IPRO 362

M.O.R.E. Life

[Mobile Operating Room Engineering]

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Team Members:

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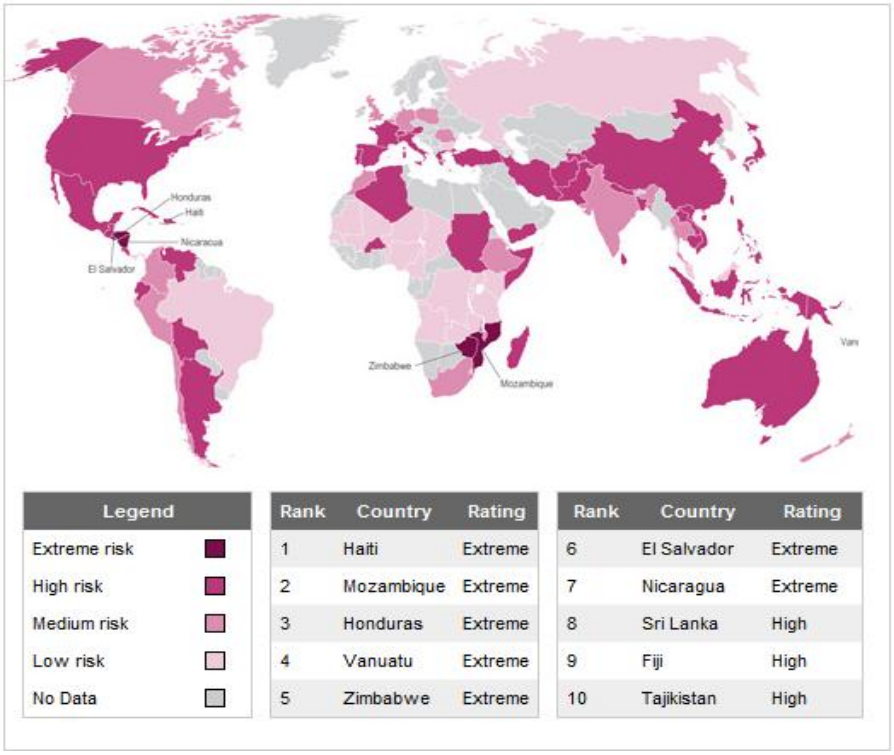
Natural Disasters Worldwide

Source: "Haiti and Mozambique Most Vulnerable to Economic Losses from Natural Disasters." *Development Workshop*.



Legend
Extreme risk
High risk
Medium risk
Low risk
No Data

Rank	Country	Rating
1	Haiti	Extreme
2	Mozambique	Extreme
3	Honduras	Extreme
4	Vanuatu	Extreme
5	Zimbabwe	Extreme

Rank	Country	Rating
6	El Salvador	Extreme
7	Nicaragua	Extreme
8	Sri Lanka	High
9	Fiji	High
10	Tajikistan	High

"…that the earth is currently experiencing approximately 500 natural disasters per year."

-Natural News

Source: http://www.internetphilippines.com/news/

"The number of natural disasters around the world has increased by more than four times in the last 20 years…" *- Natural News*

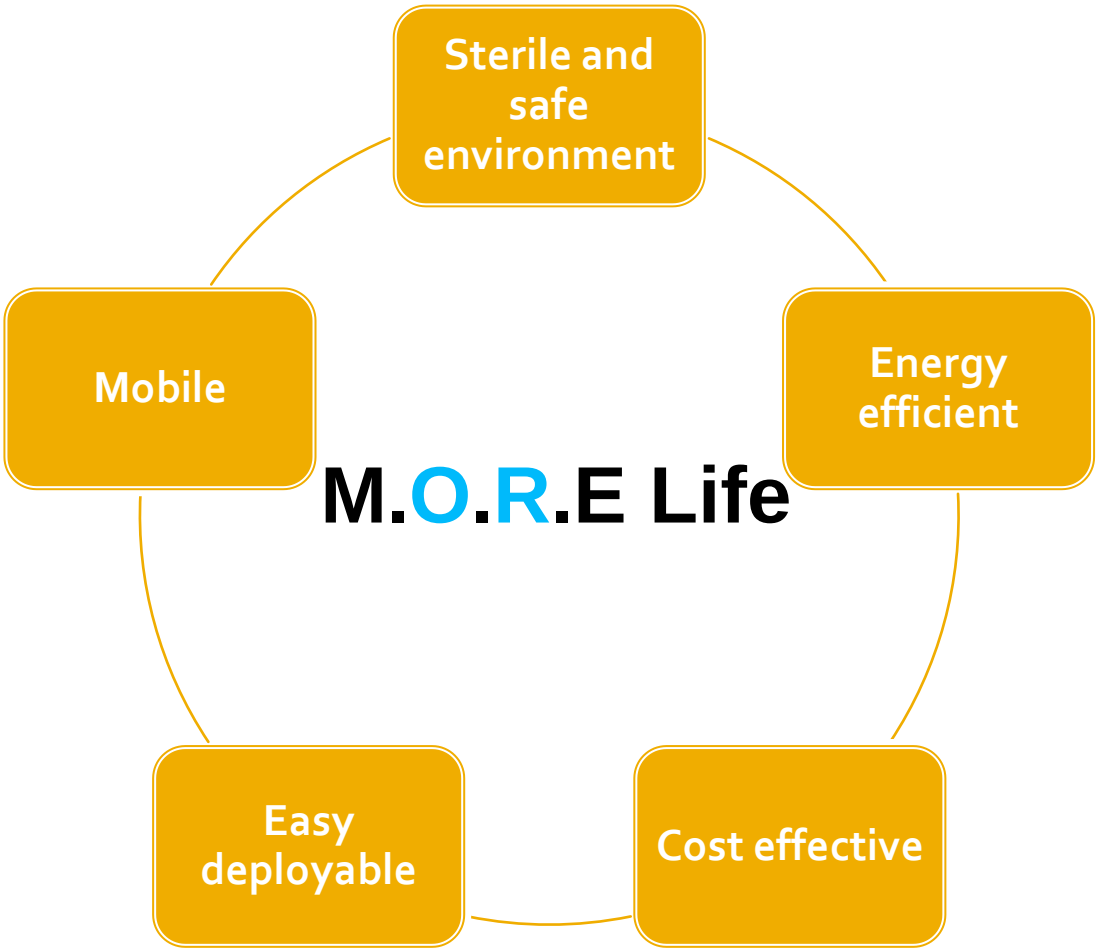
The Problem

- Current mobile operating rooms are:
  - Too large for easy transportation through disaster areas
  - Not energy efficient
  - Very expensive
  - No filtration or sterility (not a good surgical environment)

Source: http://www.goldenseason.com.sg/deconsheltas.html

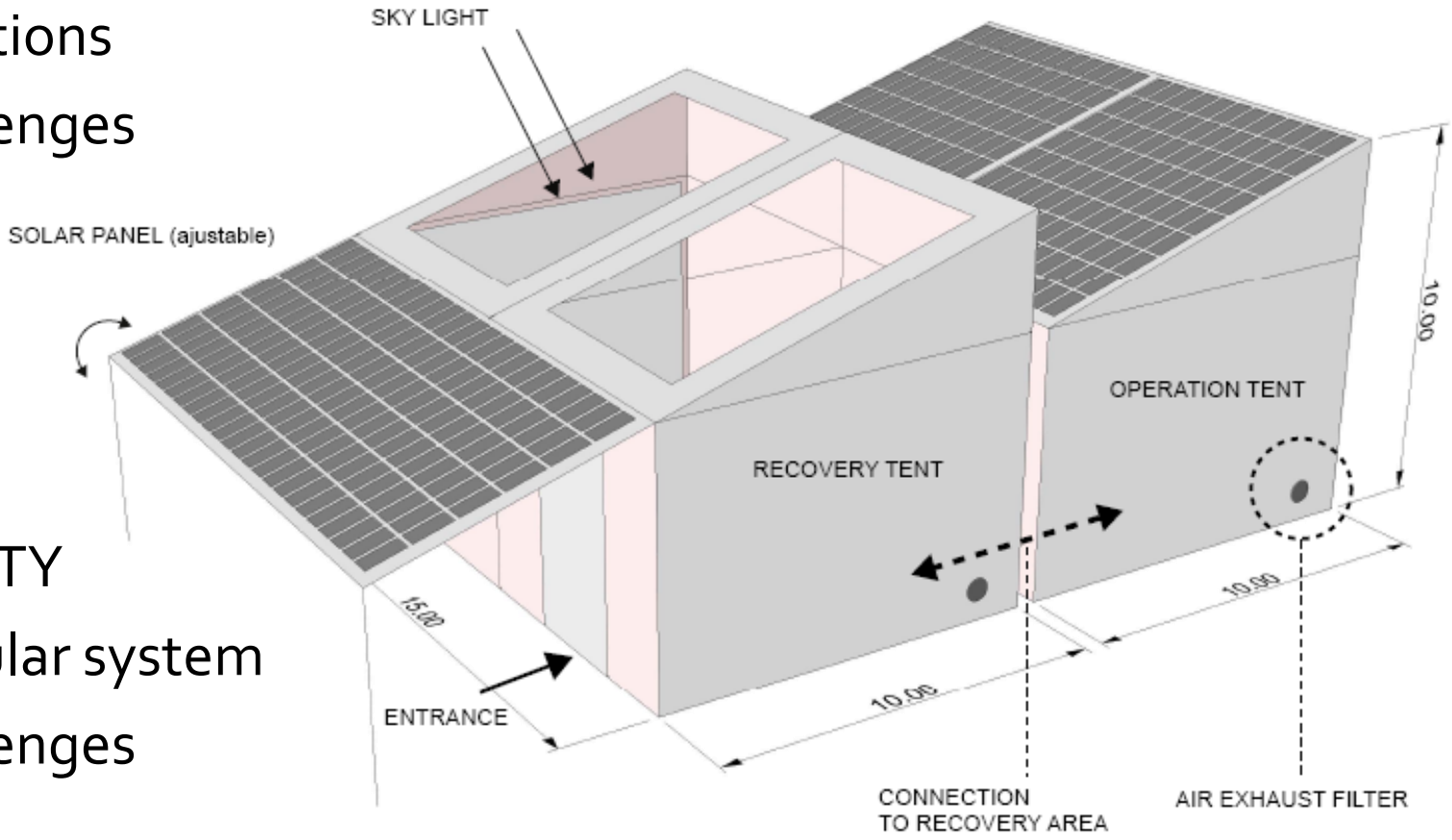
Source: http://defensetech.org/2004/09/09/operating-room-in-a-box-unfolds/

Our Objective

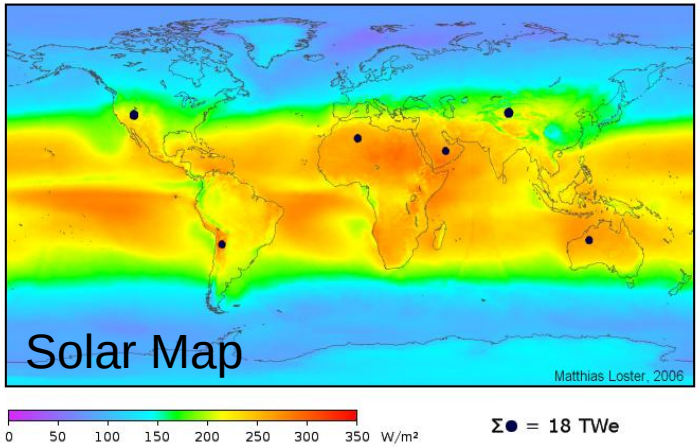


Approach: Mobility & Structure

- STRUCTURE
  - 3 Sections
  - Challenges
- MOBILITY
  - Modular system
  - Challenges



Approach: Power & Equipment

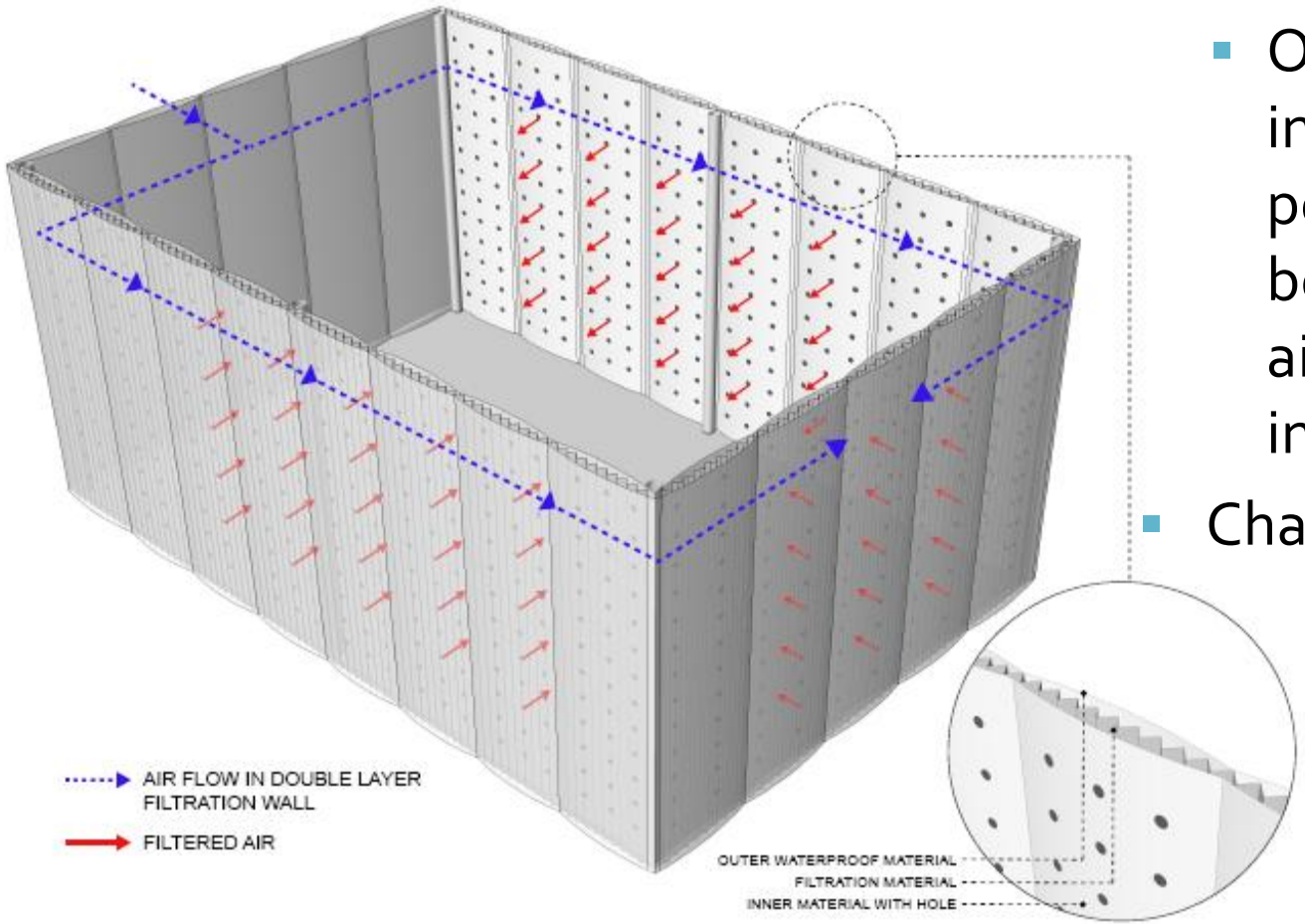


Source: http://photochemistryportal.net/home/index.php/2009/08/17/dye-sensitised-solar-cells-dssc/

Source: http://thecostaricanews.com/wp-content/uploads/2009/10/windpower.jpg

- POWER
  - Solar panels
  - Batteries
  - Wind turbines made from local materials supplement solar power
  - Challenges
- AMMENITIES FOR STAFF
  - Minimal required surgical equipment
    - Portable versions
  - Challenges

Approach: Air Filtration



- FILTRATION
  - Outer material solid, inner material perforated, filter in between, fan pushes air through filter and into tent
- Challenges

Prototyping

Prototyping

Community Involvement

- Encourage involvement of the community post natural disaster event
- Promote awareness of incoming relief organizations and their plans
- Establish relationship with community prior to event for organization and preparedness (employment opportunities)
- Improve communication and overcome language barrier using pictures for instruction

Source: http://www.life.com/image/81578682

Conclusion

- Goal for the semester
  - Make at least one full prototype and send to Uganda for testing
    - Receive feedback on areas needing improvement
    - Learn how people will interact with the system
- Goal for the future
  - Make these mobile operating rooms available to relief organizations for immediate care response after a natural disaster


Source: Getty Images by Liu Jin
MOBILITY
MODULARITY
STERILIZATION
in disaster area