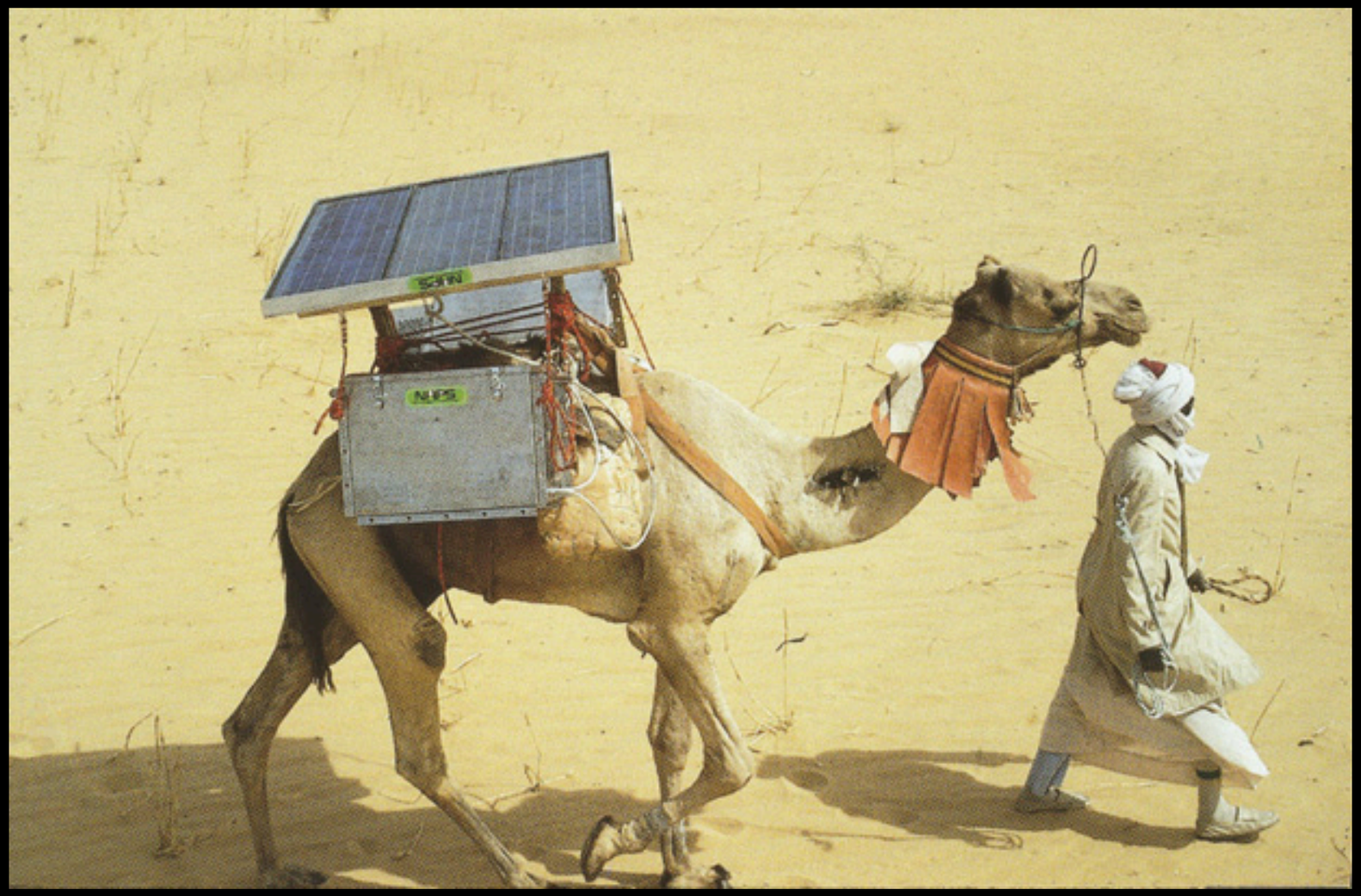
Paddy Powered



2. Hi-Tech

Simplicity in terms of design:

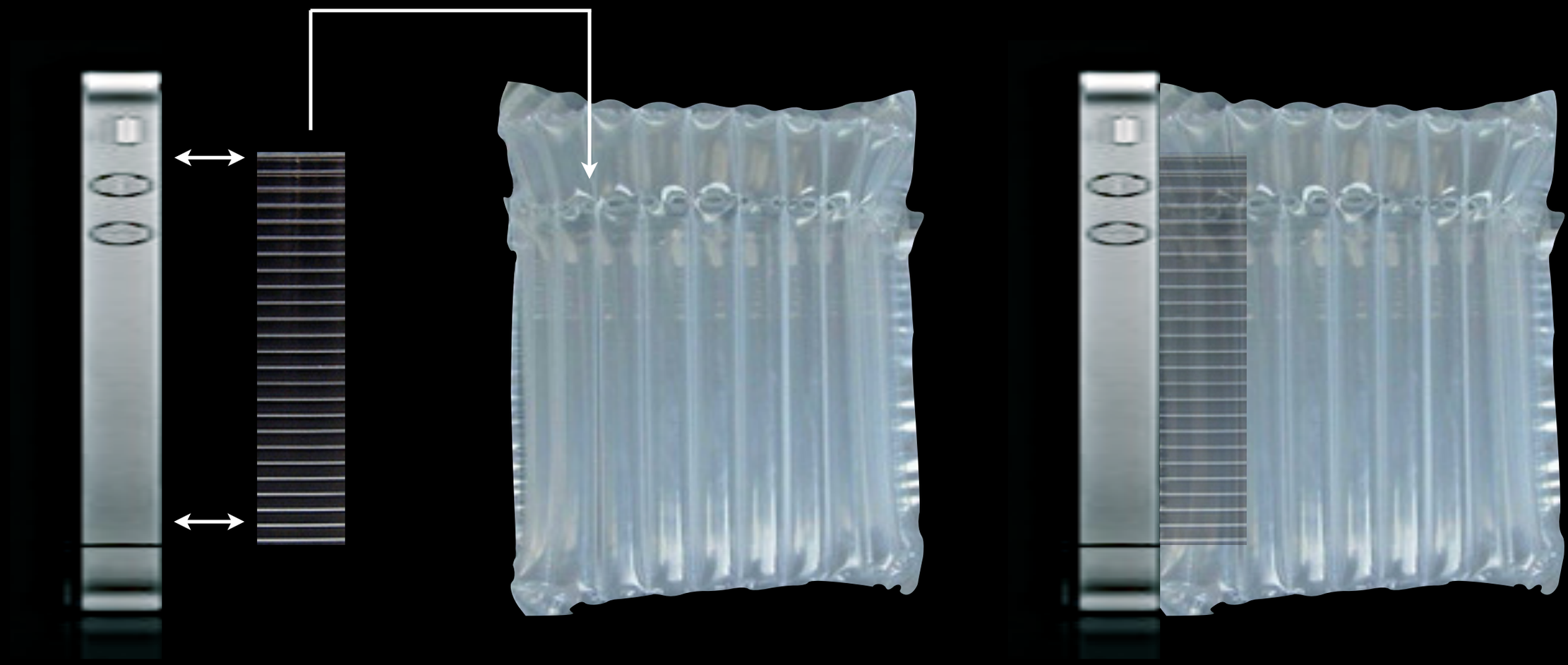
A battery powered fridge with no coolant that magnetically attaches to a cool bag



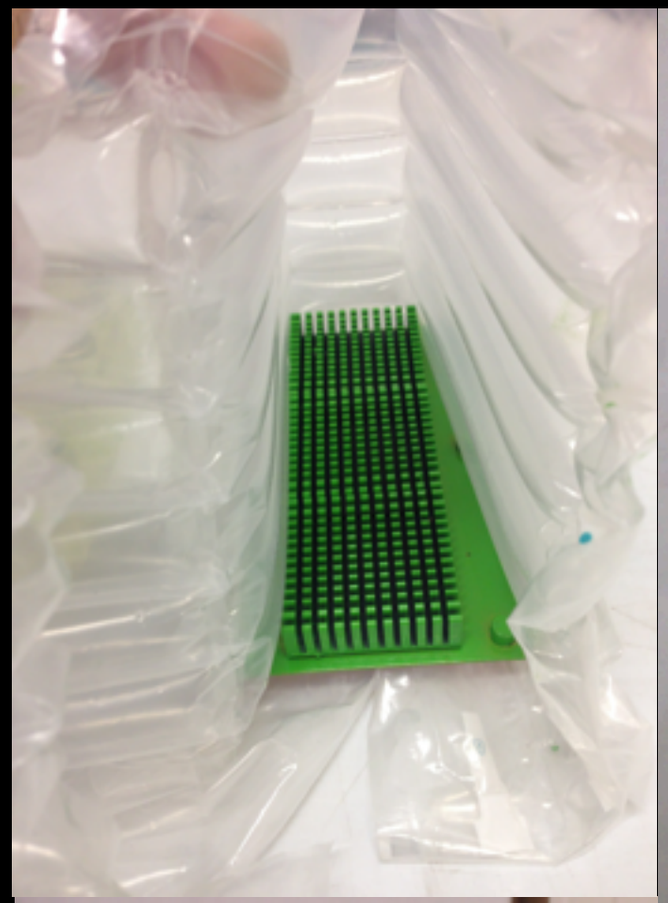
For a use case for this fridge we looked at the last mile in a cold chain, for vaccine delivery - where there are many many solutions, but they all seem a bit complex

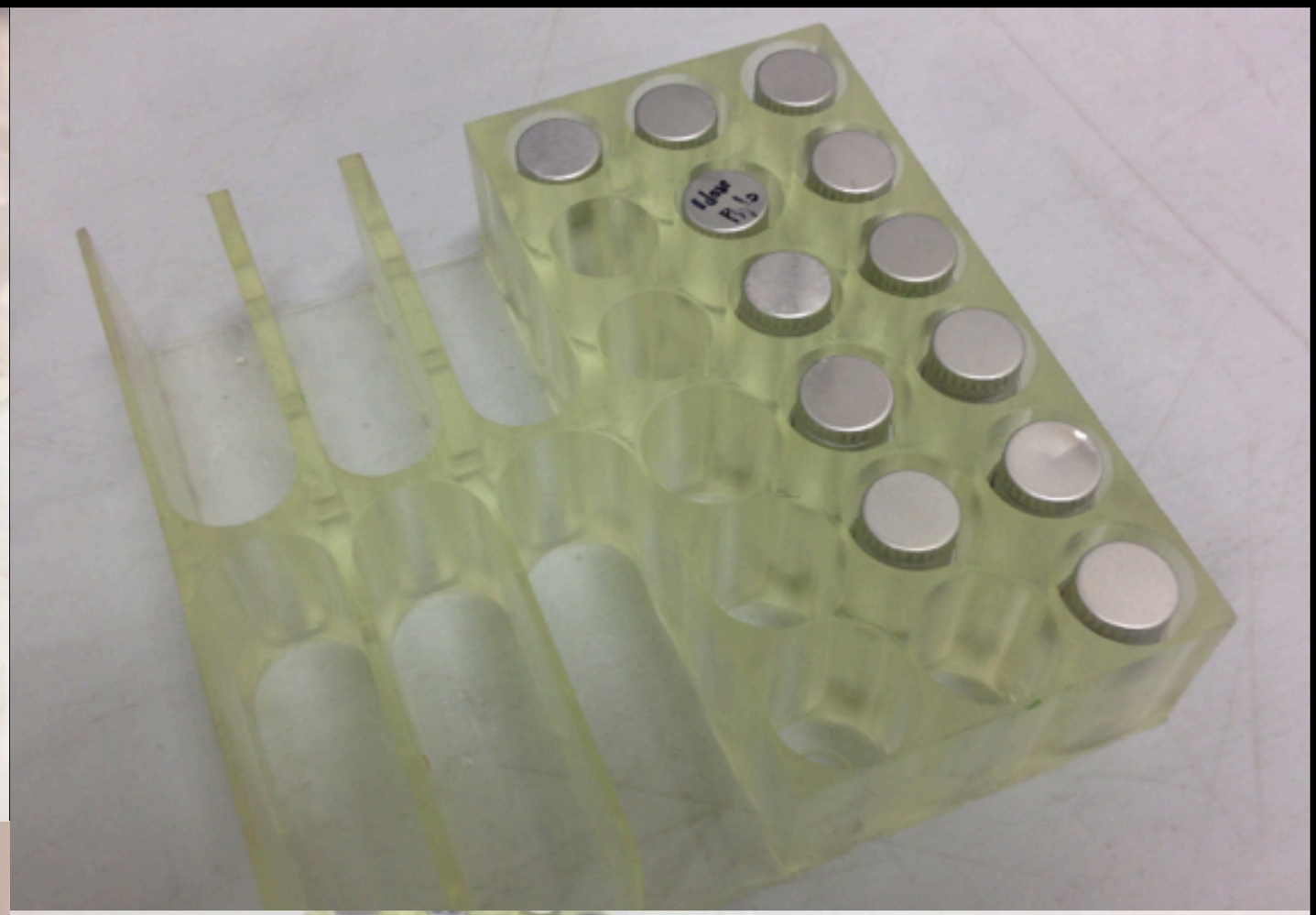
Thermo-electric fridges exist, but until recently there were not battery packs, readily available that were suitable to run them.

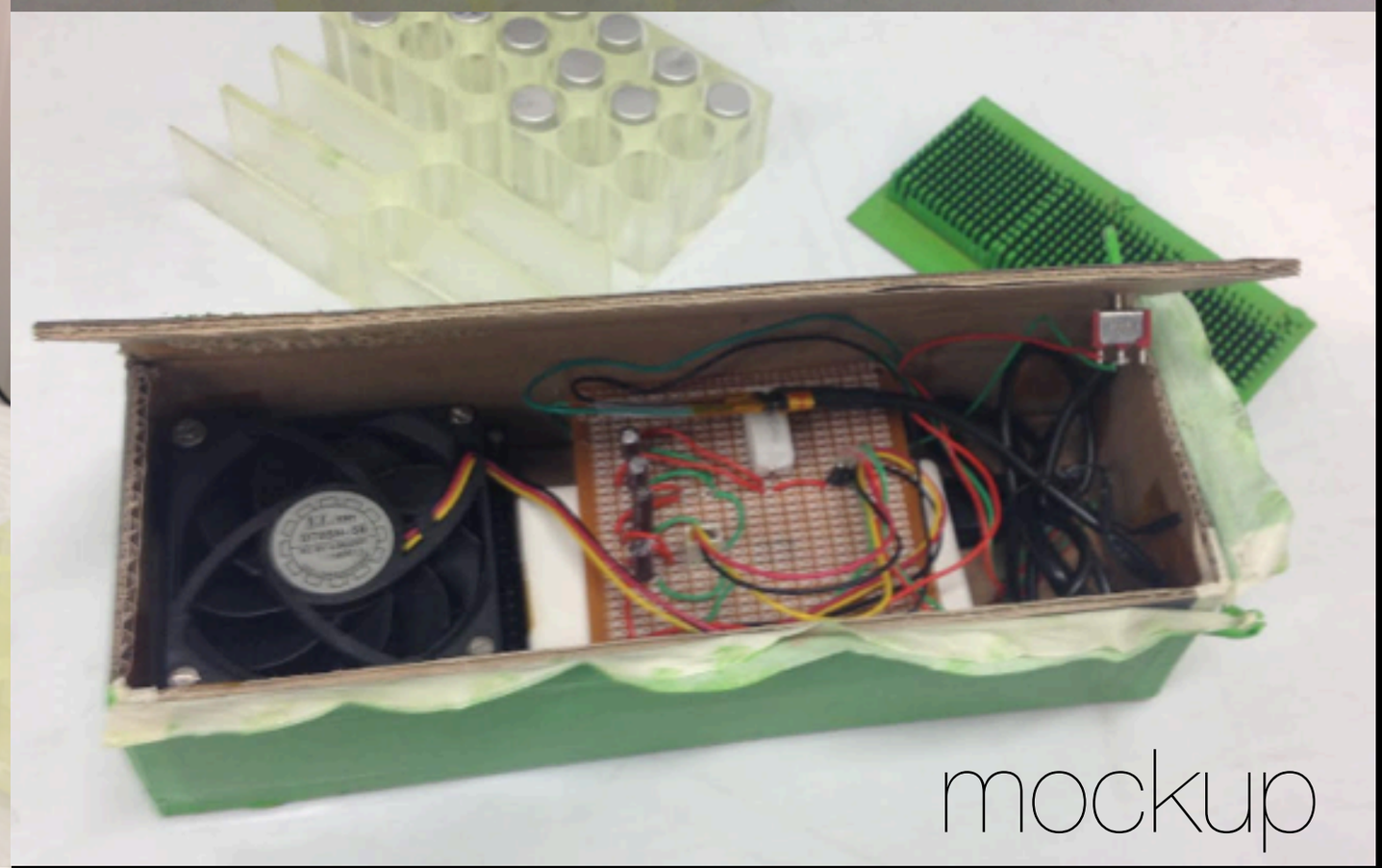
The solution: our proposal uses an ultra-portable, solid state, battery powered thermo-electric fridge in two parts, cold side and warm side, attached by magnets to a disposable inflatable bag. It can keep vaccines in 2-8 degree temperature range and SMS a remote station if this fails.



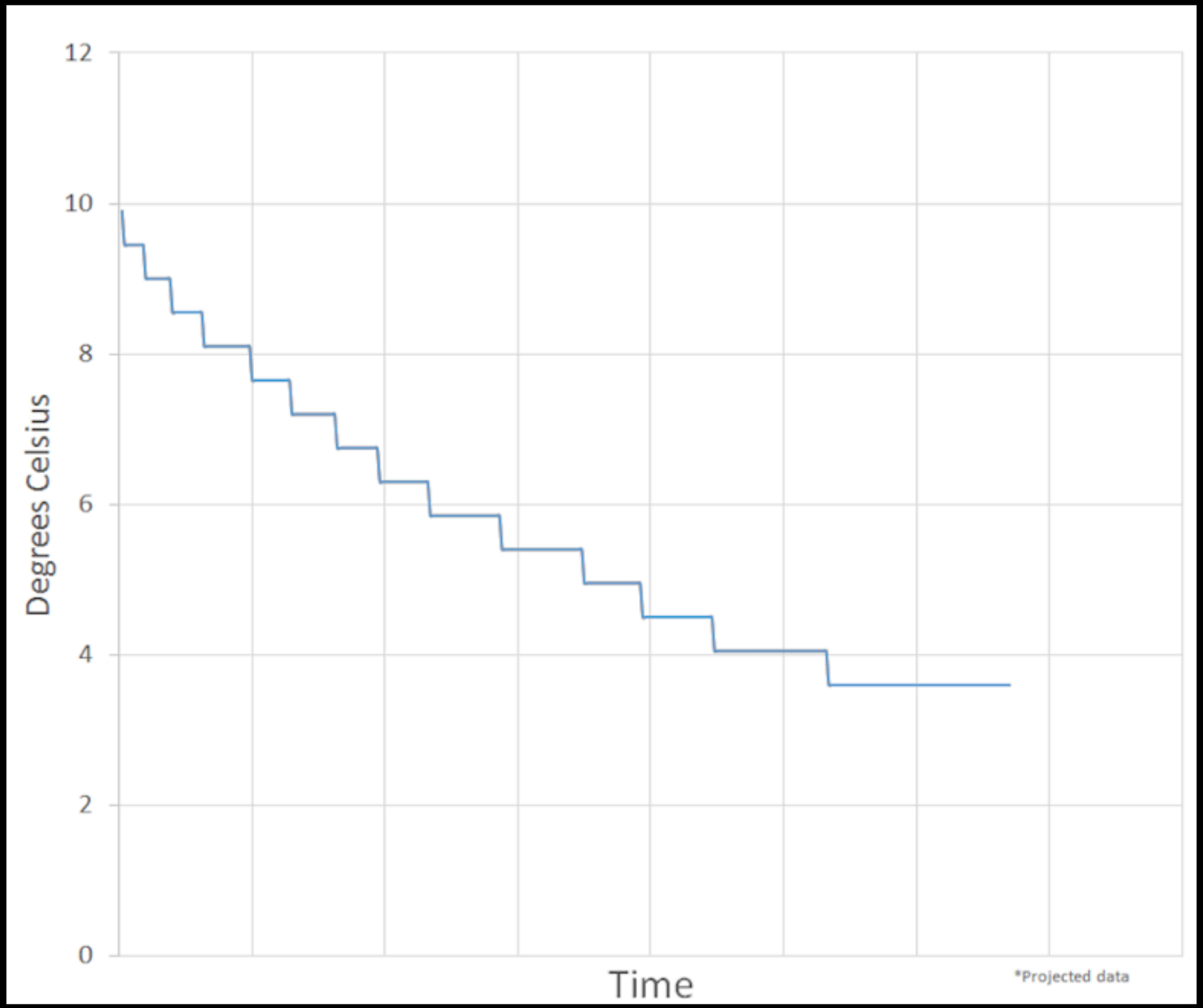
A Fridge Magnet Fridge







mockup


12
10
8
6
4
2
0
Degrees Celsius
Time
*Projected data

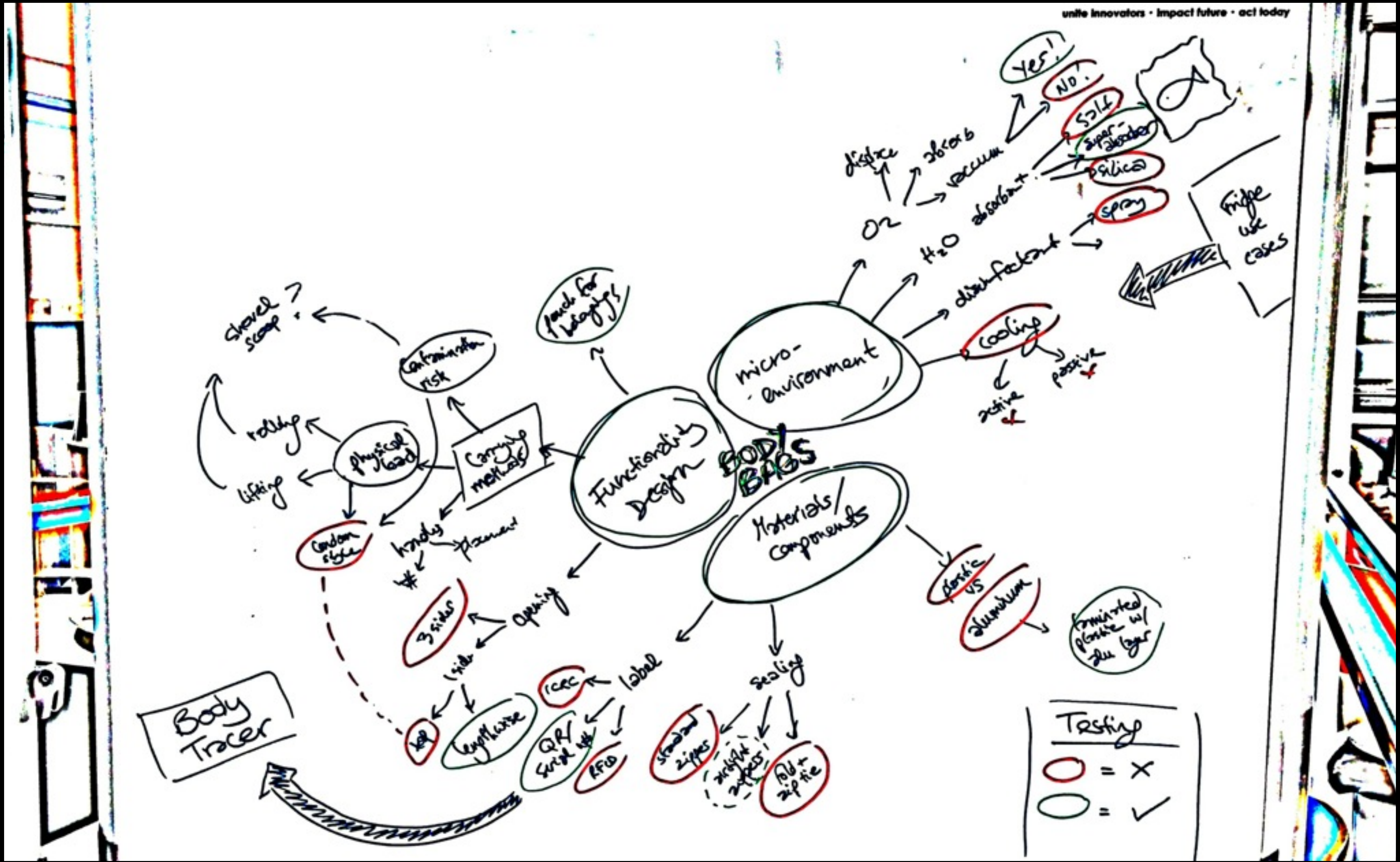
A Better Body Bag

Everyone should

be able to

bury their dead

a cheap,
simple to use,
leak proof
body bag for
better identification


unite innovators · impact future · act today
BOD BAGS
Functionality Design
micro-environment
Materials / components
O2
displace
absorb
vacuum
Yes!
NO!
H2O absorbant
Salt
super-absorber
silica
disinfectant
spray
cooling
active
passive
fridge use cases
pouch for belongings
Contamination risk
shovel scoop ?
rolling
lifting
physical load
Carrying methods
handle
placement
condom style
opening
3 sides
1 side
lengthwise
label
recc
QR/ serial #
RFID
sealing
standard zippers
airtight zippers
fold + zip tie
plastic vs aluminium
laminated plastic w/ alu layer
Body Tracer
Testing
= X
= ✓

Humanitarian crises
Use cases

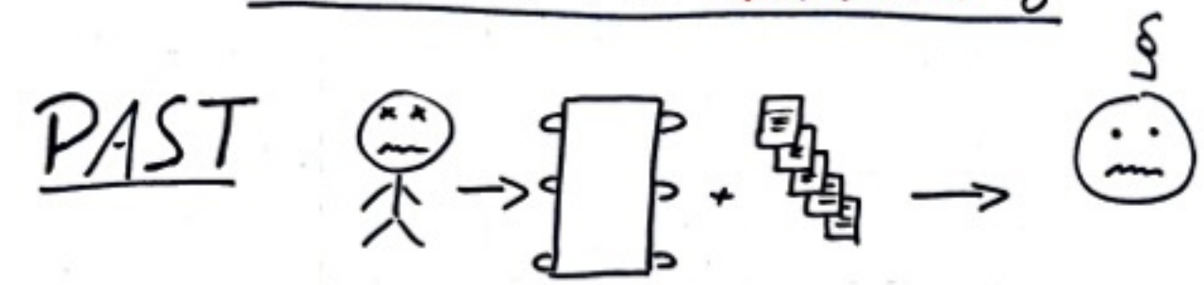
Demo!

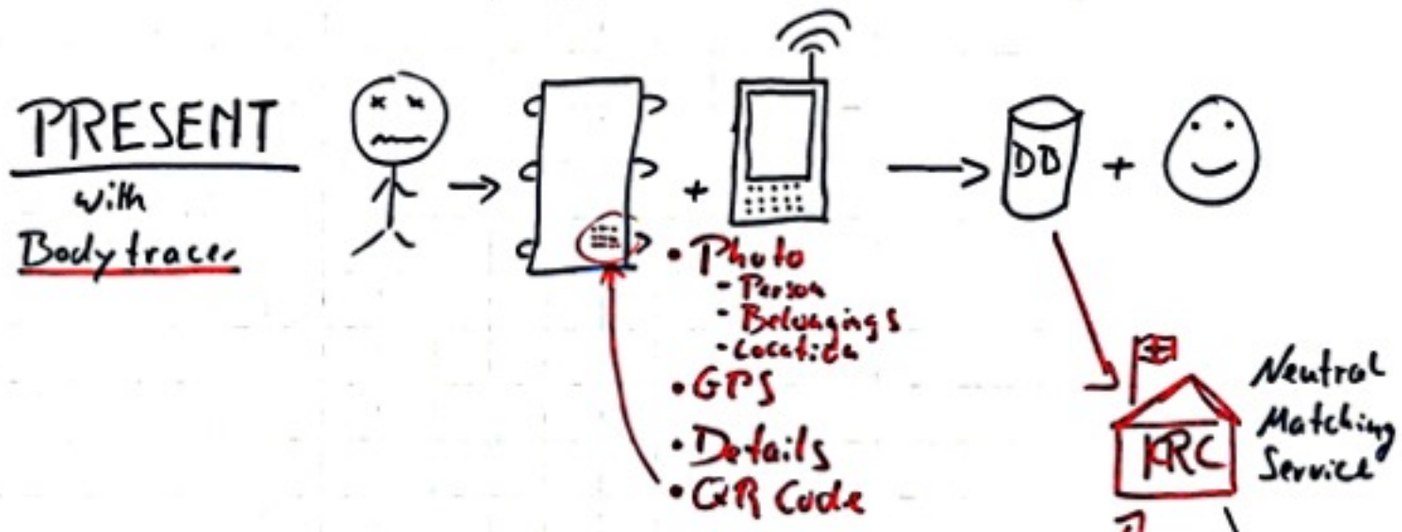
Improving a standard procedure

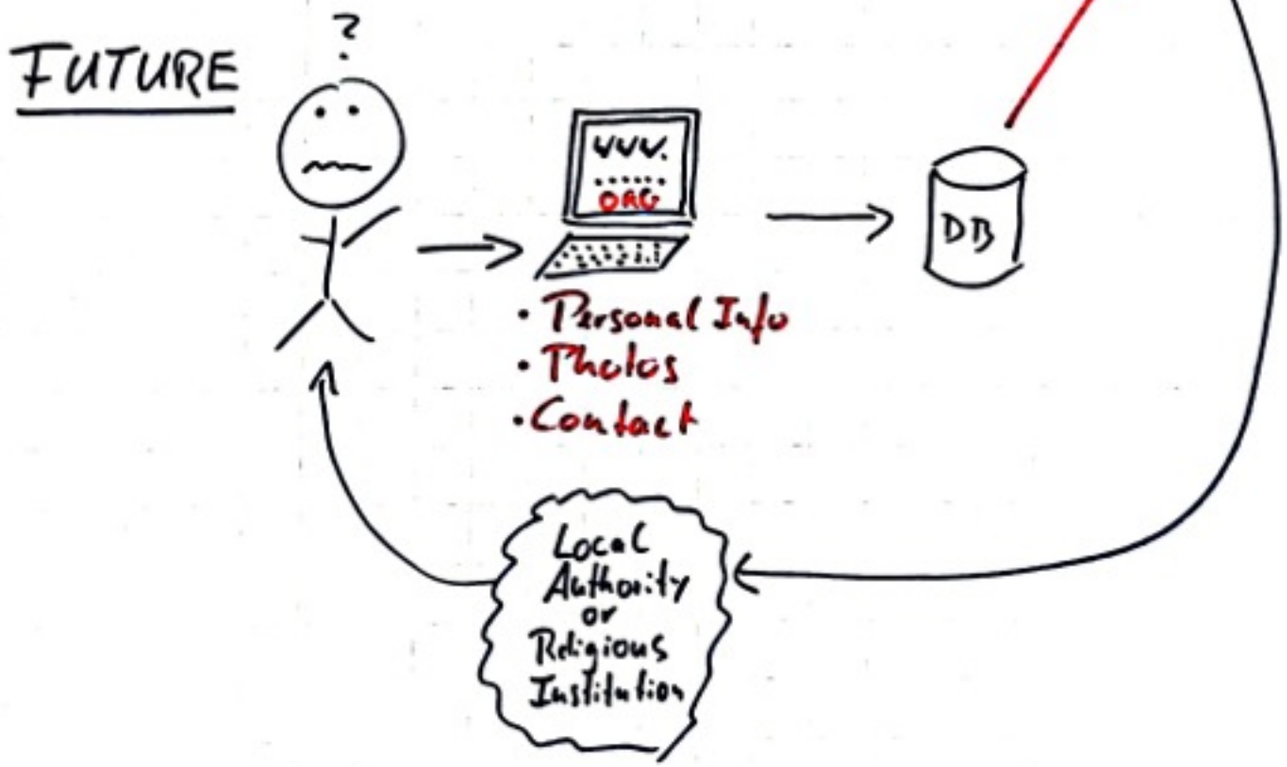
There is an app for that!

There is an beta app for that!

... and the DATA ?


PAST


PRESENT
with
Body trace
DD
• Photo
- Person
- Belongings
- Location
• GPS
• Details
• QR Code
Neutral
Matching
Service
KRC


FUTURE
?
WWW.
.com
DB
• Personal Info
• Photos
• Contact
Local
Authority
or
Religious
Institution

BODYTRACE

DISPOSING OF DEAD BODIES

1. RECOVERY

Rapid retrieval is a priority because it aids identification and reduces the psychological burden on survivors. Recovery of bodies should not interrupt other interventions aimed at helping survivors

BODYTRACE

ADD

Please ID the bag

QR CODE

or

SERIAL NUMBER

e.g. B17R-XC67

› NEXT

BODYTRACE

PICTURES

Stand at the middle of the body and ensure the QR code and unique reference number are visible in all photographs.

Use your camera or upload fotos.

Face	+	+
Full Body	+	+
Upper Body	+	+
Lower Body	+	+
Belongings	+	+
Surroundings	+	+

BODYTRACE

FEATURES

Please fill known features.

Name

Gender Male

Ethnicity

Age Infant (0 to 4 weeks)

Traits i.e. Scars, tatoos, missing limb

Height in cm

Weight in kg

To exit full screen, use the menu button, or press and hold on a web page.

Facial Hair

None, Moustache, Beard, Colo

BODYTRACE

CONFIRMATION

Verify that QR code/ID has been fixed to:

- Body or body part
- Belongings
- Documentation
- Burial site marker

Additional QR code stickers can be found on the external pouch

BACK SUBMIT

BODYTRACE

RESOURCES

Management of Dead Bodies After Disasters – A Field Manual for First Responders

Guidelines for the Management of Deceased Individuals Harbouring Infectious Disease

WHO Safe Burial Practices for Ebola

Send question

38,000,000 deaths go uncounted every year

João Bárcia, Romain Bazile, Jessica Bennett,
Charlie Cook, DJ Forza, David Galbraith, Tim Head,
Kitty Liao, Jonathan Moy de Vitry, Ricardo Páramo,
Steffen Raetzer, Hansdieter Schweiger

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