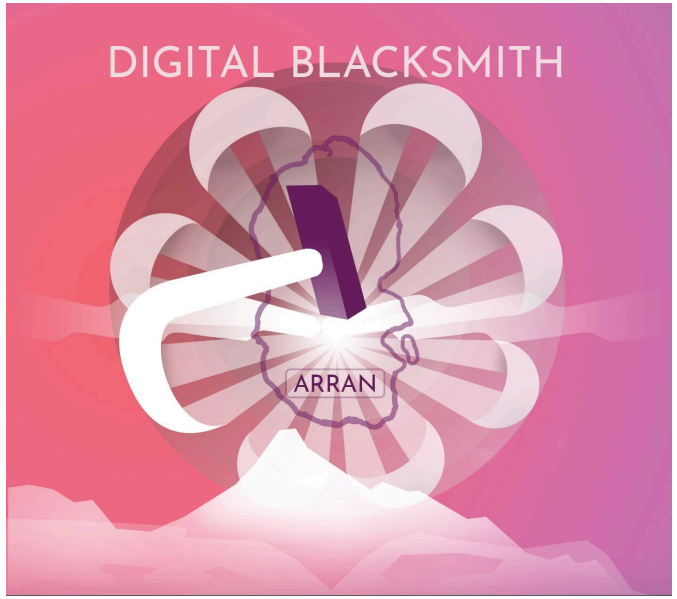
Internet Society
UK Chapter



enhancing broadband, skills & applications

Connecting Rural Communities

Agenda

- 17:05 Introductions
- 17:10 Rural connectivity , shortcomings - reasons and solutions,
- 17:20 A host of Applications
- 17:30 Skills - The Digital Blacksmith
- 17:40 Questions & Answers
- 18:00 The End

Case in point – The Isle of Arran

Why does connectivity matter?

- Internet benefits have become very clear for rural users

Connect – utopia?

- Seamless connectivity, always fast, present wherever you go
- Affordable so that everyone can share in the benefits and the pie will be bigger for everyone

Why are rural areas so often left behind?

- Policy focus has been on price competition, discouraging deep infrastructure investment
- Long, old telephone cables don’t yield the best broadband

Towards affordable access - coverage

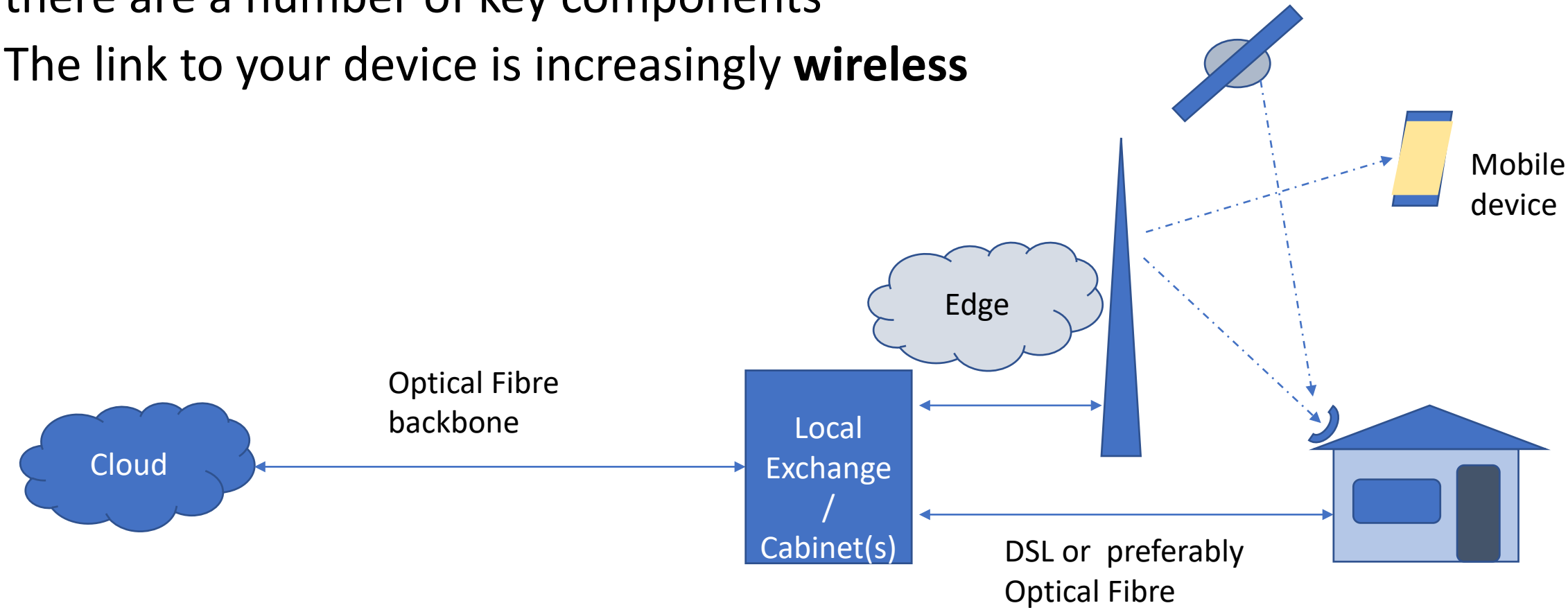
- Combining optical fibre and wireless technology enables affordable and rapid deployment
- The exact combination can be varied to suit all budgets – and can be evolved over time

the dream team

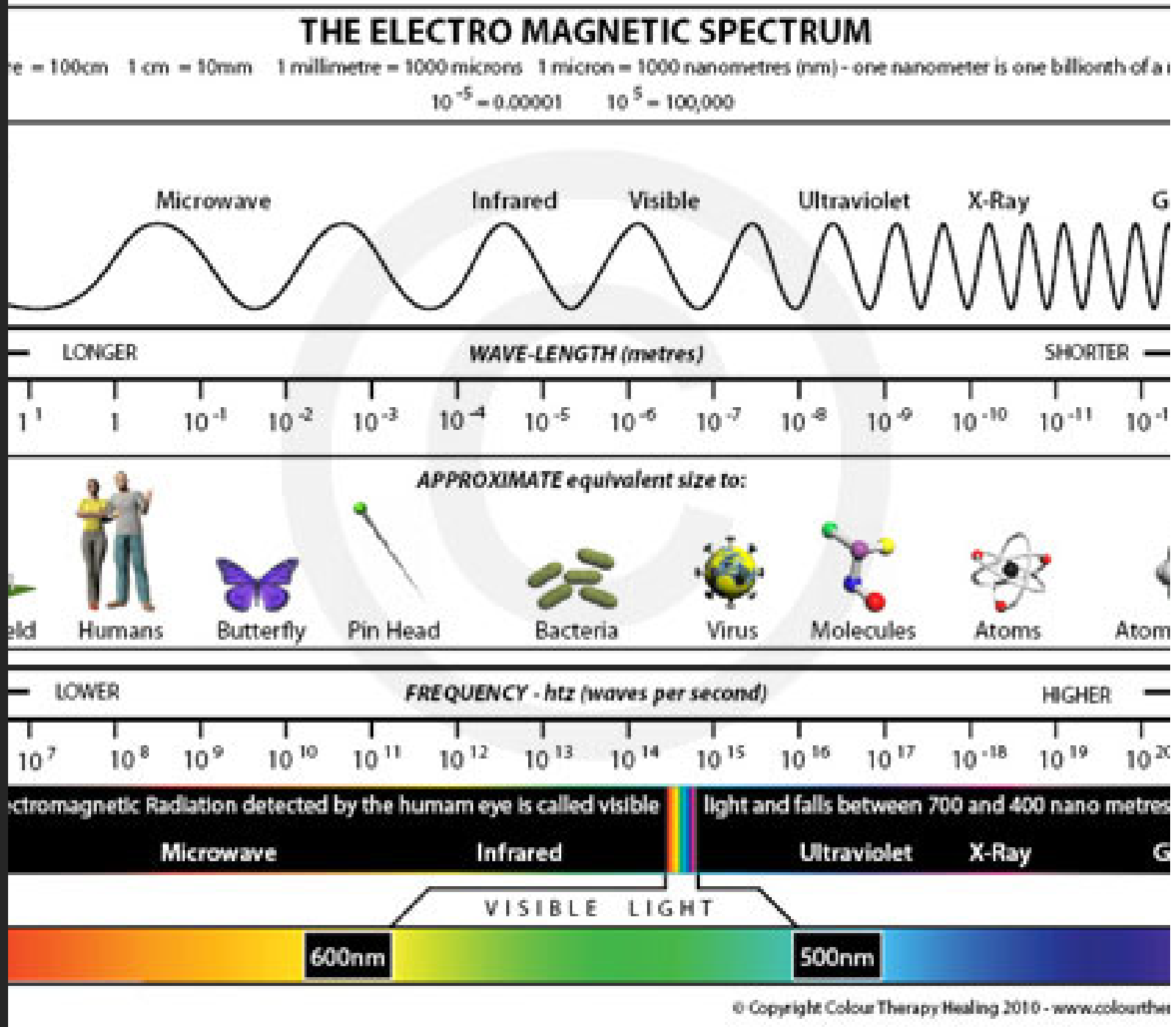
Fabulous Fibre and Wonderful Wireless

Anatomy of a connection

- Between online services, usually hosted in the cloud, and your device there are a number of key components
- The link to your device is increasingly **wireless**

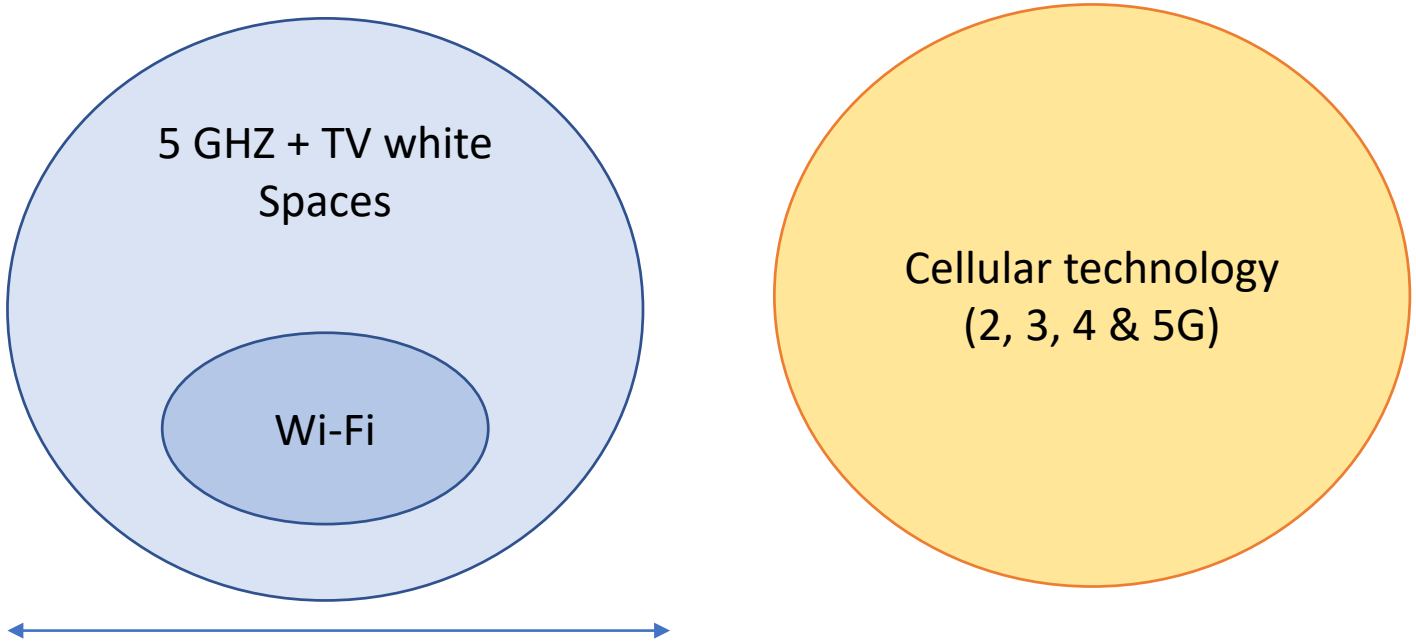


Wireless capability rests on spectrum



Advantages of wireless

- Wireless offers flexibility and lower cost (compared to optical fibre) – particularly in rural deployments
- A wide range of wireless technologies offer a large choice of capacity/coverage trade-offs



Careful planning is needed for good connectivity – outdoor & indoor

Affordable access part 2 - devices

- Shared access – e.g. in a Library has been appreciated by many, but has its shortcomings (mostly applies in developed countries)
- Smart phones and tablets have gradually become more affordable – aimed at serving large developing markets

Policy – the levers driving affordable access

- Affordable access can be achieved in difference ways, but essential someone needs to pay for it
  - Universal Service requirements can be laid on a large operator which can offset losses in rural areas against urban profits
  - Government could facilitate wayleaves, planning permissions & constrain local taxes on infrastructure
- Not all countries have the regulatory resources to craft the perfect broadband framework – nor do they need to (Model Rules)

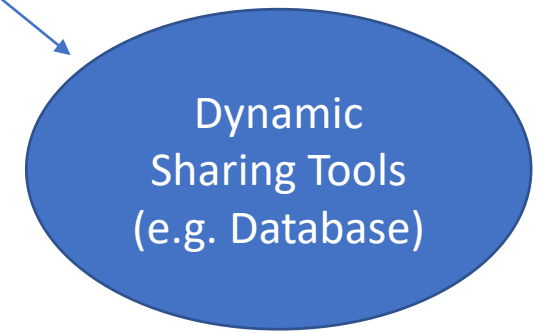
Policy 2 – levers for wireless (spectrum)

Licensed Access

- Exclusive access
- Wide area, regional, national operators
- Supports centralised investment

Licence-Exempt Access

- Shared Access
- Opportunistic access
- Technology-based rules
- Facilitates end-user/ community investment



Hybrid Access

- More efficient use of spectrum
- Higher power allowed
- Adaptable as market develops
- More scalable than conventional licensing

Sharing costs is key to making rural connectivity viable

- It’s hard to generate commercial interest in improving rural connectivity. No single company could realise the returns that would justify the investment needed – especially if it looks only at the short term
- However if businesses are able to sharing the costs of infrastructure, access to spectrum etc., then the costs and benefits start to come closer into balance

Internet for community cohesion….

- Local media – facilitating local society
- Facebook is well established, but others are available:
  - HelloHub – Virtual Coffee Shop example
  - Capturing and making shareable rich local history – people, geology, flora & fauna
- Ecosavvy – reducing carbon footprint (including lower food waste) – now with online participation
- The Coaltown Daisies and TCDtv – feeding your fans online …

Internet of Things

- Remote health monitoring is just one of the many areas of life where the Internet of Things can help
- Farming and food production is another
- Fisheries monitoring
- Habitat monitoring

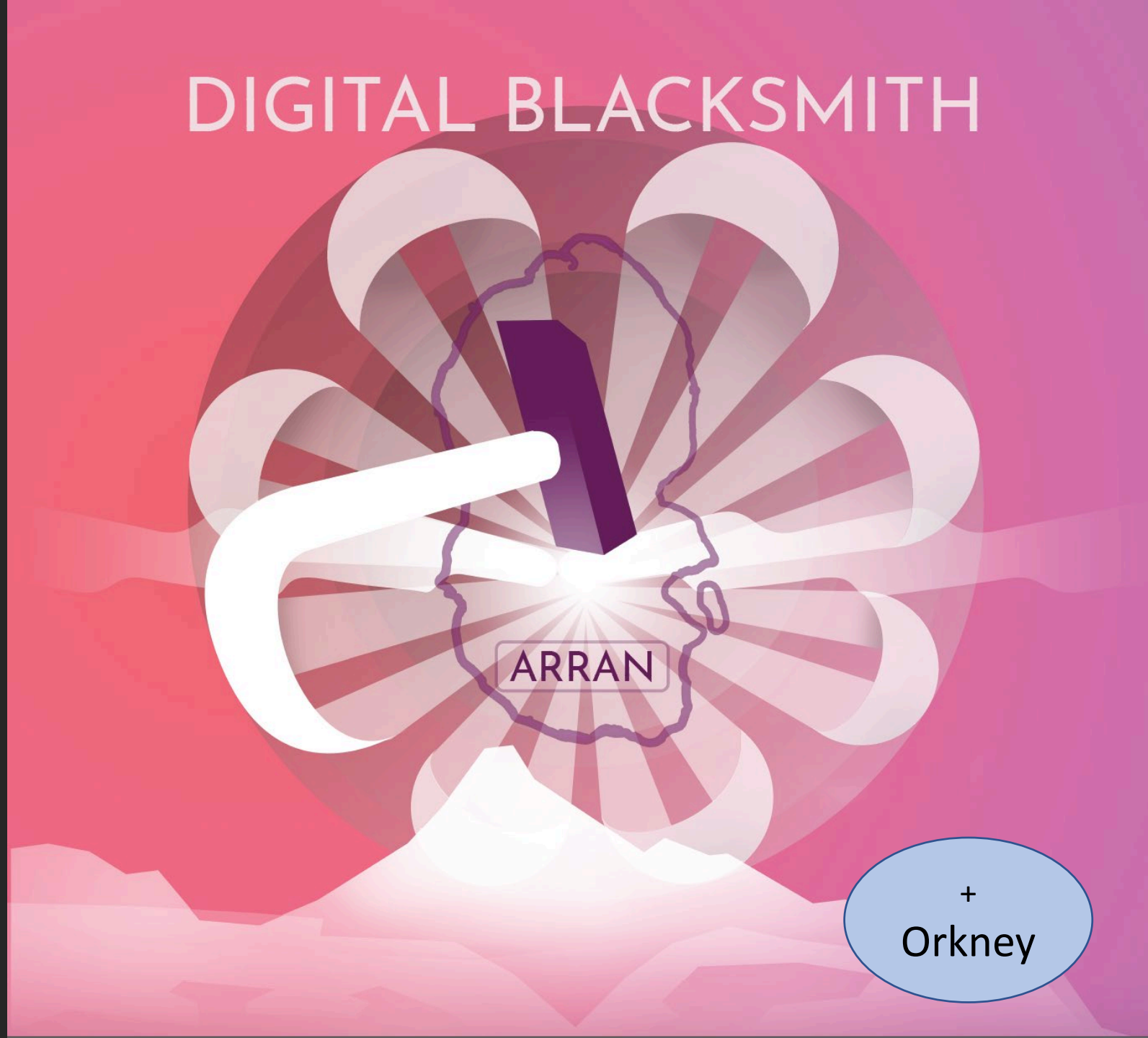
Harvesting data as well as crops …

- Data can be collected from widespread sensors across fields and from individual animals, together with multi-spectral band aerial images
- Analysing this data in the cloud can give deep and timely insights – saving resources and cost

Smarter homes in smarter communities

- Keeping an eye on properties and people remotely is powerful
- Clearly needs some privacy safeguards

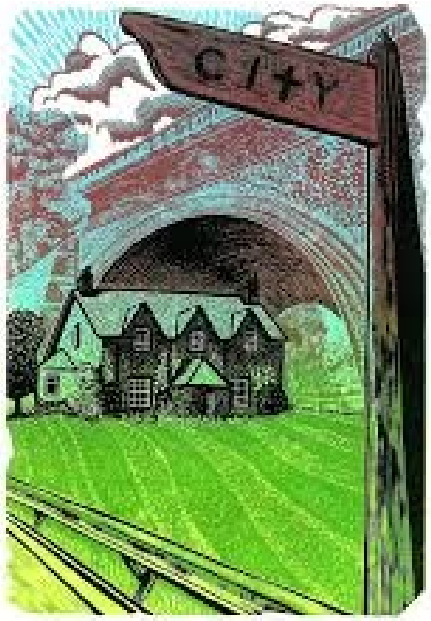
Reaping online benefits requires local-based skill



Digital Blacksmith – promoting skill development

Internet Safety

Internal connectivity – home / office / coffee shop



Career signposting

Web + Social Media Applications

Internet of Things applications

In summary

- A combination of optical fibre and wireless technologies can be used flexibly to create affordable coverage for rural communities
- A host of applications and online services are available to support development of local economy and society
- Such abilities have become critical during this period of lockdown, when not being online brings risks of isolation
- Skills are needed to apply the connectivity and digital tools to harvest the greatest yield for local communities – and create new jobs
- Sharing infrastructure, spectrum, costs and skills can enable the whole community to benefit

Thank you

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Appendix

A brief wireless primer

- Not all wireless technology is equal – linked to the part of spectrum which is being used
- There's a coverage / capacity trade- off. Higher frequencies give more capacity, but less range – for example Wi-Fi in the 5 GHz band

Key technologies:

- Cellular (licensed) – 5G is the latest, but 4G has wider coverage now
- Wi-Fi (licence-exempt) 6 is the latest – only included in the newest devices