

Federal Register Notice: 89 FR 51554, [Federal Register :: Networking and Information Technology Research and Development Request for Information on Digital Twins Research and Development](#), June 18, 2024.

Request for Information on the National Digital Twins R&D Strategic Plan

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Although digital twins have their place in R&D, we must be careful to assess the efficacy and the limits of that efficacy before applying it to human research. Digital Twins and all synthetic data is contrived or cloned. It is not the original data. In human research, this is critical to distinguish as humans have many complexities not captured by cloning one aspect. In clinical trial research, cloning small sample sizes to extrapolate about the efficacy of the treatment to all populations remains problematic without additional testing. Model Autophagy Disorder also has to be considered. Not only, does the efficacy of using a digital twin needs to be assessed, but also how many iterations can that model be used before it collapses. R&D needs to determine exactly when does AI models repeatedly trained on AI generated data actually collapse. This occurs because models forget the true data distribution. This occurs because digital twins/synthetic data is not real data.

Please include

- the need to test the efficacy of the digital twin to represent the original source (this may fit in the VVUQ section)...this needs to be called out for humans especially
- the need to test the model for the tipping points that it shifts from valuable to harmful
- the need to test the fidelity or the degree to which the digital twin is delivered as intended by its developers. It's crucial to measure this variable to understand how and why the digital twin works and to assess its impact on outcomes.

Please do no harm to humans using digital twins

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