Special Operations Equipment and Gear Transport System

US Military Special Operations missions typically require operators to carry heavy loads for extreme durations. Heavy loads affect operators’ reaction time, psychological wellbeing, as well as, energy and fatigue levels during the mission. Additionally, the physical and mental stress of heavy loads causes significant performance degradation and injury through neuromuscular fatigue and both short and long term physical damage to the nervous, muscular, and skeletal systems of the operators’ bodies.
USAF Special Operations Forces (SOF) experience considerable physiological and psychological stressors during training and while conducting military operations. USAF Special Tactics operators prosecute “airfield seizures” alongside sister service “shooters”. During these missions, operators typically carry 100+ pounds of gear. During the mission, operators require resupply of mission gear and equipment, as well as, movement of heavy items such as patients, K9s, food, water, ammunition, and other large, bulky items. Often, many airfields are two miles (or more) in length and require personnel to make several trips up and down the side of the airfield delivering items. Your objective is to “invent” a resupply device, manually or autonomously operated, controlled, or programmed to haul items on rough and unimproved surfaces.
Solution
Requirements

The Systems must consist of, but are not limited to, the following requirements:

- **Safety:** System must be safe!!!!!
- **Size:** As compact as possible
- **Weight:** Less is more
- **Power:**
  - Load capacity: Min 350lbs of gear (not including safety factor)
  - Speed: At least as fast as a human walker, Min 3mph - Max 15mph
  - Distance/Duration: 2 miles
- **Travel where human walker is able to travel**
  - Operate on pavement, sand, gravel, dirt, areas with short vegetation
  - Ascend and descend moderate grades (no mountain climbing)
  - Traverse narrow paths and climb steps
  - Navigate over or through rocks, logs gaps, obstacles
  - Minimum maintenance, sustainment, and support
- **Must be accepted by BA SOF community (it doesn’t solve the problem if they don’t use it)**
You need to focus on SWAP—Size, Weight, and Power.

The solution must be packable for insertion and extraction via military rotary and vertical airlift aircraft such as MH-60 and CV-22.

Devices for which there are multiple uses (such as litter carry for medical evac situations, personnel carry, power generation, battery charging, etc.) are preferred.

Solutions should not be human powered, however, powered by some other energy source – consideration needs to be made of the storage life and operating time (efficiency, fuel/battery), logistics (availability of fuel, batteries, charging in theater), and safety of the operators.