The AMPS Insider

An AMPS LLC Magazine

Executive Overview

The ISCE 48th Annual Conference. Early Warning of Atrial Fibrillation using Deep Learning. Product news. Looking forward. AMPS People.

Editorial

The [48th Annual Conference](#) of the International Society of Computerized Electrocardiology ([ISCE](#)) will soon be held at Chateau Elan, Braselton, Atlanta, Georgia, from April 3 to April 7, with exciting programs presenting different areas of cardiovascular research and emerging technology.

As an active member of the Board of Trustees, AMPS will have a large presence, led by our President and Chief Scientist Fabio Badilini, who is the current President of ISCE, plus three other delegates:

- Chief Technology Officer Gianpietro Spagna presenting a telemedicine project conducted at a pediatric Hospital in the Milan area,
- Chief Medical Officer Dr. Antonio Sanzo presenting clinical data from a large pediatric population of the same Hospital,
- Customer Support/Service Manager Martino Vaglio a frequent contributor within the ISCE community.

More information about the Conference, including registration instructions, can be found [here](#).

We're also happy to introduce a manuscript recently approved for publication on Patterns: *Early Warning of Atrial Fibrillation using Deep Learning.*

The paper summary: Atrial fibrillation (AF), the most prevalent cardiac rhythm disorder, significantly increases hospitalization and health risks. Reverting from AF to sinus rhythm (SR) often requires intensive interventions. This study presents a deep-learning model capable of predicting the transition from SR to AF on average 30.8 minutes before the onset appears, with an accuracy of 83% and an F1-score of 85% on the test data. This performance was obtained from R-to-R interval signals, which can be accessible from wearable technology. Our model, entitled WARN, consists of a deep convolutional neural network trained and validated on 24-hour Holter electrocardiogram data from 280 patients, with 70 additional patients used for testing and further evaluation on 33 patients from two external centers. The low computational cost of WARN makes it ideal for integration into wearable technology, allowing continuous heart monitoring and early AF detection, which can potentially reduce emergency interventions and improve patient outcomes.

The full article will be available on the AMPS web site once published[.](#)

Products News

CER-S v4.7.0 was finalized and has been submitted for certification as CE Medical Devices by the Italian Subsidiary CardioCalm.
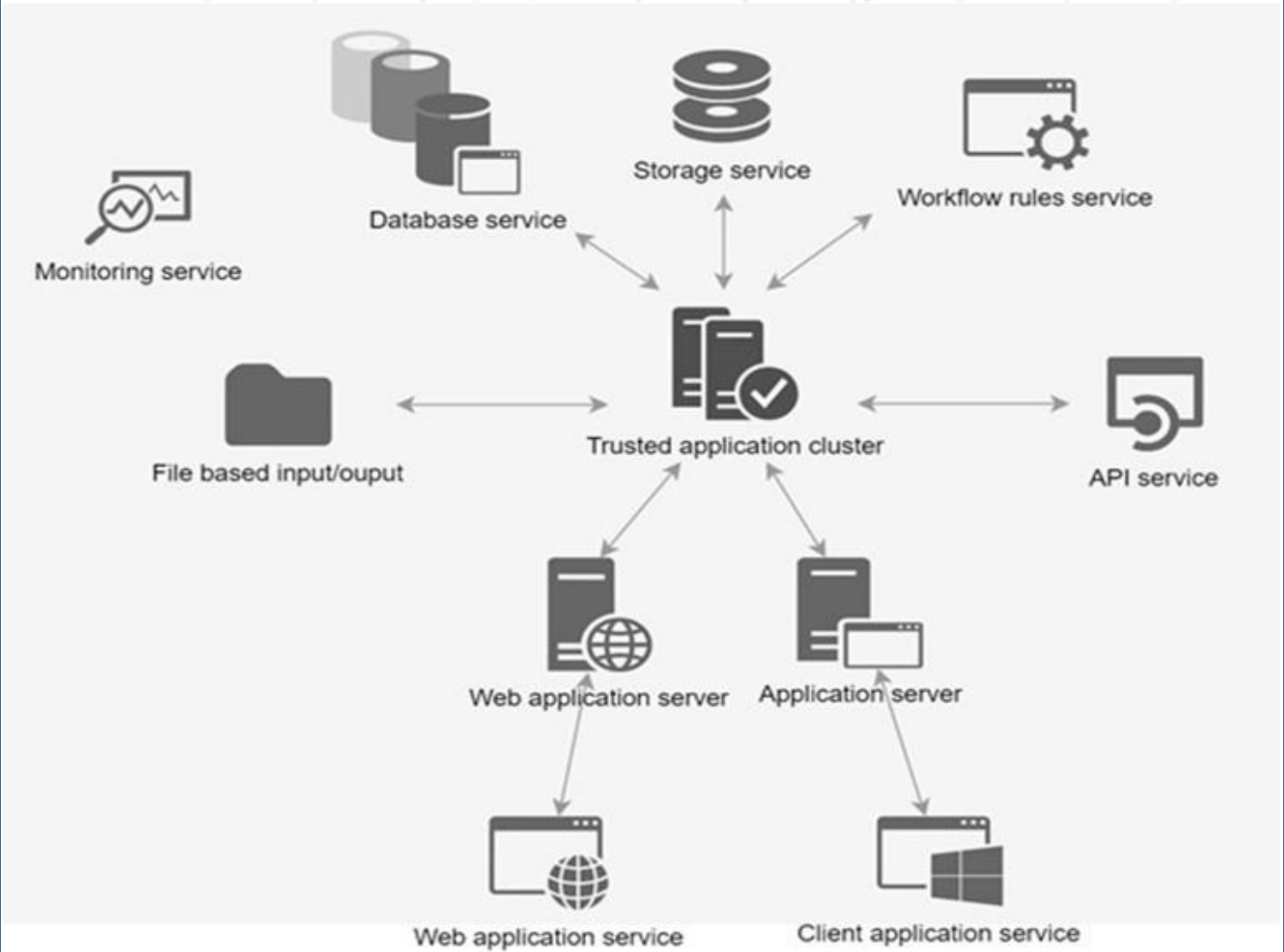
Looking forward

AMPS is moving forward to develop an advanced digital ECG data management system to be named **ECGMaster**. This solution targets the replacement of similar existing products available on the market that are being phased out of production and no longer supported. The main characteristics of ECGMaster will be:

- Advanced digital ECG data management
  - ✓ long-term storage of ECGs data
  - ✓ possibility of review, editing and remote access
  - ✓ study specific data

- ✓ complete patient management and linked personal data
- ✓ custom ID and data
- o Multiple input/output options
  - ✓ different input/output modalities, file based, API and more
  - ✓ multiple input/output formats, both standards and proprietary
  - ✓ compatibility with all major ECG devices
  - ✓ highly customizable PDF reports
  - ✓ different data exports
- o Best-in-class ECG measurement tool
  - ✓ BRAVO automatic measurement algorithm
  - ✓ advanced tools for manual measurement and measurement review
- o Customizable workflows

- ✓ possibility to define customized rules based on events and diagnostic statements
- ✓ possibility of defining statuses and operations on statuses
- o Security, compliance, privacy
  - ✓ multi-layer login, account management, transaction logging and audit trails
  - ✓ record-specific audit trial to track all ECG activity
  - ✓ role-based permissions
  - ✓ privacy by design and by default
- o Architecture
  - ✓ modular system
  - ✓ installation both in cloud and on-premise
  - ✓ components scalability
  - ✓ automatic backup and data retention rules.

This diagram depicts the high-level architecture of **ECGMaster**

AMPS People

We are very pleased to announce that Dr. Antonio Sanzo joined the AMPS team as Chief Medical Officer in January 2024. Antonio has a vast experience as a Clinical and interventional Cardiologist, at the department of Arrhythmology and Electrophysiology of the IRCCS Policlinico San Matteo in Italy and is a certified Electrophysiology Specialist level 2 of the European Heart Rhythm Association. Antonio is the perfect fit in the AMPS team as his technical skills and competences include the diagnosis and treatment of cardiac tachyarrhythmias, including complex forms, via electro-physiologic studies and transcatheter ablation, the diagnosis and treatment of cardiac bradyarrhythmias, via pacemaker implantation, and primary and secondary prevention of sudden cardiac death via defibrillator implantation, and finally, the treatment of heart failure (resynchronization therapy) via pacemaker and biventricular defibrillator implantation.

Antonio Sanzo