



**eurac**  
research



© Strapazzon

## XIX CONGRESSO DELLA SOCIETÀ ITALIANA DI MEDICINA DI MONTAGNA

# Medicina e telemedicina sulle montagne italiane

Lorenza Pratali MD, PhD  
Istituto Fisiologia Clinica, CNR Pisa  
Società Italiana di Medicina di Montagna  
Commissione Medica Centrale, CAI

Massimo Martinelli  
Laboratorio Segnali e Immagini  
Istituto di Scienza e Tecnologie dell'informazione  
CNR Pisa



**eurac**  
research



© Strapazzon

## XIX CONGRESSO DELLA SOCIETÀ ITALIANA DI MEDICINA DI MONTAGNA

No conflicts of interest to  
declare



# Telemedicine yesterday

## Murders by the Natives at Barrow Creek.

*'... We are informed by Mr Told that during Sunday night Dr Charles Gosse at his request attended at the Telegraph Office and gave instruction as to the proper treatment of the wounded, and up to about 11 o'clock all were progressing favourably. Later in the day, however, a change for the worse took place in Mr Stapleton's condition, and notwithstanding all the aid that it was possible to render him, he sank under the effect of his injuries, and died, very quietly, at a quarter to 6 o'clock in the evening.'*

Flint, the assistant, slightly; and a friendly native very seriously.

"The Station-master, assistant, and all the men were sitting outside the building smoking, and also talking to several friendly natives, when a large body of others rushed from ambush and commenced throwing spears.

"The cause of attack is supposed to have been for the purpose of obtaining flour, which had been refused to the natives—except the aged, infirm, and those that



1874

# Telemedicine definition

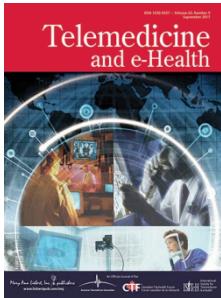
Curatio  
sine  
distantia et tempora



Editors:  
Anton Vladzmyrsky, Malina Jordanova, Frank Lievens

2017

# Telemedicine today



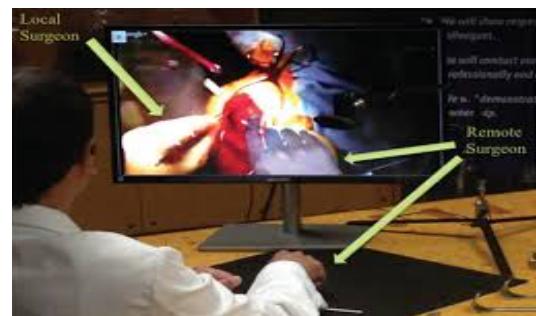
Acute setting



Simulation



Chronic setting



# Telemedicine today

- Secondary Prevention
- Diagnosis
- Treatment
- Rehabilitation
- Monitoring

Tele-Medicine Specialistic	Tele -Health	Tele-Assistance
MD	MD	Health professionals
Acute and chronic diseases	Chronic diseases	Elder, people with frailty
Tele-clinical visit Tele-consultation Tele-cooperation	Tele-clinical visit	

# Telemedicine applications

	Patient	Service center	Dispensing center
<b>Information</b>	x		x
<b>Training</b>	x	x	x
<b>Integration NHS</b>			x
<b>Ethical aspects</b>	x	x	x
<b>Privacy</b>	x	x	x
<b>Professional responsibility</b>		x	x

# Telemedicine in Italy



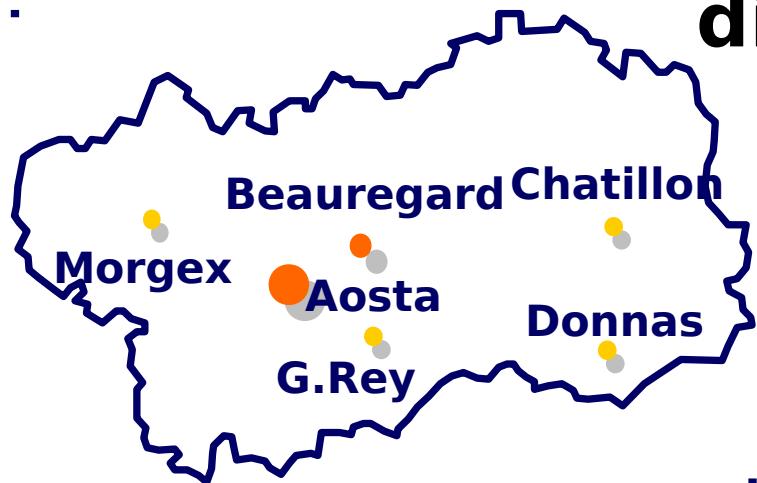
*Ministero della Salute*

**TELEMEDICINA**  
**Linee di indirizzo nazionali**

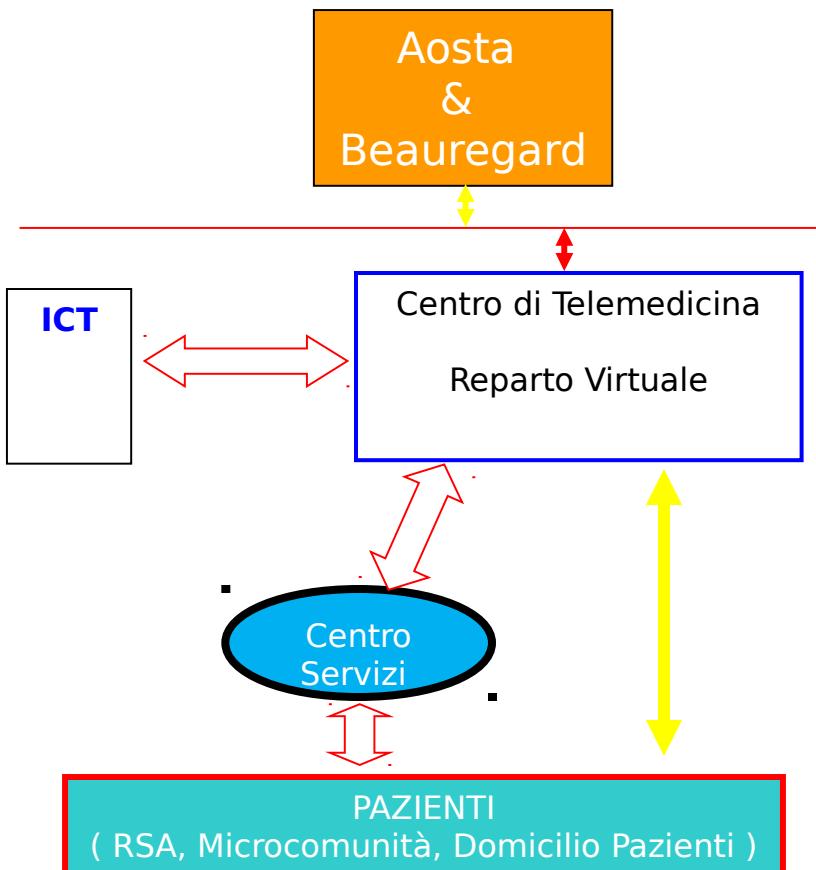
July 12, 2012

# Project “ParTout Sanità”

## Telemonitoring in chronic diseases



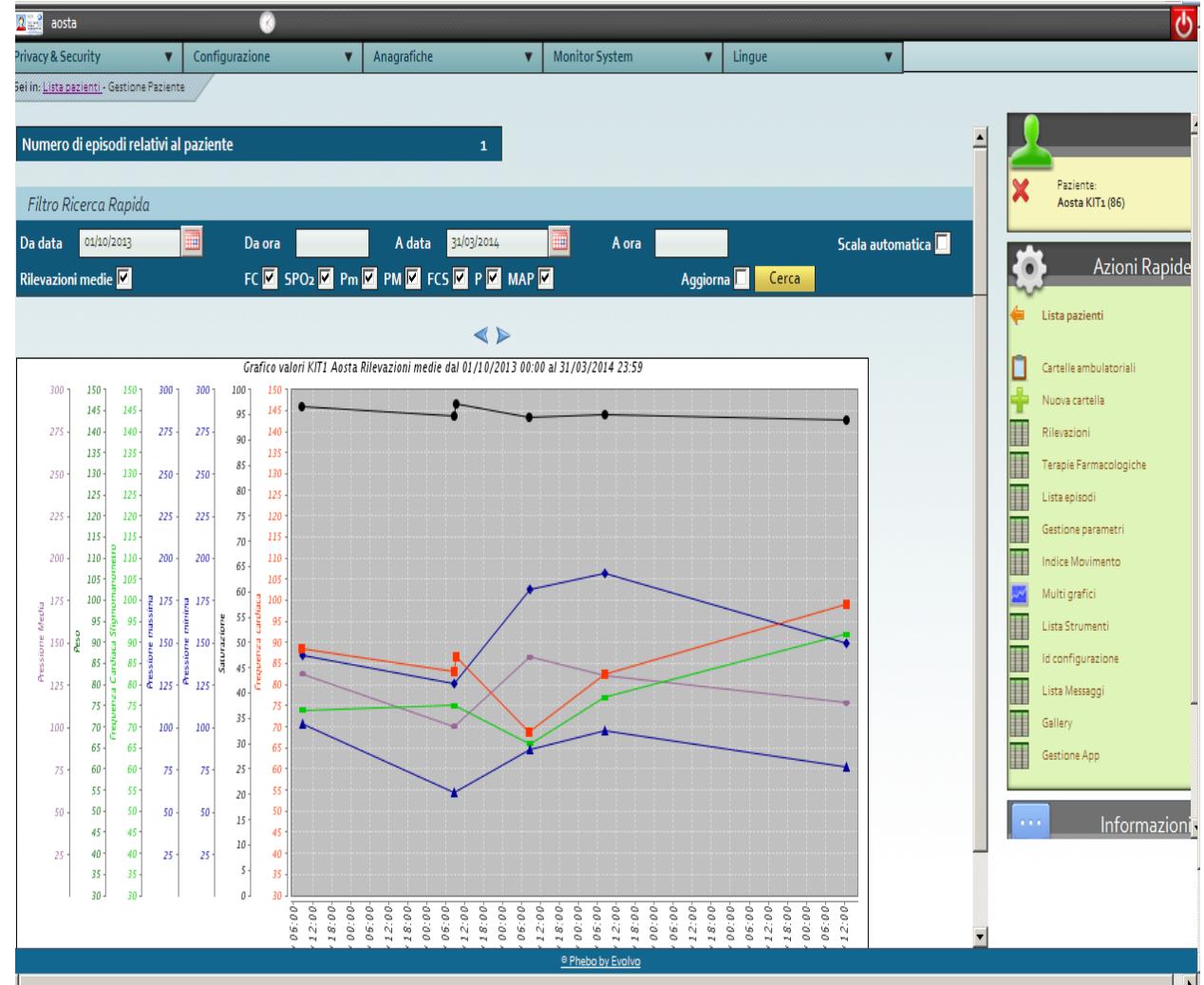
Dr. Franz. De la Pierre  
Ing. Davide Emanville



# Project “ParTout Sanità”

Weight  
Blood Pressure  
Oxygen saturation  
EKG  
Glucose meter

30 patients  
5006 measurements  
128 significant episodes  
Alarm  
3439  
1002  
576





# e-RÉS@MONT

APPLICATIONS DE  
MÉDECINE DE MONTAGNE  
AUTOUR DU MONT-BLANC



**Hes-SO**  
Haute Ecole Spécialisée  
de Suisse occidentale

 **Interreg**  
**ALCOTRA**  
**e-RÉS@MONT**  
Fonds européen de développement régional  
Fondo europeo di sviluppo regionale

 **Espace Mont Blanc**

 **RÉPUBLIQUE FRANÇAISE**  
Liberté • Égalité • Fraternité

 **CANTON DU VALAIS**  
**KANTON WALLIS**



**Hes-SO**  
Haute Ecole Spécialisée  
de Suisse occidentale



**Scaricate  
l'App mobile gratuita  
di medicina di montagna  
e-Rés@mont**

App Store



Google play



## POSTAZIONE DI TELECONSULTO MEDICO

**MAL DI MONTAGNA?  
PROBLEMI DI SALUTE IN  
RIFUGIO?**

Richiedi il tuo test al personale sanitario  
presente in loco!



### LA PIATTAFORMA SPERIMENTALE DI TELECONSULTO MEDICO

**e-RÉS@MONT**, in collegamento con il "Centro di alta specializzazione in medicina e neurologia di montagna" dell'AUSL della Valle d'Aosta, permette di ottenere un parere medico sulle proprie condizioni di salute e sul proprio adattamento fisiologico all'alta quota.



**I PARAMETRI SONO TRASMESSI IN TEMPO REALE  
ALL'OSPEDALE DI AOSTA E ANALIZZATI DALLO  
STAFF MEDICO SPECIALISTICO DEDICATO**



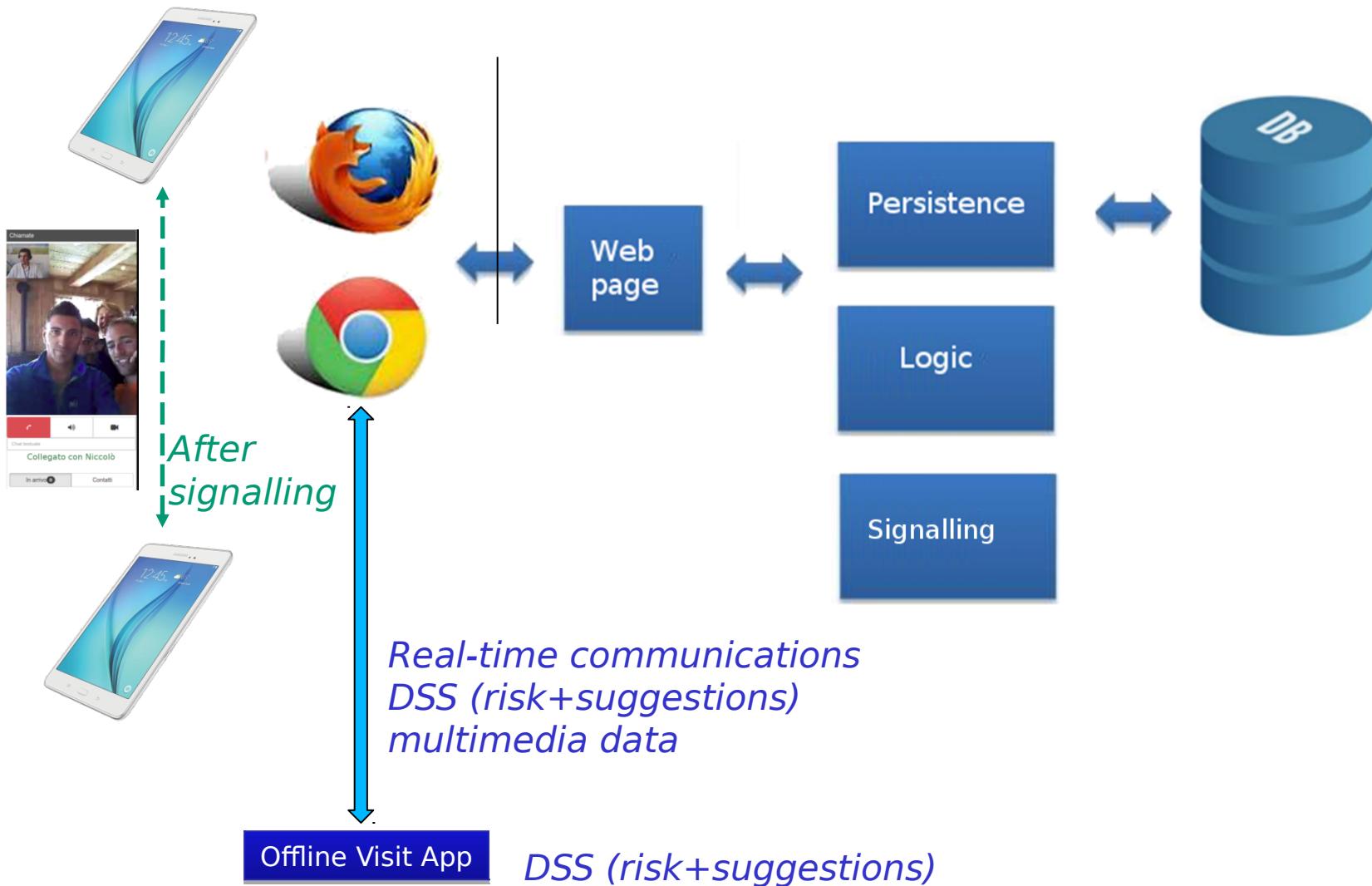
Grazie a questa sperimentazione sarà possibile testare la fattibilità e l'efficacia della pratica del consulto medico a distanza in ambiente montano, nell'ottica futura di un servizio sanitario essenziale reso ai professionisti, ai frequentatori della montagna e alle popolazioni delle vallate e località remote.

### IL CENTRO DI ALTA SPECIALIZZAZIONE IN MEDICINA E NEUROLOGIA DI MONTAGNA

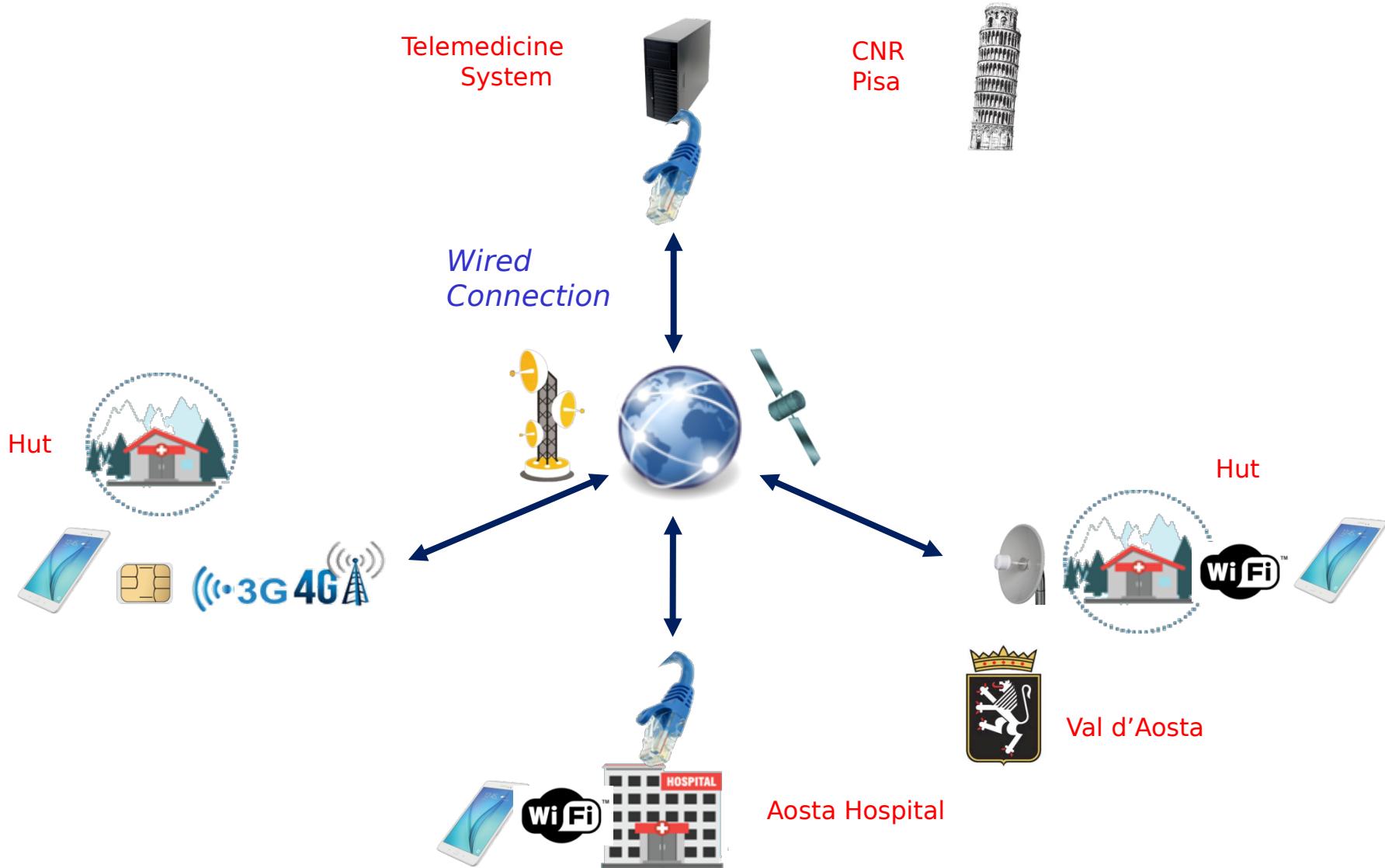
ha sede presso l'Ospedale regionale di Aosta e si occupa di attività clinica ambulatoriale, ricerca sulle patologie d'alta quota e formazione. Grazie al teleconsulto medico il Centro può mettere a disposizione le proprie competenze anche in contesti isolati e difficilmente raggiungibili.

# How it works (High Level)

Modern Web Technologies



# The physical network



# e-Rés@mont-Summer edition



# e-Rés@m<sup>ont</sup>-Preliminary

## data #1

**Teleconsultations: 634**

Men 61.5% mean age  $49 \pm 17$  yrs

Site	Men %	Age	Women	Age
Col De La Seigne	29.0	$45.5 \pm 17$	<b>39.8</b>	$45 \pm 14$
Cogne	17.6	<b><math>54.1 \pm 17</math></b>	20.9	<b><math>62 \pm 17</math></b>
Arbolle Hut	21.6	$51 \pm 15$	20.5	$50 \pm 14$
Mantova Hut	19.6	$49 \pm 14$	7.1	<b><math>35 \pm 13</math></b>
Torino Hut	12.2	$44.5 \pm 14$	11.7	$47 \pm 14$

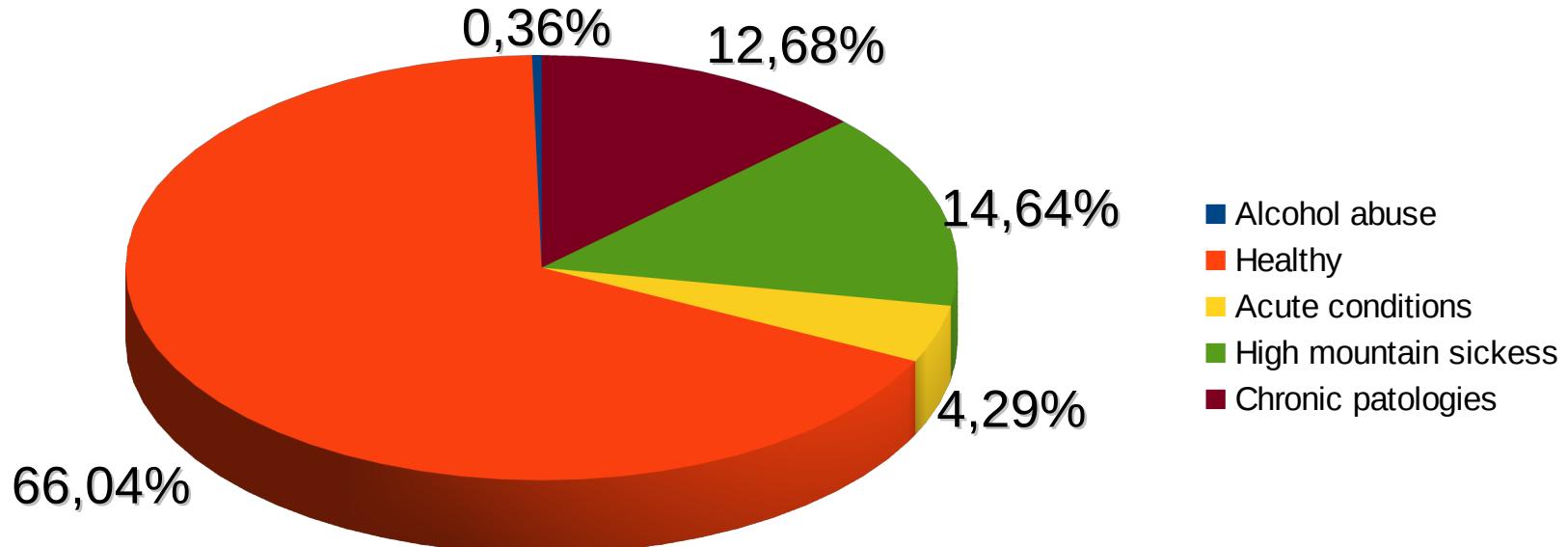
# e-Rés@munt-Preliminary data 2

## Physiological parameters

Site	O2 Sat %	SBP	DPB
Col De La Seigne	94.0±2	122.4±14	76.6±9
Cogne	96.6±1	133.1±18	75.9±10
Arbolle Hut	94.2±2	124±18	75.3±13
Mantova Hut	<b>90.8±3</b>	128±17	71.8±9
Torino Hut	<b>90.5±5</b>	<b>135.5±21</b>	79.9±12

# e-Rés@mont-Preliminary data 3

## Principal diagnosis





# Problems & Solutions

- internet connection
  - introduction of mobile 3g/4g connection
  - code to scale video band added to proportionally scale signal
  - offline App with a smart DSS providing risk scores & suggestions