



SPHERE
BIM DIGITAL TWIN PLATFORM

“DATA DRIVEN BUILDING DIGITAL TWINS AS NEW BUSINESS CASES IN THE BUILT ENVIRONMENT”



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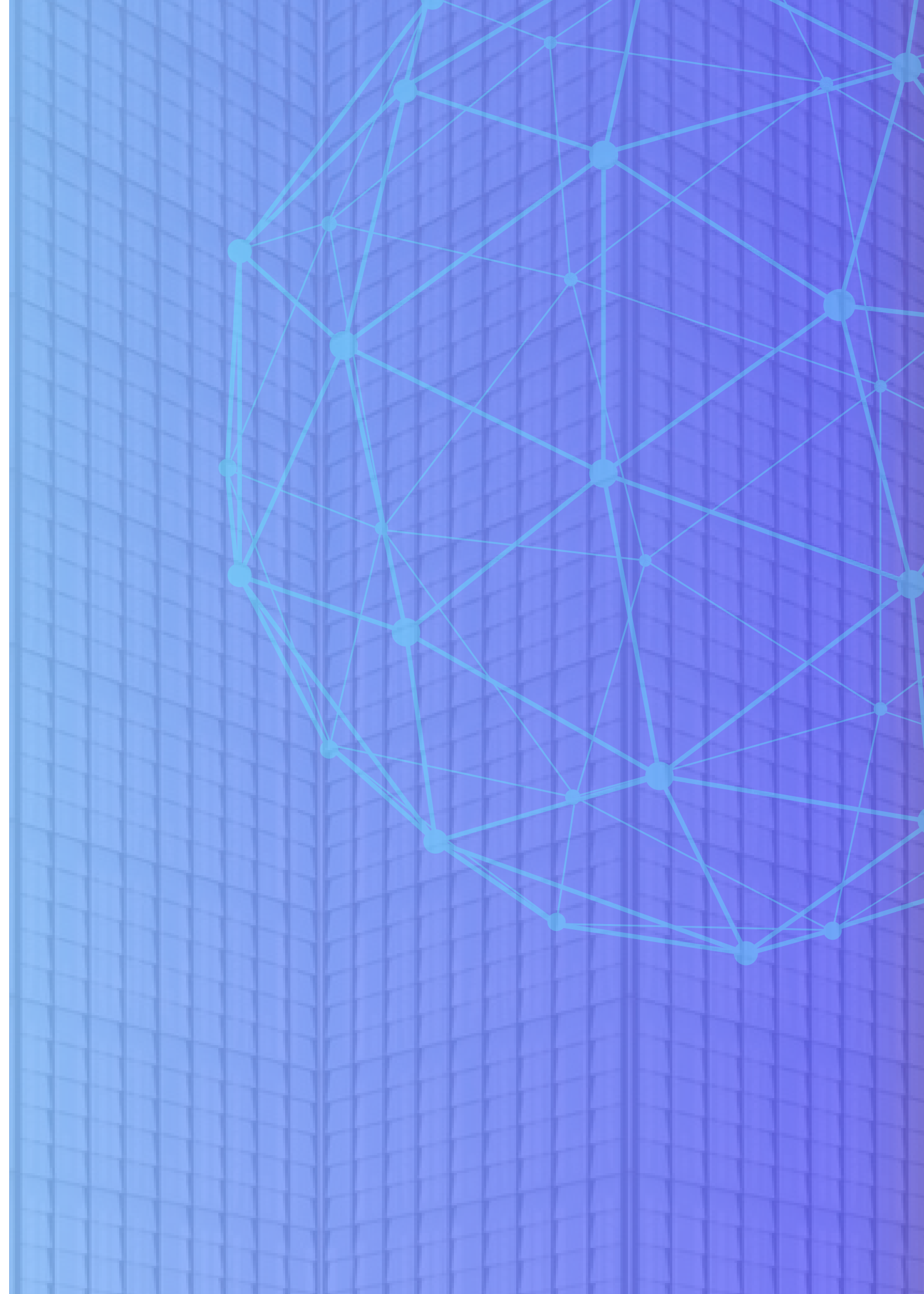
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“DATA DRIVEN BUILDING DIGITAL TWINS AS NEW BUSINESS CASES IN THE BUILT ENVIRONMENT”

Digital transformation is more important than ever. Data and analytics change how architecture, engineering, construction and owner (AECOO) operates but some changes are invisible to the eye: transformation of business models. To avoid commoditization, some companies are moving fast to adopt digital platforms to run their business. They add new services to their existing portfolio, and they build new partnerships. We see the emergence of new roles (chief data officer, chief digital officer, chief transformation officer, chief analytics officer, chief partnership officer), new activities (that focus on data capture and usage), and new tools (to make business decisions and develop insights based on data). Consequently, entirely new ecosystems are emerging as well as new roles are being proposed^{1 2}.

Accordingly, AECOO industry is moving towards digitally enabled business models, and specifically towards Platform Business Models overpassing the traditional AECOO model of a business models' pipeline. Nevertheless, some drawbacks and bottlenecks remain unsolved, mostly regarding competition and growth. Also maintain their margins are not clear enough with the development of the new paradigms. Business Model is still in its infancy and market proof of concept and market validations are still needed.

Nevertheless, an increasing number of AECOO stakeholders have saw the potential benefits of adopting digital platforms across project lifecycles. However, when it comes to Platform Business Models, changes also bring questions just as much as it may bring gains, and more specially on data as asset, systems ownership and IP.

A possible idea, such as the one proposed in SPHERE Project, is create their own technology data platforms and try to create new ecosystems around them, partnering with technology companies, build tailor-made solutions, develop new service offerings, and conceive new business models to deliver and capture value. Platform Business Model attracts companies because it is considered by all technology and business experts as the most valuable type of business model. But it is still difficult to predict what is going to happen. What is certain is that Data is the new raw material, fueling the dramatic ecosystem shift taking place. All players will create and also consume Data. In the future, firms will buy, sell, and trade Data. There will be Data Miners, Data Controllers, Data Brokers, Data Wholesalers, etc.

A GAME CHANGER

In October 2018, a Fortune article was already predicting the rise of the use of digital technologies in in the built environment industries. In the light of high-cost pressures and international competition in a high-risk industry with tight profit margins, the AECOO sector is finally getting to grips with the large-scale application of digital technologies. But what does all this mean, and how will the adoption of such technologies transform AECOO businesses?

While Building Information Modelling (BIM) represented a major step towards the digitalization of building construction planning, Digital Twin has emerged as new paradigm to manage the entire building life cycle management, by merging the structured Information Model coming from the Design and Construction phases (BIM) with Simulation Models used along the asset lifespan³ as well as the real data gathered by the increased usage of IoT in buildings. But is this extra effort in digitalisation worthy with current business practices or an expansion of the established – digital – business models is needed to enable the Digital Twin's market roll out.

PAAS AS REFERENCE / STARTING POINT

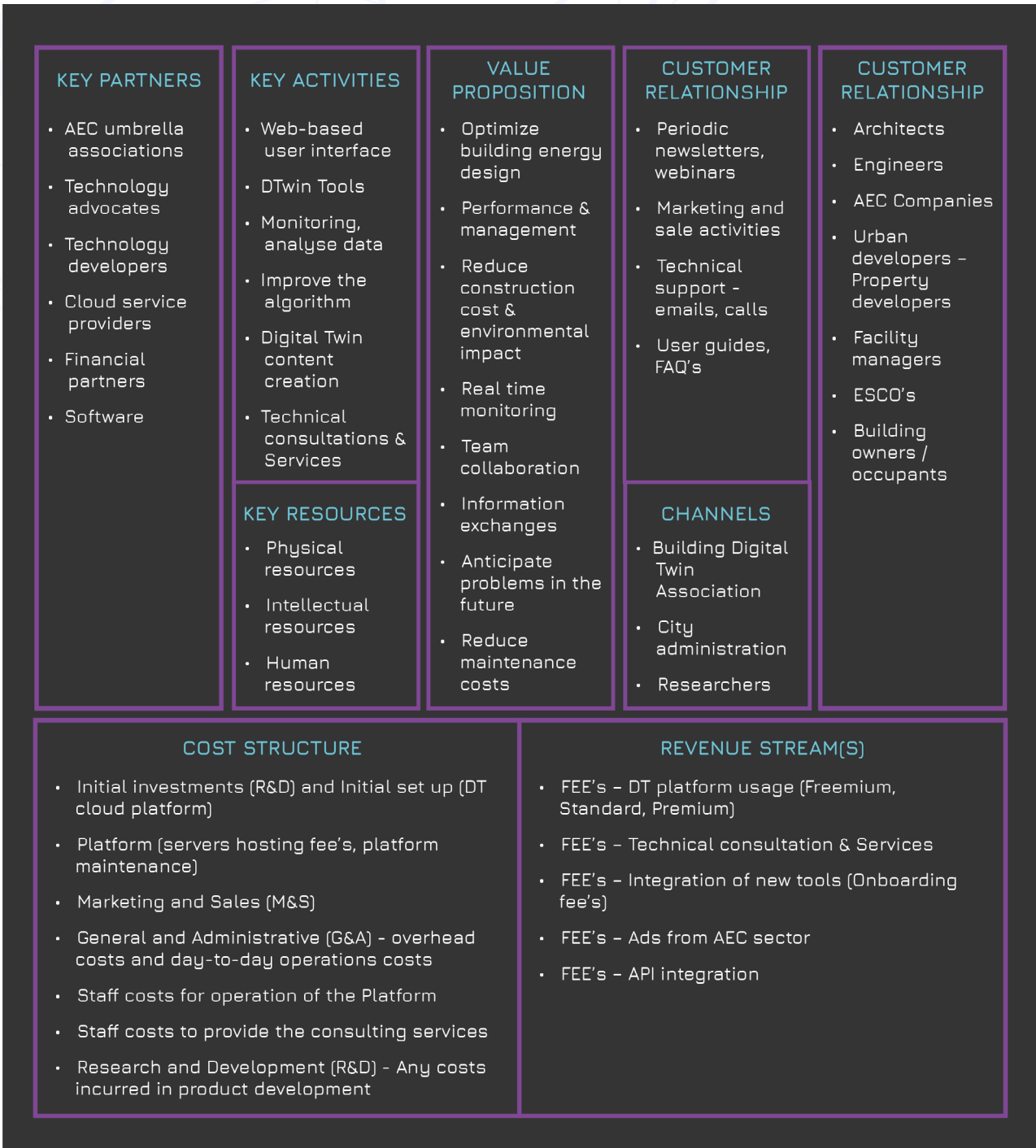
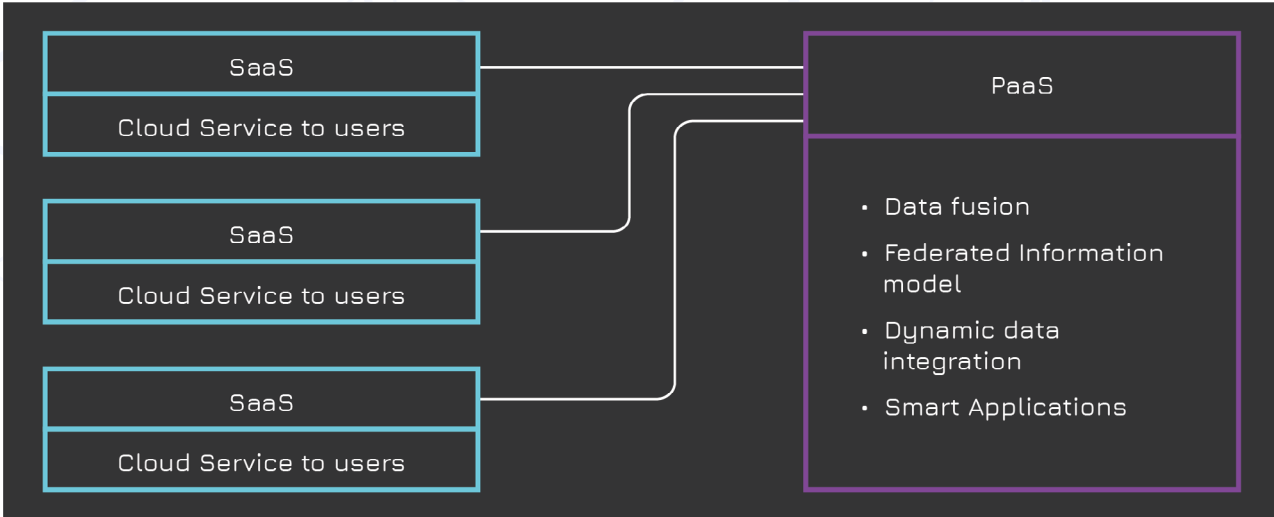
SPHERE project aims at improving the energy design, construction, performance, and management of building with the development of a BIM-based Digital Twin platform based on Platform as a Service (PaaS) approaching the concept of Digital Twin. SPHERE is then a Digital twin environment based on Platform as a Service business model. The platform foresees onboarding of tools from external tools developers. This enables existing platforms to expand its current value proposition to match current trends and provide the users a whole new set of on demand tools under a Building Digital Twin Environment (BDTE). In addition, beyond custom made APIs, in SPHERE it is also proposed an ontology framework to ease the onboarding process (see the SPHERE Ecosystem related business models).

As an easy example (based on the works of SPHERE consortium) can be seen how DT works as new paradigm of digital business models (till now mostly based on SaaS business models) by integrating and encapsulating, SaaS based products as DT services enablers:

¹ See White Paper 1 (<https://sphere-project.eu/download/sphere-digital-twin-definitions-for-buildings/>)

² <https://www.cdabb.cam.ac.uk/top-trump-role-profile-cards>

³ See White Paper 2 (<https://sphere-project.eu/download/from-bim-representation-to-functional-simulation-and-real-time-advanced-control/>)



BEYOND PLATFORM AS A SERVICE.... TOWARDS NEW DIGITAL BUSINESS MODELS IN THE AECOO INDUSTRY

Beyond the well established PaaS business models, some authors has detected the potential of Digital Twins to enable a new business model combining the ideas of major trends in the digital business (SaaS, PaaS and IaaS) with the requirements of the AECOO industry in the so called Building a as Service model, being the DT the key cornerstone of the this idea.

