OPENING REMARKS
Summit on Education Games
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Good morning and welcome. Thank you for joining us to explore how we can connect the insights of game developers to the needs of education and training.

I want to give special thanks our co-sponsors—the Entertainment Software Association and the National Science Foundation—for making this Summit possible.

Our discussion will focus on the intersection of three forces that converting to reshape the way we teach and learn: increasing demand for education and training, new insights about how people learn, and the disruptive ideas of game developers.

First, the demand for learning has increased in scale and scope forced by rapidly advancing technology and ferocious global competition. Employers seek workers with more knowledge and skills, including higher order skills such as analysis, problem solving, teamwork, and rapid adaptation to change. These skills are needed by senior engineers and

managers but they're also needed by truck drivers wrestling with new navigation and dispatch systems, sales and maintenance specialists who find the bulk of their time is spent on products that didn't even exist a year earlier – in short by virtually everyone.

This places unprecedented demands on all parts of the nation's nearly trillion dollar a year education and training enterprises. K-12 schools are being asked to do a much better job of preparing our future workforce entrants. Colleges and universities are being asked to keep provide greater scope and depth and to do so while controlling costs. And they are being asked to serve an increasingly diverse student body.

Accelerating technical change outdates skills more quickly. Keeping pace means frequent, if not constant, renewal of our knowledge and skills. And recognizing the strong link between educational attainment and earnings, more adults are seeking to upgrade their skills to earn higher wages and stay competitive on the job. Nearly half of all post-secondary students today are over the age of 25.

The second, advances in learning science provides new insight into how people best acquire new ideas and new skills. These include the fact that learners need clear goals, clues about how to organize information, and practical experience in applying this knowledge to practical problems. It's important to continuously monitor how a person is advancing so that they can move forward if they're ready or given more time to reinforce and master knowledge if this is needed. And of course it's important to spend time on task – something that's much easier if the learner is confronted with a highly motivating challenge and can prevail only through the power of knowledge.

The problem, of course, is that this advice seemed impossible to follow in most cases given the constraints of ordinary school rooms and the limits of funding. Impossible, that is, unless something completely disruptive took place.

And that's where the third part of the equation begins – the disruptive concepts of electronic games. Game developers have instinctively implemented many of the recommendations of learning scientists and used them to help

players acquire a skill set that closely the thinking, planning, learning, and technical skills increasingly demanded by employers.

A good game can continuously monitor a player's expertise and move them forward at a pace that is always slightly uncomfortable but never boring or overly frustrating. In a game's world the measure of success is complex and practical: can you use your knowledge: Can you feed your people? Can you cure the patient? Can you beat Dan Snyder at his own football franchise game? A good game can create challenges so compelling that players are willing to spend hours acquiring the knowledge and the information needed to prevail.

The advice of learning scientists is powerful in part because it reinforces the power of traditional instructional tools involving rapid movement between instruction and practice, between abstraction and concrete applications. It's not surprising that games are powerful embodiments of these ideas. They are probably the oldest form of learning – and a completely natural way to acquire knowledge and skill.

Children imitate their parents; apprentices imitate master craftsmen often in play.

It is a tantalizing to think about taking the engaging and eye-popping features of games and simulations to let learners tinker with chemical reactions in living cells, practice operating or repairing expensive equipment, or experimenting with marketing techniques—all designed to make it easier to grasp complex concepts and transfer this understanding to practical problems.

We all know, however, how difficult it has been to bring the powerful tools of games to bear on educational problems. Firms trying to market educational game products have seldom done well. The key issue for us here today is how to exploit the completely unexpected advances made in gaming to help us address the enormous challenges facing the US education and training enterprise. Specifically.

- What features of games should we transfer to the learning arena, and where potentially can they be applied?

- What research and development are needed so gaming applications are effective for education and training?

- What are the incentives and barriers to developing and commercializing games for learning—for large educational publishers, gaming companies, and small entrepreneurial companies? What is the investment climate? Are there barriers that make the education market hard to penetrate?

- What needs to change in our education and training institutions to take advantage of the power games could bring to teaching and learning? Do we need to change our forms of learning organization, and our instructional practices? Do teachers need to be prepared for new roles? And what stands in the way of these changes?

These are not easy or well examined and they cry out for assembling unusual suspects – namely the people in this room. If you look around you will find business executives from the

gaming industry and the education software industry, researchers and academic experts on technology and pedagogy, teachers, game developers, experts on competitiveness policy, and government policy makers. You probably don't know most of them. Maybe you don't want to know all of them. But each of you has something unique and important to contribute to this much faceted challenge.

There is, of course, one group of people not well represented here today and that's the younger people in the education enterprise. There's little doubt about what they want. This generation has grown up with technology, and have integrated it seamlessly in the conduct of their lives—except at school, where they are too often unplugged and their learning disconnected from the real world.

When a recent survey asked them how would like to use technology to learn in the future, and they will tell you about: computing and Internet access on the go, learning any time and any place, tutoring machines that help with homework, tele-porters that take you to the bottom of the ocean, and time machines that let you witness historic events first hand.

It's hard to think of an issue more important to the US today than finding a way to make full use of the explosive, unexpected power of modern information tools. Research advances have enabled us to put two teraflops into the next generation of game devices. What we've not done in education is find out how best to use this power for learning. We can't afford to procrastinate on this and I hope that we can have a practical plan to put before the Congress next spring – a plan crafted by the people in this room.

Now I would like to turn the podium over to our co-sponsor, Doug Lowenstein, President of the Entertainment Software Association.