CROWDSOURCING AND VIRTUAL REALITY APPLICATIONS FOR PEACEKEEPING: STUDY CASES IN MOGADISHU AND TRIPOLI

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State of the Map 2022, August 21st
What we do
The logistics base and peacekeeping operations
UN Maps
The 'Google Maps' of the UN

Features
- Street Map
- Image Map
- Terrain Map
- Globe
- Operational Map
- Direction
- Search

Maps on Demand
Leveraging innovative technology
Virtual Reality (VR) applications and use cases

- Visualization around a shared simulated 3D view of an area of interest for strategic planning

**Operational Efficiency**
Develop specialist skill-sets to be deployed as strategic or mission-level resources in a cost-effective manner

**Collaboration**
Enable multiple users to safely collaborate around a shared simulated sandbox, from separate remote locations

**Safe training**
Improve and ensure the delivery of training, especially in situations where safety and security are compromised

**Expanded Planning Tools**
Allow users to provide/create on-the-fly input to planning, to trigger and shape their simulations in a realistic virtual environment
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Yet another building mapping project?
Yes, but...

- Need for accurate information
  - Geometry and footprint
  - Building characteristics (height, levels, material, color, roof type)
Yet another building mapping project?
Yes, but...

- Urban environment
  - Buildings are close to each other
  - Azimuth for tall buildings
  - Comparison of imageries, offset correction
Yet another building mapping project?
Yes, but...

- Security issues
  - Cannot fly drones. Often, cannot take pictures
  - Security concerns with civilians
  - Security policies
Mogadishu

Setting

1. Contacts with local community
2. Definition areas of interest with clients
3. Production of instructions
4. Crowdsourcing and validation
UN Mappers community
Volunteers supporting peace and serving humanity
Mogadishu
Over 50k buildings in few weeks
Tripoli: OSM Libya as a key partner
Their contributions to Kartaview
Tripoli: BuildingComplete
Tweaking of open-source Android applications

- Building Type: School, apartment, house, mosque…
- Roof Shape: Flat, gabled, round…
- Building Colour: White, grey, beige, blue…
- Building Level: Flat, gabled, round…
- Building Material: Cement blocks, bricks, concrete…

- And translations in Arabic
3D modeling
Data ingestion and modeling of buildings
3D modeling
Procedural modeling
In conclusion

Before the demo...

• Challenges:
  – Field mapping is dangerous and doesn’t scale well. Could be useful for groundtruth
  – Many geospatial tools are denied
  – Coordination between IT-only and GIS teams

• Next steps
  – Perform large scale estimation of building heights
  – Perform small scale field mapping of building details
  – Train peacekeepers to edit field information
  – Explore further usage of street-level imagery

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