Developing a roadmap to identify companies that can benefit from using bimodal freight transport.

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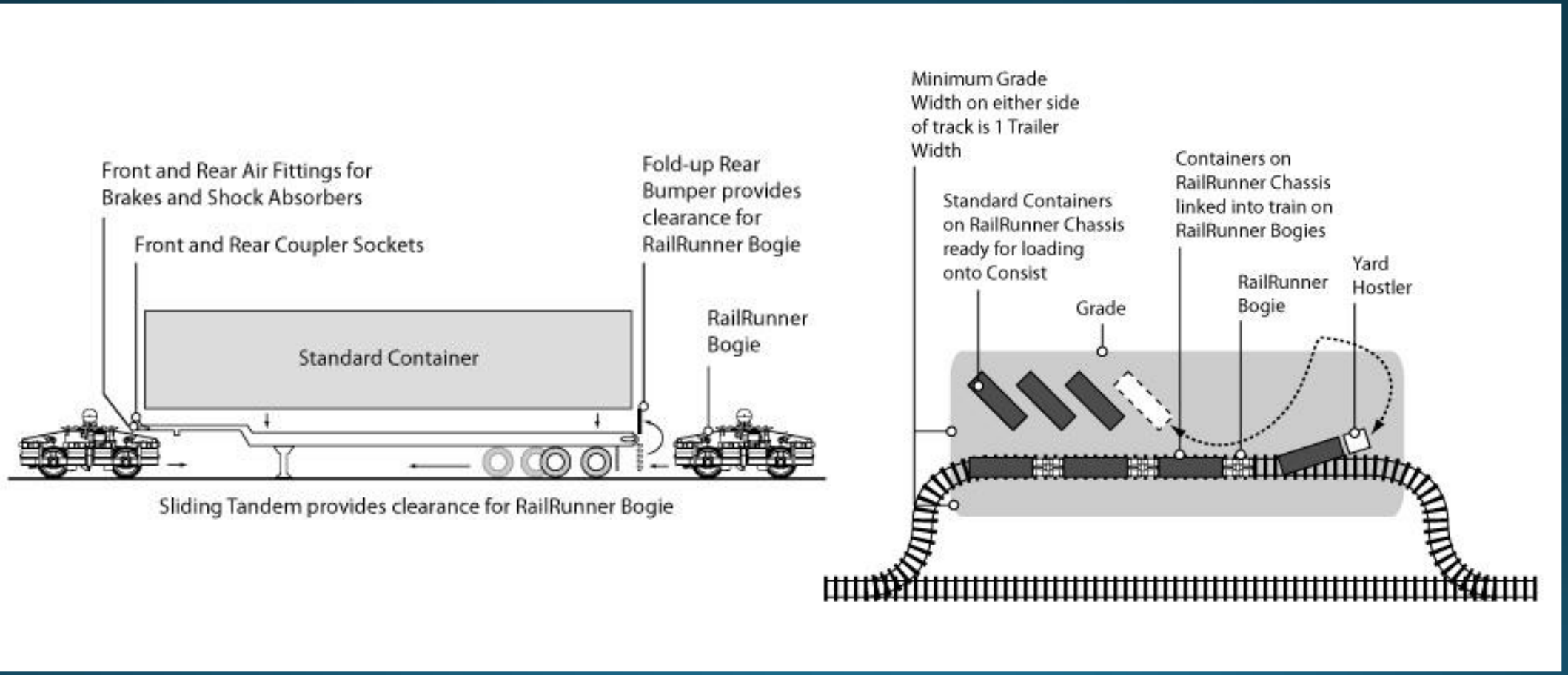
Background

- Long distance transport is dominated by road transport in SA.
- High externalities: accidents, congestion, road maintenance, high logistics costs, CO_2 emissions etc.
- Ideally trucks would do collection and distribution.
- Trains would do long distance freight transport.
- South Africa has not seen a successful bimodal solution.

RailRunner technology



Positives of RailRunner vs traditional bimodal solutions.

No need for cranes or expensive equipment.

A train with forty trailers can be assembled in four hours.

Container doors cannot be opened in transit.

This type of technology has been used in United States, Canada, United Kingdom and recently India.

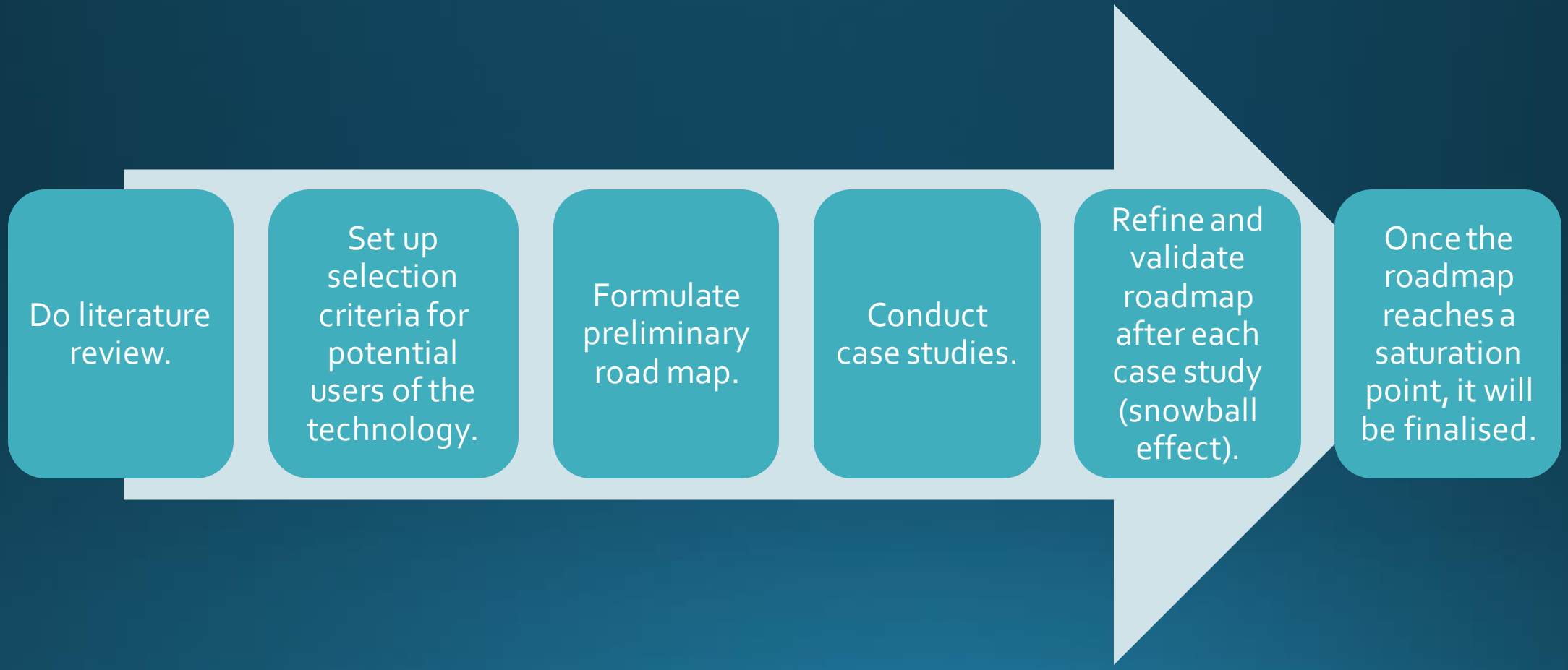
Purpose

Develop a roadmap that help identify users that can benefit from using the technology.

The road map could be used by freight owners and logistics service providers.

It will help potential users determine the benefits and the drawbacks of using the technology as well as the potential return on investment.

Research approach



Literature review conclusions

Train characteristics	Road characteristics	Train commodities	Positives of road to rail	Multimodal challenges	Transport criteria/requirements
Long distance	Flexible	Bulk	Less traffic	Sidings and infrastructure	Reliability
Large/high volumes	Door-to-door	Mining	Less pollution	Flexibility	Time / punctuality
		Raw materials	Less accidents	High investment costs	Frequency
		Agriculture (Grain)	Smaller environmental impact	Reliability	Low price / cost
		FMCG	Reduction of CO_2	Frequency of services	Flexibility
		Fuel	Lower externalities		Safety/security
		High value goods	Safe (less accidents)		

Noteworthy aspects highlighted in green

Preliminary selection criteria

Commodity types.

- FMCG (Fast Moving Consumer Goods).
- Agriculture.
- Other (to be determined through case studies).

Distance between origin and destination.

- Long distance (>500km).
- Origin and destination close to rail terminal.

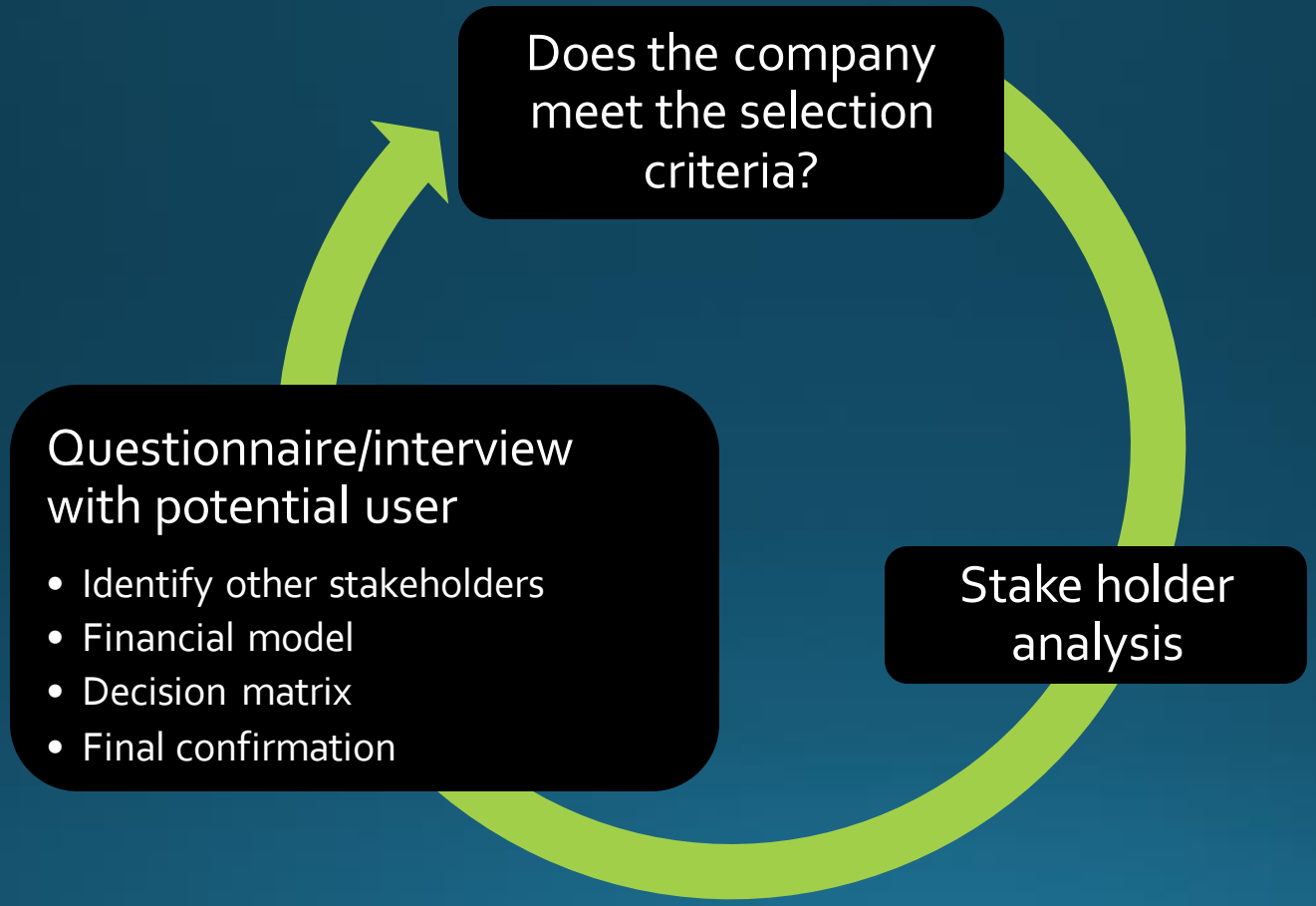
Corridors in SA and volumes on those corridors.

- Two corridors with highest volumes:
- Cape-Gauteng corridor (1500km).
- Natal-Gauteng corridor (600km).

Transport criteria (decision matrix).

- Preliminary decision matrix is used at first.
- Decision matrix from case studies will then be used.

Preliminary road map



Financial model

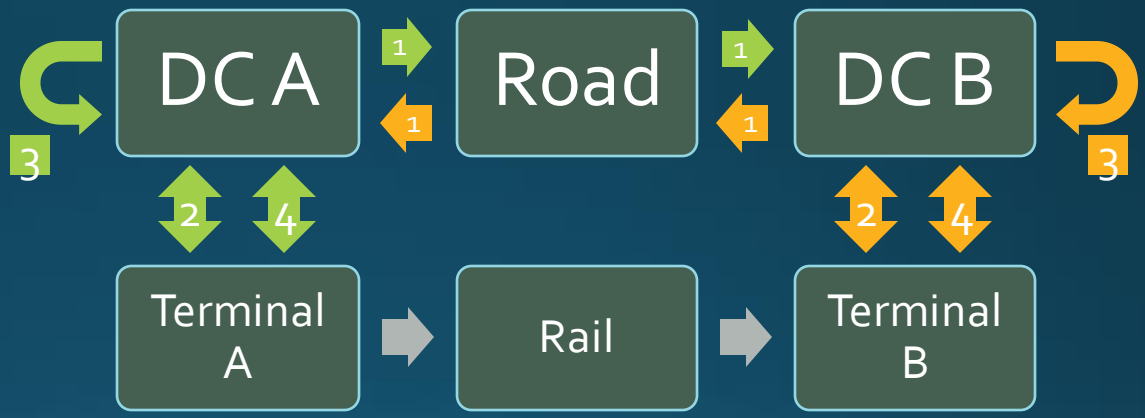
Transport method 1: DC-to-DC transport

1. Primary mover (Prime Mover) moves **full** trailer from DC to DC via road.
2. Primary mover moves **empty** trailer from DC to DC/supplier.
3. Primary mover moves **full** trailer from DC/supplier to DC via road.

Financial model

Transport method 2: Catching your own pass

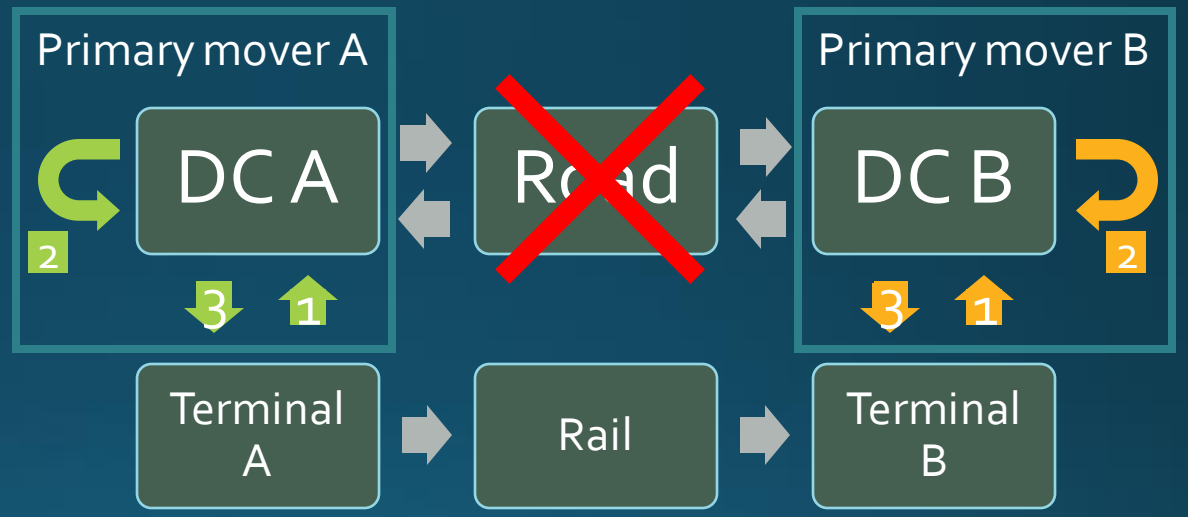
1. Regular trailer moved via road to DC.
2. Primary mover goes to terminal and takes RR trailer back to DC.
3. The two trailers are moved to other DCs/suppliers so that they can be refilled.
4. RR trailer is moved back to the terminal.



Financial model

Transport method 3: DC-to-Terminal transport

1. Regular trailer moved via road to DC.
2. Primary mover goes to terminal and takes RR trailer back to DC.
3. The two trailers are moved to other DCs/suppliers so that they can be refilled.
4. RR trailer is moved back to the terminal.



Decision matrix example

			Alternatives			
FMCG		Weight	DC-to-DC interlink	DC-to-DC 6 axel artic	Catching your own pass	DC-to-Terminal
Criteria	Reliability	5	4	4	5	5
	Time/punctuality	3	4	4	3	3
	Frequency of services	2	4	4	4	4
	Cost (Investment)	1	3	2	3	1
	Cost (TonKm)	4	3	2	4	5
	Flexibility	3	3	4	2	2
	Safety/security	4	3	3	4	5
Total		22	24	23	25	25
Weighted total			76	74	83	89

Complexity

- Multiple origin and destination pairs.
  - Multiple DCs and retailers.
  - Varying distances.
- Types of commodities.
  - Drinks.
  - Processed food.
  - Textiles.
  - Pharmaceuticals.
- Types of LSPs
  - Small (One or two trucks).
  - Large (One hundred trucks).
  - Different geographical focus.
- Vehicle configurations.
  - 6-Axel / 7-Axel
  - Box trailer.
  - Tipper.
  - Refrigerated.

Preliminary results

For moving 100 tons of freight on the Cape-Gauteng corridor.

Transport method	DC-to-DC	Catching your own pass	DC to Terminal
Vehicle type	Box trailer 6-axle Articulated		
Road KM	100%	32%	10%
Fuel usage	100%	39%	12%
Cost	100%	84%	77%

The road forward

- Validation of the financial model has started.
- Soon case studies will be conducted and the process will start.
- After each case study the road map will be updated.
- Each case study will also help validate the roadmap.
- Once enough case studies have been conducted, the roadmap will reach a point where no changes or additions are made after each case study.
- The road map will then be finalized.