

The Intelligent Community Forum will use the data provided on this form for the first stage of its international awards program: the selection of the Smart21 Communities of 2011, semi-finalists for the Intelligent Community of the Year award. The Smart21 will be announced in October 2010 at a ceremony hosted by Suwon, South Korea, the 2010 Intelligent Community of the Year. After the announcement of the Smart21, the Awards program will proceed as follows:

October-December 2010

Each of the Smart21 Communities is required to complete a second, more detailed nomination form in order to be considered for ICF's Intelligent Community of the Year Award. The information in this form will be analyzed by an international academic team, which produces numerical scores for each community.

January 2011

The seven top-scoring communities are named by ICF as its Top Seven Intelligent Communities (finalists) at the annual conference of the Pacific Telecommunications Council (PTC) in Honolulu, Hawaii, USA.

Feb-April 2011

The Top Seven Communities host an ICF executive for not more than two business days, at the community's expense, for a site visit to validate the information provided to the Forum. The executive's report on the community is reviewed by the international jury that helps select the Intelligent Community of the Year. Meanwhile, an independent consulting firm re-analyzes the detailed nomination forms submitted by each of the Top Seven and produces a second set of numerical scores. To select the Intelligent Community of the Year, ICF combines these numerical scores with the independent votes of the jury.

May 2011

ICF invites representatives and citizens from the Top Seven to New York City for its *Building the Broadband Economy* summit. Each of the Top Seven Communities will participate in a half hour discussion on stage at BBE about their community. On the final day of the summit, one of the Top Seven will be named Intelligent Community of the Year. During the year following the award, the Intelligent Community of the Year will host the next year's Smart21 announcement. ICF will also work with the Intelligent Community of the Year to promote its achievements. The Intelligent Community of the Year is barred from entering the Awards program again but is named to the international jury.

**Completing the Application.** Fill in the fields below. Each field will expand to make room for your complete answer. Save the file to your computer and email to ICF at [awards@intelligentcommunity.org](mailto:awards@intelligentcommunity.org) by **September 24, 2010**. The Selection Committee for the Smart21 will use only the information on this form in making its evaluation. Do not send additional information or attachments.

Deadline for  
Nominations:  
**24 Sept 2010**

**2011 Theme: Health and the Intelligent Community.** In addition to ICF's five permanent criteria (the Intelligent Community Indicators), the Intelligent Community Awards are guided by an annual theme. In 2011, our theme is **Health and the Intelligent Community**. ICF invites nominees to describe efforts by local government, institutions and businesses to improve the delivery and management of healthcare using information and communications technology in order to enhance the health of residents, reduce costs and create business opportunities for local employers.

**Nomination**

**Name of Community**

Birmingham UK

The following questions provide an opportunity to tell the community's story: its recent history and background, the challenges it faces, how the community has met those challenges, and the results it has achieved. **Before answering the questions, review the description of the Intelligent Community Indicators and Success Factors** beginning on page 16 or visit ICF's Web site at [www.intelligentcommunity.org](http://www.intelligentcommunity.org). Your nomination will be more successful if it addresses the topics of the Indicators and Success Factors.

**Vital Statistics**

Population	Municipality	<input type="text" value="1,028,700"/>	Metro Area (if applicable)	<input type="text"/>
Labor Force	Municipality	<input type="text" value="644,200"/>	Metro Area (if applicable)	<input type="text"/>
Area	Municipality	<input type="text" value="26,777 hectares"/>	Metro Area (if applicable)	<input type="text"/>



1. **Background** (Maximum: 1 page) Describe the community's location, features of interest, demographics and history that relates to current conditions.

The City of Birmingham is the second biggest city in the UK and economic hub of the West Midlands region at the heart of England. Birmingham enjoys a strategic geographical location, being at the hub of the UK's road and rail network, with excellent international air connections. It has a population of just over one million people which is characterised by its youth and cultural diversity. The city has the youngest profile of any major city in Europe with 37% of residents under 25 years of age and in 2005, it was estimated that 32.2% of its population was non-white indicative of Birmingham's long history of welcoming migrants. The wider West Midlands region has a population of 5.3 million.

Public Service in Birmingham has led the city's development since the pioneering days of Joseph Chamberlain. He created municipal gas and water services and removed much of the city centre slum housing. This long term view of public service and action to improve the well being of the city has continued in the ways described in this document. The success and sustainability of a growing city is still key to the city priorities of high employment in a green and safe city which protects vulnerable people. It is also a reflection of this far sightedness that created the Digital Birmingham partnership with the aim of exploiting new technologies for the benefit of businesses, citizens and communities

Birmingham was the powerhouse of the Industrial Revolution and was known as the 'city of a thousand trades'. The city provided not only the manufacturing backbone of the revolution but led much of its intellectual thinking and debate; Birmingham is home to the Lunar Society which gathered together pioneering industrialists, scientists, inventors and philosophers such as Matthew Boulton, James Watt and Joseph Priestley.

Birmingham is a city built on innovation and technology and, today, is also home to a dynamic creative and service industry. Whilst still having a considerable manufacturing base, the city boasts a rapidly expanding financial and service sector, has become a fast-growing centre for hi-tech industry, and is one of Europe's foremost conference and event destinations. The creative industries are clustered mainly in the Digbeth area of the city with over 500 artists and small creative companies, many of them digital, based in the converted Bird's Custard Factory.

The city is home to three universities: The University of Birmingham, Aston University and Birmingham City University. Together they have over 17,000 new graduates each year. The city has a strong research base and facilities, notably Birmingham Science Park Aston, which is a high-spec destination for both new and established knowledge-based businesses, and the University of Birmingham Research Park, which offers purpose-built accommodation to companies and projects seeking to work with the University in research, development, or training. Birmingham is a leader in the nanotechnology and photonics clusters.

The city also supports a thriving environment for entrepreneurship, the 2008 European Cities Entrepreneurship Ranking (ECER) placed Birmingham above London as the top UK business environment, and above European locations including Paris, Rome, Madrid and Berlin. Birmingham came top out of all 21 cities surveyed when it came to the 'economic environment, infrastructure and the quality of life provided. According to the ECER Report Birmingham came third behind the Swedish cities of Gothenburg and Stockholm as one of the best places in Europe to encourage entrepreneurship.

Birmingham's Health provision is delivered by a mix of local, regional and national organizations. As part of the National Health Service, there is a West Midlands Strategic Health Authority managing, monitoring and improving local services and 3 local Primary Care Trusts (PCTs) whose role it is to assess local need and commission care. The public sector expenditure across the city on Health and Wellbeing was over £2.1 bn in 2008-09. The health sector has 2,700 companies and over 68,000 employees with around 300 new businesses registered each year. The city's first new acute hospital for 70 years opened in June this year. Adjacent to the University of Birmingham the new Queen Elizabeth Hospital Birmingham is creating one of the largest academic / medical complexes in Europe. University Hospitals Birmingham NHS Foundation Trust (UHBFT) aims to further stimulate knowledge, technology transfer and best practice to deliver the best in care in a way which engages new healthcare practices with new technologies to boost

local and regional economies. UHB is already host to the Wellcome Trust's most successful clinical research facility. Excellent academics and clinicians together with a very large and diverse catchment area give Birmingham and the broader West Midlands a comparative advantage in translational research, in particular clinical trialing.

2. **Challenge** (Maximum: 3 pages) Describe the economic, social, political, and technological opportunities, and the challenges to the community's competitiveness, that led to creation of the Intelligent Community strategy.

#### ECONOMIC CHALLENGES AND OPPORTUNITIES

In the 18th and 19th century, Birmingham led the industrial revolution. Engineers like James Brindley and Thomas Telford developed an extensive canal network with Birmingham at the centre, which allowed shipping of final products to the national markets. In the 19th century the railway and road systems superseded the canals for transport but again Birmingham was at the centre of the national networks and the production of metalwares and later the automotive industry continued to prosper.

Birmingham's early success and manufacturing capacity laid the foundations for the opportunities and challenges it faces today. Between 1901 and 2010 the population grew from 522,000 to over 1,000,000 today. When in the 1970s and 1980s the UK manufacturing industries declined, the effect on Birmingham was devastating. Employment in Birmingham collapsed by 200,000 between 1971 and 1984. The Council responded with an economic strategy built on major city centre regeneration to attract professional and financial services companies and the growing reputation as an exhibition venue with the opening of the National Exhibition Centre in 1976.

European Funding was accessed to physically transform the heart of the city. Business and conference assets for the city were built (the International Convention Centre, Symphony Hall and National Indoor Arena), associated leisure facilities (bars, restaurants, hotels, theatres, etc) were attracted and part of the inner ring road was lowered to open up the western side of the city centre. High quality purpose built business accommodation to attract new industries was needed. To this end the city council worked with the local universities to develop science and technology parks, and also undertook long term land assembly and master planning to turn the disused canal side industrial premises at Brindley Place into the new home of Birmingham's business and professional services industry. The success of this strategy is evident to visitors and investors alike. Between 1971 and 2006 employment in the services sector grew from 45% of the economy to 85% whereas manufacturing decreased from 47% to a mere 11%. It is recognized that growth areas for the economy are knowledge based businesses and that Information and Communications Technologies (ICT) are essential to new jobs in the professional services sector, creative media and even retail.

From its role as the centre of the physical communication (canals, rail and road), Birmingham recognizes that to retain its position for business tourism and economic innovation, it needs to establish a leading digital infrastructure. This has been recognized as part of the key structural plans for the city; the Core Strategy, Prospectus and Big City Plan. Major developments include the rebuild of Birmingham's main station – the New Street Gateway and Birmingham's connection to the planned high speed rail link which will bring commuting time between London and Birmingham down to 45 minutes by the end of the decade.

Over the last 50 years Birmingham has successfully reinvented itself and this transformation is still ongoing. Despite the great success of the city center's restructuring many challenges remain in the suburbs.

#### SOCIAL CHALLENGE AND OPPORTUNITIES

Birmingham's current unemployment rate is 11.8%. Birmingham was adversely affected by the recent recession, with claimant rates rising higher than in any other major UK city. Although there are now signs of a fragile recovery, current forecasts suggest that it could be over a decade before employment returns to 2008 levels. While school results continue to improve, adult skills are below the national average, although the number of people achieving basic skills qualifications is increasing. Partners are therefore working to strengthen the skills foundations of the workforce by boosting basic skills and improving school-level attainment.

Birmingham places great importance on addressing the challenge of developing the higher level skills

required for strong knowledge-based industries. 42.6% of the workforce in Birmingham is employed in the sectors classified as knowledge-intensive by Eurostat. Birmingham now has the largest professional services sector outside London, employing over 90k people. The city has 200 law firms, 19 out of the top 20 British accountancies, 50 major property services firms and Europe's second largest insurance market. The city also has a fast growing and well-regarded creative and digital media sector.

Birmingham has a particularly large and high-quality university sector, providing the city with a strong knowledge base. With its three universities Birmingham has over 68,000 students in higher education and is one of the UK's major centers of research in many disciplines. One of the key challenges for the city is to raise skills levels of its residents and boost demand for high skilled workers. Research by the Centre for Cities in 2009 showed that although Birmingham has 41.9% of workers in knowledge intensive occupations only 22.3% of residents fall into this category having NVQ level 4 (national vocational qualification) or higher skills required. Another challenge lies in graduate retention. Our location is only a 90min train journey away from London and the South East leads to a drain of graduates and young professionals attracted by higher salaries. The City Council and region view this drain as a key challenge and see one remedy as helping local businesses make best use of the region's R&D capacity to innovate and improve their competitiveness in order to create high skilled jobs. The Birmingham Science City partnership has been set up to further develop the region's R&D capacity and ensure that this knowledge is transferred to businesses.

The research strength of the universities also offers vast opportunities to develop in specialized fields like low carbon technology especially in the automotive sector building on Birmingham's historical strength. Birmingham has been designated a Climate Knowledge and Innovation Community (KIC) through the European Institute of Innovation and Technology, which will help drive innovation and competitiveness. This partnership will develop ways of delivering economic growth through addressing major challenges, including reduction in greenhouse gases. The KIC operates in partnership with a number of European cities and organizations including London and Paris.

This initiative reflects the commitment of the city to a sustainable energy efficient future. The Council has pledged to reduce carbon emissions by 60% by 2026. It has taken a lead role on the international front including signing the European covenant of Mayors and the Green Digital Charter and locally through initiatives such as the Green New Deal and pilots on electric cars.

Nationally, Birmingham includes some of the most deprived neighbourhoods of the country. About 50% of residents live in these areas. This correlates with below national average income levels. The link between digital exclusion and social exclusion and poverty is well established meaning that many households do not have access to the Internet; 15% of people in the metropolitan West Midlands still cite involuntary reasons for not having access to the internet at home.

The pattern of attracting economic migrants has continued since the 19th century. Over a third of the population now is of non-white British origin, many having come from the Commonwealth countries (India, Pakistan and Caribbean Islands). Birmingham has the biggest influx and flow of migrants after London with 33,300 migrants inside the UK moving to Birmingham and 10,900 overseas migrants arriving. On one hand this diversity is one of Birmingham's great assets. It is feeding the vibrant cultural scene and attracts the Arts and Creative Industries sectors. The regular cultural events like the Handsworth Carnival, Arts Fest and Frankfurt Christmas Market and the diverse retail environment attract millions of visitors each year. On the other hand it impacts on the city's regeneration ambitions. The majority of newcomers arrive in three areas of Birmingham (Ladywood, Sparkbrook / Small Heath and Perry Barr). Migrants that have arrived with little financial resource move into more prosperous areas within and outside of Birmingham once their personal status has improved. This puts a particular strain on public service provision in the arrival areas.

#### POLITICAL CHALLENGES AND OPPORTUNITIES

In May 2010 a new Government was elected in the UK. The Conservative – Liberal Democrat Coalition has immediately started to address the national budget deficit by cutting public expenditure and putting structural reforms in place. These changes greatly impact on Birmingham. The Council has to address savings requirements of at least £230m p.a. over the next 5 years to make up for the

reduction in core funding.

Within these financial constraints, there are opportunities to benefit from the new policy emphasis on localism (new Local Enterprise Partnerships are being established), Health Reforms aiming to take decision making closer to patients, the continuing green pressures for carbon reduction and the Big Society concept which sees a stronger voice and influence for communities. Government plans to relocate some departments from London to cheaper locations across the country. Birmingham is competing for those.

Government is particularly promoting the open data movement, requiring all public services to publish data online. For example all council expenditure over £500 must be published by March 2011. Open data has the potential to deliver economic and civic benefits to citizens, businesses and local government alike. For example opening data about planned expenditure cuts could encourage democratic engagement. Alternatively opening data about planning permissions might encourage a local business to develop a new application and/or sell a new service. Both outcomes provide the potential to be turned into efficiency savings or added value by the council. Already there are active civic groups in Birmingham that are exploring this.

All these changes and the broader aspects of sustainable development can be supported and delivered more effectively using digital technologies.

#### TECHNOLOGICAL CHALLENGES & OPPORTUNITIES

It was in response to the local gap in harnessing the benefits of ICT with its impact on wealth creation, educational attainment and job readiness the Digital Birmingham partnership (originally Broadband Brum) was formed in 2005. In 2006 Digital Birmingham commissioned a research report about the extent of the digital divide in Birmingham. Its results showed that 36% of residents had never accessed the internet and only 48% had access to broadband compared to 56% nationally. The same applied to SMEs. In more recent studies (2009), 39% of SMEs did not use computers and only 41% used the internet for marketing and 25% for ordering/selling online.

Birmingham is aware that its image does not reflect the drive, diversity and friendliness of its people. Changing the world's view from that of an industrial, automotive city is not just about civic pride but a key element in attracting and retaining inward investment, business visitors and students/skilled people. Being recognised as a digital city strongly supports these aims.

3. **Strategy & Programs** (Maximum: 3 pages) Explain the ideas, plans and process that the community put into place to address these opportunities and challenges. Describe the organizations involved, how collaboration was established, and how key ideas were developed and formed into a coherent strategy. Please organize your response by Intelligent Community Indicator:
- Broadband
  - Knowledge Workforce
  - Digital Inclusion
  - Innovation
  - Marketing and Advocacy

The history of Birmingham as an Intelligent Community is the story of a continuing journey. Given the radical changes underway in national policy, public funding, economic development and technological innovation, Birmingham is presenting a proactive approach. We decided an intelligent city was a task for all organizations and so the Digital Birmingham partnership was created. However, we decided not to create a separate digital strategy nor create another umbrella document to plan an Intelligent Community. Our approach has been to incorporate digital issues into the existing city frameworks some set nationally, some locally but affecting all services and parts of the city. The main strategies all acknowledge digital infrastructure and technologies as enablers to achieve their objectives.

#### DIGITAL BIRMINGHAM

The driving force has been collective recognition of the wide ranging opportunity of digital, which has come together under the leadership of Digital Birmingham but which lives and delivers through

organizations across the city. Digital Birmingham is a voluntary partnership of around 50 organizations from the commercial, public service and voluntary sectors. It aims to bring the benefits of technology to all who live, work and learn in the city with a mission to make Birmingham a leading digital city by the end of 2010. The partnership was established in 2005 on behalf of Birmingham City Council and British Telecom. Digital Birmingham provides leadership on digital developments in the city, linking to city objectives re economic prosperity, environmental sustainability and community engagement and cohesion.

The initial partnership board was formed in 2006 and a small delivery team established. Intelligence about the digital needs of the city and the organizations active in this field was gathered in research undertaken by the University of Birmingham. This led to formulating an initial 4-year program 2007-2010 that focuses on 3 areas:

1. Alliance building and influencing at strategic level to increase the use of digital technologies and improve connectivity (wired and wireless) in the city
2. Promoting the benefits of digital technologies to citizens to improve digital inclusion and economic activity and marketing Birmingham's digital achievements to raise its national and international profile
3. Delivering projects demonstrating innovative use of digital technologies to the benefit of the community

**SUSTAINABLE COMMUNITY STRATEGY BIRMINGHAM 2026** – Birmingham in particular has pursued a strategy of partnership working and collaboration through the Local Strategic Partnership 'Be Birmingham' and its family of thematic partnerships to tackle economic, environmental, community safety and other issues. Be Birmingham created Birmingham 2026 and brings together organizations from the business, community, voluntary, faith and public sectors. Each partner has a duty and responsibility to deliver certain aspects of the strategy which ensures the vision is achieved collectively. These responsibilities are set out in the delivery plan, the Local Area Agreement (LAA) which will be reviewed every three years. It clearly recognizes the contribution digital technologies will make to achieving these through: a) Making effective use of digital technology to help more people contribute to local decision-making through digital channels; b) Increasing opportunities to access digital channels to reduce social and digital exclusion and c) Enhancing and supporting high-growth sectors in the city including digital, cultural and business services.

**THE BIRMINGHAM CORE STRATEGY** is the primary spatial plan for the city looking at how the city will grow over the next 15-20 years. It sets out how much and where new housing should be provided, where key locations for employment, education, health, leisure and sport, waste management will be. As part of this it outlines the infrastructure requirements for transport and digital infrastructure to support sustainable growth. The core strategy promotes the provision of high speed symmetrical broadband, working with (commercial) developers to include the appropriate infrastructure in all new developments. The City Council in partnership with the Integrated Transport Authority (Centro) will continue to develop its Intelligent Transport System to enhance real-time information for navigating the city in all modes of transport. The Council will develop a unified street services network to provide seamless connection and linking together activities like street lighting and car parking. These plans will also directly and indirectly support the sustainability agenda regarding energy efficiency and Carbon reduction.

**THE BIRMINGHAM AND SOLIHULL LOCAL ENTERPRISE PARTNERSHIP** - The proposed economic partnership in response to the new Government strategy is embracing ICT and digital industries and infrastructure as important areas for the city: "Digital technologies increasingly underpin innovation, creating new services, jobs and wealth. We will build on the strong base of the Digital Birmingham partnership to focus on the economic benefits of digital infrastructure and media and the opportunity of linking the green and digital agendas.

#### **BROADBAND**

The city has been well provided with basic broadband connectivity but access, affordability and motivation are equally needed to realize its benefits. The strategic challenge on broadband has

been twofold: improving supply of faster broadband and improving demand and take up (digital equality). At the start of the Digital Birmingham initiative, the market provided basic broadband at up to 2 Mbps download speeds. It was recognized that these 'headline' speeds were insufficient for many small businesses and those creating content in the community. It was also recognized that mobile connectivity would become increasingly important. Our plan was to address two elements, encouraging the market to invest and working to drive take up. The two main broadband providers, BT and Virgin Media, are represented on the Digital Birmingham Board and have worked to increase speeds. In addition to wider investment in 3G technologies across the city, projects covered two areas of mobile connection: street wifi connectivity and wimax (4G). At the start of Digital Birmingham, surveys indicated a take up of 30-50%. But when young people were asked about their access at home small samples indicated less than 20% in some schools. The issue of take up was clearly critical and research indicated that the factors were more about whether there was confidence and competence to use the technology, content which households identified as being important to them and affordability rather than the availability of connectivity. This will be explored further under Knowledge Workforce and Digital Inclusion.

#### KNOWLEDGE WORKFORCE

The development of the knowledge workforce is a key part of the "Birmingham 2026" strategy. A main target is to be "Britain's best skilled city – with adult skills that are ready for the new knowledge economy" and for this to be measured by increasing the number of adults with NVQ level 4 (national vocational qualification) and higher skills (first degree level or equivalent) from 24% in 2006 to 36% in 2026. A particular Digital Birmingham strategy that supported the Birmingham 2026 aims to improve skills has been to build confidence and competence in using ICTs below qualification level especially in deprived neighborhoods. In the Aston Pride New Deal for Communities 10-year regeneration project it established the ICT workstream that worked together with the Employment and Community Engagement workstreams to train over 1300 residents in basic ICT skills and at qualification level.

#### INNOVATION

Over the past decades, the local economy has benefited from significant public sector investment and employment. Today, in the face of considerable public finance cuts, there is a greater need to encourage private sector growth and, equally, for the public sector to innovate to develop smarter public services that deliver more with less. Birmingham City Council as the largest local employer is leading the way on this agenda with its Business Transformation program. Birmingham has a number of strategies and programs to develop innovation.

**BUSINESS TRANSFORMATION** - In 2006 the Council started the 10-year Business Transformation program aiming to achieve efficiency savings of £1bn and make services more sustainable. Business Transformation is the process of introducing radical changes in the way Birmingham City Council carries out its business with the prime aim of improving the services offered to customers. There are 9 workstreams that re-design frontline services and the council's back-office processes. They are driven by the need for greater efficiency and rely heavily on the supporting ICT infrastructure, connectivity and applications to deliver. As the biggest employer in Birmingham with over 50,000 staff changes to the way of working also improves the general skill level. The need to build capacity to deliver the program resulted in the creation of Service Birmingham, a joint venture between Birmingham City Council and Capita, which engaged partners to provide the Council with state-of-the-art ICT infrastructure and in turn, enable business transformation. Service Birmingham is 31.6% owned by the council meaning the council receives part of its profits. Business Transformation is driven forward by council leaders and shaped by managers and staff in service areas.

**BIRMINGHAM SCIENCE CITY** - In recognition of its research capacities and potential, Birmingham was designated as a Science City in 2005 by the UK government. The Birmingham Science City partnership includes public, private and research organisations from Birmingham and the West Midlands that are using this status to deliver a vision whereby "Birmingham Science City

will develop and use science and technology to improve the prosperity and quality of life of the city-region, the West Midlands and the UK.” The programme is raising the profile of strengths and expertise, demonstrating the value of locating in the West Midlands to start-ups, growing businesses, inward investors and public sector bodies. Projects are split across 5 key technology themes: advanced materials, digital media & ICT, energy, medical technology & healthcare and transport technologies. There are currently 11 demonstration activities funded by Birmingham Science City. Birmingham Science City links to Digital Birmingham through the digital media & ICT theme.

#### DIGITAL INCLUSION

Digital Birmingham has focused strongly on addressing the digital divide. It has worked with Be Birmingham to embed digital inclusion aims into the Birmingham 2026 strategy. Its strategic approach is based on research, which shows a strong correlation between social and digital inclusion, making socially excluded communities three times more likely to be non-users of the internet. Digital Birmingham addressed this through the 3Cs strategy: (Affordable) Connectivity, (Attractive) Content and Confidence. It worked with Birmingham City Council and third sector partners to ensure the national Computers for Pupils and Home Access Grants programs were widely taken up by poor families and provided affordable connectivity together with the computers. The Aston Pride ICT project worked in particular on confidence building of Aston residents addressing the social exclusion factor. As part of the Core Strategy, work has been undertaken with the Council’s Housing department and the Registered Social Landlords of the city to include broadband provision into the ‘decent homes standard’ and the delivery plan. Many projects undertaken by Birmingham Libraries and Digital Birmingham create relevant content for citizens and engage the community with the help of community champions (leaders).

#### MARKETING AND ADVOCACY

Birmingham established two ‘arms length’ organizations, Marketing Birmingham and Locate in Birmingham, which have recently merged. Supported by a multi-million pound budget their objectives are to increase leisure and business visits to the city, sharpening Birmingham’s image as a leading player in the global events business and a knowledge capital. In addressing the marketing and advocacy of the city and its digital credentials this has been specifically picked up by the Digital Birmingham team. The strategy identified two main targets, external promotion and internal engagement and advocacy. Digital Birmingham has worked with its partners to hold events of national and regional standing both to promote the digital city and inform local citizens and businesses. Local media has been actively involved with this strategy and publicity has been achieved through the human interest aspects of press campaigns featuring stories of the digital family (the Yorkes), the digital business (Cafelicious) and digital schools. Internationally Birmingham has promoted its digital credentials through membership of the EUROCITIES Knowledge Society Forum, the European Network of Living Labs and the Major Cities in Europe IT.

The advocacy and opportunity for the use of digital by citizens has mainly been through our 40 public libraries which have nearly 250k active members and over 4 million visitors a year. Working within the national scheme of UK online, the libraries have offered internet access, called the People’s Network, which has provided facilities and guidance to citizens and visitors. The library has supported many projects, working with citizens to capture and make more widely available Birmingham’s treasures and stories. This history of embracing the digital image alongside the written book has led to the innovative approaches for the new Library of Birmingham and its virtual and physical aspects.

4. **Results** (Maximum: 3 pages) Describe the results produced to date by the strategy in terms of new infrastructure, new investment, new "building blocks" that will lead to investment, better quality of life, improved educational achievement, employment growth, income growth, new industries or growth in existing industries (including small and medium-size businesses), and new efficiencies for citizens and organizations. Please organize your response by Intelligent Community Indicator:
- Broadband
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  - Marketing and Advocacy

**BROADBAND:**

The market has increased speeds across the city by putting fibre to exchanges and street cabinets and through developments in DOCSIS has enabled advertised speeds of 50 Mbps download. Unfortunately, contention, slow upload speeds and distance from the exchange mean further improvements for home working and data uploads are needed. Cost of up to £10,000 pa for faster business connection is hard to afford for SMEs. A further advantage of fibre connections is a lower carbon footprint compared to DSL solutions.

In response to these issues Digital Birmingham launched the Digital District project in 2009 to enable availability of superfast (100 Mbps) and symmetrical connections. The project team is creating funding bids to set up a testbed in the Digbeth/Eastside area of the city. The projects aims to generate a patchwork quilt of installations linked to regeneration areas across the city and agree technical and ducting standards. This will help aggregate and share resources and services at the city region level (six co operating local authorities).

The City Council established in 2007 a single network for corporate (city offices), schools and libraries providing a minimum of 10 Mbps connection, symmetrical to most locations. In 2007, the Council worked with BT, who installed a city centre wifi network of over 1 square mile. The use of this network has increased by nearly half since the launch ahead of other cities with similar investment. As part of the Digital Inclusion efforts a 'wimax style' network has been installed in the Aston Pride project and is being extended.

**KNOWLEDGE WORKFORCE:**

**SCHOOLS** – In providing a positive start to learning, schools have been using ICT to improve teaching and learning. From 2003 to 2009 the percentage of Year 11 pupils achieving five GCSEs at grades A\*-C rose from 49.5% to 66%. The Aston Pride Computers in the Home initiative received several awards and helped close the gap. Key stage2 results in English improved by 19% over the last 5 years compared to a Birmingham average improvement of 6%, and in Maths 5% compared to 1%.

**UNIVERSITIES** - Birmingham now has the fastest growing university applications of any UK city. The city is the most popular big city for undergraduates with applications up 13% in 2009 and the city has more research students than any other major UK City. In the Birmingham City Region area there are over 32k researchers and some £90m research funding. Graduate retention is improving, for instance while some 70% of the University of Birmingham's intake comes from outside the region, almost 50% stay in the city to begin their employment careers. In December 2008, the University of Birmingham was chosen to host the National Higher Education Science, Technology, Engineering and Mathematics (STEM) Programme, an initiative to increase the number of graduates in these disciplines to fulfill employers' needs .

**DIGITAL MEDIA** - A relatively small but very active part of Birmingham's knowledge economy is the Digital Media sector. The industry led West Midlands Digital Media Cluster Opportunities Group (the Cluster) has driven the economic cluster model for the digital media sector in the region, accelerated new product development, market entry and supply chain development. The Cluster has strong links with Digital Birmingham and Birmingham Science City. Latest evidence suggests that this sector continues to grow despite the economic downturn. The Cluster was pivotal in establishing highly successful projects like:

- a) 4iP Digital Media Fund – A partnership with Channel 4 television to fund innovative digital content for use as public services. Over 2000 companies are involved.
- b) Human Interface Technologies Lab – Under development. The centre will specialize in commercializing interface technologies in particular for Healthcare and Creative Industries.

#### INNOVATION

**BIRMINGHAM SCIENCE CITY** – National Government has nominated 6 English cities to create additional impetus on science. Birmingham's focus is on medical, transport, manufacturing and digital applications. £3.3 million has been invested by Birmingham Science City in demonstrator projects, with the funding coming from a mix of sources. In addition to the demonstrator projects there are also a number of larger capital projects planned - these are focused on increasing the potential of the knowledge base - with the biggest of these projects being the Science City Research Alliance. Led by the University of Birmingham and Warwick University £57m has been invested in worldclass R&D facilities leveraging over £29m investment. Research focuses on 3 key sectors: advanced materials, sustainable energy and translational medicine and over 80 academics are engaged in 6 projects. The city's approaches to boosting innovation and competitiveness, such as Birmingham Science City, have led to Birmingham being named by the European Cities Entrepreneurship Ranking 2010 as the most successful city in Europe for promoting new business start-ups and entrepreneurship, beating the likes of London, Paris, Frankfurt and Madrid to the title.

**BUSINESS TRANSFORMATION** - Birmingham City Council's Business Transformation program has already produced savings of £7m in 2006/7, £11m in 2007/8, and £9.4million in 2008/9. Over the next year Business Transformation will create further savings of around £8.5million. The city is on track to deliver gross cashable benefits over the next ten years of £1,659m – resulting in savings of £732m. On this basis, business transformation has achieved some £438m of cumulative cashable benefits to date. Business Transformation is the largest change program in the UK public sector and is increasingly recognized as an exemplar (both nationally and internationally) including the CHAMPS2 change methodology it developed. The Council has hosted many visits by UK and international public authorities.

**CUSTOMER FIRST** - Regarding citizen benefits the Customer First (CF) program has had the biggest impact so far. CF is creating a single point of contact for citizens with the council. One phone call to the new contact centre will provide answers to applications, queries or complaints which to date would have been handled previously by a variety of departments. CF ensures that a variety of communication channels including email, web, IDTV, phone 24/7 and face to face are provided. The new digital channels give anytime access regardless of office hours. It utilizes customer knowledge gained from the council's CRM system to provide better, joined up services and to identify customers' needs. Better performance monitoring and making this transparent to the citizens will increase customer satisfaction. For example the new eBenefits system has considerably reduced the processing time it takes from the citizen making a claim for e.g. housing benefits to the payment reaching the claimant.

**OPEN DATA** - Led by Prof. Nigel Shadbolt and supported by Tim Berners-Lee the national Open Data Panel champions the release of local public data, the progress of common standards for data released into the public sphere, and making public services more accessible. It directly points to data sources on [www.data.gov.uk](http://www.data.gov.uk). Digital Birmingham has taken the lead and has been working with developers and council departments since early 2009 under the Timely Information for Citizen project. It has made Council data available and has created its own resource that points to data in Birmingham [www.bevocal.org.uk](http://www.bevocal.org.uk) and Centro has published some of its travel data on the national website. It has recently received some grant funding from NESTA to support development of a 'civic dashboard'.

**LIBRARY OF BIRMINGHAM** - A major capital project of nearly £200m is underway to replace the no longer fit for purpose Central Library building with a new build, which will be ready in 2013. As part of the process of new design there have been extensive consultations with the ICT industry and specific events with local innovative SMEs to get them involved in the supply chain. The

Library is working with a Birmingham based digital media SME – Daden Ltd - to create a full 3-D model of the new building in Second Life. This will go live in October 2010 and will be used for a dual purpose. It already helps planners to visualise the interior to make design decisions and it will be used to inform the public and involve them in further planning.

**BIRMINGHAM SCIENCE PARK ASTON** - Support for technology innovation and start ups is provided by Birmingham Science Park Aston. On a space of 22 acres, situated just outside the city centre close to 2 university locations it offers space for currently 70 SMEs. Its latest programme Entrepreneurs for the Future provides 6 months support to start ups in the areas of clean technology, bio and medical technology, digital media and ICT. Due to the success over the last years it now plans to expand and raise funding for a new building and plans a new concept around a business park without walls, which will virtualise support structures and provide high speed links enabling collaboration and savings on travel energy and time.

#### DIGITAL INCLUSION

**ASTON PRIDE ICT PROJECT** - Aston Pride New Deal for Communities 2001-2011 is a £54m regeneration programme in one of Birmingham's deprived neighbourhoods. The area covers 5,900 households with a population of c. 17,300 people, which are predominantly from Asian and Afro-Caribbean origin (70.5%). The programme included a cross cutting ICT project, which recognized importance of broadband provision and ICT skills for a connected community. Working together with the Education workstream and colleges a number of initiatives to increase the ICT skills of residents were delivered. The project together with the Birmingham eLearning Foundation (BeLF) and Aston schools introduced the 'Computers in the Home' initiative, which made computers with security and support available to children for a monthly contribution of only £10 (approximately \$15USD). This income aids the sustainability of BeLF and the support provision. Participants have access to a dedicated wifi cloud as part of the deal thus making connectivity affordable. To date over 1,200 households have benefited from this.

**COMPUTERS FOR PUPILS (CFP) AND HOME ACCESS GRANTS (HAGS)** - Birmingham City Council received national Government grants to give free computers to pupils from poor families. In 2007 CfP grant funding for secondary school pupils was received. Digital Birmingham worked with the Council, the Birmingham eLearning Foundation and the supplier to negotiate maximum provision. As a result instead of the 10,000 computers that the CfP grant funding was expected to buy over 21,000 computers were finally provided, many of them with connectivity for the first 12 months. Since 2009 over 11,000 additional computers with connectivity were provided under the HAGs scheme for primary and secondary pupils. Digital Birmingham worked with schools to ensure eligible families were aware of the opportunity and could make informed decisions.

**SOCIAL HOUSING, THE WINDSOR TOWER PROJECT** - The Housing Strategy 2008- 2011 included commitment to provide access to broadband for existing social housing. The Housing Department is refurbishing its tower blocks as part of the national switchover programme in order for tenants to receive digital television services. Through cooperative efforts it was established that it is possible to provide broadband over the infrastructure required for digital TV services with minimal incremental costs. Windsor Tower Block with 42 flats provided an ideal opportunity to trial the solution. The pilot was undertaken in 2008-09 when a quarter of the residents received a re-used pc with MS Office and anti-virus software. As part of the ongoing digital journey discussions are now underway in the Housing department and with Registered Social Landlords to undertake a wider roll-out.

**LIBRARY SERVICES** - Libraries offer public internet access through 659 People's Network computers in the Central Library and 39 Community Libraries, with 680k bookings over the last 3 years. Many of the libraries are involved in digital inclusion outreach projects, digitising and creating content to encourage communities to use the internet. [www.connectinghistories.org.uk](http://www.connectinghistories.org.uk) for example attracted over 174k visitors in 2009/10. The website incorporates digitised archives, exhibitions, historical trails and guidance on doing research. The content is designed to appeal to people who have not traditionally used archives. Some of the content is written by individuals

and community groups with whom Central Library has undertaken outreach work. The site was featured as one of four national best practice case studies in the recent government policy document Archives for the 21st Century.

Libraries are at the forefront of using social media to engage with their customers. The Birmingham Reads facebook page is used to advertise events, online reading groups have taken place in cooperation with the Reading Partners consortium. Business Insight in Central Library has its own Youtube channel 'businessandlearning1' with currently 12 clips on business and intellectual property issues and so has the new library with 'libraryofbham2013'.

#### MARKETING AND ADVOCACY

Supported by the development of the website [www.visitbirmingham.com](http://www.visitbirmingham.com), visitor numbers to the city have grown to over 30 million per annum. Regarding inward investment, Cushman and Wakefield have identified communications as the 4th highest factor so the broadband strategy has been featured in external promotions, e.g. the presentation to Government over the relocation of central departments. In an annual survey in 2009, Birmingham was the biggest mover from 21st to 14th in the list of best European city for business.

The impact of international links is demonstrated by the high numbers of visitors from public administrations across the world and, in particular, the EURO CITIES Forum being held in Birmingham this October. High profile events have been organized such as the ministerial launch of the Digital Britain report. The work of Digital Birmingham with local media has been estimated to have an advertising value of nearly £500k and resulted in regular publications. This October, a series of linked digital events is planned to mobilize over 3,000 attendees around the globe and in the city to share in the celebration, dissemination and future gazing.

The adoption of Interactive Digital Television (idTV) well reflects the approach in the city. It was recognized that, whereas many older people do not have a computer, the vast majority has a TV. The move toward digital switchover (2011 for central England) has offered a real opportunity for idTV as an approach of taking information to people in their homes using their chosen channel. Having over 50,000 hits per month, this is the most visited Local Government TV information service in the country.

5. **Health and the Intelligent Community** (Maximum: 2 pages) Provide at least one and no more than three examples of programs or innovations introduced by government, institutions or businesses to improve the delivery of healthcare using information and communications technology.

1) NHS Local <http://www.nhslocal.nhs.uk>

For a number of years, the NHS in the West Midlands has faced some big challenges. These include the need to reduce variability in service quality, especially of patient experience, safety and outcomes; improve public confidence in the health system and its navigation; reducing inequalities; drive up the rate and adoption of innovation and improve the sustainability of services. One response by NHS West Midlands and Birmingham's Strategic Health Authority is the development of NHS Local <http://www.nhslocal.nhs.uk/>. This is a multi-channel digital service designed both to provide self-help and learning for citizens and to support the training of front line staff. It is also a network for citizens and health care staff. It brings together existing online information with a local focus and provides news, stories, videos, blogs, patients opinions, learning materials, maps by postcode about health provision and open data e.g. referral times for hospitals. Much of the content is being developed by Maverick TV, a local TV and digital media production business. Part of their strategy for future developments of NHS Local is to evaluate usage of the current resource and build more content where the users require it.

Its benefits include:

- Breaking down traditional patient/provider roles by encouraging staff and citizens to collaborate and share the best resources
- Helping users to navigate the healthcare system and find communities with shared experiences
- Helping staff to share best practice and elearning resources, encourage continuous professional

development, which can be linked to their internal electronic staff records

- Publishing data to support quality improvements and being at the vanguard of the open data movement in the UK by fully integrating the data sets of the West Midlands Quality Institute (WMQI). Examples are the 'Hacks & Hackers' event regarding online health information bringing together journalists and web developers <http://www.nhslocal.nhs.uk/story/news/geeks-and-journos-team-online-health-event>

and referral data regarding waiting times

<http://www.nhslocal.nhs.uk/story/inside-nhs/culture-openness-brings-raft-health-data-public-arena>

- Beginning the development of a collaborative digital health ecosystem based on open standards e.g. the elearning platform is based on Moodle open source software and the University of Birmingham's Head of Medical Learning has agreed to share learning resources
- Encouraging co-production and co-delivery e.g. cooperation with the social enterprise Patient Opinion, which is already used by over 100 organisations and has collected almost 25,000 opinions. It ensures that patient feedback is forwarded to the organisation concerned to improve services.

## 2) University Hospital Birmingham (UHB)

UHB's new 1213 bed Queen Elizabeth Hospital Birmingham is making best use of ICTs in a number of ways: <http://www.uhb.nhs.uk/new-hospital.htm>

### The Digital Ward

It is one of the biggest buildings in the UK to have a full 3D model. The virtual environment is available on the hospital's intranet and was used to train staff in using and finding their way in the new facilities before the opening. It will provide scenario-based training for fire drills, major incidents and cardiac teams. The Virtual Ward also links to the new wayfinder system for the public. This state-of-the-art equipment uses 'intelligent' software developed by Amazing Interactives, which allows the computer to work out the best way to get to any destination. It even allows users to request routes, customising them to include stopping for gifts, refreshments or other services. People select where they want to go from the touch screen and they are then guided through the quickest route using a virtual reality display. The wayfinder can also calculate alternative routes and directions in the event of an emergency or if a facility needs to be relocated. The wayfinder will allow people to view routes before they come into the hospital on the internet and will help them to find the right place in an easy way. It integrates with the hospital's self check-in system. The wayfinder will make sure patients and visitors can get to where they want to be with the minimum stress and delay. The system costs £350,000 and will include 15 kiosks dotted around the new hospital.

### PICS (Prescribing Information and Communication System)

PICS is a protocol driven system that improves quality of care and clinical efficiency. The decision support system provides at the bedside via wirelessly linked tablet computers a wide range of clinical functions including: drug prescription and administration; results reporting and requesting; discharge documentation; order communications and observation charting. PICS has been in use for some years in all inpatient areas, including critical care, clinical haematology and oncology. Developments are ongoing to extend its use into other areas.

PICS is handling c. 2500 different users in any week 260 of those simultaneously. It communicates 200,000 results; 23,000 prescriptions and records 130,000 drug administrations in the same time. As a result of implementing PICS impressive cost savings have been achieved for example: the generic prescribing protocol for statins, which was jointly agreed with the PCT resulted in a cost saving of £250,000 pa.

### HED (Healthcare Evaluation Data) Tool

UHBFT has developed an interactive tool which enables clinical and managerial staff to evaluate the quality of healthcare delivery and operational efficiency in comparison to acute and mental health trusts in England. The tool uses Hospital Episode Statistics (HES) data and applies an advanced methodology which accounts for casemix and other variables, incorporates all care delivered and can drill down to a patient level (anonymised). A wide range of aspects of care delivery are included in the tool: activity, mortality, length of stay, DNAs (number of patients who did not attend their

outpatient appointments), new to follow-up appointment ratios and market share (GP referrals). The Care Quality Commission (CQC) is currently reviewing UHBFT's HED tool and UHB has already entered into commercial contracts to provide the tool to a range of interested providers.

3) Medilink West Midlands

Medilink is the UK Life Science industry association. It works to bring commercial advantage to companies in this sector through networking, market intelligence and direct tender notifications. As a private company, registered not-for-profit, Medilink facilitates mutually-beneficial relationships between industry, academia and clinical/health professionals for innovative research and development. Medilink has 3 specialist divisions:

- myM-link is a membership service for private companies in the life sciences market, providing networking, market intelligence and commercial opportunities.
- Appliedeventology is a specialist events agency for the life sciences sector and its website up-to-date listings of life science events regional, nationally and overseas.
- Alvolution is the leading, independent organisation for the discovery, collaboration and promotion of technological advances in the Assisted Living sector.

Medilink and the University of Birmingham delivered the End of Life Care Science City demonstrator. Medilink brought together innovative medical technology companies with clinicians and patients. It addressed questions like how technology can prevent people from going into care, how it can make a difference to the quality of end of life care and what carers and patients' needs are. The University organised a group called the Thousand Elders that helped with feedback.

In May 2008 it opened the iHouse demonstrator in West Bromwich. This is a typical terraced house from the late 19th century, which has been refurbished using the latest independent living technologies and access focused design. The aim of the home, created with the help of partners from health and social care, housing associations, industry and people living with physical or sensory impairments, is to help participating companies refine, improve and develop their technologies while raising awareness amongst health service providers and create demand from the public.

### Key Contacts

6. Please provide contact information for a key public-sector, private-sector and nonprofit leader involved in your community's Intelligent Community programs.

Public-Sector Official	Name: Paul Tilsley Title: Councillor and Deputy Leader Organization: Birmingham City Council Telephone: 0044 121 303 1292    Email: paul.tilsley@birmingham.gov.uk Contribution to the Community:    Chair of Digital Birmingham Partnership
Private-Sector Executive	Name: Ian Binks Title: Partnership Director West Midlands Organization: British Telecom Telephone: 0044 121 230 2950    Email: ian.binks@bt.com Contribution to the Community:    Digital Birmingham Board member
Nonprofit Executive	Name: Brendan O'Brien Title: Chair of Yardley Neighbourhood Forum and member of BANF Management Committee Organization: Birmingham Association of Neighbourhood Forums - BANF Telephone: 0044 7973113554    Email: brendan.obrien@banf.org.uk, Contribution to the Community:    Digital Birmingham Board member



7. Please provide the name and contact information for the person to be contacted by ICF in connection with this application.

Name: Heike Schuster-James	
Title: Business and Programme Manager - Digital Development and Communities	
Organization: Birmingham City Council	
Telephone: 0044 121 675 8887	Fax: n.a.
Email: heike.schuster-james@birmingham.gov.uk	

8. Please provide from your own press list up to 10 local and regional media (print, broadcast or online), including the publication's name, the name and title of an editor or reporter, and an email address.

Publication	Editor/Reporter	Email Address
Birmingham Post	Alun Thorne	alun.thorne@birminghampost.net
Birmingham Mail	Andy Richards	andy.richards@birminghammail.net.
BBC Midlands Today	Planning Desk / John Bray	john.bray@bbc.co.uk or midlandstoday@bbc.co.uk
BBC Radio WM	Jenny Wilkes	jenny.wilkes@bbc.co.uk
BBC Birmingham Online	Jill Ella	birmingham@bbc.co.uk or jill.ella@bbc.co.uk
BRMB	Louise Easton	louise.easton@orionmedia.com
Businessdesk.com	Mark Reeves	newswm@thebusinessdesk.com
Midlands Insider	Andy Coyne	andy.coyne@newsco.com

### Ownership of Information

By submitting this information, the above-named community attests and acknowledges that:

- All information provided is accurate and fairly represents the past and current condition of the community to the best knowledge of the individual submitting the information.
- All information submitted to the ICF in connection with its international awards program becomes the property of the Intelligent Community Forum and will be used for the purposes of research, analysis and publication in pursuit of its global mission.

### Intelligent Community Indicators

For a complete description of the Intelligent Community Indicators, visit [www.intelligentcommunity.org](http://www.intelligentcommunity.org) and select "Intel Comm Indicators" on the Intelligent Communities menu.

1. **Broadband Connectivity.** Broadband is the new essential utility, as vital to economic growth as clean water and good roads. Intelligent Communities express a clear vision of their broadband future and craft policies to encourage deployment and adoption.
2. **Knowledge Workforce.** A knowledge workforce is a labor force that creates economic value through the acquisition, processing and use of information. Intelligent Communities exhibit the determination and demonstrated ability to develop a workforce qualified to perform knowledge work from the factory floor to the research lab, and from the construction site to the call center or Web design studio.
3. **Digital Inclusion.** As broadband deploys widely 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 pro-mote digital inclusion by creating policies and

funding programs that provide “have-nots” with access to digital technology and broadband, by providing skills training and by promoting a compelling vision of the benefits that the broadband economy.

4. **Innovation.** For business, broadband has become to innovation what fertilizer is to crops. Intelligent Communities work to build the local innovation capacity of new companies, because these produce all of the job growth in modern economies, and invest in e-government programs that reduce their costs while delivering services on the anywhere-anytime basis that digitally savvy citizens expect.
5. **Marketing and Advocacy.** Like businesses facing greater global competition, communities must work harder than ever to communicate their advantages and explain how they are maintaining or improving their position as wonderful places to live, work and build a growth business. Effective marketing shares this story with the world, while advocacy builds a new vision of the community from within.

### **Success Factors**

In evaluating nominations, ICF looks for trends that characterize successful Intelligent Communities. We suggest that, where appropriate, your nomination refer to the following success factors in describing your strategy and results.

**Collaboration.** The development of an Intelligent Community typically requires intense collaboration among government, businesses, universities and institutions. Few organizations have enough resources, political capital or public backing to drive a community-wide transformation. But collaboration is challenging. It demands vision, flexibility, and a high degree of trust among the partners. Intelligent Communities develop the vision, find the flexibility and create trusting relationships among key constituencies. Effective collaboration is typically the result of the working environment created by effective leaders.

**Leadership.** It is fair to say that no Intelligent Community has succeeded without strong leadership. Effective leaders identify challenges, set priorities, communicate a compelling vision and foster a sense of urgency in achieving it. They establish a collaborative environment that encourages risk-taking and creates win-win relationships with partners in government, businesses and institutions. It matters little where leadership comes from. In the Intelligent Communities that ICF has studied, leadership has emerged from elected officials, government employees, business executives, universities and nonprofit organizations. What matters is the character, motivation and talents of the individuals who commit themselves to improving the economic and social wellbeing of the community.

**Sustainability.** When Intelligent Communities invest in broadband, workforce development, digital inclusion, innovation and marketing, they work to create programs that sustain themselves through local service revenue, growth of the tax base, and the attraction of long-term investment. They avoid depending on short-term funding that fails to lay a foundation for the future, or that is subject to changing political priorities. They also plan their growth in order maintain quality of life while creating jobs and spurring business growth. They craft policies on land use, building codes, transportation, rights-of-way and other infrastructure to ensure the community remains a desirable place to live and work. They also use technology to reduce dependence on physical infrastructure, allowing more citizens to share the same community resources. And some Intelligent Communities give specific attention to environmental sustainability. They invest in Intelligent Community programs in order to identify environmental issues, reduce pollution and curb carbon emissions as well as for economic development and inclusion. This environmental stewardship contributes to the health of the community and the sustainability of the planet.

**The Education Last Mile.** In addition to provide citizens with a quality education, Intelligent Communities focus on guiding graduates into employment or entrepreneurship in the community, so that their skills benefit the community that invested in them. From employer site visits and internship programs to competitions and festivals, Intelligent Communities ensure that their graduates know about local career opportunities and have multiple opportunities to pursue them.