FP7 WELCOME

An integrated care approach for empowering COPD patients with comorbidities
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Who are we

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  – Coordinating FP7 WELCOME, H2020 AEGLE

• EXUS Innovation ([www.exus.co.uk](http://www.exus.co.uk))
  – The Innovation unit of the software house EXUS
  – Focused on data technologies and applications
  – 4 pillars of excellence
    Information Management, Health, Security, Creativity
WELCOME

• **Wearable Sensing and Smart Cloud Computing** for **Integrated Care** to **COPD** Patients with Co-morbidities

• Duration: **48 months**
• Start Date: **1st November 2013**
• End Date: **31st October 2017**
• Total Funding: **6,170,975.00 €**
Consortium Partners
The Problem

• By 2030 COPD will be the 4th largest cause of global mortality.

• Problem becomes more complex when thinking of co-morbidities
  – Multiple therapies involved

• Even more complexity is introduced when thinking integration in different healthcare systems
  – Structures
  – Cultures
  – Perceptions
WELCOME focus

- Addressing the needs of patients suffering from Chronic Obstructive Pulmonary Disease (COPD) with co-morbidities including Chronic Heart Failure, Diabetes, Anxiety and Depression.

- Developing a technology solution enabling a step-change in the integrated care of and self-management by patients.

- Combining a smart vest with sensors to measure and monitor specific COPD patient indicators. Leveraging further patient and environmental information, real-time data can be automatically uploaded to highly secure cloud-based patient medical records.

- Enabling patients, clinicians and health professionals to better monitor and manage integrated personalized healthcare plans.
Data concerning environmental trends like pollution levels and temperatures in patients’ areas that can affect COPD and comorbidities

Exploit them as a source of informal data

Country Specific Healthcare Hub

- Applications taking into account the structure and the involved parts of each country’s healthcare system
- Each involved stakeholder will have access to the relevant content according to its role in the healthcare system
- The process output will be evaluated accordingly and feedback to the patient will be generated

WELCOME Central Hub

- Signal Processing Algorithms
- Medication Adherence Algorithm
- EIT processing
- Context aware based DSS for supporting the treatment of COPD with comorbidities CHF, Diabetes and Anxiety and Depression

External Internet Sources

Patient’s Hub

- WELCOME vest
- Diabetes management kit
- Medication Compliance Device

Commercial Cloud Space
Envisioned impact

• Reduce the time spent in clinics
• Support and enhance the role of all stakeholders
• Increase independence, empowerment and self-management
• Introduce an integrated care paradigm towards the big-data era
Results so far - 1

• User-centered design
  – Definition patient and clinical needs across UK, Greece, Germany, The Netherlands & Eire to identify ideal remote monitoring conditions and use scenarios
  – Analysis of different national COPD care pathways and typical patient experiences
  – Feed these findings into a whole-system design
Results so far - 2

• Full system design
  – Development of use case scenarios, design technical architecture & hardware-software components, design of signal processing software for vest sensor data, design of software applications for patients & clinical users
Results so far - 3

• Vest, sensors and application prototypes
  – Development of sensors & circuit boards for monitoring electrical impedance tomography (EIT), lung function, ECG, oxygen saturation, and body movement
  – Vest textile prototype with integrated sensors
  – Application mock-ups and cloud components prototypes
Is this enough?

- Fragmented care
- Minimal use of tele-health solutions
- Need for integration
  - Patient focused care
Integration of tele-health into care pathway
Conclusions

• Positive acceptance for solutions combining existing and innovative technologies
• Not focusing only to one disease but including also co-morbidities
• Include our users throughout the development process
• Mindset and organizational changes are required for broader adoption
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THANK YOU!

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