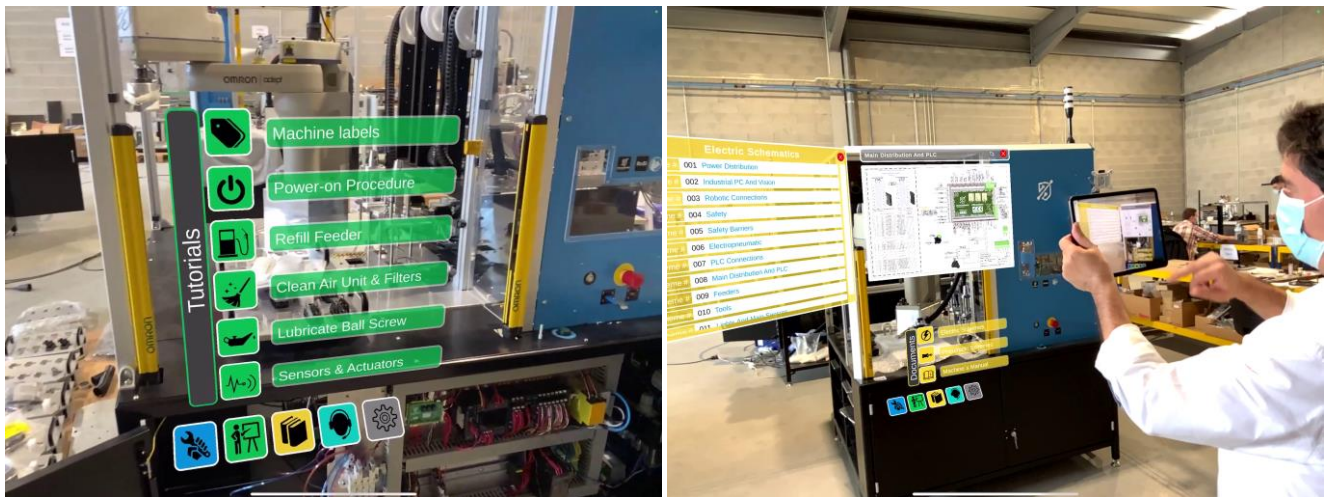


zAR: Empowering ZDMP with an Augmented Reality based maintenance service towards a zero-defect manufacturing

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Project Details and Motivation

The correct maintenance of industrial machines is critical to achieve a zero defects manufacturing paradigm promised by Industry 4.0. In this context, Augmented Reality (AR) can be a key enabler to overcome this challenge. The ability to see information overlays on top of industrial machines completely transforms the areas of training and maintenance, contributing to the zero-defect objective. The main goal of the zAR sub-project is to bring an AR service into the ZDMP platform. A new component and application will be developed and integrated that will facilitate ZDMP platform end users to use AR applications to visualise machine data traversing the ZDMP platform.



ZDMP Fit

ZDMP already promotes the connection between end-user systems (industrial shopfloor) and the ZDMP cloud infrastructure, as illustrated by Figure 1. Data coming from the industrial shopfloor needs to traverse the Internet in a secure way to be consumed by ZDMP components. This data is then processed/transformed to be used by different zApps. In such scenario, ZDMP can act as a facilitator in bringing the inherent advantages of AR visualisation into the industrial shopfloor.

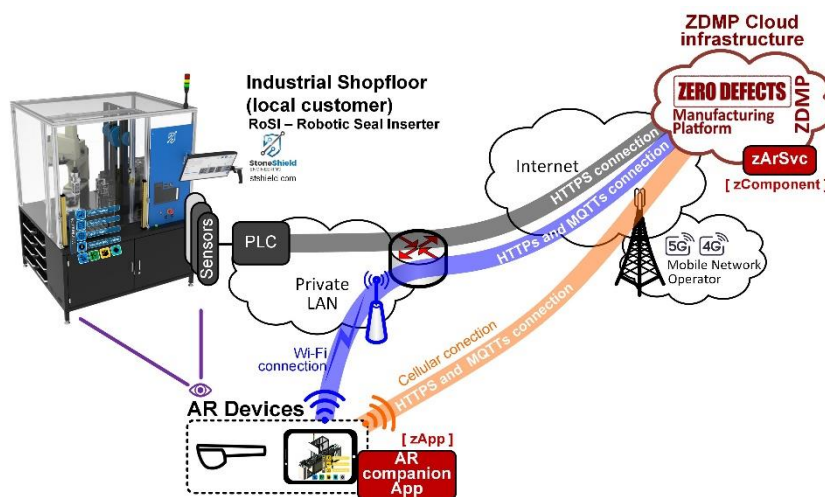


Figure 1 - zAR subproject ecosystem fit in ZDM goals

Despite its immense possibilities, AR is still an emerging technology with very few developers capable of developing industrial applications. The zAR subproject delivers this capability into the ZDMP platform. This is mainly achieved by the developed zArSvc zComponent, which will act as a middleware between external AR applications and the data consumed by ZDMP. By providing an AR interface builder and open interfaces to external AR applications, third-party companies can develop their own AR applications, needing only to interface with the zArSvc component. The overarching view of the integration blueprint, considering the different dataflows is summarised by Figures 2, 3 and 4.

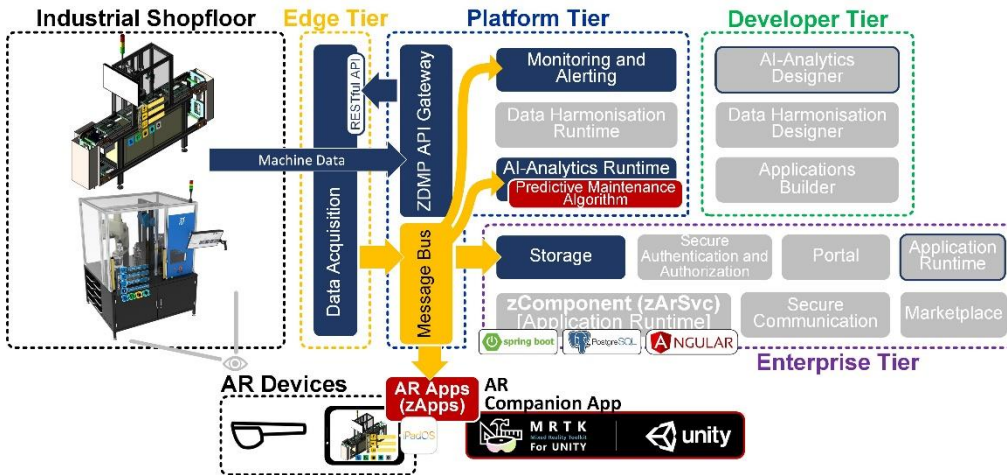


Figure 2 – Machine data flow

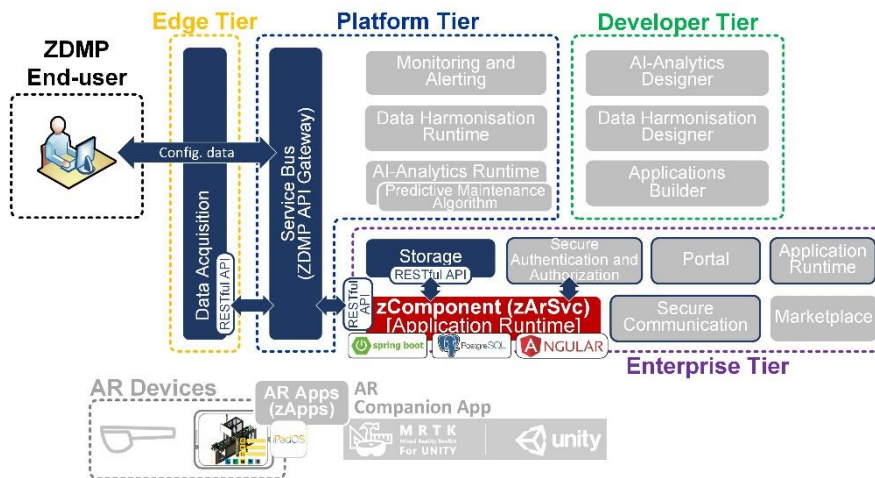


Figure 3 – zComponent configuration data flow (by a ZDMP end-user)

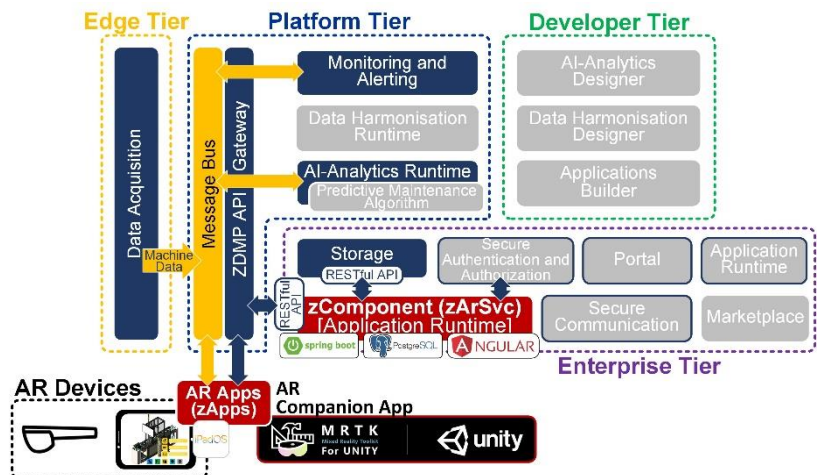


Figure 4 – zApp (AR application) data flow

The usage of 14 ZDMP components are foreseen and 1 new zComponent and 1 new mobile application will be developed by Allbesmart to address this challenge. The proof-of-concept will be showcased by using the zApp with two different industrial machines, one from a local customer and other involving the ZDMP Experimental Facility at Tampere University.

The zAR business model resides primarily on usage royalties of the zComponent (zArSvc), through the ZDMP Marketplace, and secondly, on the royalties from the usage of the zApp (dedicated iOS or Android store).

Participant Details

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- **Profile:** Allbesmart is an engineering company that provides customised outsourcing services and technology expertise on Internet of Things, wireless communications and high-performance software development, for various industries.

ZDMP Details

The ZDMP – Zero Defects Manufacturing Platform – is a project funded by the H2020 Framework Programme of the European Commission under Grant Agreement 825631 and conducted from January 2019 until December 2022. It engages 31 partners (Users, Technology Providers, Consultants and Research Institutes) with a mission to “Provide the platform, components, services, and marketplace to achieve the right product, at the right time, with the right conditions using the right resources.”. Further information can be found at www.zdmp.eu. ZDMP channels 3.2M€ of SME orientated funding to subprojects, such as this one to both facilitate SMEs with their innovations and increase the value of the ZDMP ecosystem,

Links

• Sub project website	https://allbesmart.pt
• Architecture Component(s)	https://www.zdmp.eu/documentation
• ZDMP Website	https://www.zdmp.eu