RailPro

November 2017

Africa needs innovative thinking and doing.

Solutions to Alleviate Mobility Poverty:

The RailBus™ Bi-Modal Commuter

Public Transport for South Africa

SAB Foundation SOCIAL INNOVATION & DISABILITY EMPOWERMENT AWARDS 2017

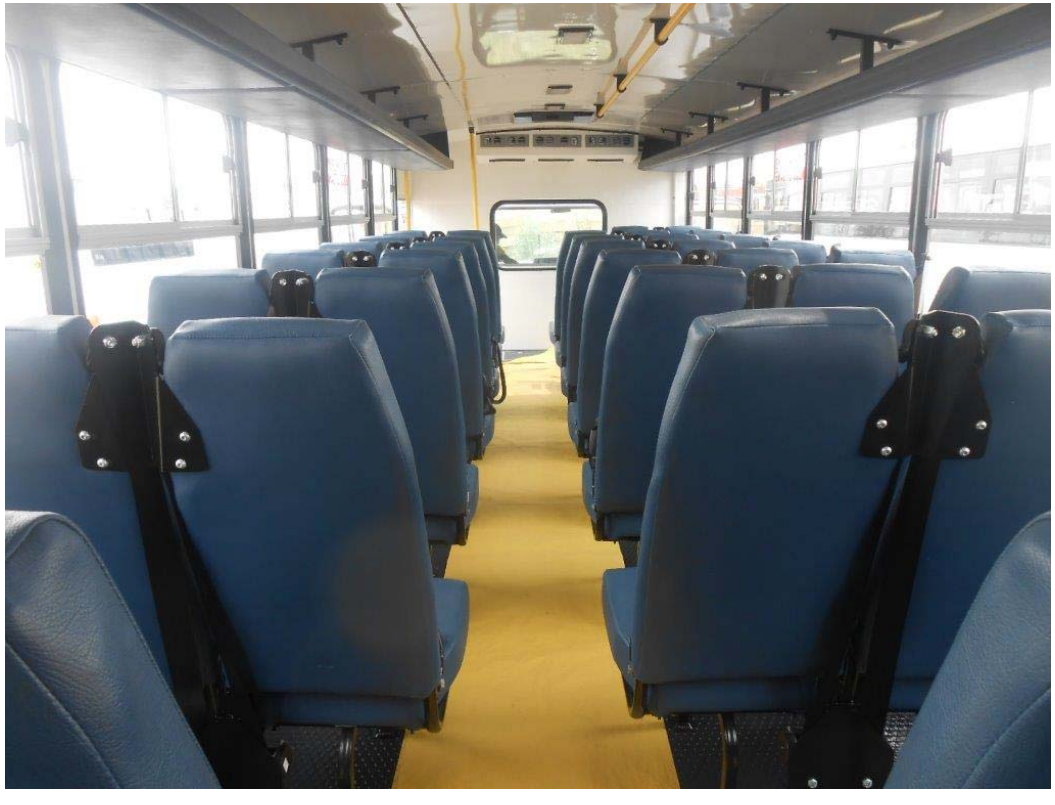
Winner of the SABS Design Excellence Awards & Winner of the 2017 SAB Social Innovation Award

SABS DESIGN EXCELLENCE AWARDS

This is what we do….drive a truck on *rail* and *road*

Our vehicles are used to fix and build the railways all over Africa: Cranes, freight, tankers etc

RailBus – Conversions carried out on Isuzu Chassis



Conversions carried out by Busmark in South Africa.

- 43 seater chassis conversion (above)
- 55 seater chassis-cab conversion (left)
- SABS compliant

- Isuzu supporting RailPro in South Africa.

Complies with:

- Transnet Freight Rail Infrastructure Specification BBC0944 Version 2: Perway Maintenance Road/Rail Vehicle;
- Compulsory Vehicle Standard issued by the SABS;
- Road Traffic Act No. 29 of 1989 and Regulations as updated;
- SABS 1563:1992 Rollover protection.

Mixed-use Hop on / Hop off Road Rail Vehicle

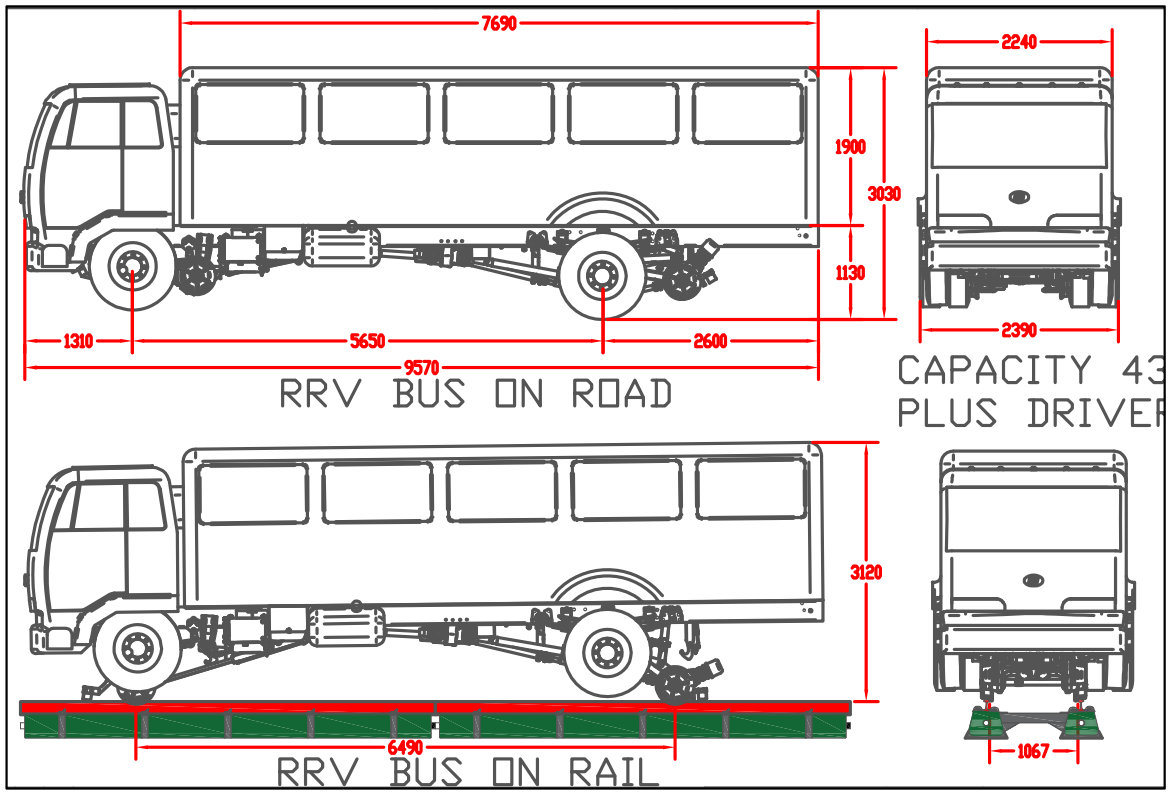
A Road/Rail vehicle ("RRV") is a vehicle that can operate both on rail tracks and on a conventional road. These are vehicles are widely used by network operators to maintain their rail infrastructure.

There are many industrial freight adaptations of RRVs such as tankers, crane trucks and flat deck carriers. See www.railpro.co.za

A new adaptation is a people mover or RailBus™ **("RailBus ™").** The RailBus™ is built on standard road vehicle chassis, with approved coach body designs, conforming to all Safety and Regulatory requirements. The RailBus™ seats up to 43 passengers, excluding the driver and conductor.

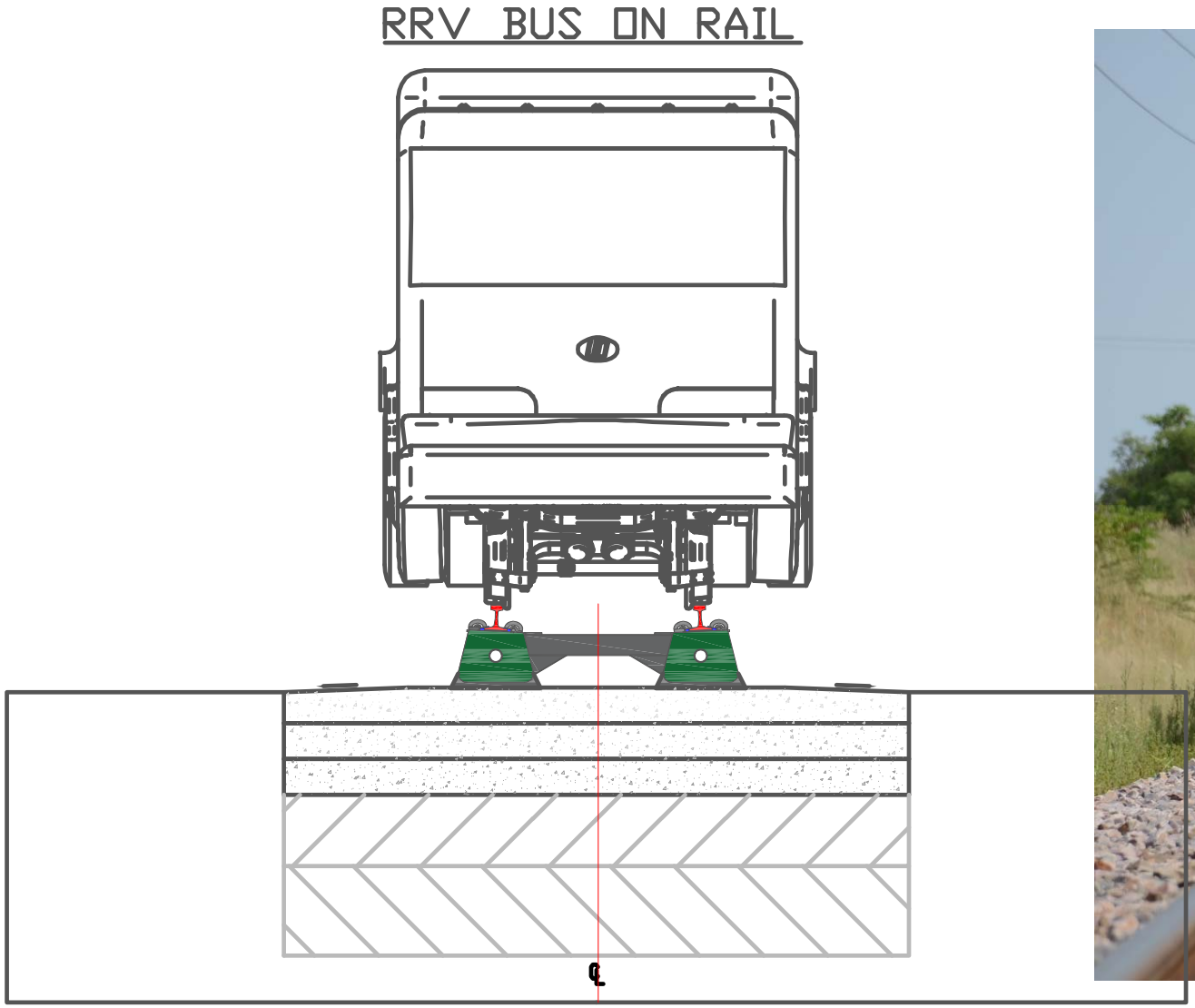
In a commuter transit market with discrete / small parcel traffic demand, the concept works well, where:

- Passenger numbers are small.
- Rolling Stock is expensive.
- Rolling stock and loco's spares and maintenance are expensive.
- Fuel consumption of trains is substantial (circa 6 litres diesel per km).
- RailBus fuel use is lower (up to 6km per litre of diesel).
- Truck maintenance is cheaper.
- Ability for RailBus™ to "mount" and "dismount" the rail.
- Procurement of RailBus™ is easier than trains, and
- Remote communities benefit on an affordable basis.



More information at www.railpro.co.za

Mixed-use Hop on / Hop off Road Rail Vehicle (RailBus™ RRV)



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What is “Mobility Poverty”?

African conurbations are growing. Pressure on infrastructure is exacerbated by rapidly increasing car ownership. Inhabitants of African cities, with large, impoverished satellite communities, are often poorly served by infrastructure, and suffer “Mobility Poverty.”

There is a high effective tax on hourly earnings that the time and monetary costs of commuting impose. “Spatial mismatch” is exacerbated where job seekers are located a long way from employment opportunities. Long commutes to formal sector employment should make working in informal self-employment more attractive – but the evidence shows the informal sector remains small. So the Development Impact of linking workers to employment is pronounced. Key variables that define Mobility Poverty in the urban context:

1. Access to jobs and markets; people are not mobile on an affordable basis.

2. Access to healthcare, education, and food and water.

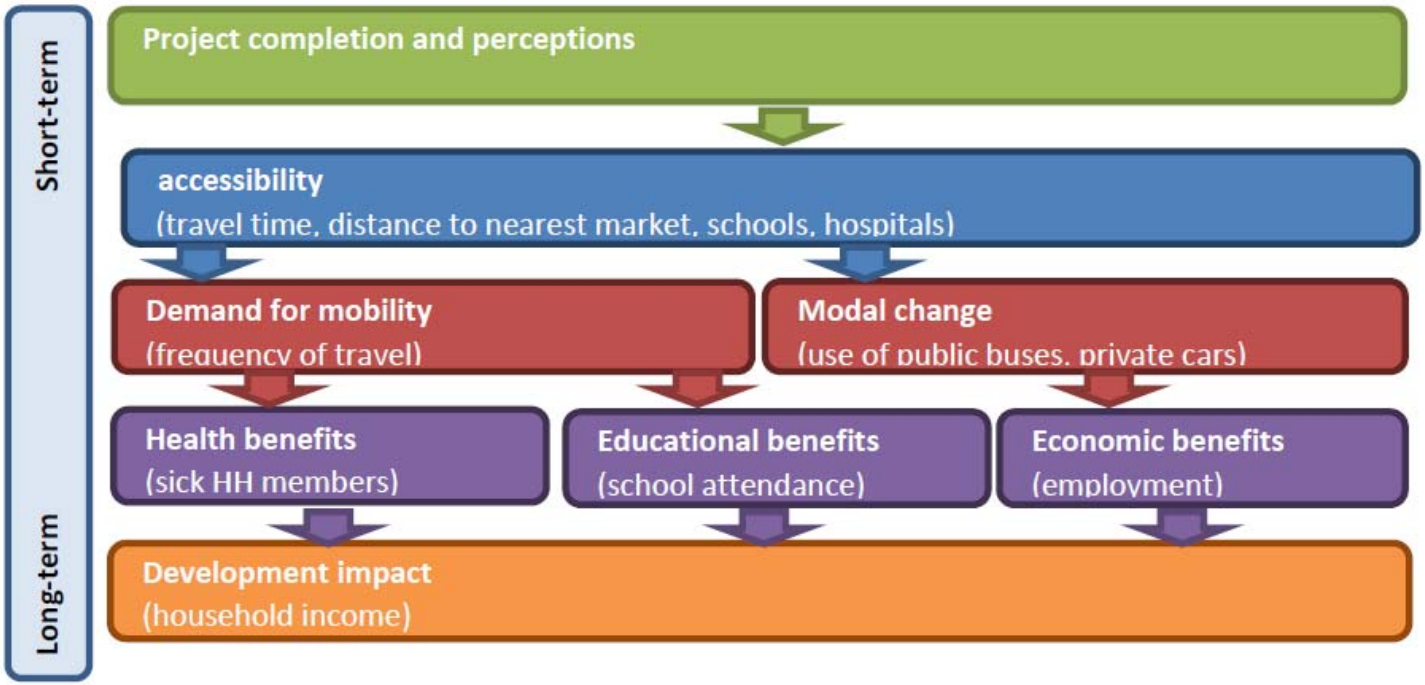
Transportation costs impact wellbeing;

(a) Reducing transportation costs leads to greater access to markets,
(b) and a decrease in both trade costs and price gaps.
(c) This further affects input and output prices of goods and services, and
(d) facilitates economic diversification.

New roads don’t alleviate the problems. There is limited access to capital in Africa.

Pragmatic, innovative solutions are required.

Deliver Affordable Mobility to Achieve “Development Impact”



Underutilized Narrow Gauge Rail

Rail Lines run are underutilised – in the urban and rural environment. RailBus™ can use this line to liberate tens of thousands of urban poor from an effective tax on mobility

Rural areas – thousands of km not used.

Social Impact Bonds – Example: Road Safety

Recent road traffic accidents (RTA) in South Africa have involved mini-vans carrying children.

In South Africa, RTA data might underpin "Social Impact Bonds" that would reimburse impact capital funders who identify routes that reduce the amount of RTAs.

South Africa: Rayton-Mamelodi, East Pretoria

The **Cullinan-Rayton-Mamelodi-Pretoria** line has been allocated to RailPro to run a working pilot project which will test:

1. RailBus™ seating and configurations – luggage, capacity, getting on/off etc.
2. Integration with regulatory systems.
3. Collecting fares – test swipe card / phone payment systems.
4. Testing the bi-modality function – getting of the line and ending at a road based terminus.
5. Standard Operating Procedures – crossing road junctions, station procedures, etc.
6. Price Point and operational costs, including maintenance regimes.
7. Marketing strategies – bring policy makers, clients to assess.
8. Stakeholder interaction – especially with local taxi operators.
9. Financing strategies.

Mozambique: Maputo

Maputo offers an immediate opportunity for a multi-modal freight and passenger transport solution because:

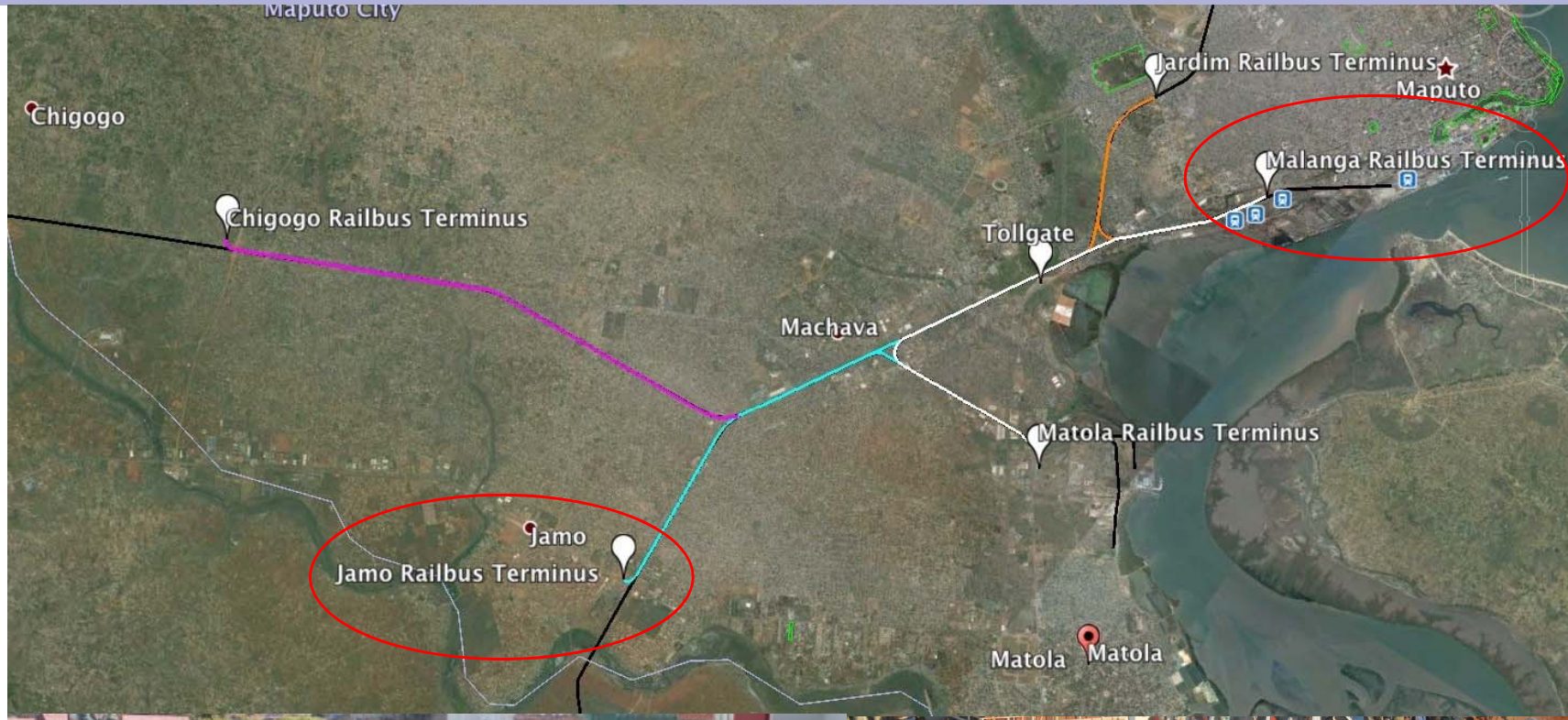
1. We have been offered access to the rail. We have good working relationships with the Mozambiquan Minister of Transport and rail parastatal CFM.

2. Lack of adequate road systems.

3. Use of existing Railroad – used by only 4 trains per day (run by CFM.)

4. Worker concentration in Jamo and Chigogo. Circa 200,000 commuter journies per day. Lacking public transportation to town centre.

5. **Proof of Concept**: Initial run from Jamo to Malanga. One RailBus.

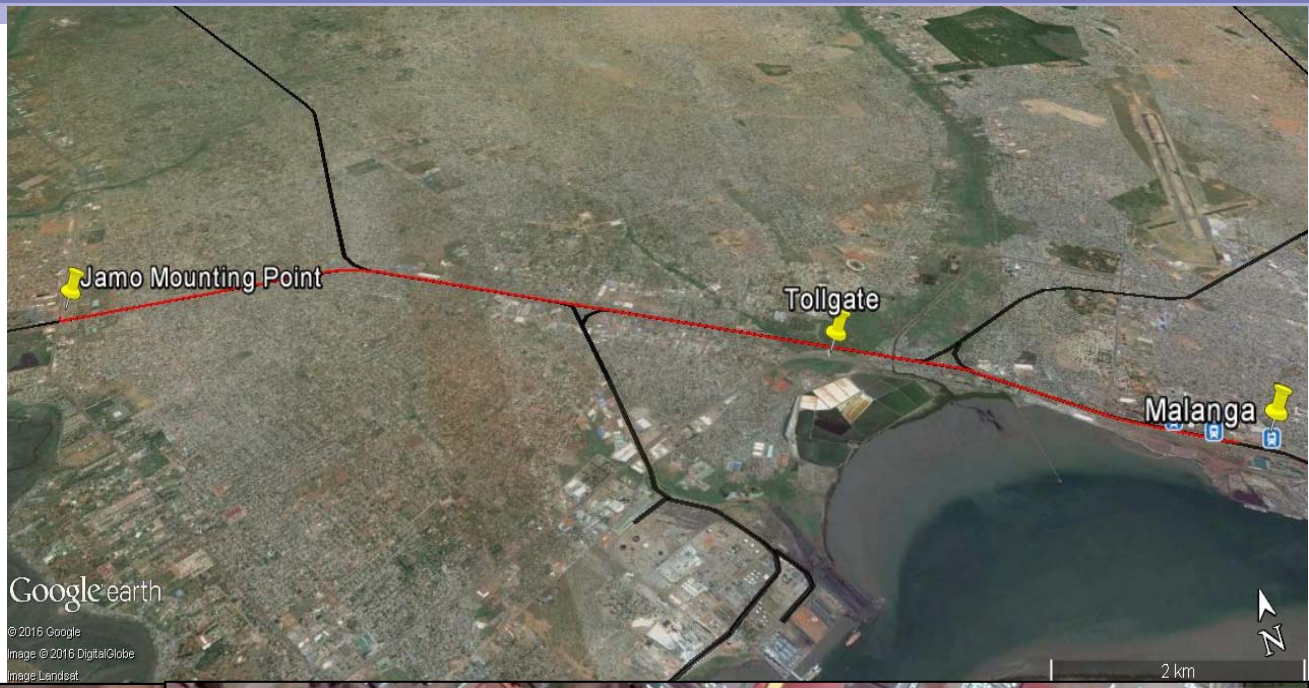


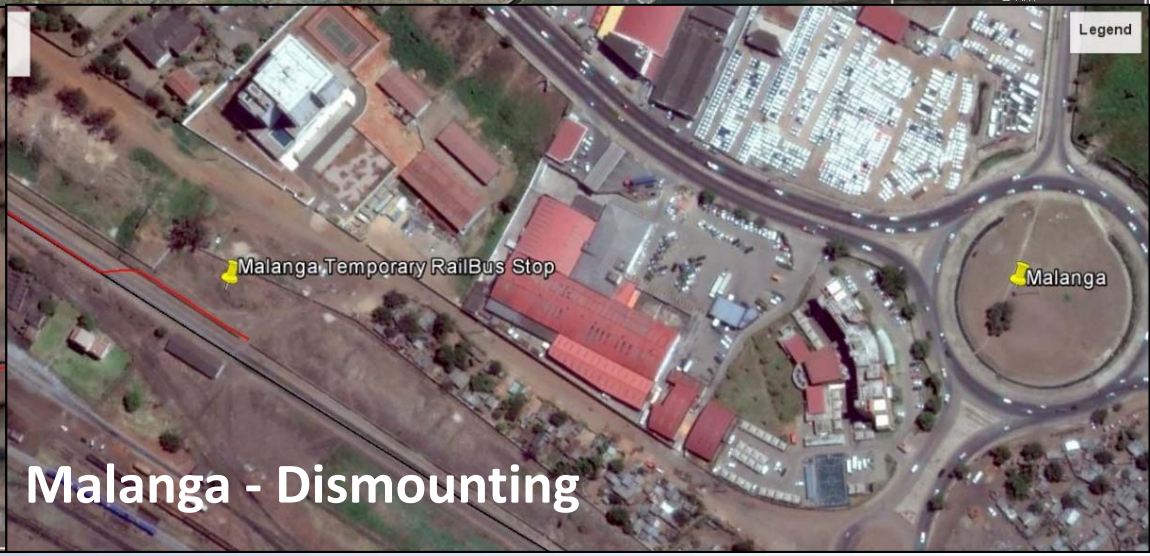
Jamo to Malanga: 60,000 Passenger Journeys Per Day

Maputo: Jamo to Malanga – Proof of Concept:

- Existing Rail Line.
- 13km.
- 4 trains per day.
- Road network taking 60,000 passengers per day.
- RailBus will travel down the track and return by road or rail.
- “Turnouts” will be affixed to start and end points.
- Price point will be established.
- Operating procedures refined.

We aim to be disruptive, and to make things happen!!



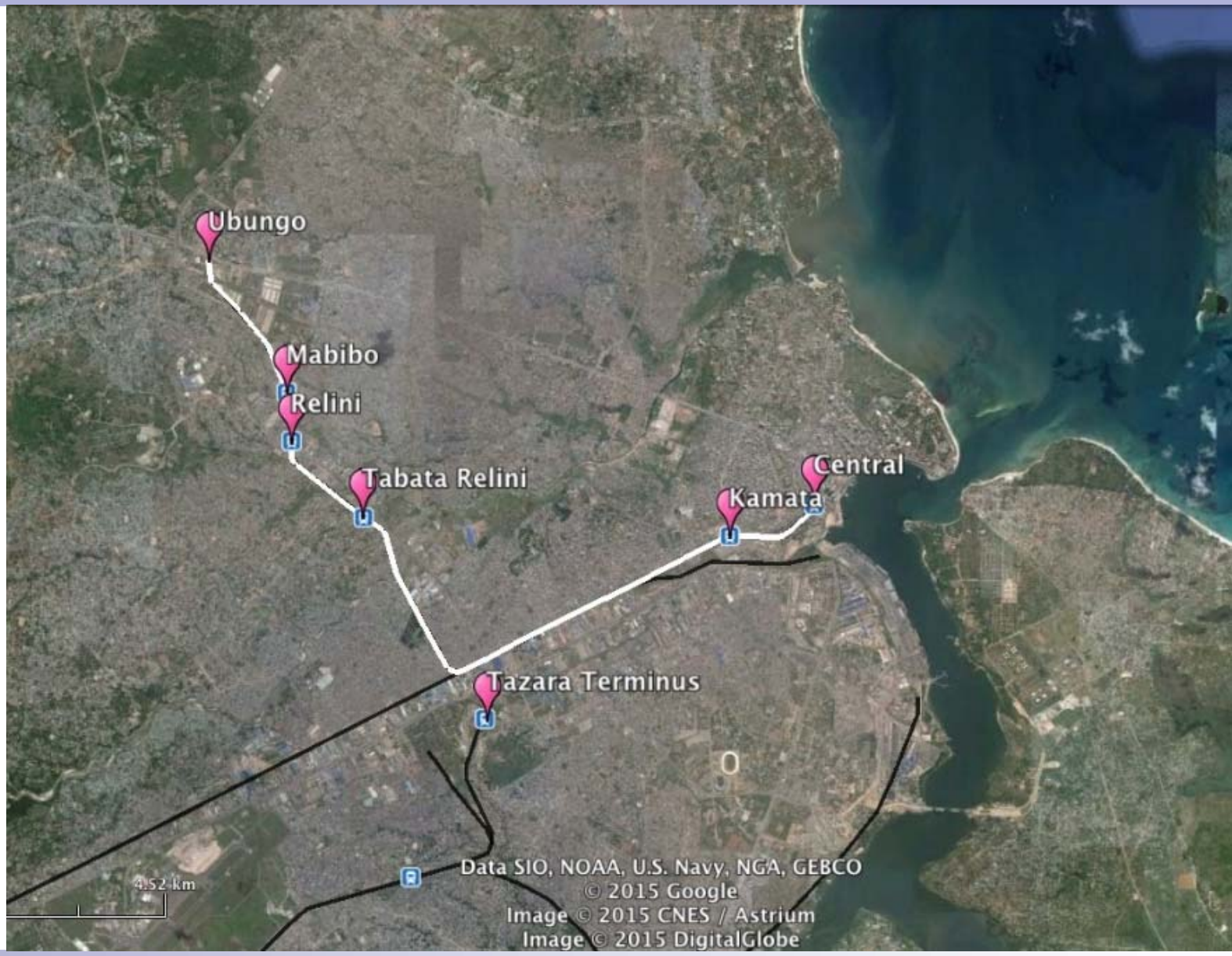


Tanzania: Dar es Salaam

The model is equally relevant across the continent, for example;

Dar es Salaam case:

1. A dilapidated 1,000mm gauge rail line.
2. 12km commuter spur line from the Central station towards Ubungo in Dar es Salaam.
3. This line starts on the Central line (Dar - Morogoro - Mwanza) alignment at Central Station and runs for approximately 5 km to the junction opposite Tazara station. From there it turns north to Mabibo Station and can even be extended beyond to Ubungo.



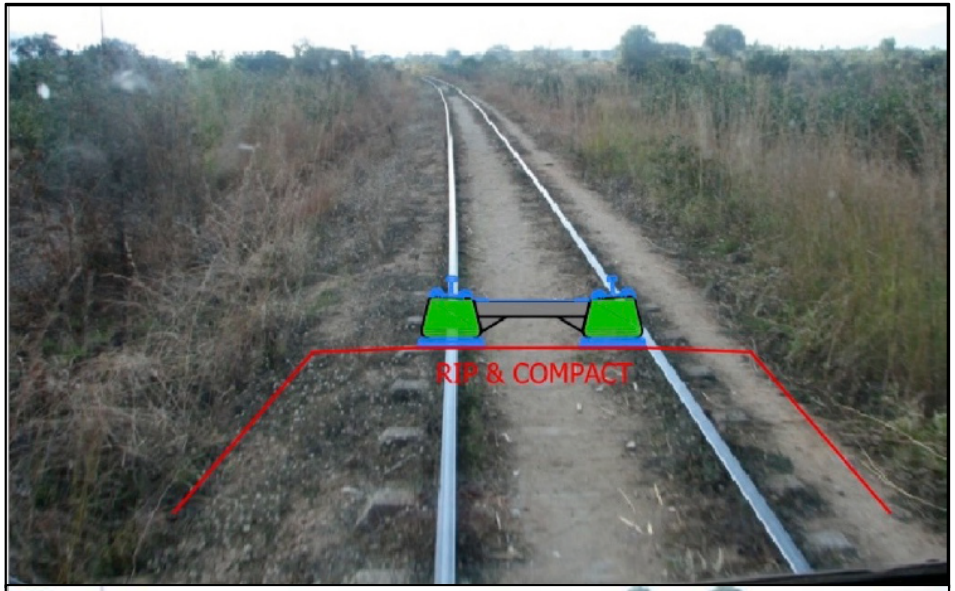
RailPro – “Uber” style communications with GE

General Electric Digital is pioneering the “Industrial Internet of Things” technology. Connectivity and the “digital transformation” is especially relevant to RailBus™ operating in the urban and rural environment.

- RailBus™ can utilise technology that is cheap and simple and designed to purpose by GE. It runs off the GSM/IoT network.
- Systems can safely control “mixed” rail traffic.
- A local network traffic control system can be designed to route traffic safely, delivering location & speed, and programmed into the vehicle “onboard diagnostics”, including proximity radar & braking systems. The network will interface with passengers, and client companies.
- A small and simple to understand “touch screen” computer is placed in the RailBus™. It links in with the network control system in a central operations room. Standard communications such as radio’s act as a “fail-safe.”
- The network can inform passengers in real time when the next bimodal RailBus™ is due, via a standard LCD screen.

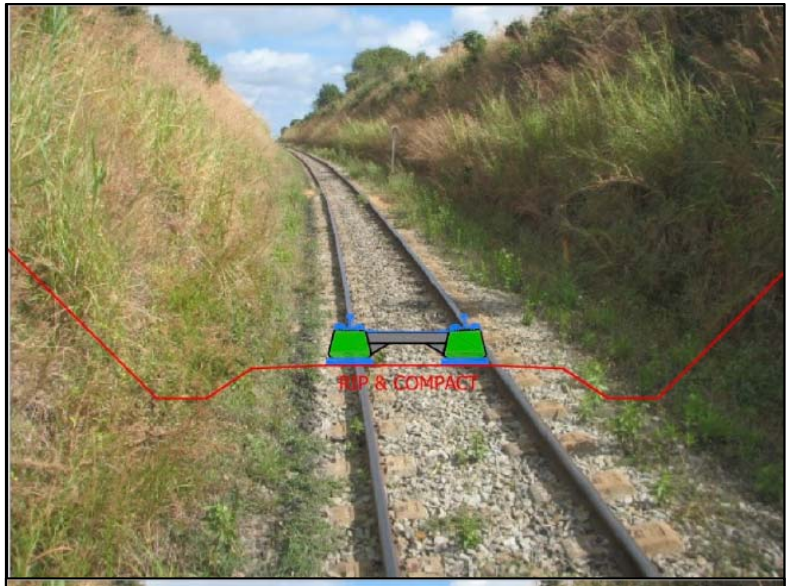
The Industrial Internet of Things www.ge.com/digital/

Refurbishing Rail Line with TMT is cheap



Tubular Modular Track (TMT) versus Conventional Ballasted Track (CBT)

- Reconditioning the track requires less width, so can fit on the existing narrow residual embankments and cuttings from “colonial” times.
- Less displacement of population living close to the track.
- Strip the old rail out. Reintegrate the existing ballast into refurbished railroad, lay the TMT beams, reintegrate the old rail (where possible) – lifts the axle weight from original 14tonnes to 23 tonnes.
- TMT can be designed to have “structural integrity” over 10m – thus reducing the need for special “culvert” engineering.



More information at www.tubulartrack.co.za

TMT - In beam Power and Fibre Optic

Tubular Track can carry Fibre Optic and power lines in the rail beam. The Track can also carry advertising.

More information at www.tubulartrack.co.za

TMT - Level Crossing and RRV “hop on fishbone”

Turnouts, repairs, and level crossings all fabricated by Tubular Track.

Allows damaged rail to be quickly repaired, and new, cheap rail to be implemented to carry the RailBus.

More information at www.tubulartrack.co.za

Team

RailPro Director: Ed Magan is British national and entrepreneur. Ed had a successful 10 year career in the financial advisory sector, working for London based private equity fund, Chelsfield Partners. Ed was responsible for overseeing private placement investment and deal origination for international projects backed by corporates, high net worth individuals and sovereign wealth funds. Ed subsequently launched his own African focussed business focussed on development and integration of new technologies in Africa. Ed holds an MSc in economics from Trinity College, Dublin.

RailPro Director: Ian Ross is South African national, trained as a mechanical engineer. Ian established a contract engineering business from 1984, serving clients such as Eskom and Sasol. Ian was engaged in beneficiating copper in central Africa exporting to offtakers such as Falconbridge. Ian acquired Transvaal Mining and Finance Company Ltd from Gencor, restructured and sold the business, and subsequently acquired a platinum refinery in South Africa, and again sold the business to a listed company. Since 2006, Ian has continued to focus on innovative engineering projects.

RailPro Head Engineer: **Hannes Fourie** is a South African national. B. Eng. (Mechanical) (With Distinction) – 1983 University of Pretoria. M. Eng. (Mechanical) (With Distinction) - 1985, in the field of Structural Strength and Dynamics University of Pretoria. Hannes is the winner of numerous awards, and one of the leading engineers in South Africa, Hannes was also at one time a transmission engineer for Lotus formula 1 racing team.

Director Isuzu Trucks South Africa: Michael Coney. Michael is a director of Isuzu Trucks in South Africa.

Advisor: Jaap van der Merwe - 30-year rail veteran, entrepreneur, university lecturer; 16 years in engineering, IT, and strategic marketing with Transnet Freight Rail ("TFR") in South Africa and 14 years as a supplier to the rail sector in South Africa, Botswana, Mozambique, Lesotho, Brazil, and Australia. Principal, T-Track Global.

Advisor: Dr Wynand Pretorius - Involved in transportation planning, project management and policy formulation for more than 25 years. Former Professor in Transport Economics at University of Johannesburg. Former Advisor to Cosatu's Investment Arm (Congress of South African Trade Unions). Advisor to Good Earth Power, Oman. Advisor to Minister of Transport, Mozambique.

RailPro

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