

ITU Workshop on “Monitoring and Benchmarking of QoS and QoE of Multimedia Services in Mobile Networks”

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Benchmarking and optimising the customer experience of multimedia services – Case study: Dutch football experience

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Topics discussed

- Omnitele framework for QoE, QoS and network performance
- Case study: Dutch football experience during World Cup 2014
 - Benchmarking customer experience
 - Optimising customer experience

omnitele

experience

why we exist

Omnitele is an international telecommunications consulting and engineering company. We provide services for telecom operators and regulators in domains of network strategy, design and quality assurance. Our mission is to maximise mobile subscriber quality of experience and minimise operator network cost.

track record

We have solid track record and over 25 years of experience in telecoms industry. The company was founded in 1988 to set up world's first GSM operator and network. Since then we have completed 1000+ projects in 80+ countries.

presence

Our headquarters is located in Helsinki, Finland. We have local presence in the Netherlands and the Hashemite Kingdom of Jordan. Our company is owned by Finnish telecom investors and we are independent of all international operators and telecom network infrastructure equipment vendors.

omnitele way

Our unique way of working sets us apart from the competition. We call this the Omnitele Way: being Straightforward, Trusted and Intelligent. We deliver tangible results and ensure excellent *Omnitele Experience*.

.... our services

omnitele
experience

We offer a unique set of strategy consulting and expert services to cover mobile operator needs from network strategy to deployment and quality assurance. Our mission is to maximise mobile subscriber quality of experience and minimise network expenditures.

technology
strategy



design and
optimisation



audit and
benchmark



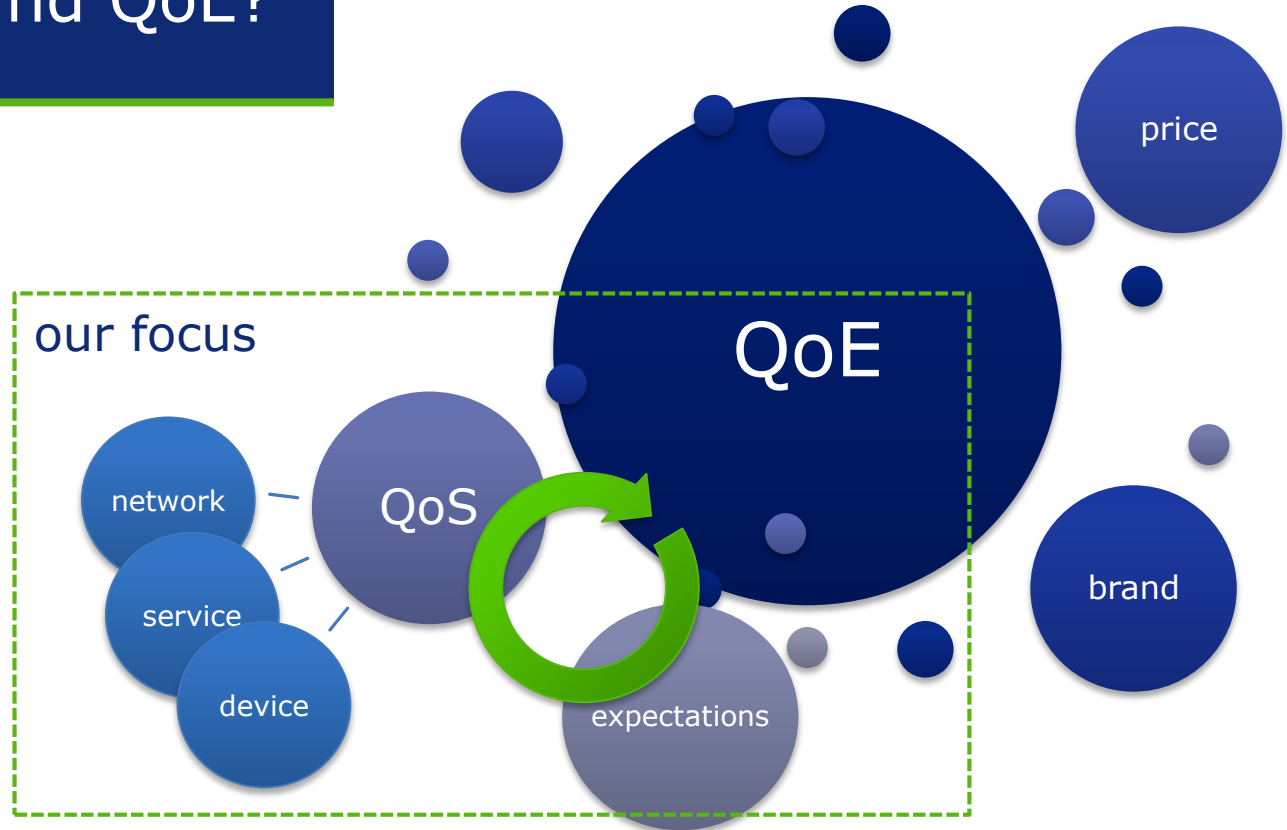
performance
management

maximised customer experience
minimised network cost

what are QoS and QoE?

QOE DEPENDS ON...

- expectations
- branding
- socio-economic background
- price
- customer care
- provisioning
- **end-user QoS**



QoE, QoS and network performance

QUALITY OF EXPERIENCE

how well service quality meets expectations?

QUALITY OF SERVICE

measured application/service KPIs

NETWORK PERFORMANCE

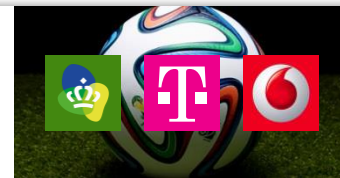
capacity, coverage, functionality, efficiency...



Web Browsing Customer Experience in Amsterdam - Football WC2014 experience



CHALLENGE | best mobile WWW browsing experience?



HOW | WC2014 related tests with Anite's CEM Observer

WHERE | locations where football fans watch the games



Benchmark Overview

38 test locations in
Amsterdam where fans
watch the WC2014



Measurement profile built on football
experience

browsing of WC2014 related pages:
results, stories, statistics, interviews

<http://www.fifa.com/worldcup/>

<http://www.nusport.nl/wk-nieuws>

<http://www.telegraaf.nl/telesport/wk-voetbal-2014/>

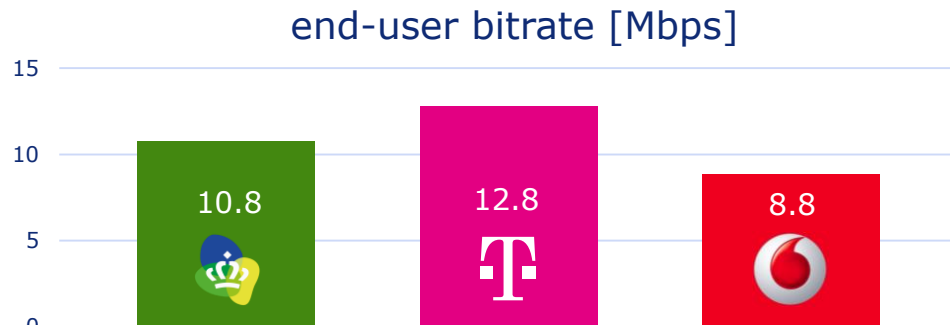
<http://nos.nl/wk2014/schema>

<http://www.speelschemawk2014.com/>

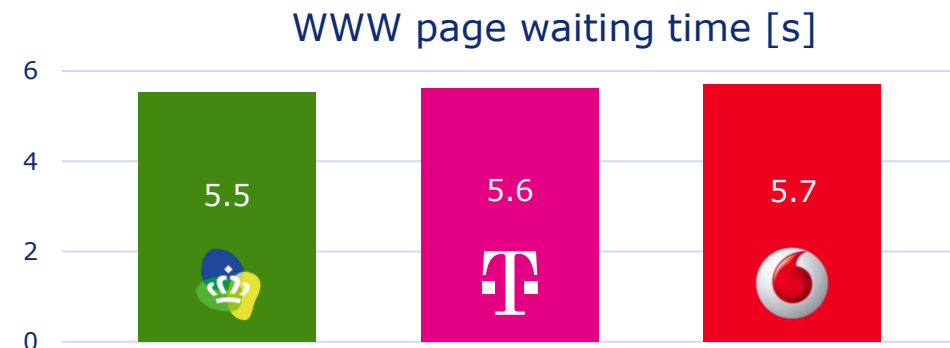
<http://www.liveuitslagen.nl/voetbal/wereld/wk/>

<http://www.vi.nl/dossier/dossier-alles-over-het-wk-2014-in-brazilie.htm>

Results: the delusion of bitrate importance...



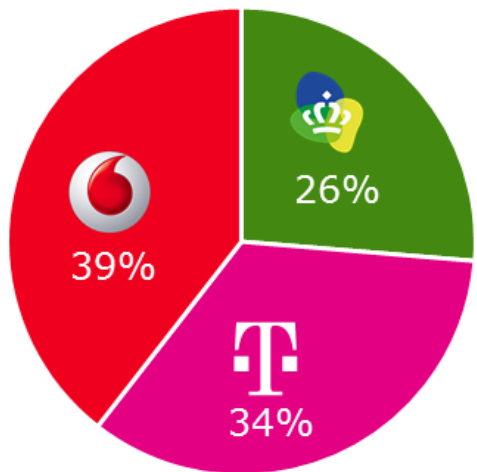
If bitrates were benchmarked,
T-Mobile has the best service



...but in **customer experience**
operators are neck and neck

Results: Location based comparison

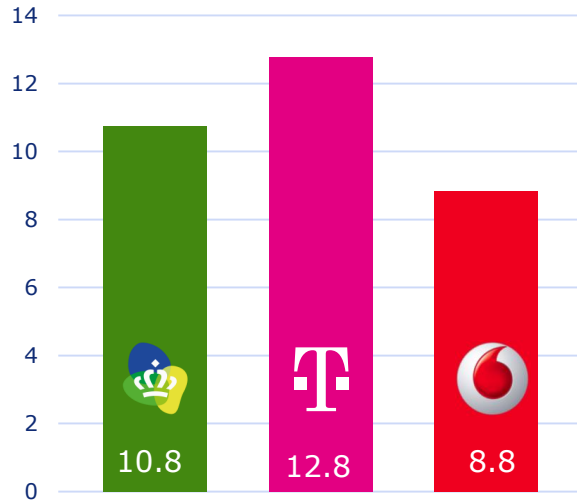
Vodafone has the shortest browsing time in 39% of locations



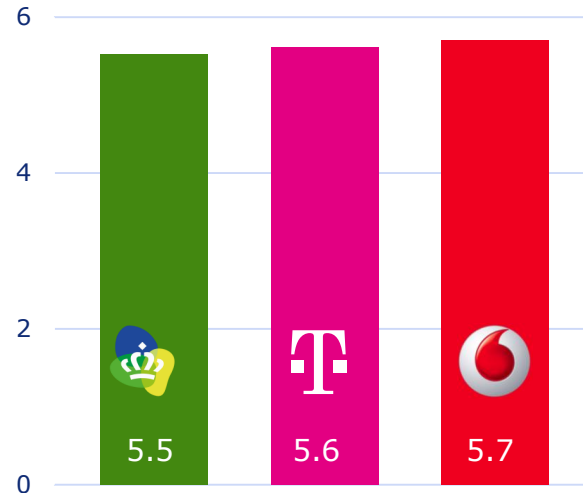
who offers the best customer experience?



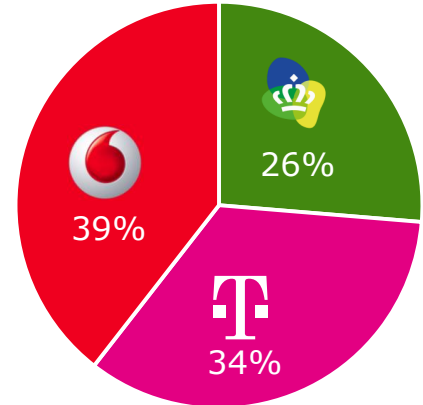
Highest throughput
on average



Fastest browsing
on average



Best in most
locations



KEY MESSAGES

- 1 Bitrate not self-sufficient to represent Customer Experience
- 2 Different result aggregations may yield different conclusions
- 3 Customer Experience measurements give means to focus network optimisation

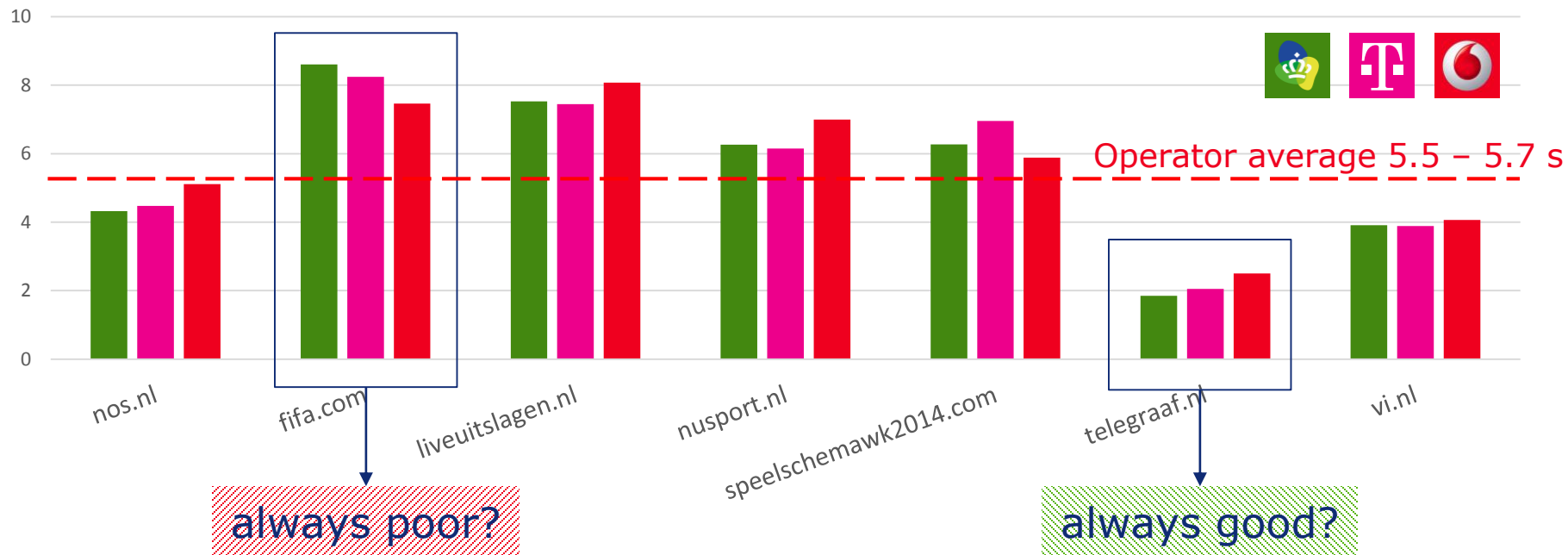




Optimising Mobile Web Customer Experience

Average throughput tells nothing - domain performance varies greatly

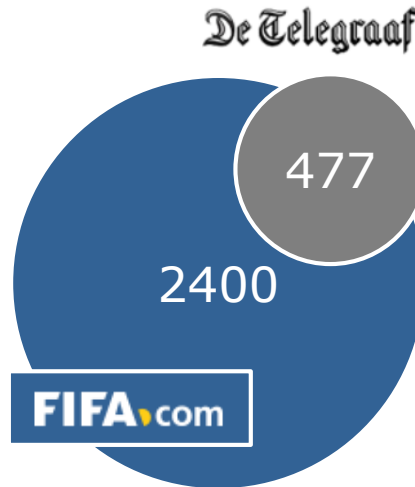
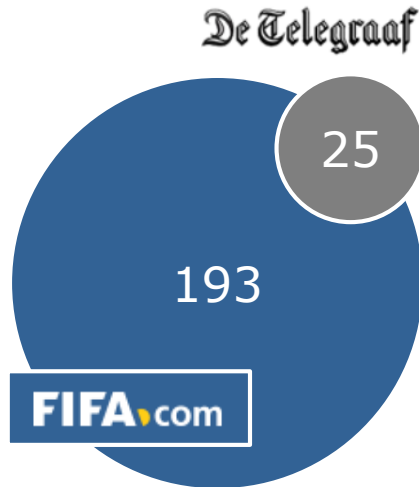
WWW page waiting time [s] - domain performance



websites differ but expectations don't

#content elements

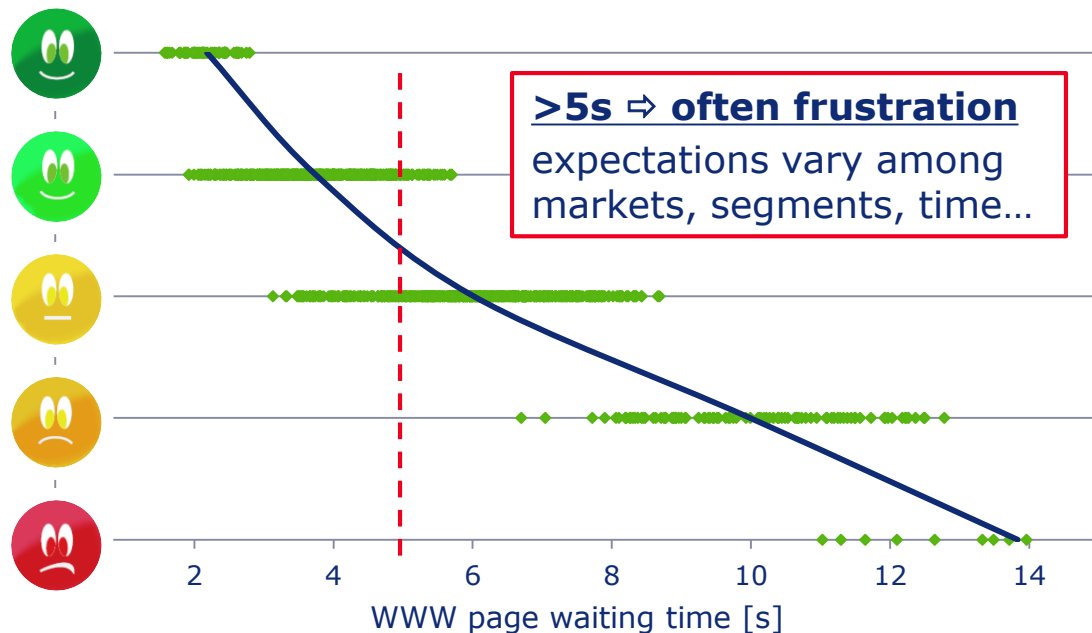
data volume [kB]



customer expectations are same

Frustration level of web browsing

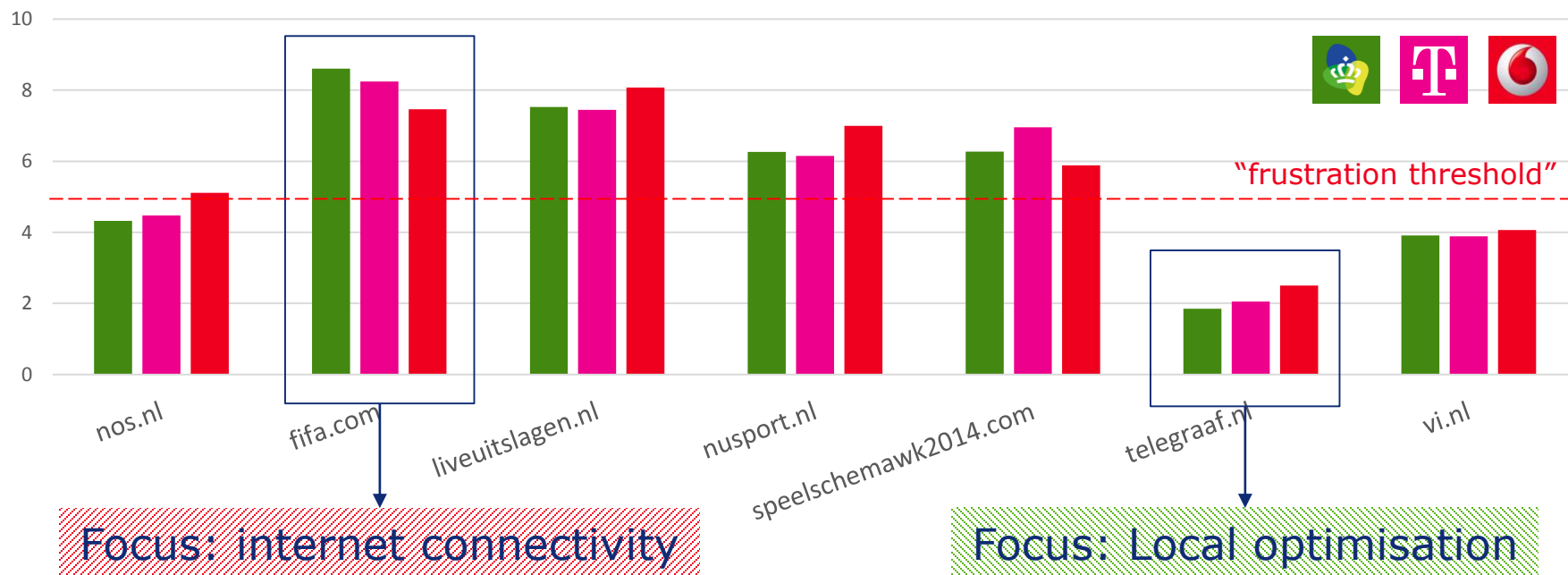
- "very fast"
- "acceptable"
- "a bit too slow"
- "too slow, annoying"
- "out of my tolerances"



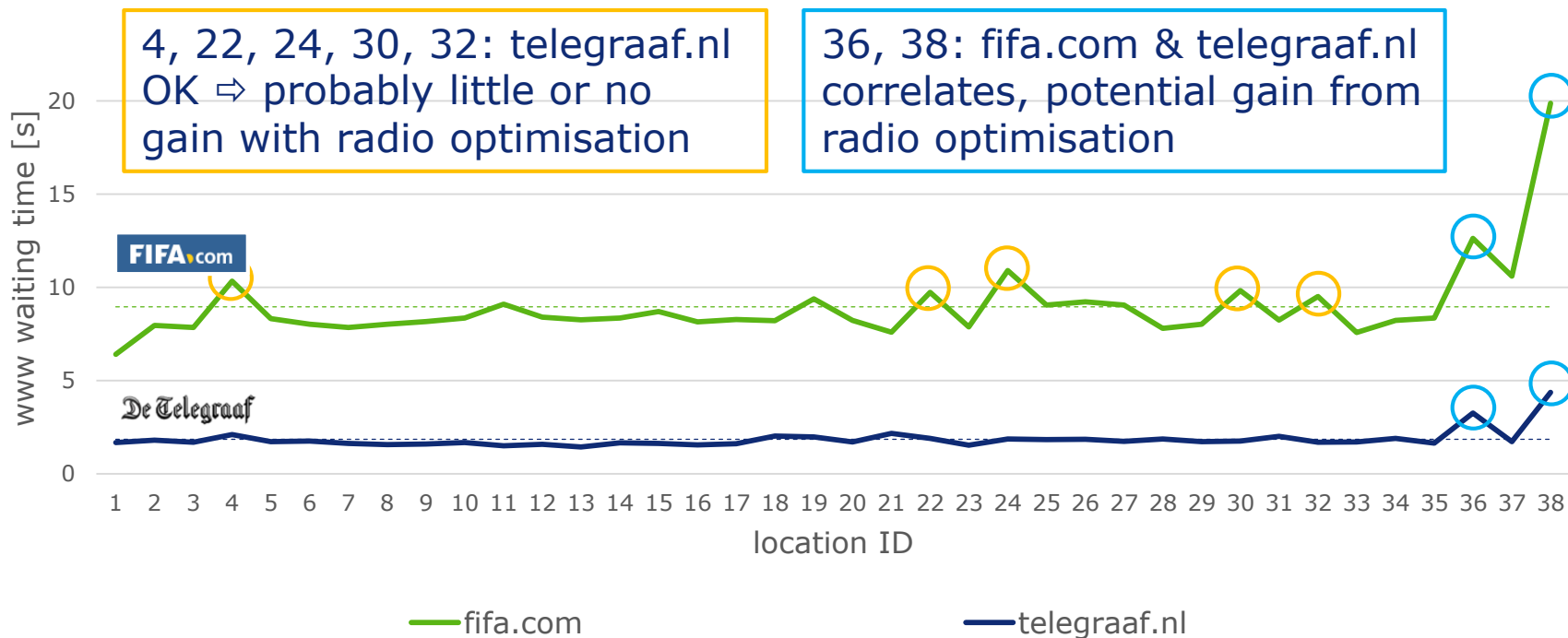
[QoE results from Omnitele case study 2013]

Focus your optimisation effort to right areas

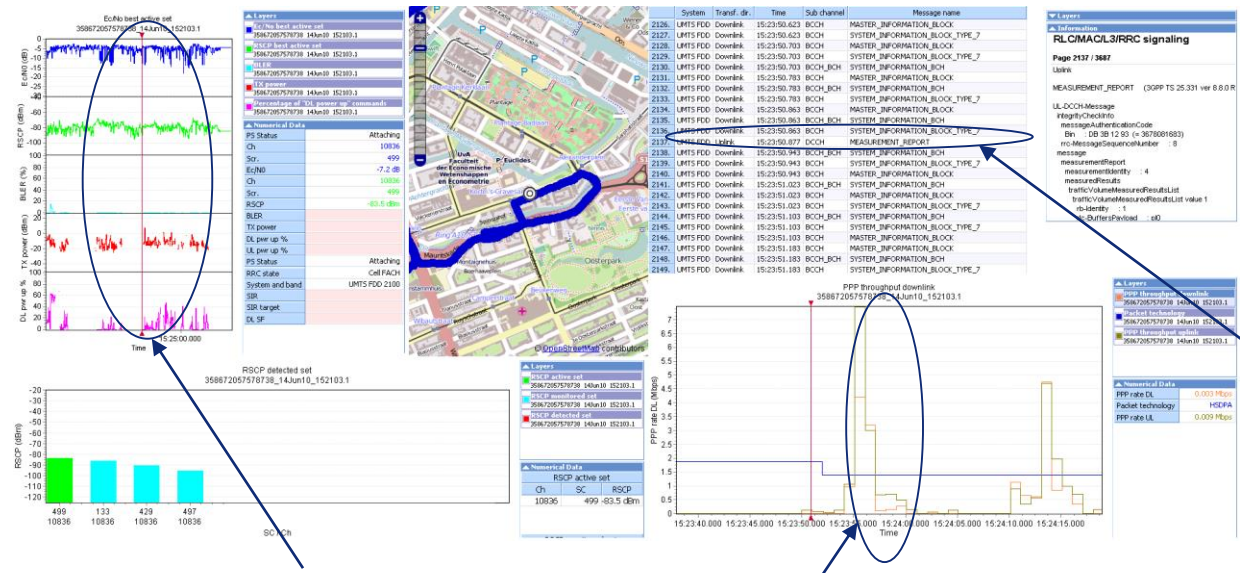
WWW page waiting time [s] - domain performance



Operator X: Identifying the locations for RAN optimisation...



Example: Long web browsing loading time for operator X



- 1:** Due to poor LTE coverage, the mobile is camping on UMTS2100.
- 2:** When trying to visit a website, the mobile attempts to access the RACH, but fails.
- Only after 5 seconds, an attempt is successful.
 - The mobile sends measurement event 4a and is immediately sent from carrier 10836 to carrier 10811, where the data transfer starts.

3: Even though radio condition are good and download of the website is not yet complete, a physical channel reconfiguration reduces the throughput from 7M Mbps to 700 kbps.

This reconfiguration combined with the RACH access problems create an extremely long web page loading time.

Solution:

Investigate the capacity of the UMTS cell

- on carrier 10836 (RACH failure) and
- 10811 (dropping throughput).

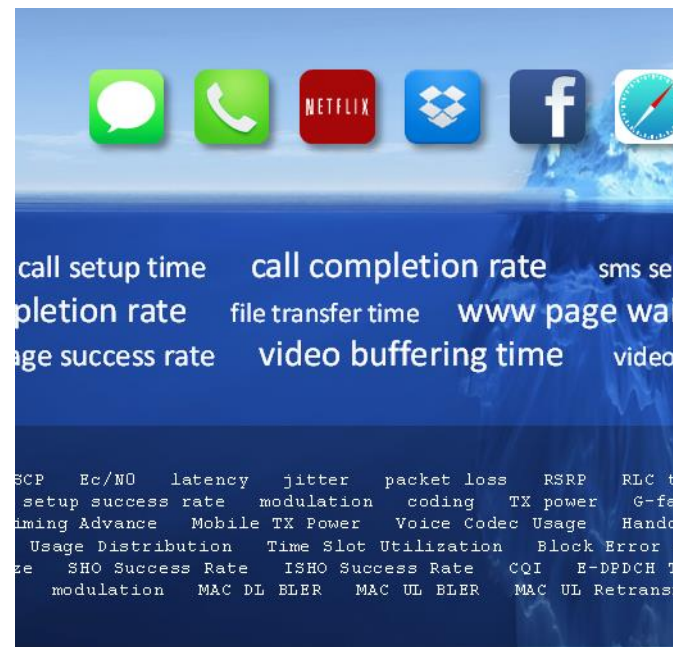
KEY MESSAGES

- 1 Average performance is not efficient trigger for optimisation
- 2 Optimise network only where it's needed and where gain available
- 3 Linking of CEM and network performance measurements is a powerful method in optimisation



To conclude

- 1 Dutch football fans have certain expectations where and how they can access their interest sites
- 2 www waiting time was measured and variations were analysed
- 3 network performance was measured simultaneously and root cause analysed and solved



Questions?

For any further info, kindly refer
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Omnitele QoE management services

ASSESS

customer experience benchmark



IMPROVE

customer experience optimisation



CONTROL

QoE driven performance management



maximised customer experience
minimised network cost