

How visual presentation of video games changed over time?

Video games date back to 1947. The earliest video game called “Cathode ray tube Amusement Device” displayed a vector-drawn dot simulating missile on the **screen**. Just what it sounds like the game used **cathode ray tube displays (CRTs)**. The same way to display graphics was used in the vast majority of the earliest games since **CRT** was the only accessible technology.

For Russian teenagers of the 90’s such games as Mario, Battletoads, Contra are well-known. The teenagers spent nights staring at the old chubby **CRT monitors**. They played on the so-called “Dendy” console, the hardware clone of the Japanese Nintendo’s consoles.

At the end of the ‘90s the great revolution of the video games industry began to mature. The single person that led to the revolution was John Carmack, the father of the 3D games. *Quake*, the first game with real-time 3D rendering was published in 1996. Since that date life of the all the gamers around the world wasn’t the same anymore. Static 2D tiles were replaced by fully dynamic 3D polygons and realistic lighting. Quake, of course, didn’t look like modern 3D games but it has built the foundation. An again, teenagers around the world spent nights staring at the same old chubby CRT monitors, but this time they played in John Carmack’s Quake.

Old CRT displays didn’t allow large **screen resolution** or **color depth**, so the artistic value of the games (in terms of the modern video games) leaves something to be desired. Everything’s changed when **LCDs** took to the stage.

The new displays also called **flat screen** displays—the CRT’s display was not flat actually—support old **VGA** interface, so it didn’t was a problem to connect an old PC to the relatively new at that time LCD. **Digital Visual Interface (DVI)** appeared later, but the difference between VGA and DVI is not significant for the end-user so we don’t focus on it.

The average CRT monitor's screen resolution is 1024×1024 (measured in **pixels**) — it was pretty good at that time. But new LCD technology allows 4K (3840×2160) and even more! The visual component of the video games started becoming incredible: millions of polygons at the same time on the screen, realistic lighting and physics, high-resolution textures — and all the at the big **screen**! Really, it was considered fiction until quite recently.

The next revolution came up with the old-known technology called *ray tracing*. This rendering method was known for a long time, but our **video adapters** reached needed performance to make it work only a few years ago. Games that use that technology don't *look* like our reality, it *is* our reality — the algorithm makes the virtual light behaves like the real one. That is why it requires so much computational power.

Nowadays, the most advanced visual quality in a video game was achieved by the Unity game engine's engineers. They have shown a technical demo not so long ago. And I have to say that it looks incredible. Seriously, I can't believe that it was real gameplay. I think we have a long way to the video games which visual quality will fully satisfy us, but Unity's engineers are close to this moment more than ever.