

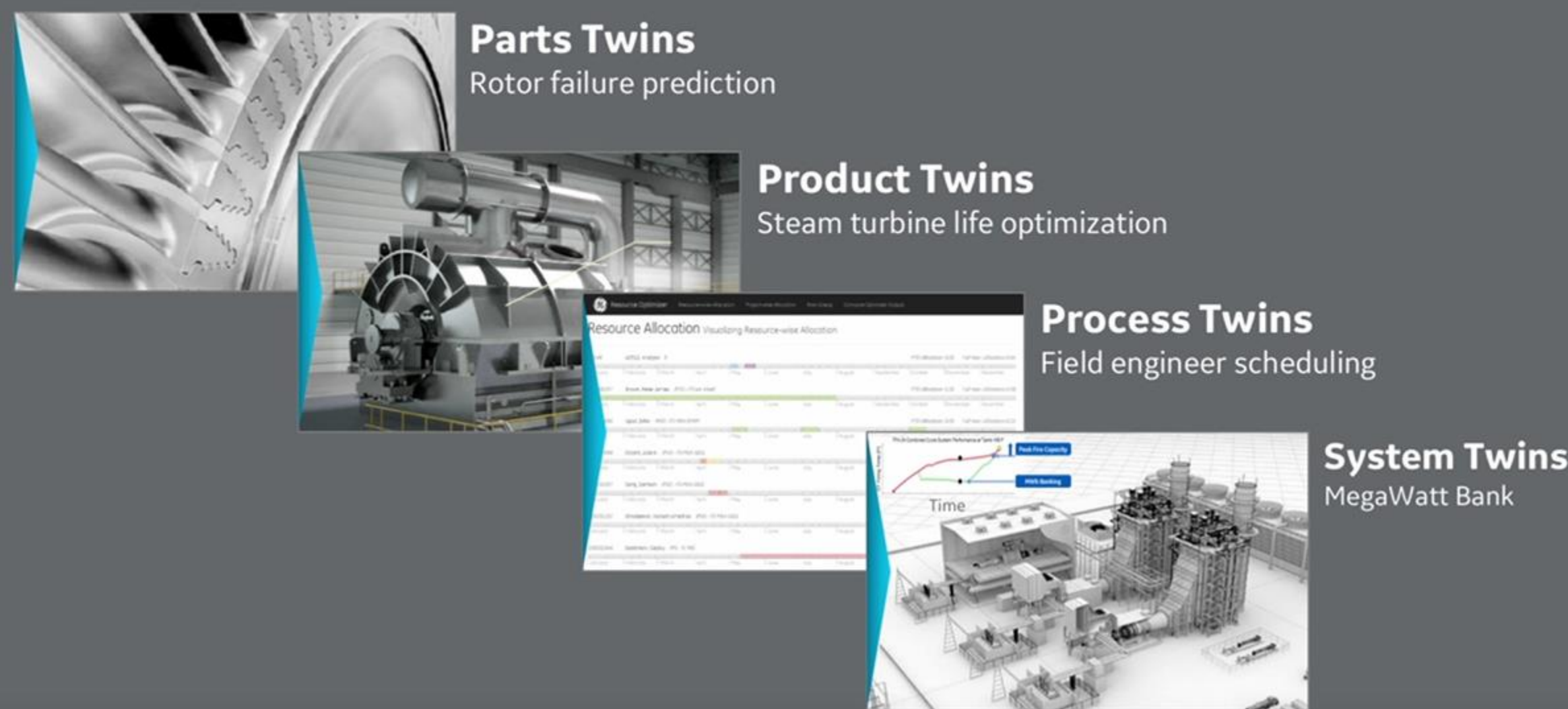


Secure Composite Digital Twin Framework

What is a Digital Twin?

Digital Twin is a virtual copy of a physical asset or a process that maintain a close feedback loop to improve the physical counterpart.

551,000 Twins and Increasing

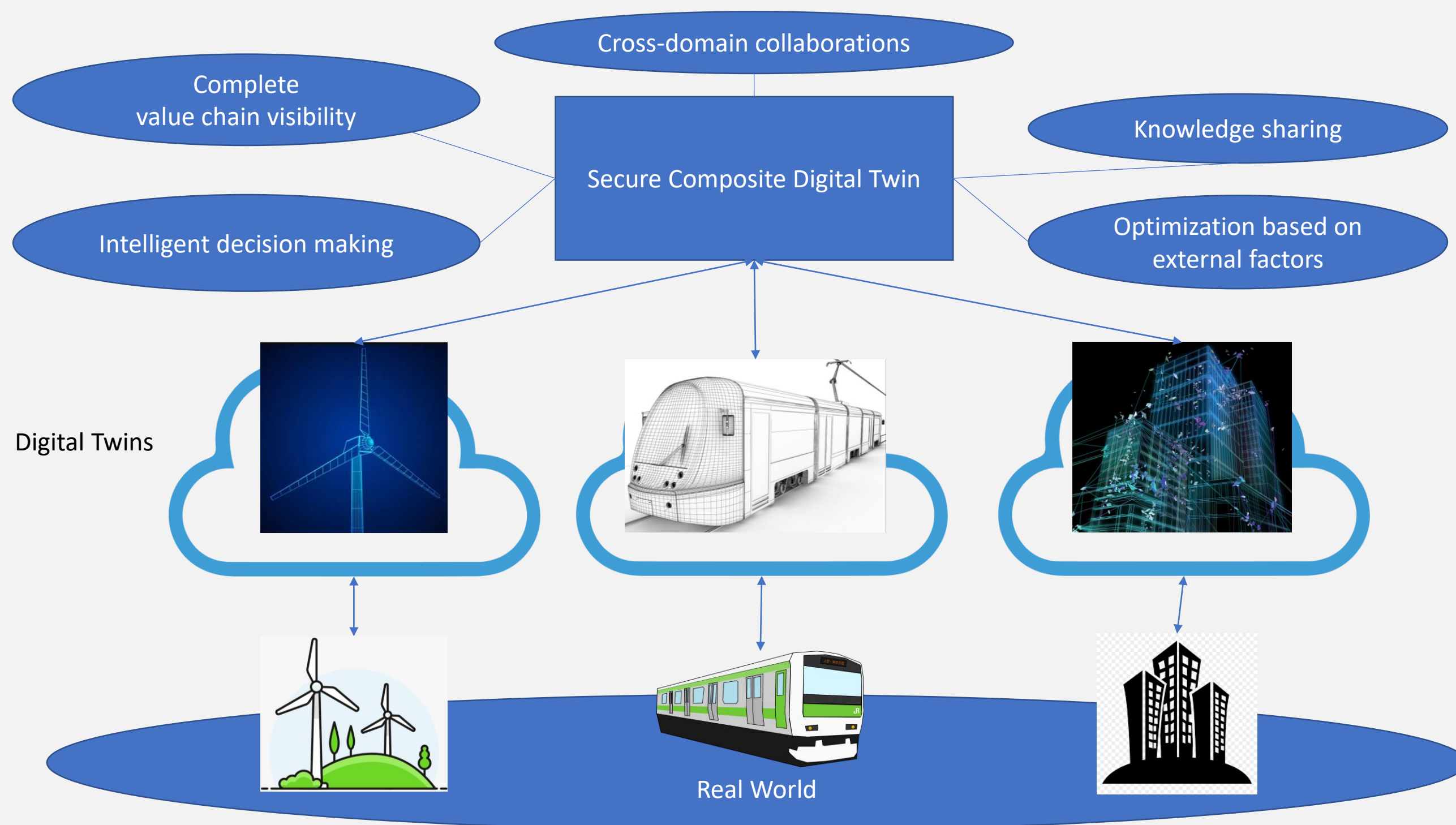


Why Digital Twin?

- Reduce the cost for optimization
- Predict future and avoid critical problems
- Experiments before real implementation
- Time flexibility
- To cover full asset life cycle
- Emergency demonstrations
- “What if” scenario simulations
- Improve the asset quality

Why Composite Digital Twin?

Composite Digital Twin is a collection of individual Digital Twins sharing learning outcomes to achieve common goals.



Composite Digital Twin Challenges

- Trustworthiness
- Interoperability
- Accountability
- Privacy
- Security

Research Contributions

- Secure framework to address composite Digital Twin challenges
- Composite Digital Twin security posture analysis and improvements
- Composite Digital Twin performance analysis and evaluations

Image Sources:
<https://www.altoros.com/blog/optimizing-the-industrial-internet-of-things-with-digital-twins/>
<https://www.lugher3d.com/gallery/cars-and-bikes-mental-ray-render/fiat-500-3d-model-for-maya-wireframe-731>
<https://www.vecteezy.com/free-vector/wireframe-building>
<https://www.clipartkey.com>