BDTIC
3rd BUILDING DIGITAL TWIN International Congress

tecnalia
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

Beeyonders approach for digital twins in linear infrastructure

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ORGANIZED BY:

BDTA DigiChecks EUnet4DBP

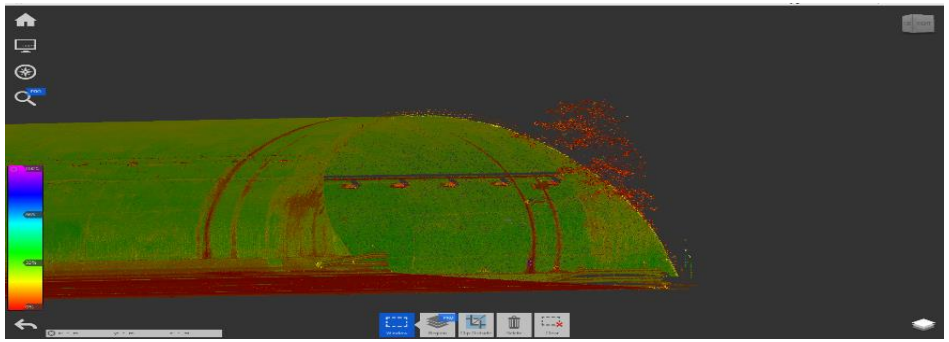
THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION´S HORIZON EUROPE RESEARCH AND INNOVATION PROGRAMME – PROJECT 101058541 – DIGICHECKS

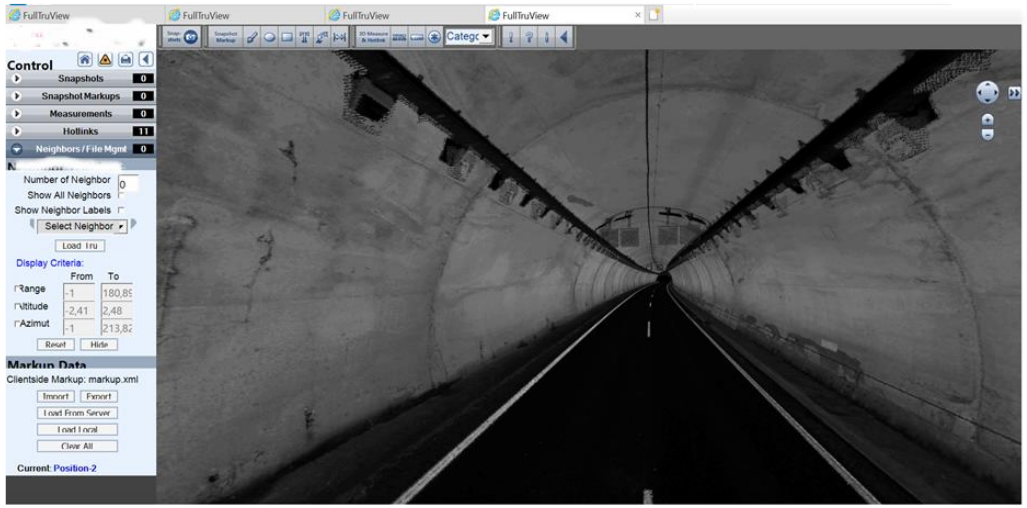
Introduction

A journey to make Smart decisions through Smart Data…

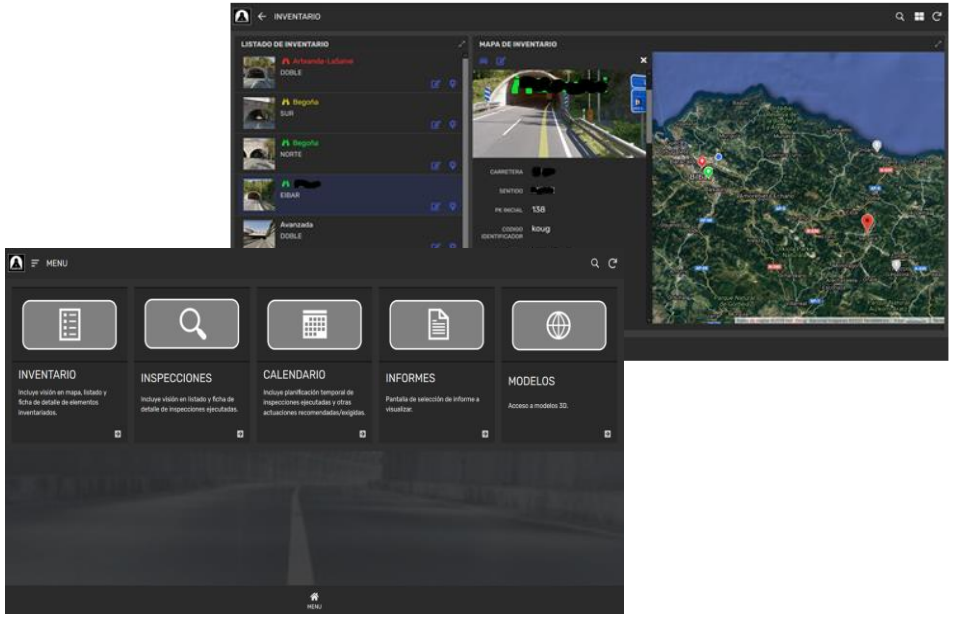
Starting from asset inspection and diagnosis

Combining inspection with digital environment



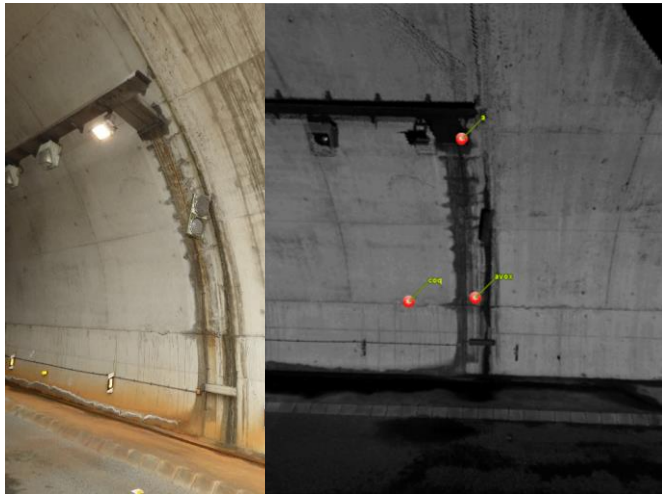


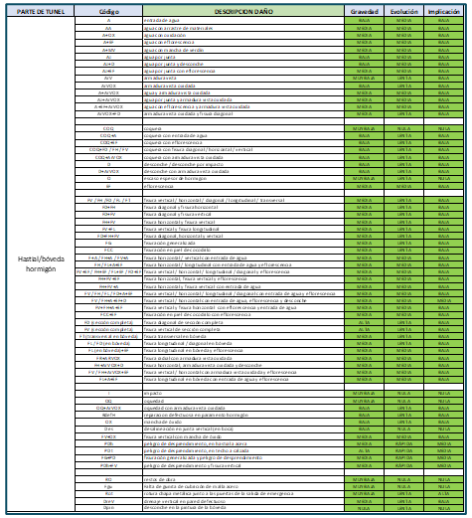
40 km tunnels scanned and integrated in a tunnel inspection management platform



Starting from asset inspection and diagnosis

Enriching on-site inspection

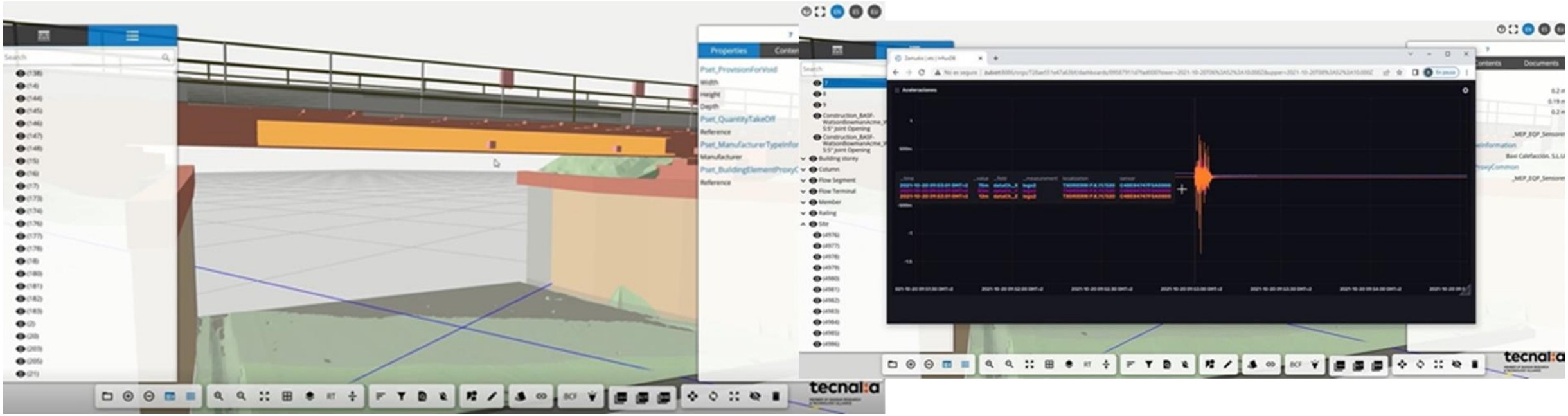




Damage library and evaluation criteria

Incorporating real time data

Structural Health Monitoring in an IFC model



Railway Bridge monitoring through the integration of IoT sensors, IFC model and structural analysis algorithms.

Consolidation at network level

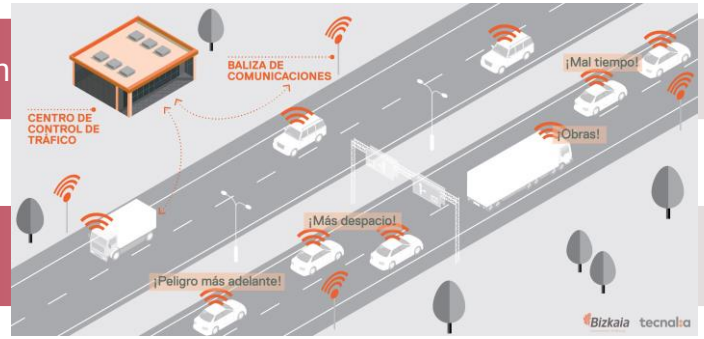
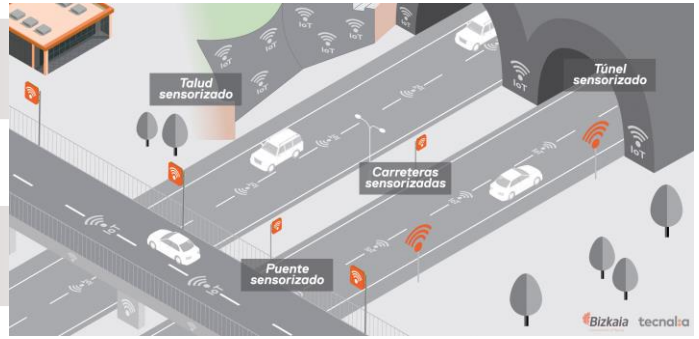
Bizkaia Connected Corridor

Public-Private Collaboration

Living Lab Corridor – 1.200 km of roads including bridges, tunnels, slopes…

Technology experimentation environment – Demonstrator for digital and physical technologies

Mobility and **Infrastructures**

	COOPERATIVE CONNECTED AUTONOMOUS MOBILITY	SMART SAFE INFRASTRUCTURES
Testing & Certification		
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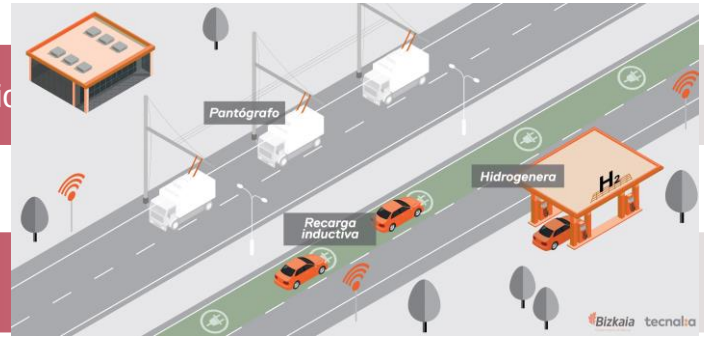
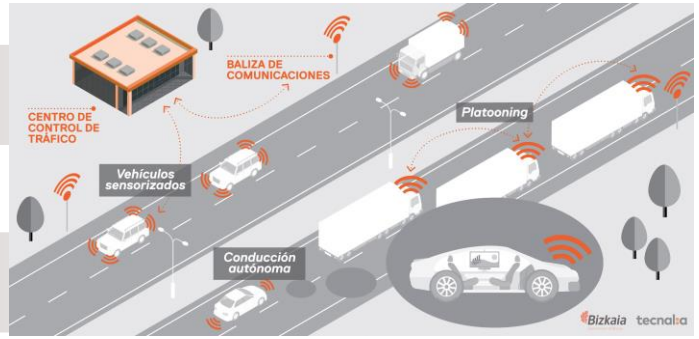
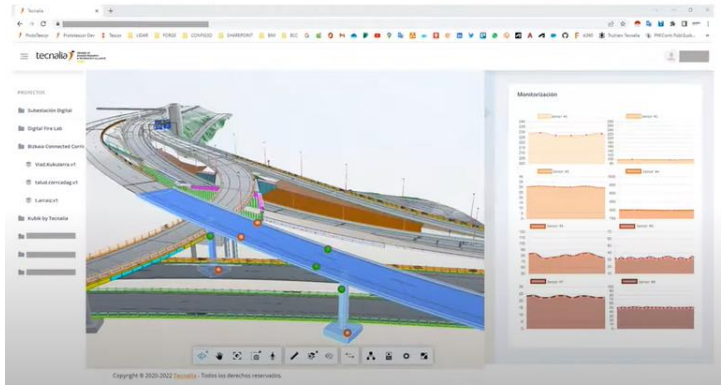
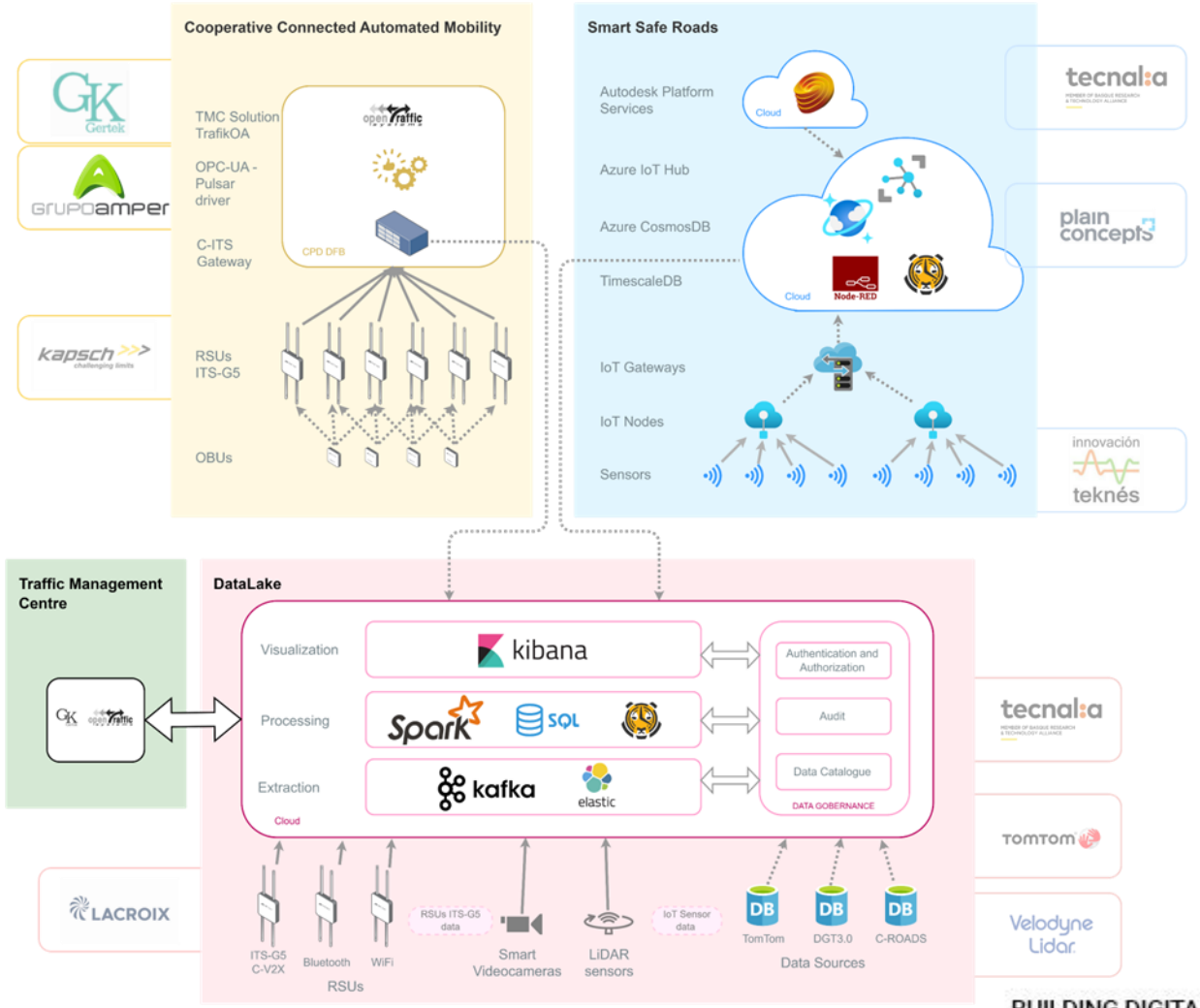
Standards & Regulatio		
Dissemination		

Consolidation at network level

Bizkaia Connected Corridor

General Architecture





The next Steps

BEEYONDERS

Funded by The European Union

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Pioneering worker-friendly technologies for Europe's construction sector

AUTONOMOUS & TELEOPERATED GROUND AND AERIAL VEHICLES

ADDITIVE MANUFACTURING

SMART ADVANCED WEARABLES

EXOSKELETONS

DIGITAL TWIN

HUMAN-ROBOT COLLABORATION

The next Steps

BEEYONDERS

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Development path with infrastructure life cycle perspective:

- Functional and **user requirements** for the Digital Twin system
- **Digital workflows** required (BPMN)
- **KPIs** to be evaluated
- **Data capture** hardware & software
- **Visualization interface** features and characteristics
- Management of **BIM** integration modelling
- **Services input/output** workflow comprising the intelligence of the system

The next Steps

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Tunnel construction

LOCATION
Santa Barbara Foundation Test Tunnel, León (Spain)

TECHNOLOGIES IMPLEMENTED
Autonomous and teleoperated ground/air robotic solutions applied to construction machinery

Road construction

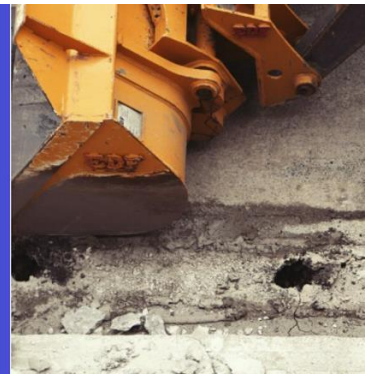
LOCATION
24 highway, Firenze (Italy)

TECHNOLOGIES IMPLEMENTED
Ground/air autonomous navigation of vehicles and use of Digital Twin and AI functionalities

Road maintenance

LOCATION
A24 highway, Rome (Italy)

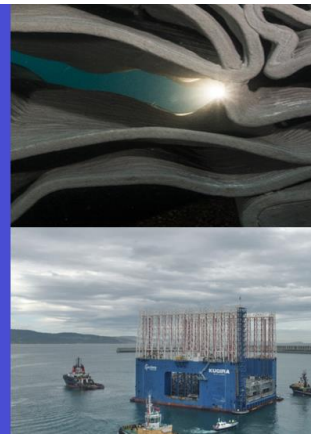
TECHNOLOGIES IMPLEMENTED
Autonomous Robotics



Maritime construction

LOCATION
Port of Gijón (Spain)

TECHNOLOGIES IMPLEMENTED
Structural design and optimization of caisson and reefs



Maritime construction - EU-Japan collaboration

LOCATION
Port of Rotterdam, Dutch National test site (The Netherlands)

TECHNOLOGIES IMPLEMENTED
Use of data to provide insights and real-time designs and feedback in push-in pile machinery process

Building construction

LOCATION
Helsinki Metropolitan Area, Southern Finland (Finland)

TECHNOLOGIES IMPLEMENTED
Wearables, drones & exoskeleton

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Thank You for your attention

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