ITU/BDT Regional Economic and Financial Forum of Telecommunications/ICTs for Asia and Pacific

Yangon, The Republic of the Union of Myanmar, 1-2 September 2014

National Broadband Plans – developing a Monitoring Framework and Checklist

Colin Oliver

UK government's Superfast Broadband project reaches a million homes

Summary: *The British government is trumpeting a milestone for its £1.7bn ($2.9bn) Superfast Broadband project, which is taking broadband to rural areas from the Isle of Wight to the Outer Hebrides*

By Jack Schofield for Jack's Blog | August 7, 2014 -- 23:20 GMT (09:20 AEST)

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BT Openreach workers are taking 'Superfast Broadband' to rural areas of the UK. Image: BT

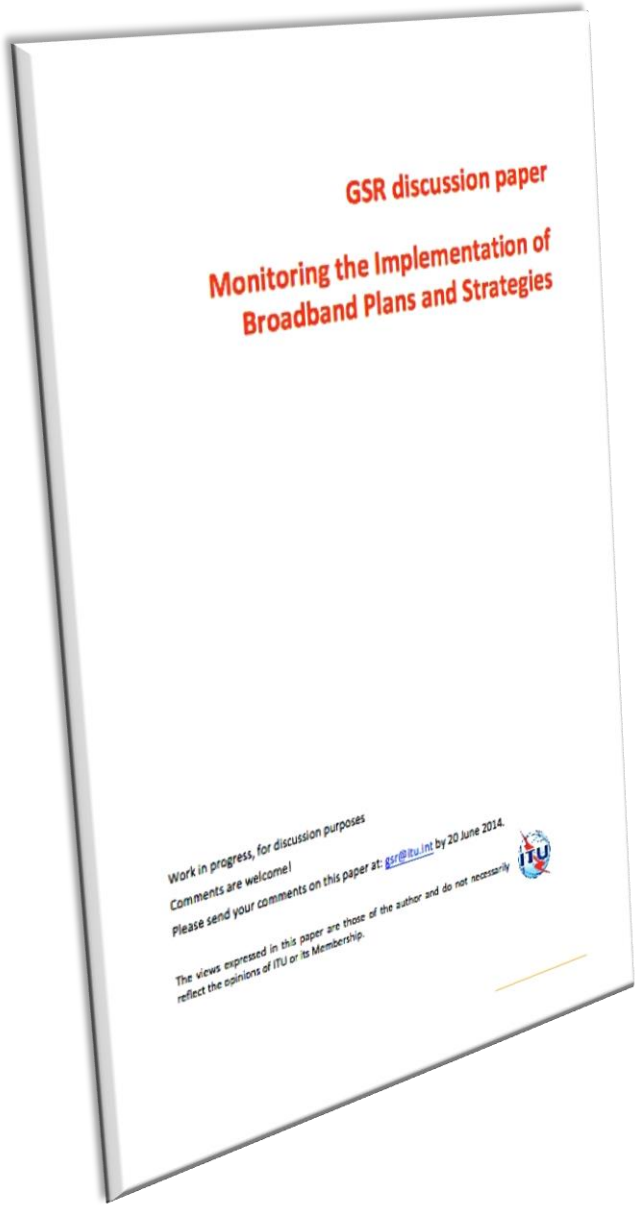
The British government claims that its £1.7bn ($2.9bn) superfast broadband project has expanded the high-speed broadband network to a million homes that would not have been reached by the normal commercial rollouts from suppliers such as BT and Virgin Media. The project, run by BDUK (Broadband Delivery UK), is spending £780m ($1.3bn) to make sure that 95 percent of the UK can get superfast broadband by 2017.

The government claims its rural programme "will deliver returns of £20 for every £1 invested, representing tremendous value for money". It will also "create an additional 56,000 jobs in the UK by 2024" and boost rural economies by £275m per month.

Monitoring broadband rollout – UK

- Reports a million rural homes connected by the Broadband Delivery UK project
  - Beyond normal commercial coverage
  - Counts ≥ 24 Mbps as 'Superfast'
  - EU targets every home to have 30 Mbps by 2020 and 50% to have 100 Mbps speeds
- Monitoring is now front of mind
  - Are plans on track?
  - Are benchmarks appropriate?
  - Are programs well managed?
  - Are local areas keeping up?
  - How do we compare internationally?

Source: http://www.zdnet.com/uk-governments-superfast-broadband-project-reaches-a-million-homes-7000032450/



GSR Discussion Paper 2014

Source material for the presentation:

Colin Oliver, Monitoring the implementation of the broadband plans and strategies

GSR14 discussion papers

http://www.itu.int/en/ITU-D/Conferences/GSR/Pages/GSR2014/GSR14-discussion-papers.aspx

Key areas in a monitoring framework

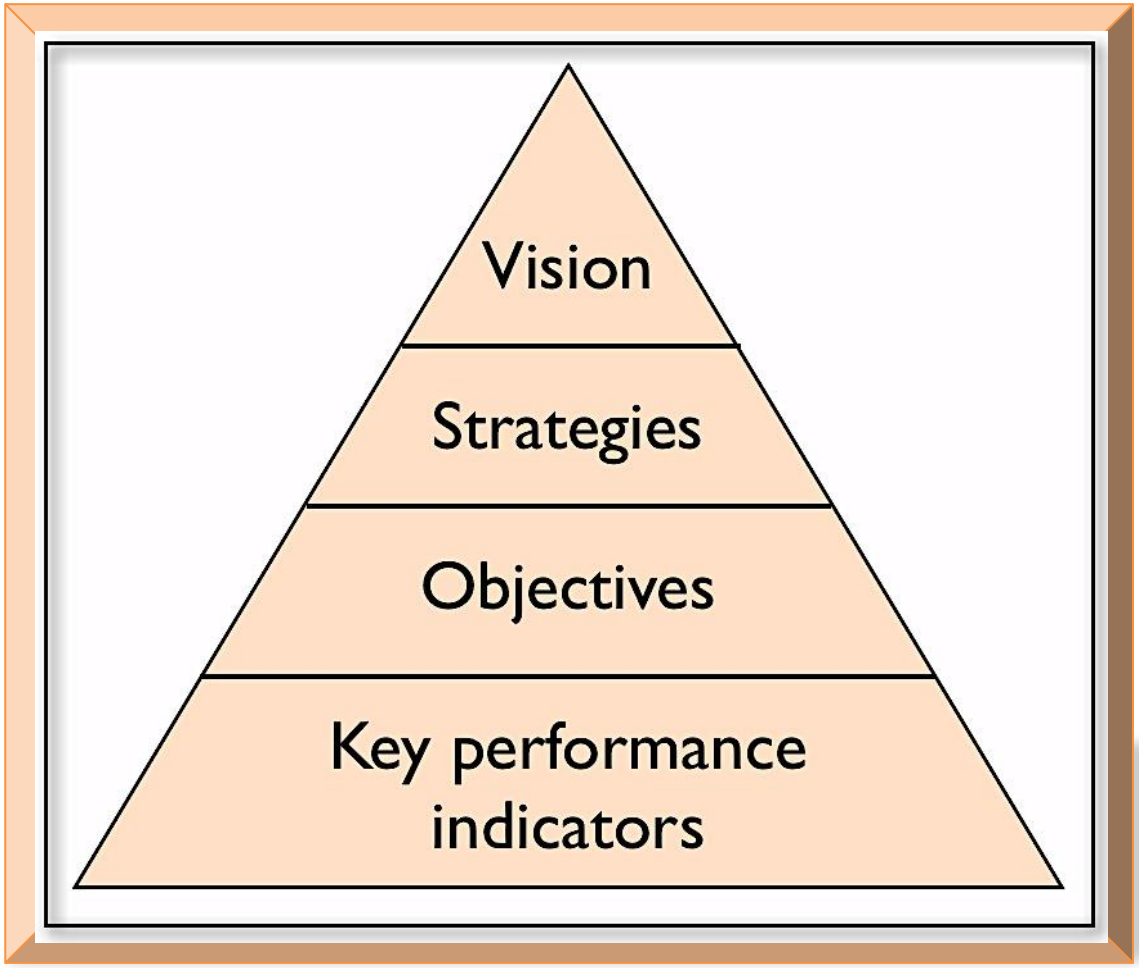
Area	Responsibility	Key areas	Information sources
Strategy development: Making good policy choices.	Policy & coordinating agencies with the regulator	**Local circumstances** National priorities State of the market – demand & supply Business case for investment Human capacity	Broad consultation Industry, regulator Economic, financial & social statistics International experience & data
Program management: Tracking progress of projects and programs toward goals & targets.	Regulator & implementing agencies	**Performance Indicators** Costs & benefits Project/program results for broadband access, improvements in capability and efficiency	Regulator Market players Business users Program participants Community leaders
Policy Evaluation: Monitoring development of broadband access infrastructure, prices, affordability and usage.	Regulator, coordinating agencies, & national statistical offices	**Outcomes** Penetration & access Investment, competition & market effectiveness Adoption and effective use Innovation Economic impacts	Regulator Statistical agencies Industry reports Social agencies (education, health *etc.*)

Source: Author, adapted from Broadband Commission The State of Broadband 2013 (Sept 2013) p 78-84

Results-oriented performance management

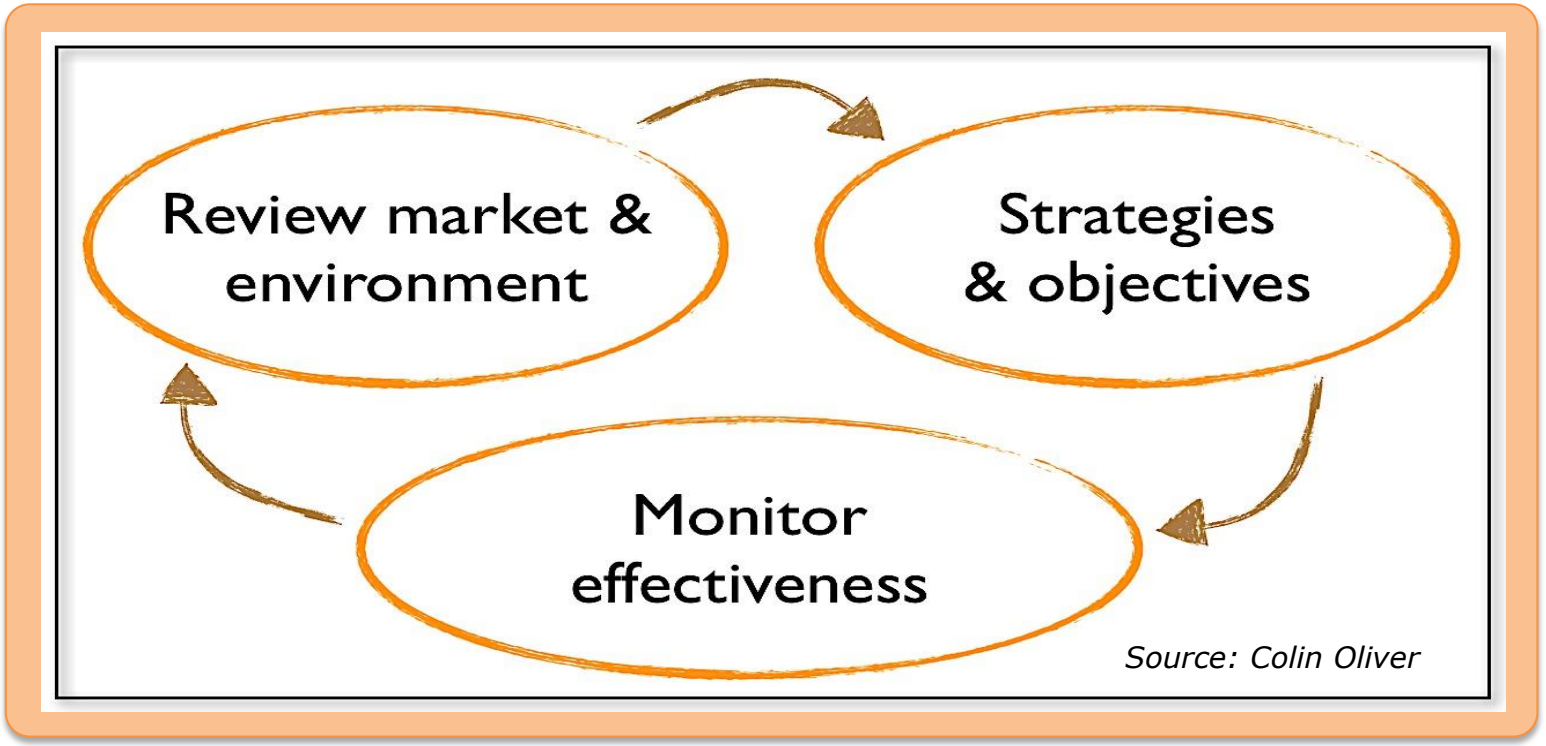
- Key performance indicators are part of a management framework
  - Supporting objectives and strategies
  - Manage for *results*
  - Performance indicators can be expressed as targets

MEASURE WHAT YOU NEED TO MANAGE



Source: Colin Oliver

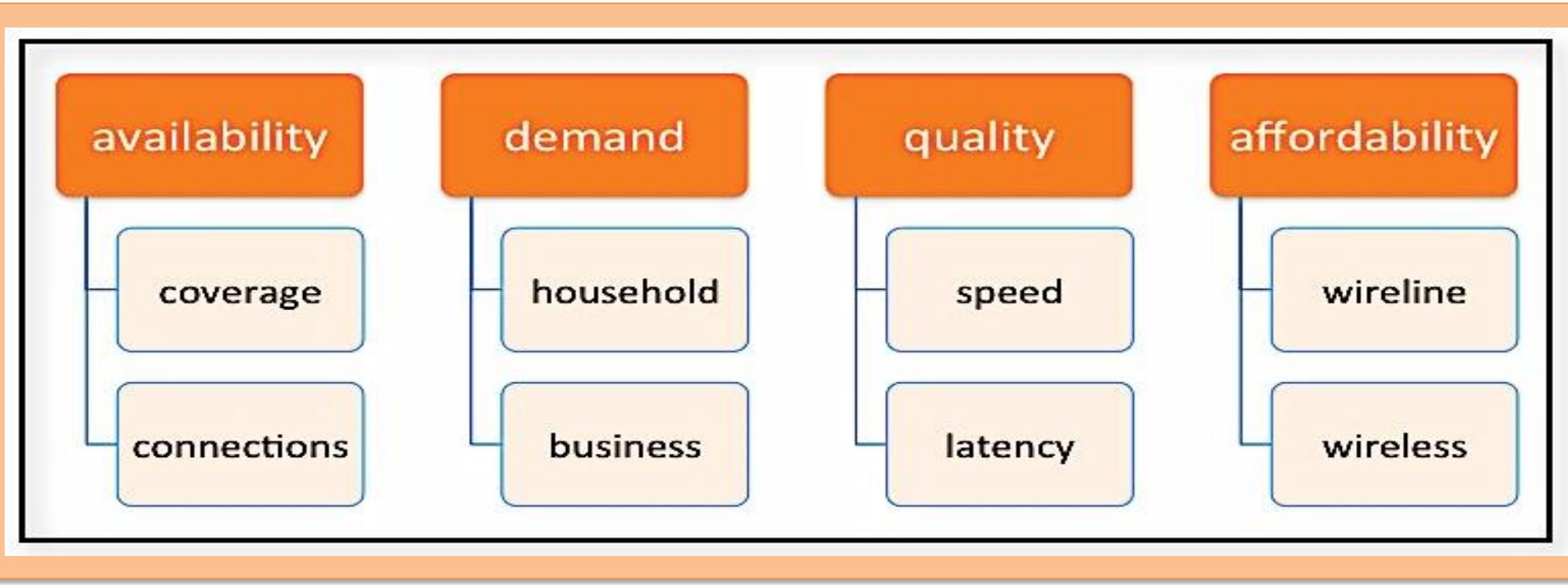
Ongoing review cycle



- Ongoing review of progress against objectives, and monitoring changes in the market and the wider environment
  - cycle of policy implementation and improvement
  - measure in order to manage effectively (priorities change over time)

Broadband indicators

- Deployment & availability (established)
- Adoption & effective use (still developing)



Source: Adapted from OECD

Items for checklist: indicators

Objectives and actions	Target date	Status
Broadband deployment and availability		
Broadband indicators in place		
• Telecommunications/broadband indicators established		
• Regulator reporting from operators in place		
• Analysis capability established		
• Broadband availability indicators by market segment		
• Central business districts		
• Urban areas		
• Rural and remote areas (*mapping may be required*)		
• Fixed and wireless technologies		
• Basic and advanced speeds		
• Interactive or published map of broadband availability		
• Price of basic and advanced services		
• Waiting times for service supply and restoration		
• Technology and devices in use		
• Updated to reflect changing usage and adoption patterns		

Issues for a check list - the enabling framework

- ☑ Regulatory scope sufficient
- ☑ Regulatory capacity established
- ☑ Broadband plan in place
- ☑ Spectrum reform to support wireless broadband access
- ☑ Simplified licensing to facilitate broadband service expansion
- ☑ Telecommunications indicators systematically reported
- ☑ Civil works facilitated
- ☑ Infrastructure sharing facilitated
- ☑ Gateway access facilitated … see paper for more detail

Objectives and actions	Target date	Status
Enabling framework for broadband development		
Enabling measures		
• Broadband plan in place		
• Key stakeholders consulted		
• Coordination framework in place		
• Cross-sectoral support for key strategies & objectives		
• Monitoring and evaluation process established		
• Targets and process milestones established		
• Reporting in place for process milestones and progress		
• Reporting in place for achievement of targets and outcomes		
• Taxes, duties, fees minimised to support the broadband plan		
• Affordable user equipment		

Source: Colin Oliver, *Monitoring the implementation of the broadband plans and strategies* GSR14 discussion papers http://www.itu.int/en/ITU-D/Conferences/GSR/Pages/GSR2014/GSR14-discussion-papers.aspx

Monitor progress with process milestones: example - Digital Victoria

- ☑ Regulatory scope
- ☑ Regulatory capacity
- ☑ Broadband plan in place
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- ☑ Simplified licensing to facilitate broadband service expansion
- ☑ Telecommunications indicators systematically reported
- ☑ Civil works facilitated
- ☑ Infrastructure sharing facilitated
- ☑ Gateway access facilitated

Engagement Actions	By	Status
7. Commence implementation of an identity management capability for citizens wanting to use online channels to engage with government	March 2014	✓ Complete
8. Agencies commence transition of key services online	April 2014	
9. Agencies complete transition of frequent transaction services online	December 2014	Planning underway
10. Continue to implement website management standards	Ongoing	✓ Commenced and ongoing Website management framework

Source: http://www.digital.vic.gov.au/status/ (as at 12 November 2013)

Other potential issues for a check list - ease of doing business

- ☑ Starting a business
- ☑ Dealing with construction permits
- ☑ Getting electricity
- ☑ Registering property
- ☑ Getting credit
- ☑ Protecting investors
- ☑ Paying taxes
- ☑ Trading across borders
- ☑ Enforcing contracts
- ☑ Resolving insolvency

The Doing Business website (http://www.doingbusiness.org/rankings) provides rankings and commentary on each issue – maintained by the International Finance Corporation and the World Bank.

Economy Rankings

EXPLORE ECONOMY DATA

Economies are ranked on their ease of doing business, from 1 – 189. A high ranking on the ease of doing business index means the regulatory environment is more conducive to the starting and operation of a local firm. This index averages the country's percentile rankings on 10 topics, made up of a variety of indicators, giving equal weight to each topic. The rankings for all economies are benchmarked to June 2013.

SUBNATIONAL = Subnational *Doing Business* ranking data available.

Ranking Methodology

Explanation of how the Ease of Doing Business Index (PDF) its sub-indices and the distance to frontier measures are calculated.

- Rankings by region: Select region or
- Rankings by income: Select income or
- Rankings by population: Select grouping

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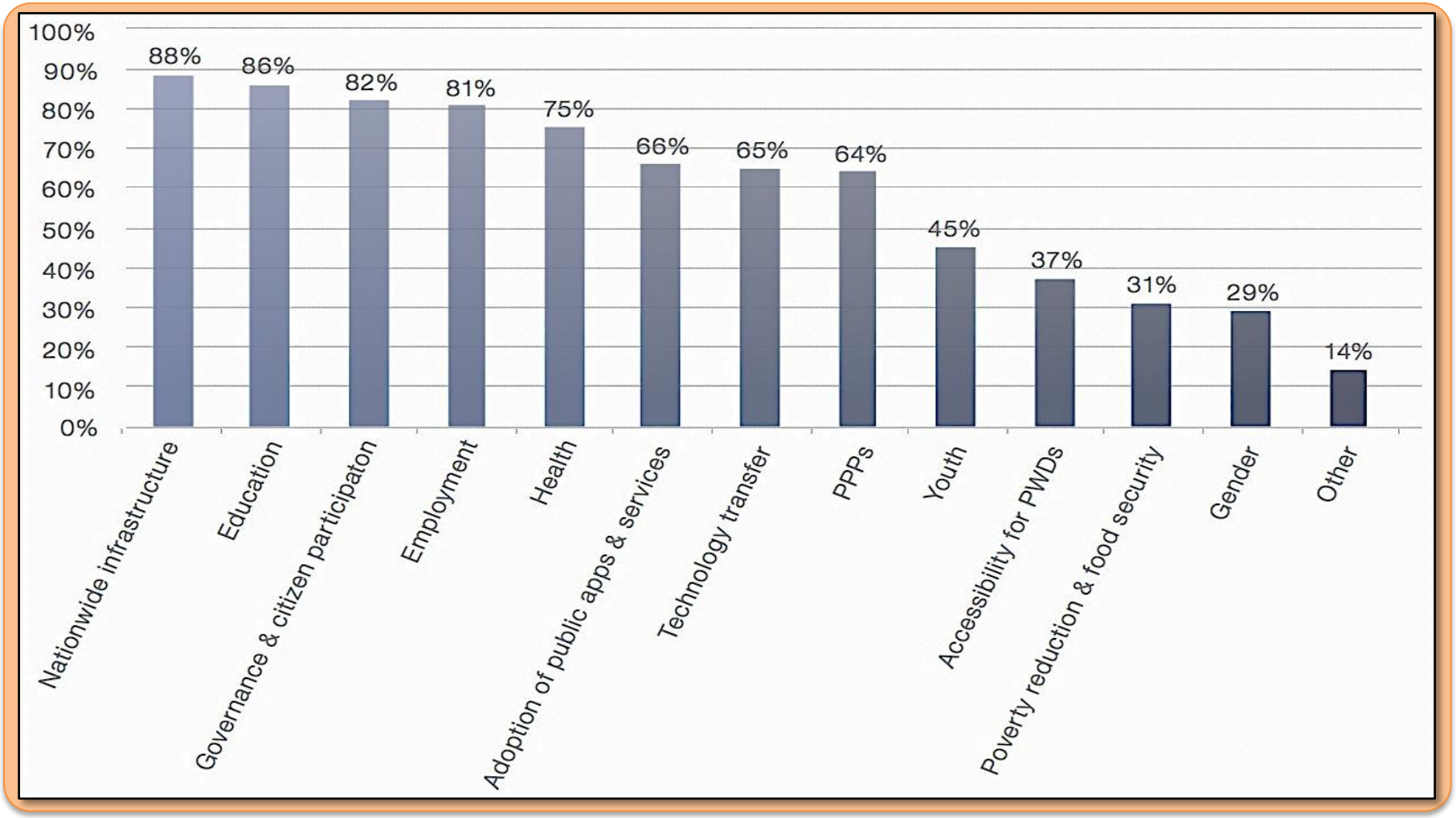
Economy	Ease of Doing Business Rank ▲	Starting a Business	Dealing with Construction Permits	Getting Electricity	Registering Property	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts	Resolving Insolvency
Singapore	1	3	3	6	28	3	2	5	1	12	4
Hong Kong SAR, China	2	5	1	5	89	3	3	4	2	9	19
New Zealand	3	1	12	45	2	3	1	23	21	18	12
United States	4	20	34	13	25	3	6	64	22	11	17

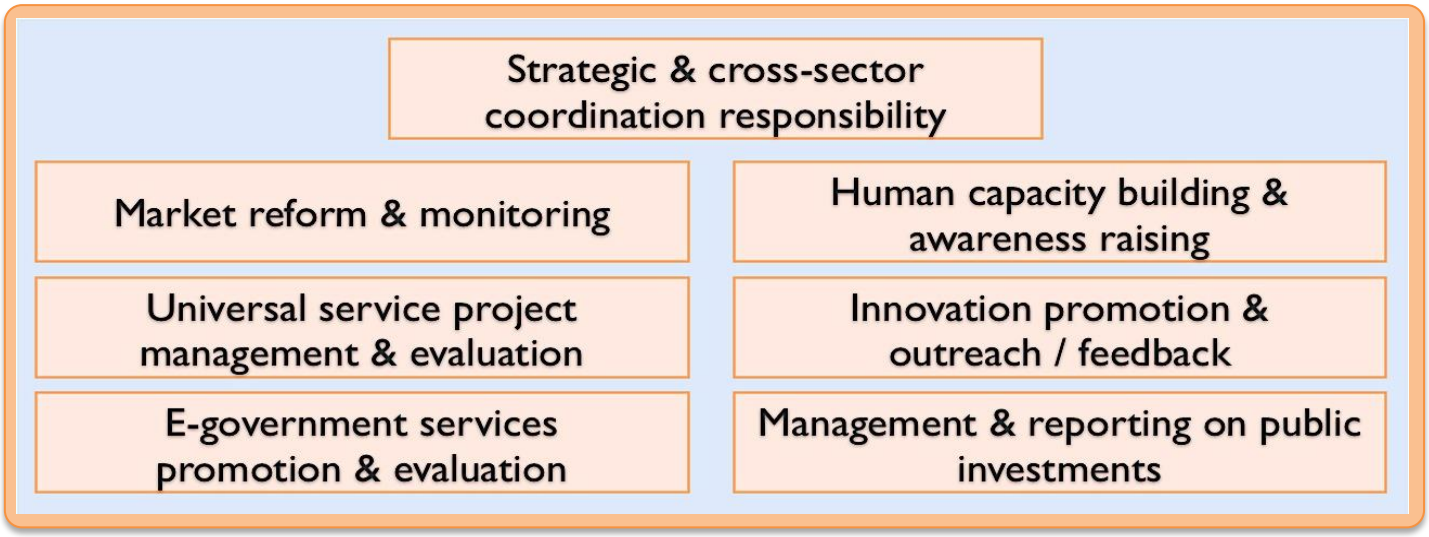
Key elements of broadband plans



Source: ITU/UNESCO Broadband Commission for Digital Development, Planning for Progress: Why National Broadband Plans Matter 2013

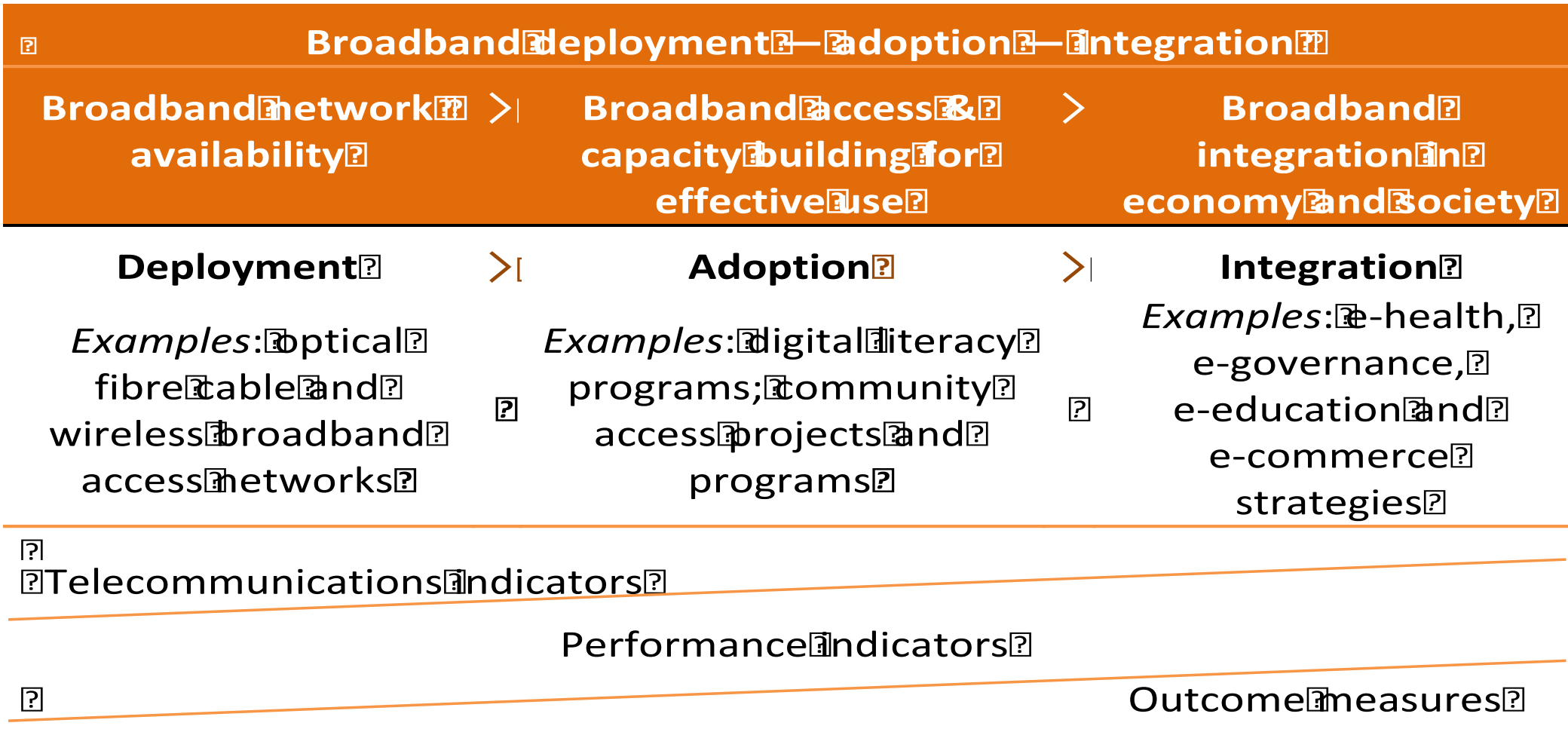
Regulator roles and coordination

- Regulator may have both lead and support roles - depending on scope and capacity (many dimensions of broadband plans).
- Key areas include
  - Regulation
  - Statistics
  - Spectrum
  - Consumers
  - Civil works
  - Capacity building
  - eGovernment, education and health sectors



Source: Colin Oliver

Monitoring indicators and outcomes



Source: Colin Oliver

*Deployment/construction overview and prospects for return on broadband investment (ROI)**

	Fixed network		Wireless network	
	Incumbent	**New entrant**	**Incumbent**	**New entrant**
Backbone / trunk routes	Fibre network construction as part of capital equipment enhancement and replacement program: commercial ROI	New infrastructure requires access & interconnection to achieve a commercial ROI	Re-use of existing passive infrastructure: commercial ROI	New infrastructure requires access & interconnection: commercial ROI
Central business districts				
Urban areas (small business & homes) – *'brownfields'*	Copper enhanced or replaced with fibre: longer-term ROI	Unbundled access generally required to achieve a commercial ROI: new infrastructure construction may provide a commercial ROI in some cases		
New estates – *'greenfields'*	Capital investment in fibre: low maintenance cost: commercial ROI		New infrastructure: commercial ROI	
Rural and remote areas	High cost and slow/negative ROI *New wireless infrastructure may be dominant over limited/declining/absent fixed line access*		New infrastructure required: possible universal service fund (USF) support: slow ROI	

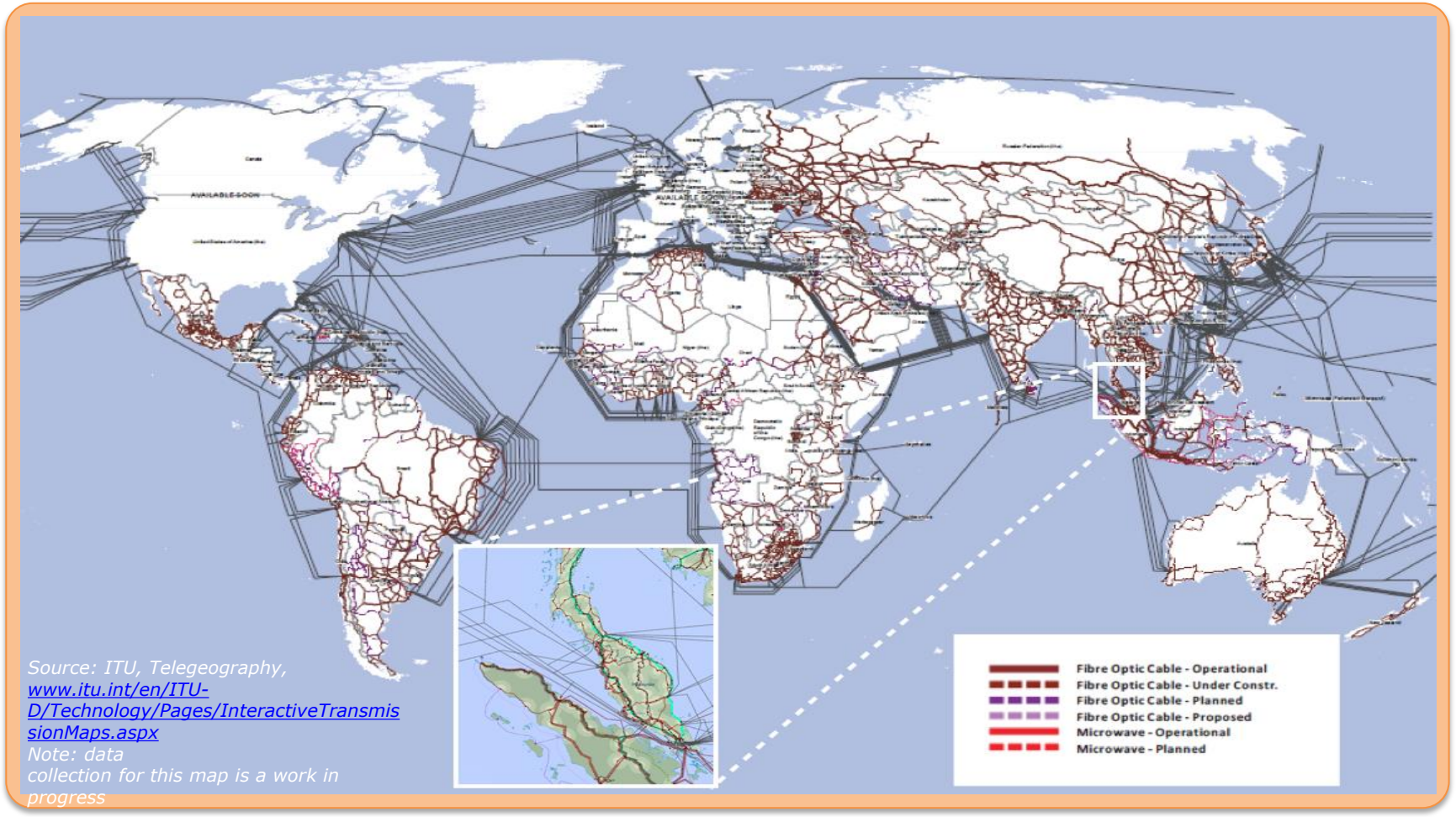
*Note: 'commercial' or 'slow' ROI are relative terms. In different countries and conditions the rate of return on investment may vary widely. In small island states, for example, the cost of international connectivity for small populations may bring additional challenges.

Source: Colin Oliver

Monitoring deployment and availability

- Indicators of availability are established, but their *value can be enhanced* by
  - Providing greater detail down to *community* level
    – e.g., through interactive online *maps*
  - Publishing information *online*
    – to benefit both users and service suppliers
  - Identifying *barriers* and regularly reviewing progress
    — and *publishing progress online*
  - Monitoring *market developments*
    – including *wholesale access and competition*

ITU's backbone transmission map



Source: ITU, Telegeography, www.itu.int/en/ITU-D/Technology/Pages/InteractiveTransmissionMaps.aspx
Note: data collection for this map is a work in progress

… with an example of interactive regional mapping capability

Broadband mapping examples

- Interactive broadband maps available online include:
  - Australia (https://www.mybroadband.communications.gov.au)
  - Canada (http://www.ic.gc.ca/app/sitt/bbmap/hm.html?lng=eng)
  - United States (http://www.broadbandmap.gov),
  - Germany http://www.zukunft-breitband.de/Breitband/DE/Breitbandatlas/breitbandatlas_node.html
  - Ireland (http://www.dcenr.gov.ie/communications/communications+development/national+broadband+scheme.htm)
  - New Zealand (http://www.broadbandmap.govt.nz)
  - Poland (http://maps.polskaszerokopasmowa.pl/maps)
  - United Kingdom (http://maps.ofcom.org.uk/broadband/).
- ✓ In May 2014 the EC completed a study of current broadband mapping initiatives (*http://www.broadbandmapping.eu/*).

New Zealand Broadband deployment update as at 30 June 2013

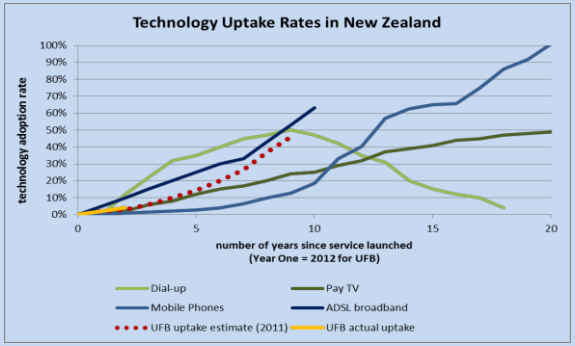
Ultra-fast Broadband Initiative (UFB)

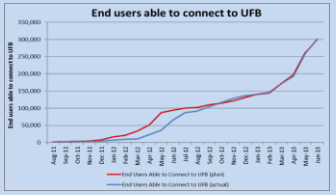
Connecting 75% of New Zealanders with fibre to the premise by end 2019. Fibre will be capable of peak speeds of at least 100Mbps.

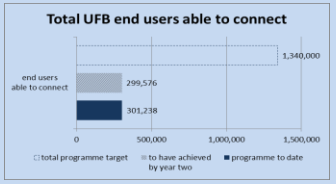
	# of premises able to connect			# of end users able to connect			# of connected users		
	quarter four	year two	to date	quarter four	year two	to date	quarter four	year two	to date
TOTAL	95,818	171,331	229,633	129,352	224,927	301,238	4,851	8,751	9,984

Number of retail providers actively offering UFB services: 50

Ultra fast broadband connections are now available in 26 candidate areas. For information on whether you can connect to UFB, please contact your retail service provider or go to www.broadband.govt.nz







Rural Broadband Initiative (RBI)

Connecting 86% of rural homes and businesses (outside UFB areas) with broadband at peak speeds of at least 5Mbps by end 2015, through fixed wireless and improved copper services.

Vodafone

Role: provision of fixed wireless broadband capable of peak speeds of at least 5Mbps.

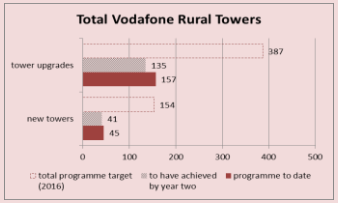
	quarter four	year two	to date
towers upgraded:	12	77	157
new towers installed:	9	32	45
households covered (approximate):	10,930	58,127	111,050

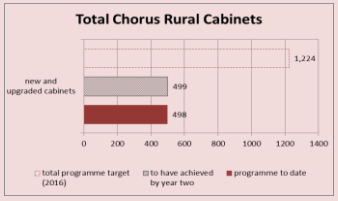
Chorus

Role: deployment of fibre to cabinets, offering improved broadband services. Some residences will receive copper-based broadband speeds of up to 20Mbps.

	quarter four	year two	to date
cabinets upgraded:	91	289	498
households covered (approximate):	7,720	31,092	50,120

Some rural homes and businesses will have the choice between copper-based broadband and fixed wireless broadband. Currently over 149,000 homes have access to RBI services.





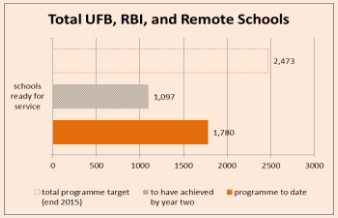
Priority Users

To be connected with fibre capable of peak speeds of at least 100Mbps through the UFB or RBI. Remote schools will receive point-to-point wireless connections capable of peak speeds of at least 10Mbps.

Schools

	quarter four	year two	to date
UFB: schools with fibre past the school gate	124	832	1008
UFB: schools with fibre connections (ready for service)	176	623	973
RBI: schools with fibre past the school gate	83	294	779
RBI: schools with fibre connection (ready for service)	83	313	774
remote schools (ready for service)	7	23	33

Note: The programme target covers state and state-integrated schools. It includes schools that have been connected to fibre outside of the UFB and RBI.



Hospitals

	quarter four	year two	to date
rural hospitals with fibre connections	8	24	28

Note: number of hospitals includes eight rural hospitals connected to fibre prior to the establishment of the RBI.

Regular online updates on the progress of the

- The Ultra-fast Broadband Initiative,
- the Rural Broadband Initiative and
- the connection of schools and rural hospitals.

Source: [Ministry of Business, Innovation and Employment: Broadband Deployment Update]

Rural & remote area project monitoring & evaluation - Canada

- **Broadband Pilot Program** - a CAN$105 million initiative 2002-2007 – to demonstrate benefits of broadband to remote communities;
  - Funded preparation & implementation of business plans for broadband services to assist job creation, education, health, economic development, governance, sharing best practices.
- Key **findings** of the evaluation:
  - CAN $4.2 million in 154 projects assisted 2,285 communities to develop business plans.
  - CAN $80.3 million in the 63 projects assisted nearly 900 communities (including 142 First Nations reserves), with one-time investment in capital infrastructure.
  - Number of unserved communities was reduced from 4,000 to 2,000.
  - Over 90% of vendors and project representatives indicated that without government assistance there is no business case for providing broadband to rural & remote communities.
  - Collaboration engendered by the project pushed up demand: neighbouring communities wanted to be included; and some vendors added more en-route communities.
- The principal **recommendations**
  - Consideration be given to extending broadband access to additional Canadian communities.
  - Existing 'bottom up' community-based approach (Canadian programs generally involved matching funding from other entities) increased awareness of the benefits of broadband.
  - Administrative improvements could be considered in future programs.
- **Subsequent** *Broadband Canada Program*, a 3-year, CAN $225-million investment to bring faster internet to an additional 218,000 Canadians in underserved areas that ended in 2012.
- *Economic Action Plan 2014* provides CAN $305 million over 5 years to high-speed broadband access to (5 Mbps) for 280,000 more Canadian households to achieve near-universal access.

Items for checklist: project monitoring

Objectives and actions	Target date	Status
Project management and monitoring		
Subsidised *deployment* projects and programs		
• Transparent monitoring of tender procedures and outcomes		
• Process milestones identified and reported		
• Reporting responsibility clearly assigned in contracts		
• Targets established with regular progress reporting requirements		
• Coverage commitments mapped and progress reported		
• Transparent monitoring of progress against targets		
• Independent evaluation of project outcomes in place		
Subsidised *adoption* projects and programs		
• Transparent monitoring of tender procedures and outcomes		
• Reporting responsibility clearly assigned in contracts		
• Qualitative reporting on demand promotion projects:		
• Demand aggregation		
• Community anchor tenants		
• Government anchor tenants		
• Independent evaluation of subsidised projects and outcomes		
• Cost/benefit reporting for ongoing subsidised programs		

FCC monitoring mandate

- In conducting its inquiry, the Commission must "determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion."
- It must also provide demographic information for unserved areas.
- If the Commission finds that broadband is not being deployed to all Americans in a reasonable and timely fashion, the Commission is required to take immediate action to accelerate broadband deployment by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.

Source: FCC Eighth Broadband Progress Report, August 2012, page 8

Report

Eighth Broadband Progress Report

The nation has made significant progress expanding high-speed Internet access in recent years, but further implementation of major reforms newly adopted by the Federal Communications Commission is required before broadband will be available to the approximately 19 million Americans who still lack access, according to the FCC's Eighth Broadband Progress Report.

In an era when broadband is essential to innovation, jobs, and global competitiveness, the Report concludes that the FCC – and the nation – must continue to address obstacles impeding universal broadband deployment and availability

Congress in Section 706 the Telecommunications Act of 1996 requires the FCC to report annually on whether broadband "is being deployed to all Americans in a reasonable and timely fashion." The Report chronicles major strides taken by providers and policymakers to accelerate deployment, including:

Billions invested by the communications industry in broadband deployment, including next-

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Federal Communications Commission – eighth progress report

- The FCC report on *barriers to investment, competition and adoption* :
  - costs and delays in building out networks;
  - President's *Executive Order -- Accelerating Broadband Infrastructure Deployment* of June 2012.
- *Barriers to adoption* have been identified by the FCC:
  - lack of affordable broadband Internet access services;
  - lack of access to computers and other broadband-capable equipment;
  - lack of relevance of broadband for some consumers;
  - poor digital literacy; … and other reasons

Items for checklist: barriers & progress

Objectives and actions	Target date	Status
Barriers to adoption and effective use		
• Broadband affordability		
• Cost of entry-level access as a percentage of income		
• Indicators of affordability by demographic sub-groups		
• Indicators of take-up of subsidised terminal equipment		
• Broadband service quality		
• Service quality checks in place		
• Information published on measured service speed and latency		
• Comparison of advertised and experienced service published		
• Poor digital literacy		
• Skill levels surveyed and skill gaps identified		
• Training programs completed		
• Number of graduates of training programs		
• Barriers to digital inclusion		
• Survey gender participation rates		
• Measure uptake of services by people with disabilities		
• Other potential barriers		
• Level of interest and community concerns		
• Periodic/local surveys to identify perceptions of potential users		

Review of benchmark speed – USA

REUTERS EDITION: U.S. SIGN IN

HOME BUSINESS MARKETS WORLD POLITICS TECH OPINION BREAKINGVIEWS

U.S. FCC asks if broadband should mean faster Internet speeds

BY ALINA SELYUKH

WASHINGTON | Tue Aug 5, 2014 3:15pm EDT

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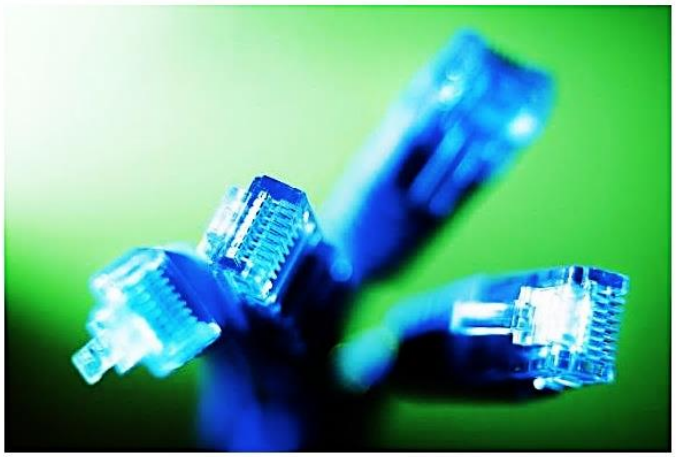

Internet LAN cables are pictured in this photo illustration taken in Sydney June 23, 2011.
CREDIT: REUTERS/TIM WIMBORNE

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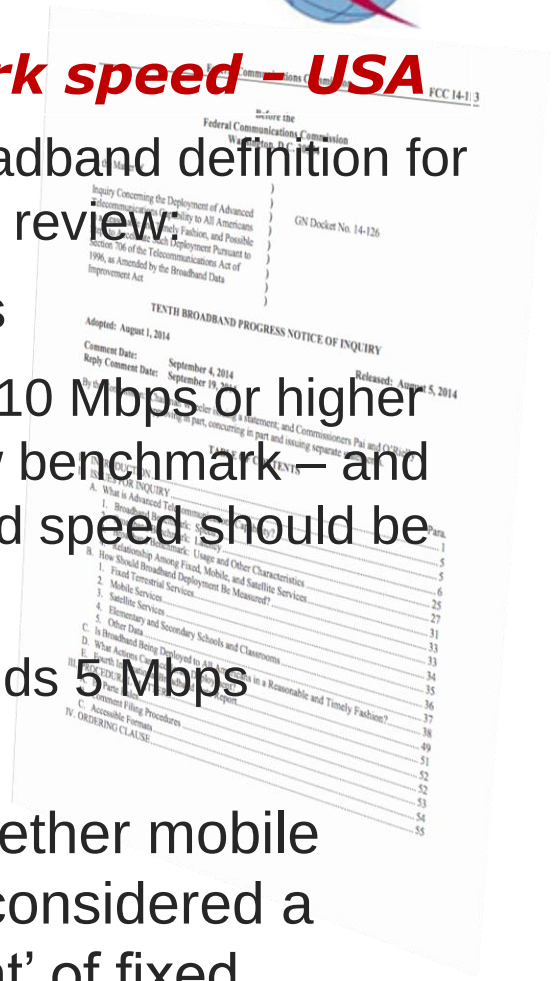
(Reuters) - The U.S. Federal Communications Commission on Tuesday proposed changing how it measures high-speed Internet to potentially require download speeds of 10 megabits per second (Mbps) or higher for a service to qualify as broadband.



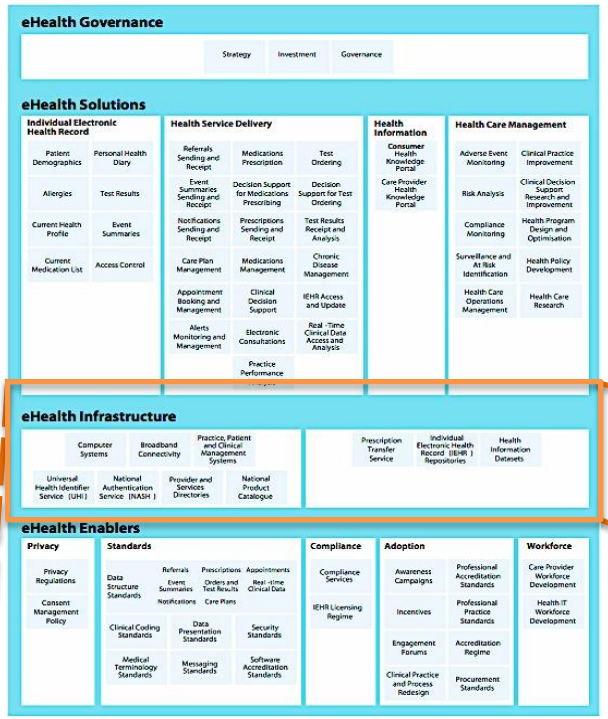
- FCC reviewing its broadband definition for the purpose of its next review:
  - Currently 4/1Mbps
  - Inquiring whether 10 Mbps or higher should be the new benchmark – and whether the upload speed should be increased.
  - (Netflix recommends 5 Mbps minimum)
- FCC also asking whether mobile services should be considered a 'functional equivalent' of fixed broadband

*Source: FCC **Tenth Broadband Progress Notice of Inquiry**, 5 August 2014, http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0805/FCC-14-113A1.pdf*
http://www.reuters.com/article/2014/08/05/us-usa-internet-speed-fcc-idUSKBN0G520F20140805

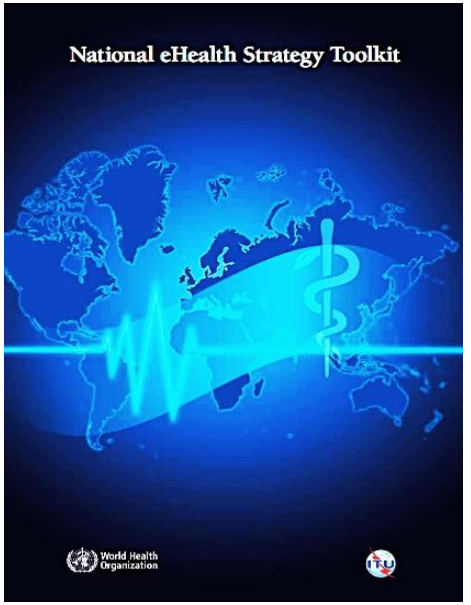
Monitoring the integration phase

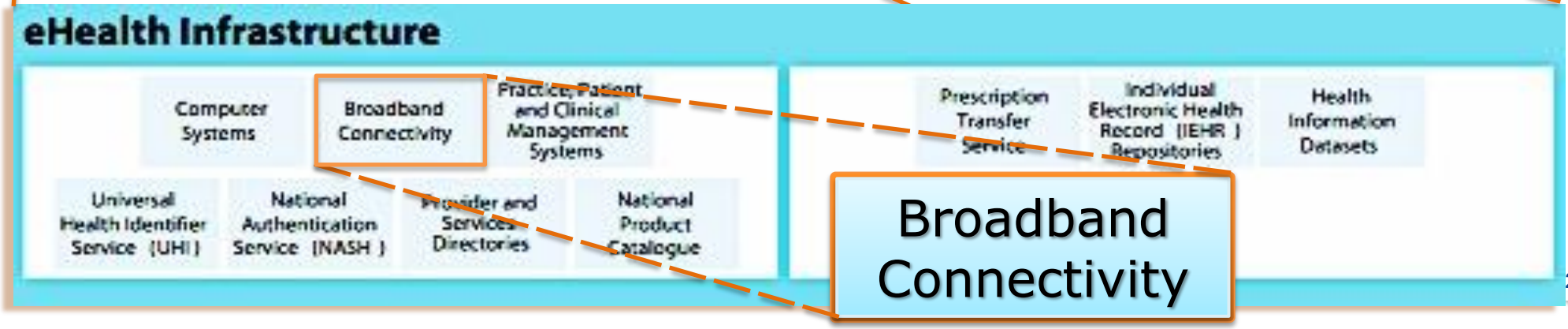
- Indicators of a fully integrated broadband environment:
  - ☑ ubiquitous availability of broadband connectivity,
  - ☑ high levels of digital literacy,
  - ☑ full coverage and utilisation of broadband by all key sectors,
  - ☑ well advanced progress with digital inclusion, and
  - ☑ universally affordable access.
  - ☒ Alternatives to online communication difficult or unavailable — requiring coordination among other agencies.
- Priorities for regulators in the integration phase?
  - ❑ reliability, resilience, security & quality of broadband services,
  - ❑ remaining gaps in digital inclusion and affordability, and
  - ❑ any remaining barriers to adoption of high speed connectivity.
- Three phases (deployment, adoption, integration) also affect users.

Example: Broadband-eHealth integration



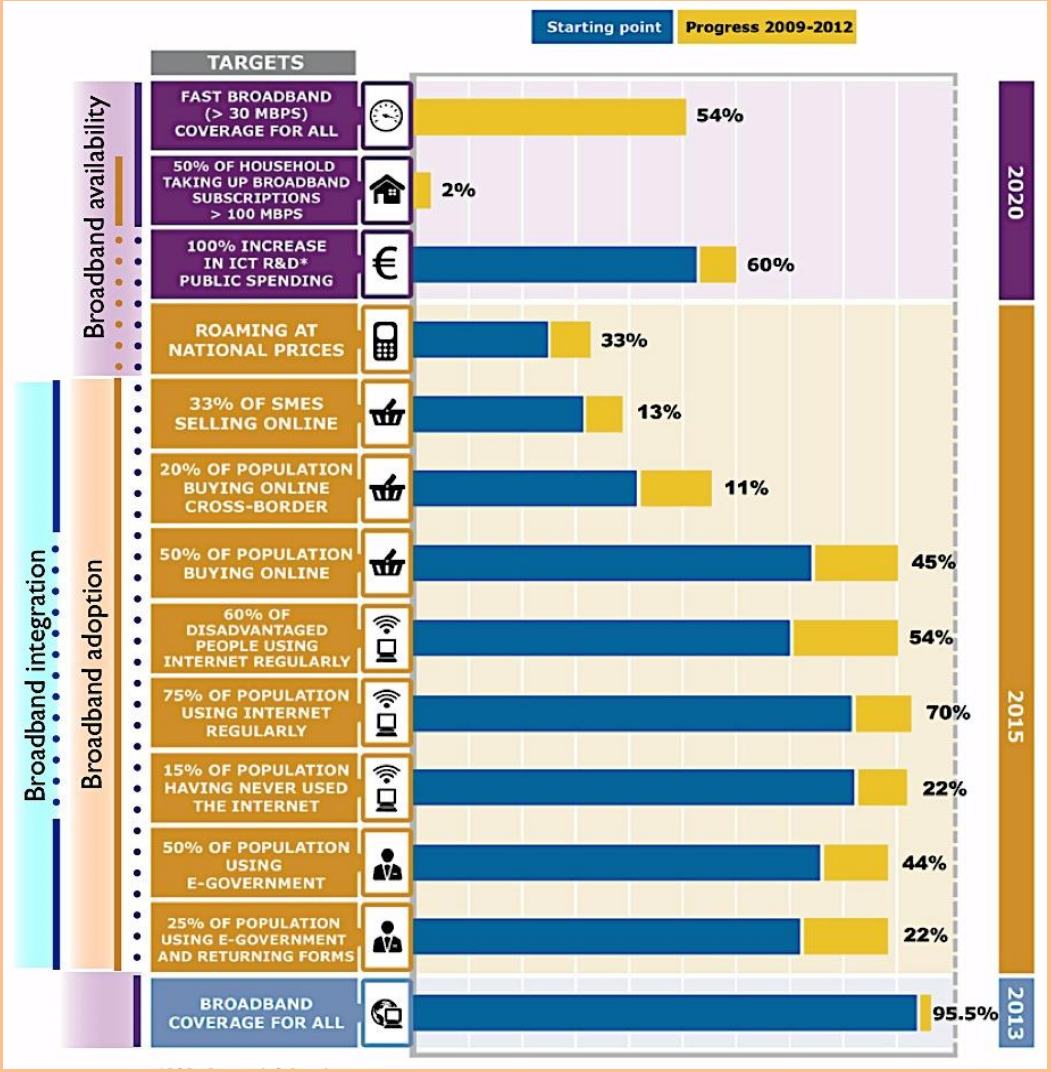
Sample national eHealth component map - ITU and WHO National eHealth Strategy Toolkit 2012 p 58, based on *National E-Health and Information Principal Committee, National E-Health Strategy, 30 Sept 2008.* Adelaide, Deloitte Touche Tohmatsu, 2008





Online status reports

European Commission Digital Agenda Scoreboard



Status report: Digital Victoria

Engagement Actions	By	Status
7. Commence implementation of an identity management capability for citizens wanting to use online channels to engage with government	March 2014	✓ Complete
8. Agencies commence transition of key services online	April 2014	Plan Consult Identify Implement Released
9. Agencies complete transition of frequent transaction services online	December 2014	Planning underway
10. Continue to implement website management standards	Ongoing	✓ Commenced and ongoing Website management framework

Source: http://www.digital.vic.gov.au/status/ (as at 12 November 2013)

Source: European Commission, Digital Agenda Scoreboard 2012.
Sidebars on broadband 'availability', 'adoption' and 'integration' added by the author

Conclusions – issues to consider

- Monitoring and feedback: should be a key part of broadband plans.
- Shared information (and mapping) supports informed decisions and contributions.
- Process milestones/progress can be published online in a way that is relevant to all stakeholders including the general public.
- Contracts, licences, projects and programs should have built-in monitoring and feedback requirements.
- Beyond the communications sector short, medium & long-term perspectives (*deployment, adoption, integration*) also apply.