

## User Narrative

Feedback

“ This design really fits in to a new interest with in the armed forces of Integrating mobile energy into the field ”

Cpt. P. Newland

Supply off the grid mobile electrical energy, collected through a solar balloon/balloons in an aim to support medial equipment used in hard to reach areas through scenarios ranging from warfare to natural disasters.

“ The main advantage would be the fact these can be deployed by aircraft in to 'off the grip' areas - creating an instant safe zone with working medical devices. ”

A disadvantage would be the cost of technical innovation

Cpt. P. Newland

Balloon will rise from here to a height of around 15ft

1.

Proposed design is air dropped to selected location and moved to medic tent

2.

Lid is twisted off to realise the hinged side walls which act as a protective cover and houses the battery packs

3.

When fully spread open the helium will start to inflate the solar balloon

4.

## Product Features

Handles flex in and out of product wall

Rubber corner guards, for extra durability

Ribs built into the back of the collapse walls act as a grip, holding the battery in place

Inflate the solar balloon

## Market delivery

This product creates a new market opportunity for military based companies to innovate and expand. Mobile energy has been done before but not to the size and ambition as this proposed design - Pushing the core theme of a sustainable energy source that can be used and exported any were in the word to help field medics use life saving equipment that normal can not be use

## Brand culture

Feedback

“Going into a situation like a natural disaster is scary, you don't know who's hurt and what your going to need to get them though it”

Cpt. P. Newland

Horizon 3 'future dreams'

- Source of future revenue
- Create viable options for the future
- Unproven opportunities

Blue Ocean Market

Focused on innovating new value  
-Innovating new market -

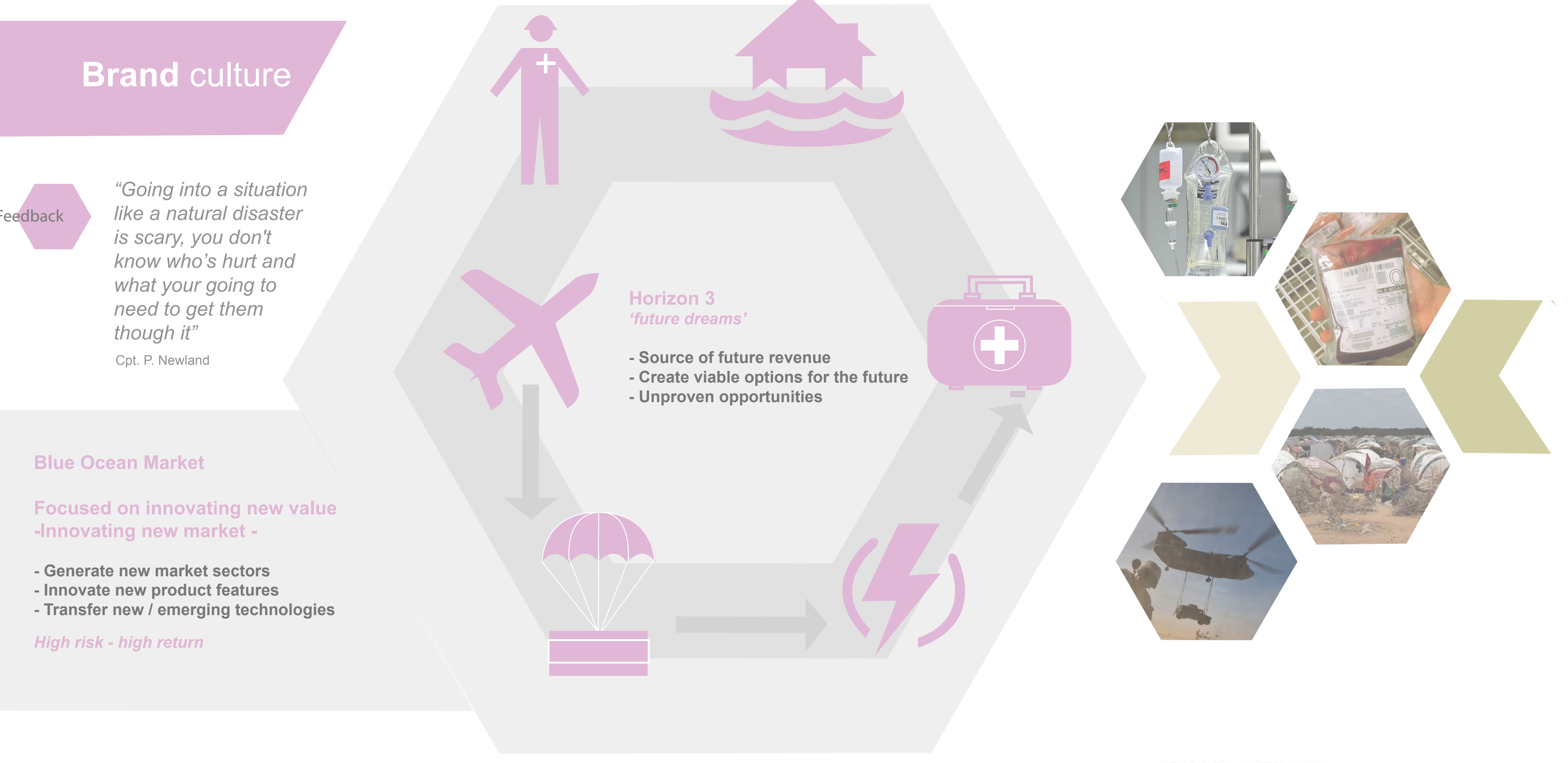
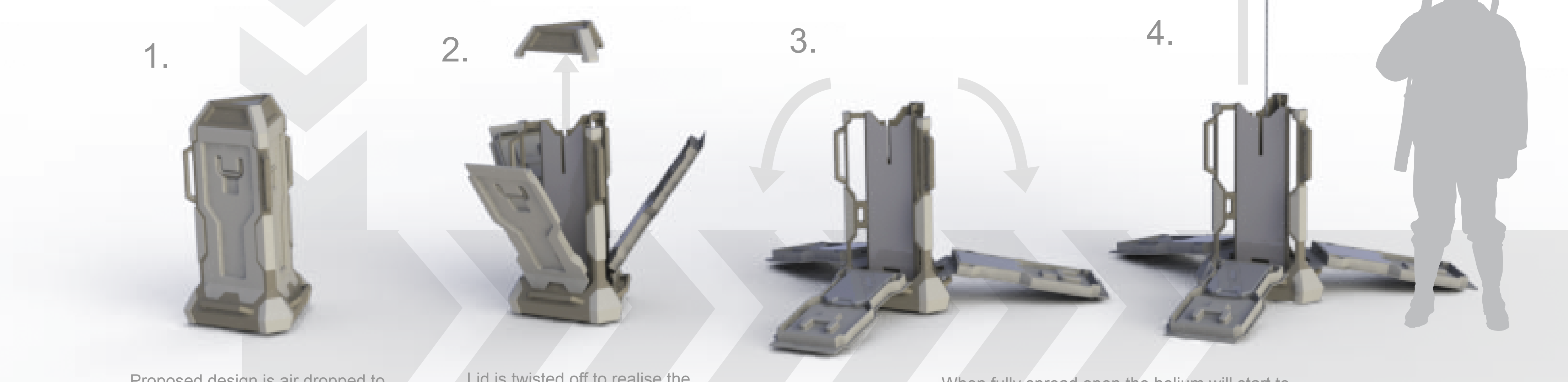
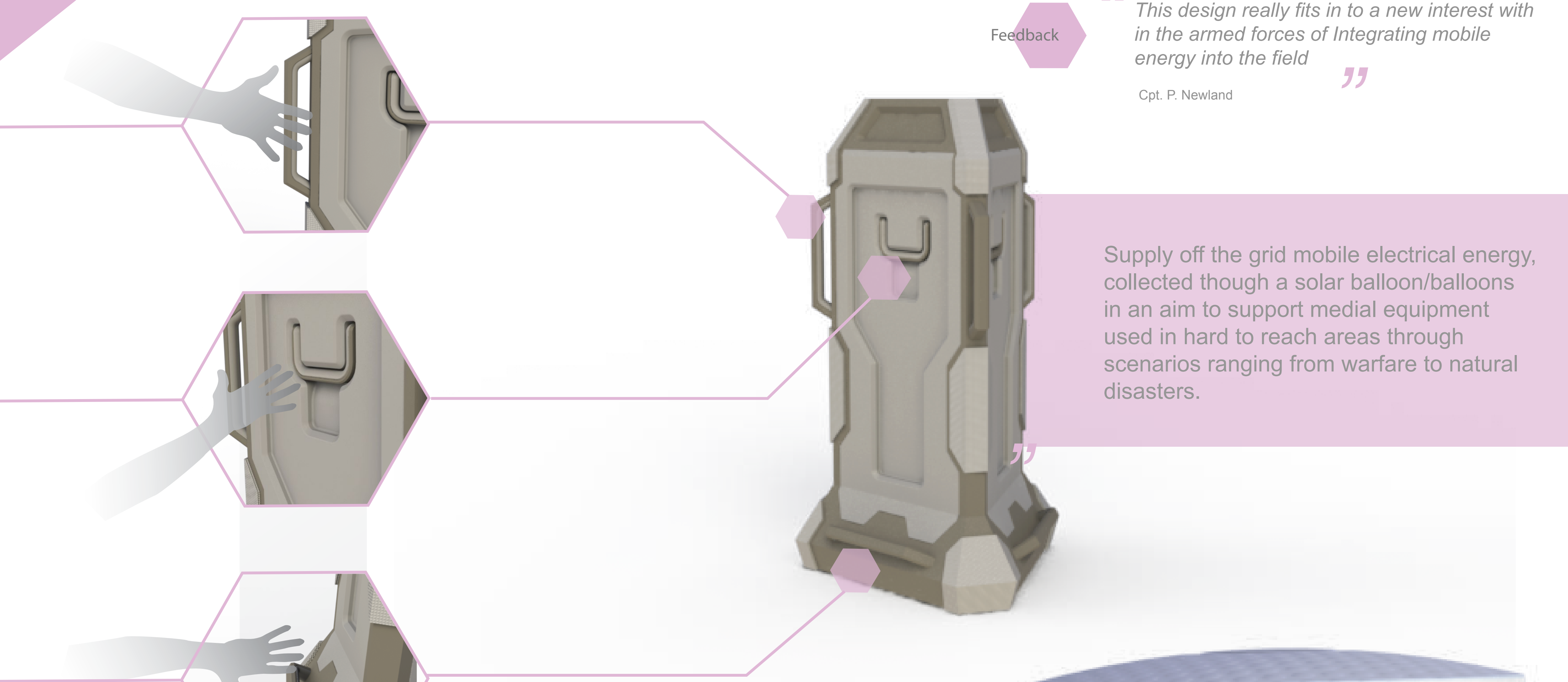
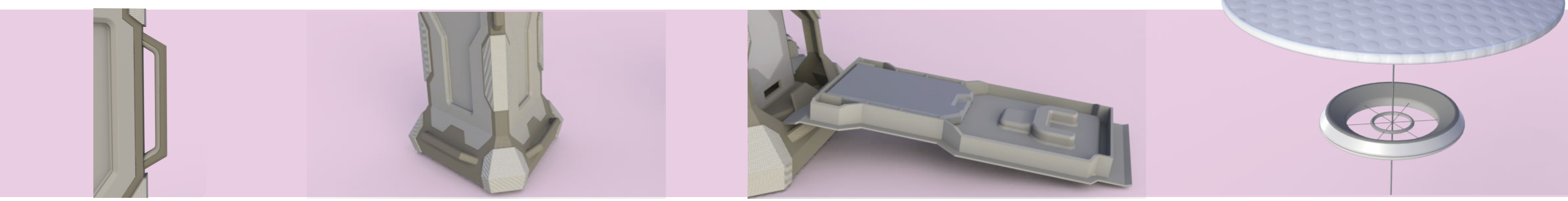
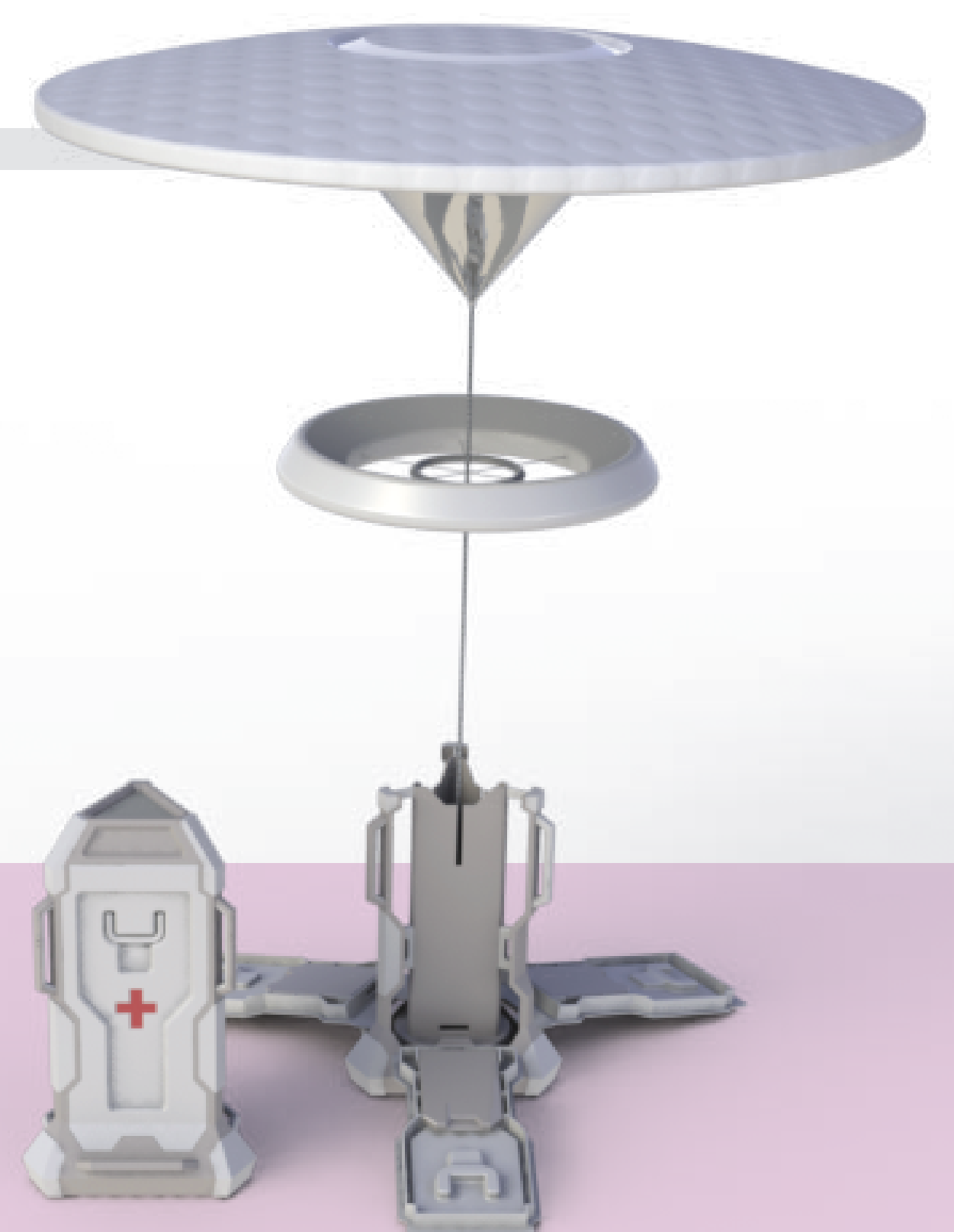
- Generate new market sectors
- Innovate new product features
- Transfer new / emerging technologies

High risk - high return

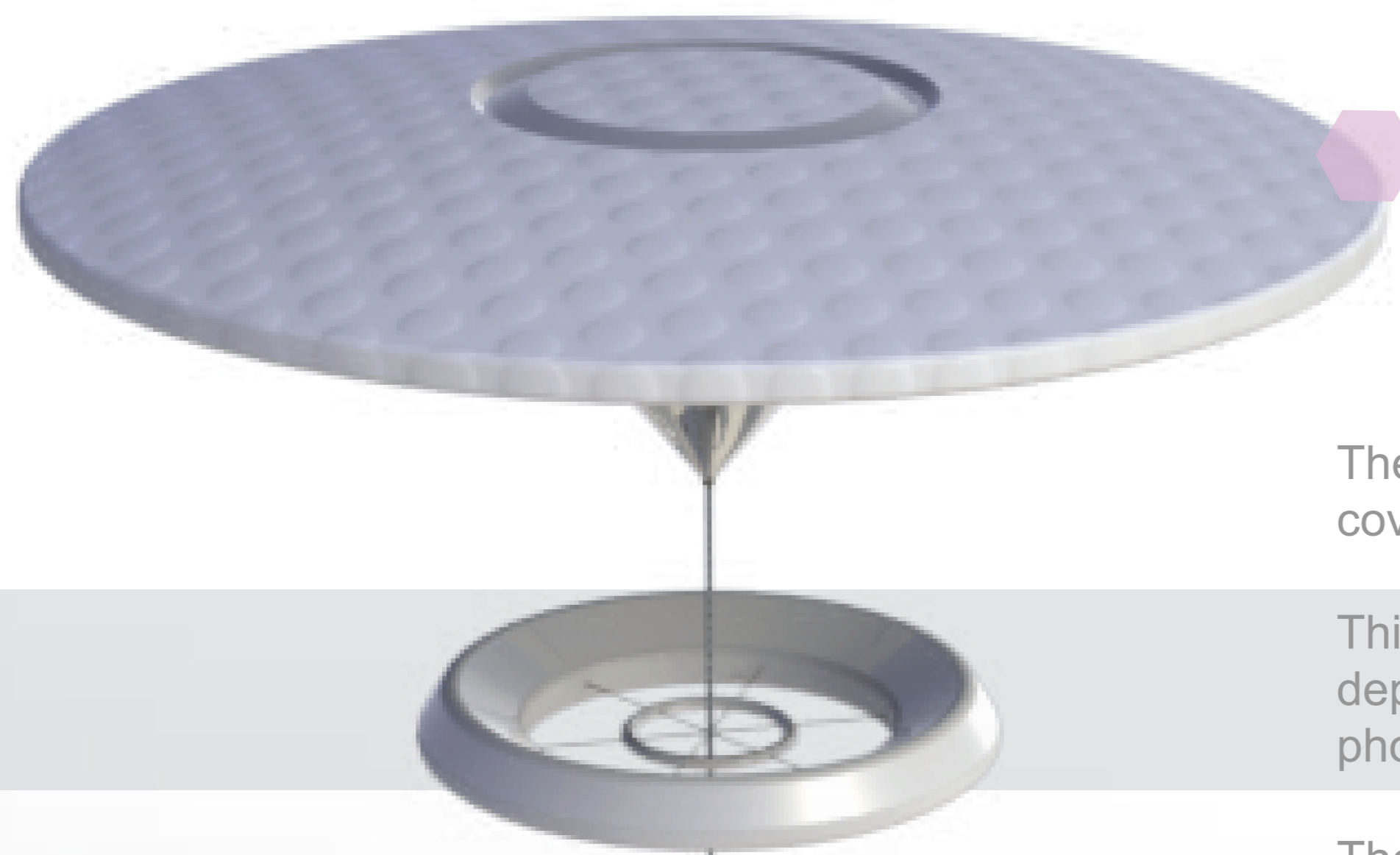
## Product Future

### British Red Cross

“Red Cross is committed to helping vulnerable people around the world to prevent, prepare for, and respond to disasters, complex humanitarian emergencies, and life-threatening health conditions. Our emergency response and disaster preparedness programs provide relief and development assistance to millions of people annually who suffer as a result of natural and man made disasters around the globe.”



## Technology



The helium-filled balloons, are covered with thin-film solar panels

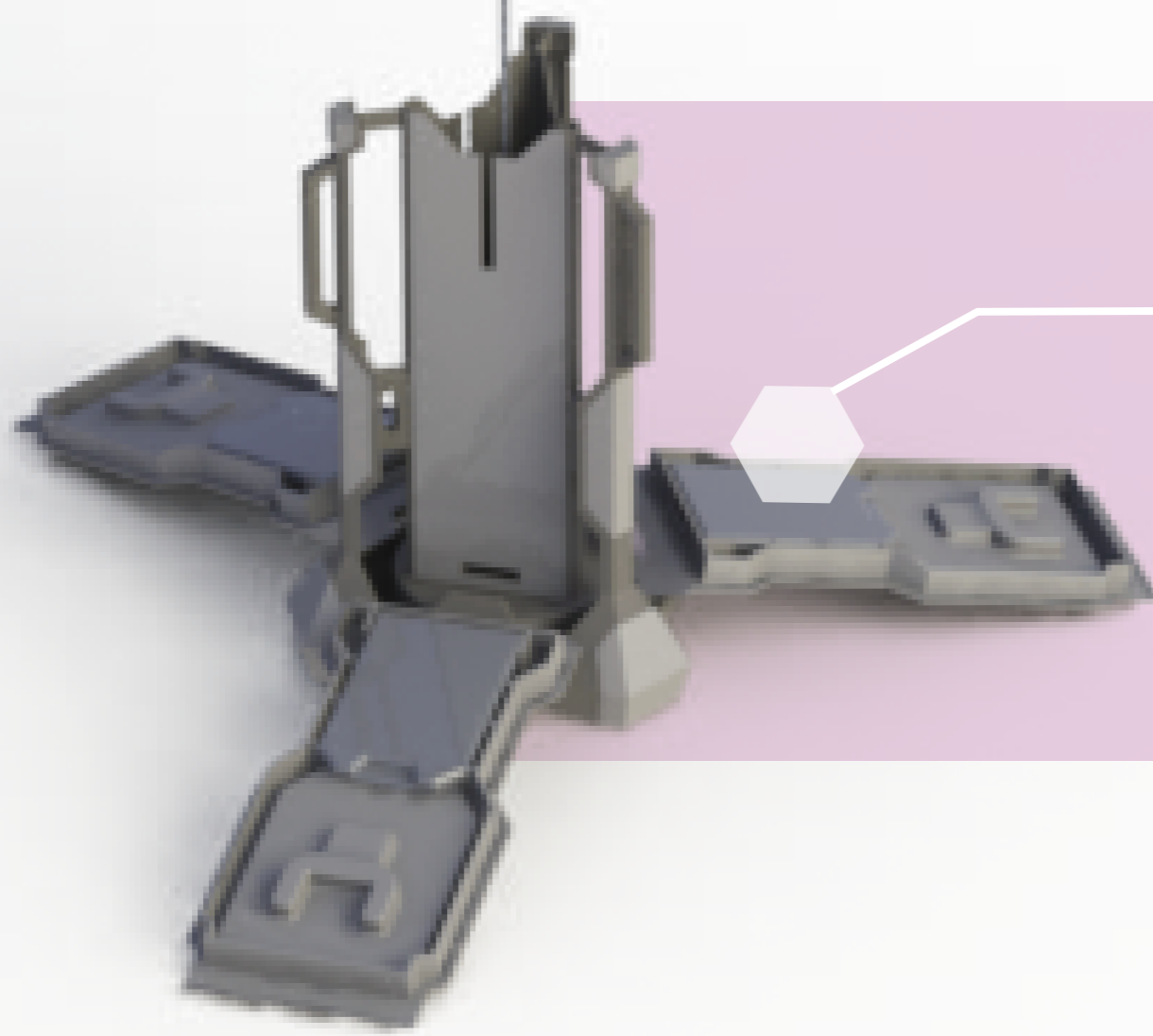
Thin-film photo voltaic cell is made by depositing one or more thin layers of photovoltaic material on a substrate

The thickness range of such a layer is wide and varies from a few nanometers to tens of micrometers

> Silicon nanostructure

> Modifying incident spectrum (concentration), to reach 300-500 suns and efficiencies of 32% to +50%.

> Use of excess thermal generation (caused by UV light) to enhance voltages or carrier collection.



The battery bank, will be key in the storage of the off the grid power. LiFePO4 will be the chosen battery that will be stored inside the drop down doors of the unit.

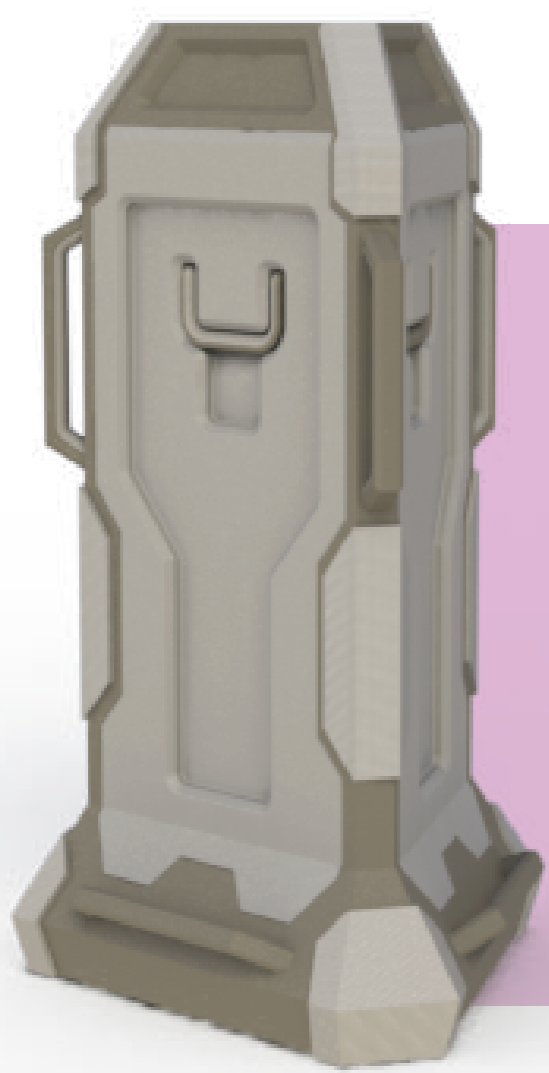
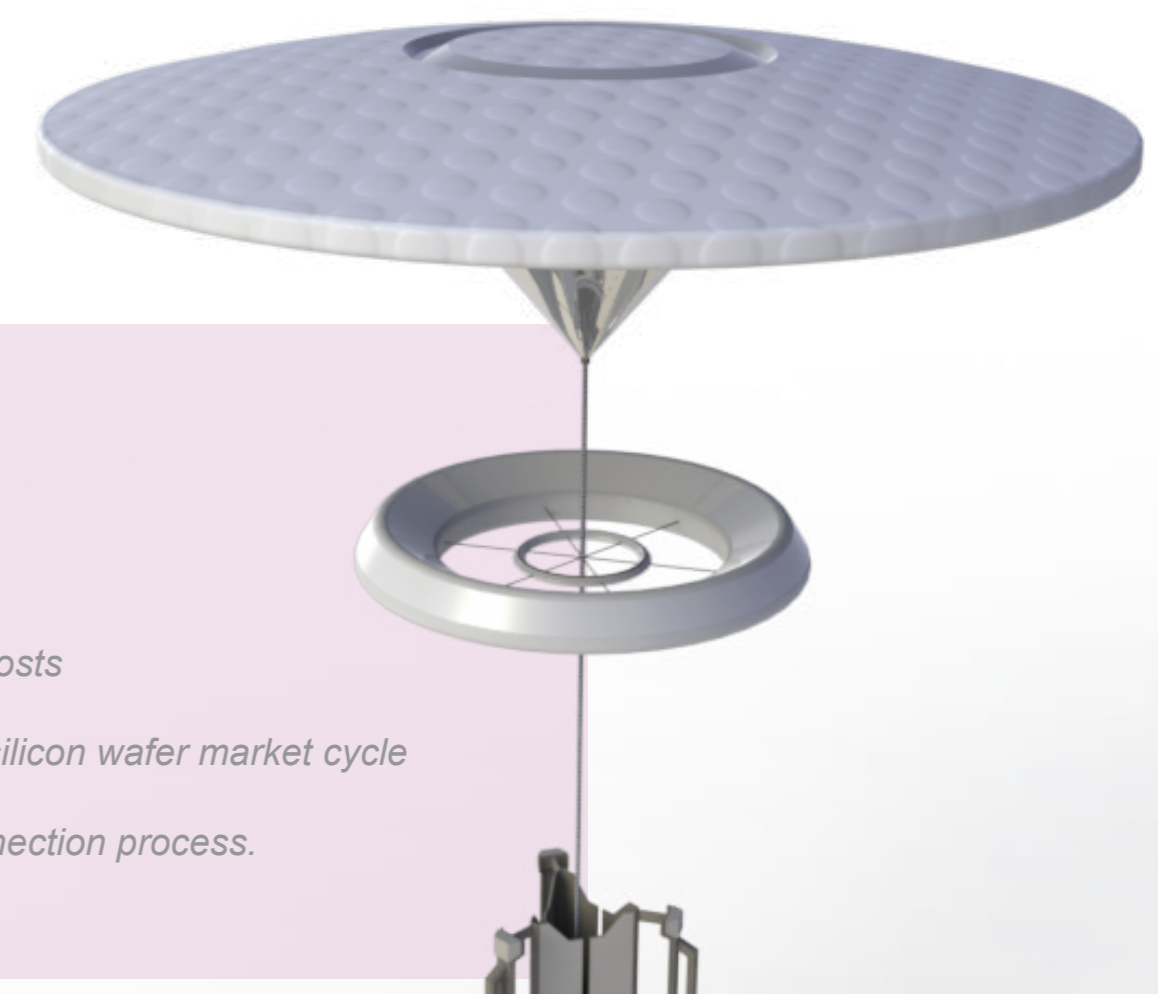
*LiFePO4 Box Battery with DC controller is a ideal battery for solar power storage because of its long cycle life, high temperature performance and full protection from overcharged and discharged.*

## Materials

Roll-to-roll processing is the process of creating electronic devices on a roll of flexible plastic or metal foil.

Large circuits made with thin-film transistors and other devices can be easily patterned onto these large substrates, which can be up to a few metres wide and 50 km long. Some of the devices can be patterned directly. For most semiconductors, however, the devices must be patterned using photolithography techniques

- Durable
- Flexible plastic substrate
- Roll-to-roll manufacturing to minimize handling costs
- Amorphous silicon to avoid dependence on the silicon wafer market cycle
- Printed interconnection to automate the cell connection process.



- The capsule that houses the solar balloon / balloons, helium and battery storage is mainly made from Hadfield steel or Manganese steel
- This steel contains 12-14% manganese which when abraded forms an incredibly hard skin which resists wearing
- The alloyed steel is perfect for the capsule as the product will be in variety of testing environments where the exterior through such

## Manufacture

Many advantages make rotational moulding the best choice. One of the greatest advantages is the reduced cost of tooling.

Moulds can be machined, cast or fabricated from materials such as stainless steel or aluminium.

Other benefits of rotational moulding include:

- Design flexibility to meet specifications
- One-piece seamless construction
- Metal inserts and fittings as integral parts
- Uniform wall thickness
- Resistance to corrosion
- Variety of colours and finishes
- Lightweight
- Excellent Load-bearing properties
- U.V. resistance
- Moulded-in graphics, such as logos, and embossing
- Product longevity

Safety lid

Main handle grip

Drop down battery storage

Solar balloon storage

Rubber corner guards

Helium canister

