Innovation requires a tremendous amount of iterative experimentation to capitalize on infrequent glimpses into a new, potential future. Doing this at scale is prohibitively slow and expensive, leading to a vicious cycle where cost and risk greatly limit our ability to expand into new fields. Video games are a perfect case study for this problem. True innovation occurs rarely, while most of the industry flounders around, squabbling over increasingly smaller shares of the market with increasingly larger numbers of competitors. Then, when a new niche is opened up via either new gameplay models, new business models or new technology, the clone wars immediately start and profit/growth decline. Innovation keeps you ahead of the curve, but is harder to schedule and harder to fund.

*An Innovation Factory approach is proposed, where automation is heavily utilized to lower both the cost and risk of innovation. Further, said automation is capable of taking innovative prototypes directly into the marketplace, bypassing the productization phase without risking scaling and quality control issues. Finally, an Innovation Factory is not just to get new products to market, but also to allow rapid, iterative adjustments to true market conditions and scalability to meet market demands.*

Online games and Virtual Reality applications are excellent candidates for Innovation Factories. Much of the Production and Operations work is highly susceptible to reusable automation techniques, thus lowering the cost/risk of development and also lowering the recurring costs in running highly complex distributed systems with high quality control requirements, high content refresh rate requirements and low operating cost requirements. The scale of the development team, the scale of the potential user base and the scale of the application complexity all greatly limit innovation opportunities to most content creators: *there is a direct relationship between iterative innovation at scale and the cost/risk/time of new products*.

AAA products require AAA production techniques, currently only available to dominant market players, such as EA and Ubisoft.

* Architectural support for iteration and Automation of the content creation, live operations and testing processes are useful in and of themselves.
* When coupled with real-time Analytics of Players, Production and Performance, the whole becomes greater than the sum of the parts.
* *A transformative leap in effective creativity, coupled with the ability to take rapid prototypes directly into the marketplace, all at radically reduced cost/risk/schedule factors.*

# Why is this not done already?

The market opportunity here is deceptively simple. The death rate of projects & studios limits retaining lessons painfully learned on how to scale development without crippling innovation. Every project starts from scratch, with a new group of people, and it is always three months late, from day one. Senior engineers who learn these lessons get frustrated and leave the industry, to be replaced by young programmers who have dreamed only of making games, not scalable software & processes, and thus the vicious cycle repeats itself. Couple that with the lack of corporate memory from the churn rate of projects and studios. Add the fact that to make this work, you need a deep understanding of all aspects of the experimentation process/mindset, how to construct complex code/content that needs to shift direction almost daily, how to test rapidly & cheaply, at scale, how to cheaply field live operations of brittle prototypes, and how to modify them on the fly, quickly enough to react to shifts in the ecosystem. Factor in that most of the people who have the background and talent to pull off these challenges off are only in games to work on gameplay features, not infrastructure. Top off with the credibility and business/communication skills required to convince funding agents that investing in invisible infrastructure from the start is more valuable than pure feature work, and it becomes clear why this is not done everyday…

# Takeaways

* Quality and speed, at scale
* Innovation at scale
* Accelerating the experimentation rate provides the innovation of play mechanics and also the highly iterative polish of the user experience so essential to success
* Take Innovation direct to the market: put your rapid prototypes directly in the live market, continuing to iterate on design with one hand and iterate on cost/scale/stability with the other­­­
* Darwin-Driven Development
  + Evolution rocks! It always finds a good solution to the current problem, and a way to adapt to shifts in the market/eco-system. But who has millions of years to get to market?
  + So we accelerate the huge random search called evolution
  + Automation to speed each step
  + Embedded metrics to help prune branches early and react to on the ground conditions
  + More automation, performance-test centric, to stabilize a rapid change rate
  + Guided evolution, not random evolution, accelerated via automation!

*We need a massive shift in the mindset of how we build complex, interactive systems. A shift that is capable of fostering innovation at both the grass roots level and the large corporation level, but it is not enough to simply come up with new ideas; we also need a way to take new concepts directly, with quality, to the market, and quickly, iteratively, improve against real world conditions.*