

# Launch of the Tanzania Educational and Research Network (TERNET)

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Dar es Salaam, Tanzania

*Bandwidth Management (or Managing Traffic  
Jams in Dar es Salaam)*

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# *Reflection*

- “We know that we have it in ourselves as Africans, to change all this [*the challenges we face*]. We must assert our will to do so. We must say there is no obstacle big enough to stop us from bringing about an African renaissance.”

– *Nelson Mandela*



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# The sobering reality...

- Buy 2Mbps @ USD6,000 or \$3,000/Mbps-month...
- Provider oversells the international link: Your international access is about 80% of the capacity you buy... 1.6Mbps.. (you do not know this...)
- Poor service guarantees, frequent outages, leaving you with 1.2Mbps effective... (No service level agreement or penalties)
- Spam and viruses use 40% of your bandwidth, leaving you with 0.72Mbps
- Music, films, etc, take 60% ... you have 0.3Mbps inefficiently used for repeated downloads of the same material...
- Your price is then actually \$18,000 per Mbps



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# What causes Traffic jams in Dar (1)?

- **Blank Slide for the Audience to fill...**



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# Eliminating jams...: Policy

- **Laws rest on policy. For laws to be effective, the underlying policy must be well understood and accepted by the population.**
- **It is the policy of the City to ensure that residents have safe and efficient access to different parts of Dar to carry out their day to day activities.**



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# Eliminating jams.: Laws and Regulations

- **Laws bring policy into effect. They are set by Parliament**
- **Regulations operationalise the laws by spelling out specifics. They define what is acceptable on the roads – what types of traffic, what types of vehicles, condition of vehicles, tonnage of vehicles, etc.**
- **Do not forget that even pedestrians have rights of defined usage, but they are also governed.**
- **Policy and laws need to explained repeatedly to people - the why, the what, and the penalties**

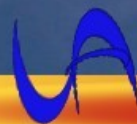


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# Eliminating Jams...: Infrastructure

- **Make sure existing roads are efficiently used. Roads are expensive to construct – simply building bigger roads is not the solution.**
- **Re-design the road system to create smooth flows; Traffic lights; Eliminate bottle-necks.**
- **Create bus and taxi lanes.. Do not forget cyclist lanes and pedestrian walkways.**
- **Establish the reason why people travel to the city center. Create satellite towns close to the residential areas to cater for needs.**



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# Eliminating Jams.: People

- **Train the traffic policemen well. They should understand the policy and laws, and enforce laws in a manner that does not inconvenience legal road users.**
- **Train all road users so that they are good and considerate drivers who understand the law.**
- **Make efficient use of each vehicle. A 2,500cc matatu makes more efficient use of a road than a 4,000 cc vehicle carrying one person.**
- **Keep goods vehicles as well as low payload passenger vehicles off defined roads at defined times.**
- **Do not permit markets and hawking on the roads.**



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# **Eliminating Jams..:**

## **Monitoring and enforcement**

- **Manage traffic holistically and adaptively – not one junction at a time: coordination.**
- **Monitor traffic flow at all times and issue bulletins to road users and traffic police**
- **Put in place courts that administer justice effectively, transparently..**
- **Establish weigh bridges...**
- **There will be VIP motorcades occasionally...**



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# Summary (1)

- **BMO Requires a proper ICT policy environment as the starting point. BMO policy is an element in the ICT policy.**
- **Carry out an objective situational analysis: How are you using your bandwidth? What are the causes of inefficient usage? How much bandwidth do you really need?**
- **Audit the network and redesign as necessary**
- **Put in place an acceptable use policy (the law) that users understand, including penalties**



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## Summary (2)

- **Build capacity – internet literacy for the general user; specialised training for technical staff**
- **Use caches (internal demand) and mirror sites (external demand)**
- **Implement spam filters and anti-virus systems**
- **Monitor network traffic and all links (internal and external) all the time so that policy, regulation and enforcement are informed.**
- **Ensure good service level agreements and enforce them**



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