



ATO/DAS over ETCS

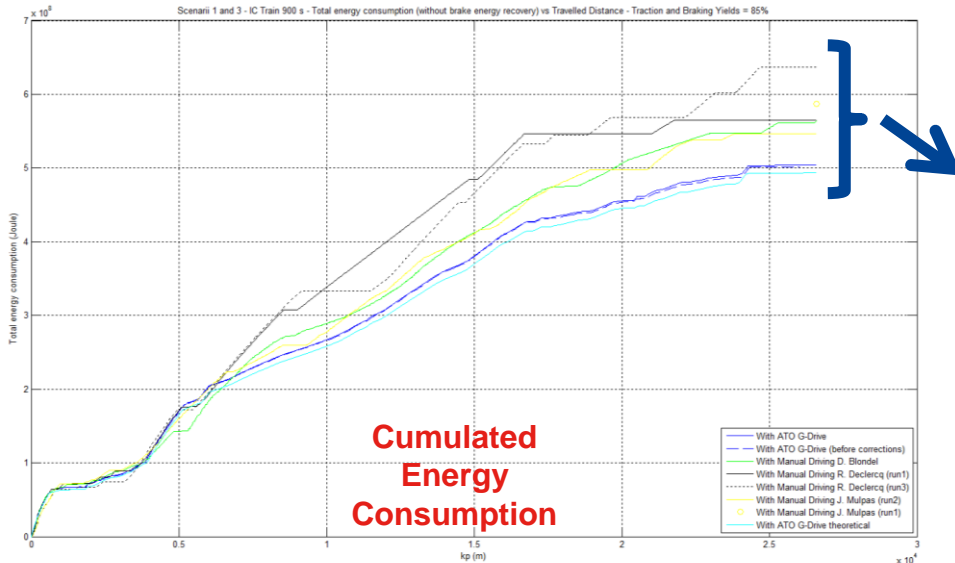
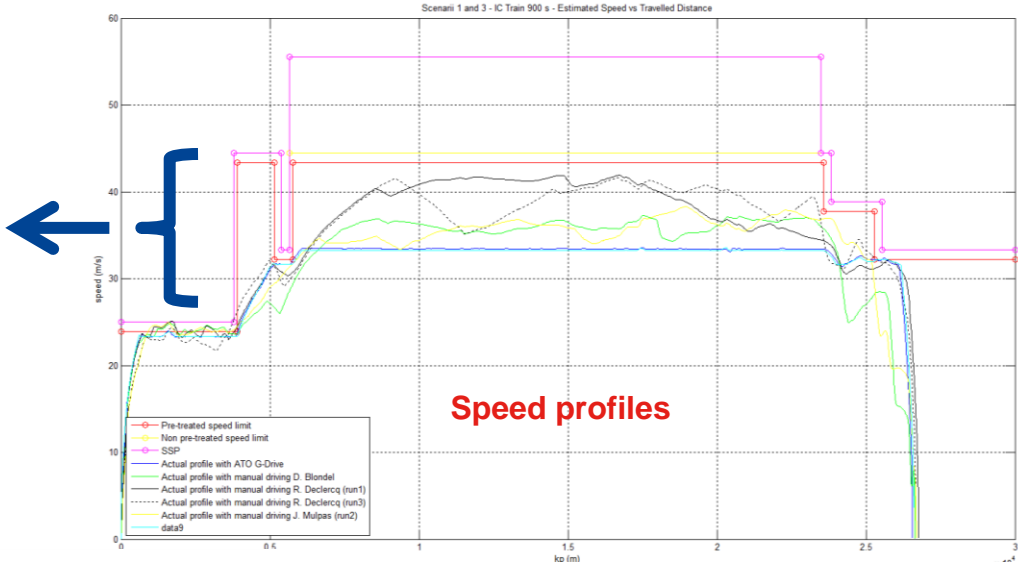
The way towards unattended operation for Main Lines

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Example of Energy Savings – Intercity trains

Different driver behaviours on same journey...

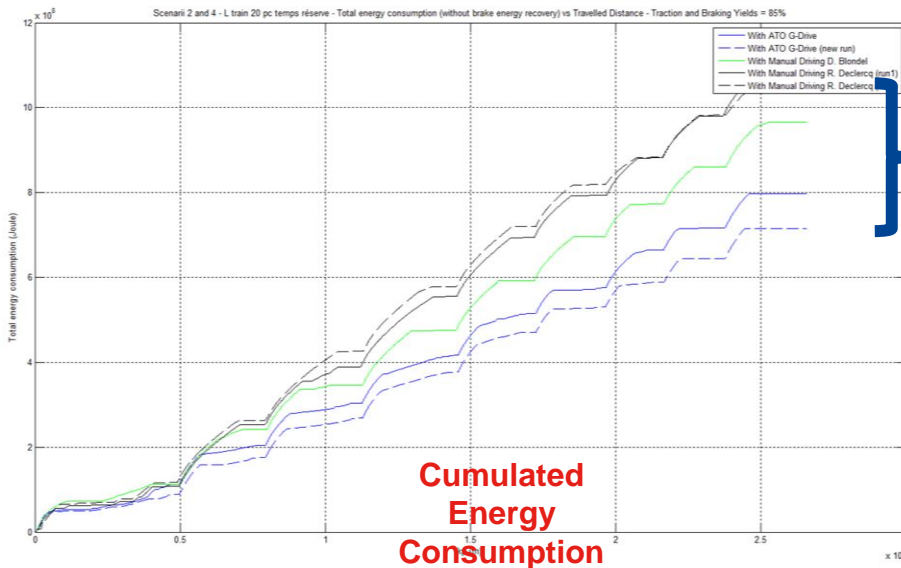
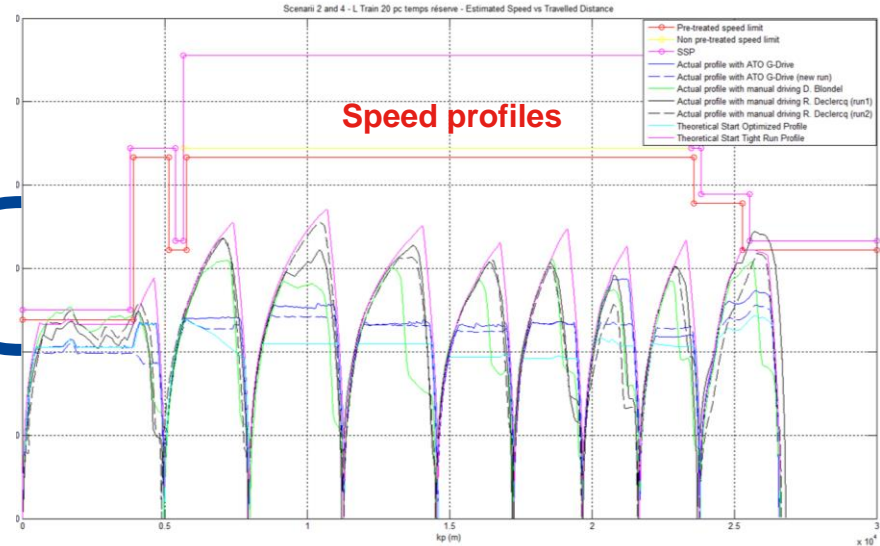
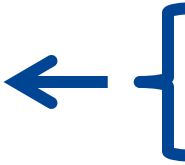


... lead to potential consumption of up to **15%**

is complete without notice.

Example of Energy Savings – Local trains

Different driver behaviours on same journey...



... lead to potential consumption of up to **42%**

Example of Capacity Improvements

- Case Study: Brussels Junction (North-South)
 - 6 parallel tracks, diverse rolling stock
 - Today capacity limited to 92 trains / hour
 - 1 « free » slot required every 4 trains to maintain stability.

- With ATO introduction:
 - Stability ensured for all runs
 - Same travel time for all train types
 - No more « free » slot required
 - Capacity increased to 120 trains/h

| | Espacement entre les sillons JNM | Temps d'arrêt FBCL | Sillons potentiels | Sillons de respiration | sillons disponibles (compte tenu des sillons de respiration) | | | | | | Gains | |
|---|-------------------------------------|-----------------------|-----------------------|---------------------------|--|--------|--------|--------|--------|--------|-------|-----|
| | | | | | Voie 1 | Voie 2 | Voie 3 | Voie 4 | Voie 5 | Voie 6 | | Tot |
| Situation actuelle | 180 | 60 | 20 | 4-R-4-R | 15 | 15 | 16 | 16 | 15 | 15 | 92 | |
| Hypothèse 1 | 120 | 60 | 30 | 4-R-R-4-R-R | 18 | 18 | 20 | 20 | 18 | 18 | 112 | 22% |
| Hypothèse 2 | 120 | 60 | 30 | 4-R-4-R | 22 | 22 | 24 | 24 | 22 | 22 | 136 | 48% |
| Hypothèse 3 | 150 | 60 | 30 | 2-R-2-R | 18 | 18 | 20 | 20 | 18 | 18 | 112 | 22% |
| Hypothèse 4 | 150 | 90 | 24 | 4-R-4-R | 17 | 17 | 19 | 19 | 18 | 18 | 108 | 17% |
| Hypothèse 5 | 150 | 90 | 24 | 5-R-5-R | 18 | 18 | 20 | 20 | 19 | 19 | 114 | 24% |
| ATO | 180 | 60 | 20 | Marge incluse | 18 | 18 | 20 | 20 | 18 | 18 | 112 | 22% |
| ATO 2 | 180 | 60 | 20 | Marge incluse | 20 | 20 | 20 | 20 | 20 | 20 | 120 | 30% |
| <i>Utilisation réelle actuelle départ FBMZ ou FBN entre 7h30 et 8h29 (Thalys compris)</i> | | | | | 15 | 14 | 16 | 16 | 14 | 10 | 85 | |

