

# FORTH and University of Crete win the first prize at Hacking Health in Athens!



The Institute of Computer Science of the Foundation for Research and Technology-Hellas (FORTH) and the Medical School of the University of Crete (UOC) participated in the first HACKING HEALTH HACKATHON in Athens and won the first prize, accompanied by 2,000 euros and the opportunity to participate in the Digital Transformation Programme of Roche Diagnostics Hellas.

Time Is Brain was developed to address the challenge of using the International Patient Summary (IPS) to find innovative solutions for Health Data and Mobility. Participants of the HACKATHON were asked to create innovative solutions to improve the specifications of the International Patient Summary (IPS) so that everyone can have access and share their personal health information, in order to get emergency unscheduled care, wherever needed, starting with vaccinations, allergies, drug therapy, and clinical problems.

The FORTH-UOC team developed and presented, Time Is Brain, a platform for the integrated management of emergencies focused on ischemic strokes. The Time Is Brain platform uses the HL7 FHIR IPS standard to manage emergency episodes of suspected ischemic stroke aiming at reducing the time between the first contact of the patient with the paramedics until the patient receives specialized treatment.



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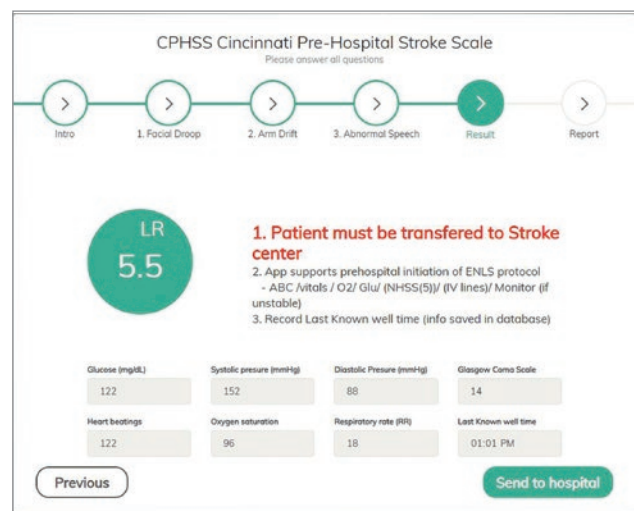
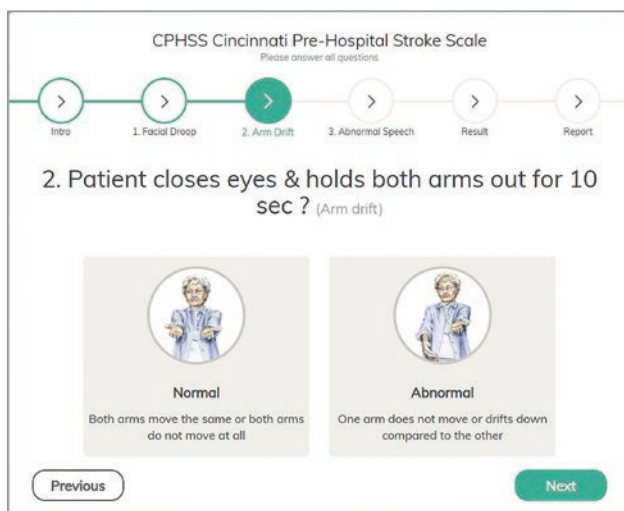
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The application of the rescue team guides the rescuers to decide if the episode is a probable stroke using the Cincinnati Prehospital Stroke Scale. Then, the application directs the rescuers to perform the necessary actions and measurements and to record all findings in the application. At the same time, the application provides information about the nearest hospital with a stroke management team and directs the ambulance towards it through the most rapid route.

Through the physician application, the stroke team receives the information and actions recorded by the rescuers. The application informs the stroke team about the arrival time of the ambulance to the emergency room. Smart queries retrieve important decision support information from the IPS relevant to contraindications against administering thrombolysis. When the patient arrives, the stroke team, reviews the IPS, and completes all the rest of the necessary information through checklists. All stored information and the patient consent form are printed for verifications and signatures. The Time Is Brain platform aspires

to drastically reduce the time required from the onset of the episode to the possibility of the patient receiving thrombolysis which must take place within less than 3 hours and in some cases 4-5 hours from the onset of symptoms. Delays in administering appropriate treatment results in disabilities and lower quality of life.

The IPS provides the minimal patient clinical dataset to support cross-border emergency and unplanned care. HL7 FHIR IPS was used for information retrieval in order for the healthcare professional to have all the required clinical data to decide about the specialized stroke treatment.. A public FHIR Server provided by HL7 (Public HAPI STU3 server) was used to create sample patients and their patient summaries based on the IPS standard. The Time Is Brain platform queried FHIR server's IPS for clinical data of the patient related to stroke treatment. The FHIR RESTful API used for the communication between the platform and the FHIR server. FHIR RESTful API also provided specified transactions on FHIR resources allowing flexibility on the criteria used for retrieving the



Figures 1-2: screens shots from the rescue team application

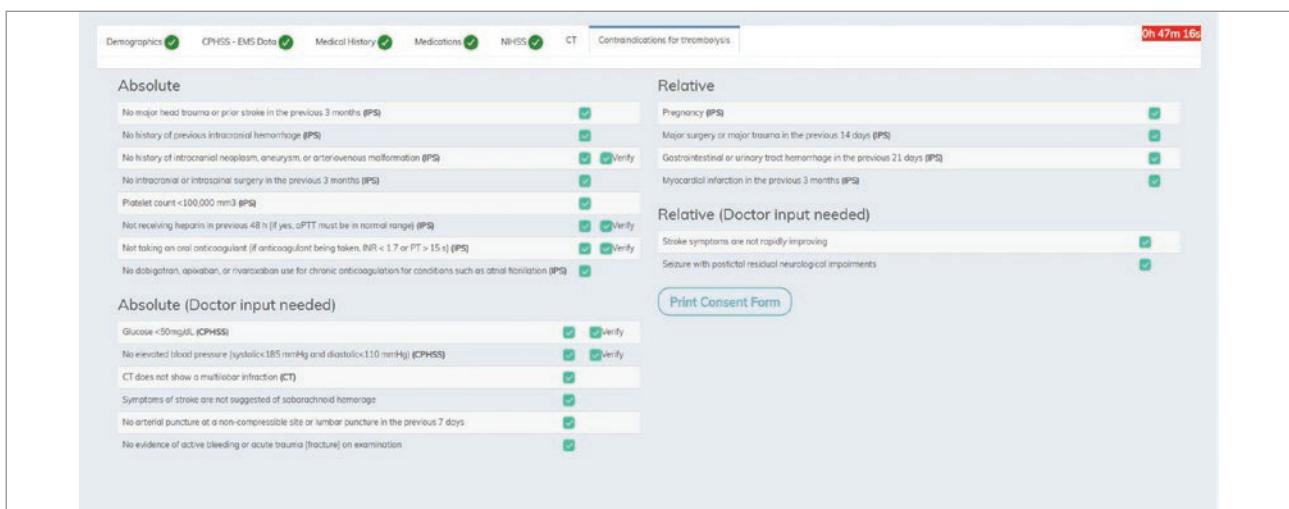


Figure 3: The Time Is Brain platform queried FHIR server's IPS for the patient clinical data related to stroke treatment.



required clinical data. IPS and FHIR integration was a vital part of the Time Is Brain platform since clinical data needed for stroke treatment is very specific and require complicated search criteria.

Time Is Brain platform is a prototype. Once funding is ensured, a full commercial product will be developed and used in a pilot study to demonstrate the health and social impact of timely management of ischemic stroke emergencies. The potential markets for Time Is Brain platform are national and private healthcare and prehospital emergency care organizations and large companies such as Google, Amazon, Apple and Microsoft.

The team would like to thank all the mentors of HACHING HEALTH and especially Mr. Dimitrios Katehakis, Head of the Center for eHealth Applications and Services of FORTH and general secretary of HL7 Hellas for his valuable mentoring advice.

### **For more information:**

- Cincinnati Prehospital Stroke Scale  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5994852/>
- Institute of Computer Science FORTH  
<https://www.ics.forth.gr/>
- Medical School, University of Crete  
<http://en.uoc.gr/courses/faculty-sciences-health/medical-school.html>
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