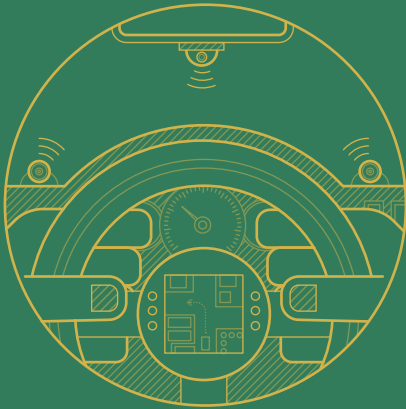


# ARTIFICIAL INTELLIGENCE DEMONSTRATORS

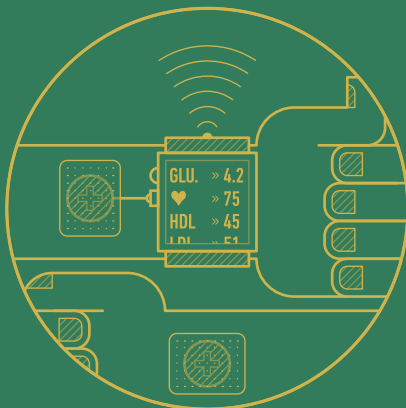
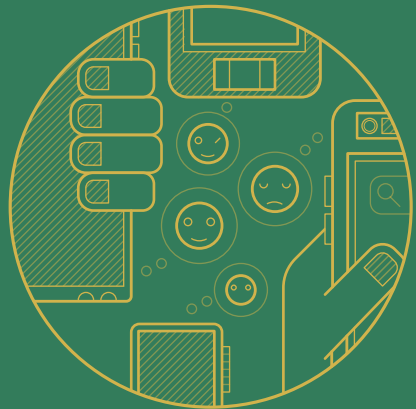


## Automotive Safety and Cognitive Computing

- ➔ Scene, people and driver detection, to trigger active or passive safety systems
- ➔ In-vehicle driver assistant, able to personalize the driver experience

## Consumer Emotional Virtual Assistant

- ➔ An emotional virtual assistant will be implemented for natural HMI (human machine interface) interactions
- ➔ Communication between API (application programming interface) services and users will also be implemented



## Healthcare Patient Monitoring

- ➔ Use of smart low-power devices to plan and schedule further diagnostic procedures
- ➔ Prediction of further diagnostic

## NVISO SA

 **SME** *Switzerland*

## Universidad de Castilla-La Mancha

 **ACADEMIA** *Spain*

## Trinity College Dublin

 **ACADEMIA** *Ireland*

## The University of Edinburgh

 **ACADEMIA** *United Kingdom*

## Fachhochschule Nordwestschweiz FHNW

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## Institute of Communications and Computer Systems

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## SYNYO GmbH

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732204 (Bonseyes). This work is supported by the Swiss State Secretariat for Education, Research and Innovation (SERI) under contract number 16.0159. The opinions expressed and arguments employed herein do not necessarily reflect the official views of these funding bodies.



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**BONSEYES**

ARTIFICIAL INTELLIGENCE  
MARKETPLACE



## PROBLEMS TO BE SOLVED

Bonseyes aims to solve two key challenges: the strong industrial need to address data network effects and data wall problems of building systems of artificial intelligence at the European level. More specifically Bonseyes will:

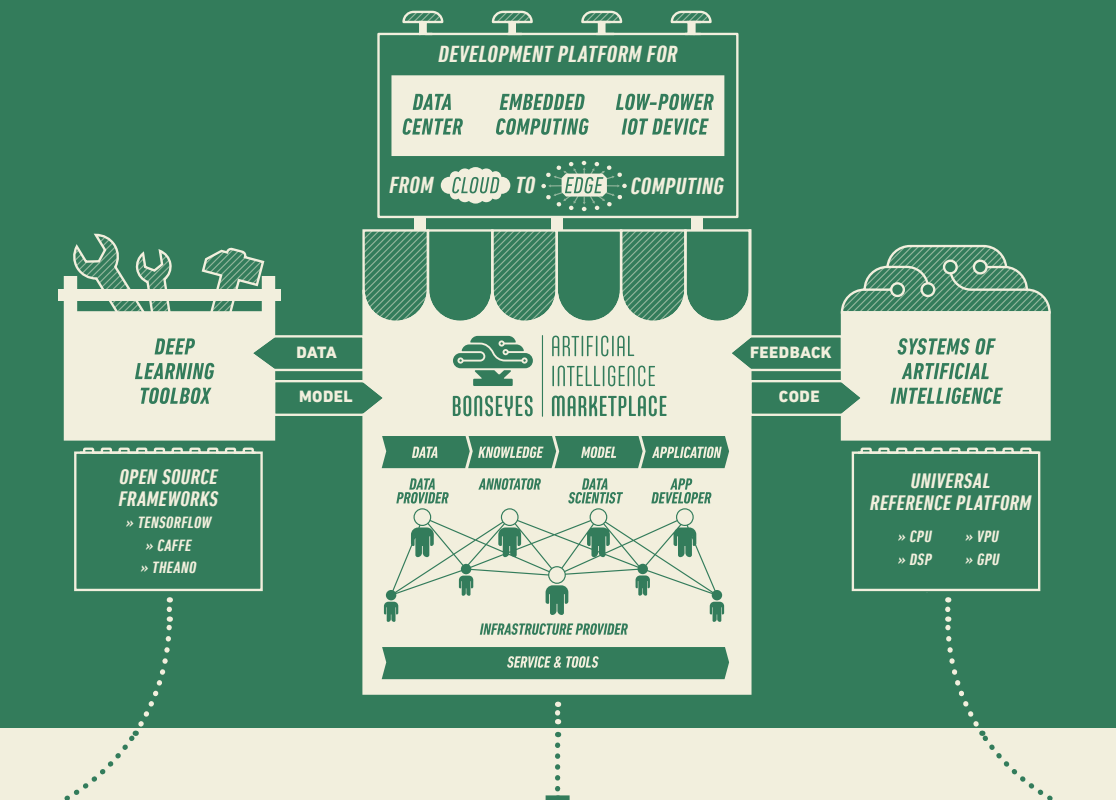
- ➔ Address the programming and design challenges of distributed architectures and autonomy of systems. It will do this by managing and synthesizing the “data deluge” created as we operate ever larger software systems with billions of connected, sensor enabled devices.
- ➔ Reduce the time of development and cost of ownership of the ever-growing roles of data analytics and machine learning in distributed and autonomous systems.

## DEEP LEARNING TOOLBOX I.....

The **Deep Learning Toolbox** will extend existing open source deep frameworks to provide a set of components that are tailored for embedded, constrained, distributed systems operating in real environments with power, memory, and speed constraints.

It will move deep learning research from predictive performance of large scale centralised models to cost-sensitive, distributed, sparse satisficing models that are robust to changes in data environments and real-life dirty data scenarios. The toolbox will provide functions and interfaces to measure accurately the true cost of running a given model on a given target platform.

The toolbox for deep learning in embedded systems will enhance existing standardised middleware packages (e.g. Tensorflow) that are not tailored for most embedded architectures.

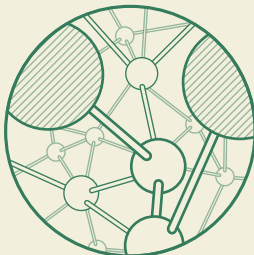


## ARTIFICIAL INTELLIGENCE MARKETPLACE

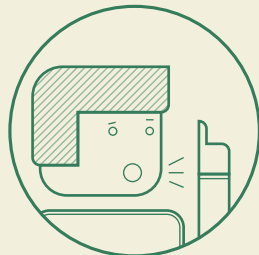
**Bonseyes Marketplace** is an open and expandable platform. It supports scenarios where data must remain in the data provider's premises and online learning with distributed CPSs (cyber-physical systems). In contrast to existing solutions, it keeps human actors in the loop by allowing for continuous feedback for evaluating the performance of the models and obtaining metadata about context and the users' perspectives.



**Secure Data**



**Distributed Learning**



**Human Feedback**

## KEY OBJECTIVES

To create a platform for open development of systems of artificial intelligence emerging as a key growth driver in Smart CPS (cyber-physical system) systems in the next decade. Opposed to monolithic system design currently used in closed end-to-end solutions, Bonseyes will focus on an open architecture to enable an eco-system of companies to collaborate in building complex distributed “intelligent” systems.

- ✓ Reduce development time by 50%.
- ✓ Reduction in cost of ownership by a factor of 5 related to training of deep learning models.
- ✓ Reduction in computational and memory by a factor of 10.
- ✓ Create four new AI market scenarios.

## .....| HETEROGENEOUS COMPUTING

Bonseyes will support multiple **Universal Developer Reference Platforms** with pre-integrated middleware via open source and vendor packages. Support for a wide array of Multicore CPU-based platforms, GPUs (graphics processing units), VPU (vector processing units), and DSPs (digital signal processors) without the need for time consuming and specialized engineering development.

