

# HIPERMED (High PERFORMANCE teleMEDicine platform)

CELTIC Plus Event - Monaco 23<sup>rd</sup> April

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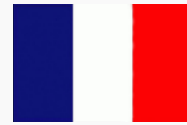
Consortium Presentation



# First Cross Domain Project



❖ 5 SME's



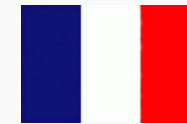
❖ 3 Industries



❖ 1 Telco



❖ 5 Research,  
Universities,  
Hospitals



# International Cooperation is a MUST



# External Final Users Validation

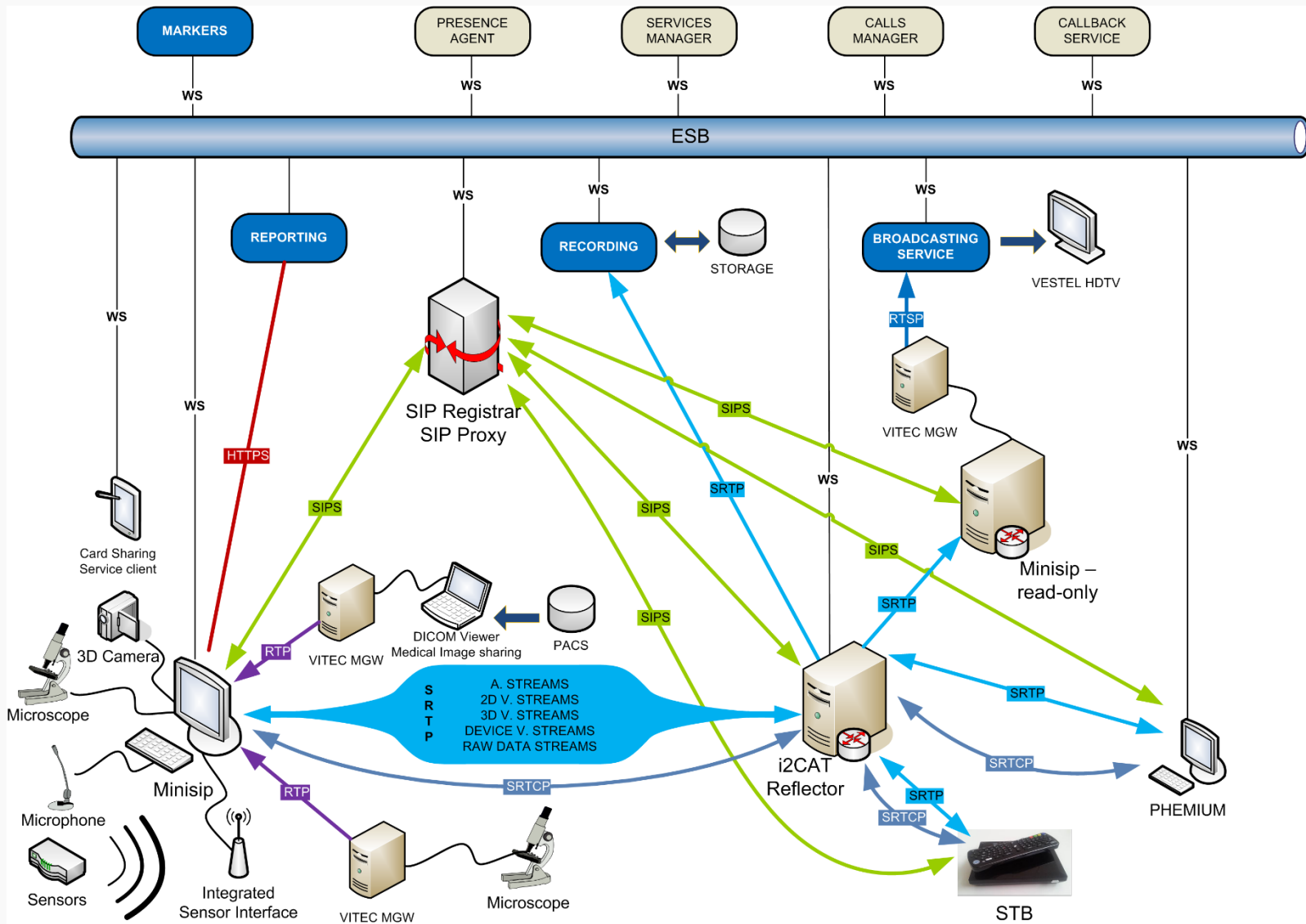




Achieved Results



# One Common OPEN Platform



# Reusing in-home infrastructure (Professional to Patient Scenarios)






# Tested in 5 scenarios with 5 subscenarios



## Professional to Professional Scenarios



Remote consultation  
3 Sub scenarios




Tele burn emergency  
2 Sub scenarios

## Professional to Patient Scenarios



Knee Rehab



Speech Training



CardioRespiratory  
Rehabilitation

# with a common Validation Methodology involving final users



- ❖ People involved in the Validation Phase
  - ◆ 42 - Technical Validation
    - ◆ 36 Technicians
    - ◆ 6 Doctors
  - ◆ 55 - Clinical, Functional & Usability Validation:
    - ◆ 4 External Technical Professionals
    - ◆ 26 Professors and Doctors
    - ◆ 14 Interns and Students of Medicine (from 3<sup>rd</sup> to last year students)
    - ◆ 11 Real Patients
  - ◆ 14 Acceptability of Video Quality Validation:
    - ◆ 14 Professors and Doctors



Detailed Results



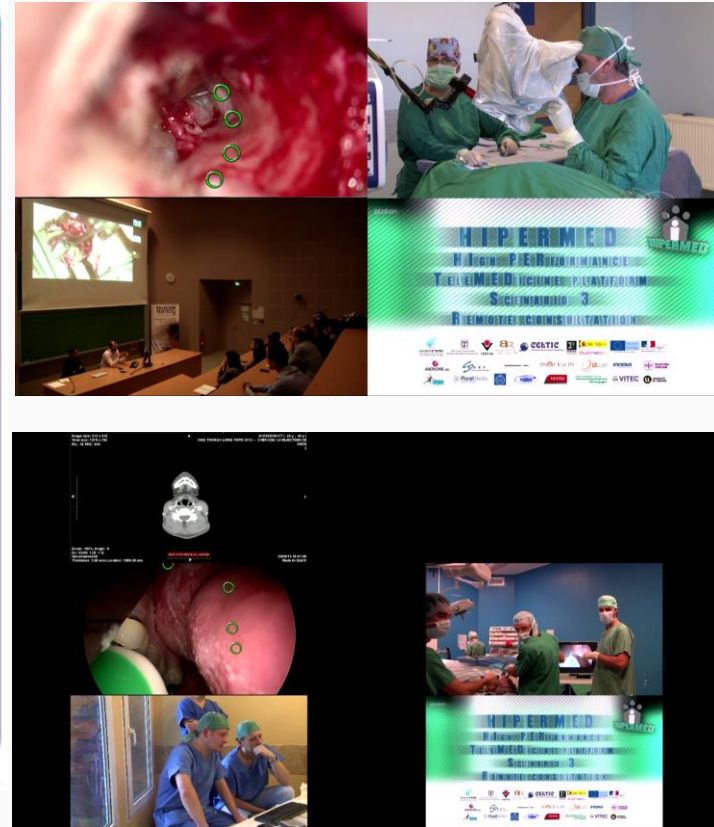
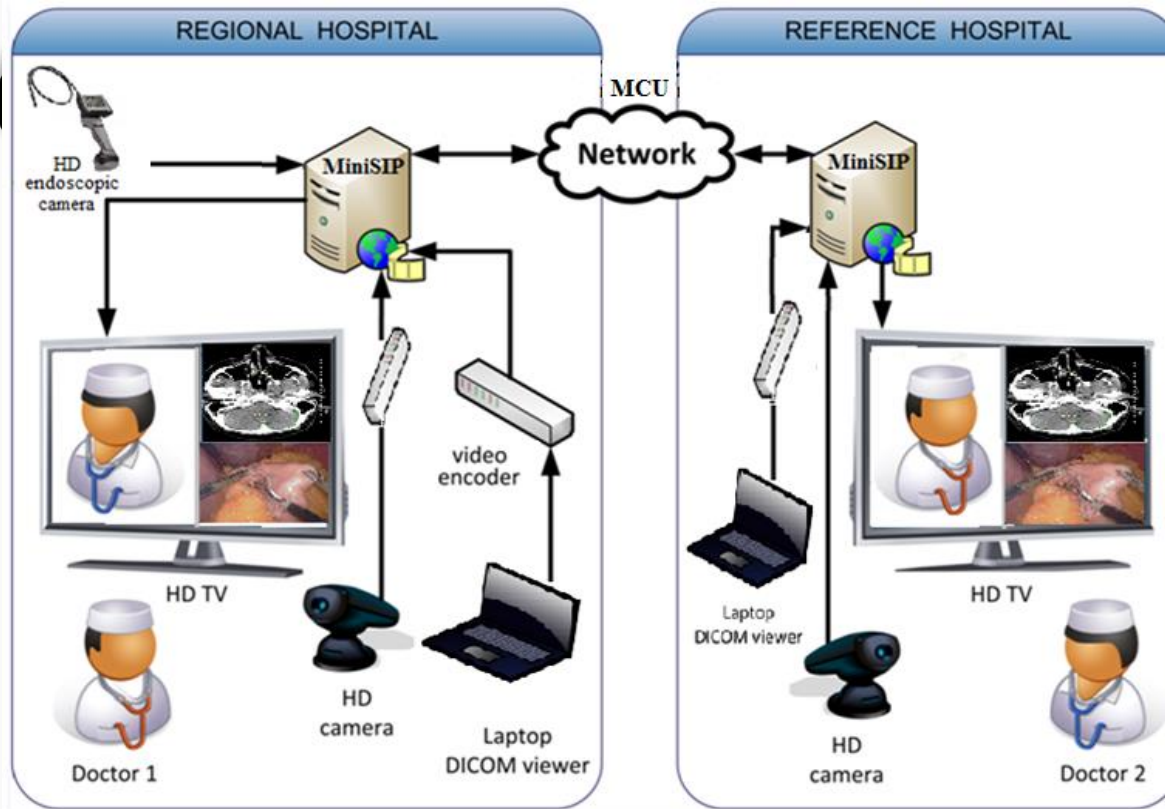
# Professional to Professional Scenarios



Remote consultation



# Remote consultation



## 3 sub-scenarios:

- ✓ Remote lecture
- ✓ Emergency consultation
- ✓ Planned consultation

## 2 hospitals:

- ✓ Poznan University Hospital (Poland)
- ✓ Nancy University Hospital (France)



Medical speciality: **ENT** (Ears, Nose, Throat)

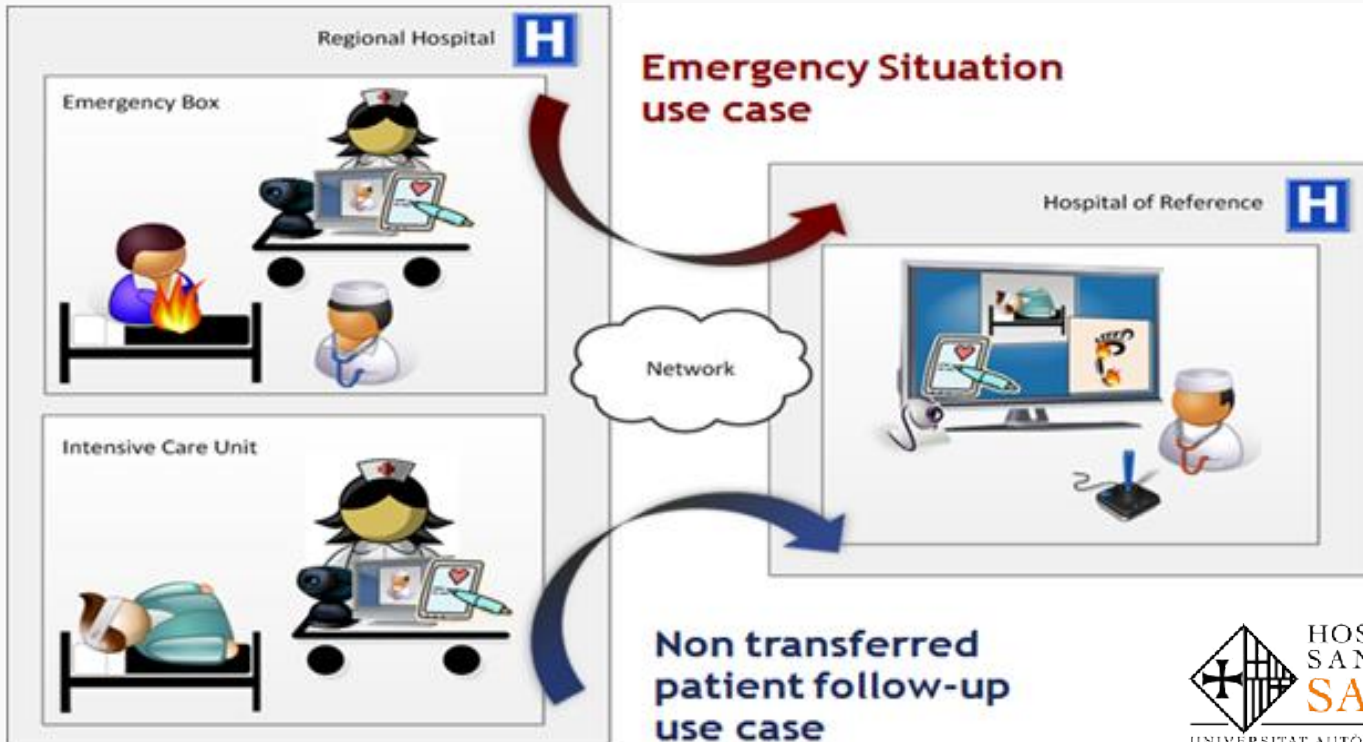
# Professional to Professional Scenarios



Tele burn emergency



# Tele-consultation for burn patients



# Professional to Patient Scenarios



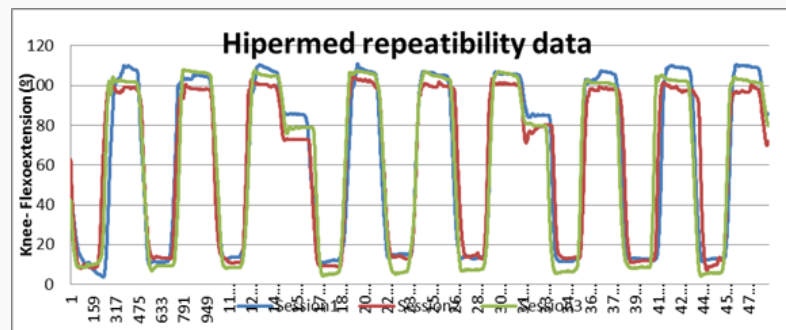
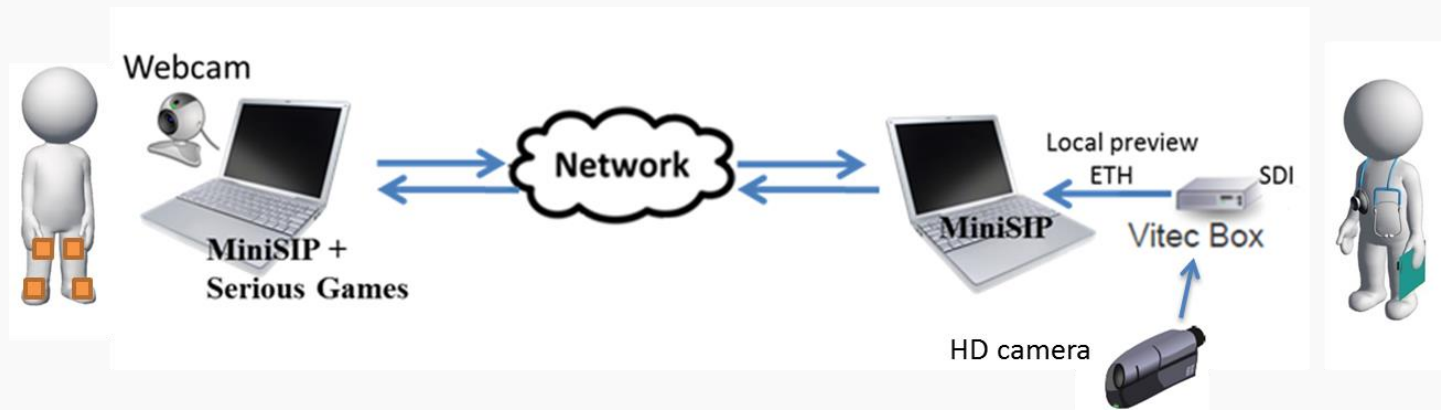
Knee Rehabilitation





# Knee Rehabilitation

- ❖ **Technical Pilot Study:** project engineers reporting efficacy of the system.
- ❖ **Clinical Pilot Study:** Conducted with real patients and doctors.



# Professional to Patient Scenarios



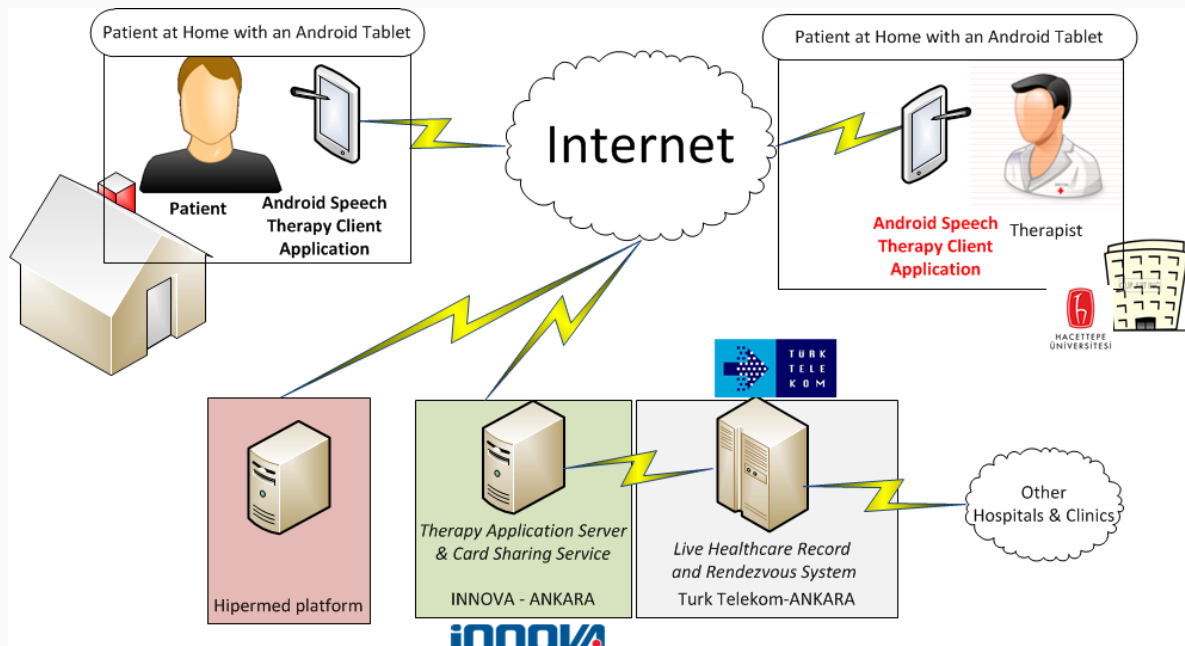
Speech Training



# Remote Speech Therapy



- ❖ Android tablets with Avea (Turk Telecom MNO) are used for 3G connection
- ❖ Hacettepe University Audiology clinic used the application for test on patients



innova  
Overview of the system

# Professional to Patient Scenarios



Remote rehabilitation for  
cardio-respiratory diseases



# Realtime information & interaction.



Gym



Camera



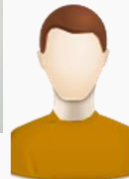
Exercises



Vital signs



Pulsometer



Gym coach

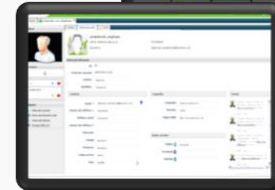


Smartphone

Patients' home



Web teleconsultation



Specialist  
physioterapist

phremium<sup>o</sup>

CLÍNICA  
BARCELONA  
Hospital Universitari





Standardization



# Standardization Activity



STANDARD	ORGANIZATION	HIPERMED Current Status
HOMEPLUG AV	HomePlug Alliance	Follower
IEEE1901	IEEE	Follower
IEEE1905	IEEE	Follower
ITU Ghn	ITU-T	Follower
IEEE1901.2	IEEE	Follower
HOMEPLUG AV2	HomePlug Alliance	Follower
IEEE 802.11/ac	IEEE	Follower
IEEE 802.11/af	IEEE	Follower
IEEE 802.11/ad	IEEE	Follower
HL7	HL7 IO	Follower
DICOM	NEMA	Follower
	ISO	
AVC/H264	ITU-T (ISO/IEC) and MPEG	<b>Contributor</b>
SIP	IETF	Follower
RTP	IETF	Follower

- VITEC, UL & PSNC presented HIPERMED in the video coding H264 Standard, **proposing new test sequences from the medical domain for the development of HEVC specially for the specification of range extensions.** The proposed set contains 8-bit Y'CbCr 4:2:2 video content





# Patents



- ❖ KTH: filed 2 patent proposals based on HIPERMED components related to the “Always on” aspect of the “Videocafe Conferencing” Service:
  - ❖ Method and System for Controlling Network Bandwidth in a Media Space and Video System Using Presence and Active Detection
  - ❖ System and method for sound mixing and volume control in media space and video conferencing systems



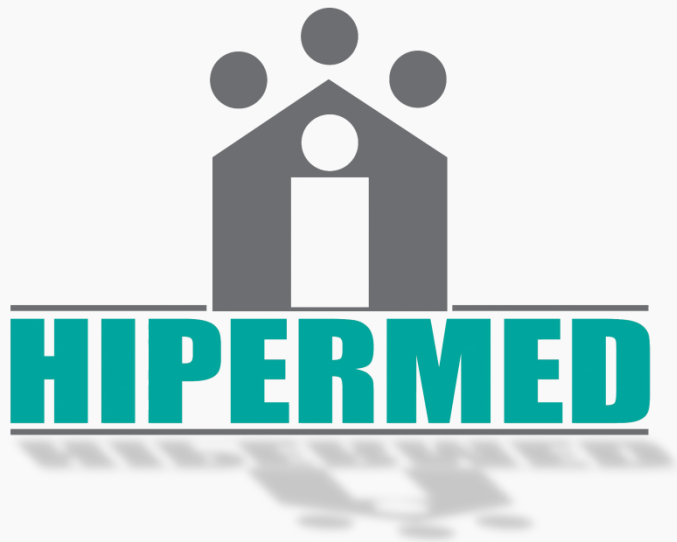
Dissemination



# Dissemination



- ❖ 27 dissemination events and 10 Conferences. Including a National and International event in Nancy (France)
- ❖ Demonstrations for medical professionals on 16 Hospitals
- ❖ Demonstrations to telcos: Deutsche Telekom & Turk Telecom
- ❖ Platform used in Sweden National CareNet Project (Neonatal care)
- ❖ ei4Africa project using HDVC platform, and extending to include in their ScienceGateway portals.
- ❖ VideoCafe startup adopted and extended HDVC platform developed in HIPERMED
- ❖ 4 Papers



Cross Domain Impact



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➤ **Academic impact**

- Promotion of collaborative research environment among researchers from different background (health and ICT)
- Production of research papers in cross-domain areas

➤ **Ecosystem build-up between eHealth & Technologic partners**

- Promotion of inter-professional collaborative and business opportunities between health and technologic partners
- Increase in the involvement of health professional in innovative ICT projects
- The “Living Lab” PROMETEE identified as an open innovation tool for researchers, industrial-SME’s and users

➤ **Resource optimization in health sector**

- Increase in the use and integration of tele-medicine tools and services in public health system



Exploitation





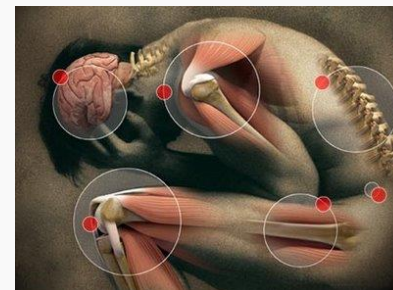
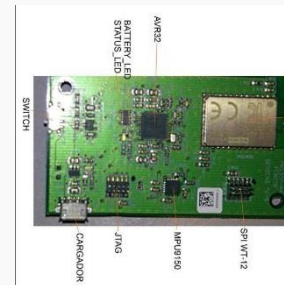
# 8 new products developed



- ❖ Devices for nurse call systems
- ❖ 5K units expected in 2014 (20 facilities & 250 devices/facility)




- ❖ Rehabilitation Inertial Sensor. Proving an **83% cost reduction** in telerehabilitation using HIPERMED platform
- ❖ In conversations with main tele-therapeutic provider that already has reached an exploitation agreement with a Worldwide leading telecommunications service provider.
- ❖ Huge volume expected





# 8 new products developed



❖ Integration between ViLynx Video Client and Inves STB (MERKUM-ViLynx and IECISA-MagicBox)

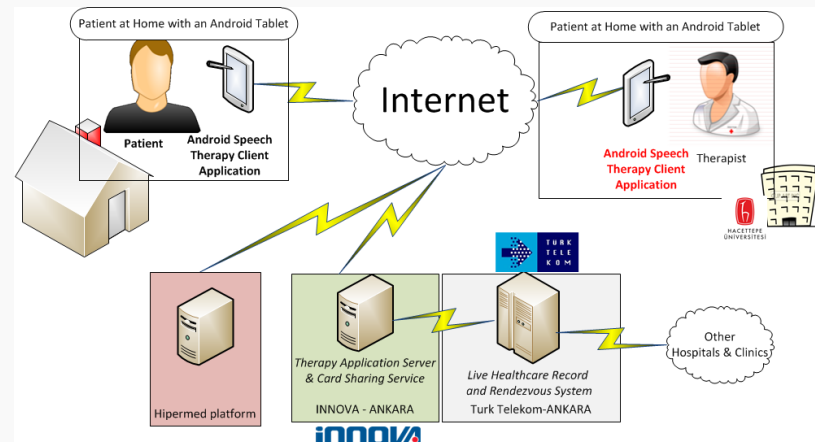
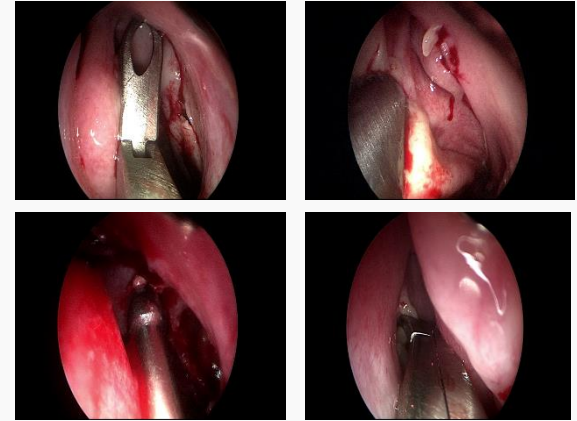


❖ eHealth App Portal for Inves Interactive STB (IECISA)



# 8 new products developed

- ❖ Medical Image Sharing Service providing the Decoding for High Quality VideoConference Sessions
- ❖ Speech Therapy solution
  - ❖ 250K potential clients in Turkey alone
  - ❖ 150K can benefit from remote therapy sessions
  - ❖ 90% live far from speech therapy clinics (all located only in 3 cities)



# 8 Products improved

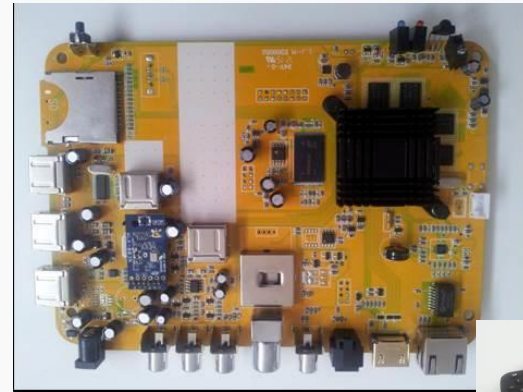
- ❖ VideoConference Session allowing videoconference among professionals and professional to patient
- ❖ Picture in Picture video overlay on Android Apps over STB allowing to offer medical services over the existing TV signal



# 8 Products improved



- ❖ Connected TV that enhances HDTV platform solutions and allow in-home videoconference sessions
- ❖ STB that integrates Videoconference, Inertial sensors, ViLynx video summary and indexing, and Phemium medical consultation into an ANDROID HDTV platform solution



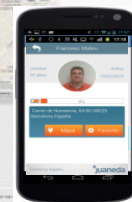
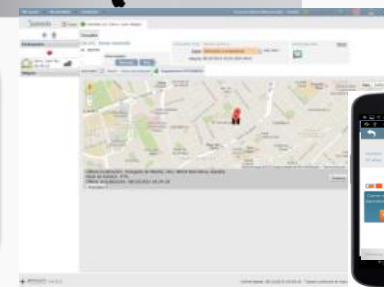
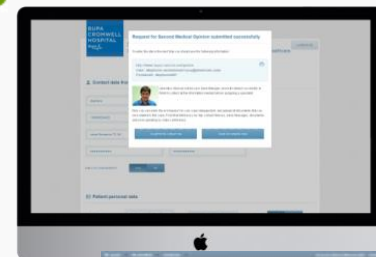
# 8 Products improved



- ❖ Integration of Video Conferencing services in VITEC range of medical video products (medical video recorders, encoders, video interfaces switching and servers).
- ❖ SIP ready video coding devices including ultra low latency video encoders
- ❖ PHEMIMUM medical consultation Platform Quality control of remote rehabilitation cardio respiratory program
  - ❖ > 1000 doctors using Phemium.
  - ❖ > 10.000 video consultations done
  - ❖ > 500.000 minutes in consultations
  - ❖ > 15 projects in Spain, France, Mexico, Colombia and Chile for medium-large companies and institutions.



phemium®



# 8 Products improved




- ❖ €480M contract to deploy Videoconference solution in
- ❖ 12 of the 21 Swedish Hospitals
- ❖ 178 of the 270 Swedish Municipalities
- ❖ Contract win by Borderlight (with other 5 Swedish companies)
- ❖ Solution developed under HDVIPER and HIPERMED.





Summary

# Some conclusions

- 
- A large, abstract black graphic on the left side of the slide, resembling a stylized plant or a calligraphic flourish, extending from the top to the bottom of the page.
- ❖ From validation test results, HIPERMED Platform has proven to be a stable and reliable solution for integrated tele-medicine services
  - ❖ Users involved in validation and dissemination activities (health professionals, institutions and patients) showed interest in the use of HIPERMED services
  - ❖ HIPERMED platform addresses current needs of time and cost saving in health sector
  - ❖ HIPERMED developed solutions are already in the market



# Some conclusions

- ❖ 27 dissemination events and 10 Conferences. Including a National and International event in Nancy (France)
- ❖ Demonstrations for medical professionals on 16 Hospitals
- ❖ 1 New company created commercializing project results: VIDEOCAFE
- ❖ 2 patent filled & HIPERMED trademark registered
- ❖ 8 New products & 8 Improved products.
- ❖ Massive Deployments in Sweden. Deployments in Poland, Turkey, France and Spain.
- ❖ GIGLE/BRCM key actor in communication standards
- ❖ VITEC, UL and PSNC contributions to video coding proposing new test sequences from the medical domain for the development of HEVC specially for the specification of range extensions.



# HIPERMED

Thank you!  
Questions?



Narodowe Centrum  
Badań i Rozwoju

