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### GRaCE-AGE achievements from 2016

The project will run for three years but these outputs are for the first year only.

**Sensors:** BeWell Innovations has created an entirely new server and database that makes it much easier to integrate GRaCE-AGE decision support with the sensor data. All the infrastructure has now been completed ready for a launch in February 2017.

**The GRaCE-AGE web-based software system** has been upgraded in response to a complete review of its interface by KU Leuven. Pilots are evaluating the new interface with a second major overhaul planned for the new year, this time with the sensor functionality included.

**Risk and safety ontology:** the current GRiST ontology has been extended to include care in the community and a formal machine specification has been created in the Web Ontology Language, OWL.

**A Health informatics and care in the community module** has been specified and delivered as part of the ATHENS (Advanced Technology Higher Education Network/SOCRATES) programme.

**Continuing Professional Development training** courses have been created for and delivered for over 50 mental health professionals.

## GRaCE-AGE has a successful EIT Health review for 2016



The GRaCE-AGE project was reviewed on 30th September in the Municon Centre, Munich Airport. The aim was to discuss and evaluate: progress towards key milestones, deliverables and KPIs; the use of the EIT budget (i.e. budget vs. actual spend, anticipated spend by end of 2016); progress towards overall objectives of the project; and the plan for 2017.

The Municon Centre can be seen in the background of what was a very impressive artificial surfing and beach bar compound. Despite this rather distracting view, we are happy to report that our project was well received and our proposal for 2017 is now part of the EIT Health business plan.

**One of the highlights** of the first year was the creation and delivery of an ATHENS module called Health Informatics in the Community. This was taken by fourteen students from different universities across Europe who attended KU Leuven for a week. The feedback was extremely positive and testimony to the KU Leuven team for achieving a second year target in the first year.

Another highlight is the output of *ten* peer-reviewed publications of various types. One was in the top medical informatics conference, the American Medical Informatics Association (AMIA), and the GRaCE-AGE paper gave some significant insights into how current intention to make a suicide attempt can be more accurately understood to improve safety management.

*See the panel on the left for a summary of the main achievements.*

## EIT Summit in Barcelona



GRaCE-AGE was an invited delegate to the EIT Health Summit in Barcelona where it was a featured project in the conference video presented to over 300 attendees (<https://vimeo.com/192954786> at 2mins 40s). The summit was held at the Cosmo Caixa science museum with a reception at the CaixaForum art museum. It was a celebration of all EIT Health activities and an excellent opportunity for creating new collaborations across Europe.

We are hoping to build on the links made at the summit to help promote GRaCE-AGE alongside other EIT projects. The idea is to increase our impact across Europe and not just within the consortium partner countries.

## Plans for 2017

The GRaCE-AGE proposal for 2017 builds on the successes of 2016 and will begin the serious business of testing how sensors inform and enhance the existing decision support system. The “canopy of care” message passing infrastructure and associated functionality will be developed that links care networks via the GRaCE-AGE ontology (knowledge model). New types of sensors will be integrated that minimise contact and intervention by the end users.



Pattern recognition algorithms will help optimise advice and in-

terventions posted on the social “care” network and evaluate them against outcomes. Information sharing will be enhanced by linking GRaCE-AGE to medical coding schemes such as SNOMED CT; the OWL specification of GRaCE knowledge that was an output in 2016 will be a useful tool for this process.

The GRaCE-AGE system will be made available for any screen size, includ-

ing being able to operate offline and on mobile phones. It requires:

1. redesigning the interface so that it is appropriate for smart phones and small mobile computers;
2. creating apps for android and iOS (iPhone) mobile phone operating systems, which must be in native languages to optimise performance;
3. and ensuring the system can be used offline with data uploaded to the server when access becomes available.

These improvements open GRaCE up to the emergency services and will improve business opportunities and sustainability, which need to be available across Europe. Hence an important objective is to translate GRaCE into multiple languages. Linking the mental-health knowledge base to different languages will be achieved by specifying language packs, where each language will have its own pack that controls and maintains integrity of the translation.

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## GRaCE-AGE partners

1. *West Midlands Academic Health Science Network*, which includes:
  - (a) *Aston University*, which hosts the servers and will develop the software for GRaCE-AGE;
  - (b) *Worcester Health and Care NHS Trust*, who will be using the clinicians version of GRaCE throughout the trust;
  - (c) *Coventry and Warwickshire Partnership NHS Trust*, which will be piloting how well myGRaCE supports collaborative care for patients in the community;
2. *University of Leuven* has expertise in hardware and data processing, which enables the development of integrated sensing systems for enabling people to remain independent in their own homes. It also has a specialised “e-Media Lab” for research on interaction design, serious games, persuasive systems, gamification and physical interaction.
3. *BeWell Innovations* has expertise in diagnostic testing and tele-monitoring as well as providing software platforms that share information between providers and patients, as is the intention of GRaCE-AGE.
4. *Maastricht Instruments* has a more hardware orientation, with expertise in helping researchers design and deliver their ideas within products that can be commercialised.
5. *Galassify* is a small, very new company that will use its experience with end users and the current GRiST system to develop the requirements and support the pilots for GRaCE-AGE.

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## Outputs for 2017



1. *GRaCE-AGE web-based software system* that includes the social network “canopy of care” functionality linking clinicians, carers, and older adults. It will have automated input from wearable and environmental sensors and be available on mobile platforms.
2. *Sensors*: new contactless sensors that increase user friendliness and the range of data collected.
3. *Education and training*: Another ATHENS (Advanced Technology Higher Education Network/SOCRATES) session; continuing professional development of mental-health practitioners; and engagement with students from schools and universities.
4. *Population language pack specification* that provides a generic solution for any language and an initial instantiation for the Dutch language.
5. *Peer-reviewed research and/or conference papers* with a target of two.
6. *News* will be released as individual stories throughout the year directly on the GRaCE-AGE website, as now. Twice a year, a more formal publications will be produced that can be printed and distributed.
7. *Commercial licencing agreement and protocol* for GRaCE-AGE will be firmed up as part of the evolving business strategy.

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