





Biovalley
Group

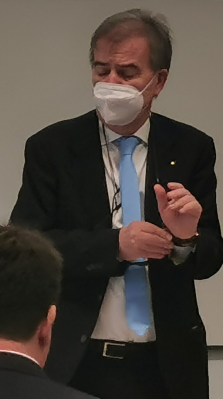
Clinical Engineering in outsourcing services

Diego Bravar

Chairman and CEO of Biovalley Group SpA

September 29th 2022

1





Biovalley
Group

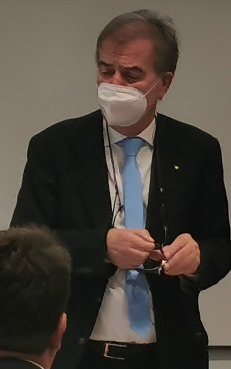
Clinical Engineering in outsourcing services

Diego Bravar

Chairman and CEO of Biovalley Group SpA

September 29th 2022

1



Trends in Medical & ICT Technologies: Open Innovation for Health and Social Organizations



Digitization & Convergence:

- Increased **penetration of digital information** (and the related software applications and hardware infrastructure supporting it);
- Medical Equipment** evolving towards standard **hardware/operating system architecture**, with added specialized software application and sensors.
- Integration of Medical Equipment and Hospital ICT.**
- New regulation including all IT systems** with "intended clinical use" in Medical Devices calling for application of risk management practices typical of medical equipment.

Technology dispersion:

- The prevalence of chronic diseases and ageing population in developed countries, and the challenge to provide access to Healthcare to huge rural populations in the developing world, are creating the ground for **healthcare systems to extend far out of the hospital**;
- Such extend system calls for **integrated wide area networks connecting patients (home devices), physicians and hospitals** (EMR and diagnostic tools).

Need for Efficiency:

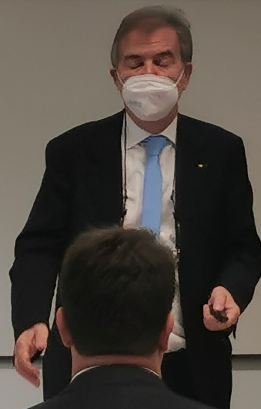
- Healthcare innovation generating the **need for new technology** (shorter product lifecycle, faster replacement), while **budget constraints** call for cost control and better asset utilization in Hospitals.

Hospital and Social Organizations "pains".

- Typical **technology purchasing and management processes** not suitable for facing the challenge.
- Leading to:
 - Over-purchasing;
 - Inefficient use;
 - Lack of integration
 - Risk / Non compliance.

Hospital and Social Organizations needs:

- "Holistic" approach to **Technology Planning**:
 - Integrated IT and Medical Equipment;
- Integrated ICT platform** to "glue" the system;
- Efficient Integrated Clinical Engineering**:
 - Lifecycle management;
 - All Medical Devices (including IT & IoT)
 - In the Hospital and outside
 - Manage functionality and usage.



Trends in Medical & ICT Technologies: Open Innovation for Health and Social Organizations



Digitization & Convergence:

- Increased **penetration of digital information** (and the related software applications and hardware infrastructure supporting it);
- **Medical Equipment** evolving towards standard **hardware/operating system architecture**, with added specialized software application and sensors.
- **Integration of Medical Equipment and Hospital ICT.**
- **New regulation including all IT systems** with "intended clinical use" in Medical Devices calling for application of risk management practices typical of medical equipment.

Technology dispersion:

- The prevalence of chronic diseases and ageing population in developed countries, and the challenge to provide access to Healthcare to huge rural populations in the developing world, are creating the ground for **healthcare systems to extend far out of the hospital**;
- Such extend system calls for **integrated wide area networks connecting patients (home devices), physicians and hospitals** (EMR and diagnostic tools).

Need for Efficiency:

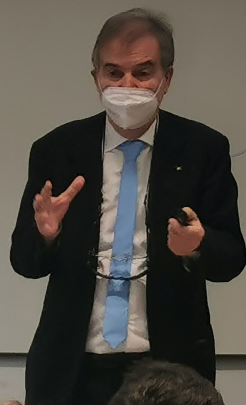
- Healthcare innovation generating the **need for new technology** (shorter product lifecycle, faster replacement), while **budget constraints** call for cost control and better asset utilization in Hospitals.

Hospital and Social Organizations "pains".

- Typical **technology purchasing and management processes** not suitable for facing the challenge.
- Leading to:
 - Over-purchasing;
 - Inefficient use;
 - Lack of integration
 - Risk / Non compliance.

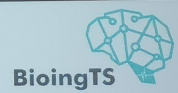
Hospital and Social Organizations needs:

- "Holistic" approach to **Technology Planning**:
 - Integrated IT and Medical Equipment;
- **Integrated ICT platform to "glue" the system**;
- **Efficient Integrated Clinical Engineering**:
 - Lifecycle management;
 - All Medical Devices (including IT & IoT)
 - In the Hospital and outside
 - Manage functionality and usage.





UNIVERSITÀ
DEGLI STUDI
DI TRIESTE



Advances in Telemedicine and Teleassistance –
CASSIA project
&
BioingTS research activities

X Spring School – University of Trieste
29.09.2022

Assit. Prof. Miloš Ajčević





UNIVERSITÀ
DEGLI STUDI
DI TRIESTE



Advances in Telemedicine and Teleassistance –
CASSIA project
&
BioingTS research activities

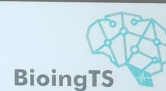
X Spring School – University of Trieste
29.09.2022

Assist. Prof. Miloš Ajčević





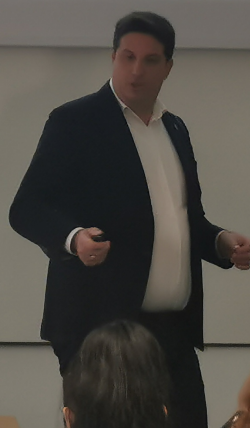
UNIVERSITÀ
DEGLI STUDI
DI TRIESTE



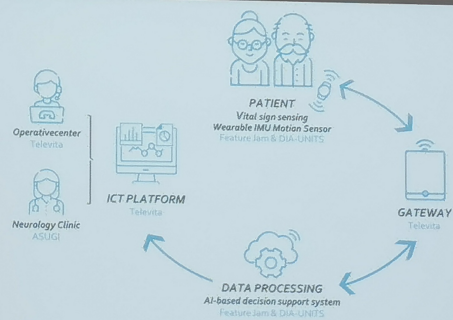
Advances in Telemedicine and Teleassistance –
CASSIA project
&
BioingTS research activities

X Spring School – University of Trieste
29.09.2022

Assit. Prof. Miloš Ajčević



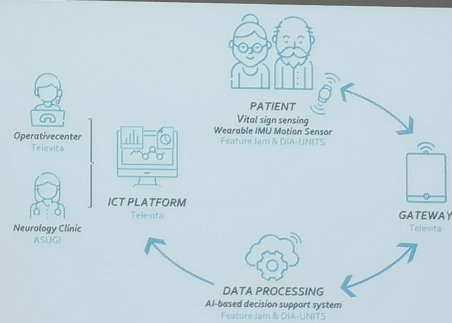
Sistema CASSIA



FUNZIONALITÀ

- › Remote Patient Monitoring (ECG, BP, SpO2, T°, RR, glycemia) - CE marked:
 - › wearable sensors -> vital signs continuous monitoring in post acute or assessment phase
 - › portable sensors -> a few daily measurements in chronic phase
 - › wearable IMU motion sensors
- › Smart Alarms & Emergency Alarms // Disease specific telemonitoring protocols
- › Feedback to improve patient management
- › Proof on concept on post TIA/Stroke and Parkinson's disease patients

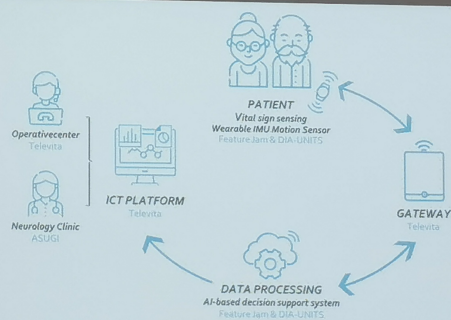
Sistema CASSIA



FUNZIONALITÀ

- › Remote Patient Monitoring (ECG, BP, SpO2, T°, RR, glycemia) - CE marked:
 - › wearable sensors -> vital signs continuous monitoring in post acute or assessment phase
 - › portable sensors -> a few daily measurements in chronic phase
 - › wearable IMU motion sensors
- › Smart Alarms & Emergency Alarms // Disease specific telemonitoring protocols
- › Feedback to improve patient management
- › Proof on concept on post TIA/Stroke and Parkinson's disease patients

Sistema CASSIA



FUNZIONALITÀ

- › Remote Patient Monitoring (ECG, BP, SpO2, T°, RR, glycemia) - CE marked:
 - › wearable sensors -> vital signs continuous monitoring in post acute or assessment phase
 - › portable sensors -> a few daily measurements in chronic phase
 - › wearable IMU motion sensors
- › Smart Alarms & Emergency Alarms // Disease specific telemonitoring protocols
- › Feedback to improve patient management
- › Proof on concept on post TIA/Stroke and Parkinson's disease patients

Agostino Accardo
Università degli Studi di Trieste



Miloš Ajčević
Università degli Studi di Trieste



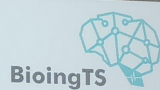
Aleksandar Miladinović
Università degli Studi di Trieste



Katerina Iskra
Università degli Studi di Trieste



Serena Starita
Università degli Studi di Trieste



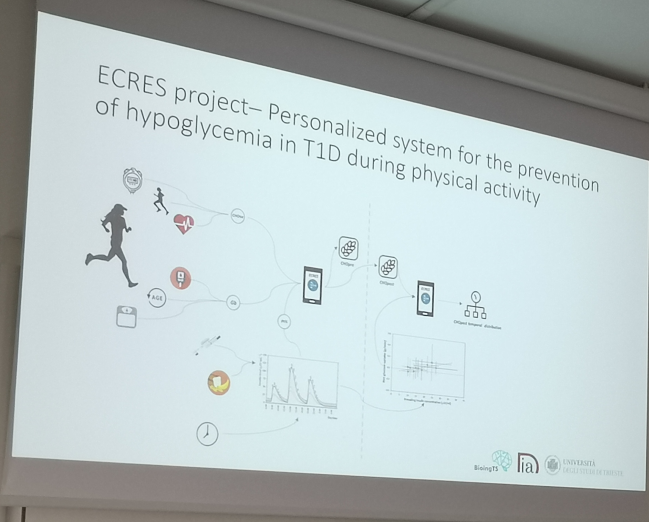
UNIVERSITÀ
DEGLI STUDI
DI TRIESTE

<http://bioingts.units.it/>

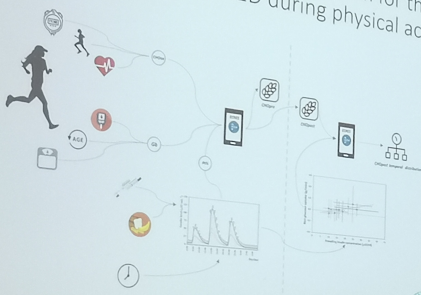








ECRES project- Personalized system for the prevention of hypoglycemia in T1D during physical activity

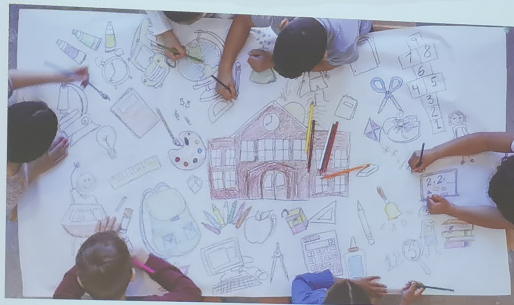


BioingTV UNIVERSITÀ DEL PIEMONTE ORIENTALE ALESSANDRIA

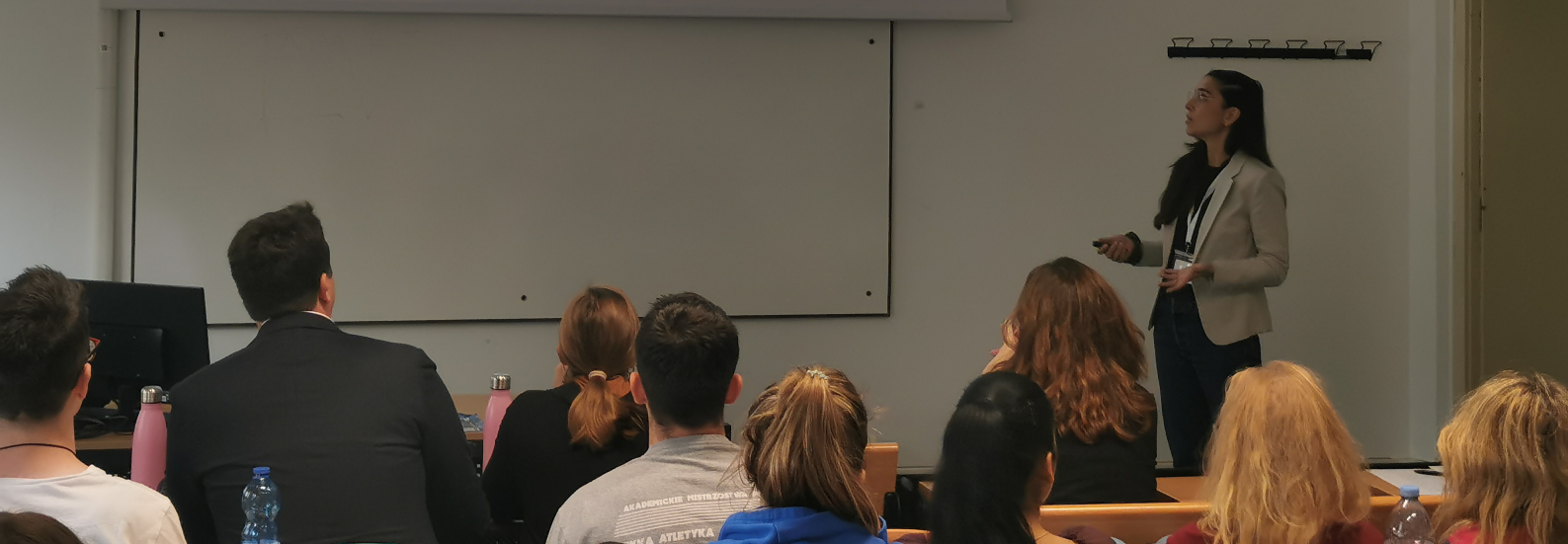


Online Handwriting

Analysis of Human Movement

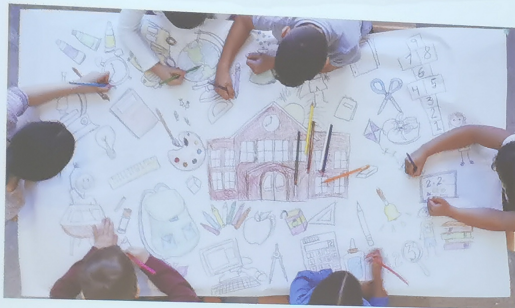


Serena Starita, PhD Student @ BioingTS

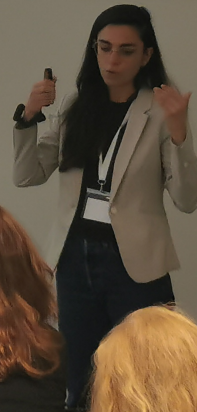


Online Handwriting

Analysis of Human Movement

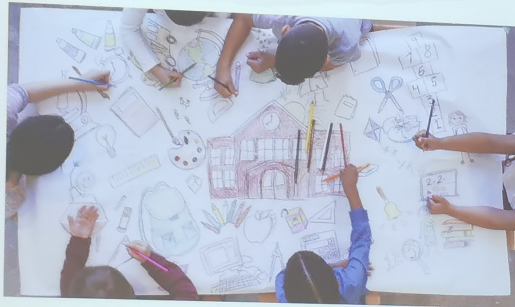



Serena Starita, PhD Student @ BioingTS

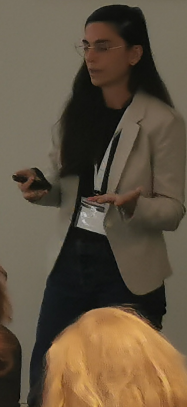


Online Handwriting

Analysis of Human Movement

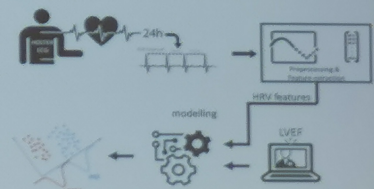


Serena Starita, PhD Student @ BioingTS 



Research project

- Main aim: development of predictive models for classification of different cardiovascular pathologies
- These models are based on features extracted by processing the data obtained by using non-invasive and highly available diagnostic techniques



UNIVERSITÀ
DEGLI STUDI DI TRIESTE



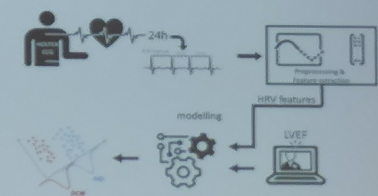
IFMBE



BioingTS

Research project

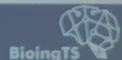
- Main aim: development of predictive models for classification of different cardiovascular pathologies
- These models are based on features extracted by processing the data obtained by using non-invasive and highly available diagnostic techniques



UNIVERSITÀ
DEGLI STUDI DI TRIESTE

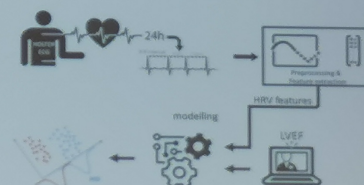


IFMBE



Research project

- Main aim: development of predictive models for classification of different cardiovascular pathologies
- These models are based on features extracted by processing the data obtained by using non-invasive and highly available diagnostic techniques



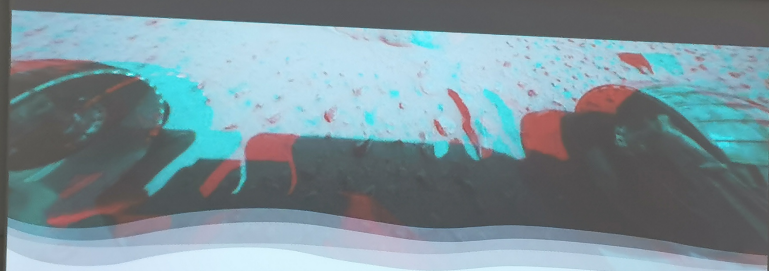
UNIVERSITÀ
DEGLI STUDI DI TRIESTE



IFMBE



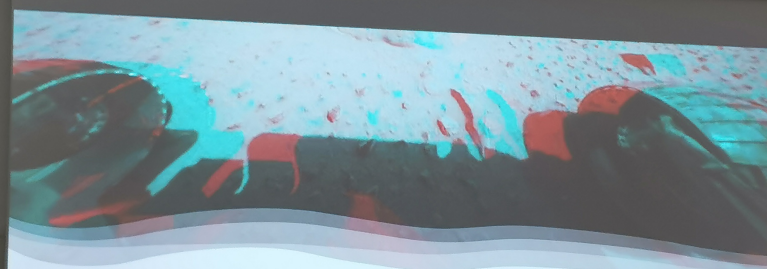
BioingTS



Human 3D vision - Stereopsis

ALEKSANDAR MILADINOVIĆ, *PhD*
aleksandar.miladinovic@burlo.trieste.it





Human 3D vision - Stereopsis

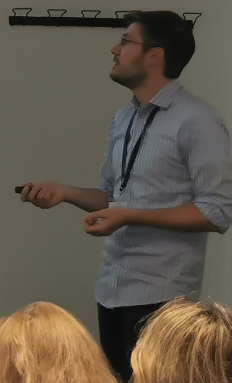
ALEKSANDAR MILADINOVIĆ, PhD
aleksandar.miladinovic@burlo.trieste.it





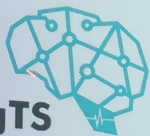
Human 3D vision - Stereopsis

ALEKSANDAR MILADINOVIĆ, PhD
aleksandar.miladinovic@burlo.trieste.it





UNIVERSITY
OF TRIESTE



BioingTS

Gruppo Nazionale di Bioingegneria
Sezione di Trieste

BioingTS.units.it/OFR

REGIONE AUTONOMA FRIULI VENEZIA GIULIA
ISTITUTO DI RICOVERO e CURA
a carattere scientifico
Burlo Garofolo di Trieste



IRCCS: Scientific Institute for Research,
Hospitalization and Healthcare


The name of IRCCS indicates institutions of
relevant national interest, which drive
clinical assistance in strong relation to
research activities. Their mission is the
continuous upgrade of healthcare.




National Eye Institute

The National Institutes of
Health is the primary agency
of the United States
government responsible for
biomedical and public
health research.




**UNIVERSITY
OF TRIESTE**


**BioingTS**
Gruppo Nazionale di Bioingegneria
Sezione di Trieste

BioingTS.units.it/OFR

REGIONE AUTONOMA FRIULI VENEZIA GIULIA

ISTITUTO DI RICOVERO e CURA
a CARATTERE SCIENTIFICO
Burlo Garofolo di Trieste



**NIH**
National Eye Institute

The National Institutes of Health is the primary agency of the United States government responsible for biomedical and public health research.

IRCCS: Scientific Institute for Research, Hospitalization and Healthcare

The name of IRCCS indicates institutions of relevant national interest, which drive clinical assistance in strong relation to research activities. Their mission is the continuous upgrade of healthcare.





Clinical Engineering in outsourcing services

Diego Bravar
Chairman and CEO of Biovalley Group SpA

September 29th 2022

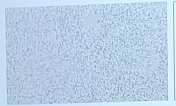








Stereoblindnes tests



Moon 200°, Car 400°, Elephant 600°.
Measuring distance 40m

Stereoblindness, the inability to use binocular disparity to sense depth, often associated with strabismus and amblyopia, is an irreversible central nervous system disorder in which the brain fails to process inputs from one eye and over time favors the other eye





Stereoblindnes tests



Mean 200° (or 60°), Stapher 600°
Measuring distance 40cm

Stereoblindness, the inability to use binocular disparity to sense depth, often associated with strabismus and amblyopia, is an irreversible central nervous system disorder in which the brain fails to process inputs from one eye and over time favors the other eye.