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F R O S T & S U L L I V A N

EXECUTIVE BRIEF

Demonstrating Proof of Concept to Ensure Viability

Moderated by Ibrahim Itani, Head of Analytics and Innovation

Marathon Petroleum Corporation

Before major investments can scale, organizations must validate ideas through disciplined Proofs of Concept (PoCs). Done well, PoCs demonstrate feasibility, align stakeholders, and transform innovation into measurable business value.

Action Items

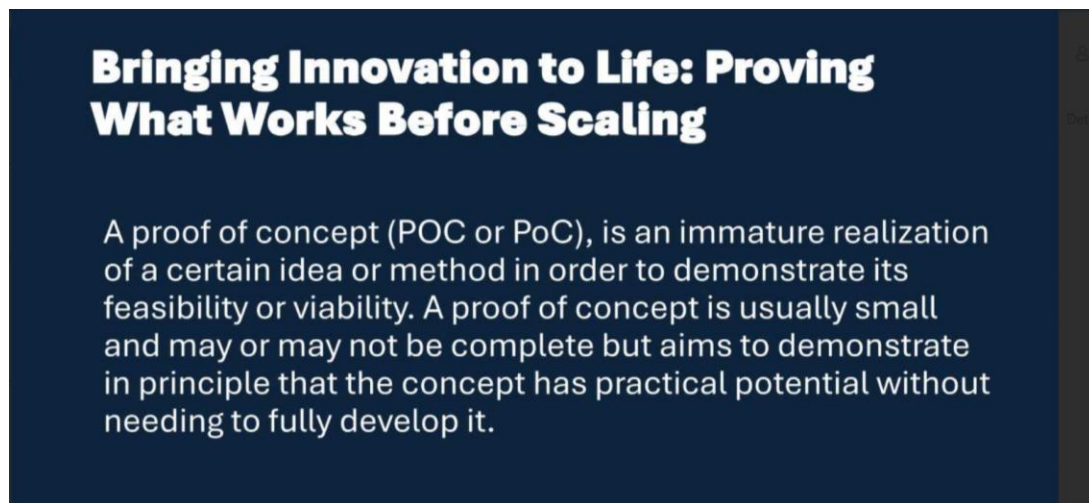
- Identify a **specific, high-value business challenge** where innovation can make a difference.
- Build a **focused pilot** that tests feasibility quickly and minimizes cost and risk.
- Define **simple success criteria** (e.g., cost avoided, time saved, improved insights) and use those results to decide whether to scale.

Introduction

Ibrahim Itani, Head of Analytics and Innovation at Marathon Petroleum Corporation (MPC), leads enterprise-wide analytics and innovation initiatives at the nation's largest refining system. MPC is committed to operational excellence, sustainability, and empowering people through innovation.

Ibrahim shared how to take a PoC from an initial idea to a tangible achievement. As he noted, innovation requires both creativity and discipline: the more you work on products, the more you need to bring forward new ideas—and test them rigorously before scaling.

Ibrahim shared the working definition of PoC found below:



Today's constant technological change often brings a certain amount of chaos and many moving parts to PoC projects. There is often pressure to use “shiny new objects” like GenAI and ChatGPT. Be sure these tools are truly needed and serve a purpose before incorporating them into PoC work. It is not whether the technology is viable or not; the focus is whether there is a need for it to solve a business problem.

Proof of Concept as a Strategic Tool

PoCs are not about proving perfection—they are about demonstrating viability. Taking a PoC to 50% viability can be enough to show practical possibilities. To increase the chance of success, Ibrahim discussed the following critical steps in the process:

- Secure **early stakeholder alignment** and define clear success criteria before scaling.
- Avoid unnecessary technical debt or redundant systems—*business value always outlives technology*.
- Assess not only technical feasibility but also **operational fit**.
- Define exit criteria upfront to prevent scope creep and wasted effort.
- Plan for scaling—*What works at a small scale will not work at a large scale in most implementations*

Proof of Concept First Steps

The best starting point is a **high-value challenge**—such as reducing cost, saving time, or improving decision quality. To maximize learning and impact, Ibrahim advocate for:

- Defining a concise problem statement and clear goals.
- Engaging **external perspectives** to reduce bias and validate feasibility.
- Tracking both technical and business metrics to evaluate viability.
- Using early results to build the case for scaling—or to pivot if viability is lacking.

Ibrahim stressed the fact that a PoC could succeed but viability might not be there, i.e., it may be too expensive develop or scale or will take too much time to implement.

Common Pitfalls in Scaling Innovation

Failure is more common than success when scaling PoCs. Common causes include:

1. Lab success not translating to field conditions.
2. Lack of ownership or executive sponsorship.
3. Poorly defined success criteria or uncontrolled scope creep.
4. Technology-first thinking without clear business alignment.

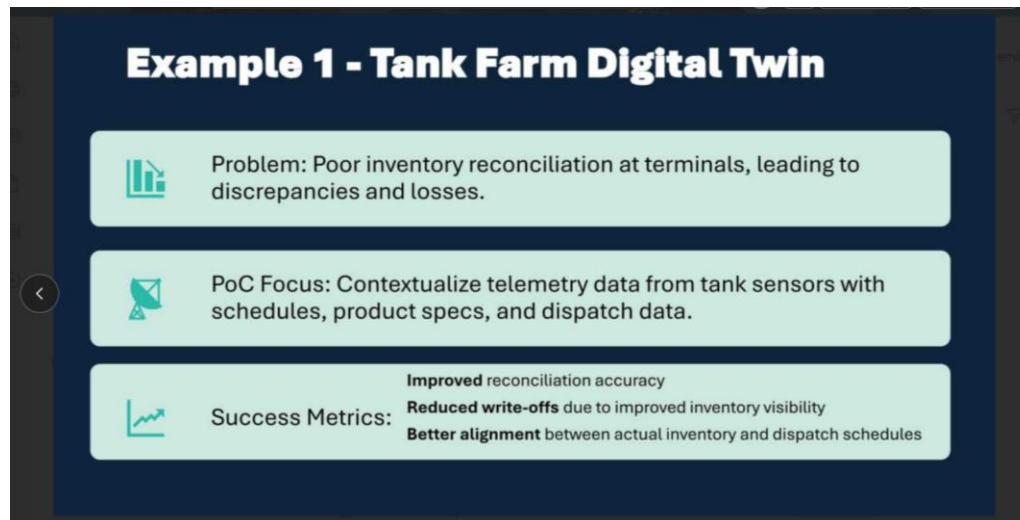
Ibrahim also emphasized the risk of groupthink: seek outside perspectives and challenge assumptions to avoid blind spots.

The Role of Digital Twins in PoC Projects

As an example, Ibrahim discussed the concept of a digital twins in PoCs. Digital twins—virtual models of physical assets—are increasingly important in PoC work. They enable rapid, low-cost experimentation by allowing teams to simulate scenarios, predict failures, and test solutions without the expense of physical prototypes. Digital twins can be modelled after physical assets as well as processes and systems. Currently, digital twins are more commonly used in manufacturing and in industrial settings.

Digital twins are much less expensive than physical prototypes. These virtual replicas allow users to iterate and explore different scenarios. For example, they can be used to evaluate predictive capabilities in a potential new product, i.e., applied in machinery simulations to estimate when a machine will fail or overheat. Ibrahim also emphasized the importance of data contextualization, or enriching raw data with operational and business context to generate insights that drive better decisions as part of a digital twin.

A few digital twin use cases -- and their importance in PoC work -- were discussed. Key points from one use case can be found in the graphic below:



From Proof to Production

To successfully transition from PoC to scaled implementation, Ibrahim shared that four disciplines are essential:

1. Validate data quality, user experience, and business value.
2. Ensure governance, security, and support structures are in place.
3. Align PoC outcomes with enterprise architecture.
4. Plan proactively for adoption and change management.

Closing

Ibrahim reminded participants that innovation requires **disciplined experimentation and strong governance**. PoCs should remain small, measurable, and business-driven, avoiding “analysis paralysis” over tools or vendors.

Ultimately, a Proof of Concept is not the end—it is the bridge from **idea to impact**.

Questions or comments? PoC experiences you’d like to discuss? Ibrahim welcomes new connections and can be found on LinkedIn [here](#).