

digitalchoices

What is the digital industry?

The digital industry is a new term to describe the wide range of work in Information & Communications Technology (ICT), computer programming, software engineering and development, high-tech computer systems and electronics, information systems and web, games and multimedia development.

People with these kinds of skills are also in demand outside the digital industry – most businesses and organisations employ people to provide ICT support and manage computer systems and networks. And because digital devices are now such a vital part of our lives at work and at home, almost everybody needs to have some computer skills.

Why work in a digital role?

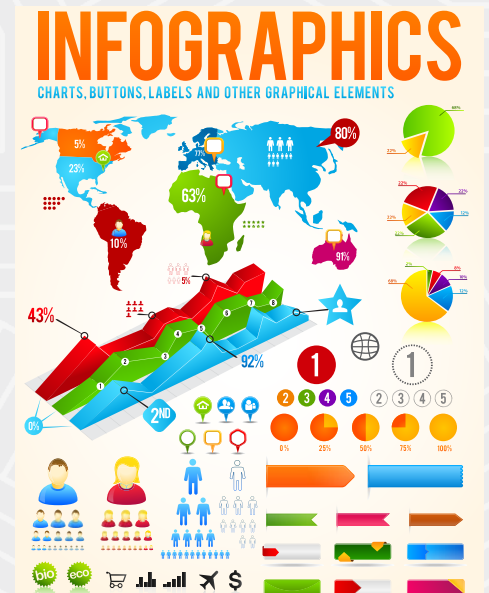
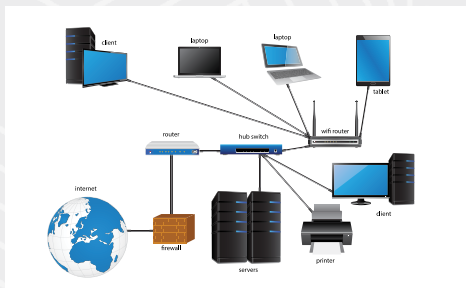
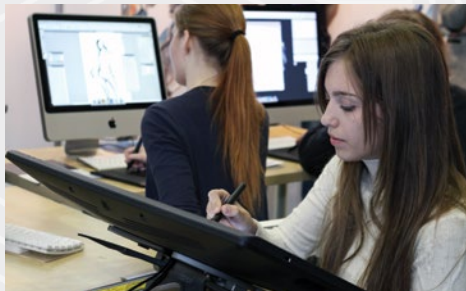
It's been estimated that the number of ICT jobs are expected to grow between 23-53% over the next decade. Many companies are crying out for staff and have to recruit overseas because there aren't enough suitably-qualified people in New Zealand. High demand, great pay and creative opportunities mean that now is a good time to consider a job in the digital industry.

What sorts of roles are there?

There are lots of different roles in the digital industry. We've divided them into six main areas or disciplines: Computer Engineering, Computer Science, Information Systems, Information Technology, Media Design and Software Engineering – all of which are described in this brochure. You'll find that some of the disciplines and specialisations mentioned in this brochure have different names in other publications. And things evolve so quickly in this field that there could well be new areas of expertise opening up by the time you read this.

Many people work across two different disciplines and some roles involve other fields such as business studies or electronics. Teams in the digital industry often involve people from a number of different backgrounds.

It can seem confusing when people with different qualifications have the same job title, but this shows that there are lots of options for getting into this industry. There's also a certain amount of flexibility in what sort of role you choose once you've completed your qualification.



Some specialist areas in Digital Technology

Computer Engineering

Computer Engineering (sometimes called Computer Systems Engineering) combines aspects of computer science and electrical engineering. Computer engineers focus on designing, developing and operating computer systems, and may specialise in computer hardware or software. They may work on the embedded computer systems used in cars and mobile phones.

Key qualifications: *Bachelor of Engineering or Engineering Technology, specialising in Computer, Electronics, Mobile Systems or Network & Communications Engineering*

Computer Science

Computer Science involves computing theory as well as practice. Computer scientists might be involved in designing and developing computer systems, programming, or finding solutions to computing problems. They work in areas such as algorithms, interface design, intelligent systems or computer graphics, and in jobs that include: software analyst/developer, games developer, network security, web application developer, infrastructure manager, business analyst and database developer.

Key qualifications: *Bachelor of Science in Computer Science or Bachelor of Computing and Mathematical Sciences*

Information Systems

Information Systems is concerned with the information that computer systems provide to help an organisation. It has a business focus on creating, modifying, storing and distributing information, such as a company's financial accounts. There are many jobs within this discipline, including: database administrator, technical writer, system analyst, technical support officer and systems developer.

Introducing people who work in the digital industry



Software Developer Amy Palamountain (GitHub) creates mobile apps and websites.

Pathway: Palmerston North Girls' High School, Year 12: Biology, Calculus, Chemistry, Drama, Physics, Statistics; Massey University: Bachelor of Science in Genetics and Computer Science



Product Development Engineer Alicia Evans (Fisher & Paykel Healthcare) develops devices that deliver moist air for children with breathing difficulties.

Pathway: Avonside Girls' High School, Year 13: Biology, Calculus, Chemistry, Physics, Statistics; University of Canterbury: Bachelor of Engineering (Honours) in Mechatronics



Conception Team Leader Lingzi Xue (Aviarc) leads a development team which creates software applications.

Pathway: Hutt Valley High School, Year 12: Calculus, Chemistry, Digital Technologies, English, Physics, Statistics; Victoria University of Wellington: Bachelor of Science in Computer Science, Electronics and Computer Systems; Bachelor of Commerce and Administration in Money and Finance



Design Engineer Daniel Bentall (Invert Robotics) works on the electronics and software that control wall-climbing inspection robots.

Pathway: Lindisfarne College, Year 13: Biology, Calculus, Chemistry, Media Studies, Physics, Statistics; University of Canterbury: Bachelor of Engineering (Honours) in Mechatronics



Software Developer/Engineer Cody Bunea (Carnival Labs) creates mobile applications and technologies for US companies such as Dreamworks Animation and Oreo cookies.

Pathway: St Andrew's College, Year 13: Design Technologies (Graphics), Chemistry, English, Maths, Physics; Canterbury University: Bachelor of Engineering (Honours) in Software Engineering



Mathematical Modeller Fiona Hely (AbacusBio) designs computer simulations for solving problems in the livestock industry.

Pathway: Kaikorai Valley College, Year 13: Art, Calculus, Japanese, PE, Statistics; University of Otago: Bachelor of Applied Science in Computer Modelling



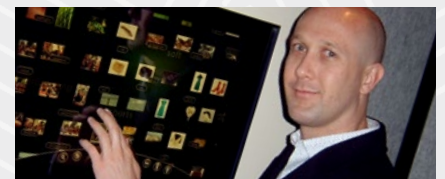
Hemi Bennett (AfterDark Design Media) runs his own company that provides IT hardware and software services, graphics and 2D and 3D animation.

Pathway: Mana College, Year 13: Digital Technologies, English, Maths, Science; Victoria University of Wellington: Bachelor of Science in Computer Science; WelTec: Diploma in Computer Studies and Management; Media Design School: Diploma in 3D Computer Design



Website Developer Celia Black (Interger) builds and maintains websites and applications.

Pathway: Te Aroha College, Year 13: Calculus, Chemistry, English, Physics, Statistics; University of Waikato: Bachelor of Computing and Mathematical Sciences (Honours)



Systems Developer Leighton Duke (NZ Defence Force) is responsible for the IT systems used to process electronic warfare information.

Pathway: St Peter's College, Auckland, Year 13: Accounting, Calculus, Chemistry, Physics, Statistics; University of Auckland: Bachelor of Engineering in Engineering Science

Key qualifications: *Diplomas and degrees in Information Systems, Information Technology or Computing Systems*

Information Technology

Information Technology focuses on the technology involved in Information Systems, such as hardware, networking, servers, operating systems and software. IT specialists work with their organisation's computer infrastructure, deciding on the hardware and software best suited for their systems then installing and managing it.

Key qualifications: *Diplomas and degrees*

in Information and Communication Technology, Networking and Security or Telecommunications

Media Design

If you're interested in both digital technologies and design, you might enjoy working in areas such as: computer game programming and design, website and app design and development, computer-generated imagery (CGI) for films, TV and games, and audio/visual communication.

Key qualifications: *Diplomas and degrees in Multimedia Design, Web Development*

and Design, Game Programming, Computer Graphic Design, Creative Technologies and Design Innovation

Software Engineering

Software engineering is about the development and maintenance of software systems. A software engineer might design, write and test computer programs, and often is involved in a project from original idea to final product.

Key qualifications: *Bachelor of Engineering in Software Engineering, degrees in Computer Science and Software Development*



Managing Director Ian Simpson (The Logic Studio) develops web-based software solutions for businesses and other organisations.

Pathway: South Otago High School, Year 12/13: Accounting, Biology, Economics, Maths, Physics; Otago Polytechnic: Bachelor of Information Technology



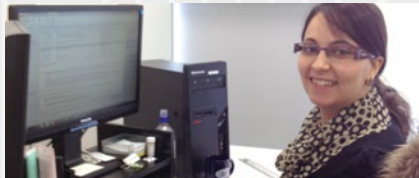
Software Engineer Lisa Wong (Crown Equipment) develops software for materials-handling equipment.

Pathway: Baradene College, Year 13: Calculus, Chemistry, Japanese, Physics, Statistics; University of Auckland: Bachelor of Engineering (Honours) in Computer Systems Engineering; Master of Engineering in Computer Systems Engineering; PhD in Electrical and Electronics Engineering



Technical Product Specialist Paul Webby (Fronde) supports the development and use of new software products, for example, social media applications for smart phones.

Pathway: St Patrick's College, Silverstream, Year 13: Art, Digital Technologies, General Science, Design Technologies (Graphics), Maths; WeTec: Bachelor of Information Technology



Software Support Engineer Lidia Aiad (Jade) works with developers on innovative software products for industries such as finance, telecommunications and law enforcement.

Pathway: Riccarton High School, Year 13: Biology, Calculus, Chemistry, Statistics, Physics; University of Canterbury: Bachelor of Commerce in Information Technology; Bachelor of Science in Computer Science



Systems Engineer Antony Steiner (Dynamic Controls) manages the design and development of wheelchair controllers that help disabled people.

Pathway: Wellington College, Year 13: Calculus, Biology, Chemistry, English, Physics; Victoria University of Wellington: Bachelor of Science (Honours) in Chemistry; University of Auckland: Bachelor of Engineering in Computer Systems Engineering



Software Developer James Currie (Digital Fusion) designs and builds custom software, and built the results page for the Canterbury Track Cycling website.

Pathway: Kaiapoi High School, Year 13: Calculus, Chemistry, Digital Technologies, Design Technologies (Graphics), English, Physics; University of Canterbury: Bachelor of Science in Computer Science



Software Developer Hiren Patel (Jade) develops investigation management software that is used by law enforcement agencies around the world.

Pathway: Aranui High School, Year 13: Calculus, Chemistry, Digital Technologies, Physics; CPIT: Bachelor of Information & Communication Technologies



IT Team Manager Jessica Gough (Telogis) coordinates the release of software products which, for example, give 'real time' information on vehicle movements.

Pathway: Middleton Grange School, Year 13: Calculus, Digital Technologies, Economics; CPIT: Bachelor of Information & Communication Technology in e-Commerce



Systems Engineer Vathnack Am (Beca) tests and modifies electronic systems to find faults and checks that the systems function as intended.

Pathway: Manurewa High School, Year 13: Calculus, Physics, Science, Statistics; Auckland University of Technology: Bachelor of Engineering (Honours) in Electrical and Electronic Engineering

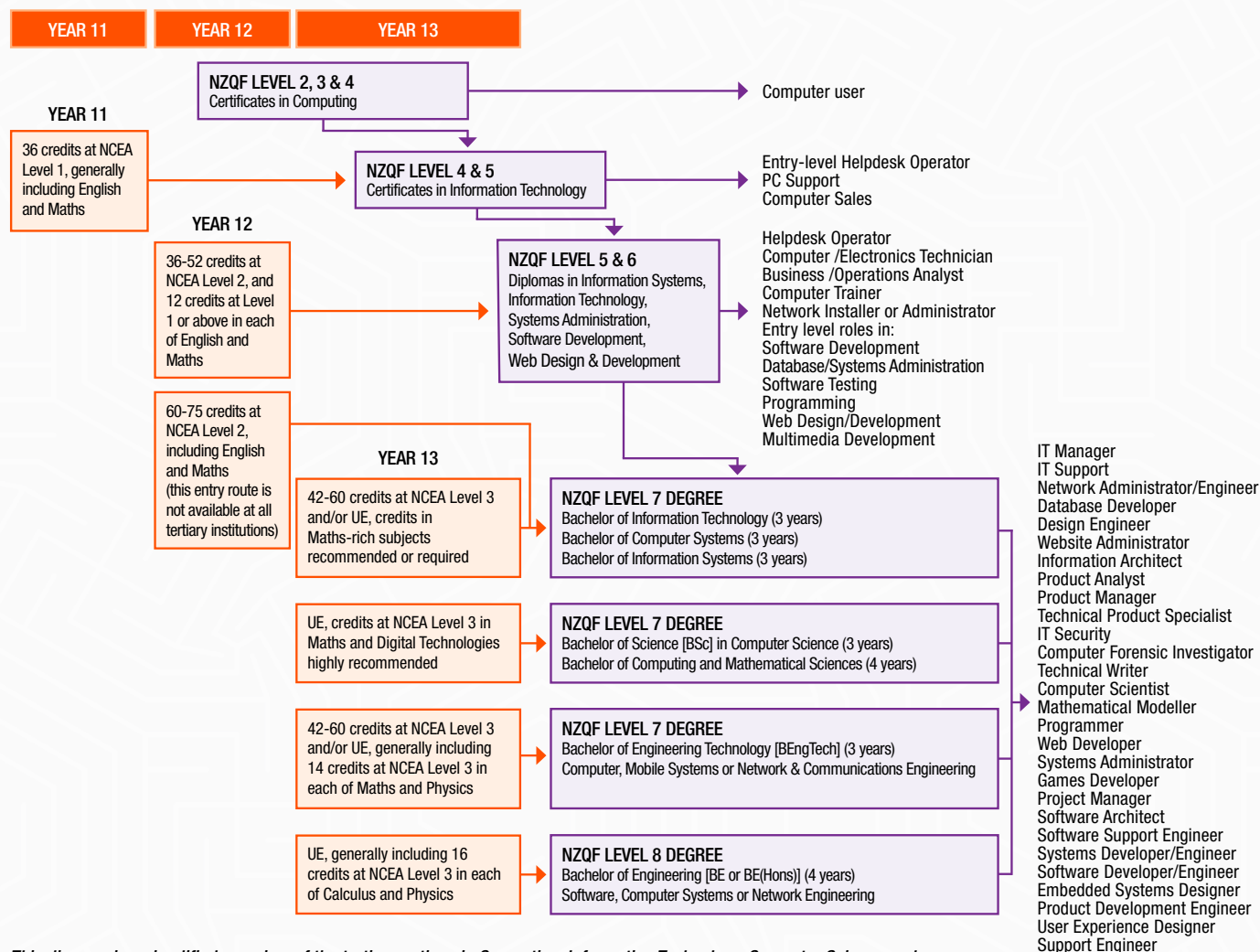
How do I get into the digital industry?

Your pathway into the digital industry starts at secondary school with a good background in Digital Technologies, Mathematics and Science subjects. But there's no need to worry if you don't have the required school achievements – many polytechnics, institutes of technology and universities offer bridging courses in

maths and science subjects. Alternatively, you could start with a certificate in Computing or Information Technology before tackling a diploma or degree. Specialist skills are often learnt on the job or by completing an advanced level or graduate diploma.

Qualification pathways into digital industries

Recommended Year 12-13 subjects: Maths, English and Digital Technologies
(Physics and Calculus are required for entry into engineering degrees)



This diagram is a simplified overview of the tertiary options in Computing, Information Technology, Computer Science and Computer/Software Engineering. A more complete listing of individual courses is available on the Futureintech website. The qualifications offered and their entry requirements are subject to change, so please check with the polytechnic, institute of technology or university where you intend to study.

Find out more

Visit the Futureintech website for:

- Stories about people who work in the digital industries
- Information on what subjects to take at school and where you can do bridging courses
- Our Course Finder, which lists digital technologies qualifications at polytechnics, institutes of technology and universities all around New Zealand
- Ask Someone – an online Q&A page where you can ask people working in the digital industries about what they do in their job and get advice about what to study.



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