



You can only manage what you measure

*UIC Energy Efficiency Days 2014
Antwerp, June 18*

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*“To meter or not to meter:
that is the question”*



What we measure...



IM's side:

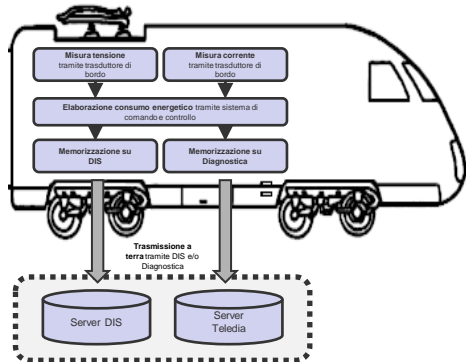
- ❑ energy consumption metered at substations
- ❑ billing system regulated by model based on train-km



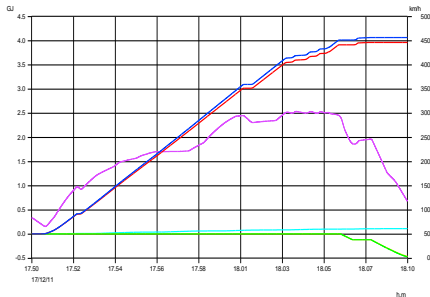
RU's side:

- ❑ energy consumption may be measured on-board for large part of HS and Regional fleet

...how we measure...



- ❑ Consumption calculation based on on-board transducers readings and sent to ground
- ❑ Separate energy measurements for:
 - absorption from line
 - traction
 - auxiliary systems
 - regenerative braking
- ❑ Good accuracy (2,5% AC; 0,8% DC) for our aims

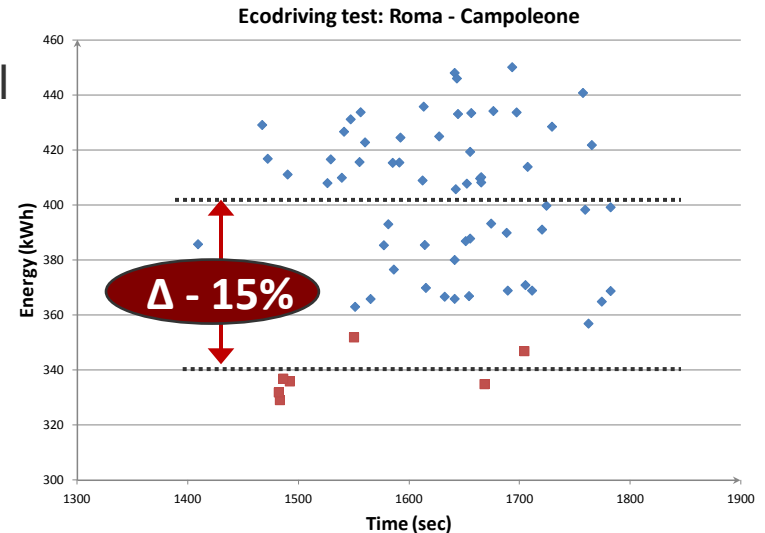


...and why we measure

- ❑ Energy efficiency is high priority
- ❑ Metering/measuring provides baseline and enables optimization



- ❑ Ecodriving campaign
 - good results from pilot tests (~ 100 runs)
 - extending trial in 2014
 - deployment at regional/national level



Final thoughts about...*”metering the future”*

- ❑ Business case drives decisions
- ❑ Investing in energy efficiency more than in retrofiting
- ❑ Procurement of new rolling stock equipped with meters
- ❑ Compliance to evolving regulations and prescriptions
- ❑ Evolution of billing model
- ❑ Opportunities enabled by adoption of new or more complex solutions for energy efficiency

Thank You!

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