

TRANSPEUTICS

Touching Lives

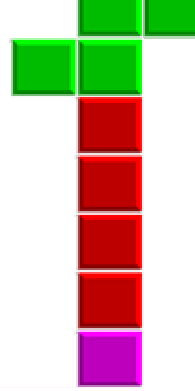


1 Background

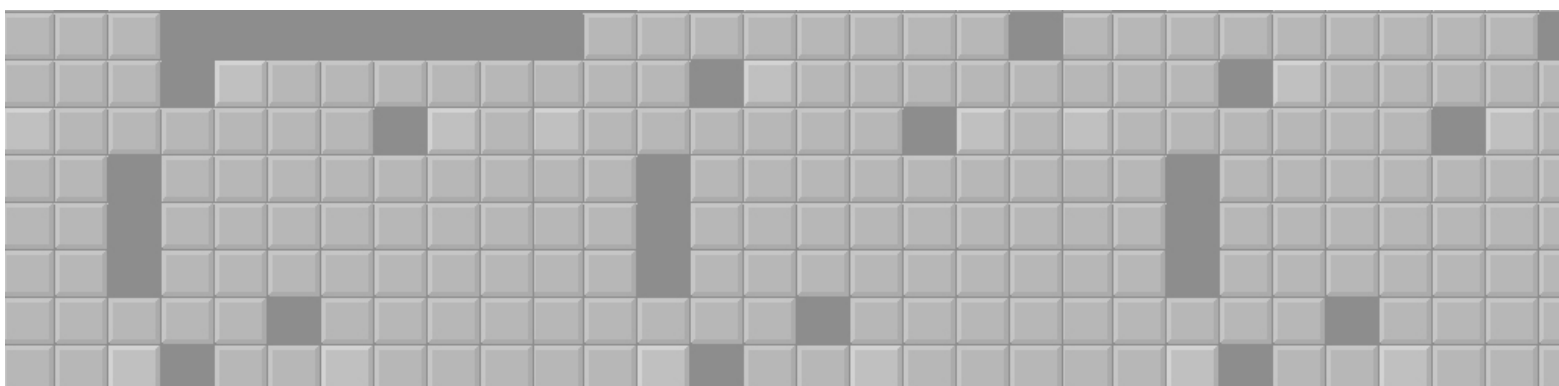
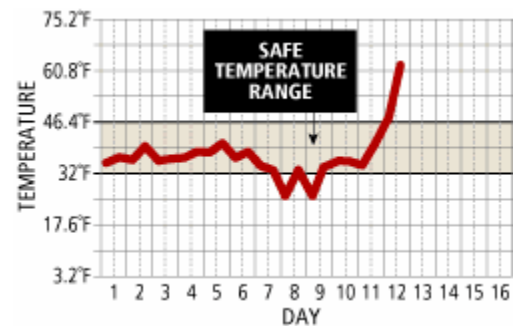
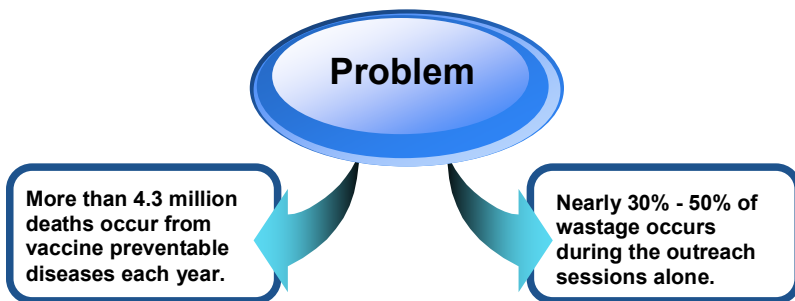
For aid agencies that have made a mission of distributing vaccines, the world has become a tangle of electrical cords connecting refrigerators to the most remote villages around the globe. They call it the **Cold Chain**. Without it, vaccines would spoil long before reaching their destination and with them considerable expense, effort -- and lives -- would be lost. But it is difficult to maintain the Cold Chain in countries where the power supply is as bumpy as the roads and anything that can go wrong does.

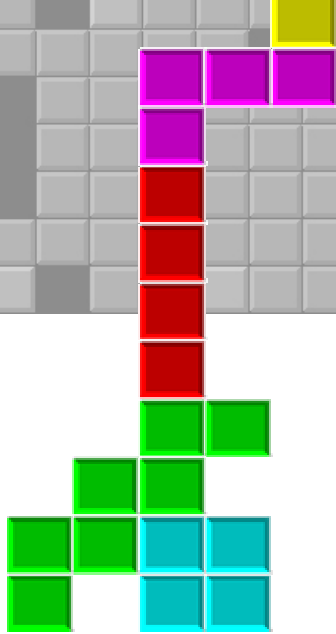
Now, some vaccines are sensitive to heat; others can be damaged by freezing. Each minute and degree above or below the ideal temperature shortens the vaccine's life. It is difficult to tell if a vaccine has been exposed to high temperatures because there is no change in its appearance. Safeguards have thus been developed to warn health workers of vaccine spoilage. When vaccines reach health clinics and are stored in refrigerators, they are monitored twice a day and readings are recorded on a chart to ensure a safe temperature is maintained.

However, despite the understanding and relevant precautionary measures, the last leg of the cold chain has not received much attention. And, surprisingly, it is during this stage that most of the wastage occurs.



VACCINE	TEMPERATURE RANGE
Oral polio (OPV) Yellow fever	-13 to 5
Measles Tuberculosis (BCG)	-13 to 46.4
Injectable polio (IPV) Diphtheria-tetanus-pertussis (DPT) Diphtheria-tetanus (DT) Tetanus toxoid (TT) Hepatitis B, Hib	32 to 46.4
	DEGREES FAHRENHEIT





About Us

We are a team of students from the MIT School of Engineering, MIT Sloan School of Management, and the Rhode Island School of Design working on developing an inexpensive and reliable containment system for transporting sensitive therapeutic materials in developing countries.

The aim of our group is to come up with simple to use and efficient vaccine carriers that will enable the safe distribution of vaccines and other therapeutic material in developing nations. Our aim is on improving the vaccine delivery during the last stage of the cold chain process.



Adam Weinstein



Emily Vernon



Jack Milwid



Michael Boren



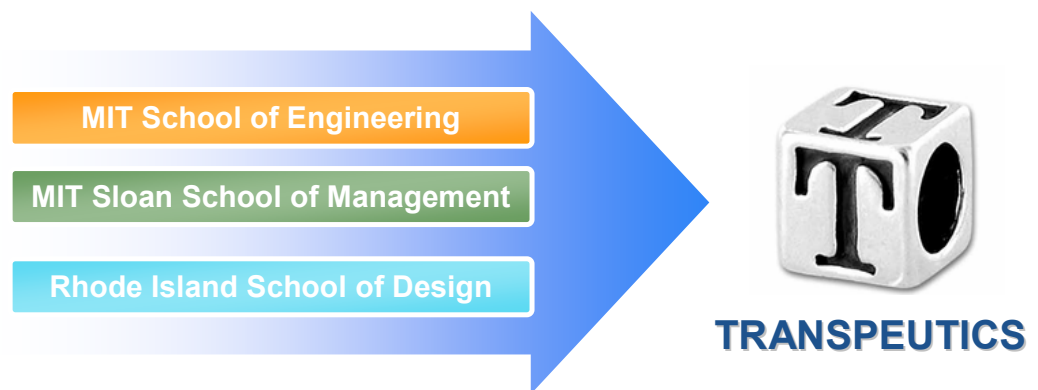
Shivani Garg

MISSION STATEMENT

Transpeutics aspires to dramatically improve the delivery of therapies to developing nations efficiently and effectively, with the goal of saving millions of lives.

As discussed above, we have been working on a better design for a vaccine carrier to be used during the short range outreach sessions that not only conforms to the WHO standards, but also makes it very easy for the operator to use and thus enables protection of the vaccines.

The focus is on having an efficient thermal control, including a suitable warning system, enhancing the modularity of the product as well as maintaining the quality of the product, while ensuring that the carrier is easily affordable.

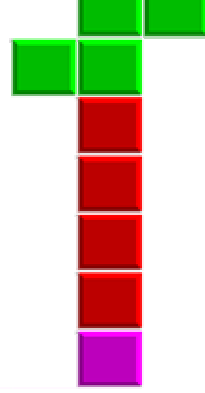


2 Transpeuter

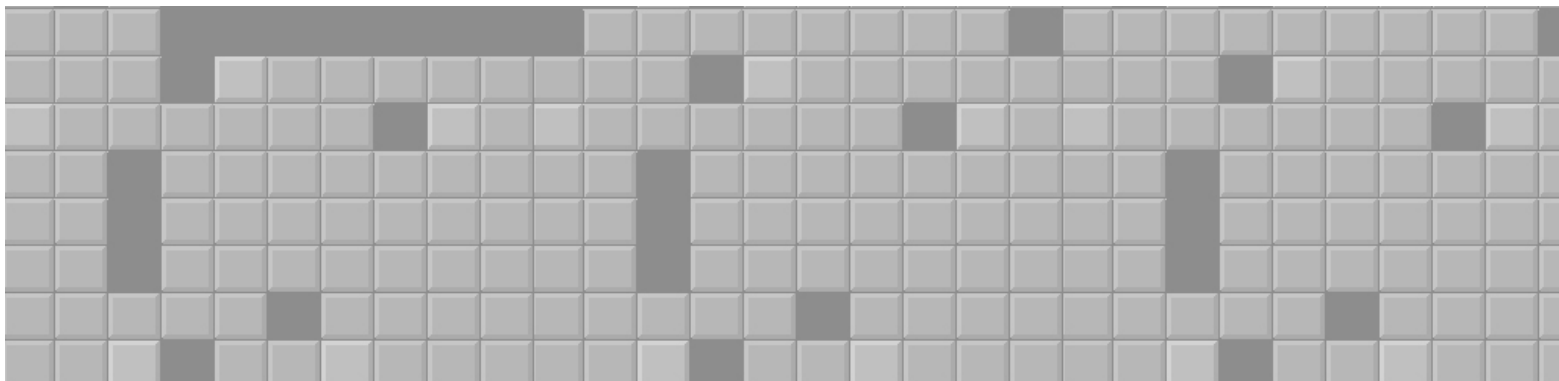
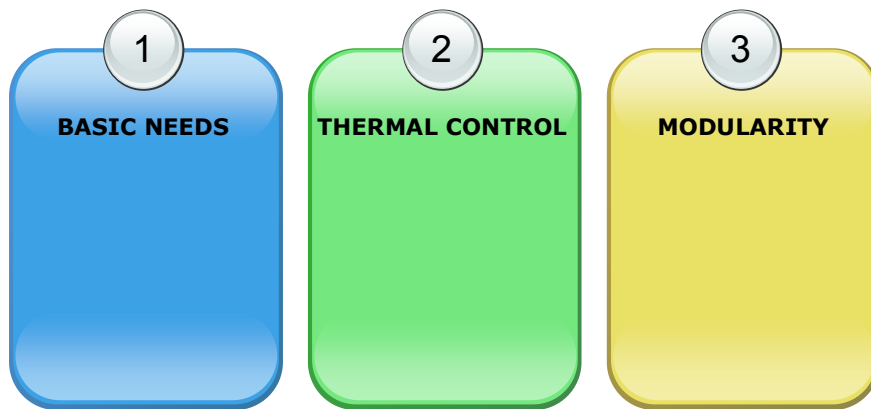
Our product is aimed at efficient transport of vaccines during the last leg of the cold chain, i.e. during the short range outreach sessions.

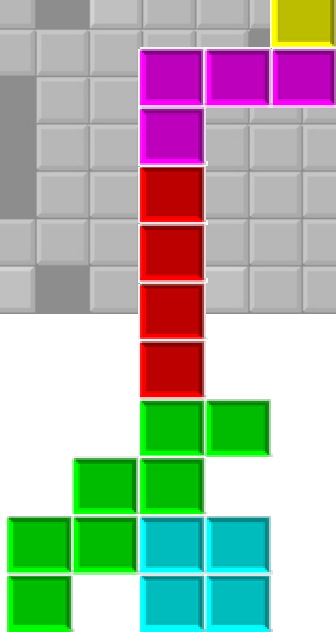
The design specifications conform to the WHO standards for vaccine delivery. These and some related graphs are shown on the next page.

Attach CAD drawing here on the right.



Some of the customer needs that we identified and aim to satisfy through our design have been categorized below:





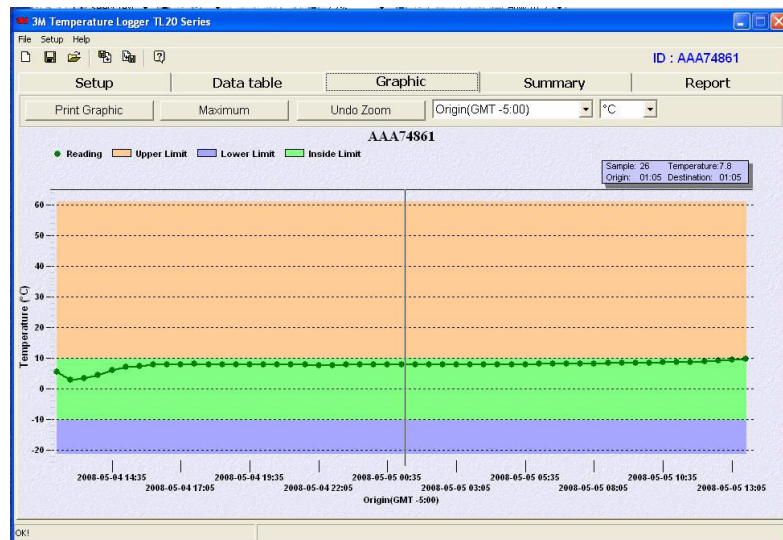
Design Specifications

Metric	Unit	Value
Temperature Sensor Range	C	-10 to 30
Non Operating Temperature Range	C	-20 to 60
Self sustaining Duration	Hours	36
Self Sustaining Temperature	C	4
Insulation Material	List	Polyurethane
Insulation Thickness	Mm	50
Cold Life (lid closed)	Hours/kg (43 C)	48
Max. Ice Melting Rate (lid closed)	Hours/kg (43 C)	20
Vaccine Storage Capacity	Litres	3
Weight (fully loaded)	Kg	10
Weight (empty)	Kg	4
Dimension (internal)	cm*cm*cm	0*0*0
Dimension (external)	cm*cm*cm	0*0*0
Vaccine Storage Dimension	cm*cm*cm	0*0*0
Type of Vial sizes supported	#	4
Cooling Mechanism	List	Ice Packs
Power Supply	List	Solar Energy

FEATURES

- Inexpensive
- Efficient Insulation
- Alarm System
- LED Display
- Efficient Packing
- Temp. Logging
- Adaptive Straps
- Only 3 Ice Packs
- Waste Container
- Other Supplies' Box
- Modular Bag
-

Sample Temperature Plot



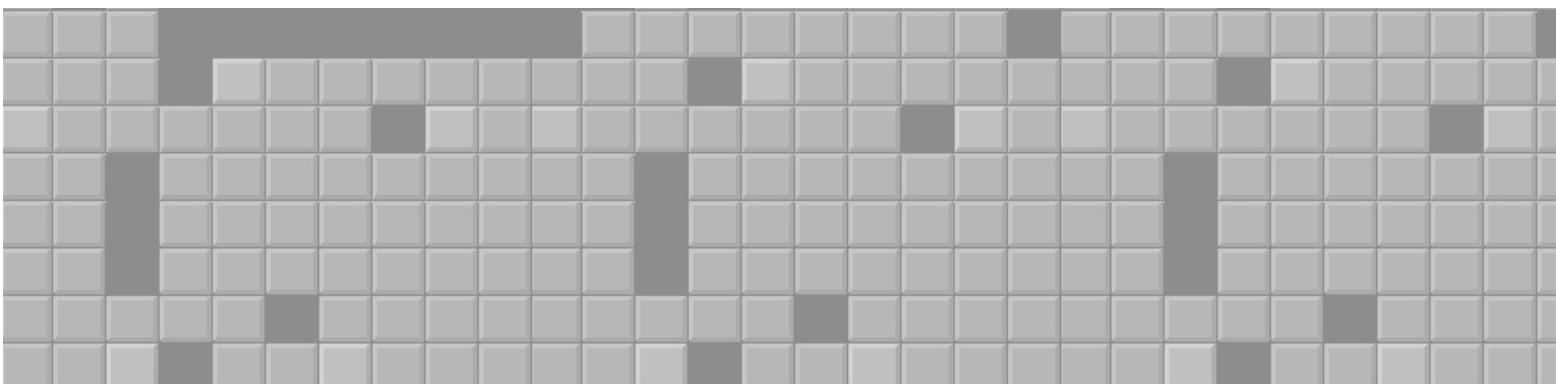
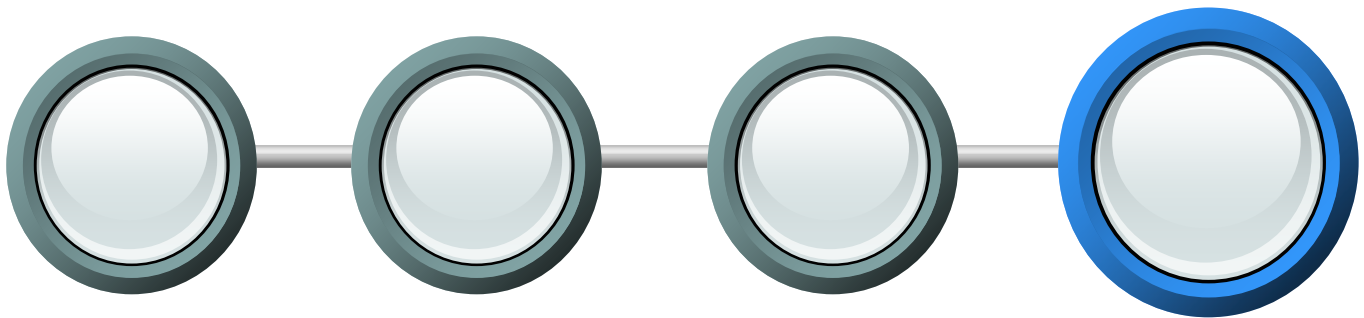
3 Cost Analysis

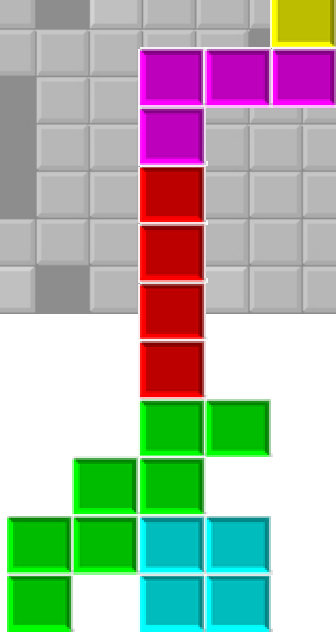
- 18% vaccines wasted worldwide due to errors in temperature control
- Vaccination programs account for about 45-55% of healthcare programs worldwide (~ 300 million \$)
- Over 250,000 medical outreach centers worldwide
- Market potential for ~200,000 units between 2008 and 2015
- Useful during disaster/epidemic relief work
- Transport of blood/other medical supplies



Unit Cost is
Payback Period is

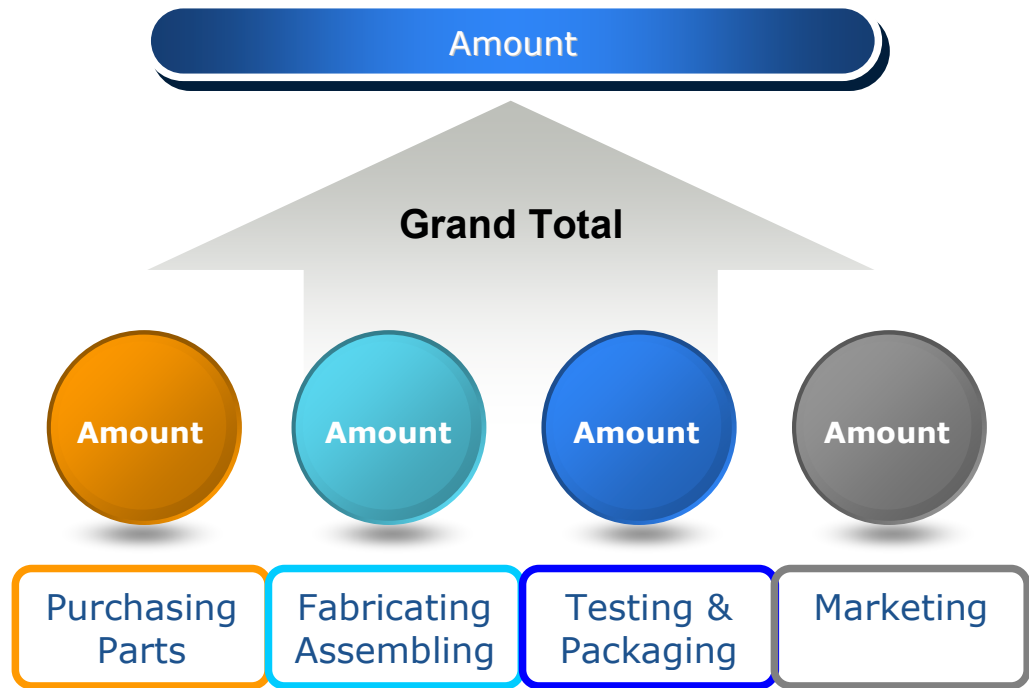
2009 → 2010 → 2012 → **2015**

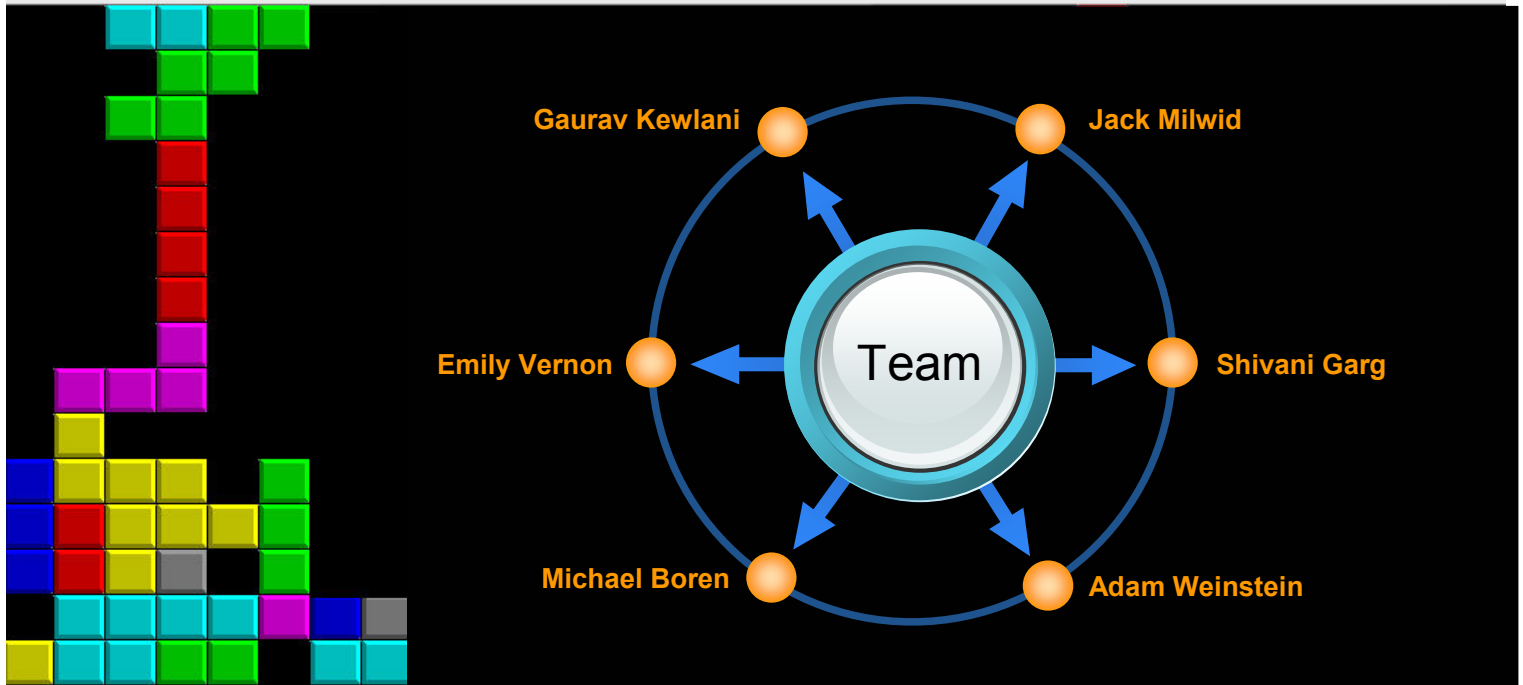




Sponsorship Details

We are talking with UNICEF/Bill Gates Foundation to sponsor our project further so that we may be able to come up with a better design.





TRANSPEUTICS

Contact Us

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ACKNOWLEDGEMENTS

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We would also like to extend our gratefulness to all the other people who have helped us in our work, especially to **Mr. Gregory Kiluva**, Technical Officer in the Cold Chain and Waste Management Department of the UNICEF Supply Division in Copenhagen.