Global Summit
A New Spectrum Mindset

November 3-5, 2020
Virtual Event

The Importance Of Connectivity For Community Centers And Development
Inclusive connectivity as a key enabler of development

ALESSANDRA LUSTRATI
Head of Digital Development

Foreign, Commonwealth & Development Office (FCDO)
UK Government

Global Summit
A NEW SPECTRUM MINDSET

November 3-5, 2020
VIRTUAL EVENT

OFFICIAL

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DYNAMIC • SPECTRUM • ALLIANCE
Head of Digital Development, Foreign, Commonwealth & Development Office (FCDO)

Alessandra Lustrati is the Head of Digital Development in the UK Government’s Foreign, Commonwealth & Development Office (FCDO). As part of her role, she leads the global Digital Access Programme, as well as overseeing a policy and programming portfolio focused on digital inclusion, digital transformation and the responsible use of digital technologies in developing countries and emerging markets. She is also an accredited Senior Private Sector Development Adviser within FCDO. Before joining the UK Government, Alessandra worked with the United Nations, the European Union, and in the non-profit and private sectors - with an emphasis on inclusive and sustainable economic growth, and a deep interest in the role of digital technologies for the reduction of poverty and inequality. She has lived and worked extensively across Africa, Asia and Europe, and speaks seven languages.
Digital Development: FCDO’s policy priorities
The inclusive and sustainable use of digital technologies can support economic development, social development and improved governance...

The UK Government has a history of investing in ‘digital for development’ in partner countries both as a cross-cutting enabler and in specific sectors (education, health, finance, agriculture, etc.) through policy and programming work...

The most recent strategy (‘Doing development in a digital world’ 2018-2020) by former DFID is currently being updated by the new FCDO...
Digital development: key policy areas

- Digital Inclusion
- Responsible Digital
- Digital Transformation
Digital development: key policy areas

- Digital Inclusion
- Responsible Digital
- Digital Transformation

‘a new spectrum mindset...’
Ensuring that no one is left behind in a digital world, and that institutions, businesses and users in our partner countries can harness digital communication and tools for inclusive economic growth, social development and open and transparent governance.

Placing a strong focus on underserved and vulnerable groups and communities (including due to exclusion factors such as gender, disability, age and location).
Testing and validating innovative and scalable technology and business models for sustainable and inclusive connectivity, digital literacy and skills, and locally-relevant digital content and services for underserved communities.

Building a more conducive environment for digital inclusion, by improving the relevant policy, legal and regulatory frameworks, and strengthening the capacity of relevant institutions in partner countries.
Key drivers of digital inclusion

- Affordable and sustainable last-mile connectivity
- Awareness and attainability
- Locally-relevant digital content and services
- Digital literacy and skills
# Key drivers of digital inclusion (detail)

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Affordable connectivity as foundation of digital inclusion

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# Enabling environment for digital inclusion

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**Policy/legal/regulatory framework**
National ICT strategies, role of USFs, spectrum allocation, telecom sector regulation, competition and taxation, ISP licensing/permits, digital skills policy, etc.

**Market ecosystem**
TelCos/MNOs, InfraCos, ISPs, community networks, device/tech providers; digital skills, content and services providers; industry bodies; investors/financial institutions, etc.
Supporting developing countries and emerging markets to embrace digital technologies, products, services and processes that positively disrupt and transform their governments, economies and societies:

(a) adopt a **whole-of-government approach to digitalisation**, to better engage across institutions, with citizens, and to improve public service delivery;

(b) grow the digital economy and facilitate digitally-enabled trade and investment, through **digitalisation of firms and supply chains**;

(c) protect the rights and amplify the voice of citizens by making greater use of **digital technologies for civic engagement** and participation in open and transparent governance.
Key areas of ‘Digital Transformation’

**Digital transformation of the economy**
- Integrating Digital Technology Across Key Sectors
- Digitalisation of Firms and Supply Chains
- Opportunities for Digital Trade
- Transforming the Labour Market
- Supporting a Local Digital Technology Ecosystem

**Digital transformation of government**
- Whole of Government Approach to Digitalisation
- Digital Government

**Digital transformation of society**
- Disrupting Access to Information and Trust
- Changes to Social Structures, Relationships, and Norms
- Empowering Citizen Voice and Rights
‘Responsible Digital’: managing the risks and challenges

- Supporting a **safe, secure and resilient digital environment** so that citizens, institutions and businesses can mitigate risks and challenges of an increasingly connected digital world and trust the use of digital technologies for social development and economic growth:
  
  a) Protecting the **most marginalised groups** and communities, especially those **most vulnerable to digital harms**
  
  b) Supporting **online safety** and **security** by building capacity for:
    - respect of **rights** and **ethical values** online and offline;
    - mitigation against threats to online **privacy** and security;
    - increased **trust** in institutions and democratic values by supporting **freedom of online expression** and association and **countering online misinformation and disinformation**.
Main digital risks and harms

- Threats to Privacy
  - Privacy Violations
  - Inadequate Policy and Legal Frameworks
  - Inadequate Digital Literacy
  - Surveillance

- Threats to Security
  - Cybersecurity Breaches
  - Threats to Personal Security
  - Conflict-Related Threats

- Digital Misinformation and Disinformation
  - Misinformation
  - Platform Architecture

- Threats to Freedom of Online Expression, Association, and Information Access
  - Internet Censorship, Restricted Access and Blocking
  - Monitoring

- Corporate Violations of Digital Ethics
  - Data Brokers and Third-Party Data Mills
  - Undermining Network Neutrality

- Market Dominance and Disruption
  - Market Dominance
  - Direct Attack
An example: the Digital Access Programme
Programme example: ‘**Digital Access Programme’** (DAP), a UK Prosperity Fund cross-government partnership

**Partner countries:** Brazil, Indonesia, Kenya, Nigeria and South Africa

**Approach:** systemic and market-level technical assistance and capacity building to **catalyse inclusive, safe and secure digital access for underserved communities**; and to stimulate digital innovations for local development challenges.
Addressing the foundational elements of digital inclusion:
- Inclusive connectivity
- Digital literacy and skills
- Locally-relevant digital content
- Digital services
Addressing the foundational elements of digital inclusion:
- Inclusive connectivity
- Digital literacy and skills
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Addressing the foundational elements of digital inclusion:

- Inclusive connectivity: enablers and models
- Digital literacy and skills
- Locally-relevant digital content
- Digital services

Examples: specialized TA support for

Nigeria National Broadband Plan (2020-2025)
Kenya National ICT Plan (2020-2024)

... working on enablers and models...
Technical assistance to the Communications Authority of Kenya on regulating for the commercial deployment of TV Whitespace last-mile technology – through:

- Designing and funding a field research project with Strathmore University (Kenya) for the validation of the model’s scale-up
- Collaborating with DSA, Microsoft and local TVWS company Mawingu Networks on sharing industry experience and best practice on spectrum implications
Supporting community networks development as a key complementary model for inclusive, affordable and sustainable last-mile connectivity, through:

- **Capacity building of community networks leaders in South Africa** (with ISOC, APC and local network Zenzeleni)
- Building **local digital skills and organizational capacity** of community networks in rural Indonesia with Common Room
- Providing systemic support at micro, meso and macro level for community-led inclusive connectivity models in the five DAP countries and enabling cross-country learning with APC.
Some reflections...
Inclusive connectivity is foundational for digital development. It needs work at systemic and market level. The ‘enablers’ need to be context-specific, and ‘tech-agnostic.’ Consider: telecom regulations, regulator’s capacity, competition policy, market structure (and its political economy).

Last-mile technological innovations and business models are key. Dynamic spectrum allocation underpins inclusive digital access.

Adopt a multi-stakeholder and cross-sectoral approach. Engage with regulators and industry from a neutral perspective. As development donor, add value through: policy dialogue, technical assistance, building capacity, knowledge-sharing.

Leverage private sector investment through strategic corporate partnerships.
Thank you!

Alessandra.Lustrati@fcdo.gov.uk

@FC DO Digital
From Libraries Whitespace Project to Community SecondNets

DON MEANS, DIRECTOR, GIGABIT LIBRARIES NETWORK
• **Director, Gigabit Libraries Network, Libraries Whitespace Project - Connectivity for libraries and community centers**

  With over 25 years experience in ICT, Means is principal investigator for an IMLS grant enabling libraries to explore deploying their own community scale wireless networks to support new neighborhood public access stations. These secondary networks serve community inclusion and resilience goals. Since March, Means has hosted a 21-part series as Libraries in Response around the question, “What is a Library if the Building is Closed?”: internet access, digital services, physical materials and social infrastructure.

  In 2013, Means created the Libraries WhiteSpace Project to advocate library leadership in utilizing TV Whitespace spectrum to dramatically expand access to public library WiFi in communities everywhere. Founding chairman of the Schools, Health and Libraries Broadband Coalition, created in 2009, as a DC-based advocacy organization promoting government policies and programs to assure gigabit fiber to libraries and other community anchor institutions(CAI’s). Initiated the national “Fiber to the Library” campaign in 2007.

  Gigabit Libraries Network is a project of Digital Village Associates, a Sausalito, CA based consultancy.
Gigabit Libraries Network

An open collaboration of innovation libraries cooperating as distributed global testbed/showcase environment in the service of educational, civic and cultural objectives
- 2007 Fiber to the Library
- 2013 Libraries Whitespace Project
- 2016 “Beyond the Walls”
- 2019 Community SecondNets
- 2020 “Libraries in Response: Every Community Connected”
Fiber to the Library campaign

- Gigabit fiber to all 17,000 U.S. public libraries
- Most expedient, economical and equitable way to deliver next generation broadband into every community.
- As “intermediate end points” extend infrastructure deeper into every market / community to facilitate last mile investment.
- Tech and biz model neutral: Public, private, co-op - wired, wireless
- Encoded in National Broadband Plan -2009
• Libraries Whitespace Project

• 1 in 3 U.S adults rely on libraries entirely or partially for internet access.
• But who must be in or just beside one of 17,000 facilities.
• Knight Foundation grant: 2 min video: https://www.youtube.com/watch?v=SofOEsh3BNU
• Goal: Quintuple the number of library AP’s to expand access
Library WiFi
- Manhattan, KS project
Wireless Usage Stats

- **TOTAL USAGE**
  - MPL: 37%
  - WhiteSpace: 63%

- **Usage by Month**
  - MPL
  - WhiteSpace

© 2020 Dynamic Spectrum Alliance
Typical Library TV WhiteSpace setup:
Base Station supporting 3-5 remote library access points
Eg. Kiosks, Parks, Shelters, Senior Centers, Rec. Facilities
“Beyond the Walls”

- Federal grant to prove concept
- Additional support from other public, non-profit and commercial
- Projects in: ME, PA, GA, NE, AZ, MI, SD & WA (tribal library)
  - National competition
“Community SecondNets”

- Semi-autonomous community scale wireless to link community anchor institutions (CAI’s) as “second responders”
- Federal grant to demonstrate dual use capabilities:
  - Expand Access and Increase Resilience
  - WWAN’s using TVWS and other wireless as redundant network capability against outages
Direct links among schools, clinics and other anchors as “second responders”
— Libraries as Second Responders —

Pandemic’s not (nearly) our only challenge.
CA: 8,500 wildfires
4,267,386 acres burned
Lost 40% IA corn crop for 2020

Corn completely flattened in Boone County by the derecho on August 10. Photo: Meaghan Anderson, Iowa State University
2 Tropical Cyclones Make Landfall Almost at Same Time!
Record # storms in 2020
Huron Public Library Redeployed to Testing Site

(*redistributed checkout hotspots to EMA*)
Millinocket, ME Library

- Fabricated portable unit for rapid response in crisis &/or in support of ordinary community events (marathon race)

Nomadic TVWS Node

- Wheeled, weatherproof case
- 50 Ah deep cycle battery, with AC charge controller
- Solar power battery controller
- 600W pure sine wave inverter w/power strip
- 6-port ethernet switch
- 3 PoE injectors for TVWS client, wireless AP, and security camera
- Circuit breaker box (4 breakers)
- 4 weatherproof ethernet ports including an external management port
- Weatherproof AC power/charging port
Milledgeville, GA Library

- Repurposing old pay phones as:

“Neighborhood Library Access Stations”
Public phone, Call box, e-Gov kiosk, Library WiFi
Within 10-15 minute reach of everyone.
SecondNets: Beyond TVWS

• Plymouth, NE (pop. ~400) - 500 Mbps 4 mile 5GHz link from Gig school
• Split between 46 local students and Plymouth Library
Pottsboro, TX Library

Partners with local WISP to use area EBS licenses to support new “Neighborhood Access Stations”

“[Mother] talked about how access to the Internet was the difference between having her five boys miss a year of school and having those same boys thrive. The family has one car that the father has to take to work M-F. They do not have internet (it isn't available) or a computer. Because of Covid, it is unlikely the sons will be able to go to school.”
Castleberry, TX ISD & Library partner to use private LTE in CBRS
Priority 3-prong approach:

- Public access centers such as libraries
- Community networks
- Offline internet

Support and reinforce each other to Connect and Enable the Next Billions (CENB) with attention to the UN’s 2030 Sustainable Development Goals (SDG’s).
2020 Declaration: “Libraries in Response: Every Community Connected”

International Federation of Library Associations and Institutions (IFLA)
Alliance for Affordable Internet (A4AI)/ Web Foundation
Internet Society
People Centered Internet
Bibliothèques Sans Frontières
EIFL (Electronic Information for Libraries)
Gigabit Libraries Network (GLN)
• Ensure that each community has access to at least one publicly-available, adequately connected, no-fee internet access point, and that every school has access to an online or offline library.

• Mobilize libraries to act as community labs for action research, improving how we connect, protect and respect each other, and work together to achieve the UN Sustainable Development Goals by 2030.

• Ensure adequate trained staffing and access to equipment for libraries and other community anchor institutions to provide a safe and secure access point to networks, respectful of privacy, and support for digital skills and education throughout life, enabling people to learn, earn and thrive.
Thank you!

Don Means, Director
Gigabit Libraries Network
Info@GigLibraries.Net
Jane Coffin is responsible for the Internet Society’s Internet Growth project teams. The Internet Growth project teams are focused on Community Networks, Internet Exchange Points (IXPs) & interconnection, peering, and community development, and a new critical project on measuring the health of the Internet. Her work also focuses on access and development strategy, where she and other ISOC colleagues and partners focus on coordination of collaborative strategies for expanding Internet infrastructure, access, and related capacities in emerging economies with partners.

Prior to joining ISOC, Jane worked on Internet and telecommunications policy issues for the Office of International Affairs at the National Telecommunications and Information Administration – U.S. Department of Commerce. She was an active participant in Internet discussions in the ITU, OAS-CITEL, and OECD, working closely with the five regional Internet registries (RIRs) and other Internet technical community stakeholders. She was very involved in policy discussions on open Internet standards and issues related to BGP, IPv4, IPv6, and MPLS. While at NTIA, Jane was an advocate for the deployment of Internet exchange points (IXPs) to increase international Internet connectivity (IIC), and was an ITU-T SG-3 IIC co-Rapporteur and an IIC coordinator in CITEL’s PCC.1. She was Vice-Chair of the Federal IPv6 Task Force, and a Vice-Chair of the ITU Council Child Online Protection Working Group.
Community Networks
Connectivity for Community Centers – Dev Panel

Jane R Coffin
Senior Vice President, Internet Growth
coffin@isoc.org
Community Networks are networks built, managed and used by local communities.
Trends

- Half of the global population remains offline
- A slowdown in the rate at which people are coming online
- COVID-19 pandemic clearly demonstrated the importance of the Internet
Community Networks are Diverse

1. **Different size**
   - 50 to 50,000 people

2. **Different technological set up**
   - Voice and SMS only, WiFi only, mesh network, municipal network

3. **Different purpose**
   - Gain access, improve affordability, greater openness and autonomy

4. **Different governance models**
   - Non-profit member associations
   - Libraries
   - Cooperatives
   - Small businesses
   - Projects and partnerships between government, NGOs, the Internet technical community, network operators and/or academia
A Community Network is Built by

• Planning and designing with the community
• Conducting survey of needs and opportunities, understanding physical features and climatic conditions for network deployment
• Mobilising locally-available resources to install network
• Dealing with legal aspects, such as obtaining permits from relevant authorities
• Learning-by-doing / training to build, operate and maintain network
• Agreeing on governance structure, revenue model and transparent process for operating network
• Raising awareness and promoting the use of network
• Creating relevant local language content and services
Policy and Regulatory Challenges

• High cost and complex requirements for licensing and permits
• Lack of access to spectrum
• Lack of support for infrastructure sharing inhibits access to passive infrastructure and backhaul
• High taxes, levies and other duties for equipment
• Civil and criminal liability for people sharing Internet access
Financial and Sustainability Challenges

• Limited access to financial resources, such as investments, loans, grants and government funds (e.g. universal service funds) for –
  - Capital expenses: purchase and install equipment, pay fees for licenses and right-of-way permits, and backhaul connectivity
  - Operational expenses: Training, rent, utilities, communications, salaries, taxes, and maintenance and support services.

• Sustainability of Community Networks is a concern, especially when they have been initiated with external support.
Policymakers and Regulators

• Consider innovative licensing solutions for Community Networks, such as license exemptions, social purpose licenses or experimental licenses
• Ease requirements and obligations attached to the license, such as simplifying registration procedures and reducing reporting requirements
• Reduce or waive license fees, taxes, levies and other duties for Community Networks
• Expand license-exempt spectrum bands for Wi-Fi that can be used in non-line-of-sight situations
• Make licensed and secondary-use spectrum available for Community Networks, either on license-exempt basis, or on affordable and flexible authorisation schemes
• Allow and create incentives for sharing spectrum, particularly in rural areas with idle spectrum
Policymakers and Regulators

- Promote open access to affordable backhaul networks and Internet exchange points, by mandating infrastructure sharing and network interconnection
- Ensure that pricing schemes for infrastructure sharing are affordable to Community Networks
- Allow tax deductions for contributions to Community Networks
- Limit civil and criminal liability for people sharing Internet access
- Make funding available to Community Networks through the universal service fund, grant programmes and low-interest loans
- Promote the use of open standards, and development of free and open source hardware and software
- Consult with Community Networks on Internet policies and regulations
Civil Society and Community Organisations

- Build and replicate Community Networks with partners
- Advocate for policy and regulatory change that speed up the building of Community Networks
- Boost knowledge and technology transfers by hosting knowledge sharing events and organising exchange programmes/study visits for Community Network partners
- Build a network of trainers to develop skills and mentor in the deployment of Community Networks
Civil Society and Community Organisations

• Collate, document, translate/localise and share tools and resources for building Community Networks
• Provide training specifically for women, indigenous peoples and other marginalised groups in building Community Networks
• Generate evidence and data about the impact of Community Networks
Network Operators and Business Entities

- Recognise Community Networks as an essential and complementary player in last-mile connectivity
- Engage in partnerships with Community Networks to deliver telecommunications services to underserved areas
- Provide backhaul connectivity and share infrastructure and spectrum at rates affordable to Community Networks
- Fund Community Networks as part of corporate social responsibility
- Offer technical expertise in installing, upgrading and operating the networks in communities
Find Out More About Community Networks

• Visit the Internet Society Community Networks webpage at https://www.internetsociety.org/issues/community-networks/
• See also resources from our partners:
  - Dynamic Coalition on Community Connectivity – https://comconnectivity.org/
  - Wireless for Communities – https://wforc.in/
Thank you.

Jane Coffin
Senior Vice President for Internet Growth
coffin@isoc.org
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