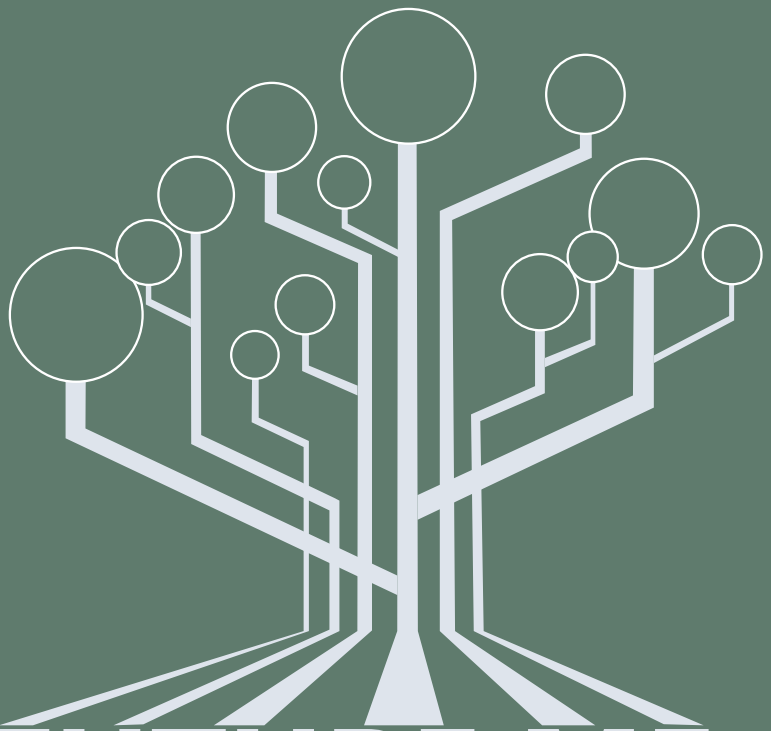
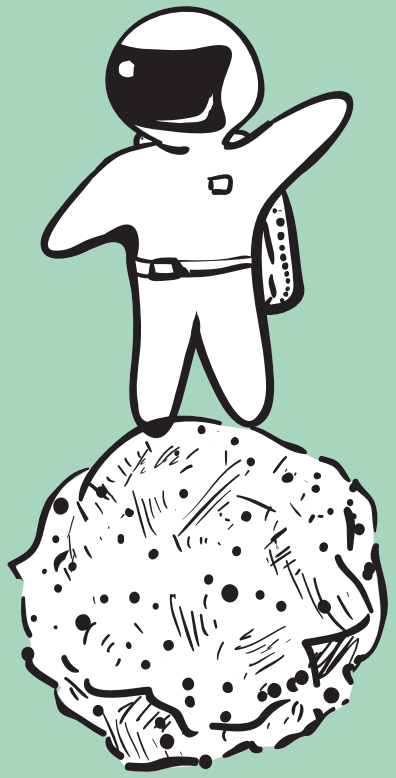
The STEM HUB



FUTURE ME

Roots to Shoots

The Future Isn't What It Used To Be!



Thanks to all the people who contributed to the production of this book.

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Introduction

Welcome to Roots to Shoots, a special edition in the Future Me series in celebration of British Science Week 2022. The theme of British Science Week is Growth. This publication looks at how STEM Careers have grown and will continue to grow into the future.

Technology is changing all the time. It changes jobs and how people work. Do you know what job you want in the future? Have you wondered what that might look like? In Roots to Shoots, STEM professionals use their imagination to predict what they think their job might be like in the future. They also share tips that might help you in your future job.

How has technology changed people's jobs over the years? How might jobs continue to change in the future? Technology such as Artificial Intelligence (AI), Virtual Reality (VR), new software and computers means that jobs may look very different in 20 years!

DID YOU KNOW?

- In only the last two years, 90% of the world's data was generated.
- 5 billion people in the world own a mobile device.
- Doctors and scientists have used technology to tackle problems and treat diseases.
- Technology can help the environment by improving communication and reducing need for travel.

Growth can affect the environment and climate. Each STEM professional has made suggestions for how their job could grow to be greener. Thinking about sustainability and climate change, how can careers reduce their footprint on our environment?

We hope that you enjoy Roots to Shoots. Do you have a career question that you would like answered by a STEM professional? Email us and get a response from a STEM Ambassador, at **askanambassador@canterbury.ac.uk**

The STEM HUB

Elizabeth

DESCRIBE YOUR JOB IN THE PRESENT

I am a Software Technical Director for one of the world's largest Visual Effects Studios. Visual Effects (VFX) combines live footage and computer generated images to create realistic looking TV and film. I am a programmer, which means I create new software and technology (through the use of coding) that enables VFX artists to create mind blowing creatures, environments and explosions that you see on the big screen.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

It has changed dramatically! New software techniques and hardware are invented every week, and we have to stay on top. The pandemic created challenges in how we work as a team, a few seconds on the big screen could have had hundreds of artists working on it. Learning how to do this remotely was amazing, and we somehow managed to create huge hits like The Mandalorian and Ghostbusters: Afterlife primarily from our bedrooms!

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Technology is at the heart of what we do. 30 years ago VFX didn't exist, prosthetics and models were used to try and create the illusion of monsters in films. With the evolution in technology we've found an entirely new industry that combines the skill of artistry and propels it into the future, to create images beyond our imagination.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

VFX is a fast moving industry both on a large scale and on a day to day basis. No two days are the same, so the ability to problem solve in unfamiliar situations is key. Coding and computing abilities are also vital even in a more artistic role.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

I think even more parts of the visual effects industry will be automated. Through the use of Artificial Intelligence and Machine Learning we'll be able to create worlds that would take an artist hours to do in a single push of a button!

HOW COULD YOUR JOB GROW TO BE GREENER?

My role could one day turn into being a VFX supervisor or head of the Research and Development team which would mean being able to attend award ceremonies like the Oscars!

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

I would say it's never too early to start learning. Most of the tools we use have free educational versions available and there are so many youtube tutorials free of charge. It's totally possible to get a good foundation from your bedroom!

Sam

DESCRIBE YOUR JOB IN THE PRESENT

My job as an Airline Pilot is a rewarding and varied job. One day we can be flying passengers to beautiful, hot countries for their holidays, and the next we can be flying parcels, celebrities and even animals to the Middle East and beyond. Cruising at 41000, which is equivalent to 115,820 Mars bars high, at three times the speed of a racing car! We fly in all-weather all around the world from the cold, foggy mornings to the sunny snow covered mountains, the views out of the window makes it worth that 3am alarm clock.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

My job has changed over the past ten years as the world continues to become more technically advanced. We are able to fly higher, further, faster but more efficiently then we were able to when I first started. There is a greater emphasis for ongoing training as new procedures are continuously introduced to make air travel safer and more environmentally friendly.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Technology has taken away a lot of the stresses associated with flying. Thus enabling us to fly further, longer and safer to some of the most remote and challenging locations on the earth.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

Skills used in flying, whichever aircraft, are continuously built upon since the introduction of flight in 1903. As technology advances and more emphasis is put on computer systems, it's important never to forget the basic principles of flight and the simplified physics behind it.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

As technology advances, the push to make aviation greener and the people of the world wanting to get places quicker I believe automation will be relied on far more. Pilots will be flying the aircraft less and having computers do all the thinking, whilst flying at higher speed and altitudes with electric powered jets.

HOW COULD YOUR JOB GROW TO BE GREENER?

The introduction of electrical powered engines will cut aviations carbon footprint by over 75%. Bigger aircraft carrying more people will enable there to be less aircraft in the sky at one time, reducing noise and waste materials.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

I would advise anyone wishing to pursue a career as a pilot, to get a few flying lessons at a local flying school before they embark on their journey. As well as speaking with current Pilots about a normal day at work. This is the most cost effective away of knowing whether if it's the right career for you. If you enjoy it, then take it by the horns and run with it.

Gloria

DESCRIBE YOUR JOB IN THE PRESENT

I am a Chemical Engineering Industrial Placement Student. My role is to ensure that excellent quality antibiotic tablets are packaged well for customers at the production site I work at. I do this through supporting the instalment of new components and equipment and improving current processes. I also help enforce the appropriate actions to prevent product defects from occurring.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

When I first started, I had to do a lot of training for the first month to familiarise myself with the procedures required to conduct different tasks. Since then, I am heavily involved in projects which minimise production downtime and costs.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Using software such as Microsoft Word, Excel, PowerPoint and Teams has made articulating information and communicating it to my colleagues more time efficient than discussing this information with them over multiple meetings.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

I believe digital literacy and communication skills will help me better produce relevant work to solve production issues.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

Interesting Question! As my company grows more knowledgeable on how to manufacture tablet products more safely, my role in twenty years would be more focussed on making better quality products, and making them more efficiently.

HOW COULD YOUR JOB GROW TO BE GREENER?

My job can definitely grow to be greener by reducing the waste of materials during the production of our products.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

I'd advise students to confidently showcase their achievements throughout their application, research the role and what tasks you'll be expected to do, and show eagerness to learn. Ask questions too, even if they sound silly!

Abigail

DESCRIBE YOUR JOB IN THE PRESENT

My job is to ensure that the geotechnical (earthworks) projects in Kent are delivered in the correct timescales to the right budget. These projects involve stabilising the railway so landslips do not occur. This involves working with designers who come up with the solution, contractors who deliver and build the solution as well as others in the property, communication and asset management teams.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

Since starting my job in December 2020, we have experienced several challenges due to decreased revenue as a result of low passenger numbers due to covid. This has meant we have had to be more innovative with the ideas and solutions we execute on the railway.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Technology has meant we are able to carry out more drone surveys to assess the ground conditions on site and develop more accurate stabilisation solutions to the railway.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

Being an innovative thinker is key to a project management role as we are facing new challenges every day.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

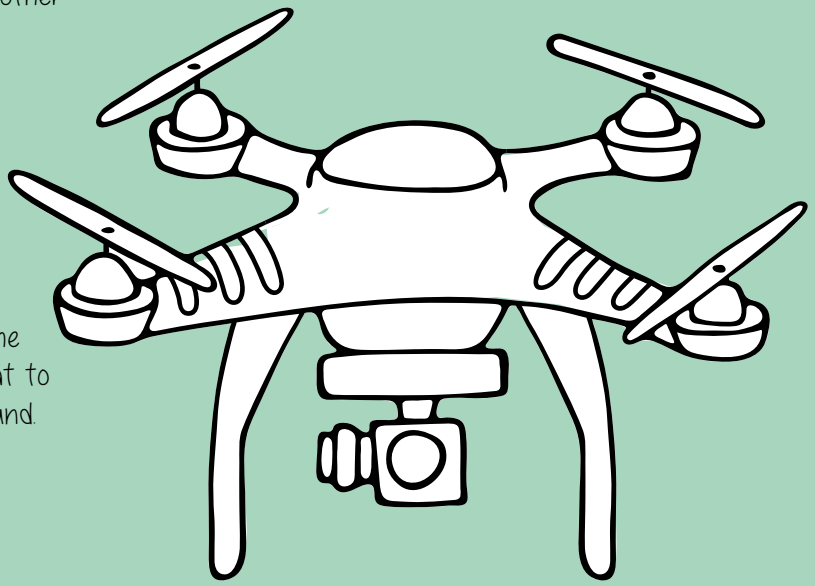
I believe we will be utilising more advanced technology to get a better understanding of the ground conditions and how they are affecting the railways. With better data for our designers to use they can create longer lasting solutions.

HOW COULD YOUR JOB GROW TO BE GREENER?

Currently we do a lot of devegetation, we could improve this by replacing what we take down at other locations and enhance the biodiversity.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

This job is about being able to communicate to a wide variety of stakeholders with different priorities. You need to be good at understanding the engineering solution and being able to promote that to someone who doesn't have the scientific background.



Charlotte

DESCRIBE YOUR JOB IN THE PRESENT

As a Diagnostic Radiographer I use cutting-edge technology to produce images of peoples insides! This is to help diagnose health conditions, diseases and injuries. My job role requires me to learn multiple imaging modalities including X-Ray, CT, MRI, DEXA and ultrasound.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

The machines we use have improved massively with research and technology meaning the images are of phenomenal quality. This is turn means diseases and illnesses are caught earlier with a much lower dose (if any) of ionising radiation.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

My job as it is now would not exist without technology. It has allowed us to catch disease earlier and treat it before it has advanced beyond treatment.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

The ability to adapt and being open to changes outside of your comfort zone.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

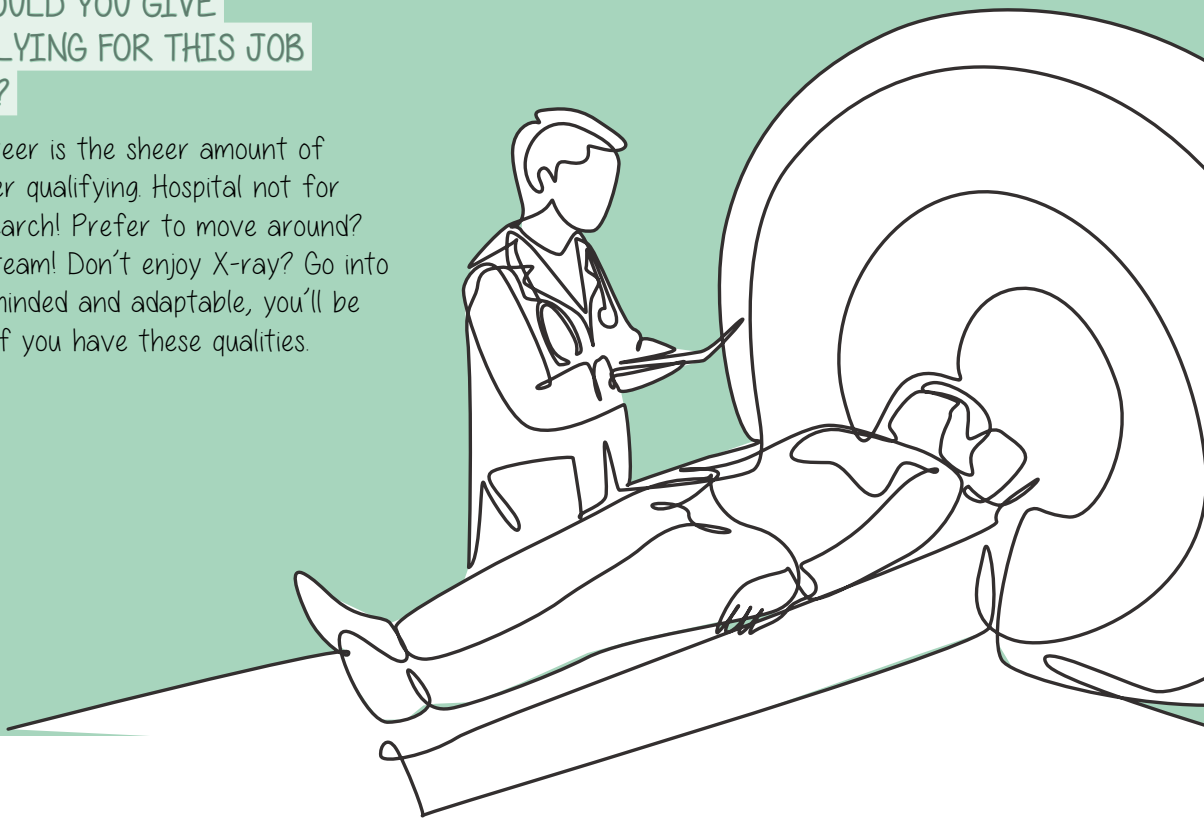
It's quite exciting to think about! I think the technology will improve even further meaning lower doses and higher detection rates. I think artificial intelligence will be a huge asset within Diagnostic Radiography.

HOW COULD YOUR JOB GROW TO BE GREENER?

If we can find alternatives to single-use plastic items that would be fantastic.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

The beauty of this career is the sheer amount of 'options' you have after qualifying. Hospital not for you? Then go into research! Prefer to move around? Join a mobile imaging team! Don't enjoy X-ray? Go into MRI or CT! Be open-minded and adaptable, you'll be fantastic in this field if you have these qualities.



Alice

DESCRIBE YOUR JOB IN THE PRESENT

Currently I'm working as a Junior Site Engineer, which involves setting out line and level of a new concrete sea wall. Taking design drawings and creating 3D models to check for clash detection as well as to help visualise the scheme. Overseeing concrete pours, taking cubes and slump tests for quality control. Having to keep a high level of concentration whist carrying out my daily tasks.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

My job has changed so much since I started, my confidence has grown in my role. I'm able to work and complete tasks on my own, things like setting up a total station for setting out and surveying. Also concrete cubes, slump test and site QA paperwork.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

AUTO CAD has definitely changed engineers' jobs for the better, drawing it up on CAD and exporting it onto the control connected to the total station has made setting out easier and more efficient.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

New skills that would help me as my job changes would be team management and confidence.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

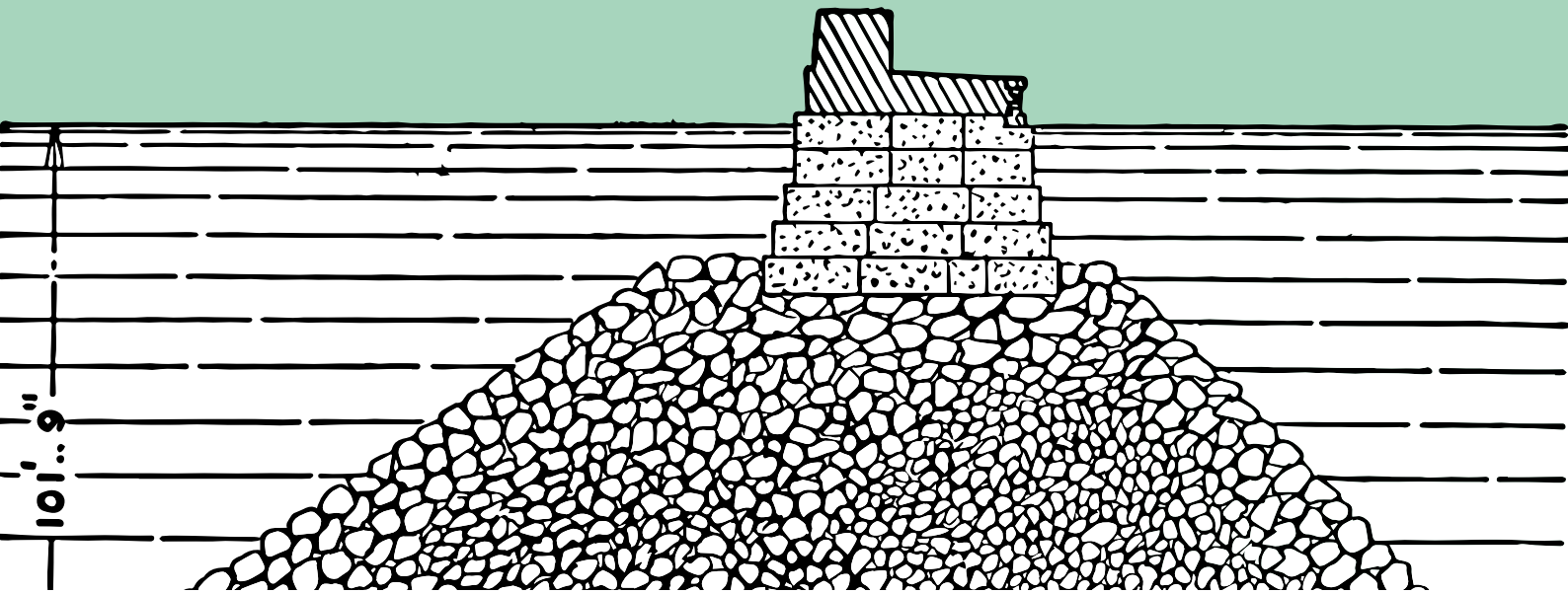
I can see my job being done by GPS and drones, so instead of using a total station and manually surveying, it will be done by GPS and drones flying over the area and taking the reading itself.

HOW COULD YOUR JOB GROW TO BE GREENER?

Learn how to be more eco-friendly, with things like sustainable thinking, using resources effectively, using renewable and recycled resources, working from home were possible and planning resiliency.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

While working ask as many questions as you can think of, try and learn something new every day. Complete as many new tasks as you can, learn new skills and work efficiently.



Mark

DESCRIBE YOUR JOB IN THE PRESENT

I lead a team of IT Project Managers and Engineers to build new and exciting products for our company. Most of my time is spent working with computer programmers and customers to find out what problems they have and what new technology we can use to solve their problems. We conduct los of brainstorming workshops to get new ideas and speak with experts on how to create new and exciting products and solutions

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

I started as a computer programmer, writing programs. Now I lead a large team of programmers and travel around the world and have much bigger responsibilities

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

When I first started we did not have great mobile phones or laptops. Now these are the tools I use most for my job. And video calls never happened before.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

The ability to keep learning new technology. The world is changing all the time, so I need to learn quickly.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

We will be solving some very different problems that our customers have from today. People will not using credit cards for starters, and I would be surprised if laptops exist anymore!

HOW COULD YOUR JOB GROW TO BE GREENER?

Yes. It already is with working from home. I don't need to fly around the world much anymore.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Solving problems is great fun and very rewarding. Think differently to other people. Diversity is fundamental to our success.

Georgia

DESCRIBE YOUR JOB IN THE PRESENT

I am a Clinical Research Nurse in London, I manage all of the diabetes and lupus research trials within the hospital. Research in hospital can range from trialling a new drug with patients or just monitoring their disease to see if we can find out anymore information to help future patients.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

We are moving towards less paper and being more online with all the information and results gathered from research trials.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

We are using more advanced databases to store all the research data and new pieces of equipment are being used all the time for new trials.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

Always being flexible and adaptable to work on lots of different research trials.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

I think it will be very digital, there will be more research centres at hospital to be able to offer more early trials to patients.

HOW COULD YOUR JOB GROW TO BE GREENER?

Becoming paperless and having packaging that is biodegradable or recyclable.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

To become a Research Nurse you will need a nursing qualification and the skills and personality of being organised, meticulous and dedicated to your trials. It's a very rewarding job and an exciting area of healthcare that I love working in!

Jake

DESCRIBE YOUR JOB IN THE PRESENT

I work with all Engineering departments to review and improve the tools, processes and training that my company uses to design world leading supercars from their initial starting point when a car is just a list of target values, through the design, prototype and build stages, all the way until customers receive their cars.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

The biggest change has been to data management. There is now a drive to capture data across a project lifecycle, and to compare and analyse that data in a repeatable and evolving manne. This can be automated in order to prompt continuous improvements for future projects.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Technology has changed the mindset from reacting to problems with a short term fix, to being able to establish root causes from the data available and creating permanent solutions due to improved communication and ability to collaborate.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

To be familiar with IT systems and an ability code software. To be adaptable, able to learn and innovate.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

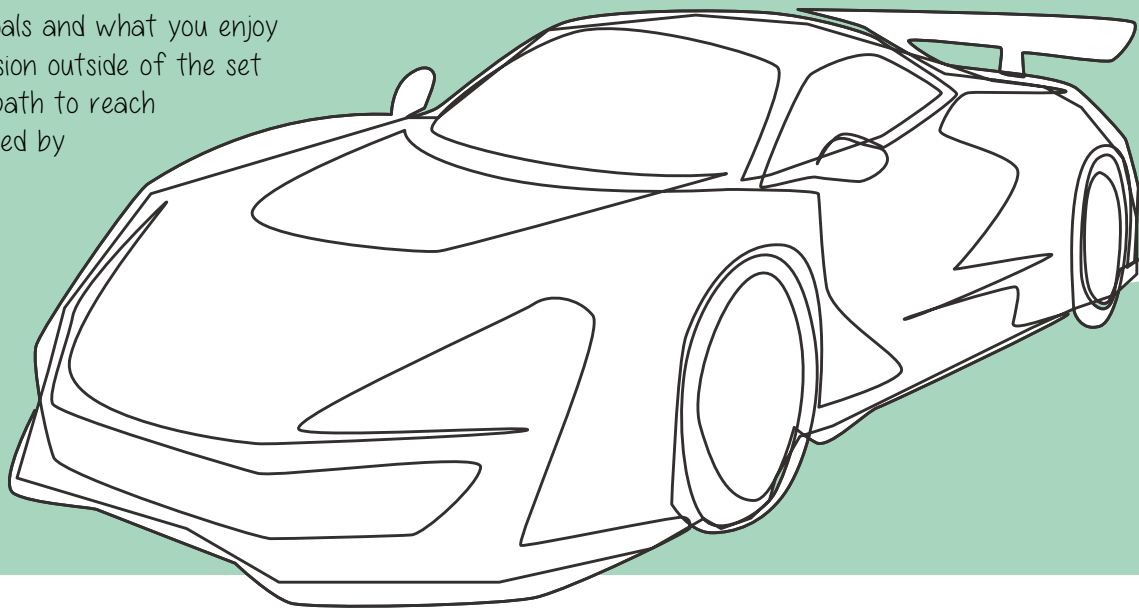
We will still be analysing opportunities for continuous improvement, but with a greater emphasis on big data analysis and AI to maximise the impact of solutions to evolve the product capabilities.

HOW COULD YOUR JOB GROW TO BE GREENER?

Through the use of more sustainable and recyclable materials within the product and alternative fuel sources for propulsion.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Be passionate about your goals and what you enjoy doing, try to apply your passion outside of the set curriculum. There is no set path to reach the role so do not be deterred by perceived setbacks.



Arnesh

DESCRIBE YOUR JOB IN THE PRESENT

I work as Senior Intellectual Property Rights Specialist. I'm in-charge of identifying good ideas within the company and turning them into patent applications. Once the application is drafted, I handle its filing, prosecution, and examination for eventual patent grant. Working in a global telecommunication company with business interest in more than 100 countries around the globe, I'm trained to handle prosecution in multiple jurisdictions such as Europe, US, China, India, Japan etc.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

Since my start in patenting, we have started using more sophisticated software tools and databases for conducting prior art searches. Before it was done by visiting libraries, referring to books, magazines, and technical journals. But now all searches are conducted online. And more recently, AI (Artificial Intelligence) is used for searching prior art material from various resources and databases.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

My job is to create and protect technology. With technological advancements we are now being able to collaborate with researchers/scientists from all around the globe without physically travelling to their locations.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

We need to constantly keep ourselves updated with the advancements in science and technology.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

There will be more use of AI (Artificial Intelligence) in my profession.

HOW COULD YOUR JOB GROW TO BE GREENER?

My profession involves creating and protecting ideas/ inventions, so we are green technology anyway. Everything is done electronically. With the global pandemic and everything gone online, our travel to meet researchers and customer locations has drastically reduced.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Creating patents from inventions is very exciting and is a very specialist profession requiring a combination of technical, legal, and business skills. With the rapidly progressing science & technology we need more patent professionals, and I encourage any student interested in science to consider this profession.

Chelsea

DESCRIBE YOUR JOB IN THE PRESENT

A big part of my job right now is to help plan and attend careers events to promote working for the NHS and care sector. This ranges from adding the event to a planner to send to other staff, to ordering equipment needed for the event. Another part of my job is to support young people coming in on a six-month placement from the pre-recruitment stage all the way up until they finish their placement.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

Since I started, my job hasn't changed a huge amount in terms of large changes. However, smaller changes that have made my job easier and more efficient have occurred. For example, a separate email account has been created for career specific enquiries that myself and my colleagues can all view and respond to accordingly.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Technology is extremely important for my role as I often need to contact people using email or via phone as this is the quickest way to communicate. I also need to access lots of platforms such as Word, PowerPoint, and Excel to complete parts of my job.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

New skills that I think would be helpful as we move into the future, are digital literacy and project management skills.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

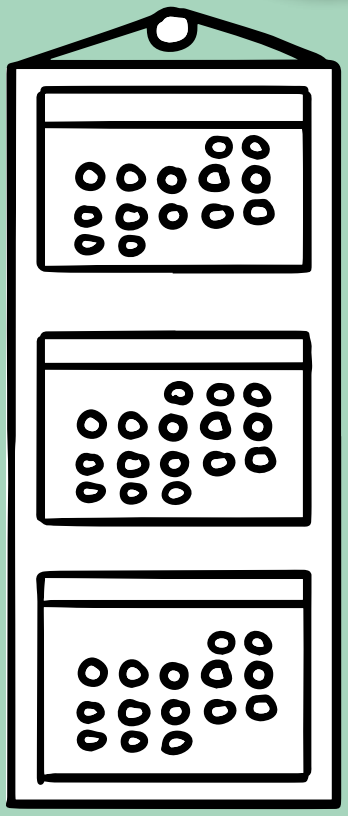
I imagine my job would be more technology based as new platforms and AI technologies are produced and delivered. This could be having a robot assistant to sort files and emails out for example.

HOW COULD YOUR JOB GROW TO BE GREENER?

To embrace renewable energy, to go 100% paperless, and to use the most efficient office products and technology to avoid waste.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Advice I would give would be to ensure that you are computer literate and willing to learn new systems and platforms with ease as new products and services are being introduced.



Elaine

DESCRIBE YOUR JOB IN THE PRESENT

I am responsible for ensuring that our worksites and the work being carried are safe for the people working on them and any other person in the vicinity ie. members of the public. To do this I carry out audits and inspections making sure that all the risks on site have been highlighted and managed. I also check that the sites have been planned and set up making sure those risks are considered.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

My job has changed so much since I started, my confidence has grown in my role. I'm able to work and complete tasks on my own, things like setting up a total station for setting out and surveying. Also concrete cubes, slump test and site Quality Assurance paperwork.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

The introduction of technology within my job has meant that we can carry out inspections, store documents and critical documentation digitally meaning that they do not get lost and access to them is instant.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

As technology is further introduced to my job the option to learn how to develop customised reporting programmes would mean we can adapt quickly.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

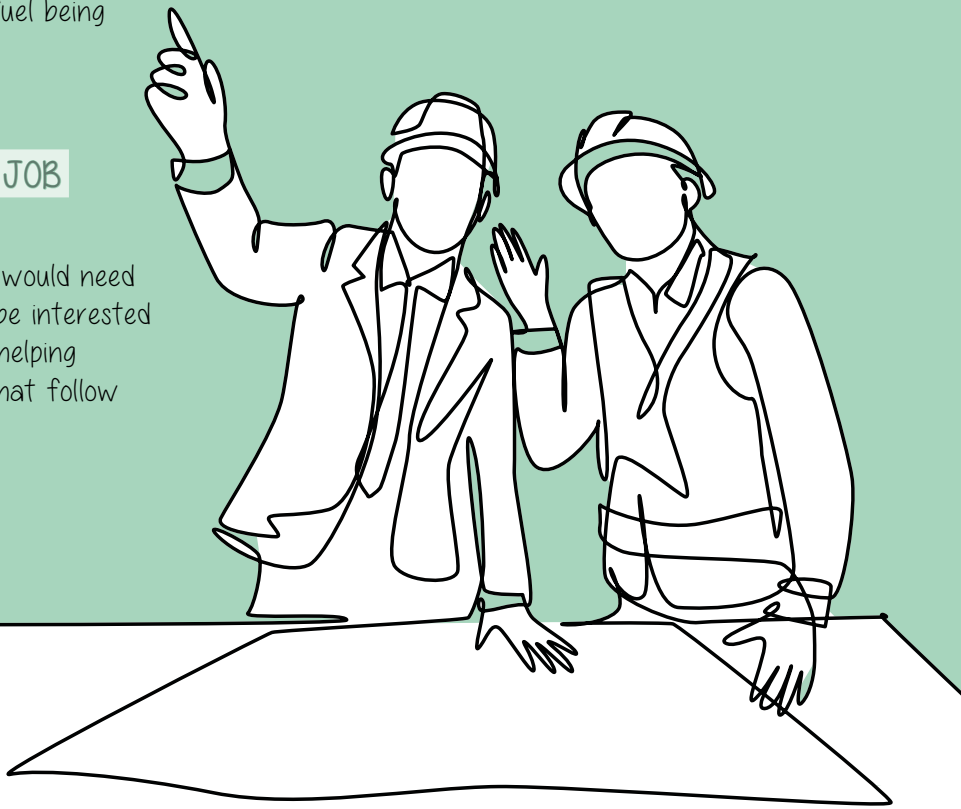
I think that my job will become more technology based with the ability to monitor data and resolve any issues quickly. The amount of paper based activities will be further reduced by digital options.

HOW COULD YOUR JOB GROW TO BE GREENER?

I think that with the introduction of further technology into our business it will allow for more work being carried out remotely and less fuel being used.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Anybody considering this job in the future would need to be focused on keeping people safe and be interested in following processes and procedures and helping others to find the best ways of working that follow those processes.



Geoff

DESCRIBE YOUR JOB IN THE PRESENT

Health Safety Quality Environment Manager (HSQE) for a civil engineering company working in the aviation sector. Currently responsible for all HSQE Duties, responsibilities within the division with 6 staff. My duties are varied ranging from looking after my team to ensuring legal and client procedure compliance, inspecting construction sites, researching new innovative solutions, report writing, incident investigations, review of safe systems of work and help, advice and support for all team members across the division including mental health.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

I started my career in Health and Safety 23 years ago and there have been many changes to my job role mainly around more efficient ways of undertaking tasks by utilising technology to protect workers health, safety and wellbeing and changing behaviours of the workforce.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Technology has played a huge part in change, mainly around systems, monitoring and assessments aimed at working smarter rather than harder!

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

Technological skills and ensuring that I keep up to date with new developments as they become available.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

Very different, I'm hoping I'll be retired! Seriously though, I envisage change in the way HSQE professionals engage people with mental health always in mind and ensuring there may be underlying issues as to why an individual is behaving in a certain way.

HOW COULD YOUR JOB GROW TO BE GREENER?

Two things, less paper and reduction in vehicle travel.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Always keep an open mind and be prepared to listen to people, what you may see as a minor issue could be huge to others, never be the expert and always take on board and actively use suggestions from others experience, learn every day!

Katherine

DESCRIBE YOUR JOB IN THE PRESENT

As a Principal Engineer working in the Technical Authority sector of Railway, I help to define the way future signalling technology will work in Great Britain and support its introduction into the railway.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

I started as a Senior Engineer where I worked on similar activities but spent more time producing engineering documents and taking on tasks. Now I try to lead the direction of my projects more.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

We are now using modelling software to help us see how new technology will change the way the railway works. This shows us what we need to prepare for, but also what improvements and benefits will come out of the new changes.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

I'd like to learn a lot more about modelling and software.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

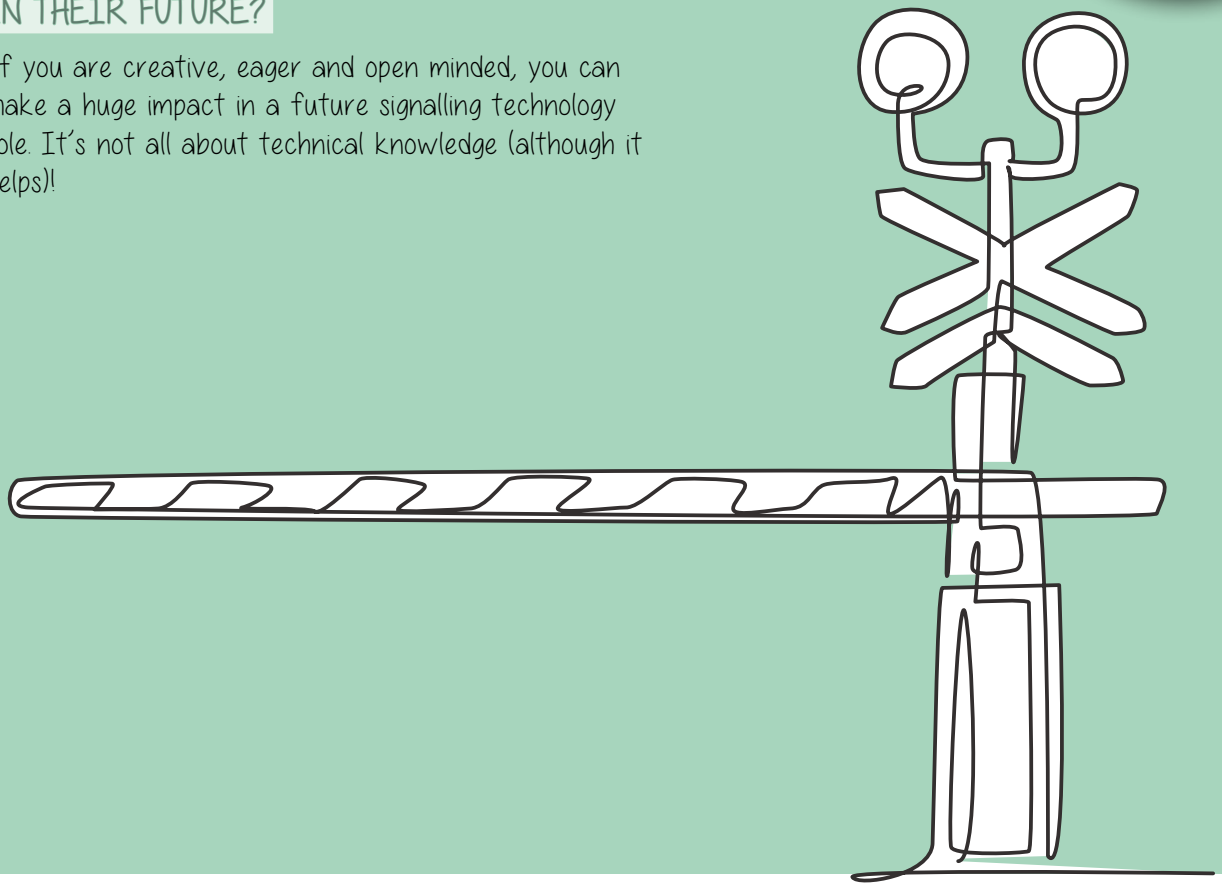
Most new technology will be very reliant on data including monitoring live activity on the railway and spotting trends, and we will perform a lot more modelling and simulation before we start to construct.

HOW COULD YOUR JOB GROW TO BE GREENER?

We can power the railway from green energy, and operate trains in a more efficient way.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

If you are creative, eager and open minded, you can make a huge impact in a future signalling technology role. It's not all about technical knowledge (although it helps)!



Sarah

DESCRIBE YOUR JOB IN THE PRESENT

I work in designing electronics for equipment used in aircraft - for both defence (e.g. RAF fighter jets) and commercial (e.g. the aeroplanes that might take you on holiday). I design circuit boards, I test those circuit boards to make sure they withstand all kinds of scenarios that they will experience in that aircraft (e.g. lightning tests), and I help to fix any failures that we experience during those tests.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

When I started work I was always in the office and working with a small team. Now I am able to work from home, or from different locations with a much larger team. I am more often working with teams based overseas.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

The computers that we use to design circuit boards, to perform our tests, or to run simulations are changing very rapidly so I have had to learn to use new tools and new, faster, equipment since I started.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

A willingness to learn to use new tools and techniques as they arrive. Being able to communicate in different ways with different teams is also essential.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

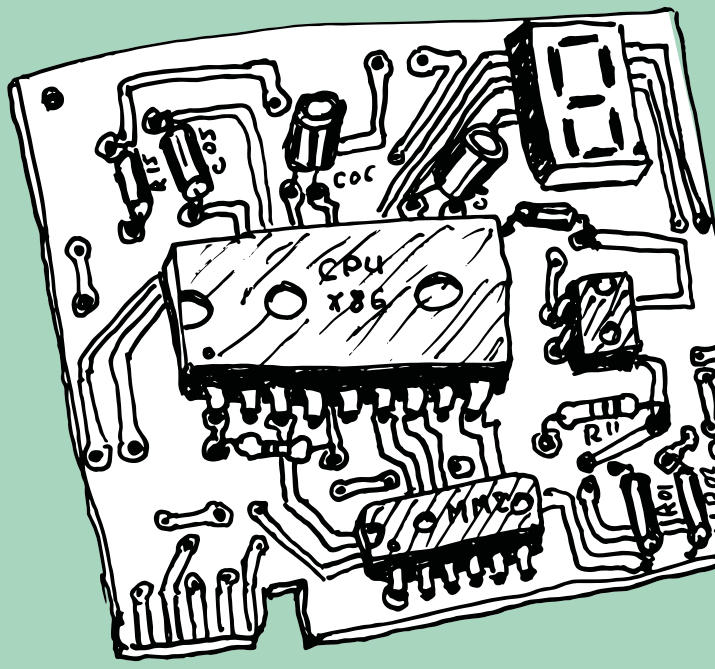
I imagine I will be able to work in even more locations with more computer-aided tools. And there will be more ways to communicate with my team who might be all working in different locations.

HOW COULD YOUR JOB GROW TO BE GREENER?

Travelling less, sourcing the energy that run our tools, our test equipment and our offices from renewable sources.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Keep up with how computers (and how we use them) are changing, how electronic component technologies are changing, and how we are all communicating with eachother across the world. If you can master those tools then the rest will follow.



Melissa

DESCRIBE YOUR JOB IN THE PRESENT

As the Compliance Co-ordinator and Environmental Lead I undertake inspections and audits on sites and within the business itself. I manage and record any non-conformances and ensure the company's policies and standards are adhered to. I maintain environmental legal and other registers on the database.

I look at how we can improve waste recycling and reducing the business impact on the environment generally. I deal with external auditors and provide information required by them. I draft environmental management plans for sites. It is a very varied role and I have a good balance of environmental and auditing responsibilities.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

I have been in my current role for two and a half years. It has evolved in that I now carry out the majority of the business's internal auditing, maintain all company registers: aspects/impacts, legal, risks & opportunities & objectives. I am more involved with creating company tool box talks, sustainability and carbon reduction issues.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

With the onset of Covid, as a company we started using the digital world for meetings and sharing information which has been very successful. I use digital forms for site inspections and audits.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

The 'environment' is a huge subject matter area and has many components to it. New skills further knowledge in sustainability & carbon reduction.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

This is a tricky one to answer! All jobs tend to evolve with business, technological and resource changes and advances.

HOW COULD YOUR JOB GROW TO BE GREENER?

Reducing the use of diesel/petrol vehicles to visit sites further hybrid/EV use and continued ability to work in a more flexible capacity where job roles allow.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Sustainability, carbon reduction, waste and renewable energies are growing areas. Worth joining a professional body to assist with personal development and receiving all the latest news within your chosen sector. Some ecology knowledge would be beneficial.

Josie

DESCRIBE YOUR JOB IN THE PRESENT

My job as a plasma physicist involves running physics simulations on supercomputers to design, analyse and model laser-driven physics experiments using high power laser facilities. These experiments aim to produce conditions like those within the sun on earth. Ultimately, the experiment results we get could help green energy production through nuclear fusion (the process which powers the sun).

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

The supercomputers I use have become more powerful and the codes have improved physics models in them, as well as being 3D, so can simulate more complex physics experiments. Also, the laser facilities themselves have become more advanced with the National Ignition Facility in USA, the world's most energetic laser, being used since 2010.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Improved diagnostics and equipment has enabled plasma physicists to be able to do sophisticated experiments to improve physics models within codes. This has led to improved experimental designs and enabled us to get closer to fusion on earth.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

Being able to use modern programming languages including Python and using Machine Learning to automate design and comparisons to data.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

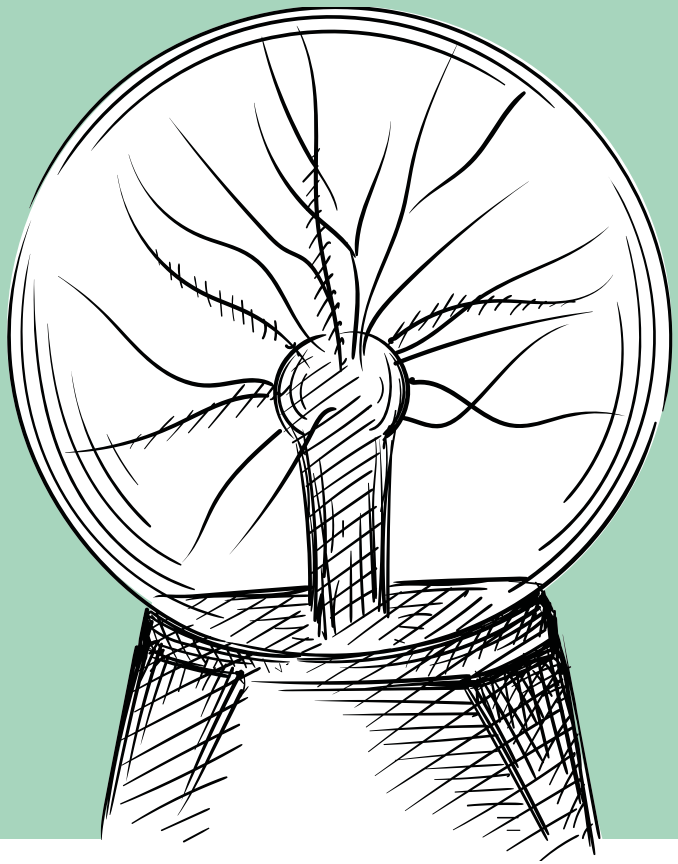
Simulations will be quicker to run and will be mostly in 3D. We will be using improved physics models in codes, which are currently too computationally expensive to include and we will also be using Machine Learning routinely.

HOW COULD YOUR JOB GROW TO BE GREENER?

By using more energy efficient computers, fuelled by eco electricity and cooled by recycled water.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Just go for it! It is never too late to move into STEM, as a lot of Universities even offer foundation years if you do not do physics/maths at A?level. Do not let others tell you whether or not you should do certain courses and apply for a certain job, as you should follow your dream. I did.



Liam

DESCRIBE YOUR JOB IN THE PRESENT

Engineering in aviation is exciting and always different. Pulling together projects and teams, problem solving, getting creative and being good at logistics are all part of my day job. I get to work outside most of the day, watching my projects progress and liaising with the clients to make sure it's all going to plan. As a graduate I got supported very well and I am constantly guided as I put my knowledge into practise

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

Now a Site Manager, my career has progressed, and my responsibilities are larger, with managing the field workers and planning more than I did before. During Covid-19 I got to experience the rail industry too where I learnt a lot and I can now merge all my skills and knowledge together.

HOW HAS ECHNOLOGY CHANGED YOUR JOB?

Very much! Things I used to have to write out or draft, I can now electronically complete, or use already created templates within my iPad, which I can upload straight into the Cloud.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

Technology in construction is always bringing in new software to make things easier, so I need to keep up to date!

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

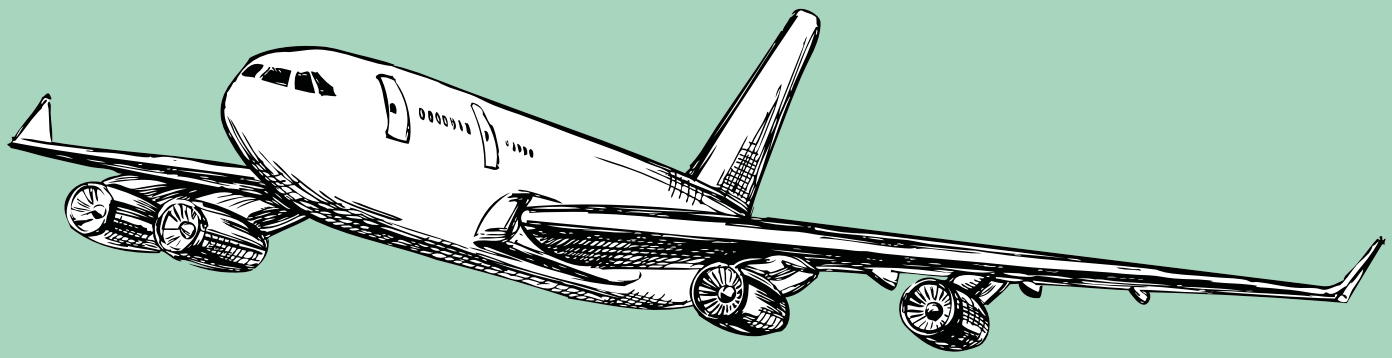
Quite different, I think technology will take over a lot of human elements. I'll have automation helping with day-to-day tasks, machinery may be self-driven, and paperwork may be abolished forever!

HOW COULD YOUR JOB GROW TO BE GREENER?

With technology going how it is, losing paper and more sustainably fuelled machinery (like cars) will be the answer.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

The hard work pays off. Joining Dyer & Butler was the best thing I ever did for my career, the opportunities and support you receive is great and my job has an awesome career path.



George

DESCRIBE YOUR JOB IN THE PRESENT

I upgrade features and systems for telecoms networks. Customers tell the company what they would like to be able to do and I work with the developers and designers to upgrade the equipment so it does what the customer wants.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

Originally my job involved mostly electro mechanical equipment, relays, switches etc. Nowadays it is entirely electronic equipment including fibre optics.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

The job is a lot less hands on and more computer and screen based.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

It will be essential to be able to use systems and understand the technology.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

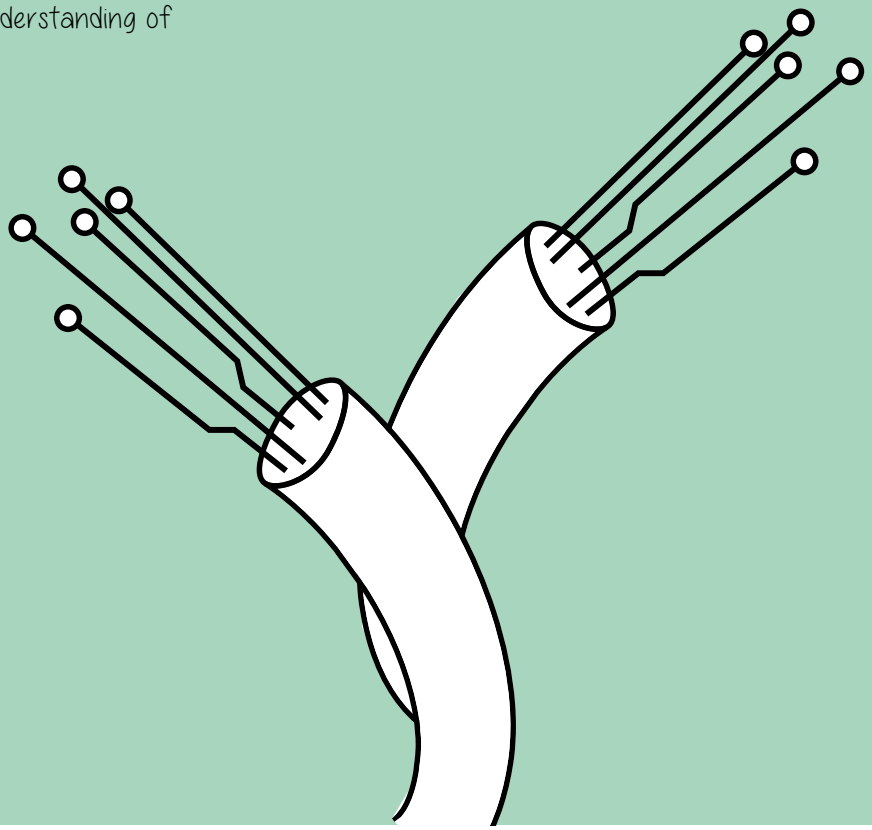
Many of the tasks will become automated, understanding and being able to develop and work on the automation will be key.

HOW COULD YOUR JOB GROW TO BE GREENER?

People can work remotely, saving travel and equipment that could use less power.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Make sure you try and get a basic understanding of electronics and engineering.



Tom

DESCRIBE YOUR JOB IN THE PRESENT

I am a Multi Engine Advanced Instructor. I currently teach full time and part time courses at FTA. I train students towards their Private Pilot's License (leisure flying), their Commercial Pilot's License (after which you can earn money from flying) and Instrument Flying (flying purely with reference to aircraft instruments no looking out the window!) I am based at Shoreham Airport and instruct on three different types of aircraft as well as ground based simulators.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

Over my career as a Flight Instructor, I have progressed to teach more advanced flying. The biggest change for me was instructing on a twin engine aircraft which is faster and more complex. FTA has grown in size and therefore, I am teaching more people from a wide variety of backgrounds.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

I now train students using digital flight instruments, similar to those fitted on an airliner as opposed to older analogue systems. Airports and aircraft have become more reliant on GPS navigation for accuracy, efficiency and safety.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

One example is, as old navigation systems are replaced, a thorough understanding of limitations and procedures relating to the more complex navigation systems is important.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

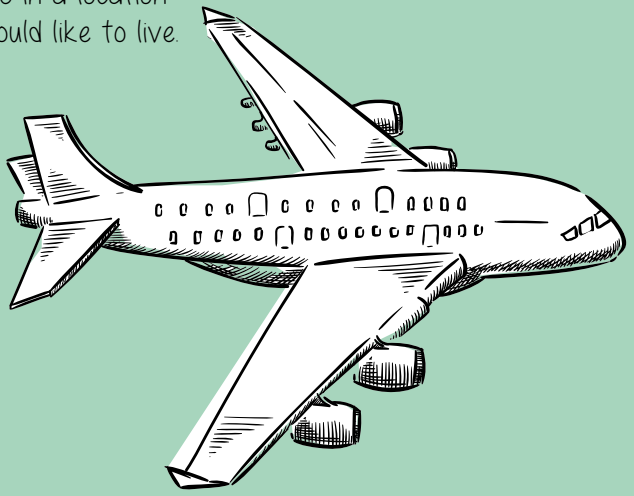
There will always be a need for flight training. As technology expands, I am sure students will utilise simulators with Virtual Reality to augment their training more than they currently do. This will also save on the cost!

HOW COULD YOUR JOB GROW TO BE GREENER?

In the future, we will see electric propulsion aircraft which would be ideally suited to flight training, reducing emissions and costs.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Apply to a company where there is potential for career progression and who look after their employees. It is important to have a good work and social life balance in a location you would like to live.



Conor

DESCRIBE YOUR JOB IN THE PRESENT

My Job is to carry out the construction aspect of our projects working to the drawings provided by our engineers. My role is specifically labour intensive and physically demanding. The work I do is very diverse and changes from day to day and from project to project. I may be driving a roller or dumper, locating existing services before an excavation, assisting with lifting operations or concrete pours.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

I haven't been in the industry for very long, so my role has not changed a huge amount. The pandemic has caused some changes with living on site, and working practices.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Using instruments like total stations and lasers to set out our work has made the job much more efficient and accurate. Looking forward, paperwork is being migrated to apps on phones or tablets.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

As the technology develops so must the brain that uses them, I believe up to date training in our equipment is the most important.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

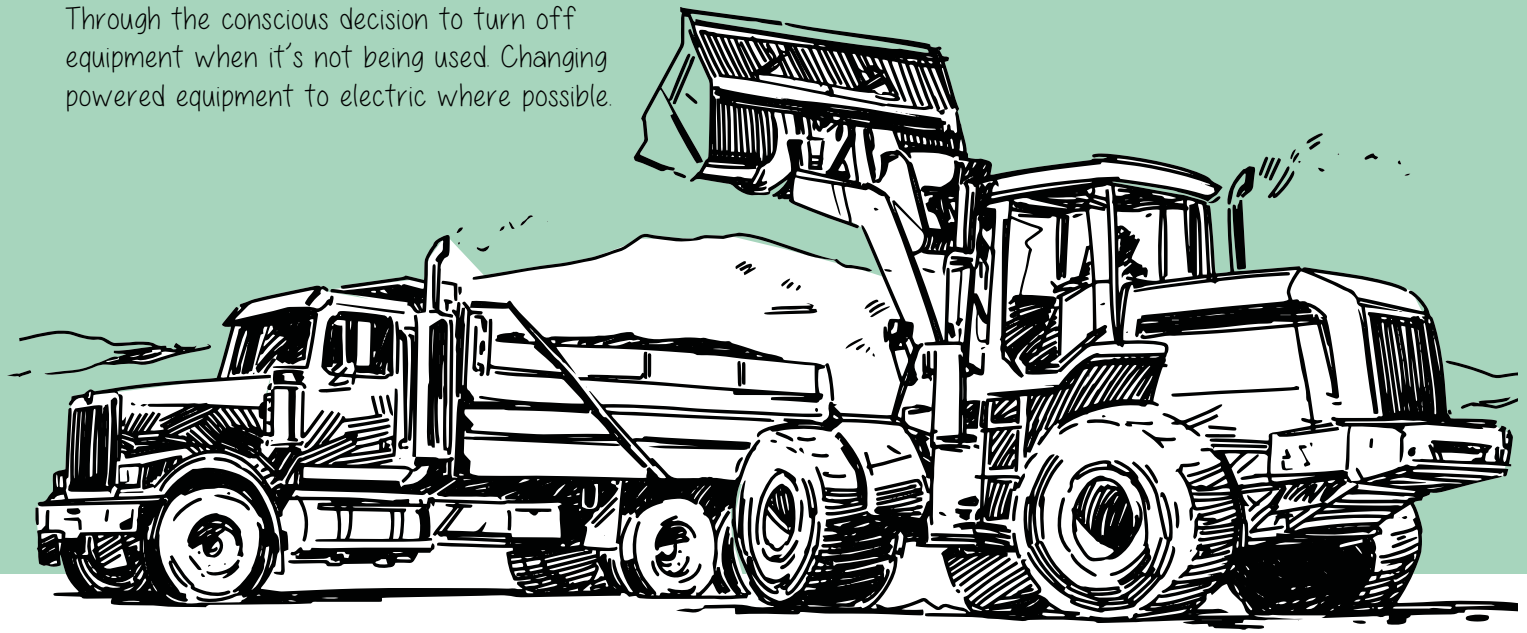
I would imagine it would be very similar, however there maybe some upgrades to quality of life equipment. Machines may be electric rather than diesel powered

HOW COULD YOUR JOB GROW TO BE GREENER?

Through the conscious decision to turn off equipment when it's not being used. Changing powered equipment to electric where possible.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Be ready for a labour intensive, but very rewarding career. There are endless opportunities and you can take it any direction you like, specialising or going into management.



William

DESCRIBE YOUR JOB IN THE PRESENT

As a Computer Aided Design (CAD) Technician, I work in a great team, who have two main purposes. #1 We turn the project teams building ideas and drawings into 3D models using AutoCAD software; #2 we take surveys of existing structures and underground services and turn them into 3D images for the project teams, so they can virtually see the current state of potential project areas before they start digging or building creating a safer work area.

HOW HAS YOUR JOB CHANGED SINCE YOU STARTED?

After leaving university as an engineer. This has quickly evolved over time mainly around industry demand and taking on new clients, Covid-19, software efficiency and company growth. We have expanded largely and my role has since been merged into aviation, rail and highways.

HOW HAS TECHNOLOGY CHANGED YOUR JOB?

Technology has progressed so much, with AutoCAD adding many more functions to their software capabilities and the company progressing Building Information Modelling (BIM) within our work, creating a higher demand for more lifelike 4D modelling.

WHAT NEW SKILLS DO YOU THINK WOULD HELP AS YOUR JOB CHANGES?

Continuous AutoCAD training is something I regularly attend to keep me up to date with the software upgrades.

HOW DO YOU IMAGINE YOUR JOB WILL LOOK IN TWENTY YEARS?

It will be so different. My job may overtake any paperwork currently needed for projects, turning 100% virtual, with us possibly being able to build anything from computer generated plans and automated/ voice-controlled design.

HOW COULD YOUR JOB GROW TO BE GREENER?

Computers become non-electrical run, with working from home, when possible, to reduce travel and our survey kit being solar powered.

WHAT ADVICE WOULD YOU GIVE TO SOMEONE APPLYING FOR THIS JOB IN THEIR FUTURE?

Be prepared to learn everyday and grow. This job is fast paced, everchanging and no day is the same. And remember to smile as you go, it's meant to be fun too!

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