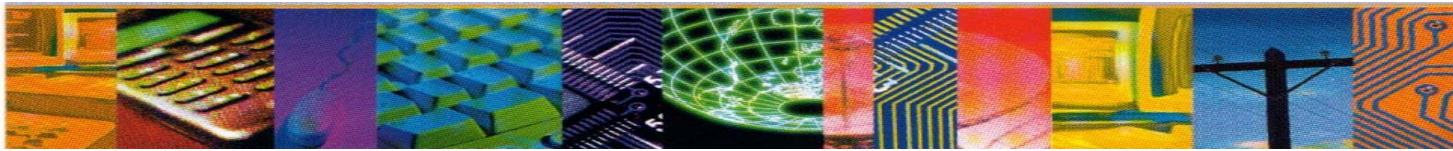# Telecommunications Industry Overview of Workforce needs for the Digital & Broadband Rollout - 2010

Communications and Information Technology Training Ltd (CITT)

- Established in 1995 and is a "not-for-profit" Company
- A national company assisting the Information Technology & Telecommunications (ICT) industry in implementing National Training Package, Industry Training Standards and advising on Employment Programs
- The Board of Directors includes IT & T industry representatives supporting training in the VET Sector
- Manages TITAB – the ACMA approved Cabler Registrar managing the Cabling Provider Rules (CPR)
- Assist Industry and RTO's in implementing Accredited Training from Certificate 2 to Advanced Diploma in areas of IT, Telco, Management and Leadership
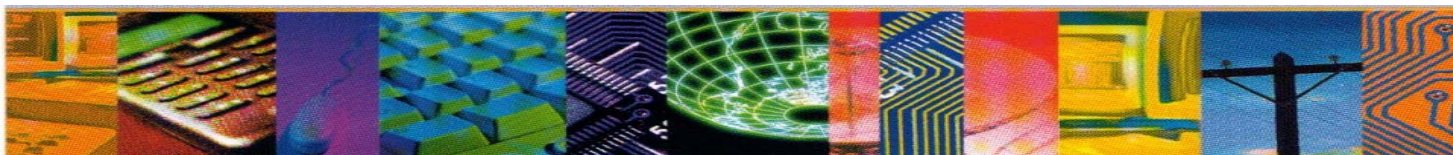
Impact of the Digital and Broadband Rollout for the Digital Economy


The Digital and Broadband Rollout will provide a bridge for industry sectors and the community to take advantage of the benefits of the Digital Economy
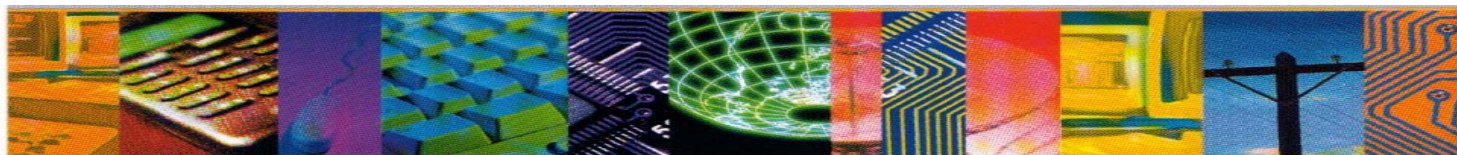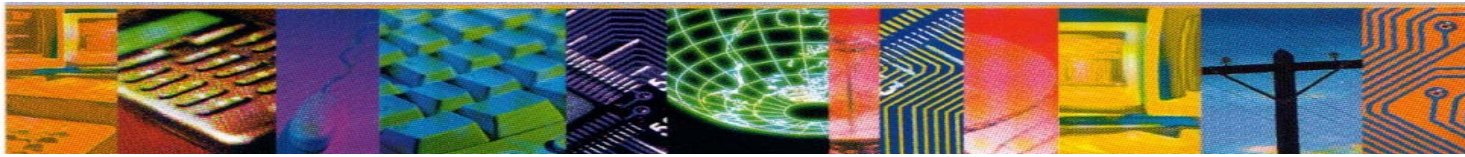
Workforce and Training - The Current Telecommunications Workforce

- Traditionally Australia's telecommunication industry was dominated by Government Departments and then Telecom as the national carrier/monopoly with its workforce trained through the enterprise's internal training programs

- In the early 1990's deregulation occurred in Australia and other licensed carriers entered with over 200 Licensed Carriers incl. Telstra and Optus in the industry

- Today the Telecommunication infrastructure comprises, in the main, copper, HFC, Wireless, Satellite and Fibre and the workforce supporting the industry exceeding 100,000. The median age for telecommunications technical specialists is 47 years (ref: IBSA Skills Council – ICT E-Scan)

- This workforce currently consists of over 63,000 ACMA registered Cablers/DataComms, lifts and security personnel (ref: ACMA), a possibility of an additional 10,000 not registered and over 30,000 technical and support staff working with Telecommunications carriers and contracted enterprises

- With the introduction of contracting out maintenance and services to external enterprises, the main workforce intake and training has been based on contracting cycles and specific products and services needs.

- There has been limited forward planning or development of a long term strategy to address the future supply of workers and the required skills/qualifications

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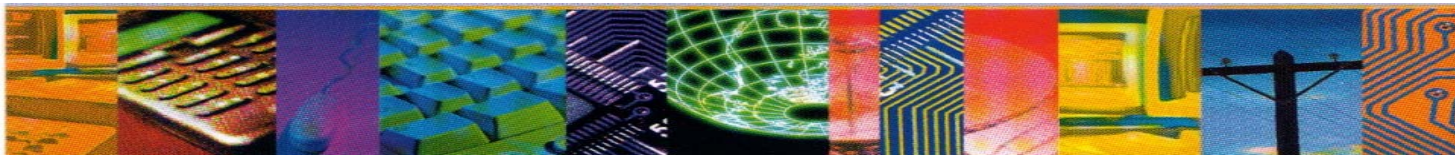
Workforce and Training - The Current Telecommunications Workforce

- The relevant Telecommunications Union, CEPU, does not regard it as an exaggeration to say that for the last decade the industry has been living largely off the fat of Telstra's historic training investment. As the Telstra-trained workforce ages and retires, labour and skill shortages will arise

- It is estimated that a large proportion of million spent by the telecommunications industry on education and training is on non-accredited short courses, in-house or compliance based training that may not be recognised by the National System.

- Employers and industry commentators believe that the number of ICT workers being trained is currently too low to meet the future skills needs of the industry. IBSA's E-scan survey revealed that 60% of ICT industry respondents had difficulty finding applicants with the right mix and levels of skills

- There are claims that the number of workers entering the ICT industry through the 457 visa scheme is masking skill shortages. Telecommunications visa applicants, in particular, are often categorised as construction or mining so the extent to which the ICT industry is relying on imported labour is not evident.

5

Workforce and Training - The Current Digital Reception Workforce

- The industry workforce currently consists of contractors, sub contractors and permanent employees who are transient between contracts, subcontract arrangements and variable employment arrangements.

- Some enterprises prefer staff to be multi-functional and on the payroll while others only use sub-contractors. There is a trend, in this sector and within the telecommunications industry generally to out-source much of the on-site work.

- A very large portion of this out-sourced work is given to labour hire companies who in turn, pass it on to self employed trades' people and technicians. Recruitment from the existing pool of partly skilled staff is limited and is now widely recognised as shrinking.

- Training is not often taken into account with the changing nature of employment. With widespread contracting in place, there is a pool of approximately 7,000 technical staff that "move" between the carriers, customer premises equipment and cabling providers, cable and satellite TV providers, data, alarm and other Information and Communications Technology (ICT) services.

- The Digital Rollout requires an additional 6,000 multi-skilled installers preferably with Certificate 3 in Digital Reception Technology
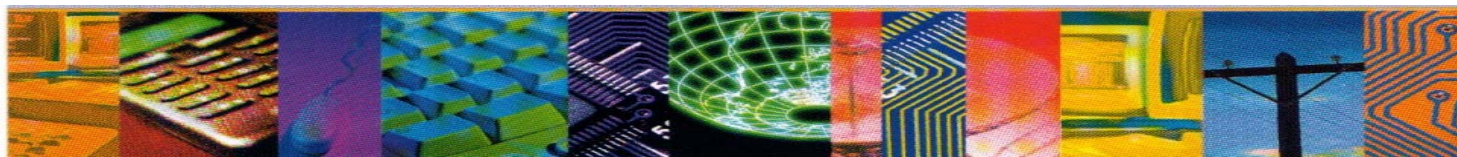
Issues Impacting the Workforce and Training

- The retirement of significant numbers of the ageing telecommunications workforce has potential to create difficulties in the near future, particularly as the ICT industry has to compete for young recruits against industries that are perceived as interesting and/or financially rewarding such as media & finance

- The ongoing mining boom will continue to both compete with the ICT industry for workers and use ICT skills in specialist roles. Western Australia and Queensland in particular will feel the effects of this labour market competition. Industry insiders claim that 10% of the ICT workforce in WA was lost to the mining industry as labourers

Over the next few years, challenges for the ICT industry include:

- Environmental sustainability

- Emergence of the digital economy

- National Broadband Network rollout and Digital switchover and the major implications for skills demand in the telecommunications industry

- Government and enterprises review of ICT use

- Other industry projects impacting on skill shortages – such as smart metering, resources and gas and other exports

- VET sector funding

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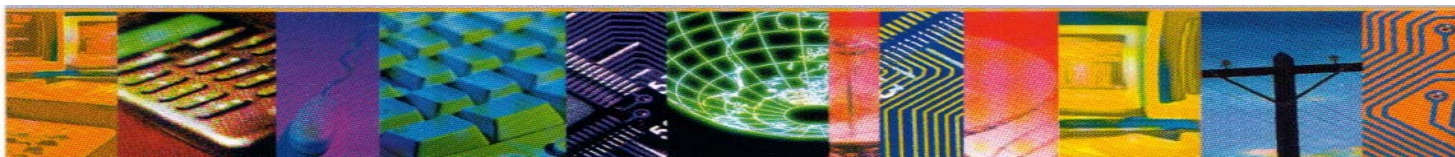
Training Field workforce for the NBN and Digital rollout

- The NBNCo. estimates that about 4,000 points of connections will be required to be activated per day (to meet the total of 10 million connections within 8 years), and this includes laying, testing and commissioning. Thus it is believed that an additional 30,000 people will be required for the Broadband rollout with varying skills and levels of expertise

- Workers on the construction of the NBN must achieve a national standard of competence; especially telecommunications employees working on consumer-side connections, no matter the type of dwelling, where they work or who they work for. The standard of their work will go beyond determining the Quality of Supply (QoS) a consumer will experience

- This means Government/NBNCo should standardise how the work done on the next generation connections integrate (e.g. FTTH, satellite, Wireless, etc.) and work together with older technologies (e.g. join fibre to 'in building' existing electronic networks, or copper and other connections)

- Given the size of the upskilling task, some industry commentators have predicted if action is not undertaken then the NBN initiative will suffer through the lack of available skills, potentially increasing the cost of the project and impeding timely completion, or worse significant infrastructure quality and functionality difficulties

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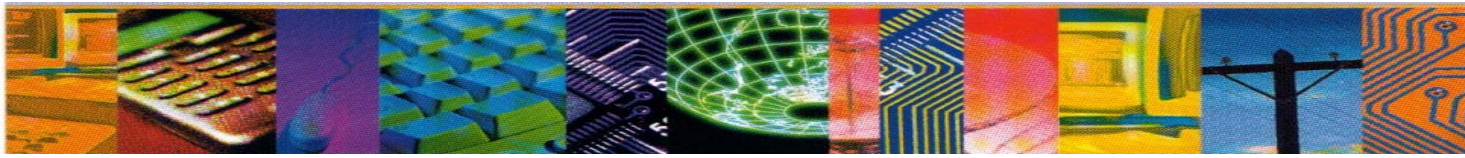
Training Field workforce for the NBN and Digital rollout

- Industry insiders believing there is a danger that short-term skills development will be provided to get the job done urgently rather than knowledge and skills building that will future-proof the workforce - the success of the NBN will be dependent on addressing the expected shortfall in the supply of skills in critical telecommunications occupations.

- At minimum there will be a requirement to up-skill many of the existing registered cablers with expectations around skills and licensing/registration requirements for cablers.

- The current VET and TAFE system has the potential but does not have the resources, facilities or staff to train the required national workforce within the next 2-3 years to get them up to speed across Australia. This requires considerable stakeholder support and industry championing.

- This may be partly addressed by work being undertaken in updating the National Training Packages but further support is required for the VET system including a national co-ordinated approach to identifying solutions

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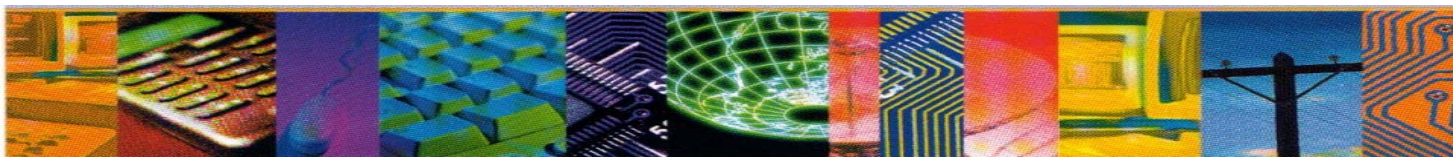
Key Recommendations:

- The Telecommunications workforce will require up-skilling and this includes the 63,000 ACMA CPR registered cablers and potentially another 30,000 in the associated technical activities.

- A National Digital Economy Co-Ordination Centre should be established to undertake a more collegiate approach to supporting converging technologies and skills in meeting the broadband and the digital economy needs by using industry benchmarks and the co-regulation quality model adopted by ADTIA.

- It should be allocated a facilitation role to work with industry stakeholders and Government assisting with workforce development and forward planning using existing competencies and benchmarks working towards national consistency within the existing VET system.

- A national audit should be undertaken to identify current vocational training facilities and teaching resources for the digital economy and facilitate development actions, including brokering workplace training places in enterprises and establish co-operative relationships with Telecommunication centres of excellence.

- New entrants should be encouraged into the telecommunications industry by wider use of apprenticeships, cadetships, traineeships, recognition of prior learning, employer incentives, linking uptake to contracts wherever possible.

- There should be a national co-ordinator for the VET (Vocational Education & Training) in schools programs and a listing of schools that meet industry requirements, for example trades centres.

10
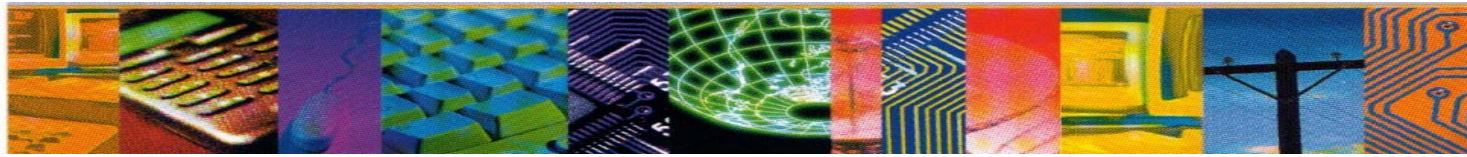
Telecommunication Industry Overview
The Statement below reflects the broad view of Industry Stakeholders

"…We believe that the construction of the NBN, as a large piece of infrastructure that is critical to Australia's social and economic development, will be an important opportunity for putting these principles into practice and establishing responsible government investment that promotes jobs growth.

We also strongly advocate the Government adopt a Responsible Contractor Policy (RCP) so that Government work contracted out is given to businesses who comply with Federal and State legislation, awards, industrial instruments and codes of practice relating to the performance of work by outworkers. An RCP is particularly important in the case of the NBN where large swathes of workers during the construction phase will not be directly employed by the NBN Company.

We are also advocating for Government investment in skills and training programs to complement the emergence of an NBN workforce, and the associated emerging workforce in the ICT sector. This investment will be not only critical for rolling out a new and complex technology to a majority of the Australian population, but also critical in retraining and reskilling all sections of the telecommunications workforce that participate in the realisation of this project…" ***ACTU submission on NBN, 2009***
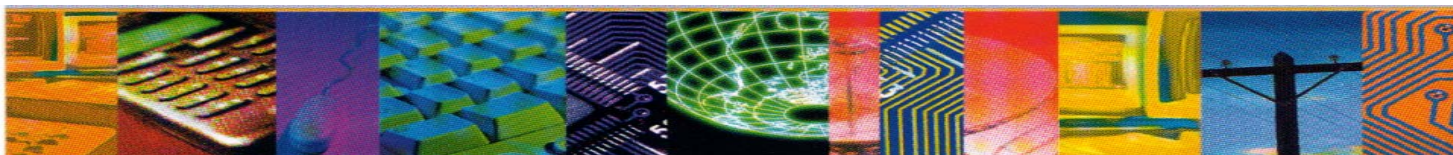
Broadband Rollout – *Telco Tasks and Employment*

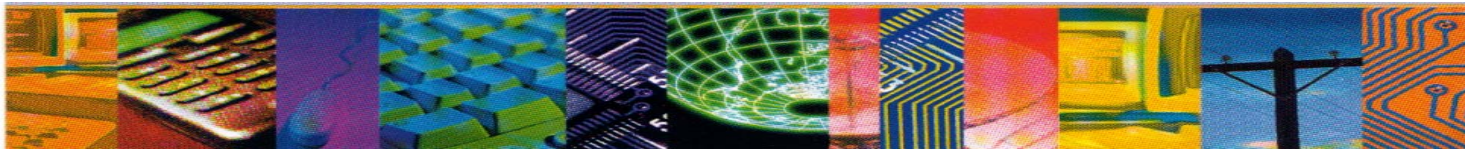***Currently:*** 63,000 registered Cablers/DataComms, lifts and security personnel in Australia, with over 200 Licensed Carriers in Australia incl. Telstra and Optus (ref: ACMA).

New: Anecdotally an additional 10,000 Cablers/DataComms and Digital installers plus upto 30,000 new positions in ICT sectors through Digital and Broadband rollouts

Broadband Rollout

Category	Tasks
Cabling	• Customer Access Network (optical, coaxial, copper) • Customer Premises Cabling • Customer Premises Equipment
Construction	• Rigging • Backboning • Construction of towers and antennae
Technician/Technologist	• Installation • Commissioning • Maintenance
Engineering	• Network's (Telco & IT) • Designers • Infrastructure
Planner/Designer	• Computer Systems • Networks • Infrastructure

Broadband Rollout – *ElectroTech. Training*

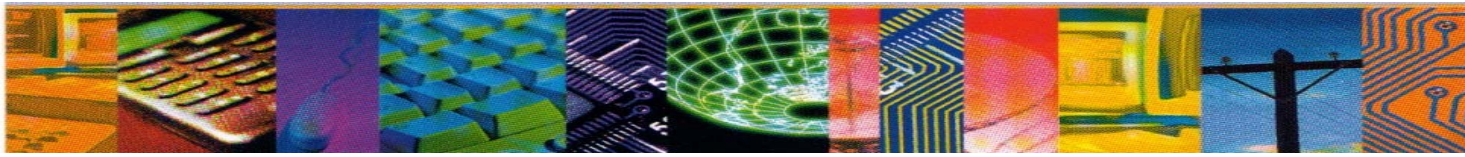## Skills
(Trained or RCC)

UEE07 Skill Sets
- **ACMA Restricted Telecommunications Cabler Registration**
- **ACMA Restricted Telecommunications Cabling Registration**
- **ACMA 'Open' Cabling Provider**
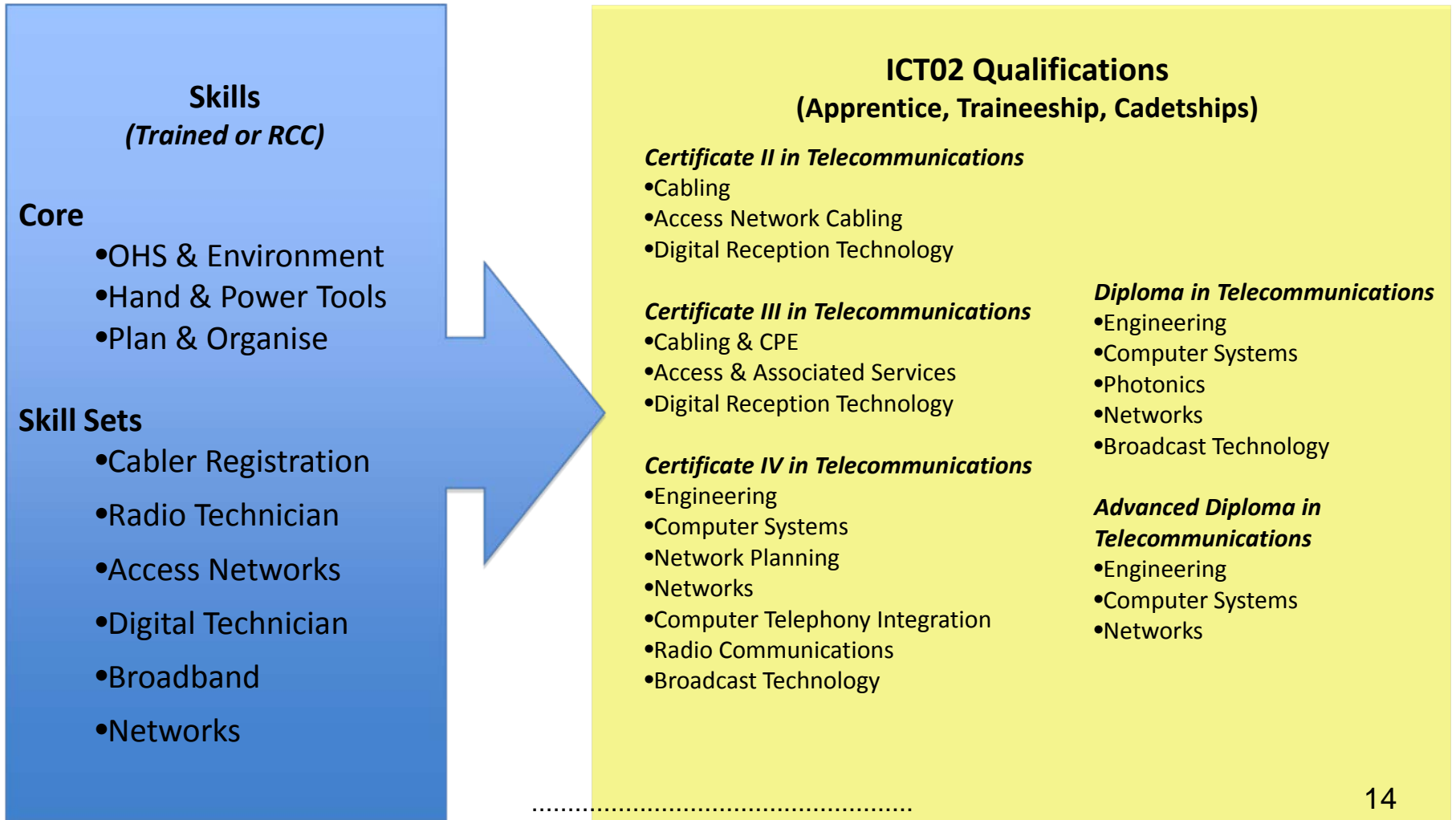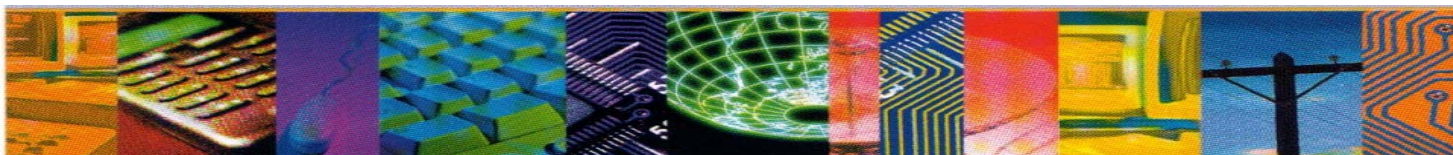- **Install and Modify Performance Data Communication Structured Cabling**

UEE07 Qualifications
(Apprentice, Traineeship)

- *Certificate II in Data ands Voice Communications*
- *Certificate II in Antennae Equipment*
- *Certificate II in Technical Support*
- *Certificate II in Electronics*
- *Certificate III in Data and Voice Communications*
- *Certificate III in Electrotechnology Electrician*
- *Certificate III in Electronics and Communications*

- *Certificate IV in Electrical – Data and Voice*
- *Communications Certificate IV in Electrotechnology – Systems Electrician*
- *Certificate IV in Electronics and Communications*
- *Certificate IV in Rail – Communications and Network Systems*
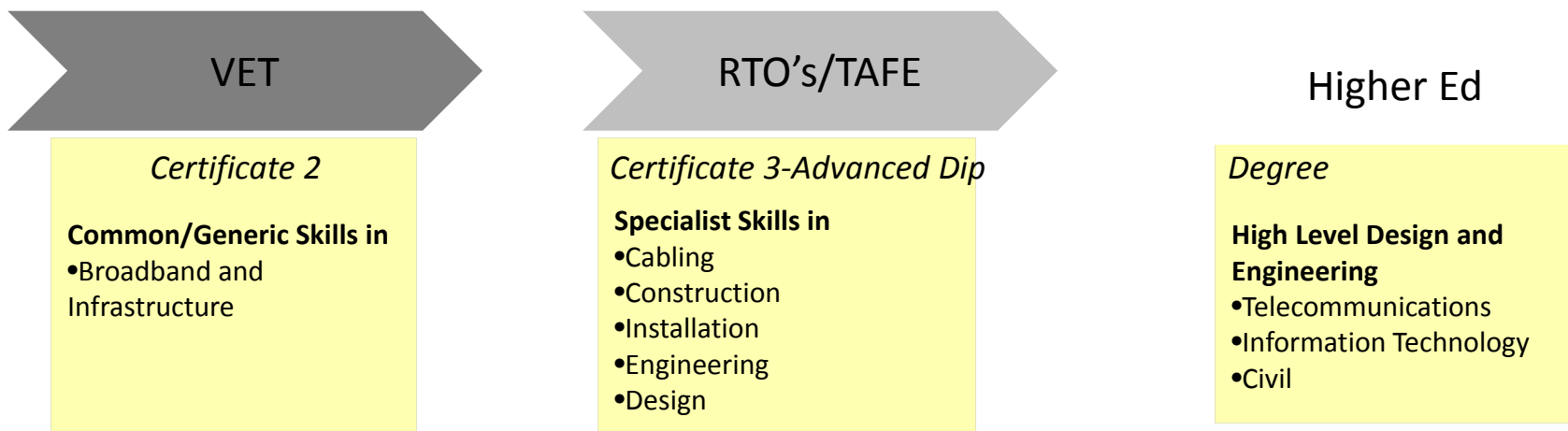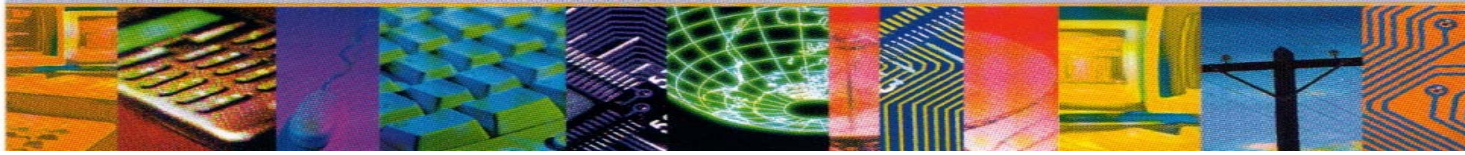
Broadband Rollout – Telco. Training

Skills
(Trained or RCC)

Core
- OHS & Environment
- Hand & Power Tools
- Plan & Organise

Skill Sets
- Cabler Registration
- Radio Technician
- Access Networks
- Digital Technician
- Broadband
- Networks

ICT02 Qualifications
(Apprentice, Traineeship, Cadetships)

Certificate II in Telecommunications
- Cabling
- Access Network Cabling
- Digital Reception Technology

Certificate III in Telecommunications
- Cabling & CPE
- Access & Associated Services
- Digital Reception Technology

Certificate IV in Telecommunications
- Engineering
- Computer Systems
- Network Planning
- Networks
- Computer Telephony Integration
- Radio Communications
- Broadcast Technology

Diploma in Telecommunications
- Engineering
- Computer Systems
- Photonics
- Networks
- Broadcast Technology

Advanced Diploma in Telecommunications
- Engineering
- Computer Systems
- Networks

Broadband Rollout – *Education*

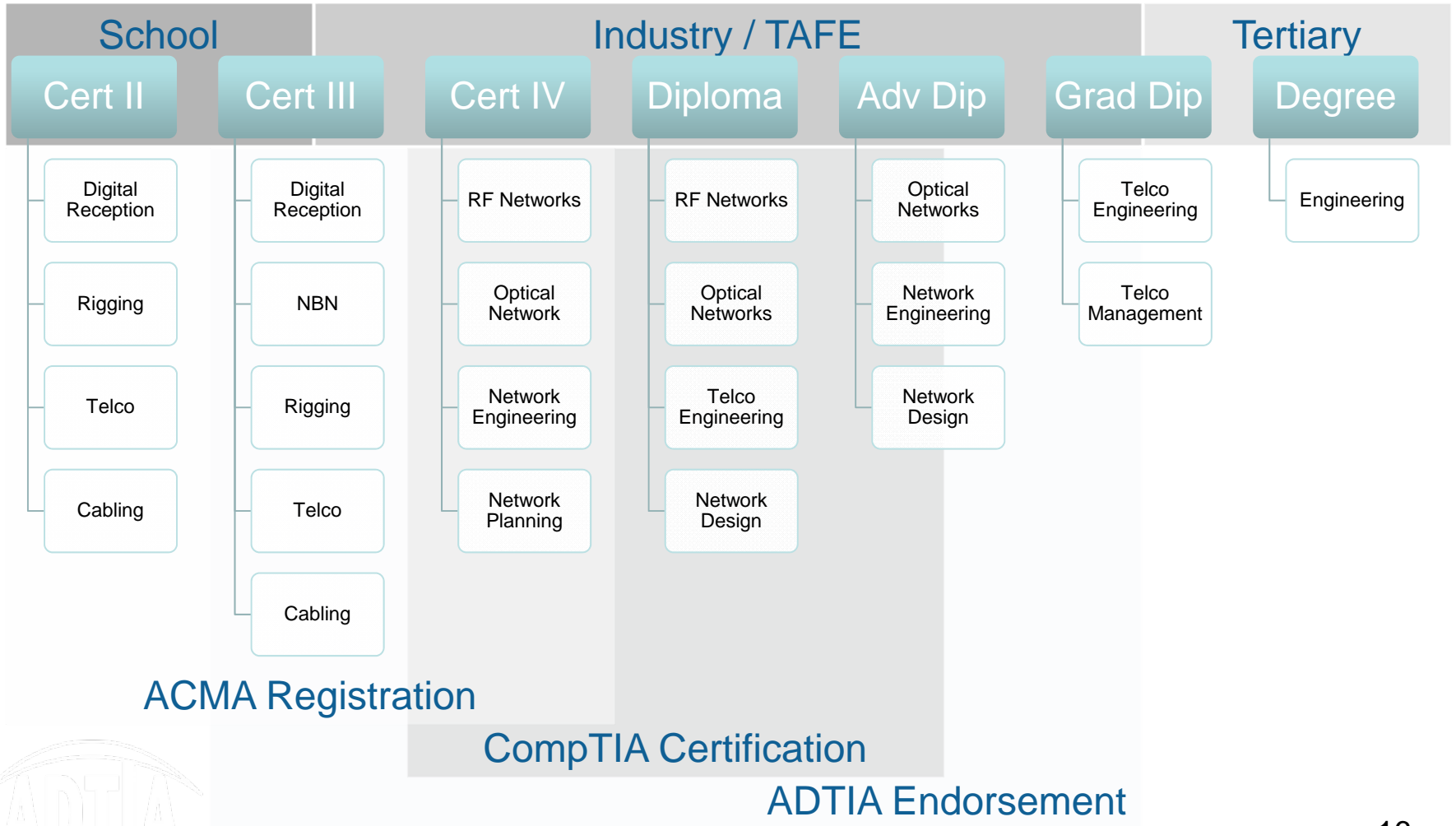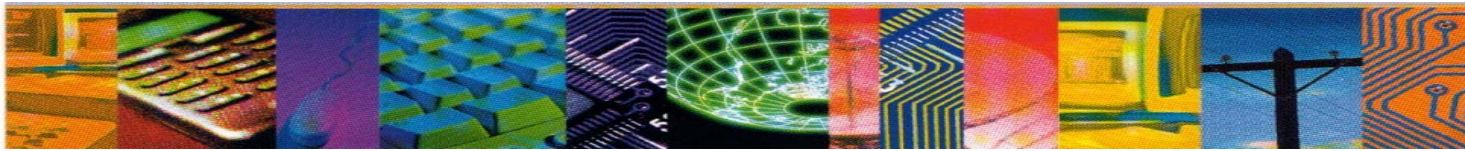## Skilling entrants for now and the future

Issues

- Resourcing/Materials (i.e. Industry Endorsed materials)
- National Coordination
- Identifying Schools to meet delivery requirements (e.g. Trade centers)
- Pathways to build Industry Skills to meet the Broadband rollout
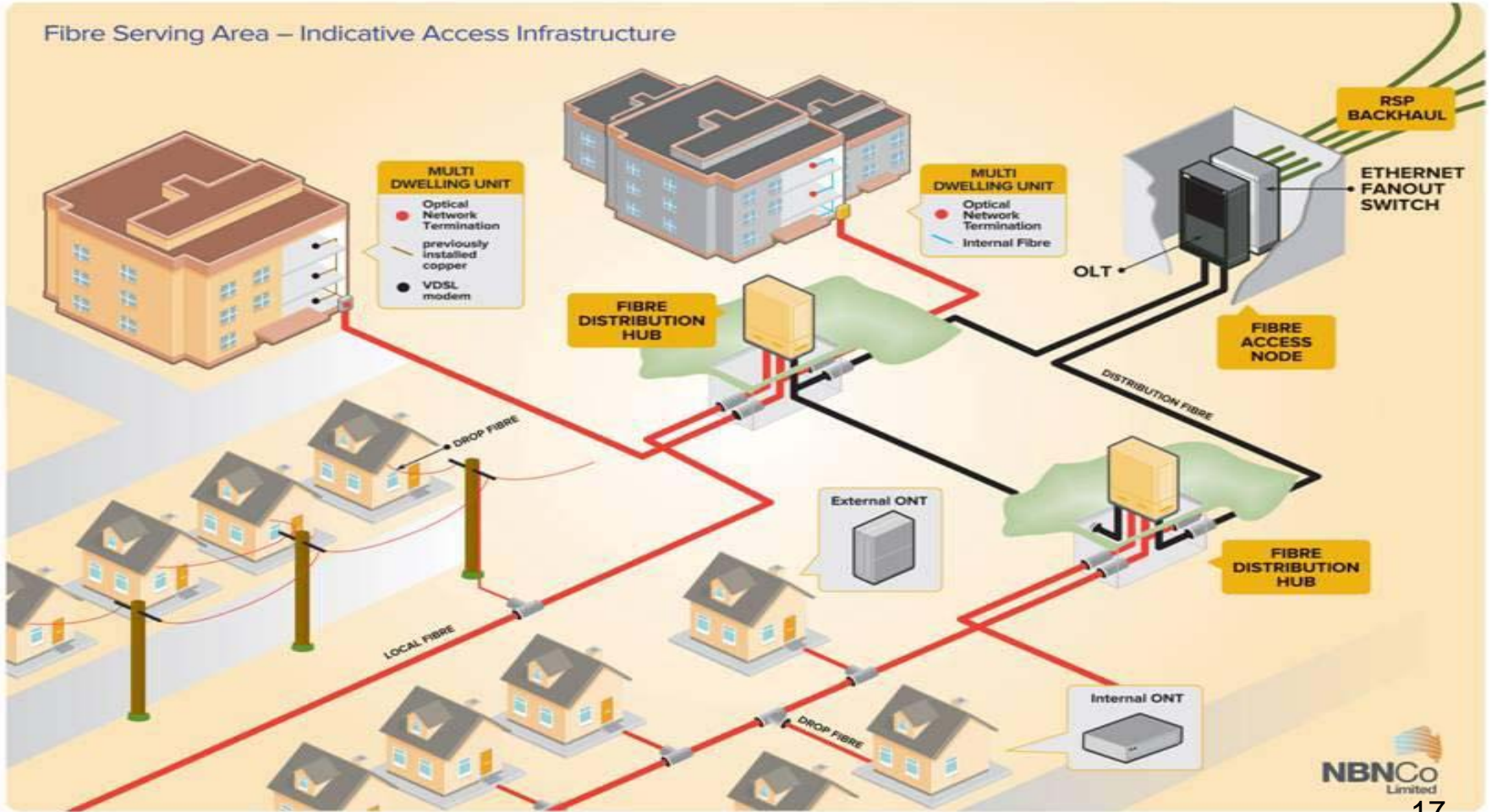- Funded Through Federal/State VET system

VET

Certificate 2

Common/Generic Skills in
- Broadband and Infrastructure

RTO's/TAFE

Certificate 3-Advanced Dip

Specialist Skills in
- Cabling
- Construction
- Installation
- Engineering
- Design

Higher Ed

Degree

High Level Design and Engineering
- Telecommunications
- Information Technology
- Civil

15

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Examples of Qualifications for Digital and Broadband skills in the Telecommunications industry

School		Industry / TAFE				Tertiary
Cert II	**Cert III**	**Cert IV**	**Diploma**	**Adv Dip**	**Grad Dip**	**Degree**
Digital Reception	Digital Reception	RF Networks	RF Networks	Optical Networks	Telco Engineering	Engineering
Rigging	NBN	Optical Network	Optical Networks	Network Engineering	Telco Management	
Telco	Rigging	Network Engineering	Telco Engineering	Network Design		
Cabling	Telco	Network Planning	Network Design			
	Cabling					

ACMA Registration

CompTIA Certification

ADTIA Endorsement

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NBNCo. proposed infrastructure layout for connecting premises

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NBN Roll Out Training

UEE Skill Sets or Certificate III Data & Voice Communications
ICT Skill Sets or Certificate III Telecommunications

Communications Alliance - NBN Reference Architecture - Release 1 - Dec 2009
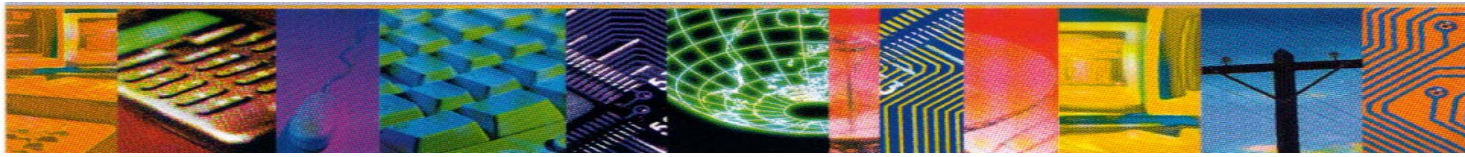
NBN Roll Out Training

ICT Skill Sets or Certificate III in Access and Associated Services
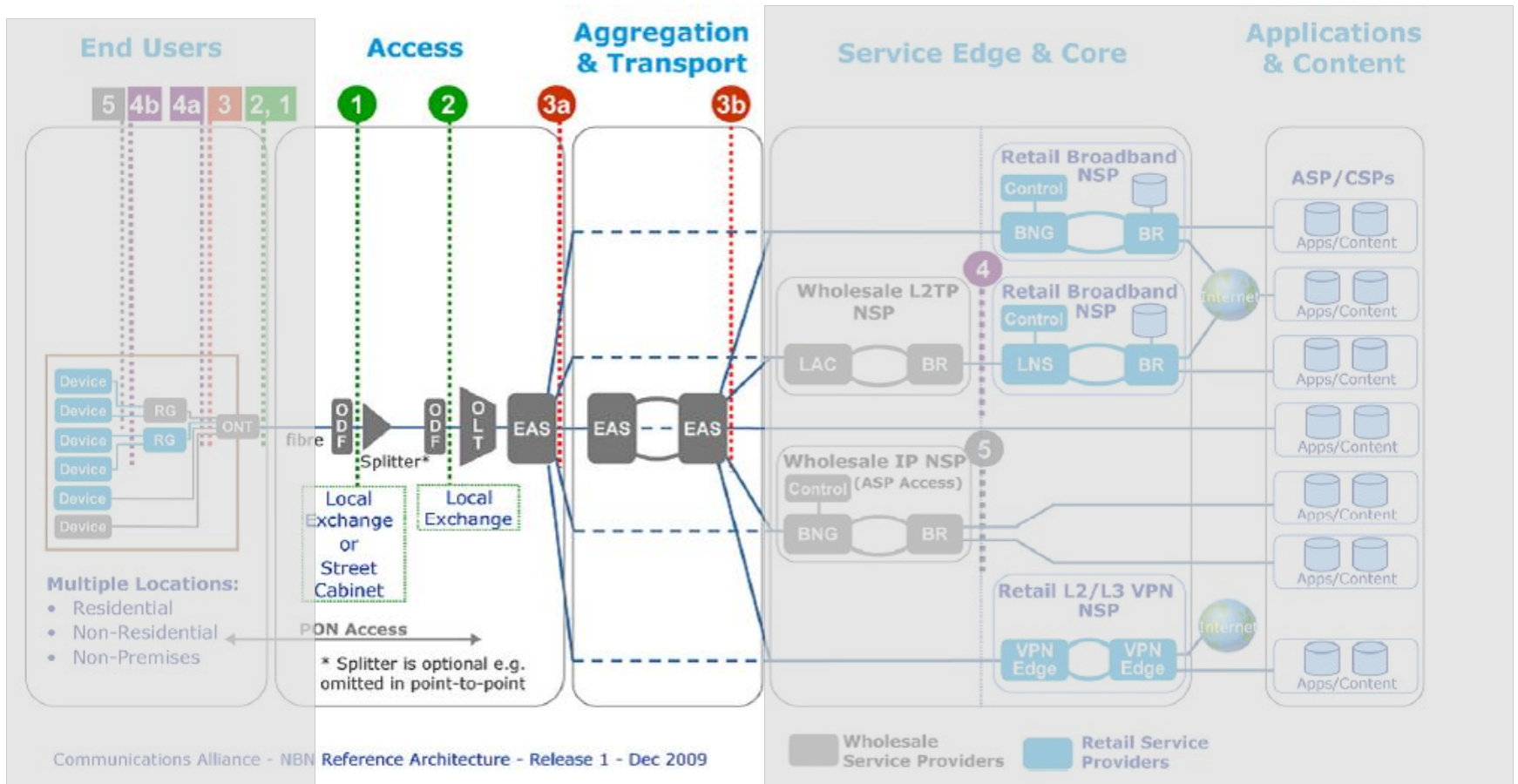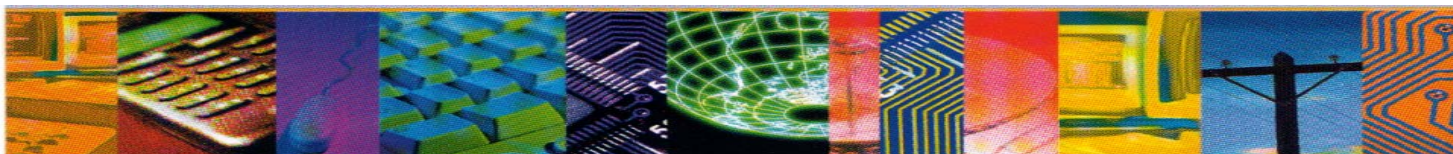
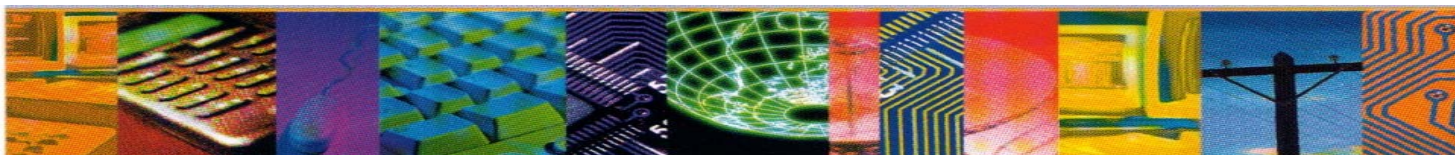# NBN Roll Out Training

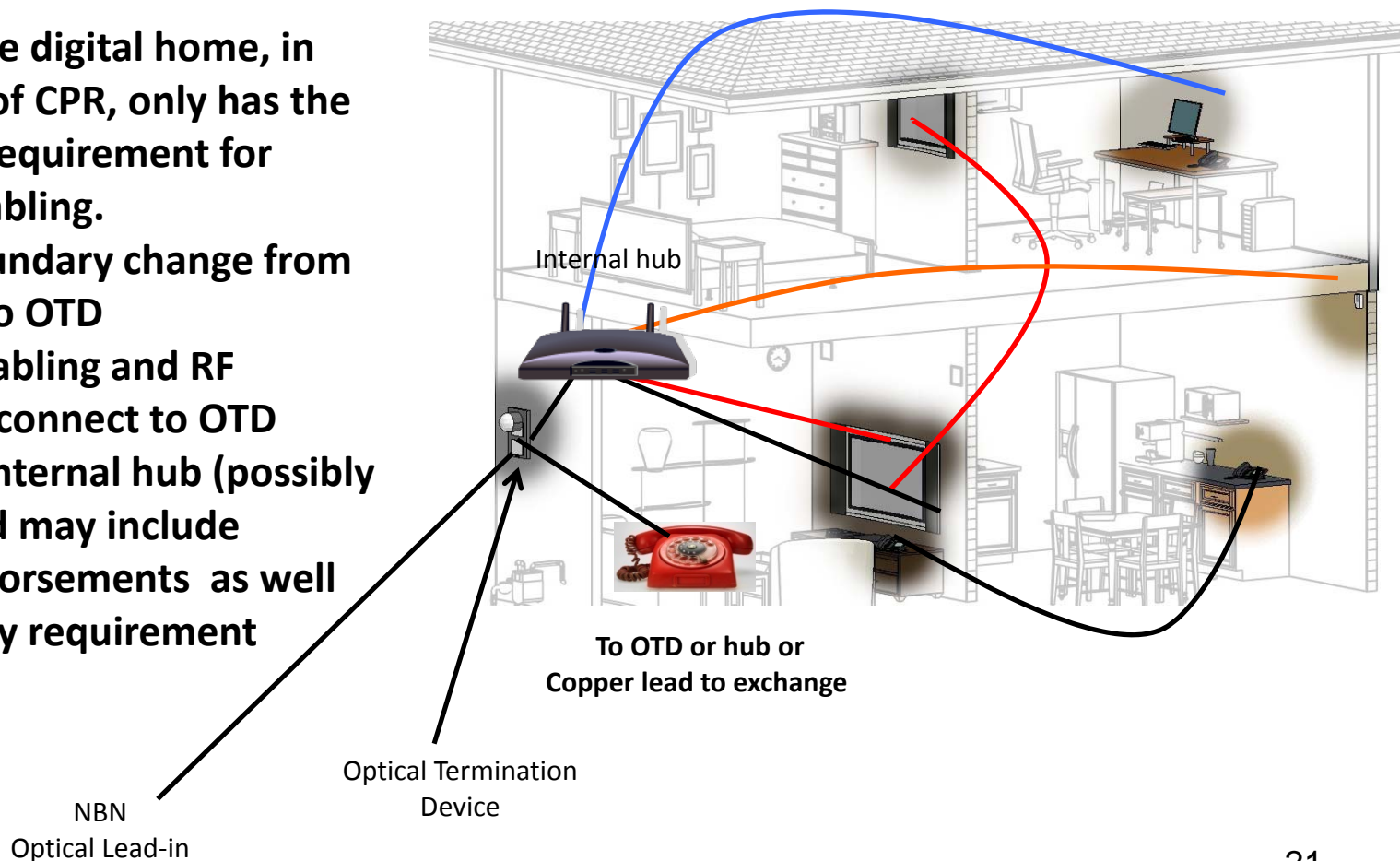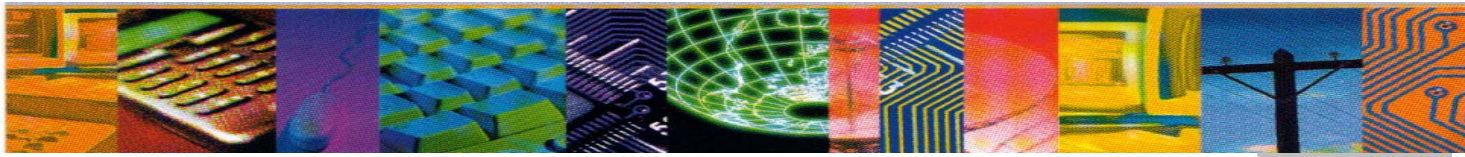ICT Skill Sets or Certificate IV in Telecommunications Engineering

Communications Alliance - NBN Reference Architecture - Release 1 - Dec 2009
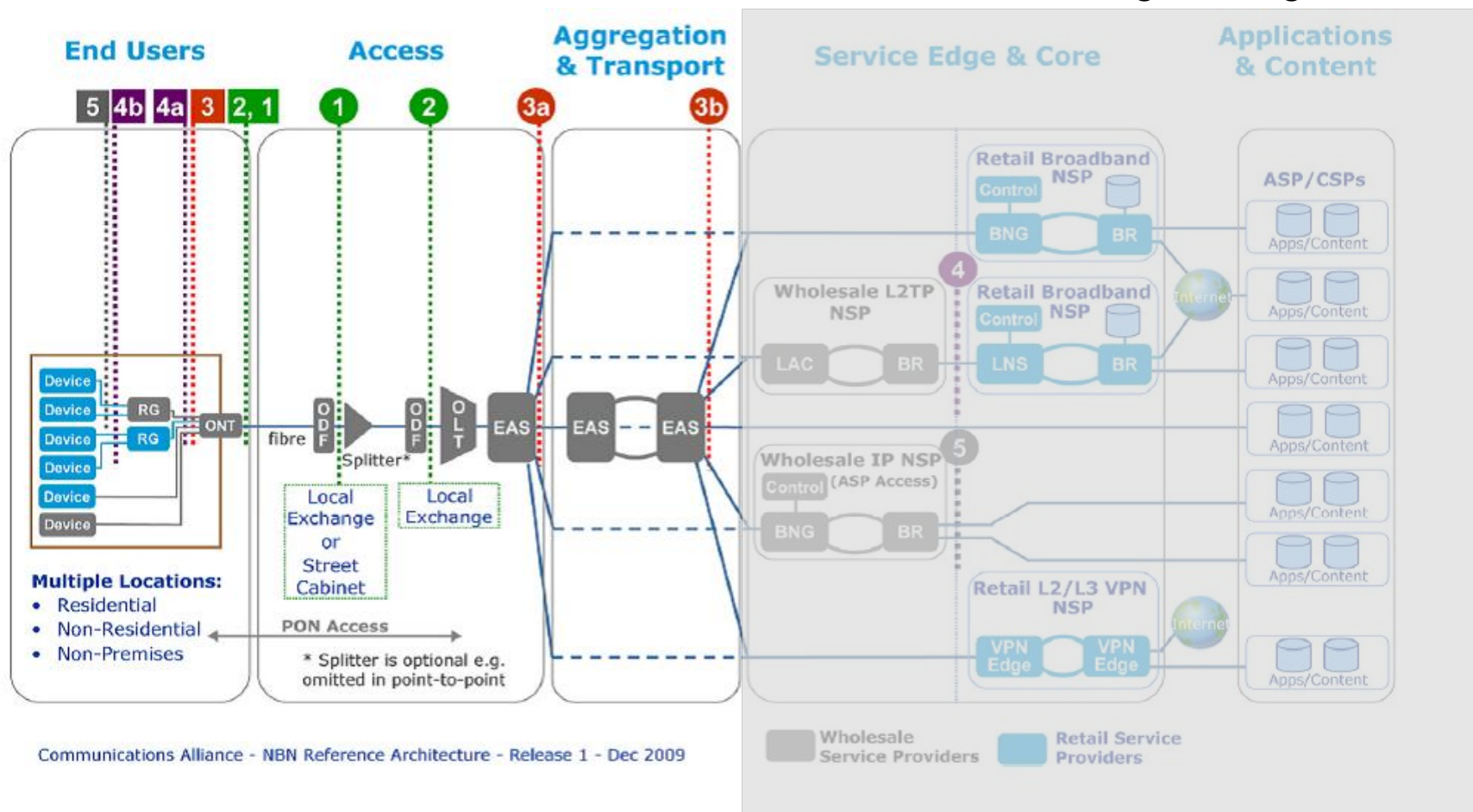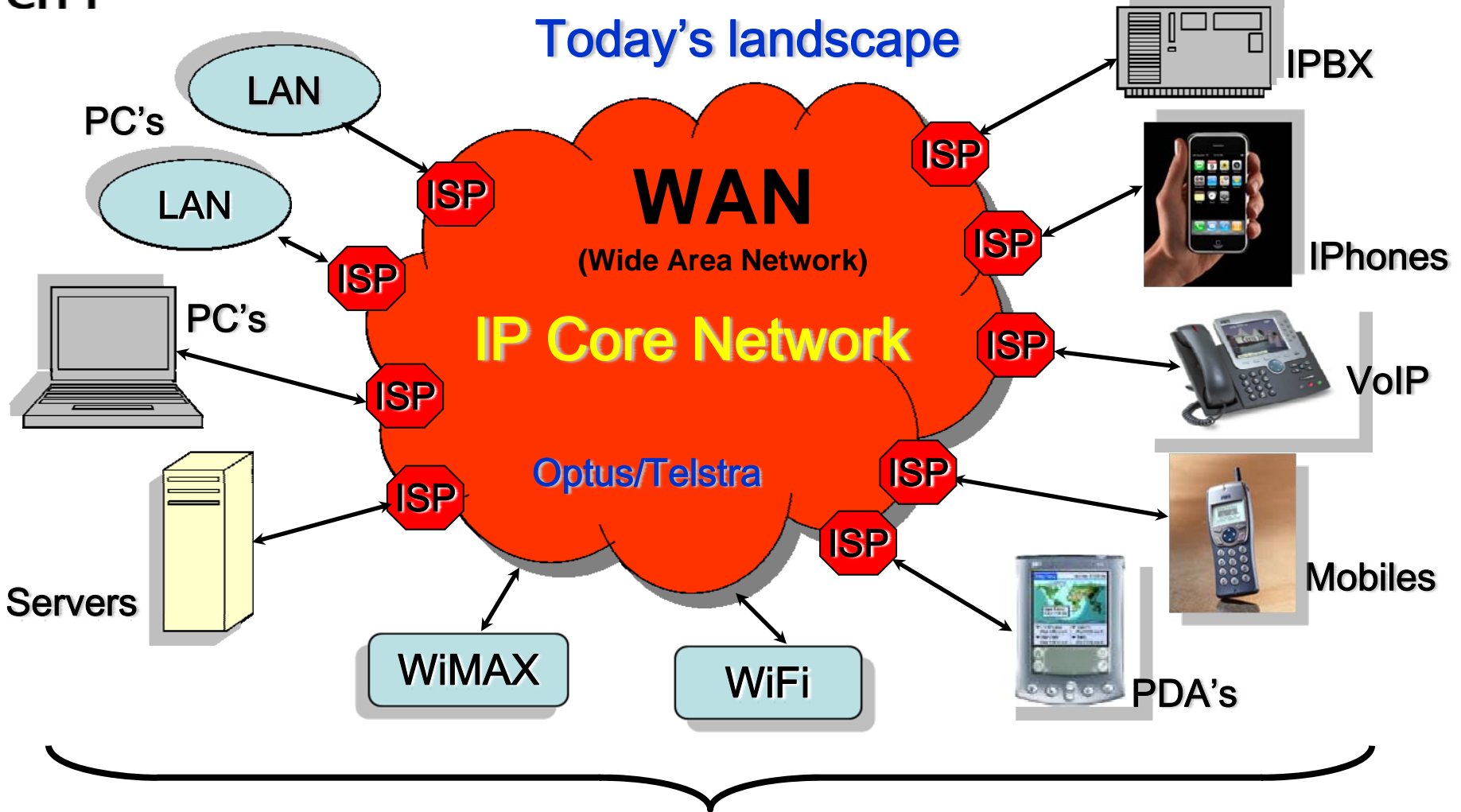
Possible NBN Rollout Impact on CPR
One scenario for "Cabling" in the Home

- **Currently the digital home, in the context of CPR, only has the mandatory requirement for telephony cabling.**
- **Network boundary change from first socket to OTD**
- **Structured cabling and RF cabling may connect to OTD through an internal hub (possibly wireless) and may include Industry Endorsements as well as mandatory requirement**
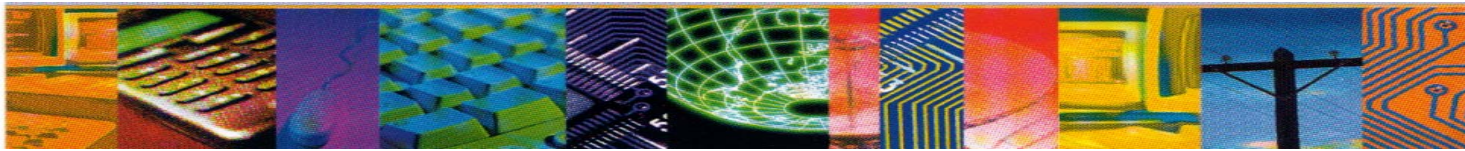

Internal hub

To OTD or hub or Copper lead to exchange

Optical Termination Device

NBN Optical Lead-in

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Today's landscape

CITT

TITAB AUSTRALIA

IPBX

ISP

LAN

PC's

LAN

ISP

WAN
(Wide Area Network)

ISP

IPhones

PC's

IP Core Network

ISP

VoIP

ISP

Optus/Telstra

ISP

ISP

ISP
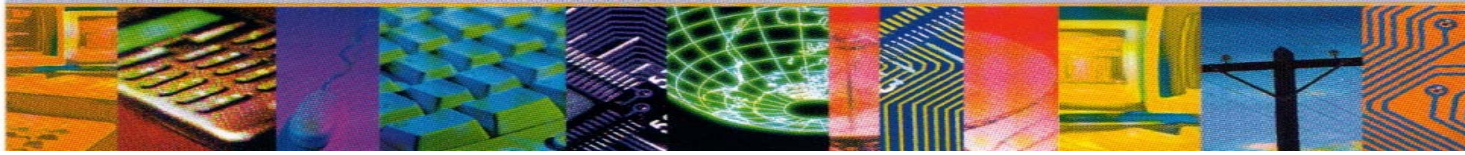
Servers

Mobiles

WiMAX

WiFi

PDA's

Converged VOICE, VIDEO & DATA, Internet Protocols (IP) Networks

This is the new Industry of Converging Technologies

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AND THEN (DON'T FORGET) THERE IS THE LEGACY (COPPER) TELECOMMUNICATIONS INFRASTRUCTURE TRAINING

Residential

Inter-Exchange Network (Backhauling etc.)

TRANSMISSION

Business

CUSTOMER ACCESS NETWORK

SWITCHING

CUSTOMER PREMISES EQUIPMENT

Skill Sets or Cert. X in Telecommunications (CAN)

Skill Sets or Cert. X in Telecommunications (Engineering)

Skill Sets or Cert. X in Telecommunications (Engineering)

Skill Sets or Cert. X in Telecommunications (Cabling & CPE)

24

Some of the Telecommunications Industry Stakeholders

NBN Co	RSP	Federal Government	AiGroup
Comms. Alliance	ACCAN	DEEWR	Equipment and Service Providers
ATUG	ACMA (Registrars)	ACEA	DBCDE
Industry Associations e.g. ADTIA	Digital Switchover Taskforce	Carriers, Infrastructure owners (e.g. Ducts & Poles)	State, Territory & Local Governments

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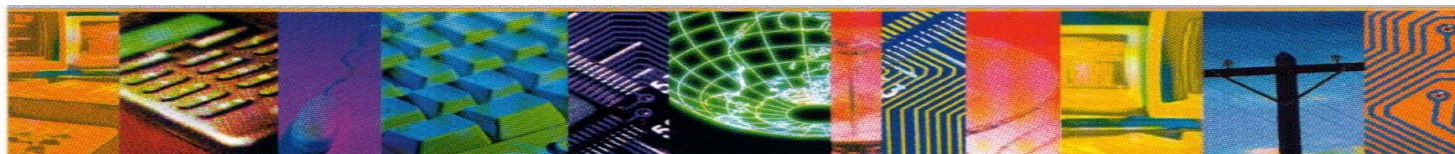
Industry QA Model – *key elements*

Benchmarks	Establishment of agreed skills, knowledge, and quality benchmarks in consultation with industry. Agreed Industry Standards both national and international.
Industry Endorsement	Consistent, independent, recognised and transportable endorsement centrally administered.
Certified Programs	'Prescribed' industry training and assessment programs to underpin competency standards and drive consistency.
Quality Monitoring	Independent quality assurance program, inspections and audits ensuring conformance line with industry standards and benchmarks. Including audits of 'endorsed' training providers.
Professional Development	PD program to ensure endorsement holders at all levels, are informed and current in both skills and knowledge on an annual basis.
Career Pathways and Marketing	Promote industry as an exciting and rewarding career choice. Raise industry awareness in schools, increasing opportunity for entry through government funded VET programs.

26
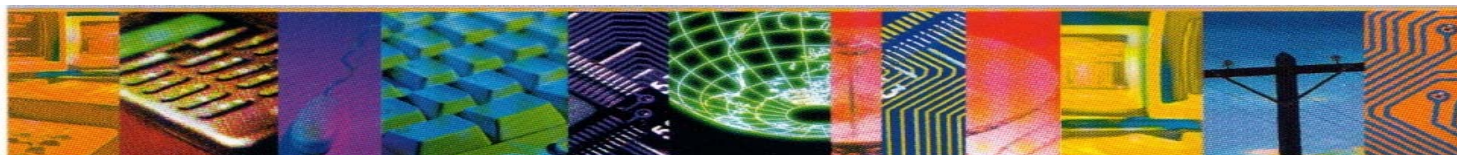
ADTIA - Industry Model

The Australian Digital Television Industry Association (ADTIA) was formed by the Digital Reception sector to work closely with the Government's Digital Switchover Taskforce. Its Statement of Purpose is:

- To represent the digital television industry in delivering the best possible technological outcomes for consumers

- To establish digital industry benchmarks and training standards that ensure a consistent application and standardised system for compliance and quality outcomes throughout Australia

- To monitor and improve the levels of quality, expertise and qualifications of digital technicians

- To provide a networking organisation for members and act as an advisory group to government and industry

- "Educate not Regulate" is ADTIA's purpose
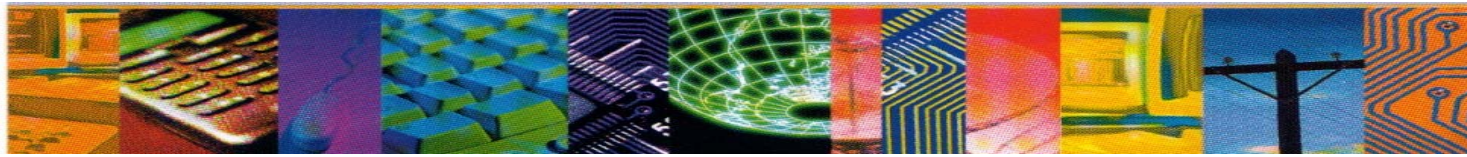
CITT

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Website: www.citt.com.au

www.titab.com.au