



TELECARDIOLOGY IN SAIPEM

Med-e-Tel - THE INTERNATIONAL eHEALTH,
TELEMEDICINE AND HEALTH ICT FORUM for
Education, Networking and Business

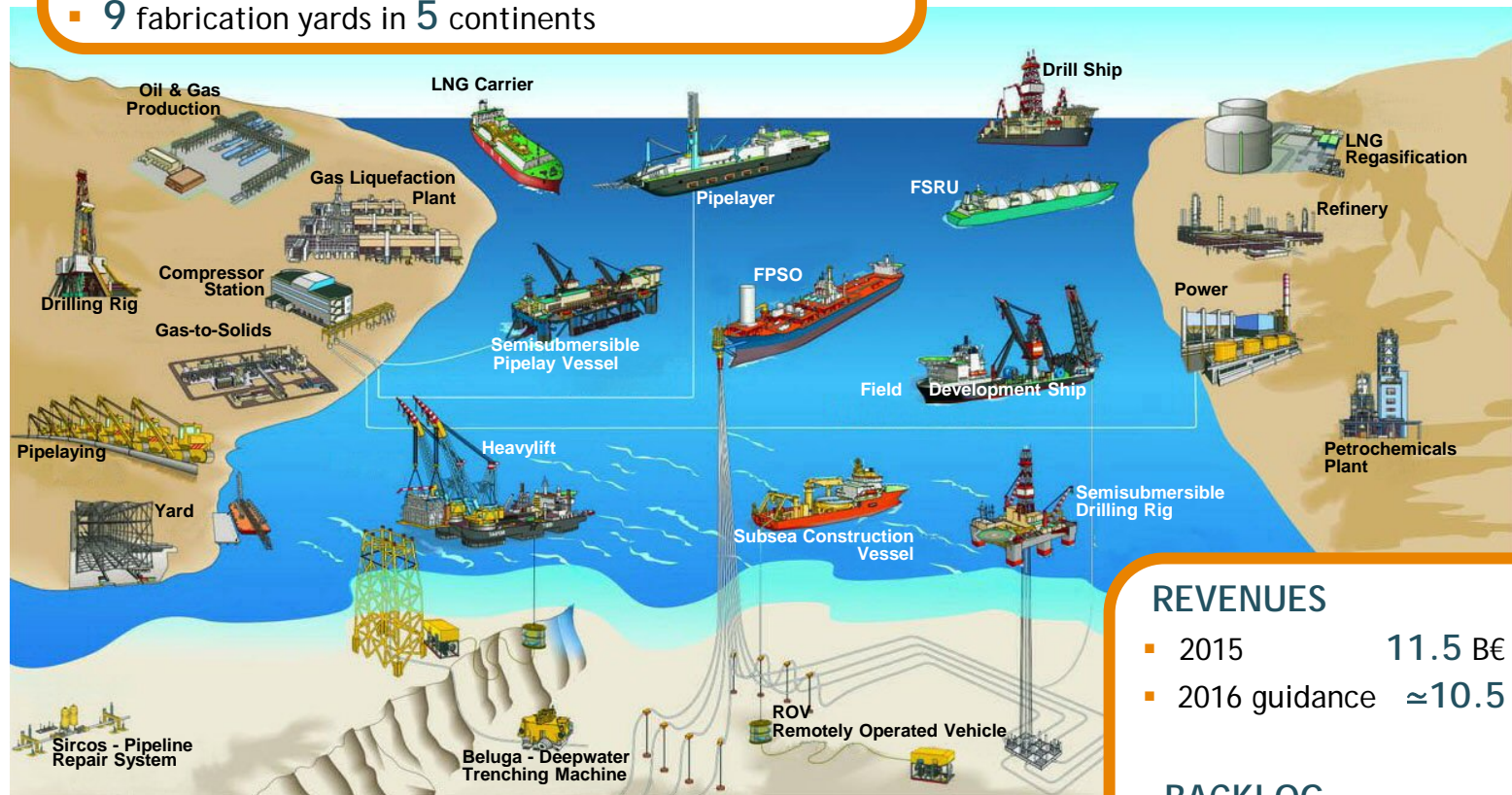
Frano Mika - Saipem SpA, Croazia Branch
HRO Health & Occupational Medicine - HESY
System Health Manager

5-7 April 2017, Luxembourg

Med@Tel

SAIPEM TODAY: A MAJOR MULTICULTURAL E&C & DRILLING CONTRACTOR

- Operating in more than **60** countries
- ~ **40,000** employees from > **120** nationalities
- More than **20** engineering and project execution centers worldwide
- 9** fabrication yards in **5** continents



(*) Source: First Half 2016 Results Presentation

REVENUES

- 2015 **11.5** B€
- 2016 guidance **≈10.5** B€

BACKLOG

- June 30, 2016 **13.9** B€

A LEADING GLOBAL EPC(I) GENERAL CONTRACTOR

Engineering & Construction Onshore and Offshore



- Full service EPC(I) provider
- Distinctive 'frontier focus' in Oil & Gas industries
- Most modern, technologically advanced offshore construction fleet
- BUs Offshore, Onshore



Drilling Onshore and Offshore



- High quality player in both onshore and offshore drilling



WHY TELE-CARDIOLOGY?

- Provide quality healthcare to employees located in remote areas
 - Improvement in the quality of Cardiovascular emergency support
 - To Play pivotal role in CVD surveillance program (CVDPP)
 - To Engender sense of security among employees
- Reducing healthcare cost
 - Improved vetting of patients who need hospital care, lessens the no. of repatriations
 - Less referrals to the tertiary care hospitals
 - To Obviate costs relating to logistics involved
- Useful support to the company medics
 - Round the clock topside support from cardiologists i.e. peace of mind
 - Valuable assistance in the decision-making process in a timely manner - enabling better diagnosis
 - Added value to the company reputation



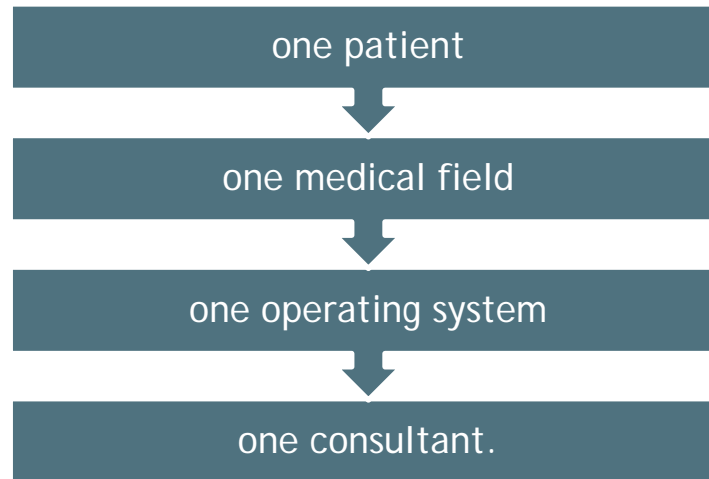
BACKGROUND

- The birth of tele-cardiology program in Saipem: 2007
- Total number of ECG transmissions since its inception: 19,325
- No. of ECG transmissions considered potential emergency in the last 6 years: 657
- Potential savings in the last 6 years: more than 4,2 M Euros

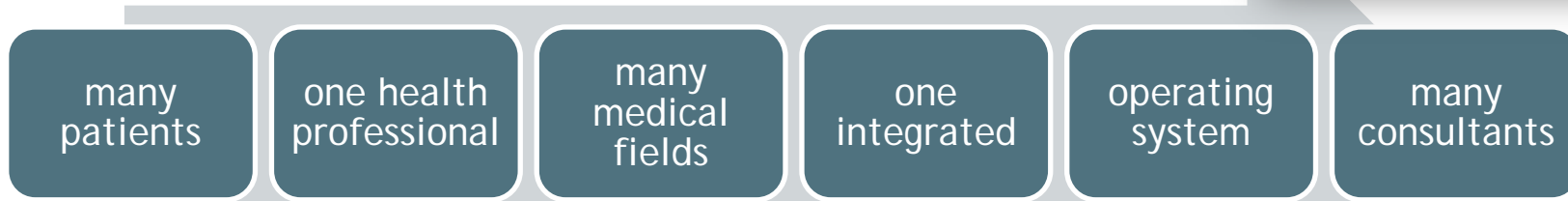


THE CONCEPT: WORK CARE VS HOME CARE

“Home care” - operates as a “vertical e-medicine system”



“Work Care” - is “horizontal”



BENEFITS OF “WORK CARE”



assures specialist's examinations directly at operating sites

extends the employees "working life"

renders safer the operating sites

allows the employee to fully enjoy leave period

brings benefits in cost effectiveness

brings satisfaction not only to the employees, but to the Company and in general to the society

TO OPERATE THE SYSTEM WE NEED



operating sites



medical personnel



ECG devices



“Top side” support

TOP SIDE SUPPORT - THE TELECARDIOLOGY “PACKAGE”

The top side service is given by the provider in Italy, “Cardio On Line Europe”, and includes:

- Rentals of the state-of-the-art ECG recording devices
- Uninterrupted supply of electrodes
- Reading of 20 ECGs sent in online mode (emergency use)- per device
- Reading of 90 ECGs sent in offline mode (for monitoring and prevention purposes) per device

ECG DEVICES



Old device

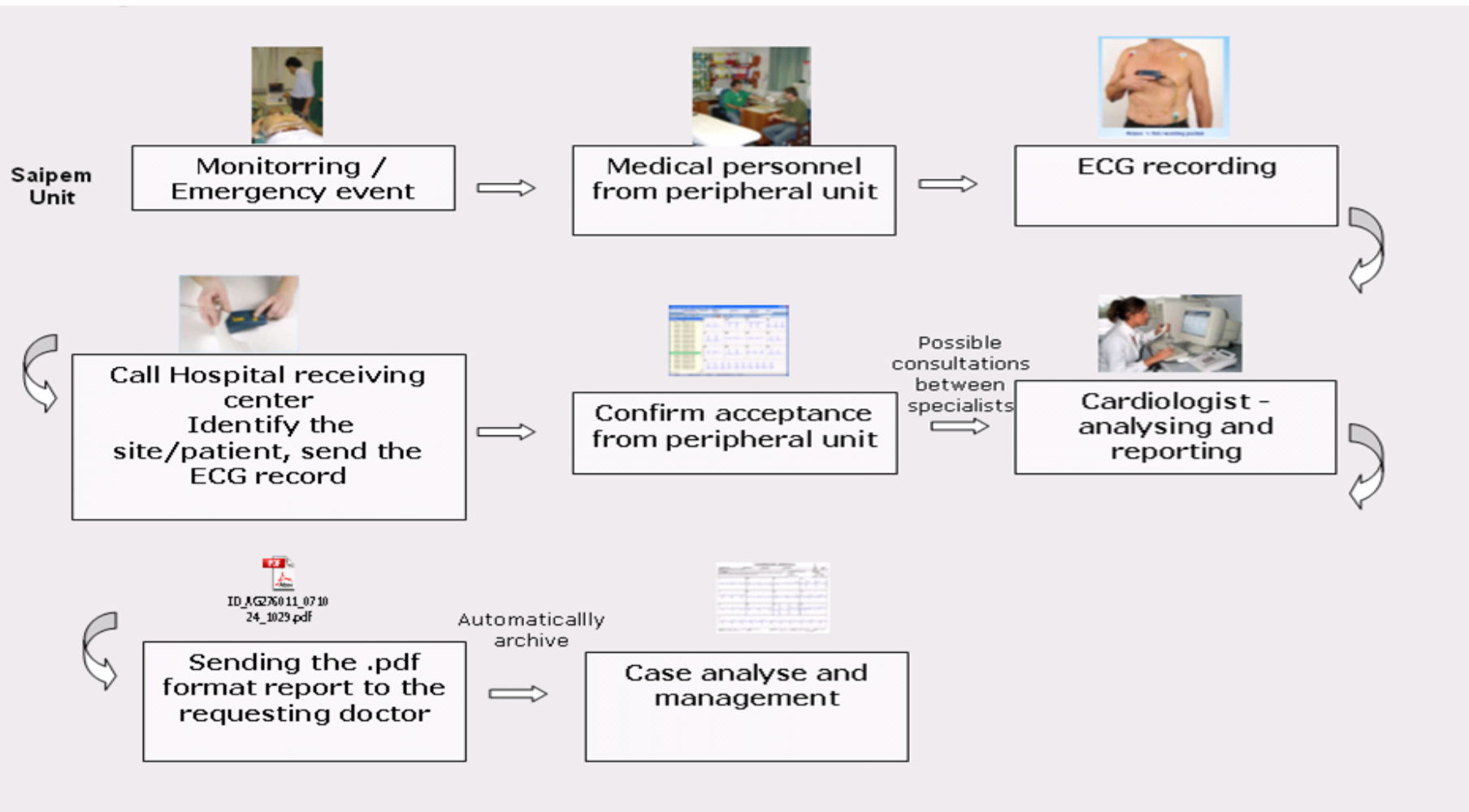
- Transmission:
 - via phone only



New device

- Transmission:
 - via phone
 - via Bluetooth connection through:
 - PCes
 - android phone
 - tablet

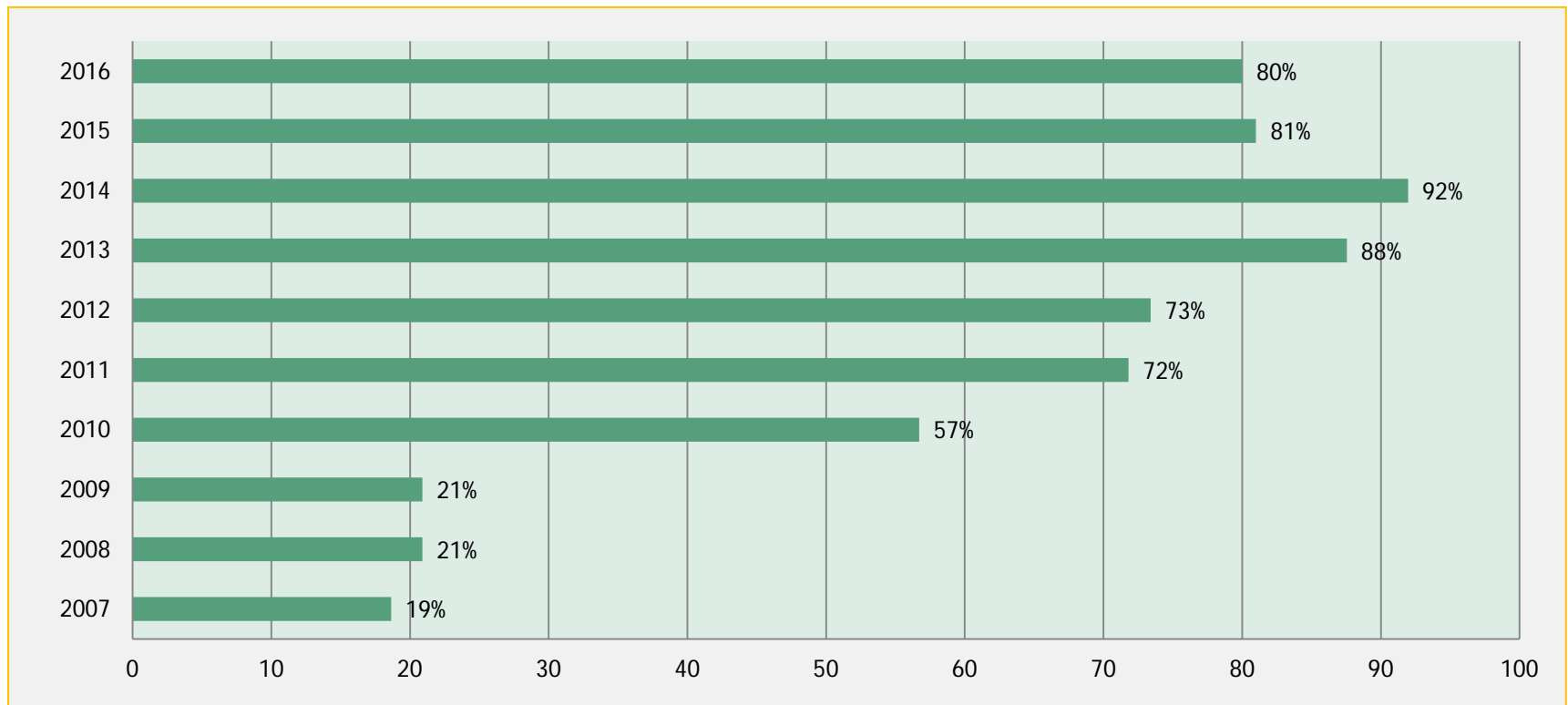
THE PROCESS



USAGE RATE OF TELE-CARDIOLOGY - SINCE ITS INCEPTION

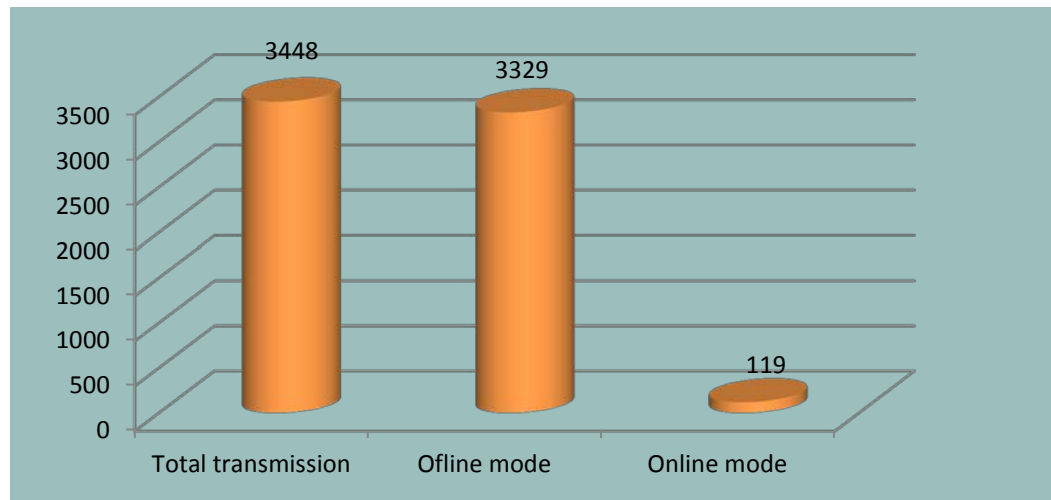
- Device usage rate - defined as the percentage of worksites with tele-cardiology in place, which were able to transmit the minimum of 90 ECGs in a year, irrespective of their manpower.

Usage rate progression over 2007 - 2016

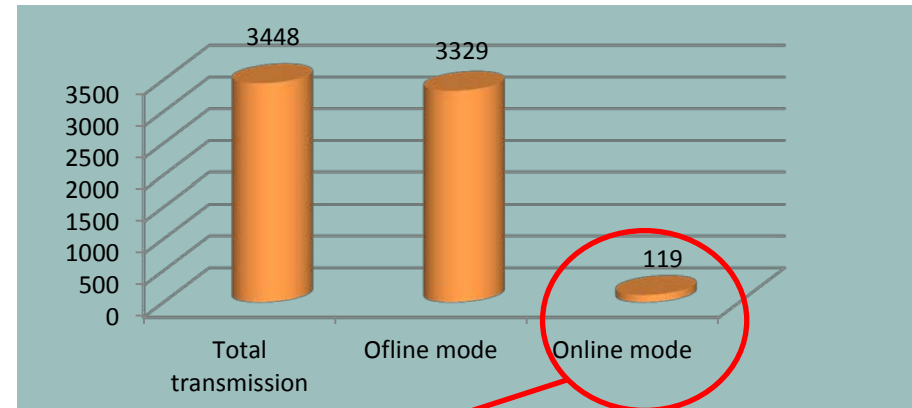


RESULTS: 2016 1/2

- Number of ECG recording device involved in the tele-cardiology program: 50
- Number of worksites involved in the tele-cardiology program: 57
- Percentage of Saipem employees covered under the tele-cardiology program: 52% (17,120 out of 33,235 in total)
- Cumulative ECG transmissions for specialist evaluation to Cardio Centre: 3448



RESULTS: 2016 2/2



- Urgent cases managed/treated onsite with the help of telecardiology: 100 (potential MEDEVACs)
- Cases repatriated or sent onshore for further evaluation and treatment: 19 (effected MEDEVACs)

CASE STUDY

NAME: Mr. N.N.
NATIONALITY: Filipino
POSITION: Painter
LOCATION: Offshore
AGE: 35 Years
Date: XX.YY.2016

Mentioned gentleman reported to the vessel clinic with a complaint of epigastric pain. His vital signs were as follows:

- BP: 110/80
- PR: 84
- RR: 19
- body temp:36.9 C.

He was given Antacid tablets and put on observation.

- Similar history of epigastric pain prompted him to seek medical attention during his vacation (2 weeks earlier). However, he was cleared by his Physician receiving the same treatment for heartburn.
- The medic on board decided to transmit an ECG via Tele cardiology and the result showed Sinus rhythm, 88 bpm, early R wave progression in the precordial leads. Incomplete RBBB. Q waves with T wave inversion in inferior leads, not present at previous ECG ,with an advice for further cardiologist consultation.
- He was referred to a tertiary care hospital immediately where the initial investigation depicted highly elevated cardiac enzymes , Troponin 158mg/dl 0-0.03), CK MB LEVEL 32 (0-16), Ck/cpk 236 (55-170), the consultant cardiologist diagnosed the case as Post-Acute Coronary Syndrome and advised for admission and Angiograph.
- Eventually he had undergone coronary angiography next day, resulting in a complete recovery in 2 weeks.

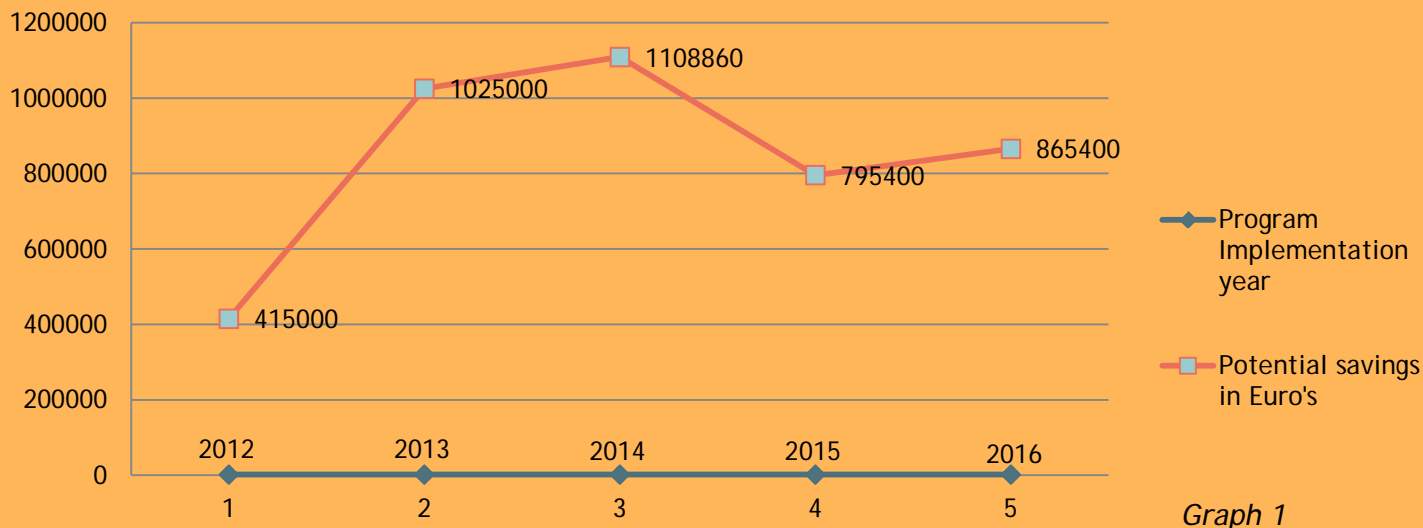
COST BENEFIT ANALYSIS IN 2016: EUROS 865,400

- Considerations

- Average cost of a MEDEVAC 10,000 Euros
- Multiplied by non-effected MEDEVACS
- All cots (devices, top side support, electrodes,..) included

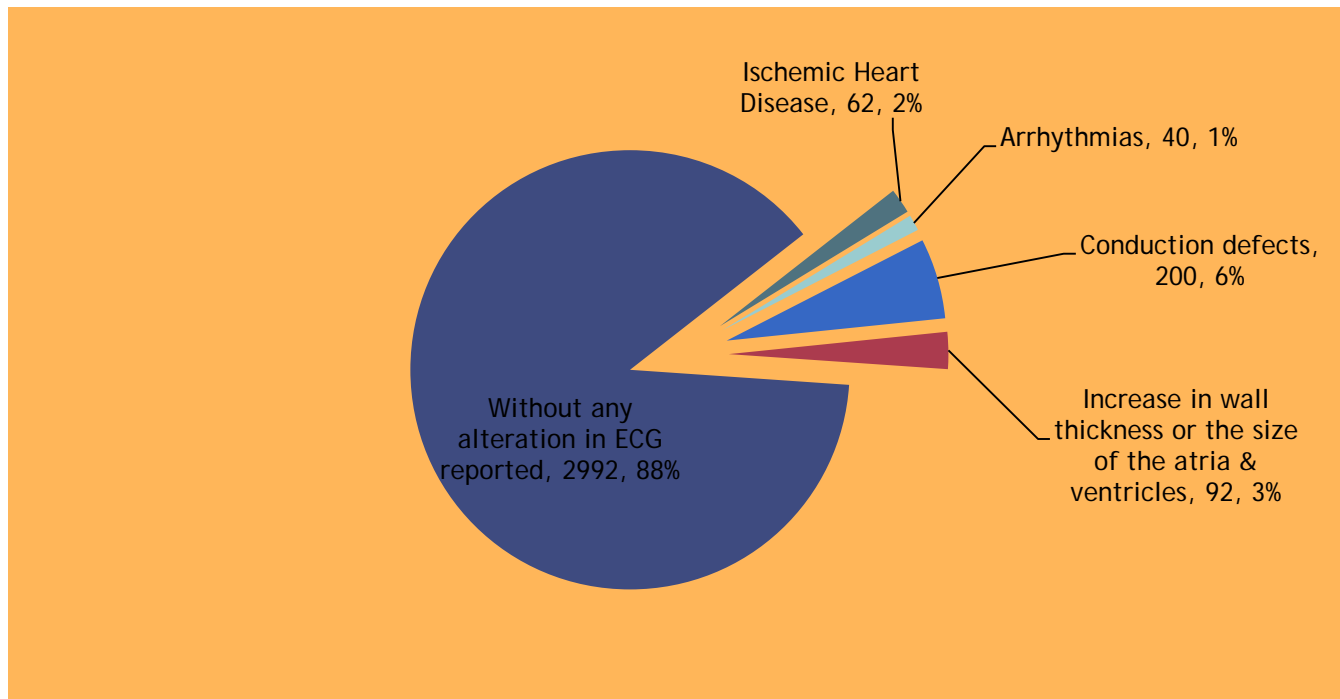
Potential savings (optimization) over the last FIVE years - Cost

Period 2012 -2016



CASE-DISTRIBUTION & CLINICAL APPLICATIONS - 2016

- All ECG reports are analyzed and classified according to the following major diagnostic criteria:
 - Ischemic Heart disease (Ischemia and Infarction)
 - Arrhythmias (Supraventricular and ventricular arrhythmia)
 - Conduction defects
 - Increase in wall thickness or in the size of the atria & ventricles
 - Without any alteration (Normal)



CASE-DISTRIBUTION & CLINICAL APPLICATIONS - 2016

- Employees having established cardiovascular diseases and monitored through tele-cardiology program: 968 (diabetics, hypertensive, overweight/obese, smokers, employees who have sustained major cardiovascular events in the past).
- Referred to cardiologists for consultations in non-urgent situations i.e. during rotation leaves: 45 (These cases were identified via “offline” transmissions).
- Serious heart pathologies not previously diagnosed and found during tele-cardiology consultations:
 - wolff-parkinson-white pattern: 2
 - Myocardial Infarction: 4
 - Atrial Fibrillation: 4
 - Bigeminy: 1



Photo: A new beginning

BARRIERS & CHALLENGES

Human factors

- Reluctance of some employees to participate the program
- Inadequate monitoring during vacation period
- Lack of “adaptability” among medical personnel.

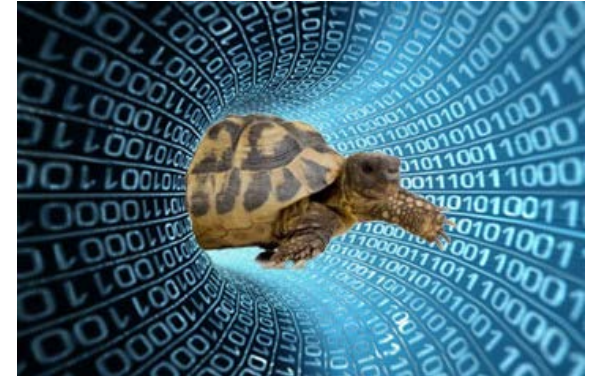


Photo: “Turtle” package of internet connection

At technological front

- To distribute new devices among sites and switch to the updated version
- At times, poor phone connections - particularly applicable to offshore and remote located sites
- Reliable interne connections - for all sites in order to switch to the PC based ECG transmissions
- Poor weather conditions leads to inferior quality of ECG transmissions in transtelephonic operations

TELECARDIOLOGY PROGRAM IN SAIPEM - CONCLUSIONS

- Tele cardiology rises in a cost effective way the level of health monitoring and cure of employees in remote locations.
- Applied system of “work care” brought added value to employees, medical personnel, Company and the society.
- ECG devices used are user friendly, easy to operate and reliable in recording and transmitting the ECGes.
- Top side support, available 24/7 , is highly qualified and reliable.
- Awareness on the benefits of the tele-cardiology program must be raised among the employees.
- Invest in further education and training of medical personnel.
- Further improvement in data collection.
- Further integration of tele-cardiology with Cardiovascular Disease Prevention Program (CVDPP).



CONCLUSIONS

The best (only) way
to treat it is
to prevent it



Thank you!

www.saipem.com