ITDP webinars | MOBILIZE

Technology to Improve BRT Reliability: Lessons & Challenges

BRT+ CENTRE OF EXCELLENCE

transit

eTrans

ITDP Institute for Transportation & Development Policy

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BRT+ CoE was recently renewed until 2021

Mewmbers BRT+Centre

BRT+
CENTRE OF EXCELLENCE

Transport
WORLD
RESOURCES
INSTITUTE

THE UNIVERSITY OF
SYDNEY

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

BRT+

Contents

What do we want on BRT or transit services?

Fast

REDUCE TRAVEL TIME

Low Waiting Time

INCREASE FREQUENCY

Comfort

INCREASE CAPACITY

Reliable

REDUCE VARIABILITY OF TRAVEL TIME

What do we need to get what we want on BRT or transit services?

Fast

REDUCE TRAVEL TIME

INCREASE SPEED

Low Waiting Time

INCREASE FREQUENCY

INCREASE FLEET SIZE OR INCREASE SPEED

Comfort

INCREASE CAPACITY

INCREASE FLEET SIZE, SIZE OF VEHICLES, OR INCREASE SPEED

Reliable

REDUCE VARIABILITY OF TRAVEL TIME

REGULAR HEADWAYS

TODAY MESSAGE

Fast

Low Waiting Time

Comfort

Reliable

¡INCREASE SPEED

&

REGULAR HEADWAYS!

Let's answer three questions

1. Why bunching occurs?
2. What are the impacts?
3. Is there a solution?

Variability of travel time

Poor dispatching

Congestion

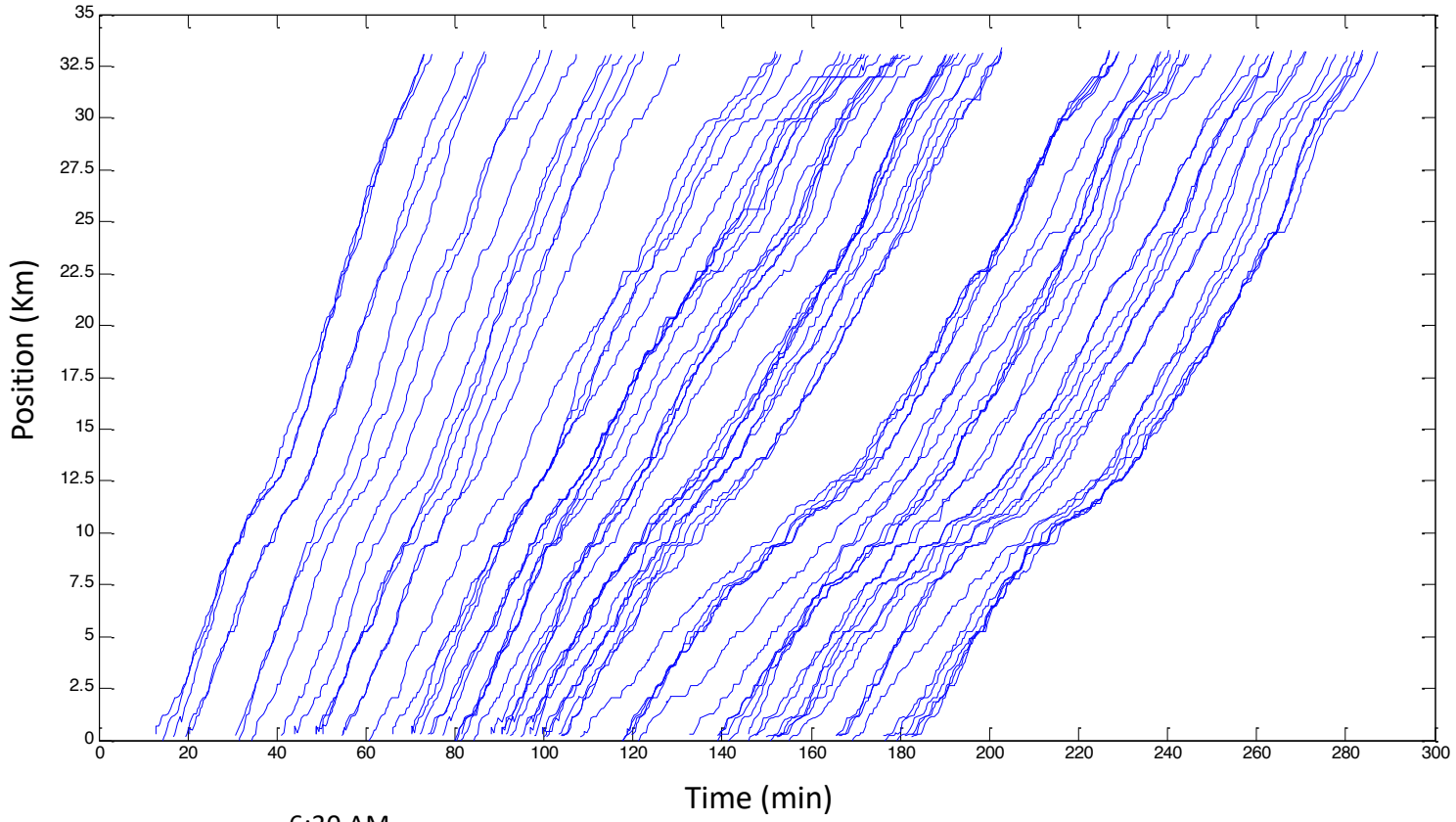
Traffic lights

Drivers Heterogeneity

Variability in stopping times

Random arrival of users
at each stop

Trajectories time-space
A Service in Santiago, March 25th, 2009

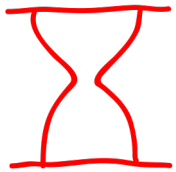


Let's answer three questions

1. Why bunching occurs?
2. What are the impacts?
3. Is there a solution?

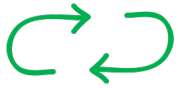
BUS BUNCHING

Many Negative Impacts



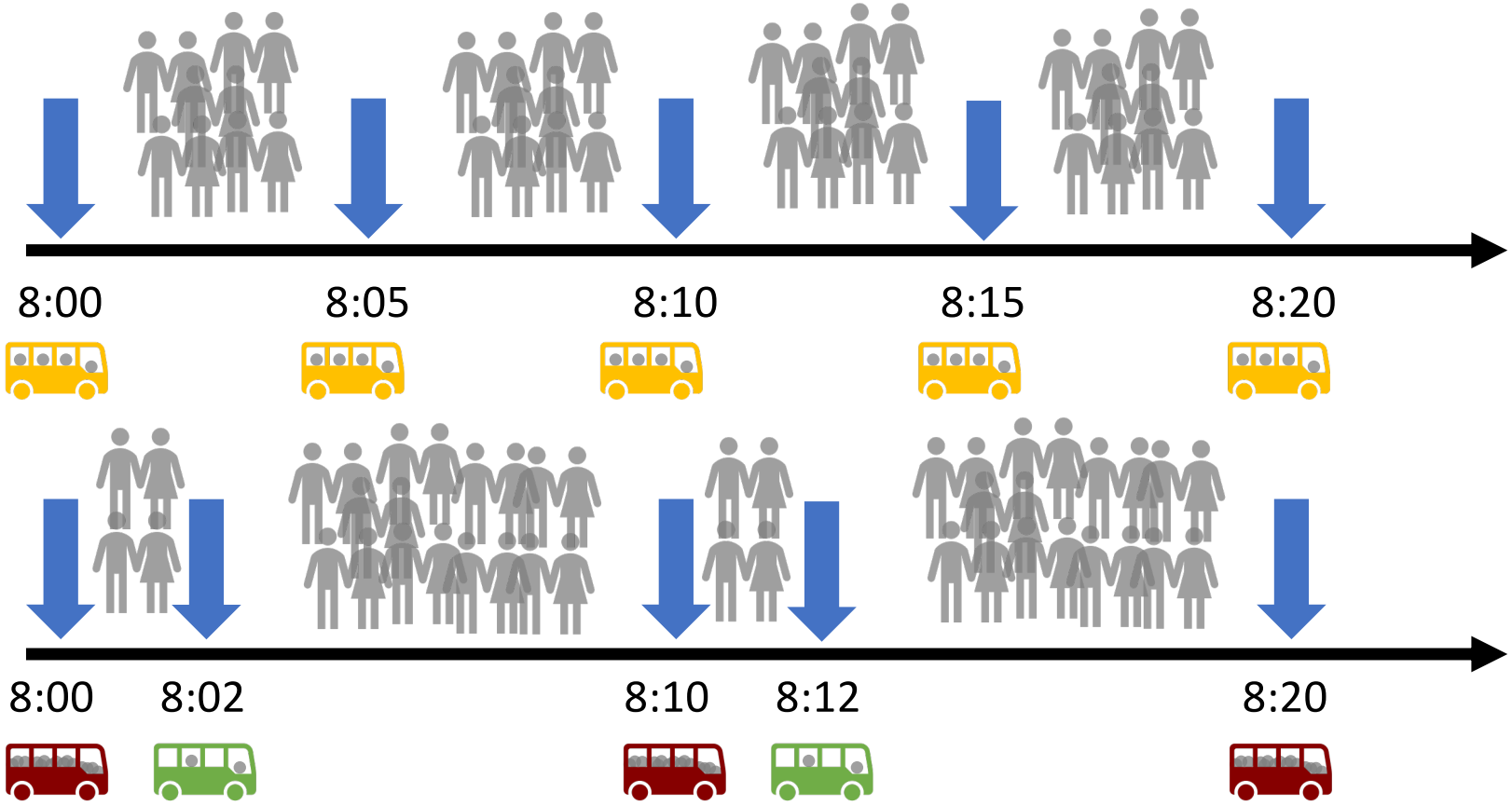
INCREASE OF
WAITING TIMES

DECREASE COMFORT
& RELIABILITY



INCREASES VARIABILITY
OF CYCLE TIMES

REDUCES TRANSIT
DEMAND


8:00
8:05
8:10
8:15
8:20
8:00
8:02
8:10
8:12
8:20




Fast Low Waiting Time Comfort Reliable

INCREASE THE SPEED

&

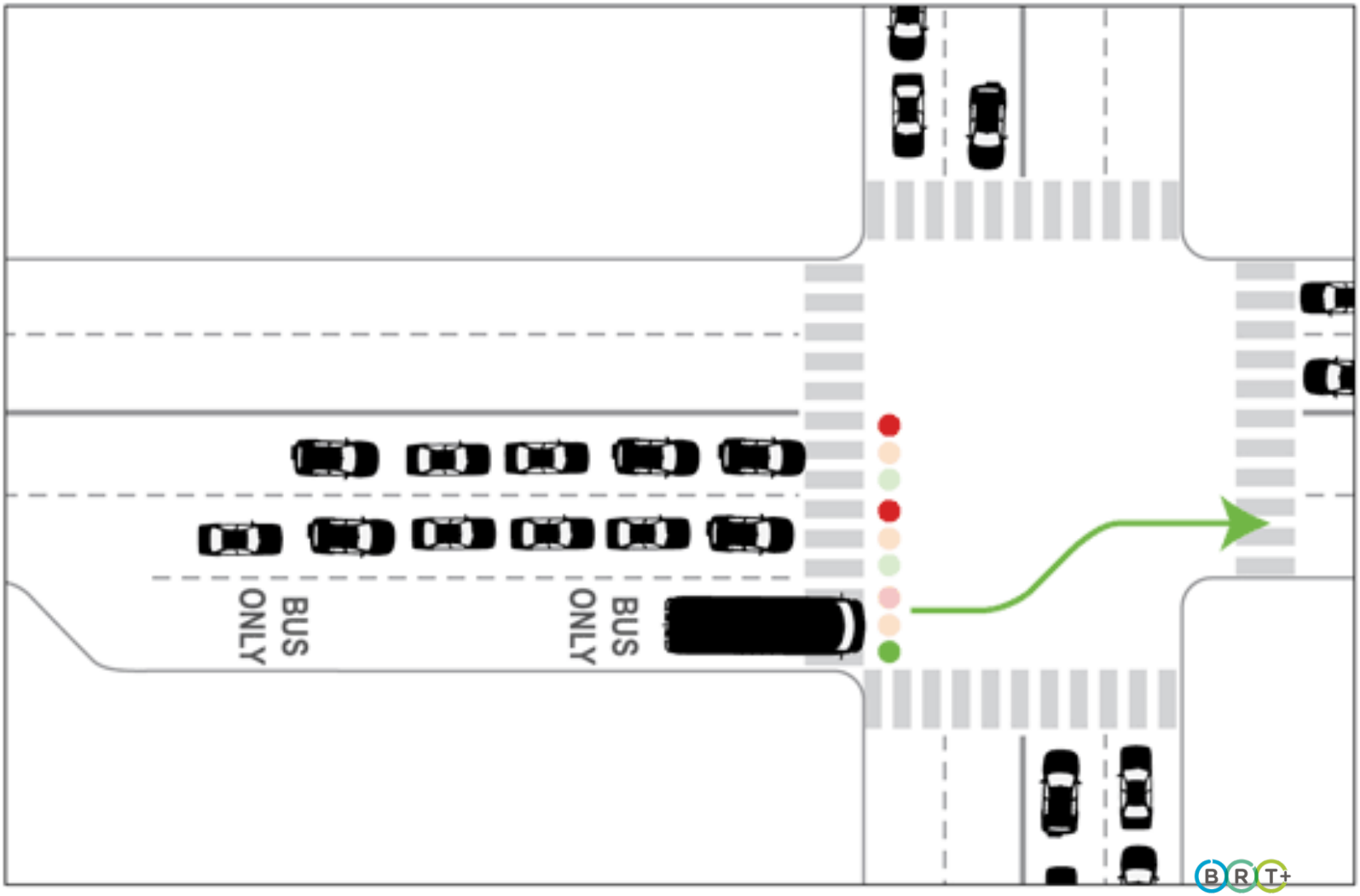
REGULAR HEADWAYS!

Let's answer three questions

1. Why bunching occurs?
2. What are the impacts?
3. Is there a solution?

Contents


Source: transmilenio.gov.co



Source: mto.gov.on.ca

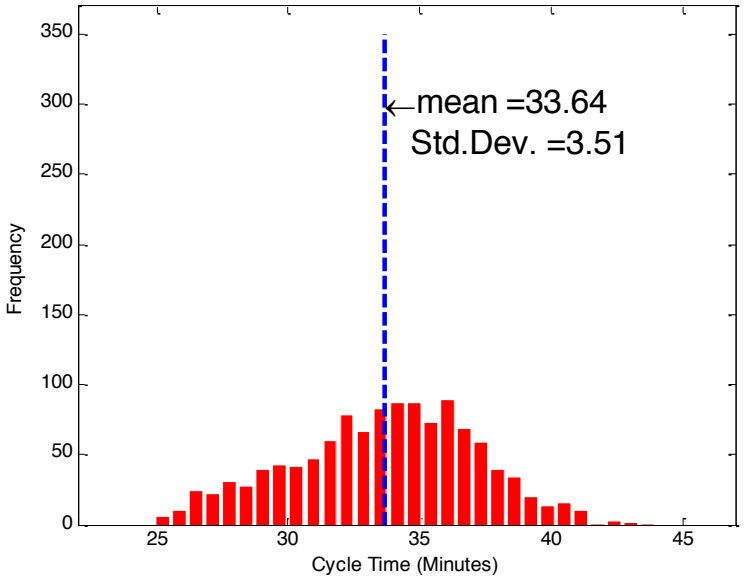
You are doing fine

Wait at headers or control points

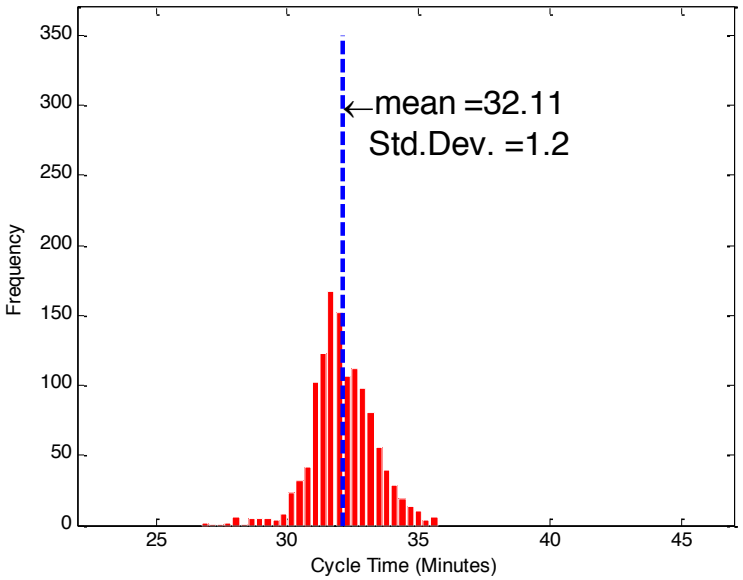
You are running late

Go slower

Cycle Time



Without Control



HRT

The BRT future should be written with double R

BRRT

Bus Rapid and Reliable Transit

Contents

Experencies

Santiago, Chile

Transantiago

Redbus Urbano

transdev
the mobility company

Lund, Sweden

Skånetrafiken

BRT+

Monitoring

Real-time Information

BusAssist

transit

Linear Synoptic

Map Synoptic

Dispatcher

Buses y drivers

BusAssist

transit

Web Plataform

Mobil App

Console on the bus

Communication with driver and regulation (Android)

BusAssist

transit

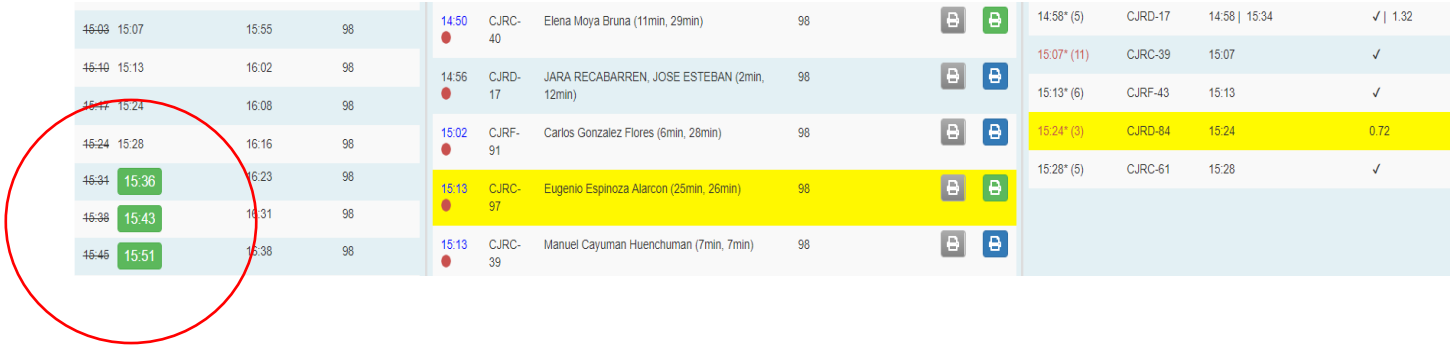
Smart Dispatcher

BusAssist transit

Optimization tool, that propose the time and buses for the following departures according to :

- Current location of buses and recent dispatches
- Availability of buses at the header and next arrivals

Main objective to increase indicators of frequency and regularity



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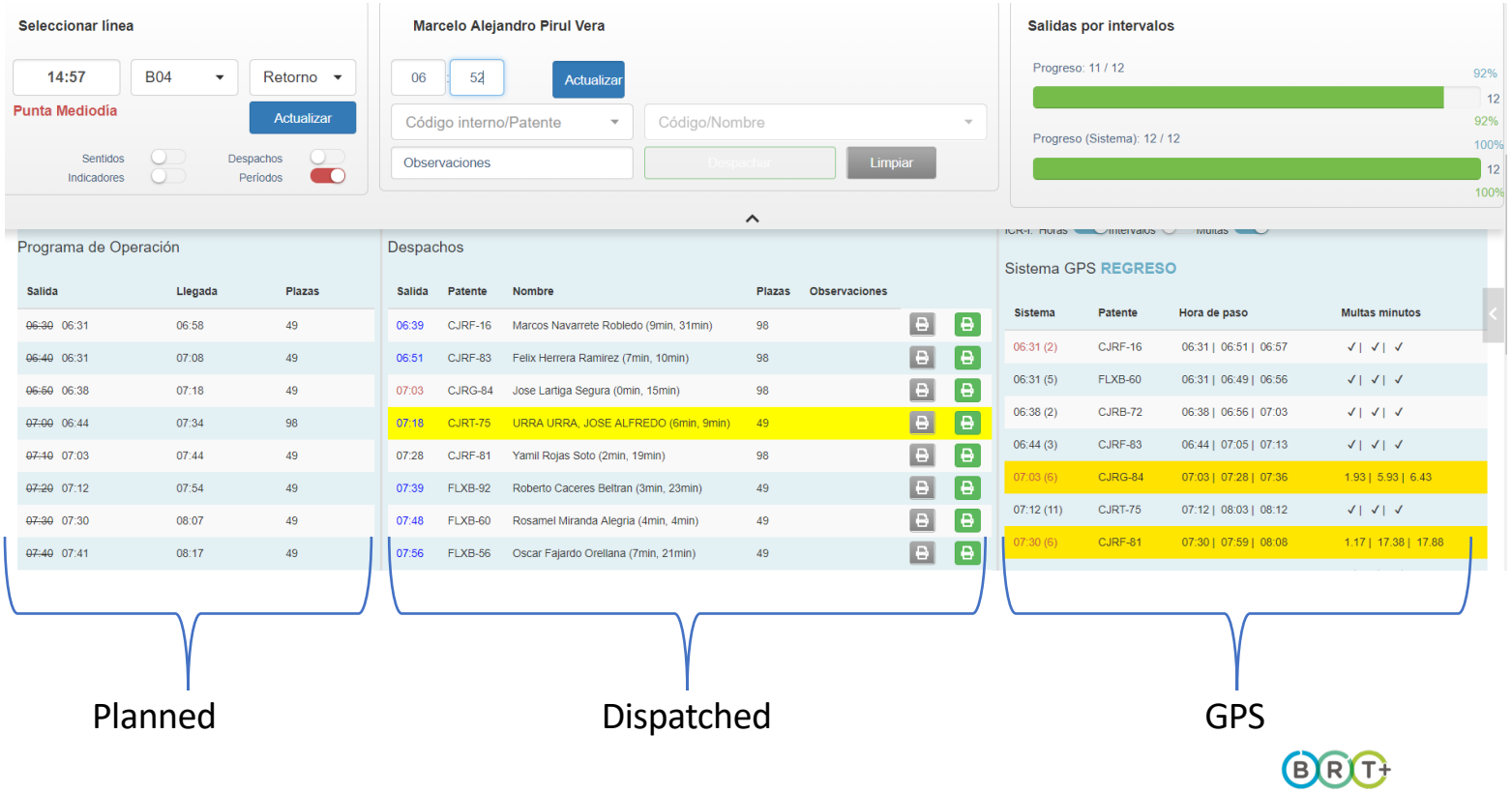
Tool for Smart Dispatching at Headers



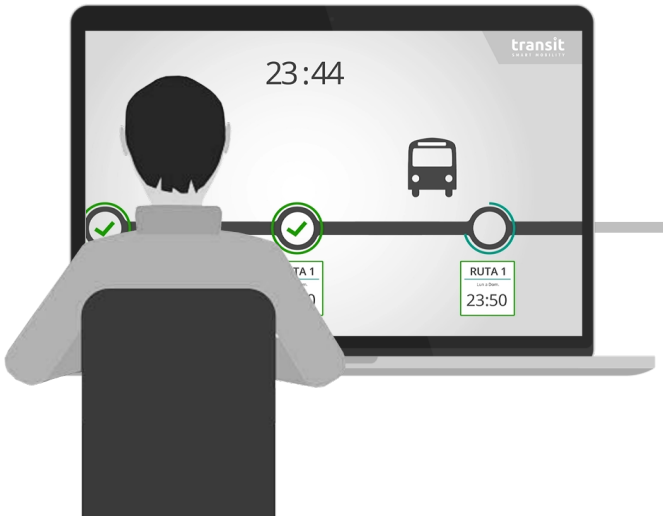
Planned

Dispatched

GPS

TRAINING

TEACHING REQUIRED METHODS TO DISPATCH CORRECTLY



THEORETICAL COURSE

PRACTICAL APPLICATION

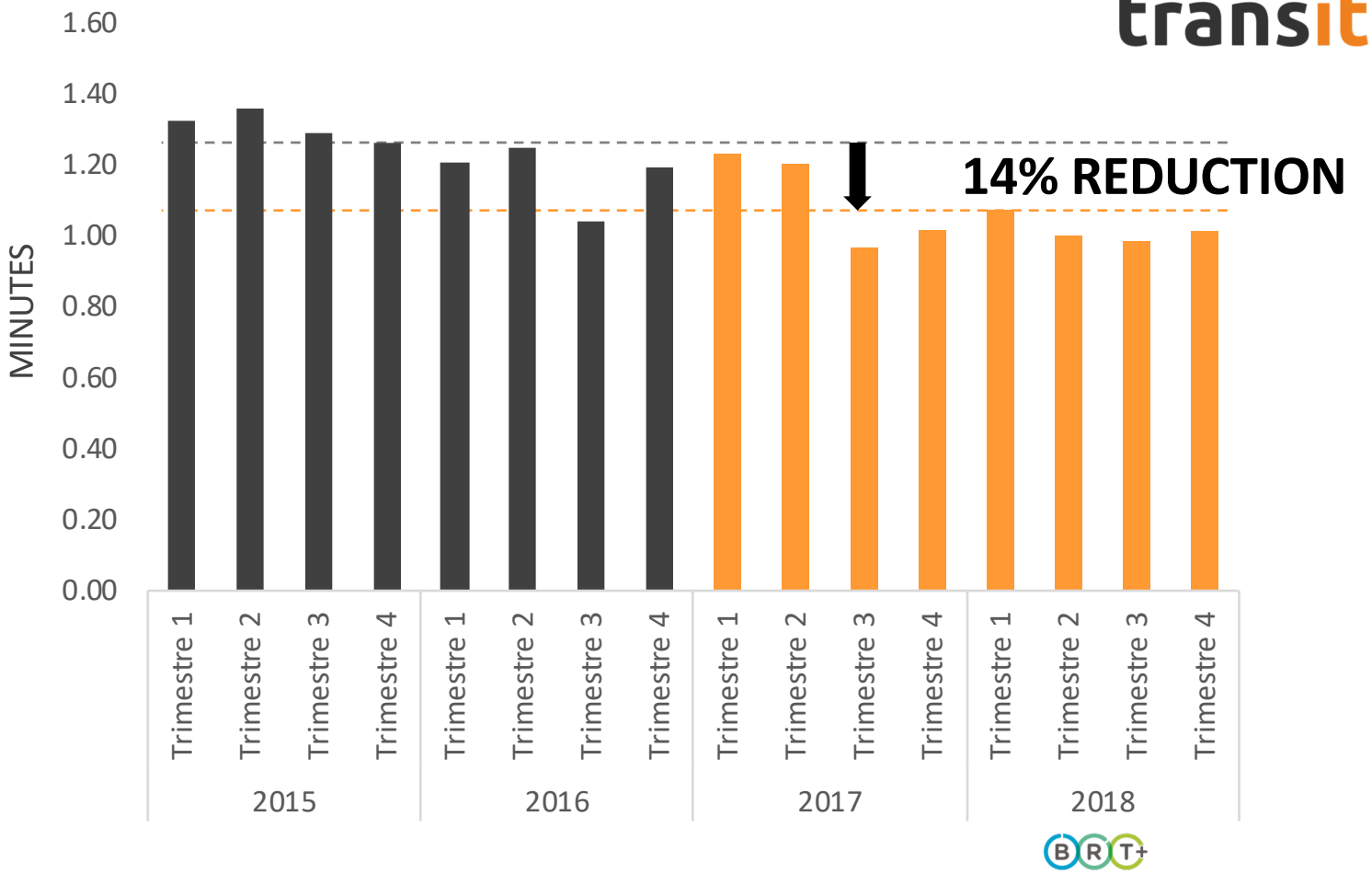
TIME

EXCESS WAITING TIME (EWT)

AT THE DISPATCHING SITE

EXCESS WAITING TIME

At dispatching header

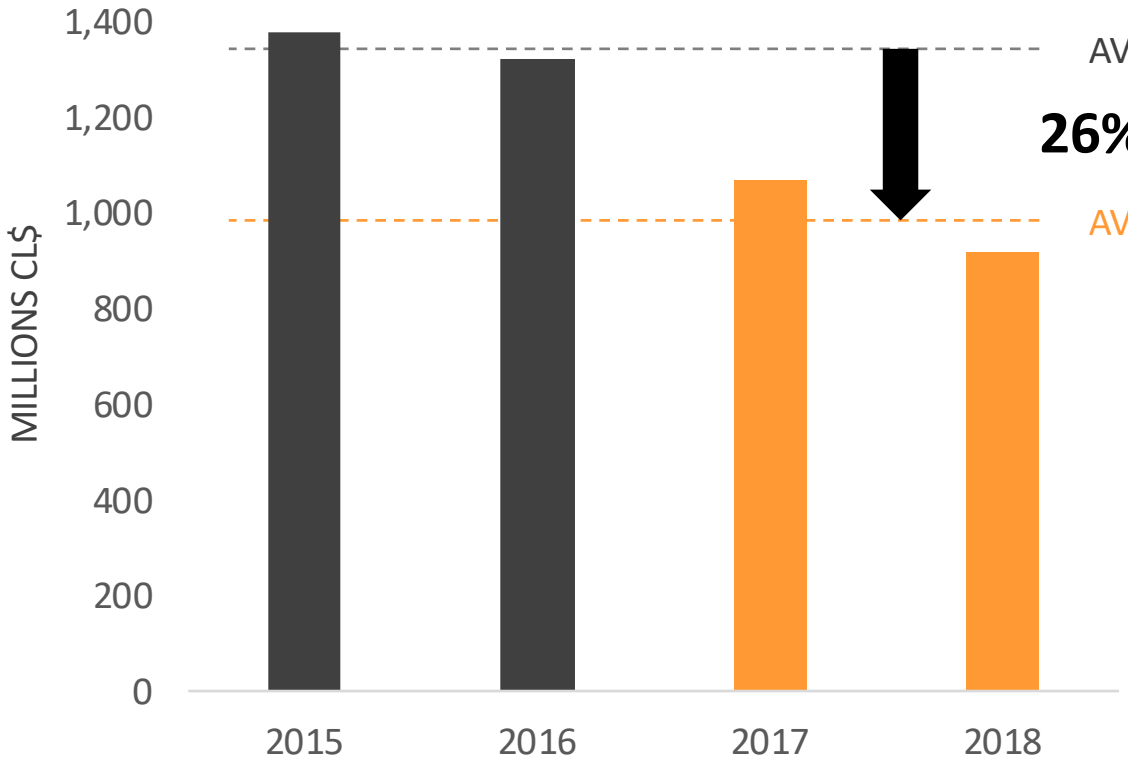


COSTS

Annual FINES

Redbus (Transdev-Chile) Case

Costs: Annual Fines



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CL$MM/Month

Lund Case

BusAssist transit

Work with government authority of Scania region in Sweden:

- Idiomatic, distance and time barriers
- More technical requirements
- New types of operation (with punctuality or route services with shared segments)
- Focus on design and UX

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Conclusions

BusAssist

transit

- Reliability is a key metric in the user experience
- To achieve Reliability we need Regularity
- To guarantee regularity we need:
  - ➔ Support of an intelligent system that adapts dynamically to the operating conditions
  - ➔ Commitment of drivers and operators
  - ➔ KPI and management of continuous improvement

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