

# Creative Technology Sectors in TN

Creative Technology  
Industry: Data for  
consideration

### First, how should we define this industry?

I have adopted the term “Creative Technology” to represent the broad sector which encapsulates all of the emerging technologies that are linked together by common skillsets. These occupations could help to position Tennessee at the forefront of innovation in the next decade. Here’s an article with thoughts on this perspective: <http://qutcea.com/2017/02/01/2017-creative-technology-trends/>

Creative Technology can be currently broken down into a growing list of world changing industry segments below. Segments highlighted in gray are typically captured by an *animated production* or by a *game production*. Many of these segments use the same personnel. For example: A vfx td’s (visual effects technical director) might create a clothing effect for a film using the same clothing design software used in the Fashion tech segment, likewise, a 3D asset artist can create content for both films and games, a software developer can create production tools for animation and also codes for games, etc. These occupations can double dip into multiple sectors creating a stable foundation for consistent work.

Creative Technology Segments:

- 3D Printing
- Animation
- Artificial Intelligence
- Augmented Reality
- Fashion Tech
- Film
- Game Development
- Graphics (Print and Motion)
- Healthcare Tech
- Interactive Content
- Internet Of Things Development
- Music Tech
- Post-Production
- Robotics
- Transportation Tech
- Virtual Reality
- Visual FX
- Wearable Technology

The applications for Creative Tech are ever-growing. To become a leader in these industry sectors, Tennessee will need to attract professionals who are creative, technical or both. Doing so will supply large productions with the local resources necessary to succeed and secure anchor tenants for the state. Locally created content will attract venture capital and bring fortune to content creators in the state. Just as great content is predicated on context, so is the creation of these jobs. Here’s an article describing the importance of Technological Context.

<http://radar.oreilly.com/2015/03/designing-for-technological-context.html>

**What is the Industry average for annual compensation?**

There are thousands of unique positions contained within these segments but most of these can be represented by a few ranges for annual compensation. The averages are balanced by the inflated rates in the large US markets in CA and NY against the low rates of the Global markets. Here are some rates as defined by GlassDoor.

- Senior Digital Artists - \$67,000 to \$82,000\_  
[https://www.glassdoor.com/Salaries/senior-3d-artist-salary-SRCH\\_KO0,16.htm](https://www.glassdoor.com/Salaries/senior-3d-artist-salary-SRCH_KO0,16.htm)
- Software Engineers - \$72,000 to \$95,000\_  
[https://www.glassdoor.com/Salaries/software-engineer-salary-SRCH\\_KO0,17.htm](https://www.glassdoor.com/Salaries/software-engineer-salary-SRCH_KO0,17.htm)

Local companies in Nashville are in the \$52,000 to \$85,000 range for Artists to Supervisors on salary and Freelance digital artists range from \$30 to \$50 per hour.

**What is the typical length of a project from development to post? How many labor hours are general involved in a project?**

Project lengths are primarily determined by budget. Typically, as the budget increases, the hours required for production also increases.

- Animated Series (22 min per episode) with budgets above \$300K per episode take about 1 year per episode from script to screen (Multiple episodes are produced in parallel). The maximum number of episodes per season is typically 24. A typical series will employ roughly 150 artists. Around 304,200 labor hours.\_  
<https://www.theatlantic.com/entertainment/archive/2012/06/each-episode-of-futurama-takes-at-least-a-year-to-make/258736/>
- Animated Films (120 min) with budgets above \$27M typically take 2 to 3 years from script to screen. It's common for animated films to employ 150 to 250 artists. 811,200 to 2,028,000 labor hours. The Secret Life of Pets released in July 2016 cost \$75M and grossed \$875.5M\_  
[https://en.wikipedia.org/wiki/The\\_Secret\\_Life\\_of\\_Pets](https://en.wikipedia.org/wiki/The_Secret_Life_of_Pets)
- VFX - Non animated films containing many computer generated shots as visual fx typically take about a year to a year and a half in post-production for the effects to be applied. These can range from hundreds to thousands and even tens of thousands of dollars per shot. A 90 min feature film typically has 400 to 1800 shots. A vfx heavy feature film like one for the "Transformers" series of films could have vfx in 100% of the films shot count.\_  
<https://stephenfollows.com/many-shots-average-movie/>

- Games – A large game like a MMORPG (Massive Multiplayer Online Role Playing Game) can take 3 to 5 years to create (\$40M to \$200M) for mass consumption. A game of that size typically employs around 200 artists. Small games like apps can be created in as little as a few months to a year with a team of 1 to 5 members. 811,000 to 1,248,000 labor hours. [https://en.wikipedia.org/wiki/Mass\\_Effect:\\_Andromeda](https://en.wikipedia.org/wiki/Mass_Effect:_Andromeda)

### What is the average per hourly rate?

Around \$30 to \$50 for Nashville. \$50 to \$100 per hour for NY.

[http://www.payscale.com/research/US/Industry=3d\\_Animation/Hourly\\_Rate](http://www.payscale.com/research/US/Industry=3d_Animation/Hourly_Rate)

<https://www.bls.gov/oes/current/oes271014.htm>

### Industry Growth rate?

#### Animation

*The global 3D Animation market is expected to grow at USD ~20.5 Billion by 2022, at ~12% of CAGR between 2016 and 2022.* <https://www.marketresearchfuture.com/reports/3d-animation-market-2760>

#### VFX

*VFX is making its presence felt in films of all genre be it action, comedy or romance and irrespective of scale, be it small, medium or big budget movies.*

<http://www.animationxpress.com/index.php/latest-news/animation-and-vfx-industry-to-grow-by-8-5-per-cent-and-18-5-per-cent-respectively-by-2020-ficci-kpmg-report>

#### Games

*2.2 billion gamers across the globe are expected to generate \$108.9 billion in game revenues in 2017. This represents an increase of \$7.8 billion, or 7.8%, from the year before. Digital game revenues will account for \$94.4 billion or 87% of the global market. Mobile is the most lucrative segment, with smartphone and tablet gaming growing 19% year on year to \$46.1 billion, claiming 42% of the market. In 2020, mobile gaming will represent just more than half of the total games market.*

<https://newzoo.com/insights/articles/the-global-games-market-will-reach-108-9-billion-in-2017-with-mobile-taking-42/>

#### AR/VR

*Our new base case is that mobile AR could become the primary driver of a \$108 billion VR/AR market by 2021 (underperform \$94 billion, outperform \$122 billion), with AR taking the lion's share of \$83 billion and VR \$25 billion.*

<https://techcrunch.com/2017/01/11/the-reality-of-vrar-growth/>

*A new update to the Worldwide Semiannual Augmented and Virtual Reality Spending Guide from the International Data Corporation (IDC) forecasts worldwide revenues for the augmented reality and virtual reality (AR/VR) market to reach \$13.9 billion in 2017, an increase of 130.5% over the \$6.1 billion spent in 2016. AR/VR spending is expected to accelerate over the next several years, achieving a compound annual growth rate (CAGR) of 198.0% over the 2015-2020 forecast period and totaling \$143.3 billion in 2020.*

<http://www.idc.com/getdoc.jsp?containerId=prUS42331217>

**Do these jobs require post-secondary degrees?**

Degrees are not required for artist positions. Not even Pixar requires a degree to be an artist on a production. <http://www.creativebloq.com/animation/job-at-pixar-10121018>

Software Engineer positions: No

Management and Executive positions: Typically Yes

Creative Tech jobs mostly require specialists who are personally motivated and highly skilled. Applicants can be successful with only a good portfolio showcasing their skills.

**Does Tennessee have any notable programs that create talent pipelines?**

Not that compare to other states and online vocational schools like:

<https://www.gnomon.edu/>

<http://www.animationmentor.com/>

<https://www.fxphd.com/>

<https://www.udemy.com/>

<https://www.pluralsight.com/>

<https://www.codecademy.com/>

<https://www.masterclass.com/>

<https://www.fullsail.edu/>

These vocational programs are taught by the leading industry artists and some come complete with an industry network for placement. Some secondary schools in middle TN now have media arts programs serving as a gateway to the industry which is very important.

There are also a plethora of brick and mortar vocational schools, many of which are flooding the workplace with unprepared new graduates the industry may find too inadequate to employ on productions.

Currently and historically (last 25 years in my experience), TN schools are not largely recognized by the creative tech industries as a good source for highly skilled candidates. There have been some notable improvements in recent years with programs at Lipscomb, MTSU, Watkins, O'More and Southern University out of Collegedale to name a few. These programs are benefiting greatly from the stewardship of seasoned industry talent ([Tom Bancroft](#) , Steve Taylor, Jesse Rademacher, Billy Pittard, Robert Gordon etc).

SCAD (Savannah College of Art and Design) is one of TN's most utilized resources for talent. If TN wants to create the same world class talent produced in NY and LA, the programs must become more rigorous and competitive and should be taught by the best talent recruited from the private sector. [Rankings link](#)

**Does Tennessee currently possess any direct or indirect assets ( i.e. companies, talent, vendors, services, schools) that can be leveraged for recruitment efforts?**

Some do exist but in my experience the assets offered through these programs typically don't possess the skills required for high level production. Most talent is brought in from out of state or grown locally over a few years while working on productions. Many of those assets leave the state to serve larger markets once they have learned enough.

**University Research**

Since the current administration has focused heavily on creating education programs for higher learning and since there are amounts from lottery and other sources of education funds each year which aren't reaching students, perhaps in addition to production grants there could be edu grants that marry productions to University programs. This could be an *inward facing effort* for growing talent and the Creative Tech industry within the state and would complement the *outward facing efforts* to recruit out of state production. Many innovations in our world have been born out of university research. Perhaps I'm not the only one thinking this.

<http://www.onlineuniversities.com/blog/2012/08/100-important-innovations-that-came-from-university-research/>

## Interesting Articles on Nashville and Industry Trends

<http://www.cbsnews.com/media/americas-top-10-tech-cities-arent-on-the-coasts/7/>

### 8. Nashville, Tennessee

One-year growth in tech job listings: 114 percent

Median early career pay: \$54,700

Median midcareer pay: \$90,200

Nashville is #9. Let's make it number #1

<https://www.fastcompany.com/3048391/the-next-top-10-cities-for-tech-jobs>

### 9. Nashville, Tennessee

Though more widely recognized as the home of country music, Nashville also boasts a large healthcare and biotech industry.

"In terms of what's driving that growth, it would definitely be Vanderbilt University," adds Garner. "You have this huge medical centre, and then all the STEM research that goes around it starts to gather there, so there's access to doctors and researchers."

Total Tech Jobs Open: 20,430

Top Five Tech Jobs: Senior programmer analyst, information security engineer, systems administrator, IT manager, and iOS Developer

Major College: Vanderbilt University

Median Rent: \$1,400

Recreation and Culture: Music scene, nightlife, hiking, waterskiing, fishing, and boating

## 5 Huge Tech Trends To Invest In for 2017

<http://www.nasdaq.com/article/5-huge-tech-trends-to-invest-in-for-2017-cm796385>

## The state of the video game industry in 2017

<https://www.developer-tech.com/news/2017/apr/21/research-state-video-game-industry-2017/>

## Software Dev fastest growing jobs . Demand for software developers is only increasing

<http://nypost.com/2017/06/04/these-are-the-top-10-fastest-growing-careers-in-new-york/>

**3D Animation Market by Technology (3D Modeling, Motion Graphics, 3D Rendering, and Visual Effects), Vertical (Media and Entertainment, Healthcare and Lifesciences, Manufacturing), Services, Deployment, and Region - Global Forecast to 2022**

<http://www.rnrmarketresearch.com/3d-animation-market-by-technology-3d-modeling-motion-graphics-3d-rendering-and-visual-effects-vertical-media-and-entertainment-healthcare-and-lifesciences-manufacturing-services-deployment-and-region-st-to-2022-market-report.html>

**The best resource for metrics on the animation industry.**

[https://www.researchandmarkets.com/research/7w4gv6/global\\_animation](https://www.researchandmarkets.com/research/7w4gv6/global_animation)