



SOUTH EAST EUROPE - INTELLIGENT TRANSPORT SYSTEMS

SEE-ITS Demo activities in Greece

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GREECE DEMO SYSTEM DESIGN

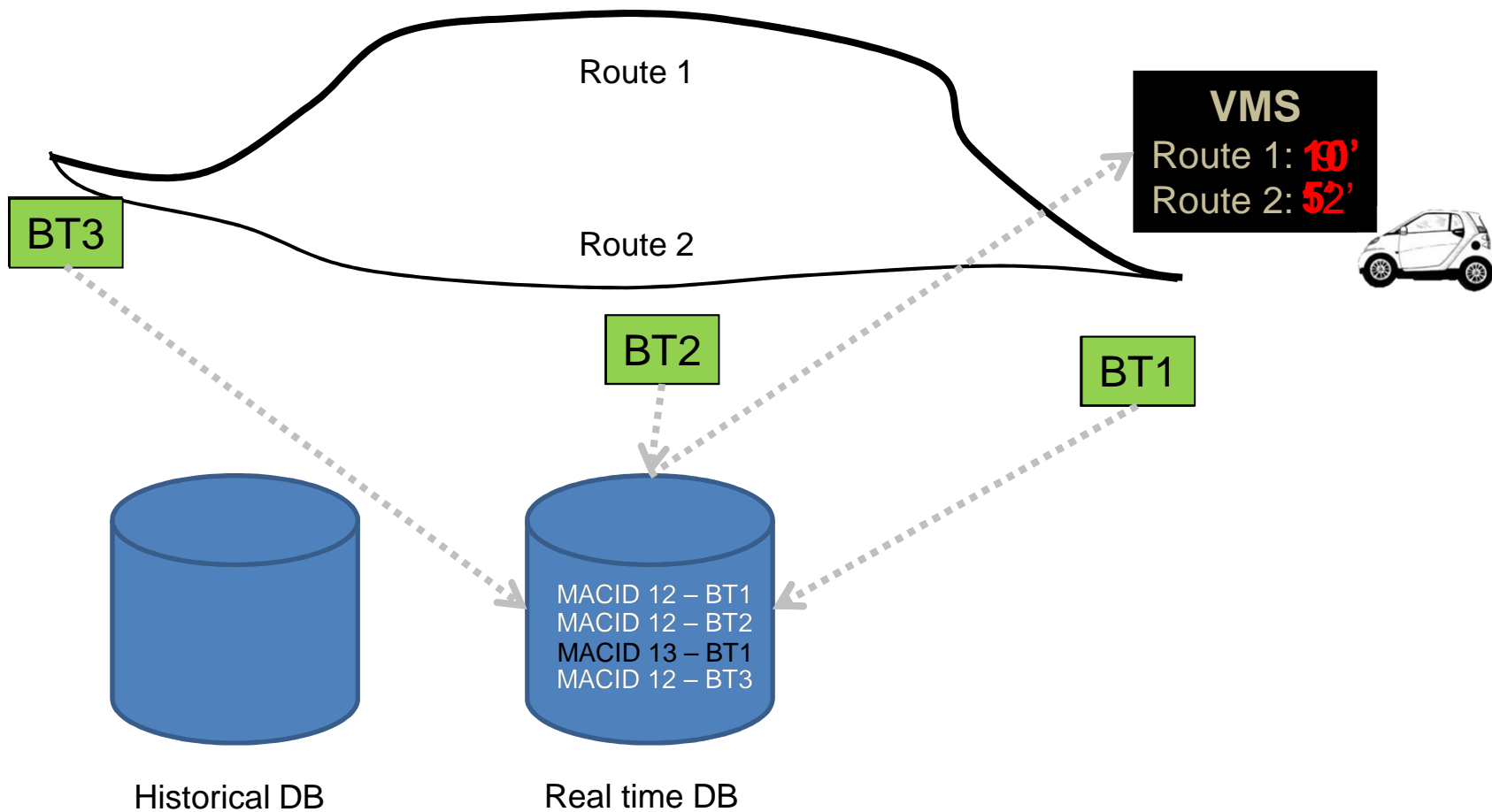
The concept

Installation of Bluetooth™ technology Monitoring Sensors (BMS) at major intersections of the city

The purpose

Tracking “travellers’ devices” by detecting anonymous Bluetooth™ MAC IDs in order to estimate real-time travel times and traffic conditions for the main axis of the road network

GREECE DEMO SYSTEM DESIGN



GREECE DEMO SYSTEM DESIGN

The following **methodologies and algorithms** have been designed, developed and used:

- ❖ BMS sensors' location for optimal user tracking
- ❖ Data filtering procedures for identifying the different modes (pedestrian, private cars, motorcycles, public buses, bicycle)
- ❖ Data fusion of multiple sources
- ❖ Real time travel time and traffic conditions estimation
- ❖ Short term travel time forecasting
- ❖ Extraction of speeds and volumes through travel times
- ❖ Continuous correction of underlying real-time models
- ❖ Correction of strategic DSS

THESSALONIKI DEMO

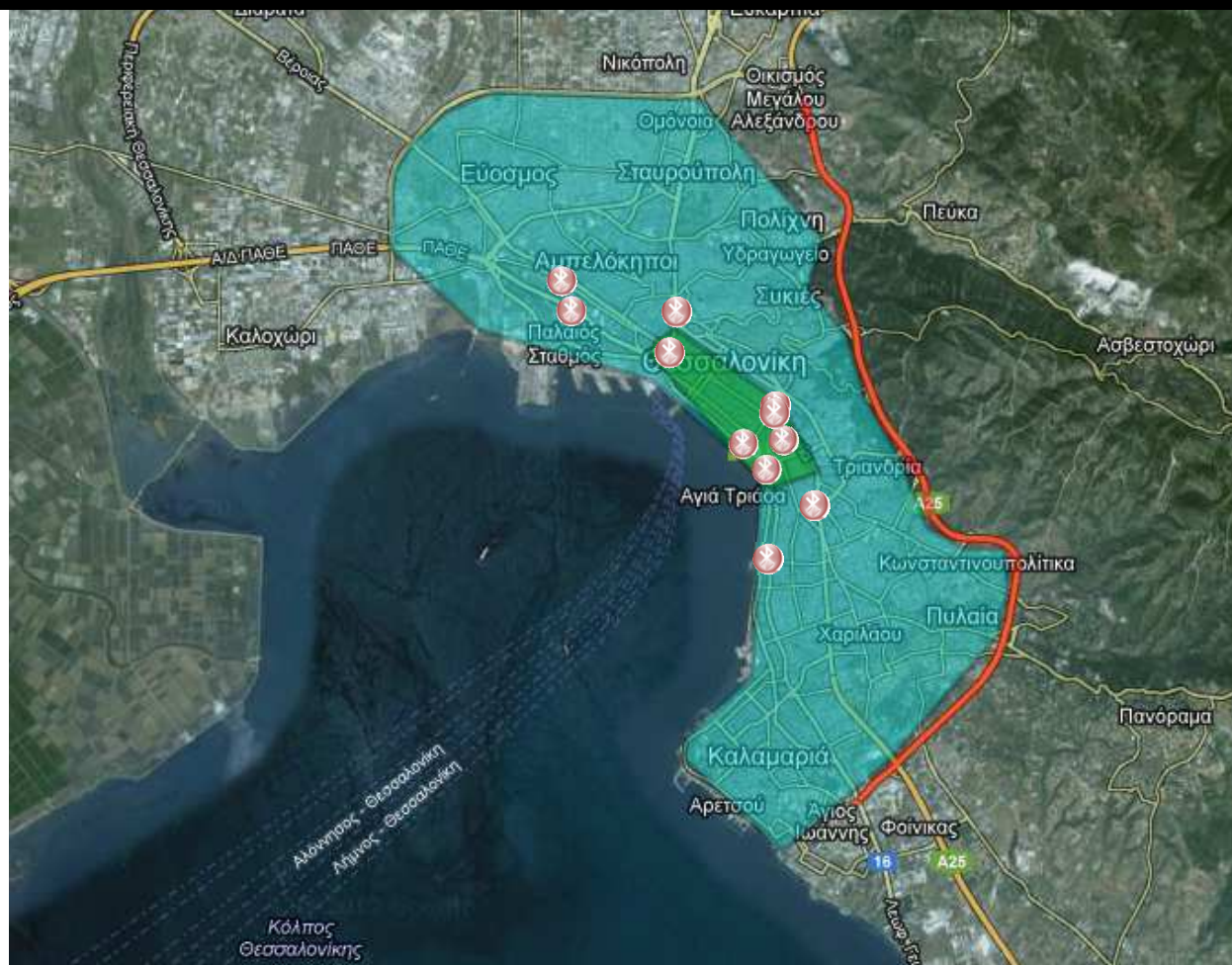
- ❖ Installation of **25 BMS** in the context of SEE ITS (58% of all installed devices)
- ❖ Provision of real travel time and traffic conditions information for **37 routes**
- ❖ In **150 paths** of the wide area of the city travel time is estimated
- ❖ On an average more than **185.000 detection per day**
- ❖ Over the day on an average **3.500 detection per 15 min**



THESSALONIKI DEMO

BMS network in
Thessaloniki

25 BMS
installed in
the
framework
of SEE-ITS



THESSALONIKI DEMO

Development of the on-line portal:
www.greece.seeits.eu

The screenshot shows the website interface for Thessaloniki. On the left, a list of 37 routes is displayed with their respective travel times. On the right, a map of Thessaloniki shows 150 routes colored according to their traffic state: green for low traffic, yellow for medium traffic, and red for high traffic. A legend titled 'Traffic Conditions' explains the color coding.

Route	Travel Time
K. Karamanli (Psaron/Kleanthous) - Platia CHANTH (CHANTH)	06'
K. Karamanli (Psaron/Kleanthous) - Platia Sintrivaniou (Sintrivani)	05'
Lagada (Ag. Panton) - Platia Dimokratias (Vardaris)	08'
Lagada (Ag. Panton) - Evangelistria (Ag. Dimitriou/Ethn. Aminis)	11'
D. Eisodos (E90 Stathmou/Ion. Koleti) - Platia Dimokratias (Vardaris)	06'
Platia Sintrivaniou (Sintrivani) - Lefkos Pyrgos	08'
V. Olgas (Arch. Mousiou) - Platia CHANTH (CHANTH)	03'
Platia CHANTH (CHANTH) - Platia Sintrivaniou (Sintrivani)	05'
Platia Dimokratias (Vardaris) - Platia Sintrivaniou (Sintrivani)	16'
Monastiriou - Platia Dimokratias (Vardaris)	07'
Evangelistria (Ag. Dimitriou/Ethn. Aminis) - Platia Sintrivaniou (Sintrivani)	03'
Lefkos Pyrgos - Platia CHANTH (CHANTH)	05'
Platia CHANTH (CHANTH) - K. Karamanli (Psaron/Kleanthous)	25'
Platia Sintrivaniou (Sintrivani) - K. Karamanli (Psaron/Kleanthous)	06'
Platia Sintrivaniou (Sintrivani) - Evangelistria (Ag. Dimitriou/Ethn. Aminis)	11'
Platia Sintrivaniou (Sintrivani) - Platia	06'

Real-time travel times for 37 routes of the road network

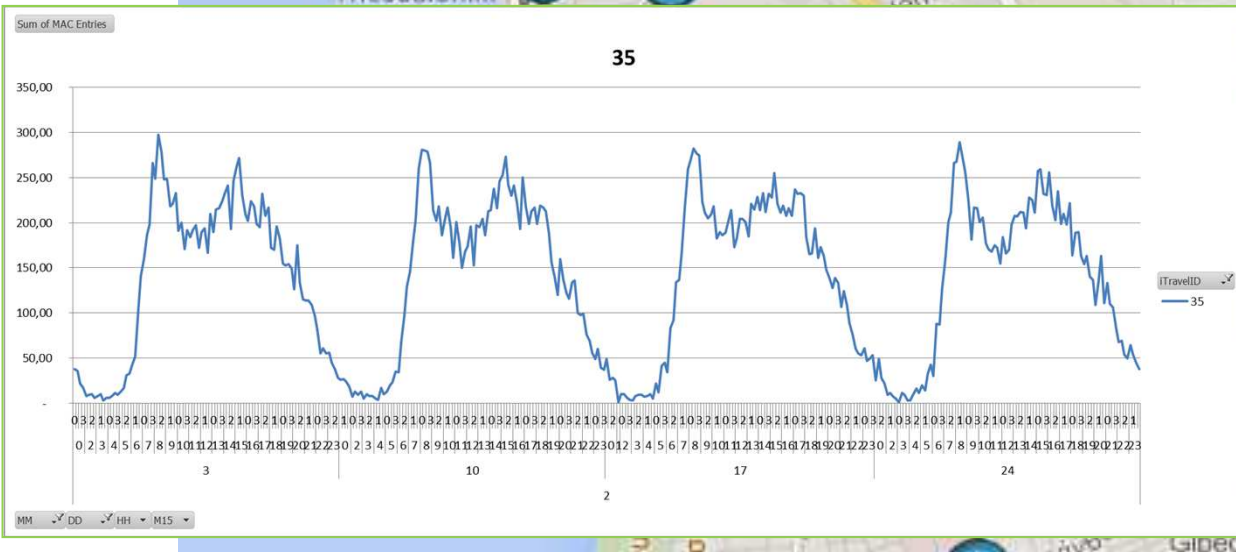
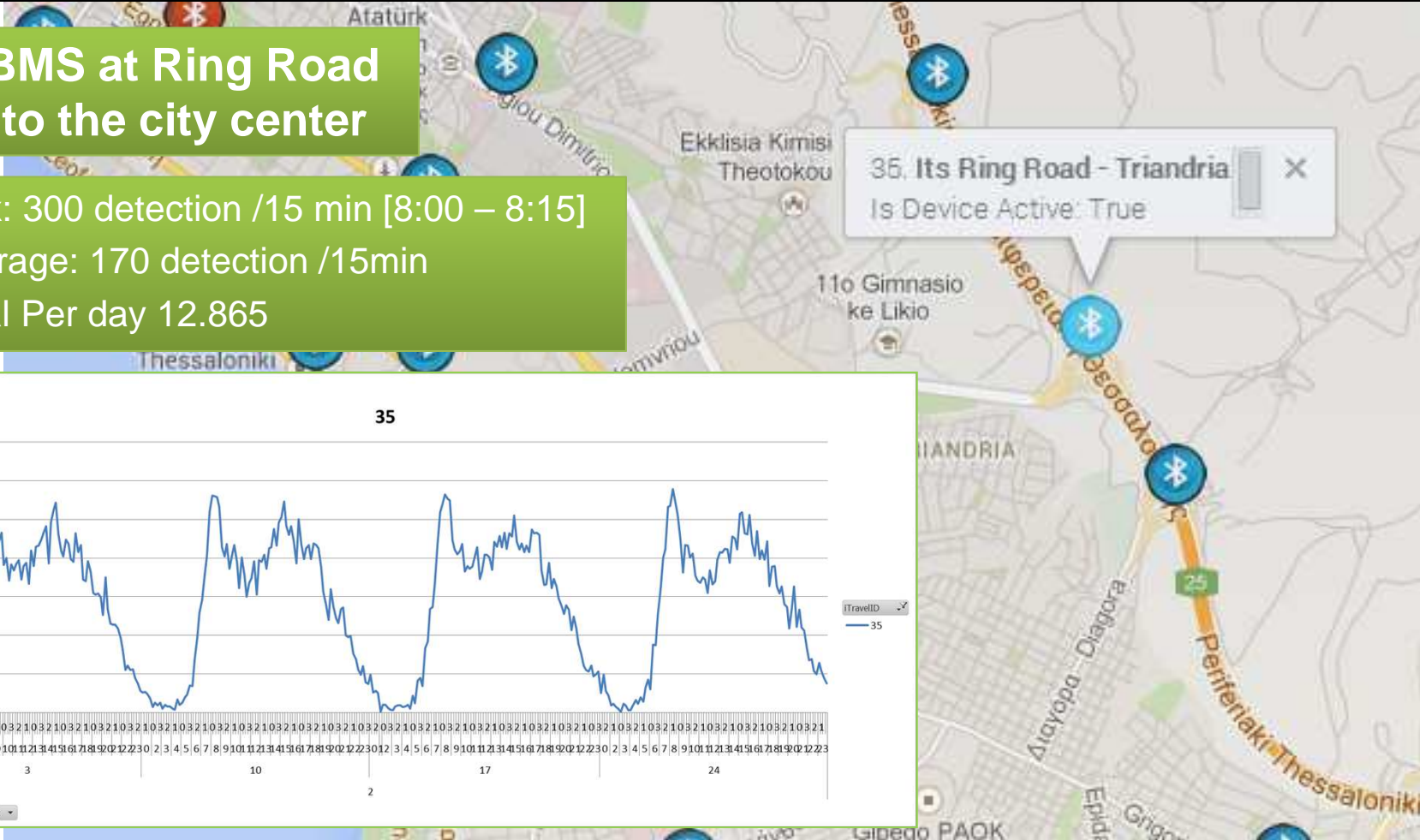
Real-time traffic conditions estimation for 150 routes of the road network

Routes are coloured depending on their traffic state

THESSALONIKI DEMO

e.g. BMS at Ring Road Exit to the city center

- ❖ Max: 300 detection /15 min [8:00 – 8:15]
- ❖ Average: 170 detection /15min
- ❖ Total Per day 12.865



PATRAS DEMO

Real-time travel time information for central routes of the city provided through internet and a mobile application.

Travel times are estimated using the algorithm developed by CERTH-HIT for the estimation of real-time travel times using point-to-point detectors.



8 BMS sensors were installed in selected urban nodes



PATRAS DEMO

The screenshot shows a web portal interface for traffic information in Patras, Greece. On the left, there is a list of routes under the heading 'Οδικές συνδέσεις'. The selected route is '68 - 71: Πλατεία Νίκης - Πλατεία Βασιλέως Γεωργίου'. The main map area displays the city of Patras with several colored routes (green, blue, orange) overlaid. On the right side, a detailed data panel for the selected routes is shown:

Λεπτομέρειες	
68: Πλατεία Νίκης	
71: Πλατεία Βασιλέως Γεωργίου	
ΚΑΤΑΣΤΑΣΗ	
Χρόνος (sec)	6m 34s
Τελ. Εκτίμηση	14 λεπτά πριν
ΠΑΡΑΦΟΡΕΙΣ	
Κωδικός σύνδεσης	149
Μήκος (m)	1700
Μεγ. Ταχύτητα (km/h)	50
Ελ. χρόνος (sec)	153
ΤΤQ 1 (sec)	248
ΤΤQ 2 (sec)	437

Web portal - Traffic information

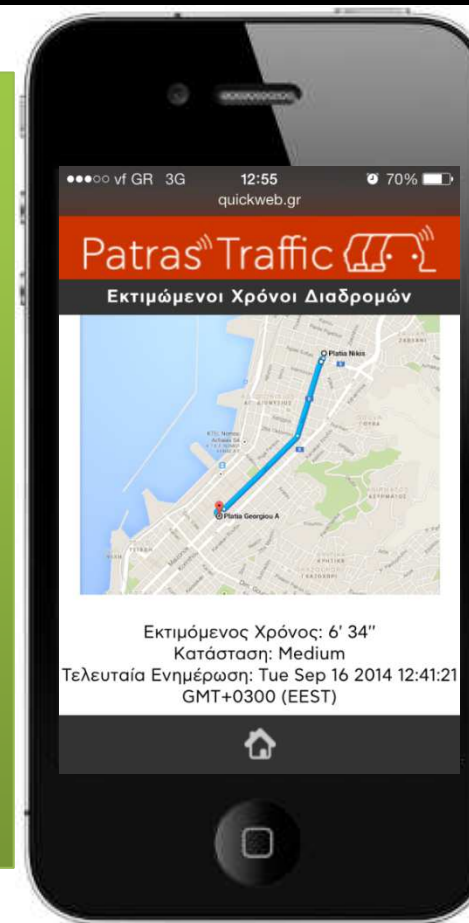
- ❖ Presentation of a Traffic Map with real time information, coloured routes (according to the traffic conditions) and estimated times for travelling from point to point.
- ❖ 14 Routes initially included
- ❖ Historical Data are being collected and analysed
- ❖ Creation of web services to be included in other Web Portals

PATRAS DEMO



Mobile App – Traffic Information

- ❖ Presentation of traffic conditions' estimation for the selected routes. The User can select his preferred or all routes in order to get informed regularly for the Real Time traffic conditions in (daily, during the day etc.)
- ❖ Each route is accompanied by map representation and the colouring of the traffic conditions



FIRST EVALUATION RESULTS

Evaluation methodology includes:

- Traffic simulation modelling
- Technical validation tests for the assessment of the technical reliability and accuracy of the system
- Field Operational Tests (FOTs) for the identification of the transportation system impact
- A questionnaire survey for the assessment of the system from the user's perspective
- Internal evaluation processes

FIRST EVALUATION RESULTS

More informed travelers:

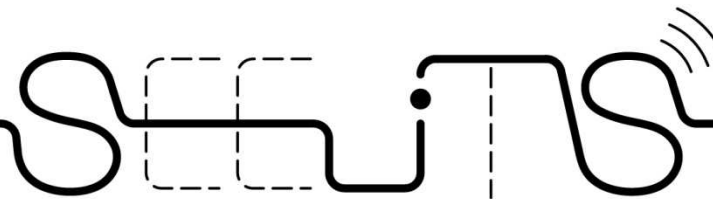
- most drivers (91%) state that they frequently observe the information provided by the Variable Message Signs

High Users acceptance

- 72% of the drivers questioned are willing to use the SEE-ITS online service for planning their trip
- 89% of drivers find the provision of such a service either fairly or very useful
- 59% of all drivers would accept the system information, would take into account the information provided by the service and, at the same time, would make use of the service for route planning

FUTURE EVALUATION

- Impact on total Vehicle-kilometers travelled
- Impact on total Vehicles-hours travelled
- Impact on Fuel Consumption
- Impact on total Emissions diffusion
- Impact on Modal Shift
- Level of users Satisfaction



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**Thank you for your
attention**

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