

PRESS RELEASE

Smartphones and wearable devices could revolutionise medical care for people with brain disorders

New collaborative research programme will explore potential of wearable devices to help prevent and treat depression, multiple sclerosis and epilepsy

Darmstadt, Germany, April 26, 2016 - [Software AG](#) (Frankfurt TecDAX: SOW) today announced a major new research programme supported by the Innovative Medicines Initiative (IMI) launches today, which will develop new ways of monitoring major depressive disorder, epilepsy, and multiple sclerosis using wearable devices and smartphone technology.

The RADAR-CNS (Remote assessment of disease and relapse – Central Nervous System) programme aims to improve patients' quality of life, and potentially to change how these and other chronic disorders are treated.

Continuous remote assessment using smartphones and wearable devices provides a complete picture of a patient's condition at a level of detail which was previously unachievable. Moreover, it could potentially allow treatment to begin before a patient's health deteriorates, preventing the patient relapsing or becoming more ill before they seek treatment.

Software AG will provide key elements of its Digital Business Platform, including Apama Big Data Streaming Analytics and Terracotta In-Memory Data Fabric. Dr. Giles Nelson, Software AG's senior vice president of product management, noted: "The Digital Business Platform will enable researchers to access unprecedented amounts of data from wearable smart devices in real-time for deep insights into brain disorders, 'personalised analytics', and early warnings of aberrant behavior."

RADAR-CNS is jointly led by King's College London and Janssen Pharmaceutica NV, funded by the Innovative Medicines Initiative (a Public Private Partnership established between the European Federation of Pharmaceutical Industries and Associations (EFPIA) and the European Union) and includes 24 partners from across Europe and the US. The programme brings together experts from diverse fields including clinical research, engineering, computer science, information technology, data analytics and health services.

Epilepsy, depression, and multiple sclerosis are distinct disorders, with different causes and symptoms, all of which can be severely detrimental to patients' quality of life and life expectancy. For all three disorders, patients often experience periods where their symptoms are manageable, followed by periods of deterioration and acute illness (relapse). Patient surveys have repeatedly highlighted the need to predict when relapses will happen and to improve the treatments which are available to stop them from occurring.

According to co-lead of the RADAR-CNS programme Professor Matthew Hotopf, Director of the NIHR Maudsley Biomedical Research Centre in London, UK, "In recent years, the quality and quantity of data that we can collect using wearable devices and smartphones has exploded. It may be that this sort of data can improve clinical care simply by providing more accurate information. Better still, it may be possible to spot when a patient is getting into trouble before their clinic visit."

"For example, in depression, someone's behaviour may change even before they have noticed they are struggling – their sleep may get worse, or they may stop doing so much in the weeks leading up to a relapse. RADAR-CNS will exploit the huge potential of wearable technologies to improve the lives of the millions of people worldwide with chronic illnesses like epilepsy, depression and multiple sclerosis."

Patients will be involved in RADAR-CNS from the start, helping to identify the most important

symptoms to target. They will also advise researchers on how best to implement remote measurement technologies in a way that is acceptable and engaging to patients, including accounting for privacy and security.

Wherever possible, RADAR-CNS will use inexpensive and widely available technology, so that the end results can be made available to as many patients as possible. The research will also be developed in a way that allows the results to be transferred to other diseases, potentially allowing the benefits of remote measurement technologies to become pervasive in medicine, and transforming the way we think about prevention and cure.

According to co-lead of the RADAR-CNS programme Vaibhav Narayan, PhD, Head of Integrated Solutions and Informatics, Neuroscience, Janssen Research & Development, LLC, an affiliate of Janssen Pharmaceutica, “Our goal is to improve clinical care and outcomes by using data generated by patients as they go about their daily lives to predict and pre-empt relapses and improve their quality of life. Such ‘predictive medicine’ solutions will be backed by scientific evidence and will meet regulatory standards. At the same time, the privacy and security of patients and their care-givers will be fully protected.”

NOTES TO EDITORS:

Depression	Epilepsy	Multiple Sclerosis (MS)
Depression can have many effects, including lasting feelings of sadness or hopelessness, losing interest in former interests, or feeling very tearful. Many people with depression also have symptoms of anxiety. It has many, often complex, causes.	Epilepsy is a chronic brain disorder that affects people of all ages, characterized by recurrent seizures (from brief lapses of attention or muscle jerks, to severe and prolonged convulsions), of varying frequency.	MS is a condition, which can affect the brain and/or spinal cord, causing a wide range of potential symptoms, including problems with vision, arm or leg movement, sensation or balance.
Around 350 million people worldwide are thought to be affected by depression.	Around 50 million people worldwide have epilepsy.	Around 1.3 million people worldwide have MS.
Depression is a leading cause of disability worldwide, and is a major contributor to the overall global burden of disease.	Epilepsy is one of the most common neurological diseases globally.	MS is one of the most common neurological disorders and causes of disability in young adults globally.
More women are affected by depression than men, but it affects all ages and gender identities.	Epilepsy can start at any age, but it most often begins during childhood.	MS is most commonly diagnosed in people in their 20s and 30s, although it can develop at any age. It's about two to three times more common in women than men.

[Source: [World Health Organisation](#) and [NHS Choices](#)]

RADAR-CNS runs from 2016 until 2021, and is jointly led by King's College London (KCL) and Janssen Pharmaceutica NV (JPNV).

This project has received funding from the Innovative Medicines Initiative 2 Joint Undertaking under grant agreement No 115902. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme and EFPIA. See www.imi.europa.eu

for more details.

Professor Matthew Hotopf and colleagues at King's College London are supported by the NIHR Maudsley Biomedical Research Centre.

The programme is a partnership of 24 organisations from across Europe and the US:

1. King's College London, United Kingdom
2. Provincia Lombardo-Veneta - Ordine Ospedaliero di San Giovanni di Dio - Fatebenefratelli, Italy
3. Lygature, Netherlands
4. Università Vita-Salute San Raffaele, Italy
5. Fundacio Hospital Universitari Vall d'Hebron - Institut de Recerca , Spain
6. University of Nottingham, United Kingdom
7. Centro de Investigacion Biomedica en Red, Spain
8. Software AG , Germany
9. Region Hovedstaden, Denmark
10. Stichting VU-VUMC , Netherlands
11. Universitaetsklinikum Freiburg , Germany
12. Stichting imec Nederland, Netherlands
13. Katholieke Universiteit Leuven , Belgium
14. Northwestern University, United States
15. Universität Passau, Germany
16. Università degli Studi di Bergamo, Italy
17. Charité, Germany
18. Intel Corporation (UK) Ltd, United Kingdom
19. GABO:mi Gesellschaft für Ablauforganisation :milliarium mbH & Co. KG
20. Janssen Pharmaceutica NV, Belgium
21. Biogen Idec Limited, United Kingdom
22. H. Lundbeck A/S, Denmark
23. UCB Biopharma SPRL, Belgium
24. MSD IT Global Innovation Center s.r.o., Czech Republic

About King's College London - www.kcl.ac.uk

King's College London is one of the top 20 universities in the world (2015/16 QS World University Rankings) and among the oldest in England. King's has more than 26,500 students (of whom nearly 10,400 are graduate students) from some 150 countries worldwide, and nearly 6,900 staff. The university is in the second phase of a £1 billion redevelopment programme which is transforming its estate.

King's has an outstanding reputation for world-class teaching and cutting-edge research. In the 2014 Research Excellence Framework (REF) King's was ranked 6th nationally in the 'power' ranking, which takes into account both the quality and quantity of research activity, and 7th for quality according to Times Higher Education rankings. Eighty-four per cent of research at King's was deemed 'world-leading' or 'internationally excellent' (3* and 4*). The university is in the top seven UK universities for research earnings and has an overall annual income of more than £600 million.

King's has a particularly distinguished reputation in the humanities, law, the sciences (including a wide range of health areas such as psychiatry, medicine, nursing and dentistry) and social sciences including international affairs. It has played a major role in many of the advances that have shaped modern life, such as the discovery of the

structure of DNA and research that led to the development of radio, television, mobile phones and radar.

King's College London and Guy's and St Thomas', King's College Hospital and South London and Maudsley NHS Foundation Trusts are part of King's Health Partners. King's Health Partners Academic Health Sciences Centre (AHSC) is a pioneering global collaboration between one of the world's leading research-led universities and three of London's most successful NHS Foundation Trusts, including leading teaching hospitals and comprehensive mental health services. For more information, visit: www.kingshealthpartners.org.

King's fundraising campaign – World questions | King's answers – created to address some of the most pressing challenges facing humanity has reached its £500 million target 18 months ahead of schedule. The university is now aiming to build on this success and raise a further £100 million by the end of 2015, to fund vital research, deliver innovative new treatments and to support scholarships.

The campaign's five priority areas are neuroscience and mental health, leadership and society, cancer, global power and children's health. More information about the campaign is available at www.kcl.ac.uk/kingsanswers.

About the National Institute for Health Research (NIHR) - <http://www.nihr.ac.uk/>

The National Institute for Health Research (NIHR) is funded by the Department of Health to improve the health and wealth of the nation through research. The NIHR is the research arm of the NHS. Since its establishment in April 2006, the NIHR has transformed research in the NHS. It has increased the volume of applied health research for the benefit of patients and the public, driven faster translation of basic science discoveries into tangible benefits for patients and the economy, and developed and supported the people who conduct and contribute to applied health research. The NIHR plays a key role in the Government's strategy for economic growth, attracting investment by the life-sciences industries through its world-class infrastructure for health research. Together, the NIHR people, programmes, centres of excellence and systems represent the most integrated health research system in the world. For further information, visit the NIHR website (www.nihr.ac.uk).

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About [Software AG](http://www.softwareag.com)

Software AG empowers customers to innovate, differentiate and win in the digital world. Its products help companies combine existing systems on-premise and in the cloud into a single platform to optimize and digitize their businesses. The combination of process management, data integration and real-time analytics in one *Digital Business Platform* enables customers to drive operational efficiency, modernize their systems and optimize processes for smarter decision-making. Building on over 45 years of customer-centric innovation, Software AG is ranked a leader in many innovative IT categories. Software AG has more than 4,300 employees in 70 countries and had total revenues of €873 million in 2015.

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