# Envisioning the Future of Augment
## The design for how to get there

**What is the Big Picture - Dynamic (i.e. this is how things are changing)**
- Demands for software are increasing and it must be reliable, economical, and integrate with complex systems of people and other computing architectures.
- "Software is eating the world" and continues to evolve specialties to suit each domain and sector of business, government, and consumer life.
- Increasing complexity demands better skills (emphasis on the E in SWE)
- Simulations will be increasingly used to understand complex systems and to evaluate alternative configurations – for development operations, training, and in products.

**What is the Big Picture - Static (i.e. this is how things will stay the same)**
- Risk of failure & Costs for failure are very high, with increasing ethical considerations (how much risk disclosure must the vendor provide the customer/user?)
- Tools and technologies are increasingly complex with increasing systems integration
- Training Breadth increasing, while Depth is too often uncertain – Need better skills/habits assessment via cognitive tooling.

**What are the essential questions?**
- For the individual -- Learning & Understanding: What are keystone cognitive assist approaches? What does teamwork require?
- For the evolving SWE domain: What are applicable working principles of engineering discipline? What Habits of Mind will inhabit the engineer's mind?
- For the market – i.e. Customers: What do customers need to know about software development – what really is 'value added'?

**What is the consensus by the Masters of the Domain on the Estimate of the Situation? What do we know? What do we need to know? Who knows?**
*I.e. from Kay, Forrester, Parnas, Jones, Shaw, Weinberg, Boehm, Myers, Musa, Ericsson, Deming-Juran we might ask:*
- What essential understandings are required to implement an engineering-based software discipline?
- What has been/could be the arc of software engineering?
- How can we learn to use engineering prior art? -- e.g. via systems models?

**Supplemental sources:**
*From Dreyfus et al, Skemp et al, Wiggins et al, Zuboff, Ausubel, Vygotsky, Chi, Toyoda, Sommerville et al, Schneiderman, Zackary, Johnson-Tanner-Tewksbury, Bereiter, Bailey*

**What say the Emergent Technologies Visionaries & Practitioners:** Madachy (Simulations), Gabriel (OOP?) & West's (10x), Bret Victor (visualization), (Machine Learning)

**What are key dimensions of software as an emergent environment?**
Critical history of software domain, Capability Growth, Individual performance, Role specialization, Distributed Teams, Process, Tooling

**Where to focus?** Augment business plan focuses on known-stable technology-follower areas:
- Training for engineering expertise
- Process & Tooling for Distributed Work
- Cost & Acceptance (SME product validation models)
- Reduction of Risk (Increased confidence) to Customers

**Work in Process:** Videos for training elements of engineering & Database of Exemplar artifacts