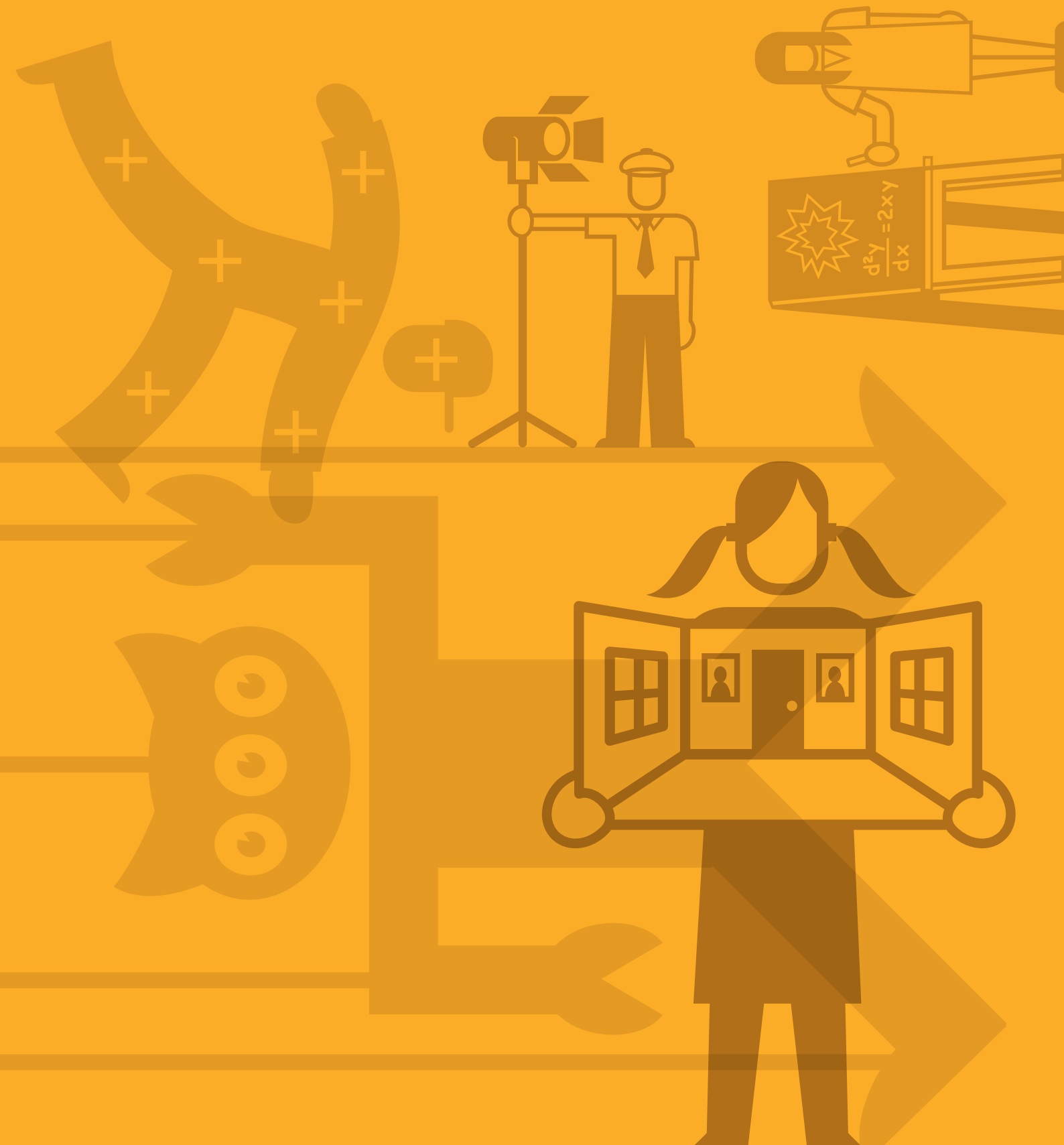
CAREERS IN

VISUAL EFFECTS (VFX)

Where art and technology collide



What is Visual Effects (VFX)?

VFX uses digital technology to combine Computer Generated Imagery (CGI) with moving images from a camera. This is a creative industry, founded on digital technology, that produces some of the spectacular effects you'll end up seeing on the big screen.

Literacy in CGI production techniques also gives you the potential to develop careers in computer games, virtual reality (VR), Augmented Reality (AR), as well as architectural visualisation, product design and in medicine, where anatomical CGI is helping to innovate new treatments.

The Picture in the UK

The UK VFX industry employs more than 10,000 people and is the fastest growing part of the UK film industry; predicted to grow 14% by 2022.

The UK is an international leader in VFX; the last four Oscars for VFX have been won by UK based companies; Jungle Book by MPC 2017, Ex Machina, 2016 by Double Negative and Milk, Interstellar 2015 by Double Negative and Gravity 2014, by Framestore. For Disney's recent retelling of the Jungle Book story, MPC created an entire photorealistic world and all the creatures that live in it, for a new audience. These companies are headquartered in London with other studios around the world, and are internationally renowned for their quality and innovation.

Although the UK VFX feature film industry is based almost entirely in London (98%), there are opportunities to work elsewhere in the country in VFX for television, advertising and games.

Getting Qualified and Choosing the Right Course

VFX has a highly qualified workforce with 86% holding a degree. Of these, 59% hold a creative/media related degree and 37% a post-graduate qualification. Other popular degree routes include physics, maths, computer science and art, which are all core skills within the VFX industry.

There are specialist VFX and animation degrees, and post-graduate degrees, but the course you choose will need to be industry relevant. Creative Skillset's 'Tick' recognises university courses that have demonstrated their relevance to industry (http://creativeskillset.org/creative_courses). There are also Further Education (FE) courses to get your career journey started, including the recent introduction of a Level 3 Extended Diploma in Games, Animation and VFX Skills and new Level 4 Apprenticeship opportunities (Junior 2D Artist and Assistant Technical Director) that are broadening career pathways into the VFX industry.

Whichever path you are planning to follow, look into the destinations of other students who have taken that route before (sites like Linked-in or hiive.co.uk can help) as this will give you a good idea of whether a course is right for you.

VFX Industry Skills

More than half the VFX workforce is employed as Artists/Technical Directors (TDs). The rest of the industry employs, in almost equal numbers, programmers, producers, production coordinators, editorial, management and support staff. Most creative roles rely on a crucial blend of technology and art. Roles in production or management require administrative, financial, legal, marketing or sales skills in place of the technical and artistic skills demanded in creative roles.

VFX companies are rarely conventional 'corporate' workplaces, so they can be a great place to grow your career, regardless of whether you specialise in a creative or an administrative role. It's a good idea to try a series of roles in VFX to find out what you are good at. The best university or FE courses will allow you to do this and to specialise as you go along. Some people have a strong affinity for the programming and maths side, while others see themselves as artistic and ideas-led. If you're really keen to develop one of these routes, follow your passion.

No matter which career you pursue in VFX, you will need to demonstrate high levels of initiative, the ability to work as part of a team and to problem solve.

Develop Yourself

Developing your skills is as important as gaining qualifications. Would be VFX artists/TDs can gain early experience by accessing free industry standard software and tutorials, including:

MAYA, the ubiquitous industry 3D package (http://autode.sk/2pXhjGL).

NUKE, the software used for VFX compositing (MARI also allows you to paint the surface texture of your models in 3D) (http://bit.ly/24MSEQT).

SUBSTANCE DESIGNER is popular in the games industry and is now being used in VFX for designing surface textures (http://bit.ly/1r3a64V).

HOUDINI, which is used for effects simulation (http://bit.ly/2icG7rV).

You can also test your ideas and share renders through forums, blogs and video sharing sites like Vimeo or YouTube.

Additional resources are available at intofilm.org/vfxcareers.

Getting In

Foundations for a Career in VFX

A trained eye and an appreciation of light and colour are vital to be able to make images appear real. Art and art history, the ability to draw and an understanding of photography can help with this. The study of biology and physics can be helpful to interpret anatomy, mass, mechanics and movement. However, advanced study in these disciplines is only important for some VFX roles. The careers map on the reverse of this leaflet shows which VFX roles require a strong foundation in certain subjects.

Awareness of contemporary culture can also be important to be able to visualise others' ideas. For instance, we all have notions of what vampires or robots look like that we have referenced from popular culture. Films, graphic novels and computer games can provide a good background for anyone interested in pursuing a career in VFX.

The Traditional Routes in are Changing

Routes into the industry are now more defined than they once were. Previously, new entrants could get their 'foot in the door' as a Runner and then decide on a specialism. The majority of the training options and qualifications available now hinge on whether your interests and aptitudes lie either in 2D (compositing) or 3D (CGI) work. Although decisions about whether to specialise or remain a generalist within 3D can wait until later, it is sensible to investigate the 2D or 3D pathways as early as possible. A good college or university VFX course, or a level 3 apprenticeship, can help you do this.

Equally, the traditional route of working in roto to move into 2D, or matchmove to get into a career in 3D, although not completely vanished from the UK industry, have diminished. Many companies now expect new entrants to be both qualified and have a good showreel to join at a higher point on the map (see overleaf) – either a junior compositing (junior 2D) or a generalist (junior TD or ATD) role.

The Vocational Training Route V

Rather than entering the industry via university courses or runner routes, new entrants now have alternatives. In many ways, the traditional runner pathway and being informally mentored into an artist/TD role within a company has given way to more formal vocational training offered in-house by the larger VFX companies – this is in addition to the Level 4 apprenticeship that has been developed by the Next Gen Skills Academy (see The Apprenticeship below), which is also open to graduates from non VFX backgrounds. In-house graduate training schemes are another route in for university graduates with good showreels. You can find out about the training schemes available via the larger VFX companies websites.

Undergraduate/postgraduate students, towards the middle of their studies, should consider applying (with a student showreel) for the larger company summer internship programmes. As well as offering experience across a range of disciplines, students receive accommodation for the duration of the programme. You can also find out about the internship schemes available via the larger VFX company websites.

However, taking a job as a runner/tech runner is still a potential way into VFX. In some companies, spending six months to a year as a Runner can lead to artist/TD positions, whilst in others it will lead you to a role within 'production'.

The Apprenticeship N

Apprenticeships are new to the VFX industry and combine valuable work experience with industry relevant courses, which will get you working directly in industry from the beginning of your career and also allow you to earn while you learn. www.nextgenskillsacademy.com can steer you towards the apprenticeship opportunities available in VFX.

The Production Route O

The production route should be considered as a first step for people keen to pursue a career in VFX and who are good at planning and organising. This career path often has three tiers, beginning as a Production Coordinator, then progressing onto Line Producer or Production Manager, depending on the company, then eventually on to Producer. There is a shortage of people with the production management/business skills needed to enable growth in the smaller companies, particularly outside of London.

The University Route S O

There are also a number of specialisms that recruit directly from undergraduate and postgraduate university courses. These are usually for roles with a high degree of STEM as well as art skills, including Layout, Crowd, Rigging, Groom, Technical Animation (Tech Anim) and Effects Specialisms. How companies recruit into specialist roles differs, depending on how they organise their work. This is often referred to as a company's 'pipeline' and may mean they prefer to hire more 3D generalists or into the kind of 3D specialisms we highlight above and on the careers map overleaf, directly.

Data Wrangling O

Graduates who have gained experience in managing digital data within other sectors and can demonstrate an interest in film and VFX, can get a start as part of the team looking after a VFX company's render farm or by supporting projects in production by backing up and moving data around, or working in editorial, organising the data coming into and leaving the company. Junior roles, such as Render Technical Assistant, Technical Assistant, Data Operator or VFX Editor are involved at the heart of the company's pipeline and as the work is usually shift based, this allows people the time to undertake internal online training or work on practice assets/shots, getting feedback from working artists/TDs between their shifts.

Animation, But Not as You Know it S

Young people interested in pursuing a career in animation should be encouraged to look across the full spectrum of roles that can misleadingly be placed under this broad umbrella. Many of the specialist roles (such as Layout, Crowd, Rigging, Groom, Technical Animation (Tech Anim), or Creature TD, Effects and Lighting) offer good career opportunities and have direct entry into the industry, but are still under represented in careers guidance. These roles tend to get overlooked in favour of character animation, which in reality there is limited need for in the UK VFX industry. These specialisms often require an understanding of, and interest in, animation but also have a need for a strong foundation in STEM subjects and computer skills. This foundation means that artists/TDs can often move between, or across, roles within companies too.

The VFX Skills Spectrum

You can think of VFX skills as being on a spectrum, with art at one end and computer science, physics and maths skills at the other end.

As the nature of VFX has changed over the years, there are now many more jobs that involve STEM disciplines and computer science in order to create both new software tools and processes to make better VFX, but also to create many 'natural' looking effects like explosions, hair, fur, clothing, water or 'digital doubles'. People are often surprised that a good degree in computer science or maths can lead to a career in VFX.

Getting Hired

Students should ensure that any study they undertake provides them with assistance, advice and support to develop an entry-level 'industry ready' showreel as this is an essential passport to first industry jobs (check out examples on Hiive.co.uk or Vimeo). Those pursuing computer science or 'code based' VFX routes won't usually have to develop a showreel but will need to evidence relevant coding skills instead.

Whichever way you enter, if you want to get ahead, make sure that you engage with your colleagues and use your time wisely to learn new skills from the professionals around you.

Career Progression

Progression upwards in the VFX industry is based on how you hone your craft and develop your talent (i.e. it's a meritocracy not a simple matter of how long you've done the job). It is craft based, so the vast majority of employees start in junior roles and develop their career as they improve and develop new skills. VFX artists never stop learning and trying new things.

People will usually work as a junior artist from between one to three years, mid-level artist from three to seven years and senior artist upwards of seven years. Senior artists go on to train junior artists, quality assure work and lead teams. Some seniors will go on to work on set and supervise the acquisition of the raw ingredients for the VFX work.

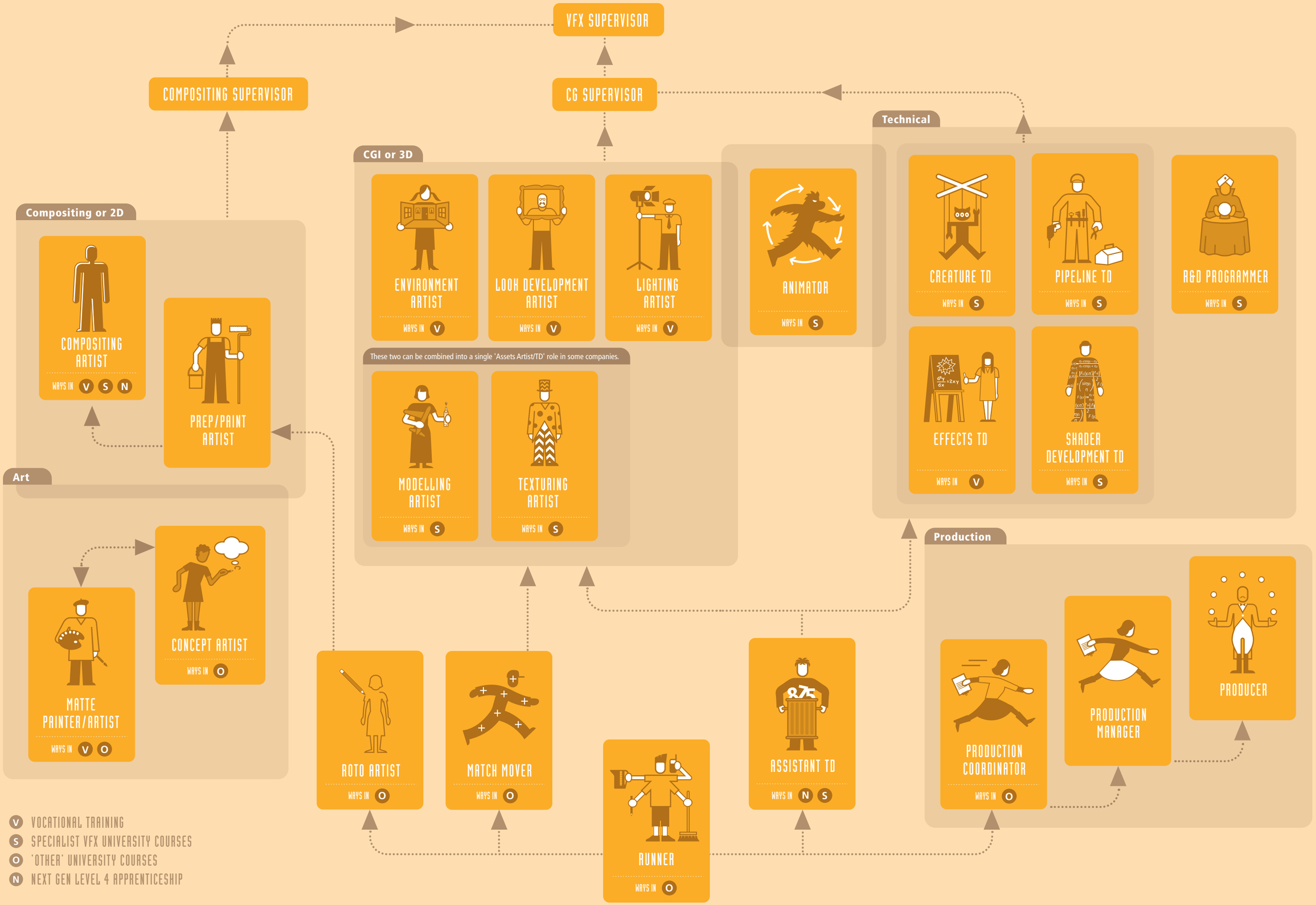
Junior, mid and senior job demarcations vary by company in terms of the skills you need to evidence, usually through an appraisal and pay review process.

Pay in VFX

The average income across the VFX sector is £45,900

Most companies employ artists on a contract basis. Contracts are usually project based and can last from between six months to a year. Contracts often roll back-to-back and it's possible to be employed on this basis at the same company for several years. Sometimes it is necessary to move from company to company to ensure consistent employment, but it's a growing industry so VFX professionals are in increasingly high demand.

Someone starting their career as a Matchmover or Roto Artist can expect to be paid an annual salary of between £18k to £20k. Junior level artists earn between £20k to £30k per year. Mid-level roles earn between £30k to £50k per year and senior level artists can command an annual salary of £50k upwards.



VISUAL EFFECTS (VFX) CAREER MAP

INTO FILM · BFI The National Lottery Film Forever · creative skillset · compositing coach · NEXTGEN SKILLS ACADEMY · UK SCREEN ALLIANCE

Specialists vs Generalists

Some specialisation is often essential in the London based/global feature film VFX industry, but you can also pursue a career as a VFX generalist in smaller production houses where roles are more varied in scope. Smaller animation and post production companies are also producing CGI for TV, commercials, computer games, VR, AR, architectural and medical visualisation often in places outside of London, such as Manchester, Bristol, Cardiff, Glasgow, Brighton, Bournemouth and Belfast.

There are a number of specialist areas where the UK film industry particularly excels and in which hundreds of highly-skilled jobs exist. The career map overleaf outlines the foundations you need for particular roles and career routes.

Runner

The job of a Runner is not glamorous but it can be a job with prospects. You will learn how teams and workflows operate while learning about production or getting to work on training shots. In advertising VFX the biggest part of the job is still to serve drinks and refreshments for company clients and keep the kitchens stocked. In film VFX, expect to run errands, manage deliveries, cover reception and keep the place tidy. To progress you will need to be enthusiastic and prepared to take advantage of any training opportunities.

Roto Artist

Imagine getting to know every detail of a famous actor by cutting around him or her! Roto Artists carefully cut out moving characters and objects from one moving picture so they can be inserted into another (or CGI can be inserted behind them) by compositors. You need to have a keen eye, patience and think like an animator – because you are one!

Paint/Prep Artist

Help create the illusion that a person can fly by 'cleaning' or erasing unwanted items from live action images such as wires, harnesses, or film equipment. Paint/Prep Artists also remove things that betray the story, for example, removing a jet or a pylon from the scene of an Edwardian period drama.

Compositing Artist

Consider the pride you'll have in knowing you matched the computer generated creature or object to make it appear as part of the frame. As a Compositing Artist you work at the end of the VFX process to combine CGI and digital matte paintings with live action and make it all look seamless.

Match Mover (sometimes called Camera Tracker)

You'll be the person that everyone relies on to extract movement and spatial information from previously shot material so that objects and people can be dropped into the shot realistically – without anyone knowing. Lots of VFX now requires scenes where entire CGI sets, make up most of what you see on screen. In such projects, you may find the job of 'Layout TD/Artist' has replaced or is working along side that of the Matchmover.

Modelling Artist

Imagine being able to make anything digitally. As a Modelling Artist you'll create a whole range of 3D objects using digital modelling and sculpting software. You could be asked to make anything on the computer, from the fantastic to the mundane. You will create the 'building blocks' for VFX that need to be crafted before they can be placed, coloured, lit, and animated. Some companies group Modelling and Texturing work together under 'Assets'.

Texturing Artist

As a Texture Artist you will create 'skin', surface detail and colour through a combination of photographs and painting in three dimensions. Texture Artists enjoy dirtying things up, making rusty, tarnished edges and surface imperfections to give computer models the messy sophistication of the real world. Some companies group modelling and texturing work together under 'assets'.

Lighting Artist

Just as our physical world has many different light sources which contribute to how objects and scenes look, so does VFX. A computer generated object needs to be lit too. Lighting Artists use computer software lighting and work with images photographed on set to illuminate 3D objects so they match live action backgrounds. These are then enhanced and accented to help tell the story.

Environment Artist

Imagine going on a film set and taking the photos that allow you to digitally recreate the scene that all the other VFX artists will use. Environment Artists are 3D generalists that use modelling, texturing and photo manipulation to re-create the environments that the action takes place in.

Concept Artist

All great ideas on paper or in the head of the creator need to be turned into images that communicate a look or a shared vision. Concept Artists use digital and traditional drawing and painting to visualise concepts for the film maker so that other VFX artists have something to work from. Concept Artists might also work in the film's art department, or in the computer games industry. Specialist companies or specialist departments with VFX companies also employ 'Previz Artists', who are 3D generalists, helping visualise a story idea with rough CGI, before any VFX is commissioned or even before principle photography has taken place.

Matte Painter/Artist

Imagine taking photographs and cutting/pasting and digitally painting visual elements to make entirely new environments or images, which might be used in the background or to illustrate a landscape or wide-angle cityscape for instance. As a Matte Painter you might use your own stock of images to cut up, flip, and manipulate to create new digital worlds.

Animator

Your work breathes life into a creature so they move realistically and display a personality, becoming part of the cast. Animating vehicles or machinery is also part of the job. No matter how good the CGI, if its movement isn't realistic the audience won't believe in it!

Look Development Artist

What does the skin of a fantasy character such as an alien actually look like? When the concept for the computer generated creature has been designed you will work with other film production departments, Lighting and Texture Artists and Shader Development TDs to establish how the alien will look in different VFX shots.

Creature TD

Fancy working out the mechanics of how a CGI character moves or simulating its hair and clothing, creating muscle and skin deformation? As well as the more generalist Creature TD (sometimes known as Creature FX TD) role, where a number of technical, anatomical as well as artistic skills allow you to add that extra layer of realism to a creature/character that might already have been animated. At larger VFX companies and on larger projects, further specialism is also possible under the Creature TD umbrella. For instance, you could specialise just within Groom, where you'll be creating fur, hair or feathers for the creature or character; work in Technical Animation (Tech Anim) TD who creates the secondary animation such as clothing or skin interaction with live action (real) objects. If you specialise in Rigging, you will build skeletal and muscle control systems within the creature/character for animators to use. Rigging a mechanical object such as a machine would allows it to 'whirr' into action when a real actor presses a button or allow a CG car to speed around a corner with its suspension behaving as a real cars suspension would.

Effects TD

Imagine creating fire, ice, rain and explosions (digitally!) Effects TDs create things that seem to move under the rules of physics, for example developing spectacular simulations of floods and destruction or just the bit of sand that is blown up when the computer generated helicopter lands.

Pipeline TD

You are the Mr or Ms fix it, writing or modifying computer code to solve problems related to art or productivity as they arise on a project by project basis.

R&D (Research and Development) Programmer

You'll be the inventor of the software that every other VFX artist relies on. In R&D, you'll use computer programming to modify and originate bespoke code to provide artists with new creative tools and enable the efficient passing of assets from one VFX process to the next.

Shader Development TD

Milk, marble, iron, skin and snow, all have complex surface structures that dictate how they look in different lighting conditions. You are the computer programmer that writes code to describe the 'material' surface quality of things modelled and generated inside the CGI world.

Assistant TD (ATD)

You'll be a technical assistant to effects and pipeline TDs and R&D programmers, learning and refining your coding craft, cleaning up effects simulation data, backing up and moving digital files from one location to another.

Production Coordinator

As a Production Coordinator, your job is to input and collate data relating to schedules, tasks, and client/supervisor feedback notes. This project information allows the production team to track progress against the planned schedule. The coordinator is central to the project management of VFX shows and liaises with all aspects of production and post-production: director, editor, supervisors, producers and artists so communication and organisation are the key skills required for this role.

Line Producer/Production Manager

The role of Line Producer/Production Manager is to create, implement and run the schedule for VFX projects. This involves tracking and managing the workflow through all departments and overseeing the work of the Production Coordinators to ensure that information is flowing correctly between client, supervisors and artists. The Line Producer is responsible for anticipating problems and communicating them effectively to the Producer and Supervisors. You'll need to be highly organised with strong communication and project management skills.

Producer

By working closely with the VFX Supervisor, you will project manage the VFX process, from writing the client bid, through to setting and managing schedules and budgets. You will recruit, or advise on the recruitment, of artists and technical staff for projects and will liaise with both crew and clients throughout production. You'll need to have a strong personality, be highly organised and good with people.

Technical Director (TD) is a job title you will come across often when researching jobs within VFX. Any role you see appended with 'TD', you should assume requires a high level of STEM skills, in particular computer science and coding, but some also require a solid foundation in physics and maths. Technical Director roles can range from junior to senior.

Looking for resources or further advice?

You can find lots of information and resources about the VFX industry online, these websites are a great place to start:

Skills Fusion	www.filmworkshop.com/fusion-careers
Creative Skillset	The Creative Industries skills body & 'Tick' accreditation – http://creativeskillset.org/creative_industries/vfx
NextGen Skills Academy	Courses and apprenticeships – www.nextgenskillsacademy.com
Double Negative	Learning resources – www.dneg.com/learning-resources
MPC	Resources for schools – www.moving-picture.com/film/content-pages/resources-for-schools/resources-for-schools-and-students
Into Film	Resources and opportunities – www.intofilm.org/search/global?globalsearch=VFX
London Creative Edge	Free creative digital software list – www.theedge.london/resources
Institute of Physics (IOP)	Physics Works, guide to physics in VFX, www.iop.org/publications/iop/2015/file_65433.pdf

VFX provides the opportunity for a rewarding, hands-on and creative career. Many people move from project to project, some travelling the world with their skills. VFX professionals can take their skills to other production centres around the world, such as New Zealand, Canada, India and China.

The UK VFX industry experiences skills shortages, particularly in the more technical specialisms that rely on strong educational foundations in STEM subjects (Science, Technology, Engineering and Maths). Studying or having an interest in these core subjects can help students to create the amazing VFX and CGI of the future.

In addition, creative and artistic roles rely on good foundations in art, photography and design, coupled with mastery of computer graphics software. There has never been a better time to begin a career in the VFX industry, and careers are much more varied than you might imagine; there are jobs for the artistically talented and technically proficient, alongside organised administrators and managers.

© 2017. Original research and design by Ian Murphy and Allan Burrell, Compositing Coach www.compositingcoach.com. All rights reserved.

Design updated by Kieran O'Keeffe.

Commissioned by Yen Yau at IntoFilm. Additional research by Sarah Gregory at London Creative Edge. With thanks to Phil Attfield at NextGen Skills Academy, Saint John Walker at NUA, Andrew Schlussel, and Ceylan Shevket at MPC and Amy Smith at Framestore.

Funded by the Creative Skillset Film Skills Fund, as part of A Bigger Future 2, a response to the Next Gen Report (a review of the skills needs of the UK's video games and visual effects industries).

All statistics courtesy of Creative Skillset's Workforce Survey 2014 and Employment Census 2012.

Follow us at Twitter: @intofilm_edu & @getintofilm