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KEYNOTE

Smart Cities & Intelligent
Communities

BROADBAND- ENABLED RURAL COMMUNITIES

“SMART CITIES AND INTELLIGENT COMMUNITIES”

**Bridging the Digital Divide Conference
Canada’s Rural and Remote Broadband
Conference - North Bay, Ontario
November 13, 2019**

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THIS MAY SHOCK YOU!

The Canadian Federation of Independent Business (CFIB) assessed Canada's 125 largest urban centres and compared them on 13 metrics of self-employment demographics, small business sentiment and local tax and regulatory policy.

What is the best Canadian city to start a small business in?

What Canadian City came out on top?



**Toronto?
Montreal?
Vancouver?
Calgary?**

Where's the best Canadian city to start a small business in (no, it's not Toronto or Waterloo)

Toronto, Vancouver, Calgary and Montreal don't even make it into Canada's 10 most entrepreneurial cities' list

Downtown Whitehorse, the place to be for entrepreneurs, says CFIB. *Ben Nelms/Bloomberg*

[Special to Financial Post](#)

Ted Mallett, April 3, 2019, 1:02 PM EDT

Spoiler Alert?!?

Answer: Whitehorse



2018 Top Communities (Overall Most Entrepreneurial):

1. **Whitehorse, Yukon Territory**
2. Winkler, Manitoba
3. Victoriaville, Quebec
4. Rimouski, Quebec
5. Rivière-du-Loup, Quebec
6. Collingwood, Ontario
6. Grande Prairie, Alberta
8. Saint-Georges, Quebec
9. Val-d'Or, Quebec
10. Squamish, British Columbia

Canada's largest urban communities tended to rank somewhat farther down the list because their small businesses may face more competition and higher costs. Property taxes are a major pain point for small firms

2018 Top Large Cities (Census Metropolitan Areas):

16. Kelowna, British Columbia
19. Sherbrooke, Quebec
20. Trois-Rivières, Quebec
22. Montreal periphery, Quebec
28. Gatineau, Quebec
33. Toronto periphery, Ontario
35. Saskatoon, Saskatchewan
37. Regina, Saskatchewan
40. Kitchener-Cambridge-Waterloo, Ontario
43. Edmonton periphery, Alberta



TOP RANKING CITIES INCLUDE WHITEHORSE,
YUKON; WINKLER, MANITOBA; AND
GRANDE PRAIRIE, ALBERTA.



Large urban areas tended to finish farther down the list, but the best in that group include Kelowna, B.C., Sherbrooke and Trois-Rivières, Que., and the periphery of communities around Montreal.

THE COMMON THREAD, EVEN AMONG COMMUNITIES OF VASTLY DIFFERENT SIZES, IS THE PRESENCE OF ENTREPRENEURIAL ACTIVITY.



Whitehorse's
Northlight
Innovation Hub



Kelowna's
Innovation
Accelerator



Sherbrooke's
Bounce
Innovation Hub

HOW 'YA GONNA KEEP 'EM DOWN ON THE FARM

(AFTER THEY'VE SEEN PAREE ?)

WORDS BY
**JOE YOUNG &
SAM M. LEWIS**
MUSIC BY
WALTER DONALDSON

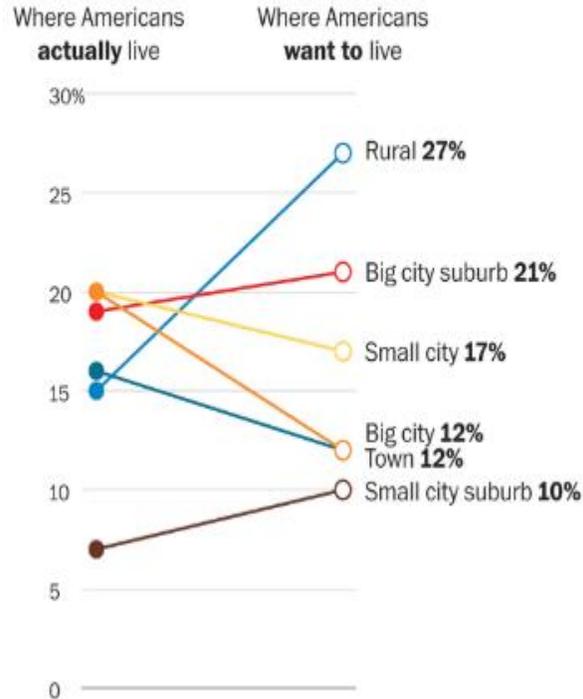


- **Social Offerings** — Places for people to meet each other and the feeling that people in the community care about each other
- **Openness** — How welcoming the community is to different types of people, including families with young children, minorities, and talented college graduates
- **Aesthetics** — The physical beauty of the community including the availability of parks and green spaces

Americans say there's not much appeal to big-city living. Why do so many of us live there?

Country roads, take me home

Where Americans live, versus where they want to live



Source: Gallup

THE WASHINGTON POST

(Illustration by Christopher Ingraham for the Washington Post)

The Atlantic

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IDEAS

Why Are America's Three Biggest Metros Shrinking?

After a post-recession boomlet, the New York, Los Angeles, and Chicago areas are all seeing their population decline.

SEP 9, 2019

New York, Chicago and LA are experiencing population decline most likely driven by unaffordability while other metros are experiencing growth, especially in the South and West.

But some are calling it an exodus to smaller, rural and even remote locations. See the Gallup poll where 80% live in urban areas, but more wished for an alternative such as a rural lifestyle.

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Can the Prairie Generation save rural America?

WHY WE WROTE THIS

Never mind “keeping ‘em down on the farm.” The youths in this story are showing a deep commitment to their region, coming home as skilled agriculturalists and entrepreneurs, and injecting a much-needed dynamism.

“Since the Year 2000 most rural Minnesota counties gained early-career to midcareer residents with ample socioeconomic assets. A third of them are returning, while the rest are new recruits.”

[nytimes.com/2019/09/17/opinion/rural-america.html](https://www.nytimes.com/2019/09/17/opinion/rural-america.html)

Opinion

Something Special Is Happening in Rural America

There is a “brain gain” afoot that suggests a national homecoming to less bustling spaces.

By Sarah Smarsh

Ms. Smarsh is the host of the podcast “The Homecomers” and the author of the memoir “Heartland.”

Brain Gain

How innovative cities create job growth in an age of disruption

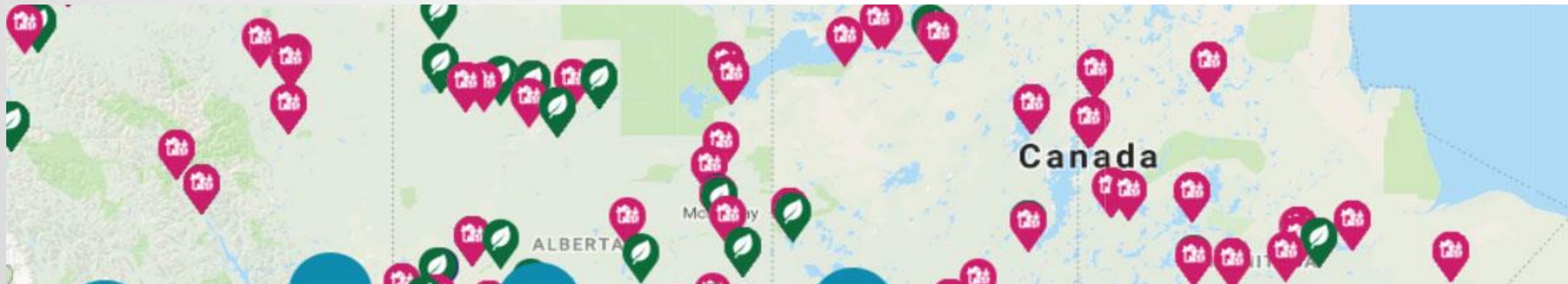
By Robert Bell,
John Jung and
Louis Zacharilla



Intelligent
Community
Forum

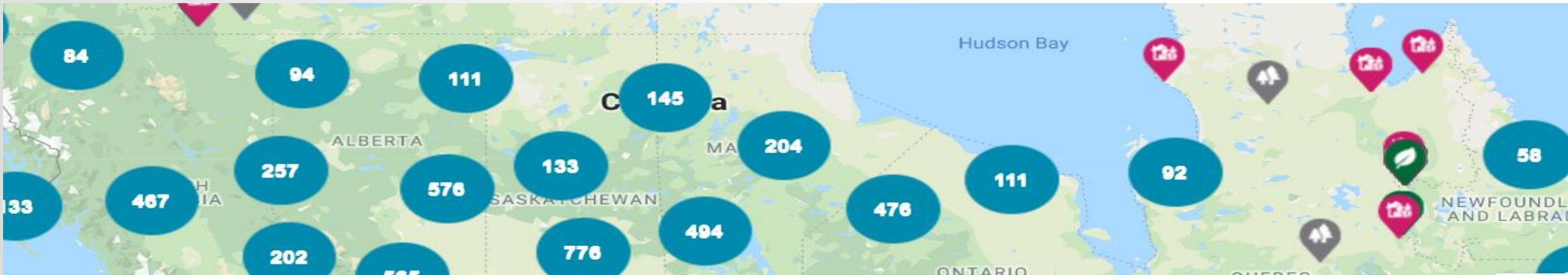
TOWARDS A RURAL ECONOMIC DEVELOPMENT STRATEGY IN CANADA

- 20 percent of Canadians live in small, rural, remote, Indigenous, coastal, or northern communities,
- They contribute about 30 percent of Canada's economic output.
- Geography and diverse climates present unique challenges
- No one-size-fits-all solution.



TOWARDS A RURAL ECONOMIC DEVELOPMENT STRATEGY IN CANADA

- Canada's Rural Strategy was developed with ideas from rural Canadians across the country.
- It is not a top-down solution, but a roadmap for growth based on rural input
- A key concept is building communities via collaborative partnerships.
- And sharing ideas and solutions Canada-wide





Economic Opportunity



Empowerment and Inclusion



Environmental Quality



Healthy Living and Recreation



Mobility



Safety and Security



\$5M



\$10M



\$50M



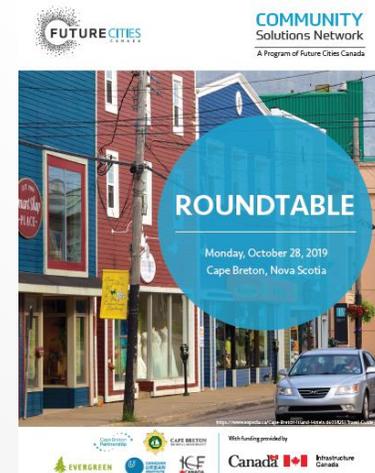
SMART CITY CHALLENGE –

Spread the benefit to all Canadians

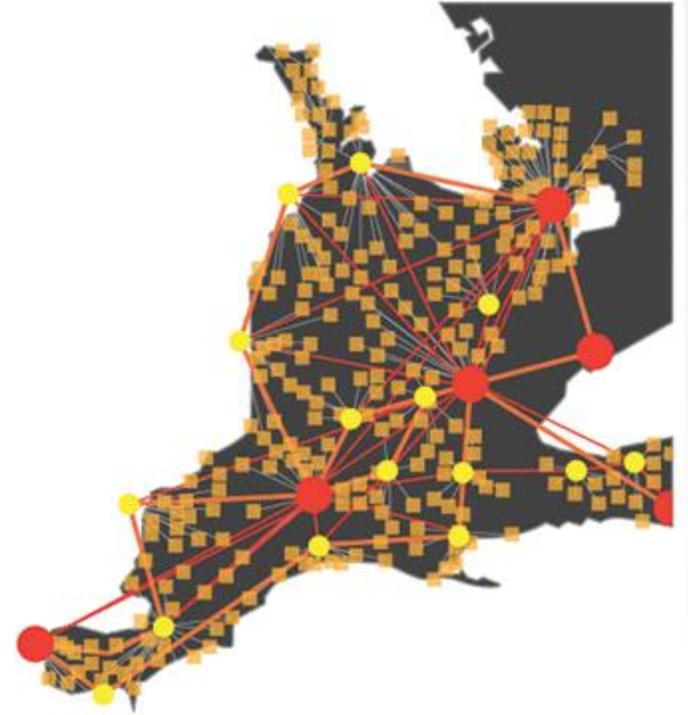
Smart cities approaches should not only benefit a single community; they should be scalable and replicable across Canada.

CANADIAN PARTNERSHIPS SUPPORTING RURAL DEVELOPMENT OPPORTUNITIES

- Investing in Canada Infrastructure Plan.
- Partnered with the Federation of Canadian Municipalities initiative: Municipal Asset Management Program.
- \$2.2 billion investments through the federal Gas Tax Fund to address short-term priorities in municipalities and First Nations communities.
- Among other strategies:
 - Smart Cities Challenge and its Support Program- Community Solutions Network.



SWIFT



Southwestern Integrated Fibre Technology (SWIFT) is a Non-profit regional broadband project initiated by the Western Ontario Wardens' Caucus and delivered in partnership with member municipalities and the government of Ontario and Canada to subsidize the construction of an open-access, high-speed broadband network in Southwestern Ontario, Caledon and the Niagara Region.

Future of Small, Rural, Remote and Indigenous Regions?

Wisdom from ICF's Roberto Gallardo July 18, 2019, Purdue University:

Rural Communities: No longer in the “Middle of Nowhere”
“Most work can be done from anywhere.”



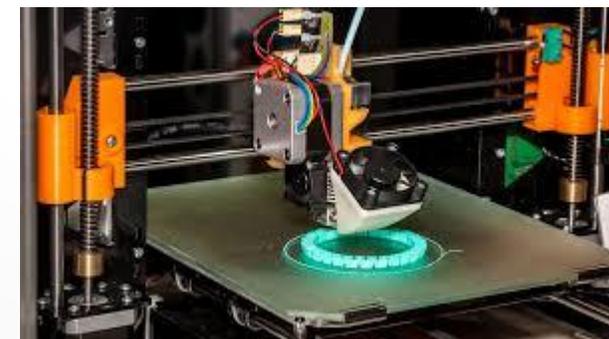
Future of Small, Rural, Remote and Indigenous Regions?

- Robots will produce the majority of goods, including agricultural related products.
- Telehealth will allow remote personalized care, minor robot-based surgeries at home
- Drone ambulances will show up anticipating health issues based on your DNA,
- Real-time health indicators and medical history.
- Healthcare overall will become proactive and not reactive in nature.
- Quality of life attracts families, retirees, young investors, & startups



Future of Small, Rural, Remote and Indigenous Regions?

- Most services will be available online, including voting.
- Government transparency, accountability and responsiveness will be at a much higher level, relying in part on blockchain.
- Civic engagement and public discourse, augmented by digital platforms, will be much more effective and efficient
- Travel will be done quickly and effortlessly thanks to driverless cars.
- Self-driving trucks along with drones will deliver fresh food, medicines
- Key components of things you can 3-D print in your home or locally.



Future of Small, Rural, Remote and Indigenous Regions?

- Through virtual reality you to attend meetings, conferences, obtain degrees or certificates
- Via VR you can experience cultural and entertainment events in global cities
- But you'll also be able to experience real nature at home in your backyard, attend parties, some medical treatments and social gatherings in-person in these small, rural and even remote areas.



Future of Small, Rural, Remote and Indigenous Regions? Rural 2.0

With ubiquitous ultra-fast internet connectivity, Smart City infrastructure, Intelligent Community applications have the potential to eliminate density and geographic proximity requirements to perform face to face –in person activities that were so critical during the previous industrial ages.



Future of Small, Rural, Remote and Indigenous Regions? Rural 2.0

Rural 2.0 communities can leverage their natural amenities while taking advantage of what only dense urban areas normally were able to benefit from before.

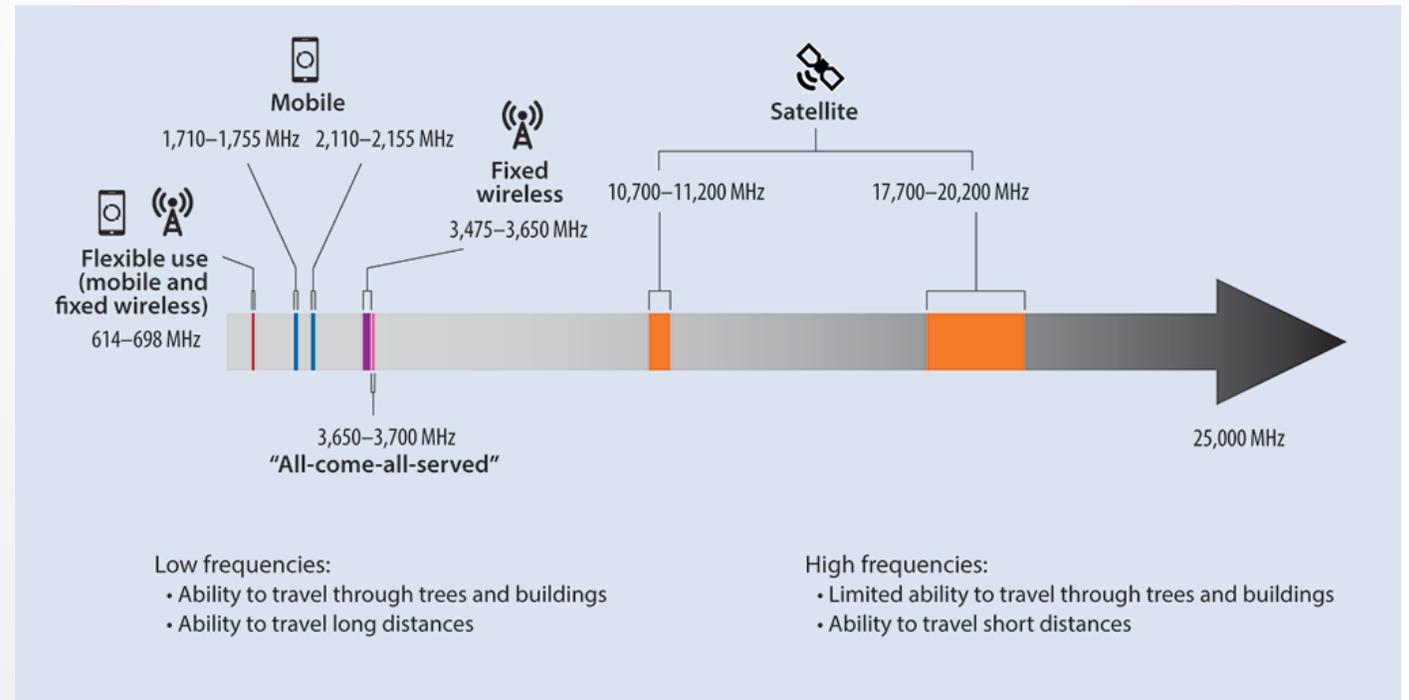
- access to funding (crowdfunding),
- worldwide markets (e-commerce),
- tech-savvy employees (teleworkers/ innovation hubs)
- telework (real-time information);
- collaboration and innovation (videoconferencing and mixed reality);
- healthcare (telehealth);
- educational opportunities (massive open online courses, online certifications).



Yukon
Economic Development

TOP CHALLENGES for Rural 2.0

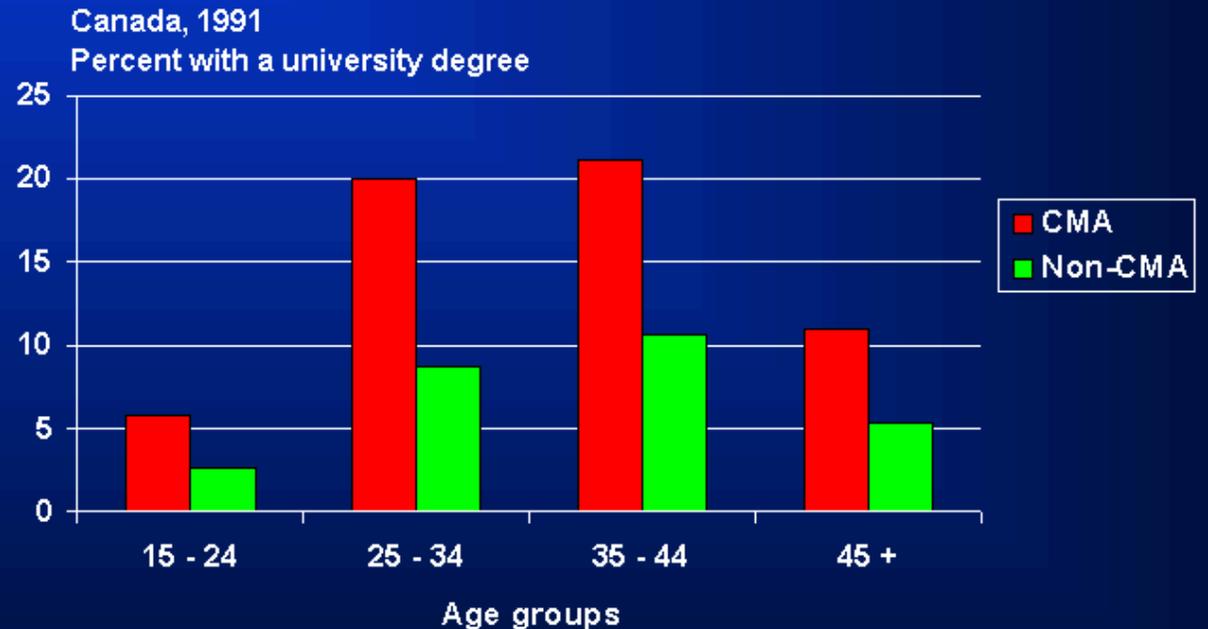
- Data limits – must go
- Parity must be achieved regarding broadband infrastructure between urban and rural areas.
- Attraction of Investments to improve digital infrastructure and digital skills in rural - lacking / inadequate (and to fund startups)



TOP CHALLENGES for Rural 2.0

- Education levels half of urban counterparts
- Digital skills /innovation startups in rural - lacking / inadequate.
- Change in mindset – need for increasing awareness to help rural areas transition to, plan for and prosper in the digital age.
- Image and lack of awareness of rural opportunities

Rural residents are half as likely to have a university degree than their urban counterpart



Source: Statistics Canada, Census of Population 1991.

Reality Check for Rural 2.0

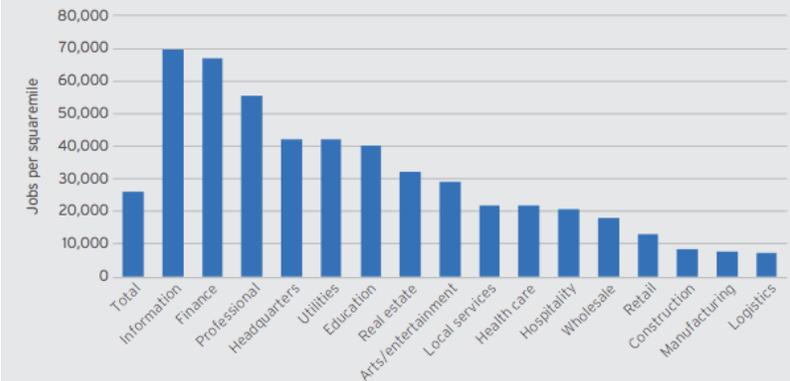
- Brookings Institution found that urban areas are generating the vast majority of jobs in the U.S
- High-tech jobs tend to band together in specific areas, usually urban areas
- United Nations projected that by 2050, 66 percent of the world population will be urban, up from 54 percent in 2014.
- Most investments in infrastructure, skills and business opportunities are in urban areas

But

With digital parity – rural renaissance/ rural 2.0 can become a reality.

Figure 10. Jobs in advanced services sectors are located in the densest parts of metro areas on average

Job density by sector in 2015

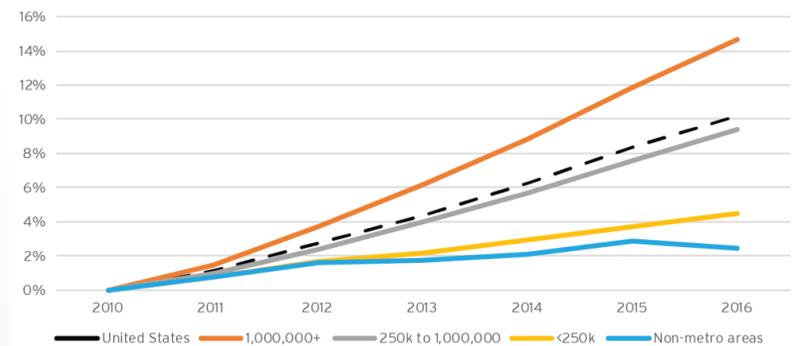


Note: Agriculture and mining are not shown due to their small number of jobs but count toward the total. Source: Brookings analysis of Census LEHD Origin-Destination Employment Statistics

FIGURE 1B

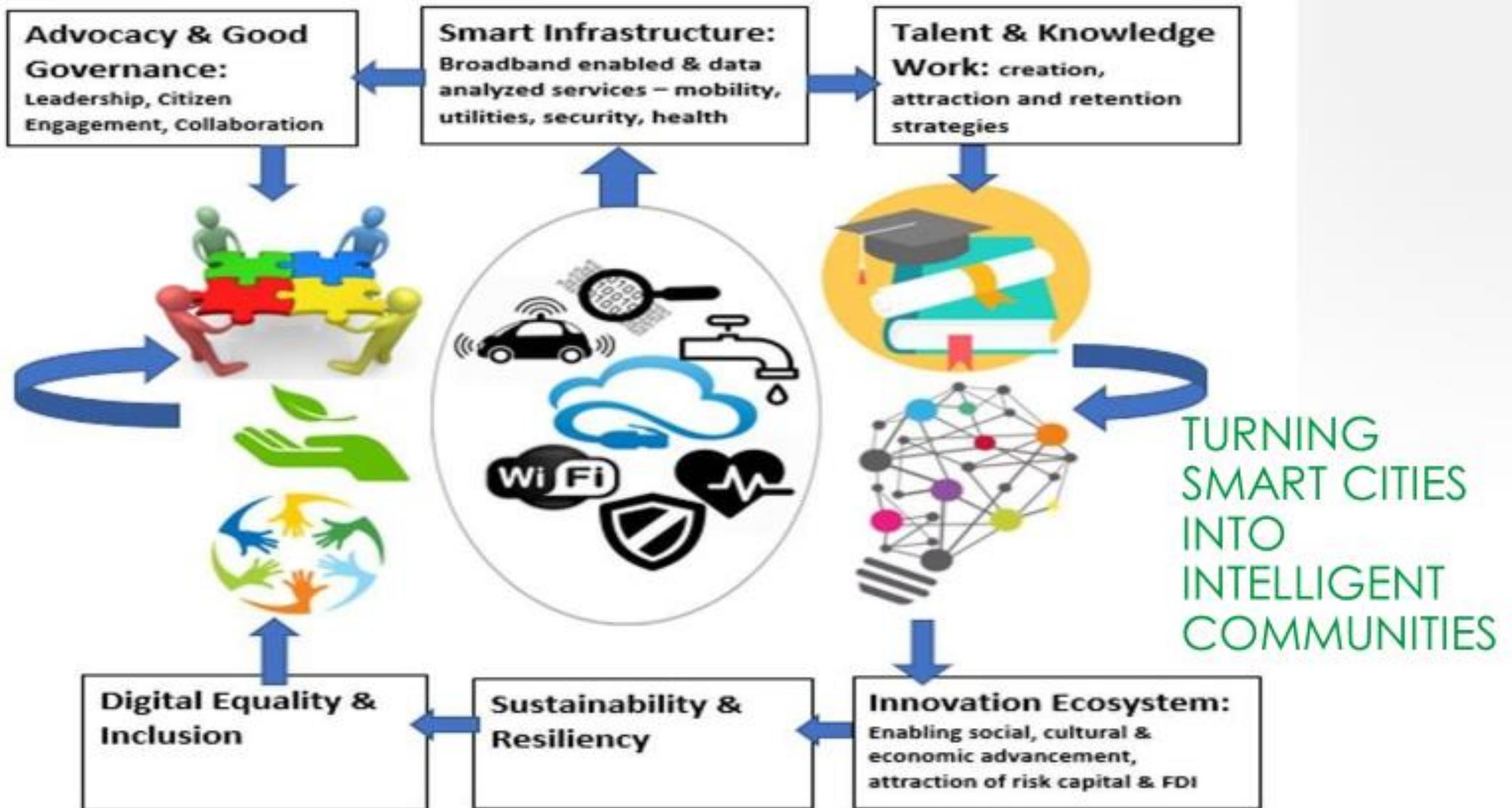
Employment by size tier

Percent growth from 2010



Source: Brookings analysis of Moody's Analytics data

VIRTUOUS CIRCLE FOR ECONOMIC DEVELOPMENT



a.k.a. SMART –CITY Infrastructure



Broadband

Broadband is the new essential utility, as vital to economic growth as clean water and good roads. Intelligent Communities express a strong vision of their broadband future, encourage deployment and adoption, and deploy their own networks where necessary.

When local governments among the Class of 2018 build **broadband networks**, what form do they take?



- 18% Build networks only for the use of government facilities.
- 28% Build "dark" networks in which they own the infrastructure but lease it to service providers to provide service.
- 32% Build open-access networks, in which they deliver a basic "transport layer" of service that makes it fast and inexpensive for services providers to bring up new service.
- 22% Build their own competitive local exchange carriers (CLEC) to provide data, voice and sometimes video services in competition with the private sector.

What kinds of **open access networks** do the Class of 2018 operate?



- 57% Operate fiber-optic networks.
- 27% Operate wireless networks.
- 16% Operate traditional copper-based networks.

OLDS, ALBERTA – THE GIGABIT TOWN SMART21 2018



<https://www.youtube.com/watch?v=AUEOX1nQMj0&feature=youtu.be>

SO IF FIXED BROADBAND IS NOT AVAILABLE
WHAT ABOUT INTERNET VIA SATELLITE?





Internet
Everywhere

—SHIFT



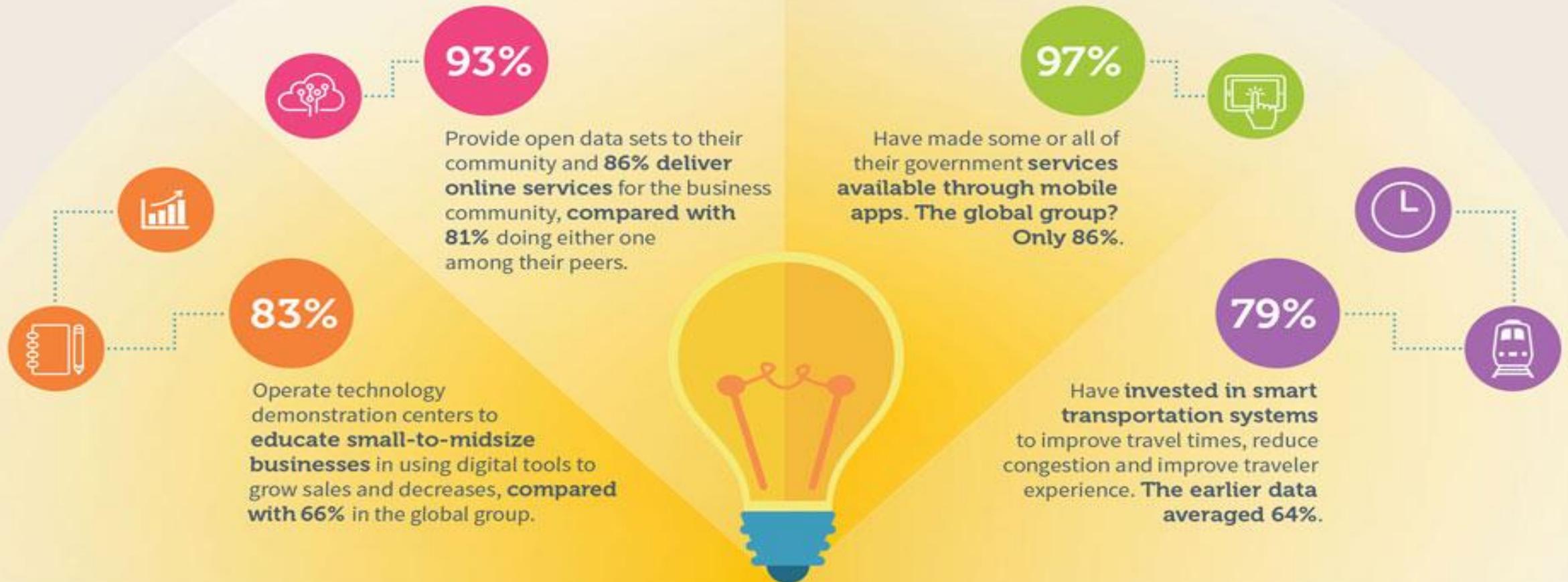
<https://www.youtube.com/watch?v=2cZB8E6lh8Y&feature=youtu.be>

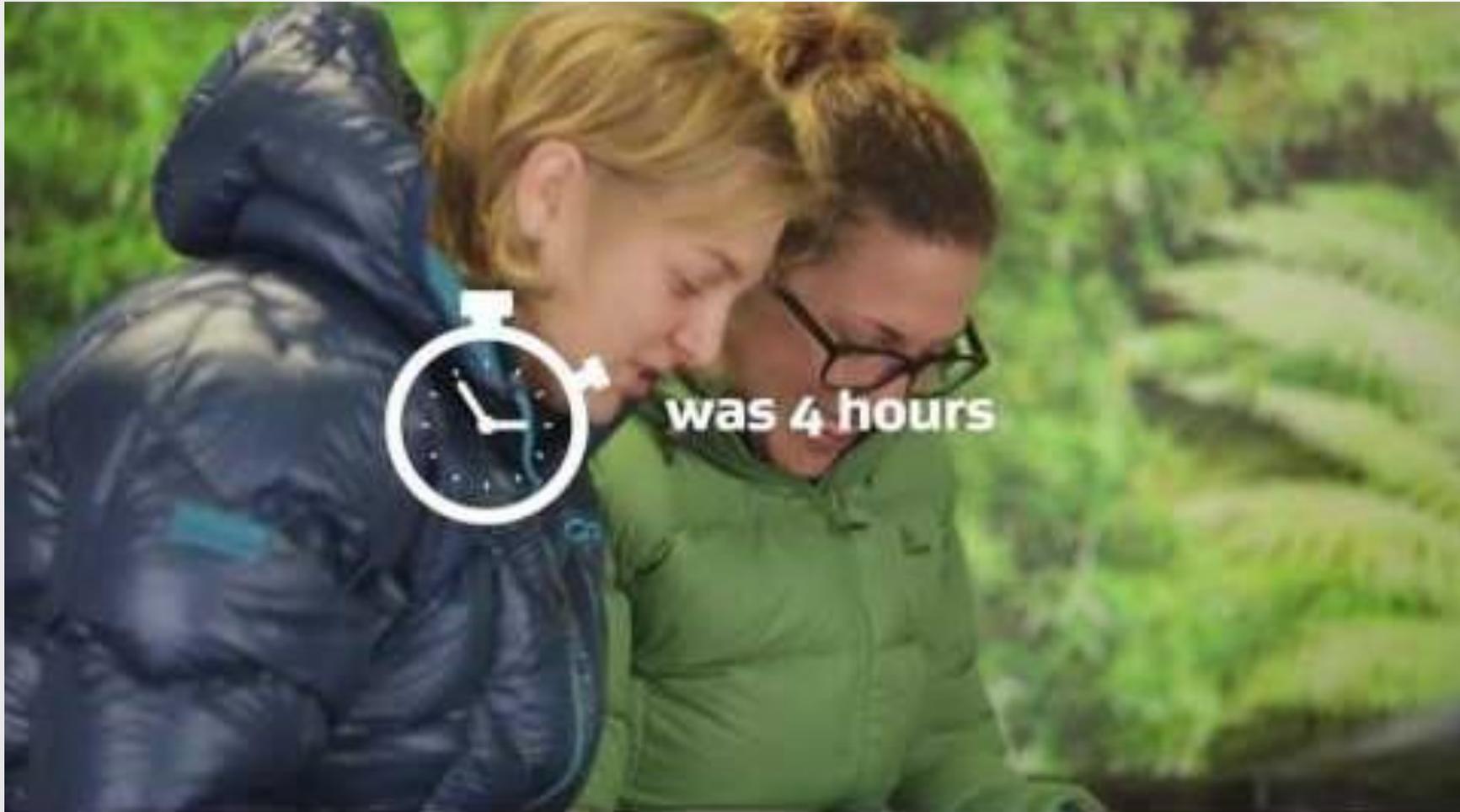


<https://www.youtube.com/watch?v=3ywH3WrzBk0>

Innovation

Innovation is the lifeblood of the modern economy. Intelligent Communities pursue innovation through a relationship among business, government and such institutions as universities and hospitals. This Innovation Triangle helps keep the economic benefits of innovation local, and creates a culture that engages the entire community in positive change. Investments in innovative technology by government also improve service to citizens while reducing operating costs, providing valuable support to a dynamic innovation ecosystem.





<https://youtu.be/9T3PcvsKoh0>

Digital Equality

As broadband deploys through a community, there is serious risk that it will worsen the exclusion of people who already play a peripheral role in the economy and society, whether due to poverty, lack of skills, prejudice or geography. **Intelligent Communities promote digital equality by creating policies and funding programs that provide everyone with access to digital technology and broadband**, offer digital skills training and motivate people to acquire those skills.



83% of the Class of 2018 offer free unscheduled tech support to residents in need of help, **compared with 70%** of the global group.



79% of the Class of 2018 have programs that work to create community champions among excluded groups, as models for others to follow, **compared with 54%** of the global average.



62% provide direct subsidies or discount programs for home access to broadband, **compared with 49%** from the global average.



<https://www.youtube.com/watch?v=N-NaWrSHsRU>

Sustainability

Communities that use fewer resources to create products and provide services are more efficient and productive, which is key to continued improvements in standard of living. **Many if not most sustainability measures improve local quality of life, from cleaner air and water to improved public transportation and greater “livability.”** Communities that make sustainability a shared goal typically engage organizations, community groups and neighborhoods in sustainability programs and activities. These contribute to civic pride, local identity and mutual understanding.

For the global average, only 36% of communities track the important measure of trips taken without an automobile. Rural communities are much less likely to track this measure because of how car-dependent their citizens are. But encouragingly, 55% of the Class of 2018 reported measuring this.



Smart cities – for a sustainable future



<https://www.youtube.com/watch?v=-9HABaeCwUM>

Advocacy

A community's citizens can be a barrier to progress, when they resist change, or can become its most powerful advocates for a better future. Advocacy is the slow and difficult process of building a common understanding of the challenges facing the community and a shared vision for overcoming them. **Intelligent Communities devote time and resources to educating and engaging their citizens, businesses and institutions as true partners in understanding challenges, identifying solutions and planning a better future.** Intelligent Communities are also good marketers to the outside world of their digital age advantages for economic development purposes.



The percentage of the **Smart21** that have developed a formal **Intelligent Community growth strategy** rose to **93%** among the **Class of 2018** from 87% for their global peers.



https://youtu.be/2COh_aY75Co



Think Tank



Institutes



**Global Network – ICF
Member Association**



ICF CANADA
INTELLIGENT COMMUNITY FORUM CANADA

ICF TAIWAN

ICF Nations

Introduction to the Intelligent Community Forum (ICF)

ICF Intelligent Communities

1999 - 2019



About 200 Global examples are at the forefront of innovation and have greater resilience to withstand economic downturns.

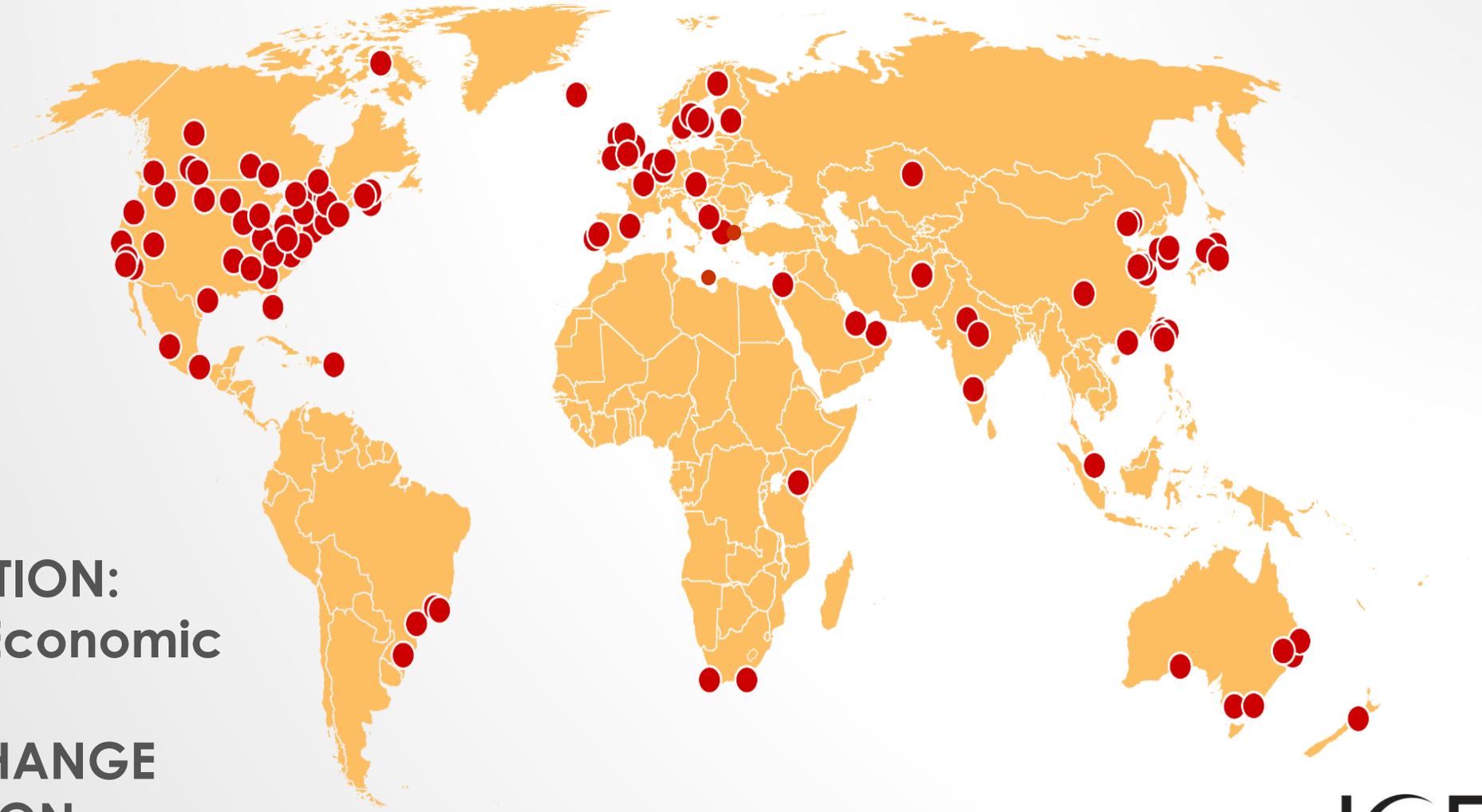
ICF Intelligent Communities

Top 7 Intelligent Communities 2019

TOP7 INTELLIGENT COMMUNITIES

- **Abbotsford, Canada**
- Chicago, USA
- Hudson, Ohio, USA
- **Sarnia Lambton, Canada**
- Sunshine Coast, Australia
- **Taoyuan, Taiwan**
- Westerville, Ohio, USA

INTELLIGENT COMMUNITIES SHARE THEIR SOLUTIONS



COMMON CHALLENGES:

1. GLOBALIZATION:
Political and Economic
Disruptions
2. CLIMATE CHANGE
3. URBANIZATION
4. DIGITAL DISRUPTION

INTELLIGENT COMMUNITIES SHARE THEIR SOLUTIONS



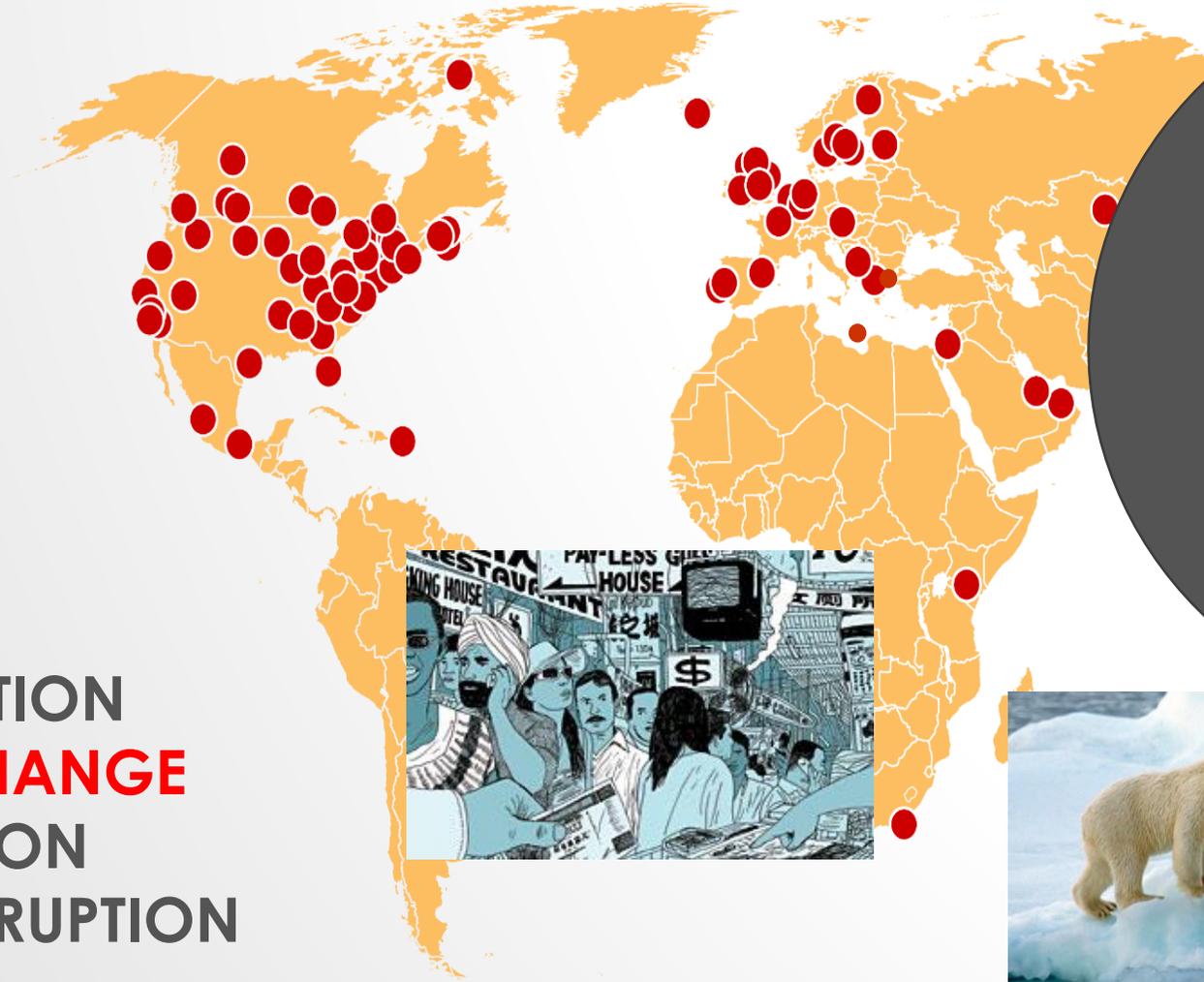
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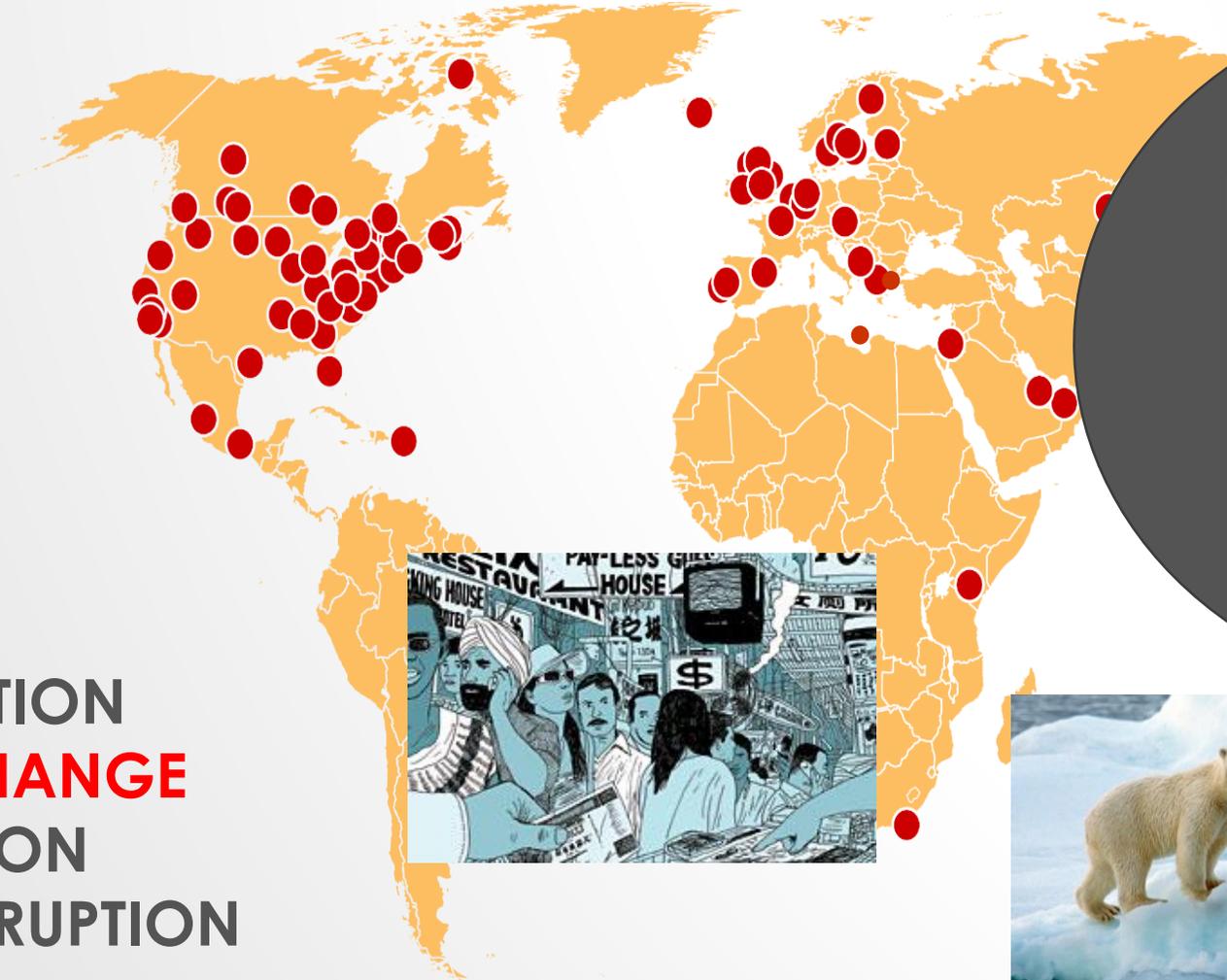
Price tag: USD\$ 140 billion per year to make the changes humanity needs to adapt to a warming world (0.1% of global GDP).



INTELLIGENT COMMUNITIES SHARE THEIR SOLUTIONS

COMMON CHALLENGES:

1. GLOBALIZATION
2. **CLIMATE CHANGE**
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4. DIGITAL DISRUPTION



UN's New Climate
Economy Report:
USD\$26 Trillion
Economic
Opportunity



INTELLIGENT COMMUNITIES SHARE THEIR SOLUTIONS



68% of the world population projected to live in urban areas by 2050



COMMON CHALLENGES:

1. GLOBALIZATION
2. CLIMATE CHANGE
3. **URBANIZATION**
4. DIGITAL DISRUPTION

INTELLIGENT COMMUNITIES SHARE THEIR SOLUTIONS

COMMON CHALLENGES:

1. GLOBALIZATION
2. CLIMATE CHANGE
3. URBANIZATION
4. **DIGITAL DISRUPTION**



The most disrupted industries affected by customer wants & demands over the next 3-5 years:

- ① Financial, Banking & Insurance
- ② Retail, Shopping and ecommerce
- ③ Automotive, Logistics & Transportations
- ④ Health Care, Pharma & Biotech
- ⑤ Education & Learning
- ⑥ Media & Entertainment
- ⑦ Government & Public Service
- ⑧ Professional, Business and Legal Services
- ⑨ Energy & Utilities
- ⑩ Agriculture & Food

Source: Wikibrands Customer Zeitgeist, 2018

Top 10 Strategic Technology Trends for 2019

Intelligent

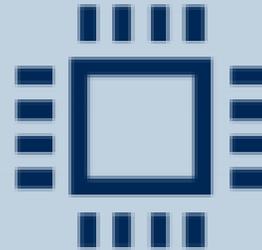


Autonomous Things

Augmented Analytics

AI-Driven Development

Digital



Digital Twins

Empowered Edge

Immersive Experience

Mesh



Blockchain

Smart Spaces

Digital Ethics and Privacy

Quantum Computing

Is your community ready?



SMART
21 INTELLIGENT
COMMUNITY
FORUM

BENEFITS



Networking





Thank you!

**John G. Jung
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Intelligent Community Forum (ICF) &
President, ICFF &
ICF Canada Executive Director
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