

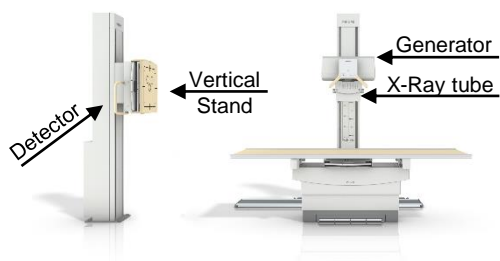
SCANVAN: A novel approach in mobile X-Ray diagnosis

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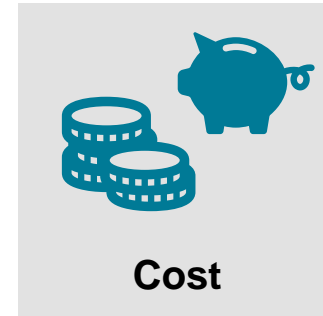
Lecture: Appropriate Health System Design, Spring Semester 2018

Conventional X-Ray machines



- ✓ Visualize dense structures
- ✓ Movable detector plate allows scanning all body parts
- ✓ Different output powers allow pediatric and bariatric applications
- ✗ High costs (device, regulations, maintenance)
- ✗ Often: little utilization

Challenges



Personas

„I rarely go to the city and have absolutely no clue about the “science fiction” medical devices they have.“

Indah (20), Seamstress from Indonesia



„Why do I have to travel to the next hospital if we have medical centers within the camp?!”

Amina (42), Mother from Al' Zaatari refugee camp



“My bones are weak and my doctor X-Rays my legs twice a year. I hate that! Organizing an ambulance ride is cumbersome and the examination table provides no cushioning!”

Klaus (78), retiree from Saas-Fee.”



Limitations



Manufacturing and maintaining a **multimodular truck** imposes **high costs**



Complex design: technically demanding in manufacturing; not possible to produce in all target countries



Effectiveness not guaranteed: target audience might not have the right mindset for using the truck

Idea and Solution

Using a multimodular truck with exchangeable modules increases the accessibility and efficiency of conventional X-Ray systems.

Advertisement

- ✓ Inform about possibilities and advantages of X-Rays
- ✓ Available in different languages
- ✓ Includes description in pictogram format

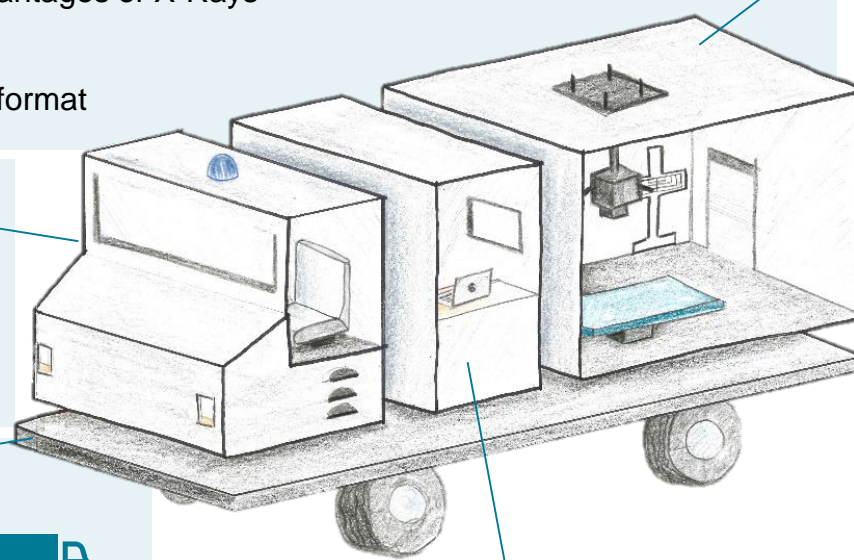
Driver's cabin

- ✓ Space for up to three passenger
- ✓ Bulletproof cabin
- ✓ Inside computer board (GPS)

Modified Undercarriage

- ✓ Rolling chassis (four wheel drive and off road tires)
- ✓ Armored fighting vehicle's (AFV) hull
- ✓ Sliding chassis

A hydraulic system inside the undercarriage allows horizontal positioning of the examination- and control room for usage in uneven terrains.



Examination room

Safety

- ✓ Lead-like walls
- ✓ Green and red lights signal status

Accessibility

- ✓ Sideways sliding door
- ✓ Movable **three-axes** X-Ray tube on ceiling
- ✓ Foldable door allows access for patients on stretchers

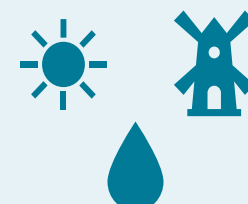
Comfort

- ✓ Vertical stand and examination table
- ✓ Cushioned examination table

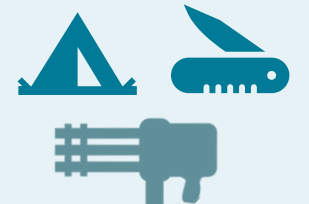
Control room

- ✓ Eye-contact with patients
- ✓ Safety: Radiation protection and signaling lights
- ✓ Internet connection for knowledge exchange

Energy Sources



Additional Features



Partners

