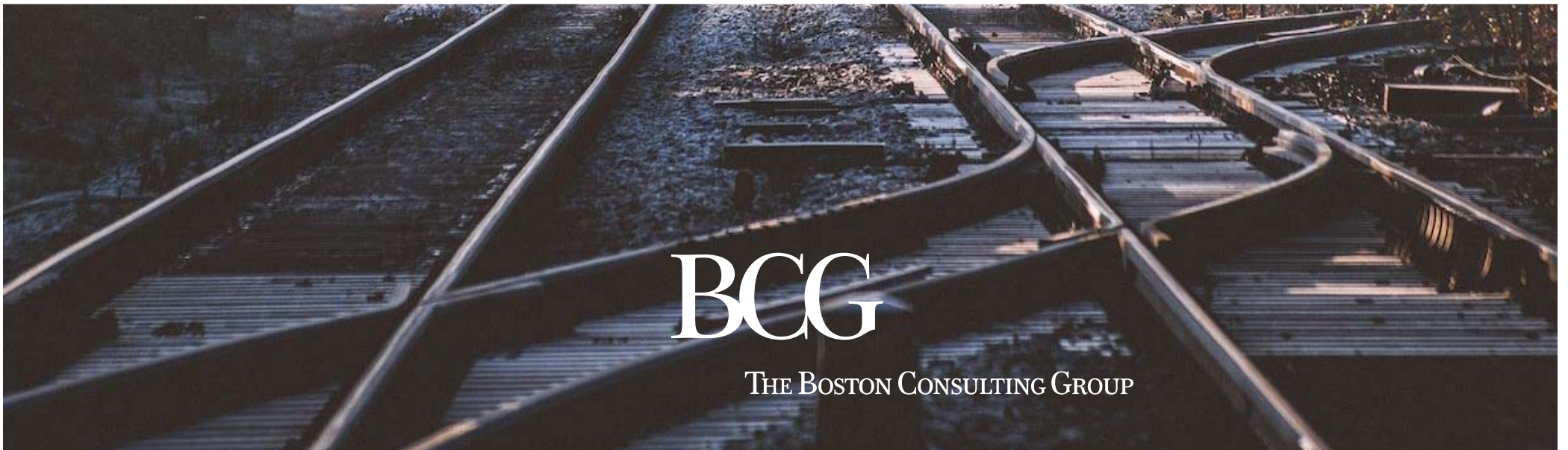




WILL THE DRIVERLESS TRUCK DERAIL THE FREIGHT TRAIN?

Rotterdam, June 22



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Agenda

- 1 Impact of digital technology on cost of the truck
- 2 Impact assessment on rail freight
- 3 Implications for rail freight companies

1 Two disruptions in the truck industry...

Driverless technology

Driverless technology has made dramatic progress during the last years

- Limited regulatory issues
- Limited cost issues
- Substantial technological issues in the last mile

While most attention is aimed at driverless passenger transport (Google-car), driverless truck initiatives are also arising

First applications seem fairly 'innocent'

- Eg, 'Platooning' reduces fuel costs (40%) with 10-20%

Platform driven load factor optimisation

Average load factors of trucks is currently ~ 60%

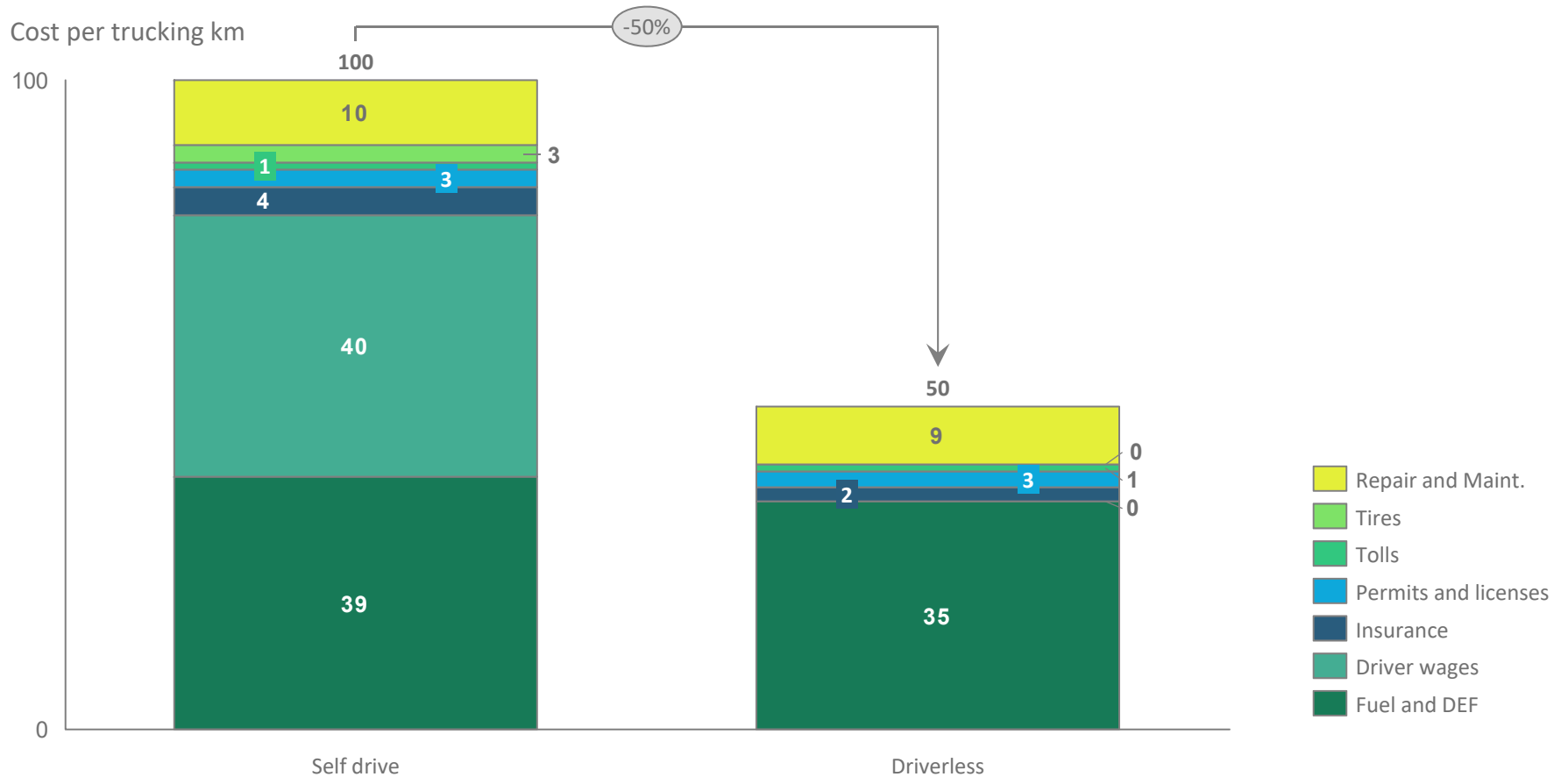
- Less than full truck size consignments
- Empty returns

Most platforms that attempted to increase the loadfactor have at best been moderately successful

- No real time matching
- No 'quality guarantee'
- Too scattered

However, Uber-like freight platforms (like Timocom and Telogis) do have the potential to increase truck load-factor to a much higher level by solving these barriers

1 Driverless technology may reduce trucking costs by 50%



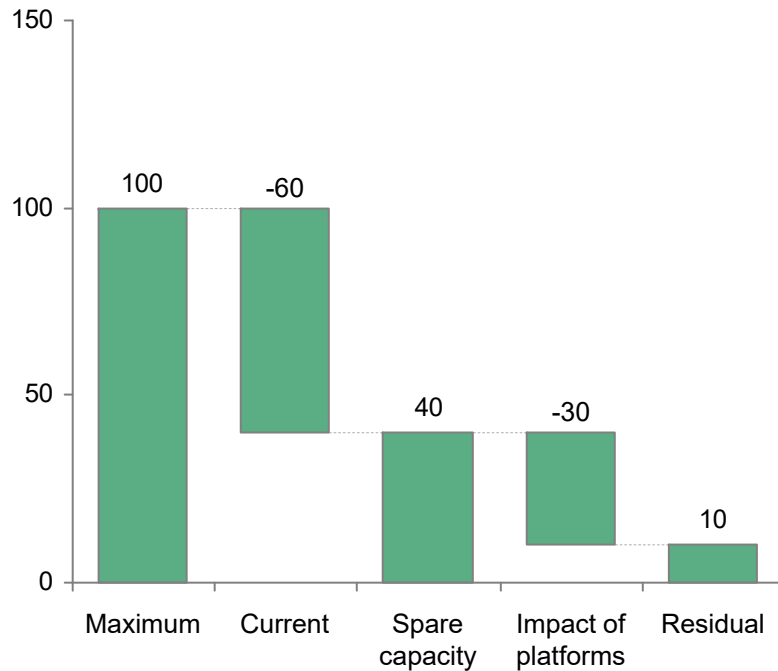
SPEED IS ALSO LIKELY TO INCREASE (FEWER DRIVER BREAKS, MORE POINT TO POINT)

Loadfactor platforms (Uber for trucks) may reduce trucking costs with another 5% (FTL) to 30% (LTL)

1

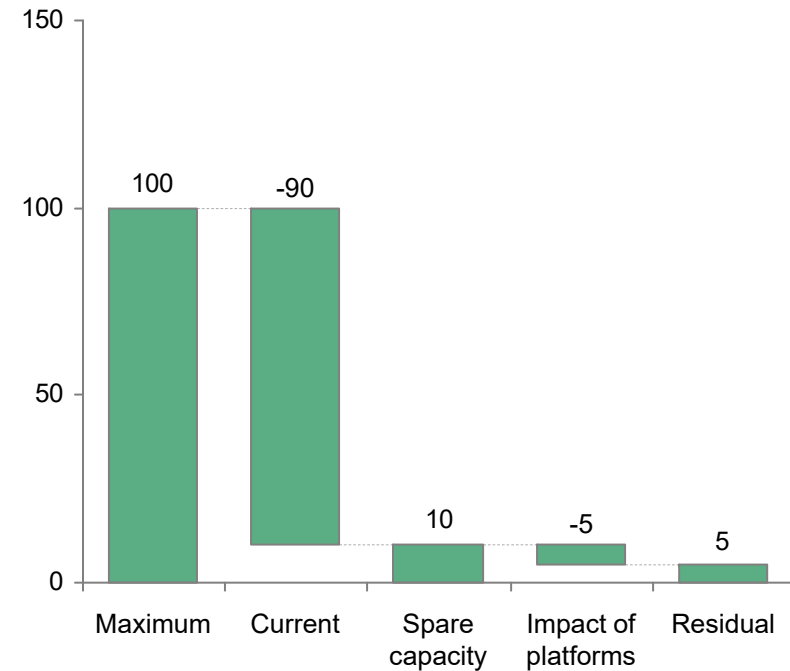
LTL trucks have 30% cost reduction potential

Loadfactor (% of total capacity per truck)

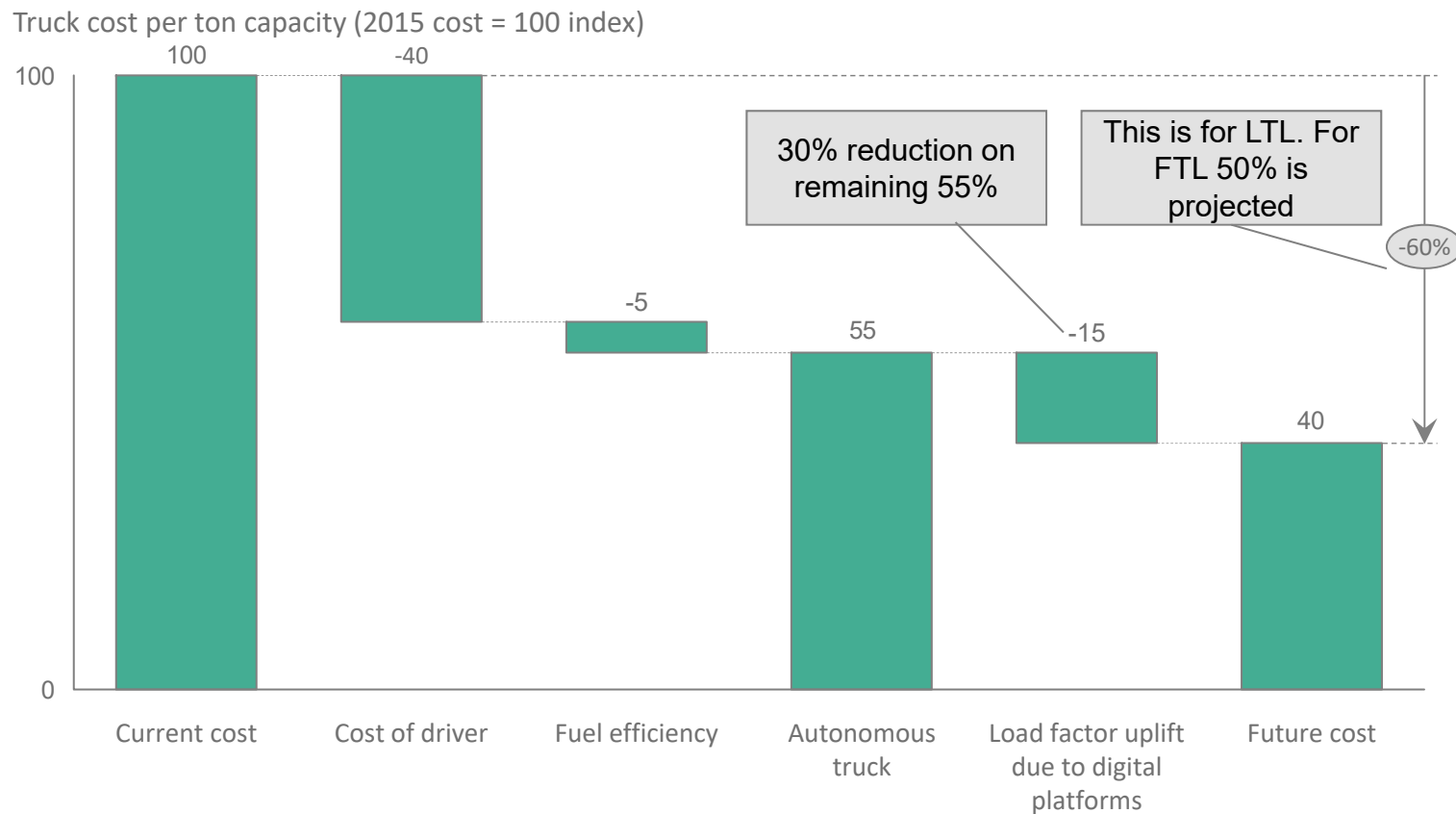


FTL trucks have 5% cost reduction potential

Loadfactor (% of total capacity per truck)

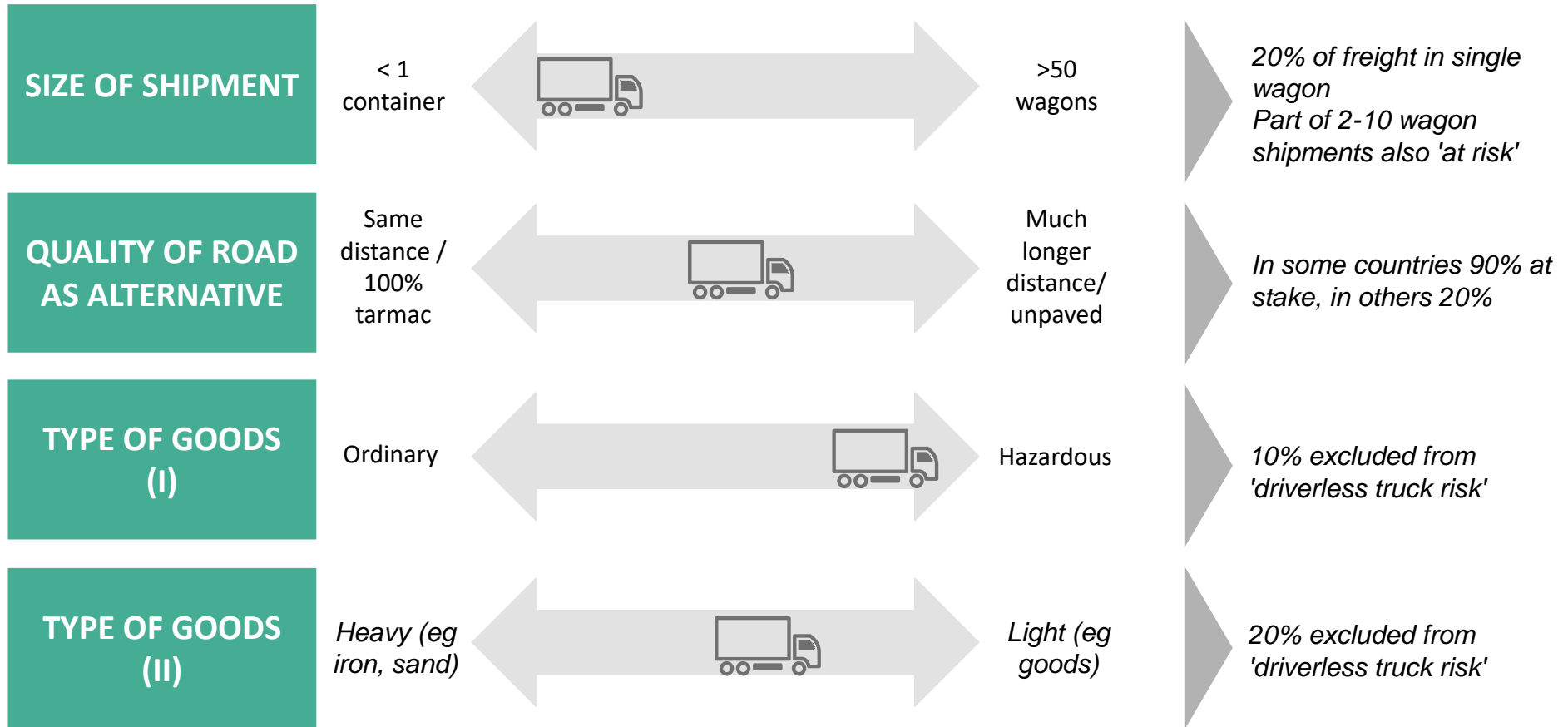


TOGETHER, THESE TWO DISRUPTION MAY REDUCE TRUCKING COST PER TONNAGE BY 60%



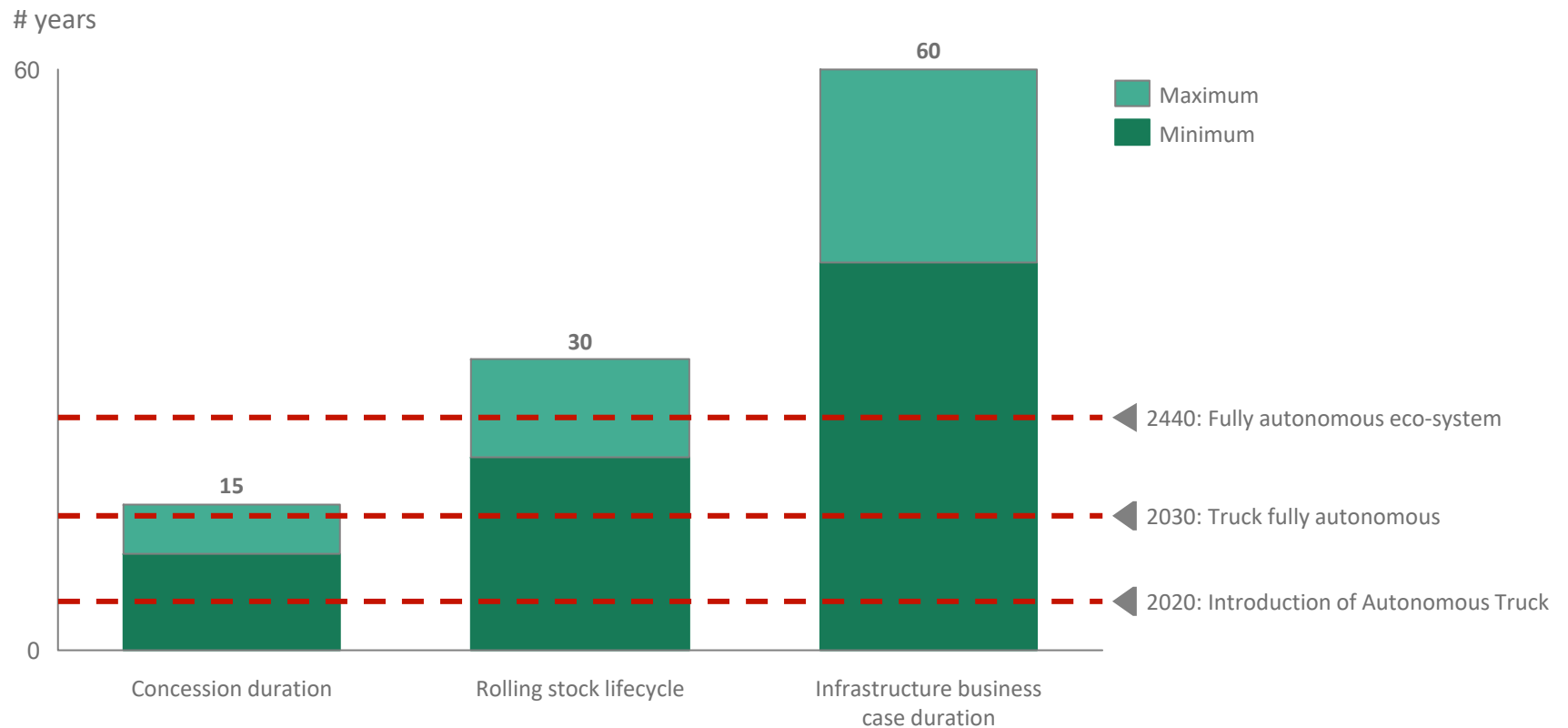
THIS IS NOT TOMORROW; IT IS AN END-PERSPECTIVE

2 First assessment suggests 20-30% of rail freight to be at stake, though differences are large between players and countries



In some countries 40% of volumes may be @ risk, in others <10%

2 While driverless trucks may seem 5-10 years away, they are essential already for investment decisions **today**



3 Rail freight companies need to take action along three dimensions

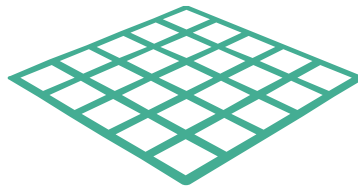


Improve competitiveness

Faster

Cheaper

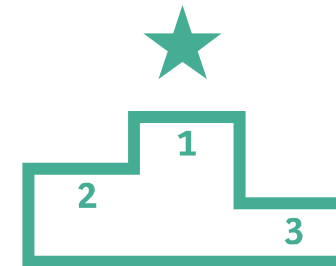
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Align investment business cases

Stress test investment business cases on driverless scenarios

Modularize investments, less 'grand design'



Build position in driverless

Develop intermodal propositions between train and driverless truck (eg cross docks)

Partner with road freight companies as a hedge

Multiple pain points still need to be resolved in the

3 rail freight sector...

1 Catch-up on traditional SW

- Timetabling automation
- Fleet & crew mgt
- Demand & supply mgt
- Pricing/ Yield management
- Increased flexibility of IT architecture

Short term
3-5 years

2 Unlock potential of digital trends

- Big data for network optimization
- Predictive maintenance
- Real time decision making and scheduling in operations
- Augmented reality in operations, maintenance
- B2B/B2B sales platforms
- Digital client journey

Medium term
5-8 years

3 Next-generation public transportation

- Autonomous driving
- Train on demand

Long term
10-15 years

... which can substantially improve performance of rail vs other transport modes

3

Available Capacity



- Global path optimization using mathematical algorithms
- Event triggered real time updates prevent wastage
- Identification and sale of idle capacity

↑ 5-7%

Timetabling personnel



- Replacement of large part of manual effort in timetable production
- Automated update to incorporate new information e.g. construction plan

↓ 50-60%

Punctuality



- Greater flexibility in case of unanticipated events e.g. real time optimal re-routing
- Ability to incorporate operations feedback into the timetable

↑ 2pp

RAIL FREIGHT NEEDS TO FAST FORWARD EXCELLENCE TO SURVIVE!



Thank you

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