# COMIT

Construction, Operation & Maintenance through Innovative Technology

# 2020

# Gemini Principles in a Digital Twin Consultancy Environment

**Purpose:**
Must have clear purpose

What is the **Purpose** of the Digital Twin they want to create?

Why do they want to create a digital twin?

What Value will they get?

**Trust:**
Must be trustworthy

How can we help them build something that will be **Trusted**?

How can we ensure quality and security?

**Function:**
Must function effectively

What **Function** must they deliver and how must we support them to deliver?

What other Digital Twins will need to interface with this one?

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The purpose of this paper is to document how the [Gemini principles](#), which are the foundation stones of Digital Twins, should be used in a consultancy helping a client deliver a digital twin. Ensuring that they are aligned with what their customers are being required to deliver.

The key word in all of what we do should be Value. This value should be demonstrated across the board.

- Your customer will be able to deliver value to their customer through the delivery of a quality product/ service.
- Your contact in the customer organisation will feel their value has increased as they improve the productivity and profitability of their organisation.
- Their client understands the increased value of the delivered product/ service.
- Your value as a trusted advisor increases to a point where we become their business delivery partner.

To deliver value in Digital Twins, the industry is advised to use the Gemini Principles ensuring that whatever they deliver has three key ingredients:

- Purpose
- Trust
- Function

If a Digital Twin does not have all of these then it is not considered valuable and the question arises as to whether the client should be paying for it!

Your job should be to advise your customer how to create the best value out of their digital twin, whether they are the owner, creator or contributor.

In this document we look at an **Advisor** as a consultant who can offer good trusted advice, facilitate introductions and sign post to a subject matter expert when needed.

## The Gemini Principles

| Purpose:<br>Must have clear purpose | Public good<br>Must be used to deliver genuine public benefit in perpetuity | Value creation<br>Must enable value creation and performance improvement | Insight<br>Must provide determinable insight into the built environment |
| --- | --- | --- | --- |
| Trust:<br>Must be trustworthy | Security<br>Must enable security and be secure itself | Openness<br>Must be as open as possible | Quality<br>Must be built on data of an appropriate quality |
| Function:<br>Must function effectively | Federation<br>Must be based on a standard connected environment | Curation<br>Must have clear ownership, governance and regulation | Evolution<br>Must be able to adapt as technology and society evolve |

**It is important to note** that a Digital Twin can be any size and deliver any purpose. It doesn't have to be a whole project or asset portfolio, but can be created just answer a specific question, make a decision or conduct a task that needs to be carried out to assist in the design, delivery, operation or maintenance of an asset.

Using these three principles as our guide, the advisor needs to ask a series of high-level questions before getting into the details of how we can increase the value.



| **Purpose:** Must have clear purpose | What is the **Purpose** of the Digital Twin they want to create? | Why do they want to create a digital twin? What Value will they get? |
| **Trust:** Must be trustworthy | How can we help them build something that will be **Trusted**? | How can we ensure quality and security? |
| **Function:** Must function effectively | What **Function** must they deliver and how must we support them to deliver? | What other Digital Twins will need to interface with this one? |

1. **Why do they want to create a digital twin, what value will they get from it?** *(This question is on two levels, what are they trying to deliver to the client and what do they personally get out of it)*
2. **How can we (The Advisor) help them build a Digital Twin that can be trusted?** *(this starts a list of people and organisations we need to warn that their may be tasks incoming. Trust being delivered through a quality DT that will follow standards, security protocols, which will need analysing, configuring, documenting and training)*
3. **What Function must this Digital Twin deliver and that must we support them to deliver?** *(Not software function but plain language end user statements) These need to be mapped from End User outcomes definitions.*

Secondary to these are:

4. **What is the purpose of the Digital Twin they want to create?** *(what questions, decisions or tasks is this digital twin been created to answer, these will further define what your company could provide to ensure it delivers value)*
5. **How can we ensure quality and security of this Digital Twin?** *(Quality is delivered through adherence to standards, identification of what standard and which product/service will ensure its enforcement. Security ensures quality and trust and therefor value, how secure does this need to be and what your company can assist in this?)*
6. **What other Digital Twins will need to interface with this one?** *(Are there other delivery partners, existing client or 3rd party Digital twins that this DT must interface with? These may impact on the systems, configuration, software and services we advise them to undertake)*

Once there is an initial understanding of the reasons, they want to deliver a digital twin, then the Advisor can look into this in more detail.

To do this, the advisor could use the 7 Questions methodology to ensure they take everything into consideration before advising the customer on a course of action.

**Q0 - Baseline Understanding and maturity assessment –** *Not necessarily a question, but the research carried out by both the advisor through strategy documentation or website reading, and the customer through taking the online maturity assessment.*

**Q1 - What is the situation and how is it affecting them? –** *Why have they approached us? What is the situation that has influenced this, what impact is their current situation having on their organisation, their clients and them personally?*

**Q2 - What do they need to achieve and why? –** *Having completed the initial research, studied their responses to a maturity assessment and understood why they have got in contact your analysis will allow you to articulate the outcomes they want to achieve and why they are important.*

**Q3 - What actions/effects do they need to achieve and what direction must we develop the plan? –** *Breaking down the outcomes into Critical Success Factors (CSF) that are SMART (Specific, Measurable, Achievable, Realistic and Time bound). Split them out into:*

- *Standards – what standards need to be learnt, enforced, enacted.*
- *Software – What software types (or specifics if clear) will help achieve them?*
- *Configuration – Will existing software or new software need configuring?*
- *Training/ Consultancy – Do they need specific training or consultancy to solve the problem in more detail?*
- *Other technology – Is there a 3rd party technology or software that will help them achieve a CSF?*

**Q4 - Where best can we best accomplish each action/effect? –** *Each Critical Success factor will need to be carried out in an office, remotely, in a meeting, workshop, briefing, on site or with their supply chain to get the best out of it.*

**Q5 - What resources do I need to accomplish each action/ effect? –** *Who do we need to get involved to own each of the Critical Success Factors and which consultancy blueprints will deliver them? How long might it take? Do we need to bring in an outside agency such as consultancy or technology? What do they need from us to ensure it is achieved?*

**Q6 - When and where do the actions take place in relation to each other? –** *Place all the resources and responsibilities on a timeline, ensuring that any with an impact or dependency on another is taken into consideration. This synch matrix will be agreed and handed over to a project/ programme manager.*

**Q7 - What control measures do we need to impose or have been imposed by others? –** *Are there any standards, security, procedures, processes that we need to comply with to ensure that success is met and how will we measure, monitor and feedback to ensure an ongoing partnership?*

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## Plain language

Everything that the advisor writes or says must be in **plain language**, free from acronyms and jargon. Where they are needed then they must follow the national industry standards and **above all, always find the value in everything you are advising on.**

The best way to test that you have achieved success with the customer is when articulating the Outcome statements is to define a set of plain language questions that can be used to test the final deliverable. If the question can be answered, then both consultant and customer are successful.