CONCLUSIONS

Technical results - Economical results- What's next

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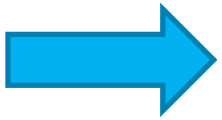
Key Points

1. Trustfully evaluate and compare energy savings potential of all and any innovation
   - %
   - MWh
   - KPIs



Done for all innovations developped within the frame of OSIRIS

2. Make those comparison/evaluations on stable basis
   - Reference tools (Modules/duty cycle – Simulation ..)
3. Ensure energy savings become effective
   - Through proper Operators and Industry investment/economical appreciation capability

Global View => Trustfull figures

	Savings *in ref. to each innovation's own area*	**Savings** *in ref. to total system for an entire year*
Technical innovations on board and ground (3)	**5% to 80%**	**5% to 6%**
Operational innovations ground systems exclusively (8 only considered here)	**11% to 80%**	**1,7% to 4,6%**
Operationnal capacity management (1)	**3%**	**2,3%**
TOTAL (aft. elimination of non cumulative solutions/figures)		**8.2 to 12.1%**

10 GWh for Istambul , **50** GWh for Paris , **15** GWh for Milan

Real Savings

- Methodology developped for technical savings evaluation does lead to a realistic appraisal of savings
  - Results are orders of magnitude taking care of all phenomenas , direct and indirect
    - can be further complemented with refines analysis
  - Holistic tool to further improve the methodology
- Economical dimension work enlightens
  - Its essential role for decision, hence for real savings
  - Uncertainty of economical calcs

Stable base

- Duty cycle-Modules method offer a strong and stable base for energy consumption evaluation
  - Either in the frame of contracts
  - Or for innnovation introduction
- Would equally apply to other parts of the transport system (eg passenger flux)

A clear candidate for future standardisation

Where to go

- An R&D project like OSIRIS is by nature uncomplete !

  Many things we would like to further develop

1. Make the Holistic tool a true asset available to the Operators and the Industry
2. Bring the duty cycle/module method to the state of a standard
3. Further improve the KPIs in their role of structuring analysis of energy pattern of Urban Rail systems
4. .....

Final Word

A warm thank to all OSIRIS partners: your inventiveness, dedication, respect for others including cultural differences, honesty in evaluating fruit of the work, even when facing difficulties, have simply shown one thing

The team of energy conscious and competent people in Urban Rail has considerably grown in size and expertise in just those few years; without the EU support to OSIRIS, this would not have happened to such scale

Lets continue in that direction together