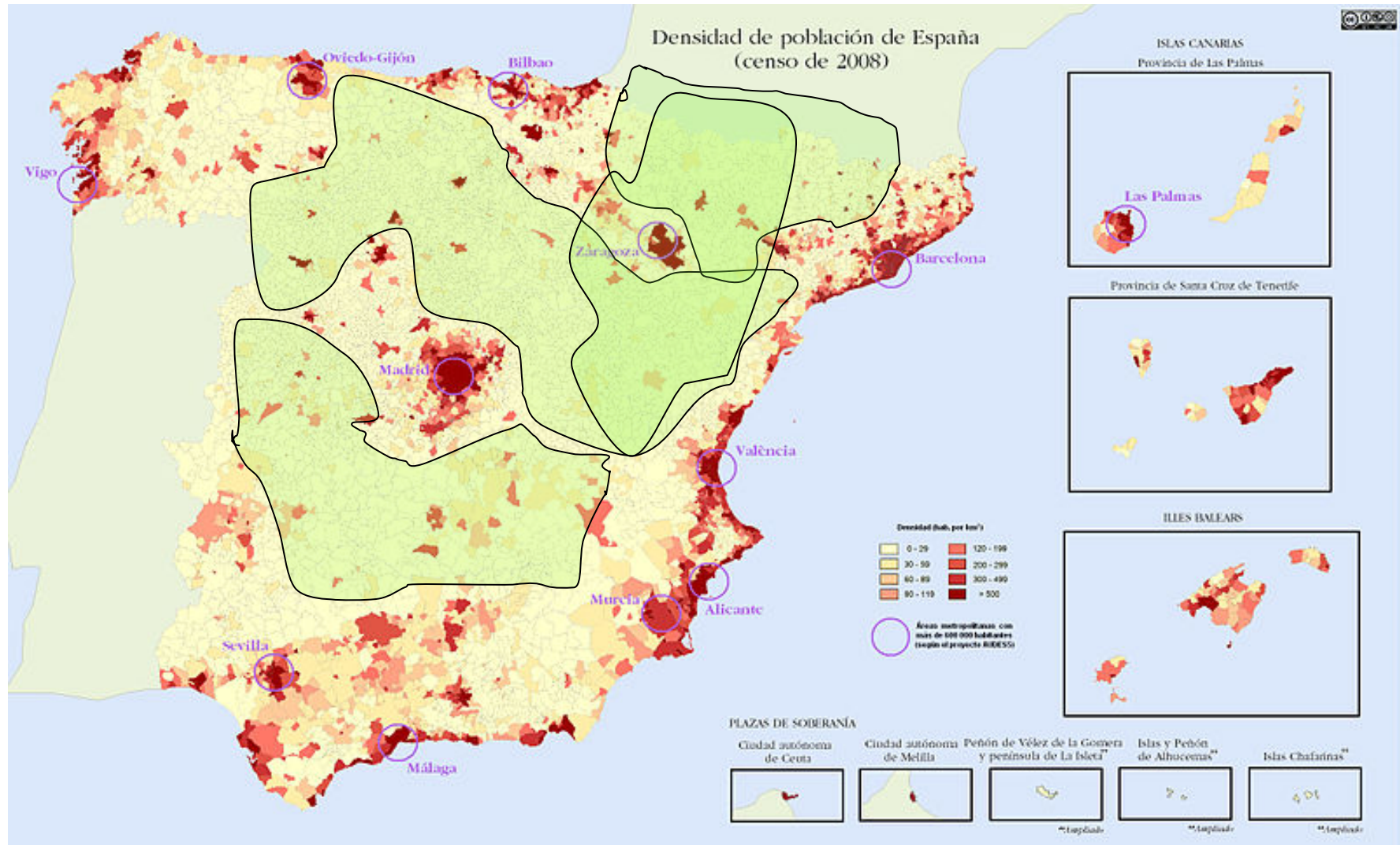


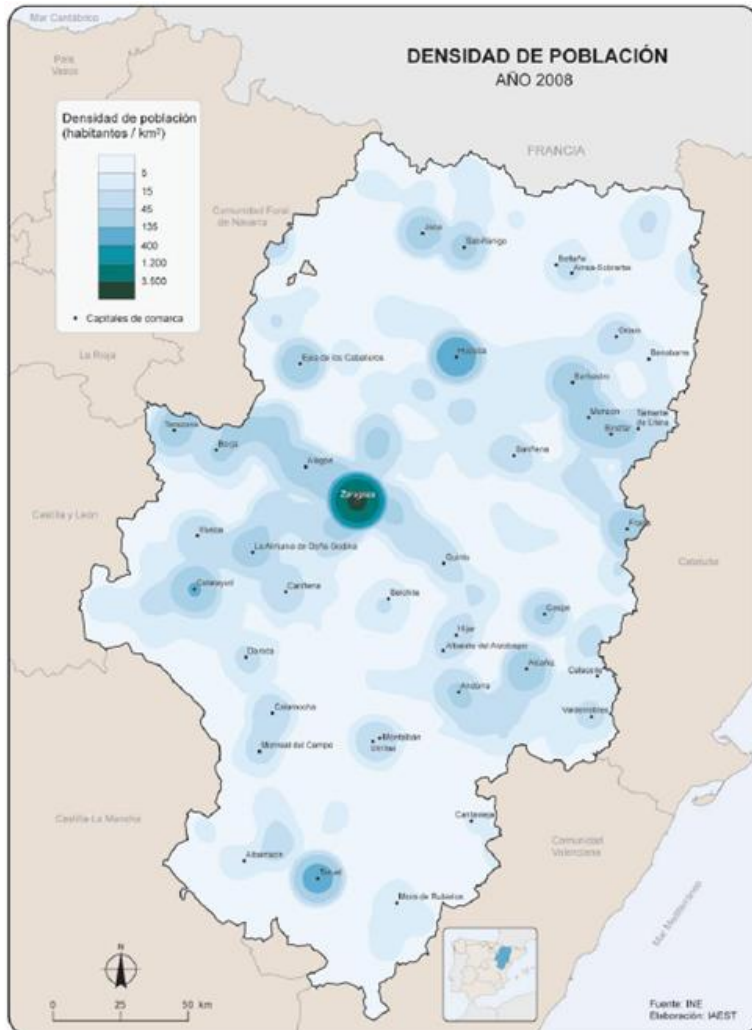
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Sparsely Populated Areas: Challenges and Opportunities - Aragón

One of the biggest sparsely populated areas of Spain





- **Unbalanced urban and rural distribution: 95% of the territory involves “fragile and hardly structured” rural zones.**
- **Ageing population**
- **Brain drain of most educated Spanish young people.**
- **Providing good public services to citizens in a large depopulated territory has a high cost.**

Unbalanced distribution

- Half of the population in one city
- Public choice issues
- “Magnet effect”

Ageing Population

- Elders account for circa 60% of total expenditures
- Not economically active cohort
- Lower purchasing power

Brain drain

- Lowers potential economic growth
- Loss of high income workers
- Loss of formation costs

High cost of services

- Extra 6% health costs:
 - More health centres
 - More doctors
 - More kilometres

1.000 biotechnology and biomedical researchers

5 biomedical and health research institutes
(nanotechnology, biochemistry, environmental health, biophysics and biocomputing, biomedicine)

Very advanced Nanotechnology and Supercomputation facilities

900 publications
3000 Impact factor

2 Public Hospitals, 2 Private Hospitals and numerous medium size Hosp. and Primary Care centers

2 Universities
(UZ public, USJ private)

60 research groups + 80 clinical research groups

Companies

- **BIO-MED Aragón:** 25 companies and organizations
- **Cluster Health Aragón (Arahealth):** 28 companies and organizations





European Innovation Partnership on Active and Healthy Aging (EIP on AHA)



+2 años la Esperanza de Vida con Buena Salud en 2020
Triple ganancia para Europa

Sustainable & efficient care systems

health & quality of life of European citizens

growth & expansion of EU industry

Planes de Acción

 Improving prescriptions and adherence to treatment (A1)	 Integrated care for chronic conditions, inc. telecare (B3)	Sitios de Referencia
 Better management of health: preventing falls (A2)	 ICT solutions for independent living & active ageing (C2)	
 Preventing functional decline and frailty (A3)	 Age-friendly cities and environments (D4)	

Sitios de Referencia

BMA B3 Good Practices

Partner BMA	Initiative	Objectives
Telemedicina and e-Health Group	Integrated Healthcare Information System for End-to-End Standardized Exchange and Homogeneous Management of Digital ECG Formats	AA7
Hospital Barbastro	PITES: Innovation platform in new telemedicine and e-health services for chronic and dependent patients	AA5
Microhealth	MICROHEALTH HEMOPHILIA	AA7
IACS	FOCUSS is a knowledge management project that optimizes the intellectual capital of the system by using the resources of the own Public Health System of Aragón (PHSA).	AA3
Telemedicina and e-Health Group	Evaluation and alignment of telemedicine systems in the HealthCare domain: Teledermatology experience in Aragón	AA7
Telemedicina and e-Health Group	End-to-end telemonitoring solution working with European standards: ISO-IEEE 11073 and EN13606	AA7
Hospital Barbastro	DREAMING ICT-PSP GA No 225023	AA7
Telemedicina and e-Health Group	Design of an ontology-based telemonitoring system to support personalised supervision for chronic patient at home	AA7

Innovation at **SALUD**

(Healthcare Administration of Aragón)

Goals

MISIÓN

- Proporcionar a todos una **atención sanitaria** integral
- Asegurar la **accesibilidad** a la atención
- Promover **estilos de vida** saludables
- **Prevención** y protección
- Mantener la **autonomía** de los pacientes y su inserción en el entorno y sociedad

LÍNEAS ESTRATÉGICAS

- La **telemedicina**:
 - Teleconsejo: entre AP y AE o entre AEs
 - Teleconsulta: entre paciente y AE
 - Telemonitorización domiciliaria con sensores biomédicos.
- **Prevención** y promoción de la salud
- **Seguridad** de pacientes: Uso de radiofrecuencia
- Programas de **e-learning**.
- Uso de **herramientas expertas** como ayuda en la toma de decisiones

Innovación en el área de Sistemas de Información del SALUD

- ➡ Innovación en productos y servicios
- ➡ Innovación organizativa y de gestión
- ➡ Innovación en procesos

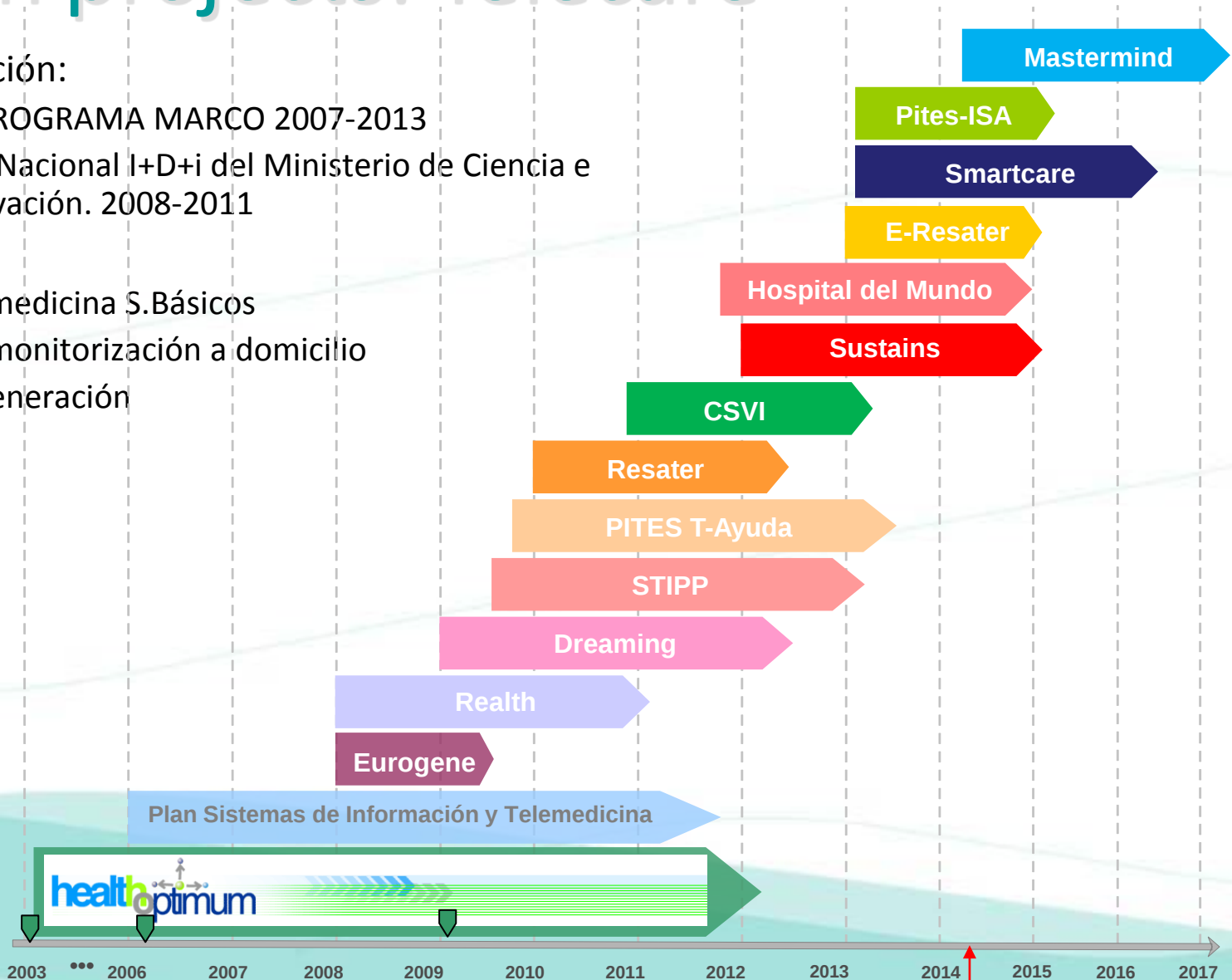
Segmentación del proceso

- ➡ Alianzas estratégicas:
 - Compartir conocimiento
 - Compartir experiencia
 - Creación de tejido económico (Economía del conocimiento)
- ➡ Validación de servicios
- ➡ Despliegue de los servicios en la organización.



Main projects: Telecare

- Financiación:
 - VII PROGRAMA MARCO 2007-2013
 - Plan Nacional I+D+i del Ministerio de Ciencia e Innovación. 2008-2011
- Hitos:
 - Telemedicina S.Básicos
 - Telemonitorización a domicilio
 - 3ª Generación



Soluciones

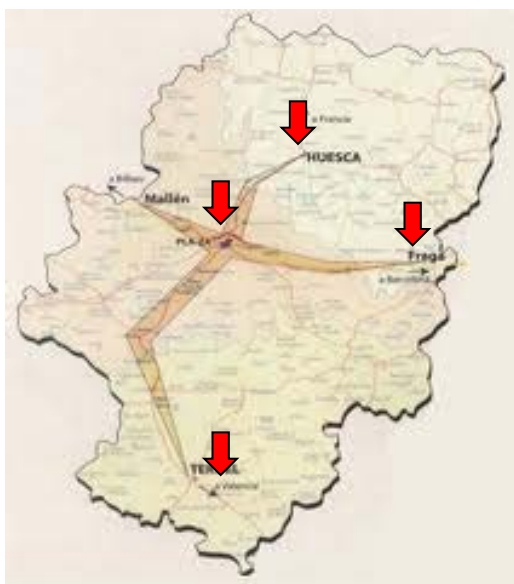


- **DREAMING**: Solución de teleasistencia y telemonitorización de constantes vitales de pacientes crónicos autónomos en sus hogares.
- **PITES**: telemonitorización de pacientes crónicos dependientes en colaboración con voluntarios de organizaciones sociales.
- **RESATER**: Salud y telemedicina en entornos rurales. Inclusión de pacientes viviendo en residencias de ancianos.
- **SMARTCARE**: Integración de cuidados. Telemonitorización en entornos asociativos.
- **PITES T-ASISTE**: Hospitalización a domicilio
- **STIPP**: telemonitorización en condiciones adversas
- **CSVi**: Dreaming + Realth
- **Ispamat**: Pacientes en tratamiento anticoagulante oral.
- **Realth**: Capacitación mediante TDT + monitorización de presión sanguínea y glucemia

Lots of empty space?



Logistics!



MIT  ZARAGOZA
International Logistics Program



Another tourism is possible!

Turism as share of Spanish
GDP (2013)

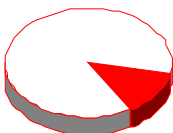


Turism:
160 MM €
15,9%

Source: INE



Sun & beach
86,1%



Inland tourism:
13,9%

Fuente: IET 2007



Born in 2013

Key points

- ✓ Mature and fragmented sector
- ✓ Need to reinvent the offer
- ✓ Differentiation and competitiveness based on innovation.

Working groups

- ✓ **Safety**
- ✓ Commercialization
- ✓ Sustainability
- ✓ Tourism product innovation



Acoustic Trail

First GPS eyes-off for mountain runners

Geko
NAVSAT


MONTAÑAS
DE INNOVACIÓN
Cluster de Turismo de Montaña
SPAIN


FEDER
Fondo Europeo de
Desarrollo Regional
"Una manera de hacer Europa"
UNIÓN EUROPEA



Connecting **people** with
Satellite Navigation
Technologies

Navigation based on senses

Helping people to navigate in the
outdoors by using haptic and
acoustic stimulus

Collaborative navigation

Sharing people position: don't
lose anyone and don't get lost

Where is the pain?



Increasing number of people practicing mountain sports, resulting into more incidents and **accidents**.



Professional assistance in the mountains, like search and rescue activities, is **complex and expensive**



Companies and institutions need **new solutions** to **reduce mountain risks**.

What is the Acoustic Trail App

Acoustic Trail is an Android smartphone application based on GPS and 3D sounds.

It support mountain runners by guiding them along an specific track, without taking eyes off the trail.





What does user need?

To know the track

Navigate without getting lost

Keep the eye on the trail

Don't stop for consulting maps or GPS

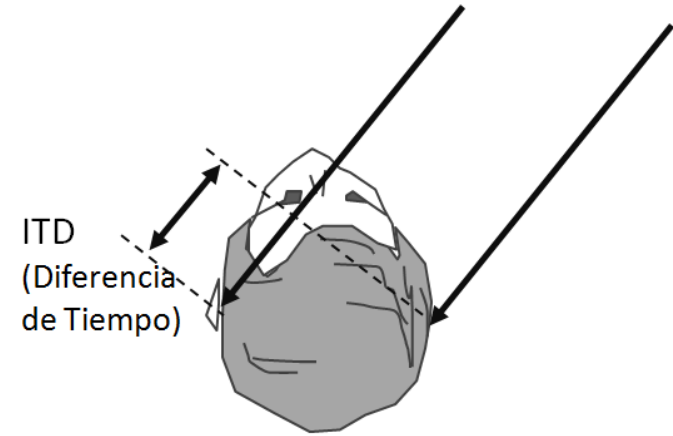
How can I **perceive** the **track**
if I have to **keep my eyes** on
the **trail**?



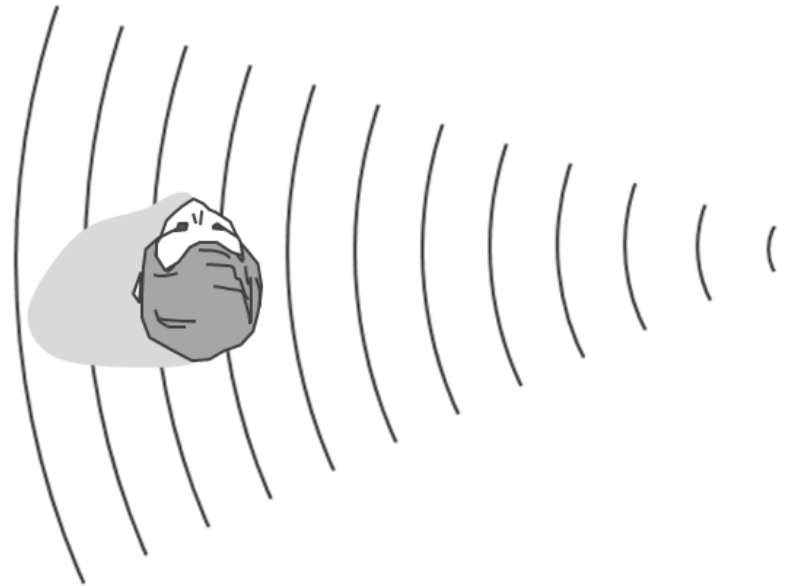
Acoustic Augmented Reality



Where do the sounds come from?



ILD
(Sombra
acústica)



Next steps

End user tests and validation

Other smartphones platforms

Extend application to other areas

¡Muchas gracias!

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