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Digital Twins Implementation using Azure and Forge

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Learning Objectives

- Know about Digital Twin and its applications
- Create a Azure Digital Twin Service and send sensor/device data to Azure
- Understand how to bring 3D BIM Model, Live data and analytics on one page
- Combine Forge and Azure to create Digital Twin

Description

"IoT sensors and smart devices are all around. BIM is all around. Why not marry BIM with IoT - and create the next generation powerful disruptive Digital Twins for a better today and tomorrow?

Digital Twin is the Living Model with dynamics/functionality. It's the virtual representation of spaces, objects, smart devices and sensors binding in a single place to view the live updates, to perform analytics and simulations, and to create predictions for better decision making and predictive maintenance. Digital Twins are one of the top—and most discussed—industry disruptive technologies. Combining the power of BIM using Forge with IoT devices using Azure Digital twin/IoT services will create the digital twin that can help in multiple ways. This class will introduce the basics of Digital Twin and its applications and then talk about how to bring Forge and Azure APIs together to make a digital twin web application that can showcase live data and analytics."

Speaker(s)

Shahansha:

I’m having 10 years of experience in Software Development. I was working in different domains like Telecom, Insurance and was working primarily on software product development using C, C++, Java. Then out of personal interest learnt developing Augmented Reality apps when

HoloLens was released and posted some technical videos in Youtube. This landed me in Arcadis, the design and consultancy firm for natural and build assets. From then started working on multiple latest technologies like Augmented / Virtual Reality, Robotic Process Automation, Digital Twins, Forge, Alexa skills, Analytics etc. I have developed 50+ websites, number of variety Windows, IOS and Android apps. Very actively engaged in current Civil industry digital transformation ranging from Analytics to AI using voice assistants, chatbots, BI, visualizations, Autodesk Forge, Machine Learning, AR/VR, IoT. My site: www.shahansha.com

François Appéré:

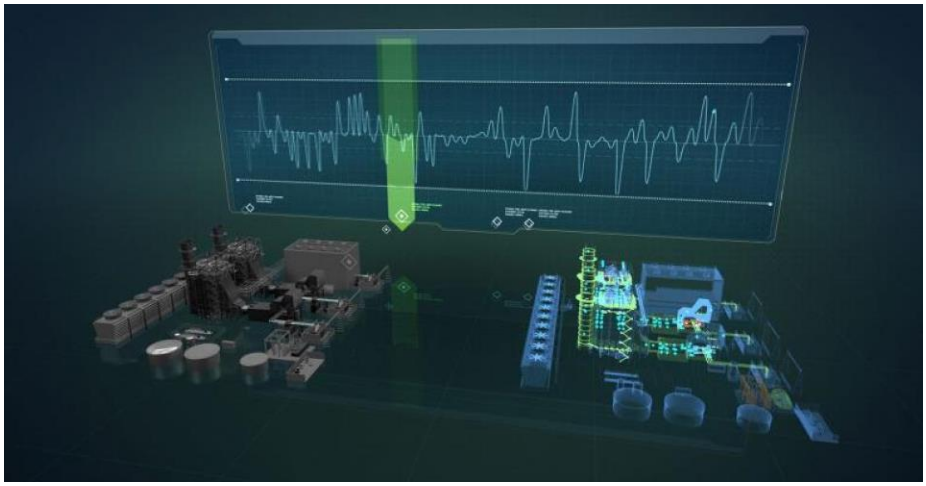
Francois is the North America BIM Lead at Arcadis. He is responsible for the implementation of BIM within Arcadis North America (5000+ staff) across the three business lines (Water, Environment, Infrastructure). François has a strong background in civil engineering, bridge design, BIM process, and leadership. He studied BIM Management at the Ecole des Ponts et Chaussées de Paris and dedicated his thesis to the BIM implementation in the bridge design process. François started his career working for Arcadis France as a bridge designer before managing infrastructure projects. He worked as Project BIM Manager for several major projects in France and Europe. He is an active member of the Arcadis global BIM community and has initiated and chaired for two years the Community of Practitioners of BIM for Infrastructure. François has participated in global leadership and development teams and is driven by improving the working process and integrating new technologies in daily workflows.

Digital Twins Introduction:

Digital Twin is the working virtual representation of physical object (built or natural). Digital twin is the combination of representation like 3d model with the data like the live sensor data. It shows the working nature of the physical asset in real-time from remote location on most platforms. There are 6 key aspects of Digital Twin:

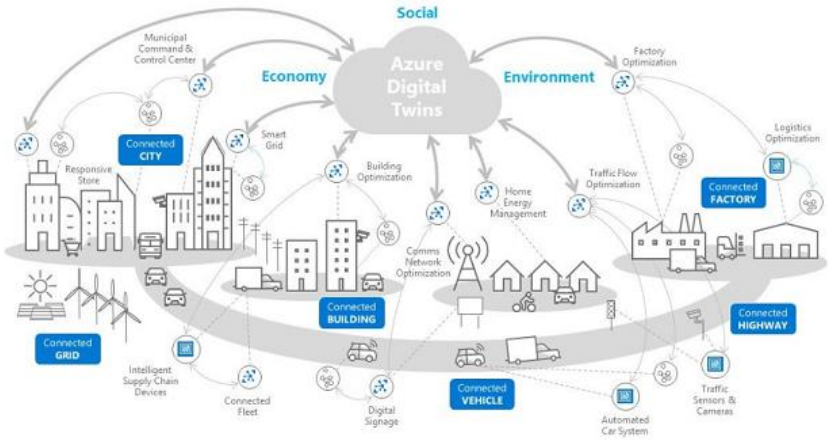
- *Visualization*
- *Live*
- *Analytics*
- *Simulations*
- *Predictions*
- *Automation*

Digital Twin is bi-directional. It just doesn't get the data from real object but also can send instructions to its physical twin to automate things.



Azure Digital Twin Service:

Microsoft Azure has digital twin service that makes things easier to create and maintain a digital twin. It connects the people, spaces and devices. This helps in getting data from smart devices/sensors to cloud and connect it models/spaces to show case data in real-time and helps in monitoring, analytics, predictions. More details : https://docs.microsoft.com/en-us/azure/digital-twins/about-digital-twins



Autodesk Forge with Azure Digital Twin service:

Autodesk forge gives us access to the models and its data online. Combining the power of BIM with IoT using Autodesk Forge and Microsoft Azure Digital Twin will give us comprehensive model of physical assets. This will help for visualization along with the live data to monitor the assets. With the data stored we can do analytics to get insights. Simulation with different scenarios helps in predictions which results in better decision taking.