

ENSURE SERVICE QUALITY DURING NATURAL DISASTERS

Maputo 2024

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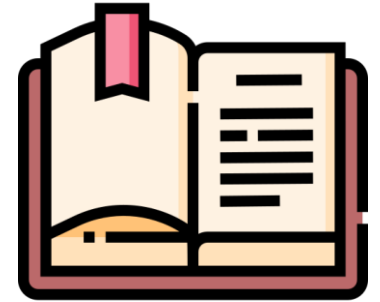
**Movitel
background**



**Climate Status of
Mozambique**



**Solutions to
ensure service
quality**



Experience

A modern office interior with a central meeting table, orange chairs, and a curved reception desk. The ceiling is dark with recessed lights, and the floor is light wood. A large window on the left shows a view of the city. The text "MOVITEL NETWORK" is overlaid in the center.

MOVITEL NETWORK

MOVITEL BACKGROUND



01

Movitel is a mobile telecommunications operator, with around 12 years of services, being implemented throughout the national territory.

02

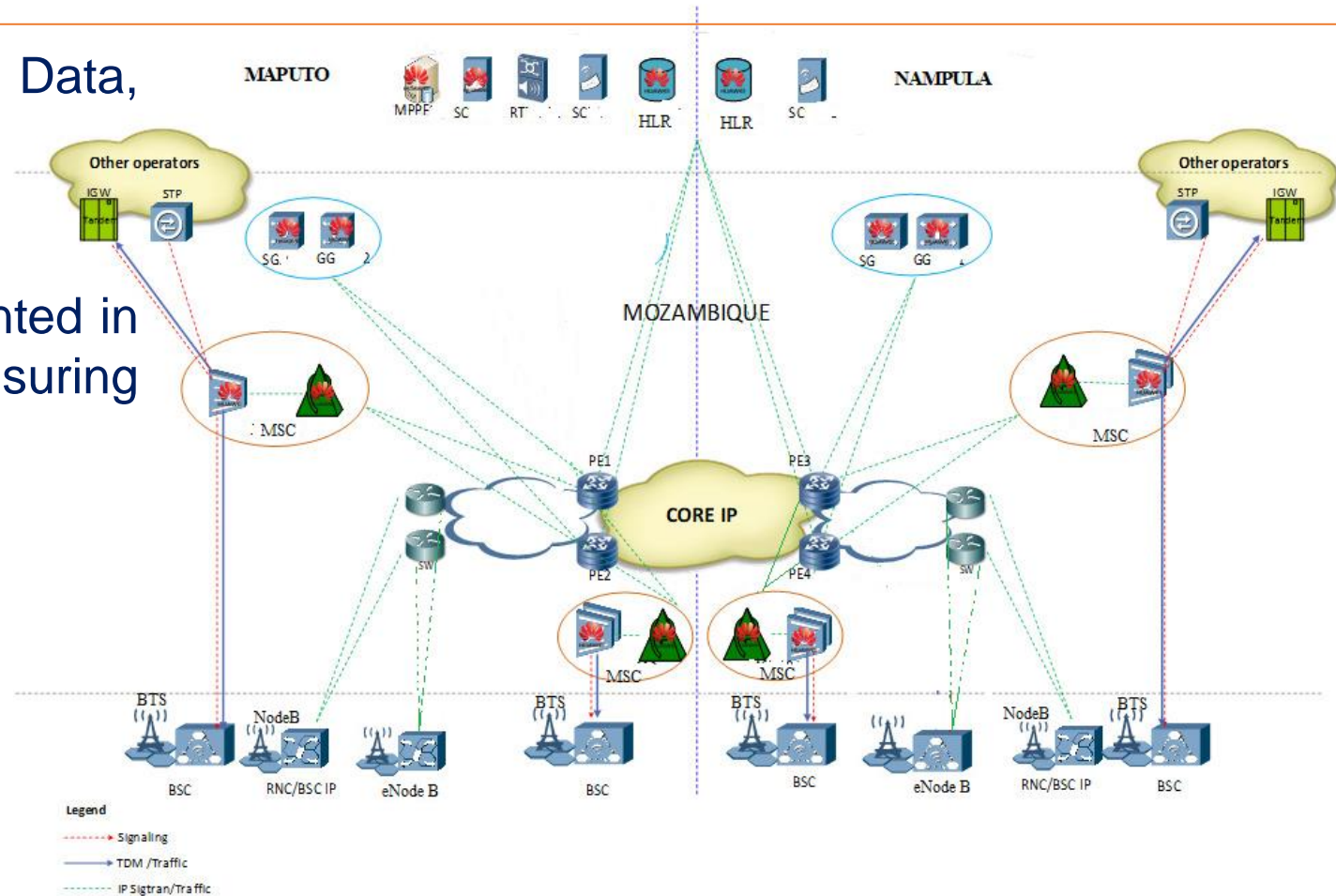
It started with 2G and 3G services, in 2019 it launched 4G LTE services.

03

With the mission of increasingly serving its users better, it has invested in the best network expansion, technical and technological strategies to increase satisfaction with its services.

CORE NETWORK

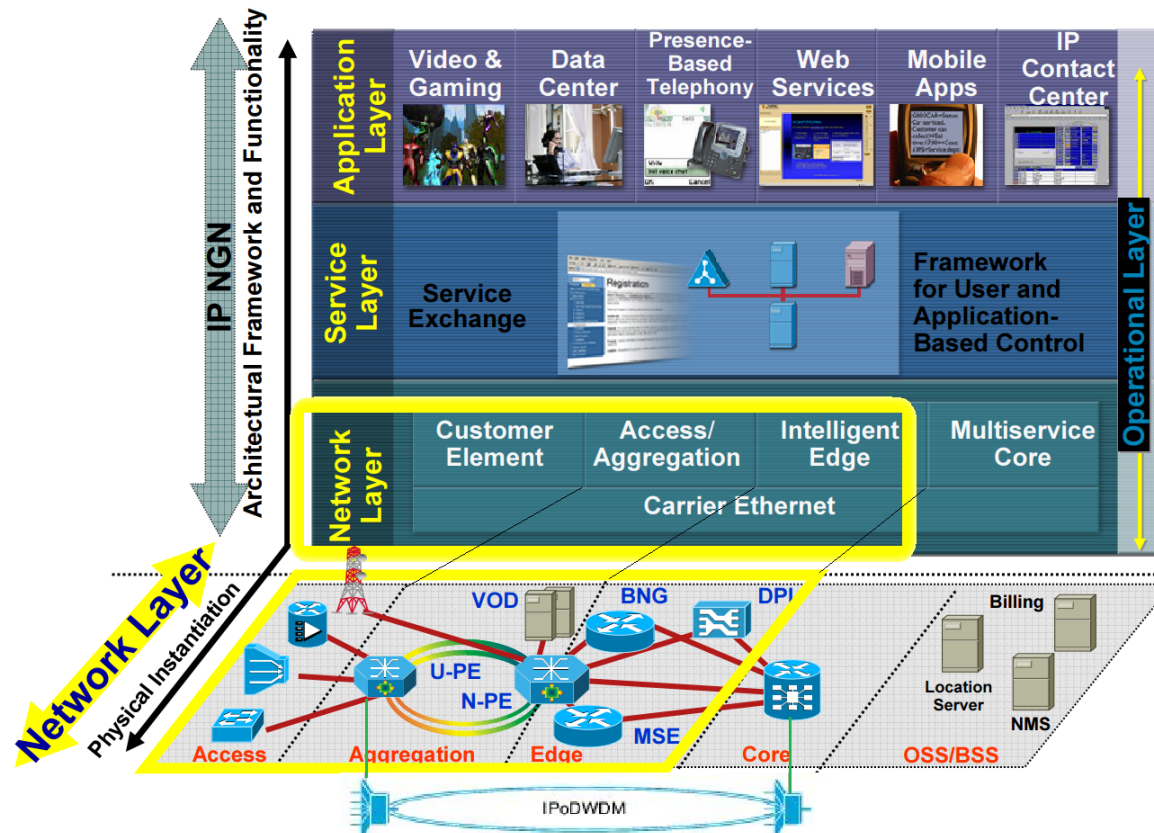
- 1 Provide Service: Voice, SMS, Data, OTT, streaming....
- 2 The core network is implemented in two areas north-south, ensuring service continuity



TRANSMISSION NETWORK



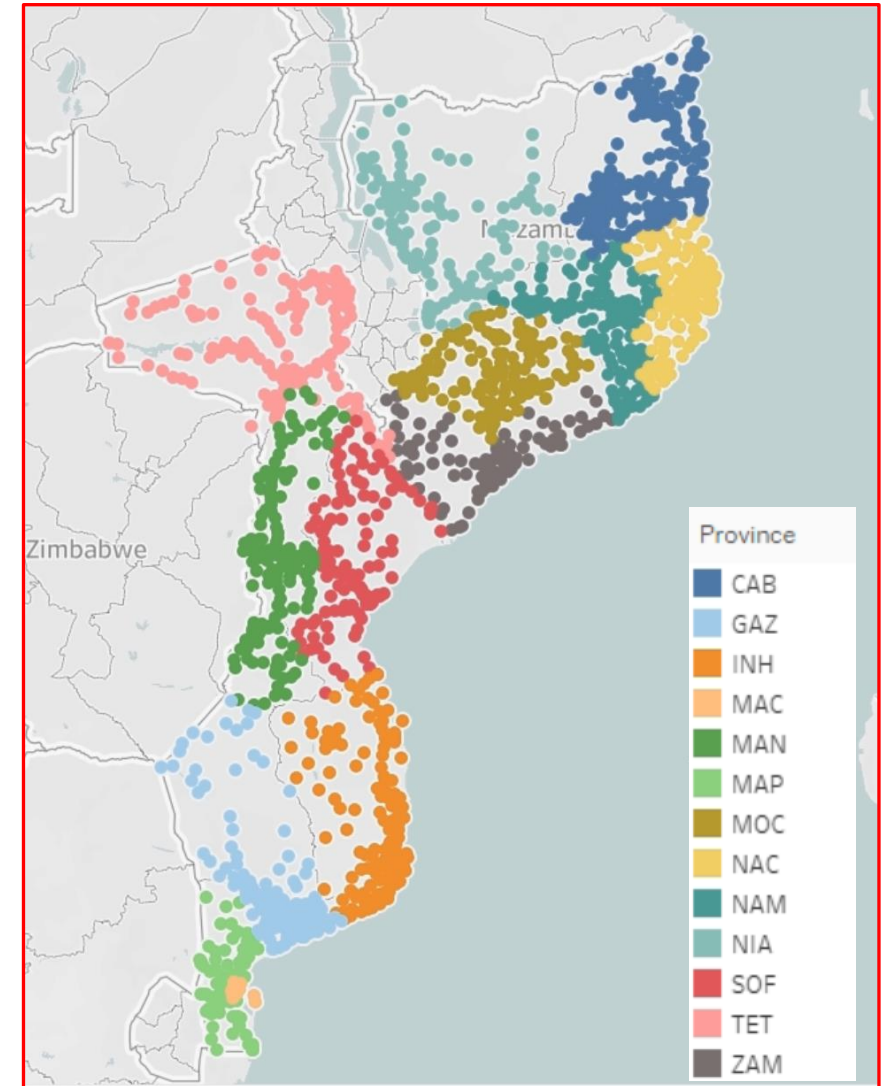
- 1 Movitel have optical fiber connect from core network to station all district, we have 80% sites using fiber cable:
 - 4 backbone cable links.
 - Access cable links 80% sites.
- 2 Microwave: used for backup for optical cable and for remote area.
- 3 Transmission using 3 technologies: DWDM, Metro and SDH.



RADIO ACCESS NETWORK



- 1 Movitel have a round **>1800** stations: Urban: **45%**, rural **55%**
Movitel provide service 2G, 3G and 4.5G. Successful trial 5G in 2023.
- 2 **2G:**
Coverage of population: all network: **92%** pop.
 - Center of province/district: **96%** pop,
 - Village: **91%** pop.
- 3 **3G:**
Coverage of population: all network: **60%** pop.
 - Center of province/district: **94%** pop,
 - Village: **52%** pop.
- 4 **4G:**
Coverage of population: all network: **70%** pop,
 - Center of province/district: **97%** pop
 - Village: **65% pop**





CLIMATE STATUS OF MOZAMBIQUE

CLIMATE STATUS OF MOZAMBIQUE



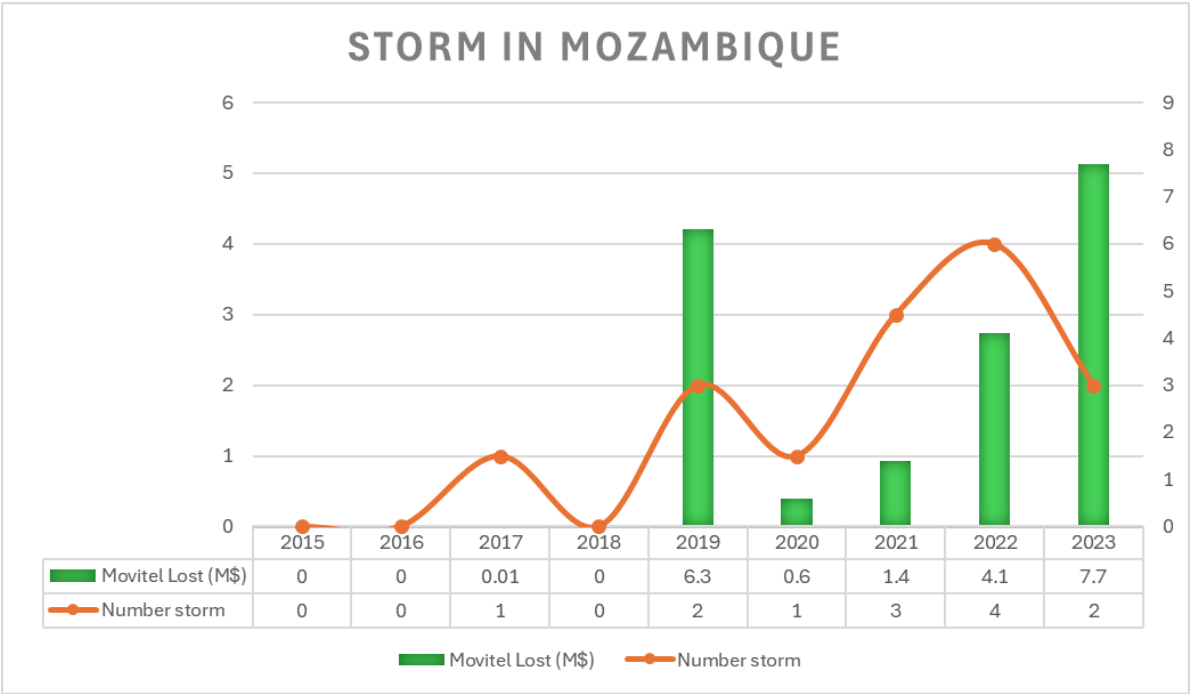
Africa, in general, and Mozambique, in particular, are among the most vulnerable to natural disasters, noting that extreme weather events that were rare yesterday are now increasingly frequent and intense.

“Mozambique is especially vulnerable to climate change due to its geographical location in the inter-tropical convergence zone and downstream of shared river basins, its long coastline and the existence of extensive areas with altitudes below the current sea level. On the other hand, poverty, limited investments in advanced technology and the fragility of infrastructure and social services, particularly health and sanitation, contribute to their vulnerability and low adaptive capacity.

Resilience and adaptation to climate change constitutes a challenge for Mozambique, as in recent times we have had severe cyclone events such as FREDDY, IDAI, Kenneth, Chalane, Eloise, Gwambe.

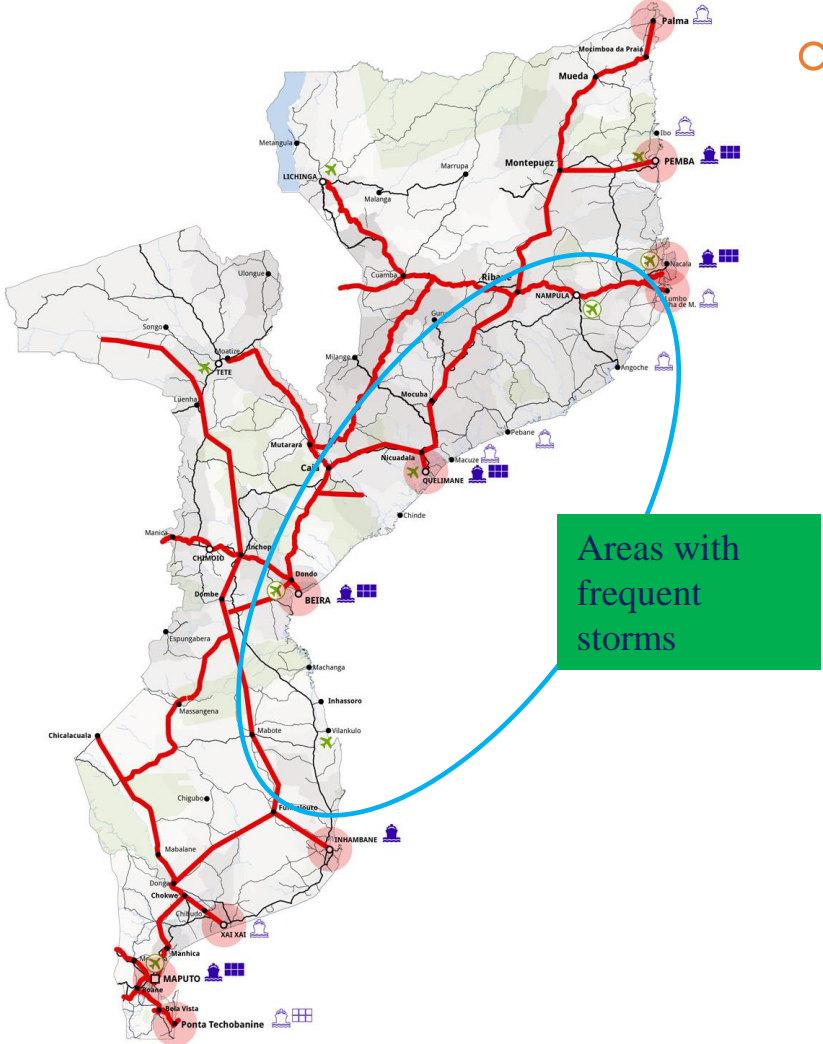
According to government agencies, it is estimated that with the cyclones IDAI and Kenneth Mozambique lost more than 3 (three) billion US dollars. Clearly a setback to the country's economy.

CLIMATE STATUS OF MOZAMBIQUE



Year	2019	2020	2021	2022	2023
Number storm	2	1	3	4	2
Movitel Lost (M\$)	6.3	0.6	1.4	4.1	7.7
Province effect	6	3	3	4	7
Site of Movitel effect	321	79	131	275	187
The km of optical cable	4200	1300	2646	4312	1829

From 2019 until now, Mozambique has had 10 major storms affecting the country, of which Movitel lost more than 19.5 million dollars to recover after the storms.



CLIMATE STATUS OF MOZAMBIQUE



Impact of natural disasters (floods and storms)



IDAI



Kenneth



Fredy



Chalane



Eloise



Gwambe

A modern office interior with a central wooden table and orange chairs. To the left is a curved reception desk with a white top and orange base. The background features a dark wall with a large abstract painting and a wall of circular decorative elements in grey and orange. The floor is light wood, and the ceiling has a dark, ribbed design with recessed lights. A semi-transparent dark blue banner with white text is overlaid across the center.

SOLUTIONS TO ENSURE SERVICE QUALITY

RADIO ACCESS NETWORK | POWER



- 1 For backbone stations in areas always have storms and floods: should have a backup plan: Diversified transmission (both microwave and optical), have both solar and generators with full tank of fuel.
- 2 Coverage and Capacity of RAN (2G, 3G, 4G) always full configuration to ensure service if having natural disasters



IMPLEMENTATION PLAN TO RESPOND TO STORMS AND FLOODS



Before have natural disasters (floods and storms) come

Making scenarios and plans to quickly respond to storms and floods:

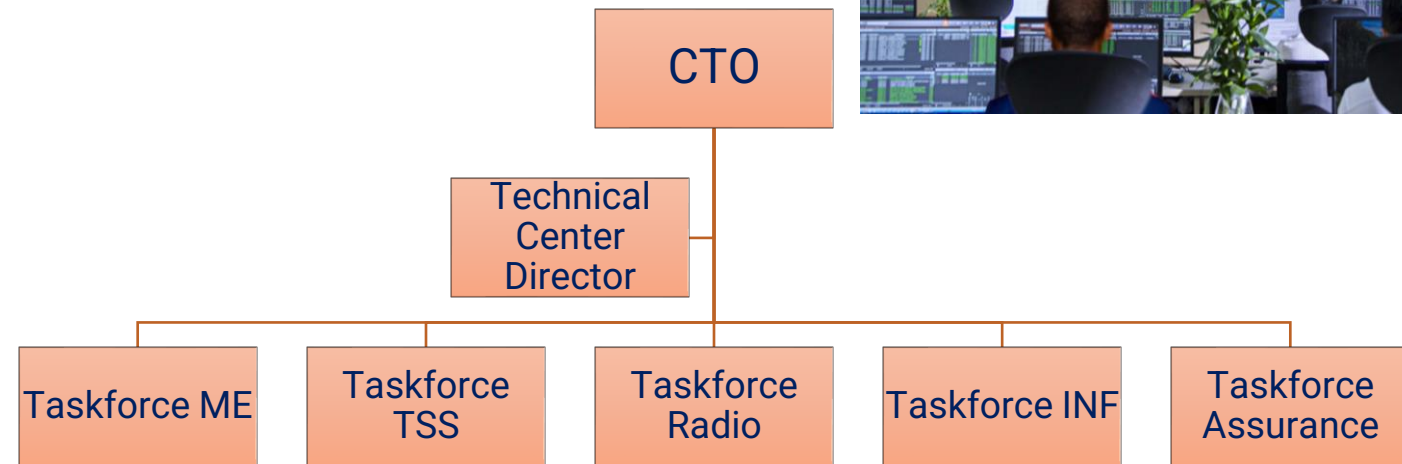
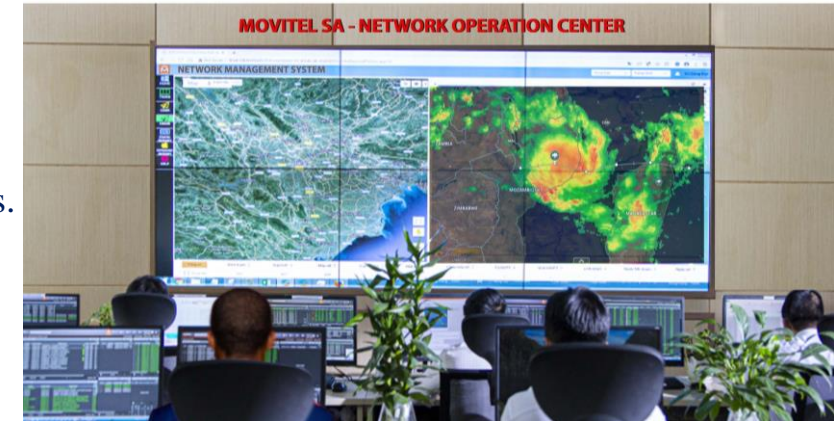
Establishment of a storm and flood Operation Center (NOC)

- General Executive Officer: CTO of company
- This division headed by CTO and stayed in directly affected Province to control operation activities.

Predict the path of the storm, then check stations on the route that may be affected by the storm.

Reinforce backbone stations and stations at high risk of impact.

Prepare materials for rescue the site, network



IMPLEMENTATION PLAN TO RESPOND TO STORMS AND FLOODS



After have natural disasters (floods and storms) come

Rapid rescue the network status:

Based one the specific the problem of site/link, we send correct the team to rescure

- About Power, Electric: send taskforce ME.

- About transmission: send taskforce TSS.

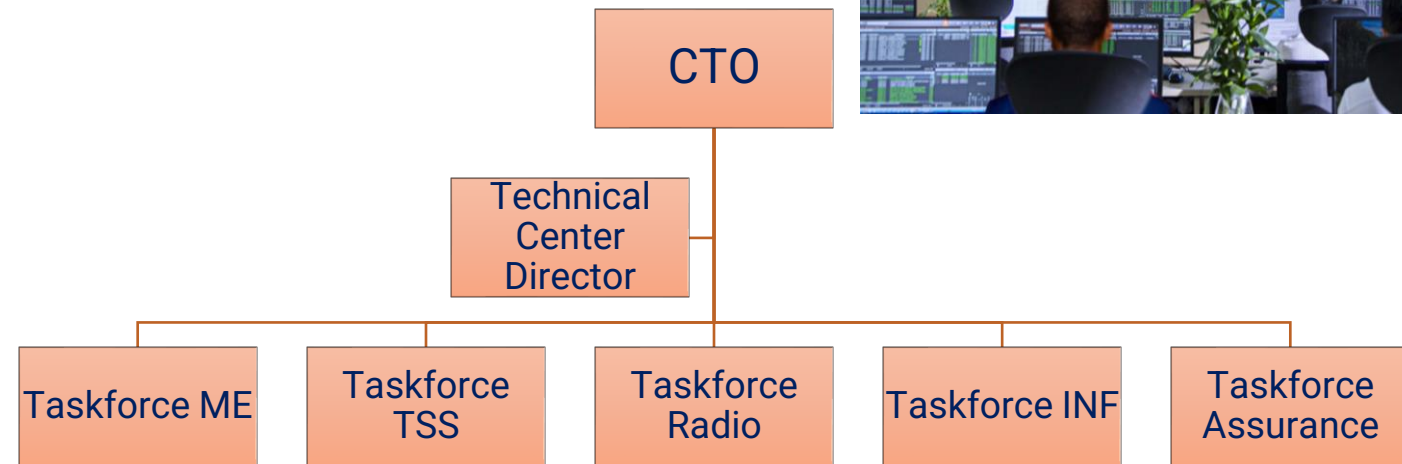
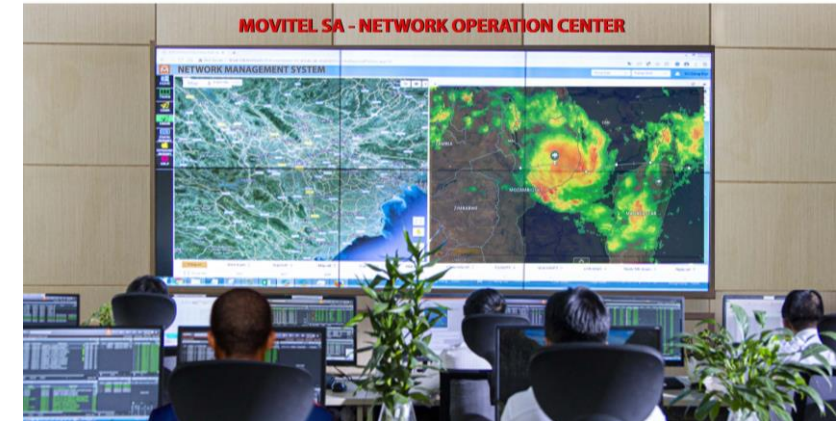
- About infractrature: send taskforce INF (tower, roof, minishielter)

- About radio equipment: send taskforce Radio.

NOC summarize where is the most important place to rescure and control the team come to fix has priority.

NOC evaluate and monitor the scenario of weather (flood after storm, broken road...) and control the team if accur new event can impact the network.

Audit and optimize the network after climate situation and daily activities are normalized.



Play Digital

Work Digital

Digital Health

EXPERIENCE

Before have natural disasters (floods and storms) come

Reinforcement infrastructure for reduce damage by disaster

Ensuring sparepart equipment to rescue and store equipment in the area of incident.

Design the network for new situation.

Sharing the infrastructure with other operator.



THANK YOU

Mamana
 Kia Ora
 Grazie
 Kiitos
 Chokrane
 Jusoaxar
 Dankon
 Maake
 Ua Tsaug Rau Koj
 Mochchakkeram
 Terma Kasih
 Multumesc
 Merci
 Raibh Maith Agat
 Cam on
 Obrigado
 Asante
 Matondo
 Dank Je
 Niringrazzjak
 Origado
 Mochchakkeram
 Obrigado
 Matondo
 Salamat
 Nirringrazzjak
 Matur Nuwun
 Chokrane
 Raibh Maith Agat
 Kiitos
 Salamat
 Arigato
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 Raibh Maith Agat
 Merci
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 Viraka