Could Digital Transformation Help Fix Healthcare?

How much would you guess that it costs to put an FDA-approved drug on the market in the US? Millions certainly - perhaps tens of millions?

You'd be very wrong.

Recent estimates by the Tufts foundation clock in at a whopping [$2.7 billion dollar spend per drug](). Such a staggering number is not going to be significantly reduced by simple process optimization, or new gadgetry. Something must be fundamentally changed in order to reduce this cost. But where to start? Anyone familiar with the complex world of pharma will tell you that only 1 out of 10 drugs actually make it to market - the rest fail during clinical trials or even earlier, due to logistics or safety concerns. Something has to bear the brunt of this massive cost - the drugs that DO make it to market.

So what is so expensive about pharmaceutical R&D? Each step is costly, but a major culprit is the gold standard of medical research; randomized controlled human trials.

What if we could remove humans from human trials?

It's easy to understand why we have needed human trials up until now. There is simply no better way to gauge how the complex chemistry in pharmaceuticals will affect human biology without a controlled trial. It's conventional wisdom that randomized control trials are the best method to prove (or disprove) the viability of a drug. But if there were a way to remove humans from the equation without compromising on safety or accuracy, it's possible that RCTs (randomized controlled trials) could undergo an [80% cost reduction]().

[Trial simulations have been tested]() to some success - but these early iterations face obstacles similar to those encountered by early AI researchers; we don't understand the context of disease biology as well as we need to, and the technology has not necessarily caught up with the ambition of trial simulation advocates.

Or has it? The truth is that there's much more data on disease out there than is currently usable - but that's changing.

Advancements in technology are moving the needle on trial simulations

Pharma and healthcare in particular face lots of data challenges already. With privacy and security concerns and the high costs associated with R&D and the consequential value of the outcomes, data sets are often small, disconnected, and jealously guarded. But sensor tech (through wearables) and cutting-edge medtech like 3D printed cell cultures has the ability to fill in major gaps in these data sets in a cost effective way.

AI technology is poised to connect the dots. With enterprise [AI already optimizing complex processes in pharma](#), NLS-based AI in particular seems a natural complement to a humanless trial simulation. With the ability to answer queries in real time, R&D scientists would have access to all necessary data, regardless of source - and receive actionable insights, instantly and in natural language.

How would a humanless trial work?

A trial simulation would begin based on a statistical model. The best guess as to how a human subject would react based on the best existing data. From there, the simulation could test different assumptions and ultimately identify risks and opportunities for improvement, shortening the R&D timeline and preventing expensive upfront mistakes. All of this could happen in a fraction of the time it currently takes to run a human trial.

In the beginning, it's likely that a simulation would be run in conjunction with human trials as risk mitigation and cost reduction plan - but it's easy to see why the industry is excited for the future. At $2.7 billion per drug as it stands, the amount of capital which could be freed up to test more promising new drugs could lead to a real step change in human healthcare.

For more detail on the prospect of digital transformation in pharma R&D, read Jacob LaPorte's insightful article ["Why Humanless Trials Could Be the Pharmaceutical Industry's "Nirvana"](#). And to learn more about how Coseer is partnering with leaders in pharma to re-imagine clinical trials, check out our [industry page](#) or [setup a meeting](#).

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We follow a tactical approach to enterprise search:

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- Our solutions deploy entirely behind your own firewall for 100% security, and every decision point is logged for full transparency.
- You add the finishing touches, but our point-and-shoot AI practically trains itself. No more huge training data sets or time wasted annotating and tagging.

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