IBM Global Business Services

TRRA
TORONTO REGION RESEARCH ALLIANCE

ICT TORONTO

GREATER TORONTO
MARKETING ALLIANCE

TEDCO

TORONTO

Global Investment Trends and Toronto's Competitive Positioning in the ICT sector

March 2007

Agenda

Introduction

Methodology

ICT Global Investment Trends

Toronto's Competitive Position in ICT Sector

- 1. Next Generation Electronics
- 2. Professional Shared Services
- 3. Specialist Software Development
- 4. Digital Media

Recommendations

TRRA Project Background

Project Objective

Benchmark Information and Communications Technology (ICT) sector of Toronto against 6 competitor cities. Develop a screening tool to understand the competitive position of the region

Methodology

IBM PLI-Global Location Strategies benchmarking methodology. The methodology has been used successfully to guide the investment decisions of ICT companies.

IBM Team

The PLI – Global Location Strategies team is international in composition. The team consists of individuals in the Americas, Europe and Australia with several decades of cumulative experience in location advisory services.

Project Goals

- Identify key competitor regions globally for the Toronto Region ICT sector.
- Identify the strengths and weaknesses of Toronto relative to the other cities on key investment decision drivers.
- Understand the Toronto regions positioning in the global marketplace with respect to its ICT industry.
- Create additional fact base describing the ICT sector.

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Methodology

Step 1 – Project Alignment

- Reviewed existing studies and analysis as a basis for defining sectors, competitors and other benchmarking data.
- Created a short list of constituent subsectors and benchmark/competitor regions.
- Discussed the shortlist with the TRRA to:
  - Refine the specifications for the ICT sector
  - Select four sub-sectors.
  - Select 6 common competitor regions to be included as benchmark/ comparator locations.

Step 2 – Profile Definition

- For each of the four ICT sub-sectors selected for benchmarking developed a representative prototype investment project, with project assumptions, location requirements and weightings.
- Refined the prototype investment project details with TRRA to develop four agreed upon profiles including project assumptions, location requirements and weightings (weighted scorecard).

Methodology

Step 3 – Collection of Benchmarking Data

- Gathered information related to each location sub-factor and cost factor. The data sources selected were those used by PLI and other site selectors in corporate relocation work.

Step 4 – Benchmarking

- Each location subfactor was evaluated based on the data collected for the study. A score was assigned on a scale of 1 to 10.
- The labour, utility, real estate and tax costs were estimated based on the project assumptions and profile details.
- A qualitative analysis was conducted using the weighted scorecard to plot the relative scores for each of the competitor locations.
- A quantitative (cost) analysis was conducted to estimate relative operating costs for each profile.
- The qualitative and quantitative results were plotted on a Cost-Quality Map for each ICT sector to show the trade-offs between cost and quality factors.

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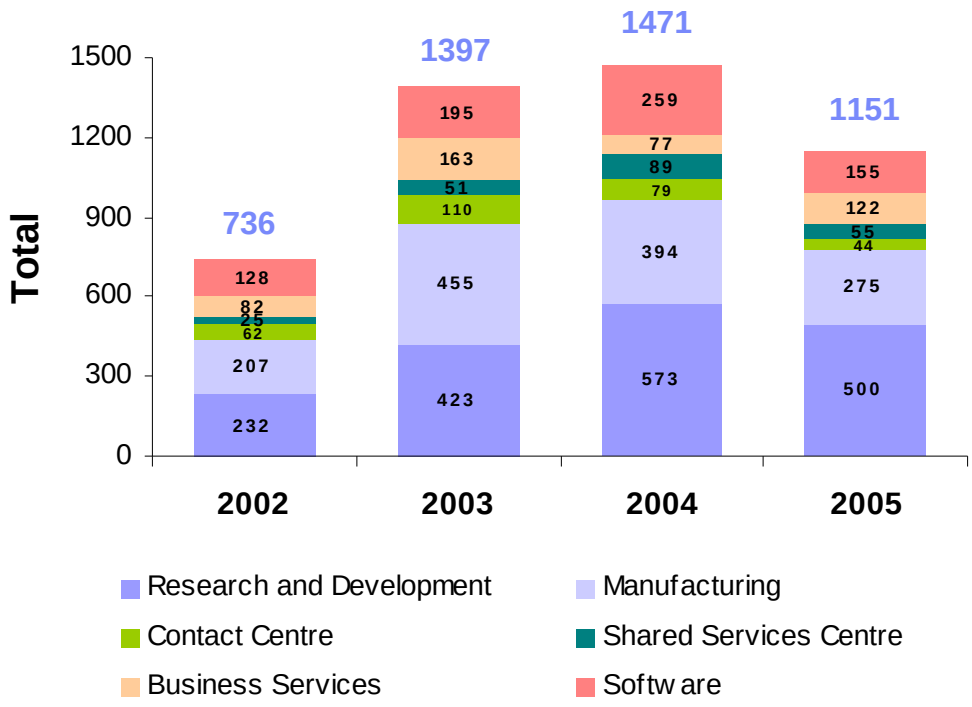
IBM maintains Global Investment Locations Database (GILD) to track investment projects

- Records investment project announcements around the world on an ongoing basis
- Monitors corporate investments at the *project level,* records announcements of new (greenfield) and expansion projects by companies globally
- Captures details on the investor, origin, location of investment, subsector and cluster, type of investment, jobs created, capital invested, and other key factors
- Used to identify where recent investment is going, provides key input for identifying location options
- Provides detailed analysis of recent investment trends by sub-sector, and activity, identifying location's market share in attracting cross border investment, monitoring target countries, and other key information
- Supports corporate investor decision-making and provides insight to the development community

ICT Investment Projects Across Select Activities

Annual Number of ICT Projects



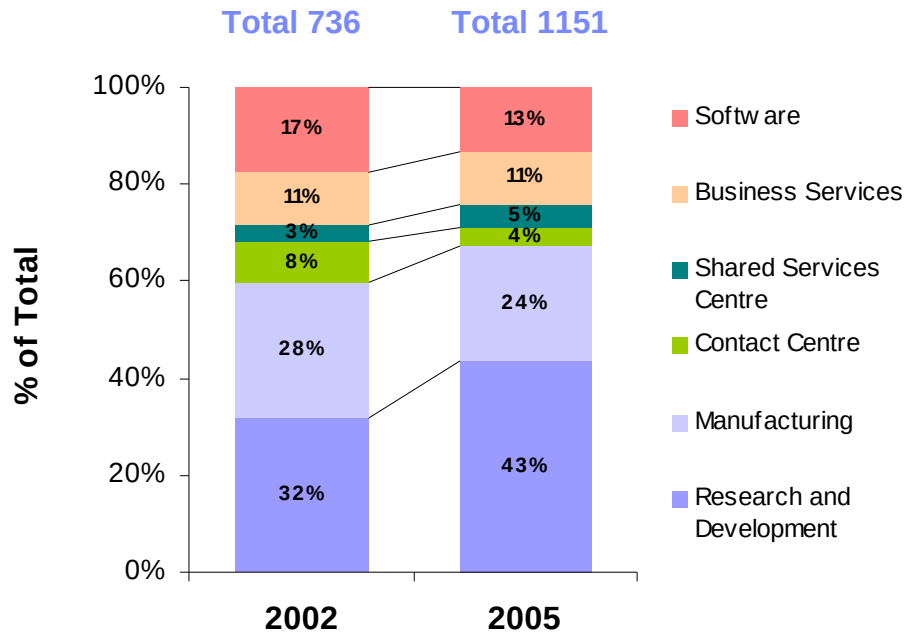
Key Observations

- The number of new ICT projects have grown from 2002 to 2004 but experienced a decline in 2005
- Manufacturing and software segments have seen the largest decline in the number of projects in 2005

Source: 2005 IBM-PLI GILD Database, IBM Analysis

Share of ICT Projects by Activity

2002 vs 2005 Share of Projects by Activity, %



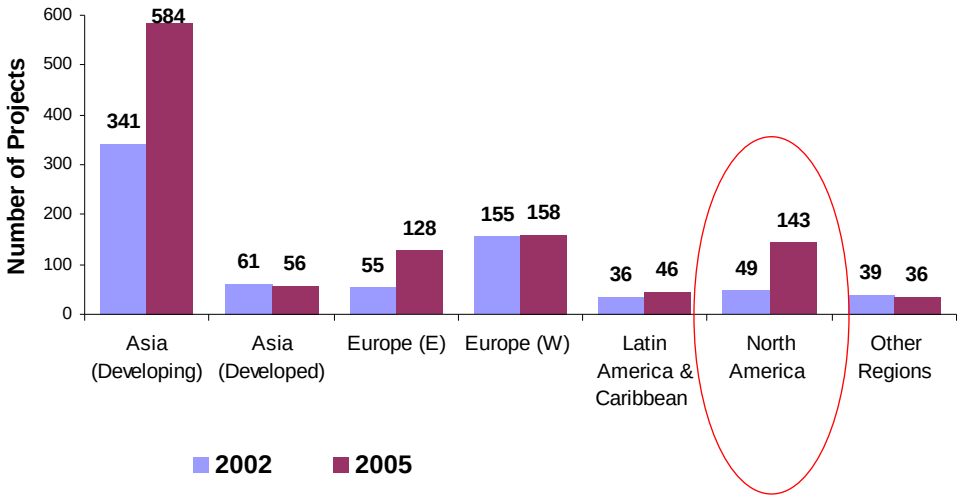
Key Observations

- R&D projects account for the largest share of ICT investment in 2005
- The share of R&D and Shared Services projects has increased in the ICT investment from 2002 to 2005
- Business Services maintain its share
- Manufacturing and Contact centers' share has declined

Source: 2005 IBM-PLI GILD Database, IBM Analysis

ICT Investment Destination

2002 vs 2005 Annual Number of Projects By Region



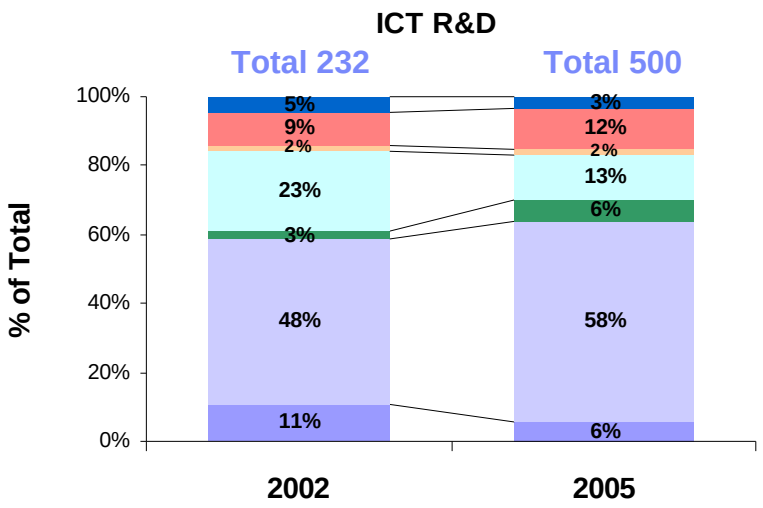
Key Observations

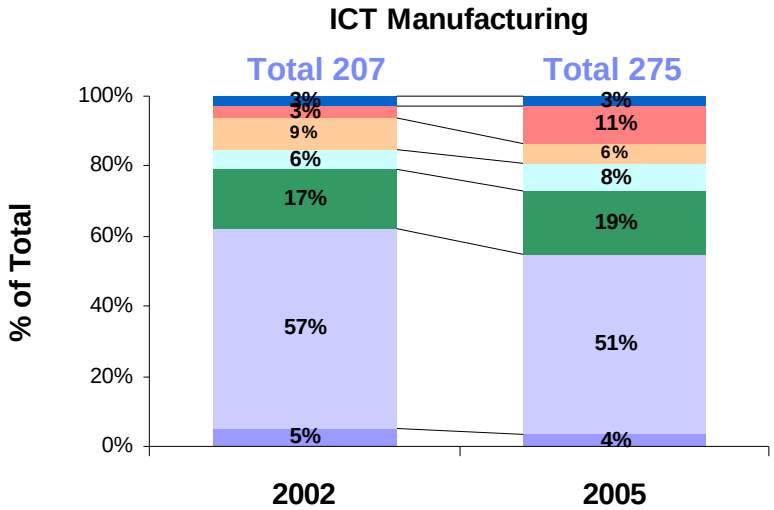
- Asia (India and China) remains the most popular destination for ICT investment accounting for a half of new ICT projects
- The number of projects in North America almost tripled from 2002 to 2005
- Eastern Europe emerges as an important destination for ICT investment

Source: 2005 IBM-PLI GILD Database, IBM Analysis

ICT Investment Destination by Region

2002 vs 2005 ICT R&D and Manufacturing Projects by Region





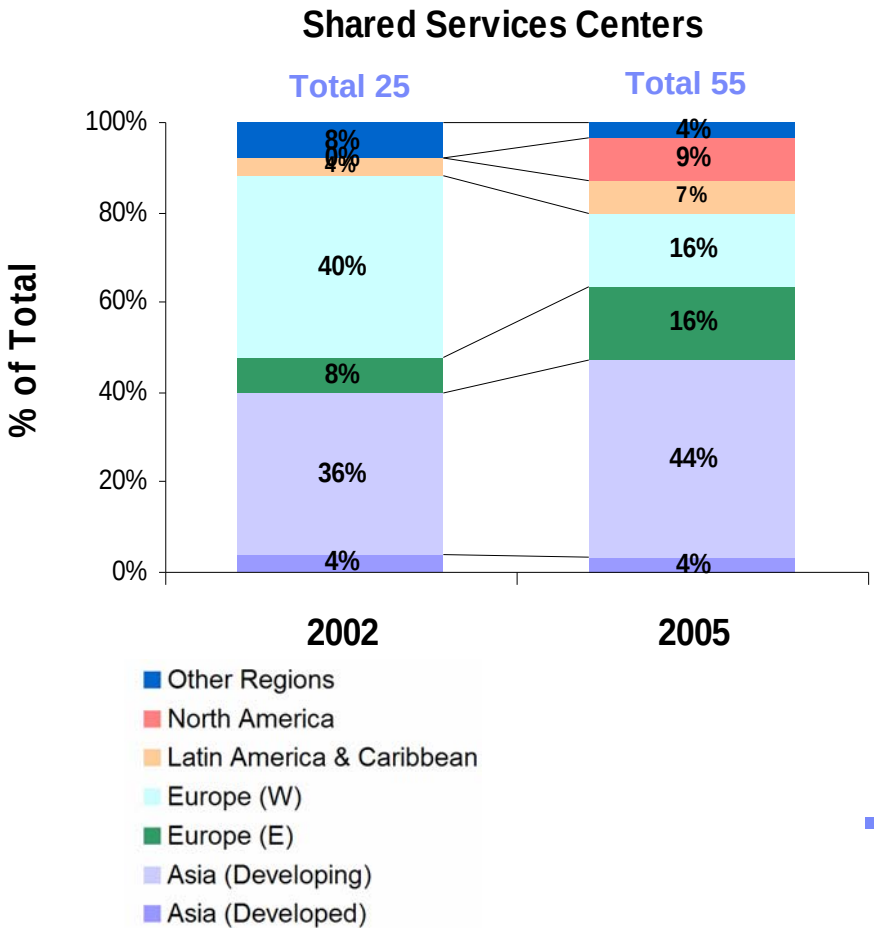
- Other Regions
- North America
- Latin America & Caribbean
- Europe (W)
- Europe (E)
- Asia (Developing)
- Asia (Developed)

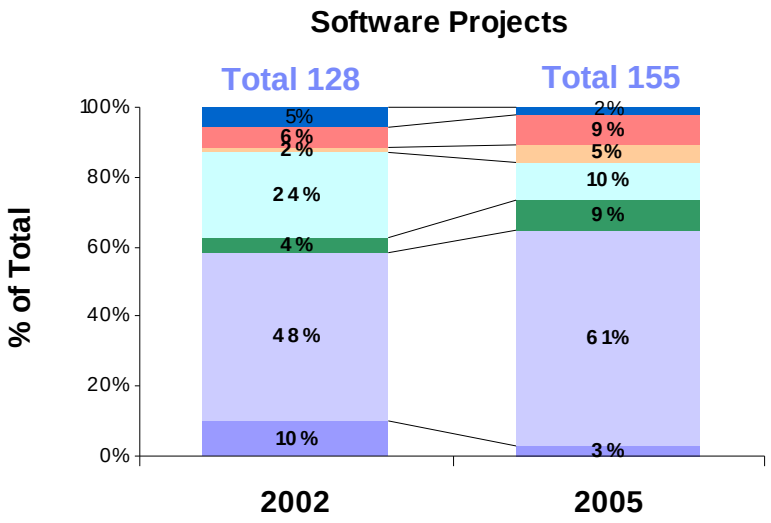
Asia is an increasingly important destination for R&D projects in ICT space. North America took a higher share of both R&D and Manufacturing investment in 2005 compared to 2002

Source: 2005 IBM-PLI GILD Database, IBM Analysis

ICT Investment Destination by Region

2002 vs 2005 Software and Shared Services Centers by Region



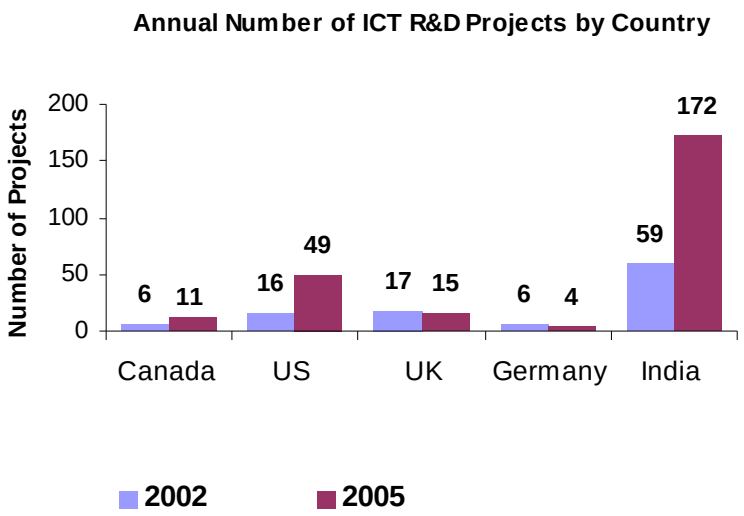


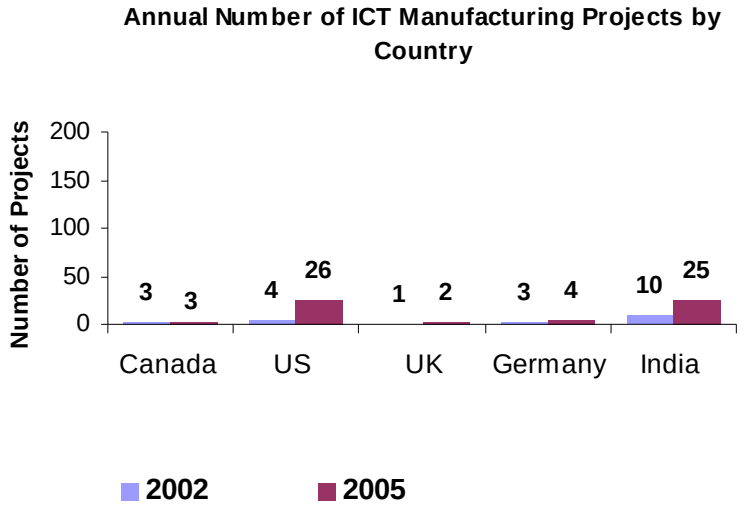
Source: 2005 IBM-PLI GILD Database, IBM Analysis

W Europe is loosing its share of new Shared Services, Software and R&D projects to E Europe, Asia and North America

ICT Investment Destination by Country

2002 vs 2005 Number of ICT R&D and Manufacturing Projects by Country



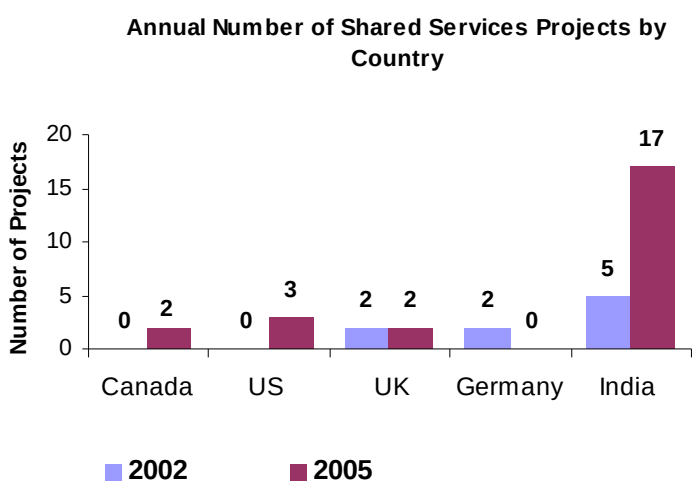


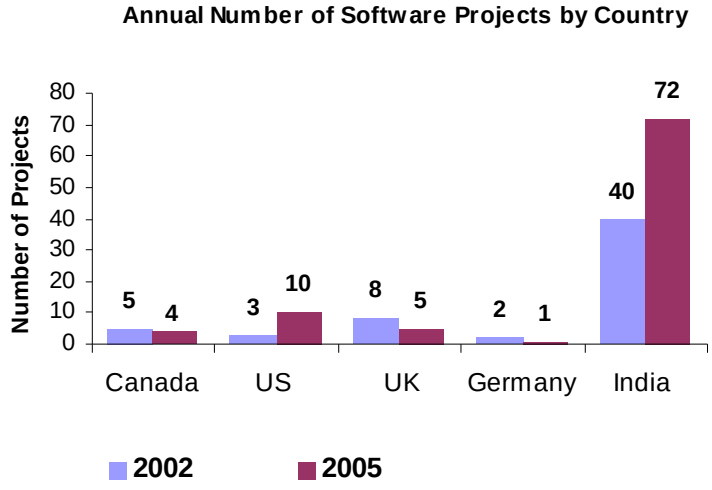
India is by far the most popular destination for ICT R&D projects. Canada have almost doubled the number of R&D projects in 2002 compared to 2005. The number of ICT Manufacturing investment remains low compared to the number of R&D projects

Source: 2005 IBM-PLI GILD Database, IBM Analysis

ICT Investment Destination by Country

2002 vs 2005 Number of Shared Services and Software Projects by Country





India captures the greatest number of new Shared Services and Software projects.

Source: 2005 IBM-PLI GILD Database, IBM Analysis

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Recommendations

1. Next Generation Electronics

Project Specifications

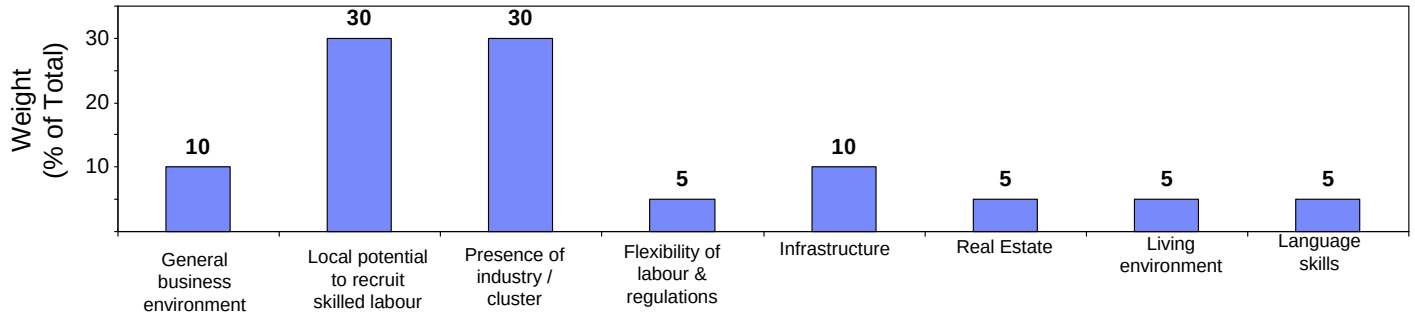
Activities

Next generation electronics production. The production of prototype and small lots of equipment using nanotechnology, optical, bio, or other non-metallic circuits for application in areas such as the communication sector.

Key Project Drivers

- Availability of skilled labour including electrical engineers and material scientists
- Collaboration with universities or institutes with strong nanotechnology and optronics centers
- Presence of telecommunications equipment company cluster
- Access to courses/R&D/suppliers in nanotechnology and miniaturization
- Access to suppliers of electronics industry, circuit boards, semiconductors, and vacuum technology
- Proximity to purchasers of high tech equipment

Weights



1. Next Generation Electronics

Location Subcategories

- Highest weighted subcategories
  - Presence of industry specific employees
  - Presence of experienced employees (subsector)
  - Presence of industry base
  - Importance of university / R&D

Location factors	weight	overall weight
1. General business environment		
1.1. Economic and financial stability	20	2.0%
1.2. Political stability	10	1.0%
1.3. Quality of support from local government & development agencies	15	1.5%
1.4. Business permitting procedures	10	1.0%
1.5. Availability of financial support for setting up (incentives)	20	2.0%
1.6. Corporate Taxation	10	1.0%
1.7 Business Ethics and Bureaucracy	5	0.5%
1.8 Compliance privacy regulations, information security , IP rights	10	1.0%
1.9. Risk of natural disaster	0	0.0%
1.10 Time zone	0	0.0%
	100	*10.0%*
2. Local potential to recruit skilled staff		
2.1. Overall size of labor market	20	6.0%
2.2. Presence of industry specific workers	35	10.5%
2.3. Presence of experienced employees	35	10.5%
2.4. Presence of non-experienced staff (student population)	5	1.5%
2.5. Overall tightness in labor market (unemployment)	5	1.5%
	100	*30.0%*
3. Presence of industry / cluster		
3.1 Market proximity (access to customers)	20	6.0%
3.2 Presence of industry base	30	9.0%
3.3 Importance of university / R&D	30	9.0%
3.4 Presence of similar operations	20	6.0%
	100	*30.0%*

Location factors	weight	overall weight
4. Flexibility of labor & regulations		
4.1. Working time regulations	30	1.5%
4.2. Hiring flexibility	30	1.5%
4.3 Firing flexibility	40	2.0%
4.4. Work permits	0	0.0%
	100	*5.0%*
5. Infrastructure		
5.1. Air access	30	3.0%
5.2. Highway network & congestion	10	1.0%
5.3. Availability of public transport	15	1.5%
5.4. Quality & reliability of telecommunications	20	2.0%
5.5. Reliability of power supply	25	2.5%
	100	*10.0%*
6. Real estate		
6.1. Availability of industrial sites	0	0.0%
6.2. Availability of office space	100	5.0%
	100	*5.0%*
7. Living environment		
7.1. Cost of living	30	1.5%
7.2. Attractiveness for international recruits	10	0.5%
7.3. Safety	30	1.5%
7.4. Quality of schools	30	1.5%
7.5 Personal taxation for expatriates	0	0.0%
	100	*5.0%*
8. Language Skills		
8.1. Mastery of English (as corporate language)	100	5.0%
		100.0%

1. Next Generation Electronics

Project Profile

Labour

- General and Operations manager (2)
- Engineering manager (2)
- Electrical engineers (10)
- Materials scientist (5)
- Machinist (7)
- Electrical & electronic engineering technician (43)
- Electrical and electronic equipment assemblers (31)
- Computer Software Engineers (5)

- Total = 105

Property

Site :

- Surface 1.00 hectares

Building (m^2) :

- Production - 3,500
- Warehouse – 300
- Laboratory – 100
- Office – 500
- Total – 4,400

Utilities and Taxes

Power :

- Monthly 17, 043 kWh

Water :

- Daily 56,850 L

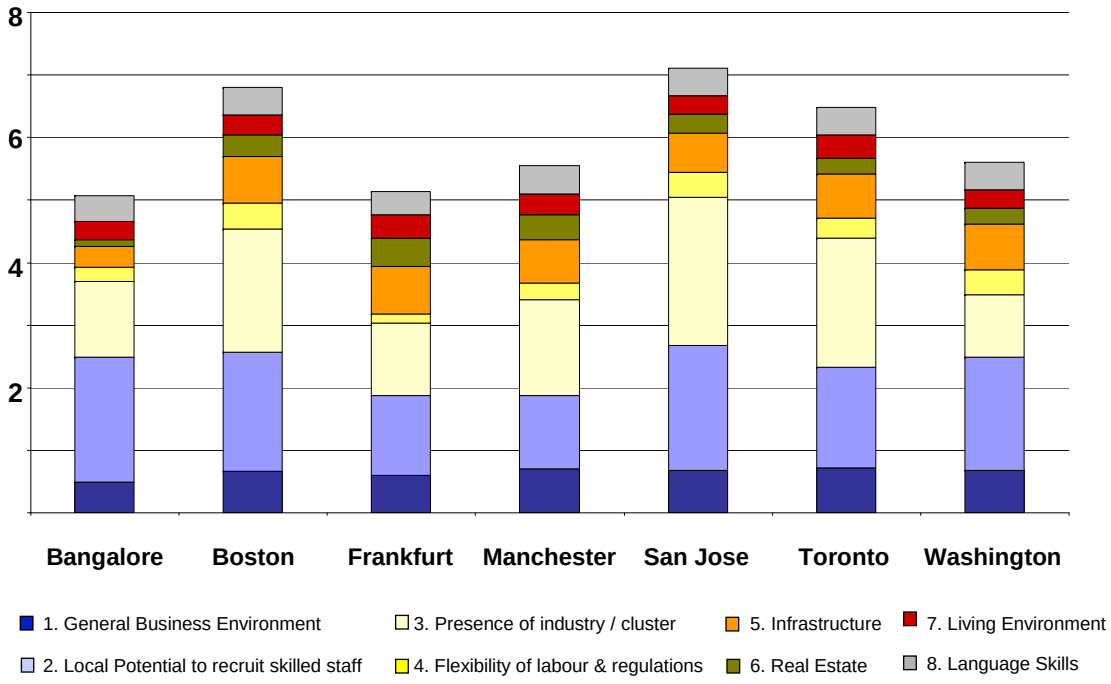
Income Taxes :

- Profit markup 10%

1. Next Generation Electronics

Quality Dimension*

Next Generation Electronics
Total Weighted Quality Scores



Key Observations

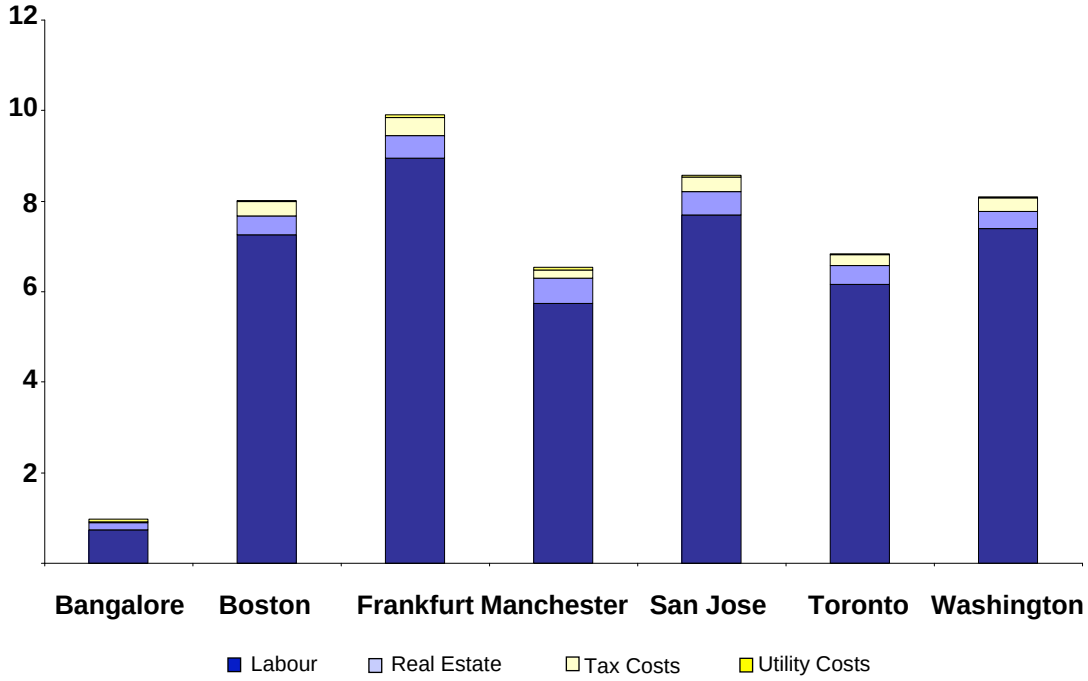
- Toronto ranks third on the quality dimension
- The local potential to recruit staff and the presence of an industry cluster contribute the greatest amount to the variation between scores.
- Boston, San Jose and Washington have higher numbers of employees working in companies classified as research and development in physical, engineering and life sciences. This assessment is a component of the ranking for potential to recruit skilled staff.
- Toronto's proximity to companies using next generation electronics contributes to the second place ranking for presence of industry/cluster.
- Boston and San Jose ranked higher for the presence of research in electronics and nanotech a component of the industry / cluster ranking.

Note: * A set of factors such as General Business Environment, Labour availability, Presence of industry / cluster etc.

1. Next Generation Electronics

Cost Dimension*

Next Generation Electronics
Annual Operating Cost (million USD)



Key Observations

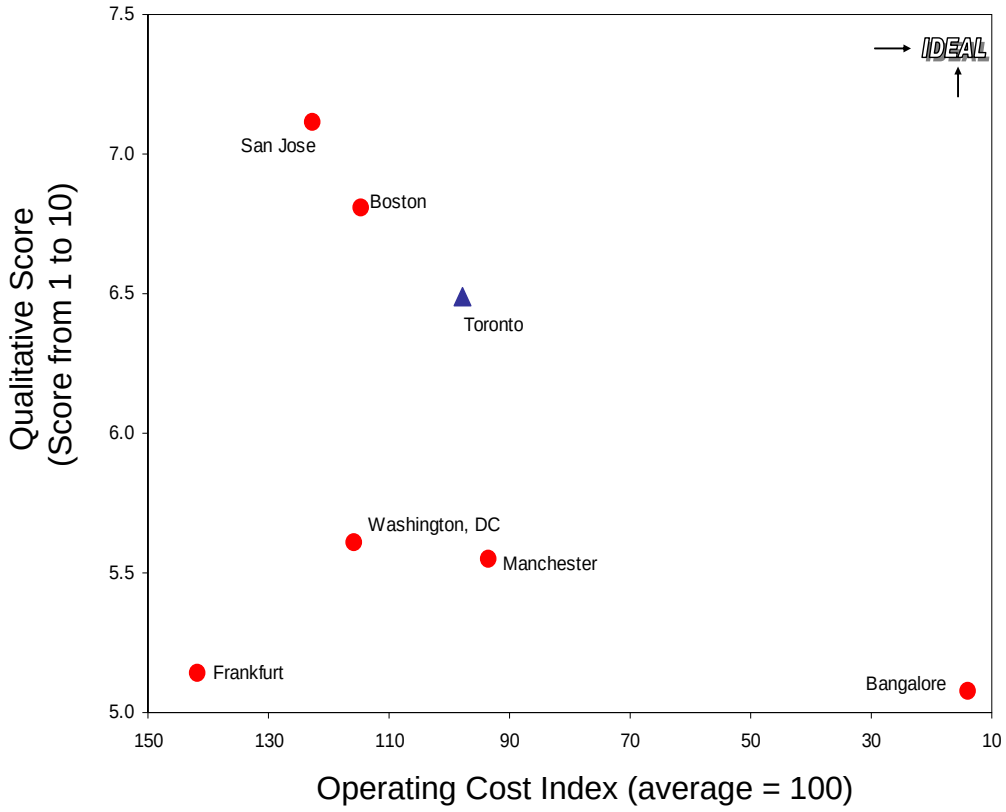
- Toronto is more expensive when compared to Manchester and Bangalore.
- A potential savings of approximately 15 % for Toronto compared to its closest North American rival.

Note: * Only location-specific costs are included

1. Next Generation Electronics

Cost – Quality Map

Next Generation Electronics



Key Observations

- Toronto is positioned below San Jose and Boston on the quality dimension but it has a cost advantage over the two cities.
- Bangalore has the greatest cost advantage and the lowest quality ranking.

2. Professional Shared Services

Project Specifications

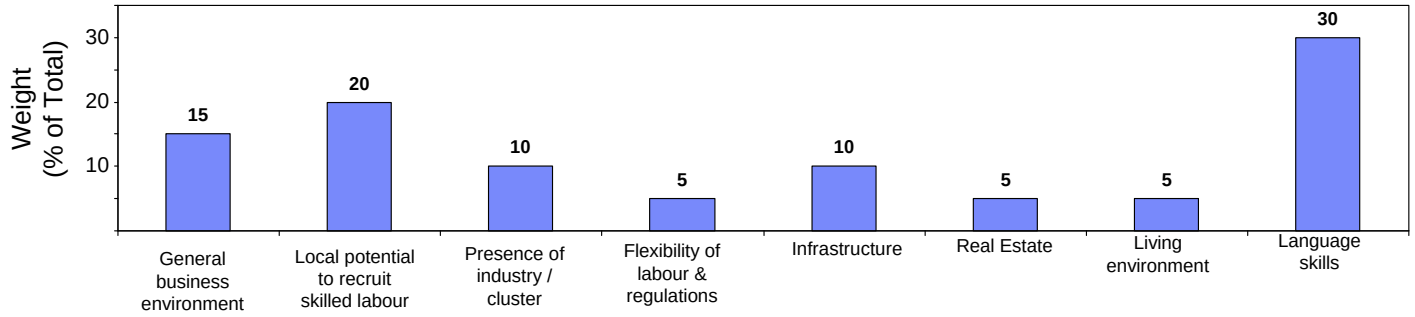
Activities

Financial shared services centre providing business process outsourcing. The focus is on providing support to middle office operations for businesses.

Key Project Drivers

- Local availability of finance, HR, accounting skills
- Cost reduction
- Telecommunications infrastructure

Weights



2. Professional Shared Services

Project Profile

Labour

- General and operations manager (1)
- Financial manager (6)
- Management analysts (8)
- Computer systems analysts (10)
- Accountants and auditors (95)
- Financial analysts (10)
- Accounting clerks (45)
- Office clerks, General (15)
- HR Specialist (5)
- HR Asistant (5)

- Total = 200

Property

Site :

- Surface 1.00 hectares

Building (m^2) :

- Production - 0
- Warehouse – 0
- Laboratory – 0
- Office – 3,000
- Total – 3,000

Utilities and Taxes

Power :

- Monthly 60,000 kWh

Water :

- Daily 90,960 L

Income Taxes :

- Profit markup 10%

2. Professional Shared Services

Location Subcategories

- Highest weighted subcategories
  - Mastery of English
  - Presence of industry specific employees
  - Presence of experienced employees (subsector)

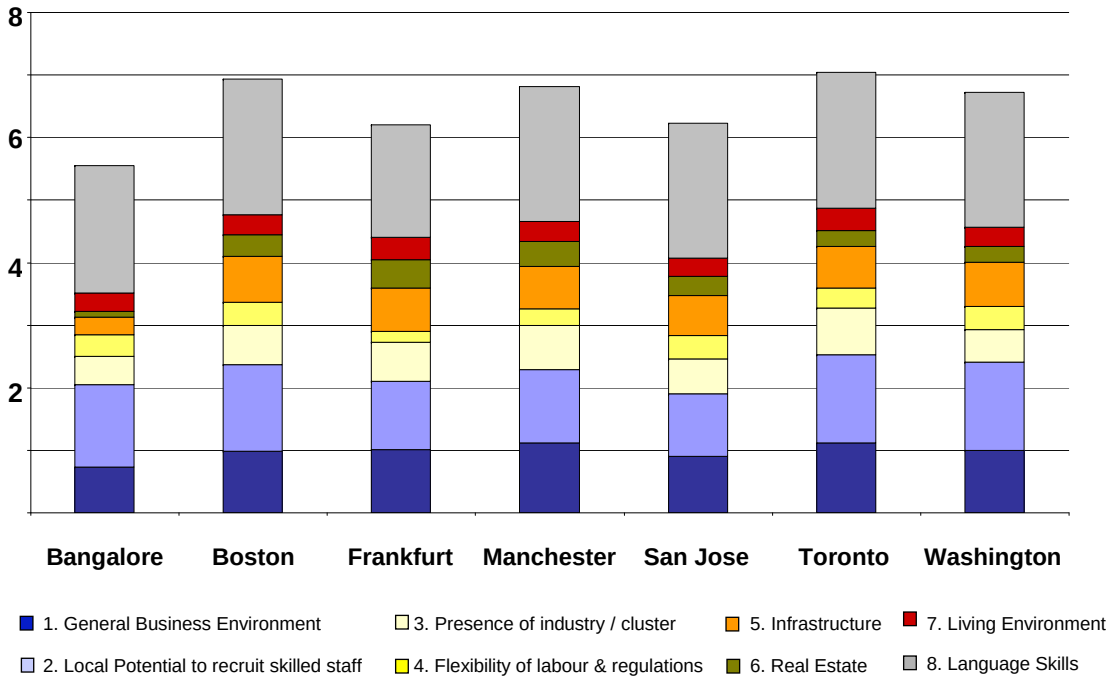
Location factors	weight	overall weight
1. General business environment		
1.1. Economic and financial stability	10	1.5%
1.2. Political stability	5	0.8%
1.3. Quality of support from local government & development	0	0.0%
1.4. Business permitting procedures	0	0.0%
1.5. Availability of financial support for setting up (incentives)	10	1.5%
1.6. Corporate Taxation	10	1.5%
1.7 Business Ethics and Bureaucracy	15	2.3%
1.8 Compliance privacy regulations, information security , IP rights	20	3.0%
1.9. Risk of natural disaster	15	2.3%
1.10 Time zone	15	2.3%
	100	*15.0%*
2. Local potential to recruit skilled staff		
2.1. Overall size of labor market	10	2.0%
2.2. Presence of industry specific workers	35	7.0%
2.3. Presence of experienced employees	25	5.0%
2.4. Presence of non-experienced staff (student population)	15	3.0%
2.5. Overall tightness in labor market (unemployment)	15	3.0%
	100	*20.0%*
3. Presence of industry / cluster		
3.1 Market proximity (access to customers)	0	0.0%
3.2 Presence of industry base	40	4.0%
3.3 Importance of university / R&D	40	4.0%
3.4 Presence of similar operations	20	2.0%
	100	*10.0%*

Location factors	weight	overall weight
4. Flexibility of labor & regulations		
4.1. Working time regulations	66	3.3%
4.2. Hiring flexibility	17	0.9%
4.3 Firing flexibility	17	0.9%
4.3. Work permits	0	0.0%
	100	*5.0%*
5. Infrastructure		
5.1. Air access	5	0.5%
5.2. Highway network & congestion	15	1.5%
5.3. Availability of public transport	20	2.0%
5.4. Quality & reliability of telecommunications	30	3.0%
5.5. Reliability of power supply	30	3.0%
	100	*10.0%*
6. Real estate		
6.1. Availability of industrial sites	0	0.0%
6.2. Availability of office space	100	5.0%
	100	*5.0%*
7. Living environment		
7.1. Cost of living	30	1.5%
7.2. Attractiveness for international recruits	20	1.0%
7.3. Safety	25	1.3%
7.4. Quality of schools	25	1.3%
7.5 Personal taxation for expatriates	0	0.0%
	100	*5.0%*
8. Language Skills		
8.1. Mastery of English (as corporate language)	80	24.0%
8.2. Mastery of French	10	3.0%
8.3. Mastery of Spanish	10	3.0%
Total weighted score	*100*	*30.0%*
		100.0%

2. Professional Shared Services

Quality Dimension

Professional Shared Services
Total Weighted Quality Scores



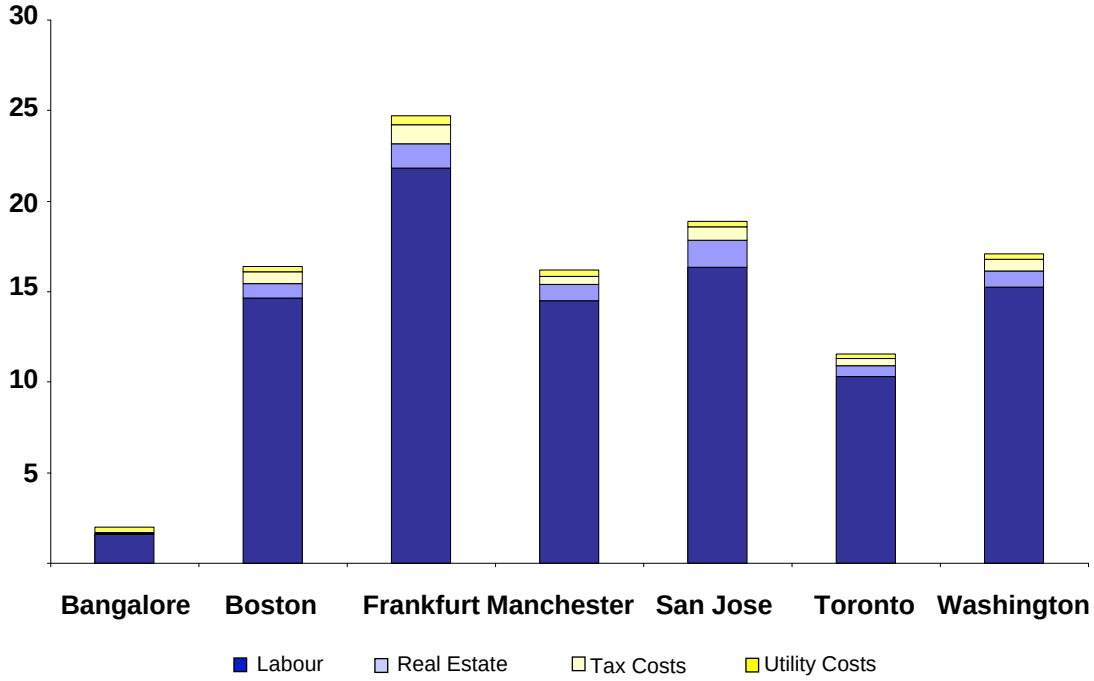
Key Observations

- Toronto ranks first on the quality dimension
- The Native English speaking countries rank highest. A quarter of the qualitative score is dependent on English language skills.
- Toronto has the highest score for the local potential to recruit skilled staff. The region has the largest amount of employees in accounting, finance, administrative/management services sectors.

2. Professional Shared Services

Cost Dimension*

Professional Shared Services
Annual Operating Cost (million USD)



Key Observations

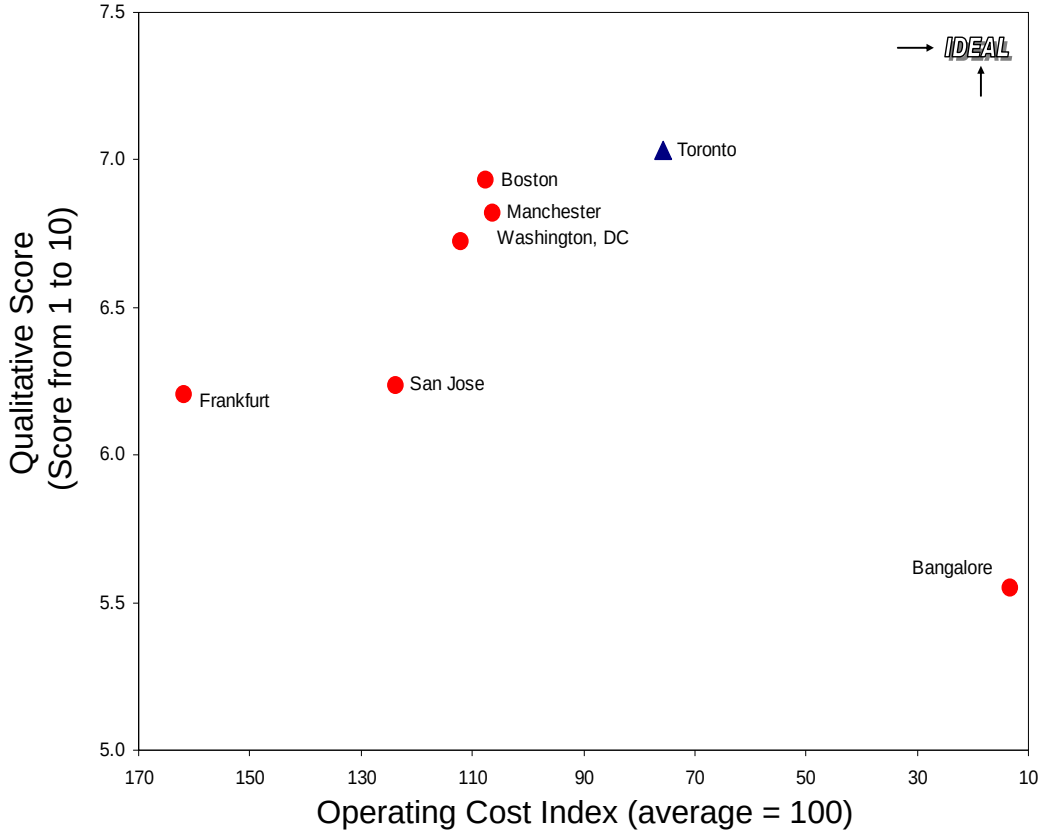
- Toronto has the second lowest operating cost of the comparator regions.
- Toronto has a cost advantage over Manchester a successful professional shared service location in Europe

Note: * Only location-specific costs are included

2. Professional Shared Services

Cost – Quality Map

Professional Shared Services



Key Observations

- Toronto is positioned closest to the ideal.
- Boston, Manchester, and Washington are close on the quality dimension but Toronto has a cost advantage over these cities.

3. Specialist Software Development

Project Specifications

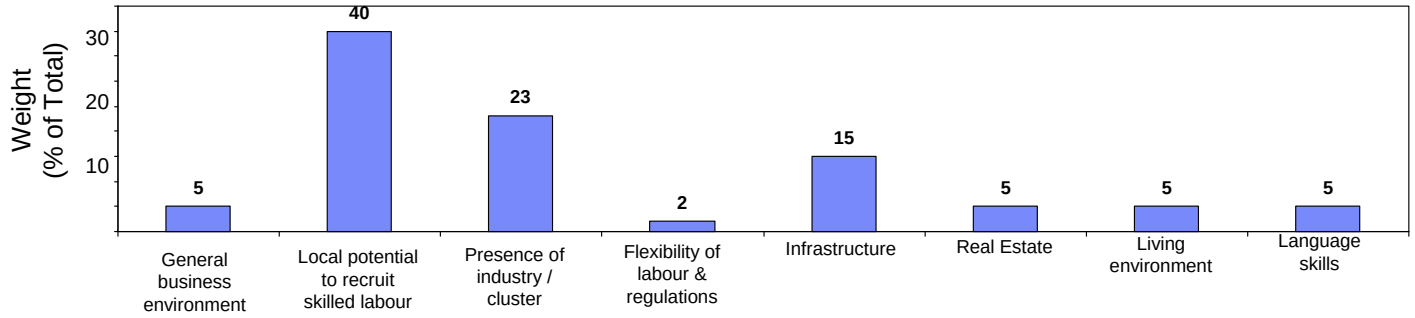
Activities

A software development company that specializes in applications for telecom related business. The company specializes in developing content for mobile operators (carriers) and mobile content providers.

Key Project Drivers

- Availability of skilled software developers
- Accessibility to advanced technology and research
- Presence of telecommunications industry
- Overall Quality of Life

Weights



3. Specialist Software Development

Location Subcategories

- Highest weighted subcategories
  - Presence of experienced industry- specific employees
  - Presence of experienced employees (subsector)
  - Importance of university/R&D

Location factors	weight	overall weight
1. General business environment		
1.1. Economic and financial stability	15	0.8%
1.2. Political stability	5	0.3%
1.3. Quality of support from local government & development	15	0.8%
1.4. Business permitting procedures	0	0.0%
1.5. Availability of financial support for setting up (incentives)	25	1.3%
1.6. Corporate Taxation	10	0.5%
1.7 Business Ethics and Bureaucracy	5	0.3%
1.8 Compliance privacy regulations, information security , IP rights	25	1.3%
1.9. Risk of natural disaster	0	0.0%
1.10 Time zone	0	0.0%
	100	*5.0%*
2. Local potential to recruit skilled staff		
2.1. Overall size of labor market	5	2.0%
2.2. Presence of industry specific workers	40	16.0%
2.3. Presence of experienced employees	30	12.0%
2.4. Presence of non-experienced staff (student population)	10	4.0%
2.5. Overall tightness in labor market (unemployment)	15	6.0%
	100	*40.0%*
3. Presence of industry / cluster		
3.1 Market proximity (access to customers)	20	4.6%
3.2 Presence of industry base	20	4.6%
3.3 Importance of university / R&D	50	11.5%
3.4 Presence of similar operations	10	2.3%
	100	*23.0%*

Location factors	weight	overall weight
4. Flexibility of labor & regulations		
4.1. Working time regulations	20	0.4%
4.2. Hiring flexibility	35	0.7%
4.3 Firing flexibility	35	0.7%
4.3. Work permits	10	0.2%
	100	*2.0%*
5. Infrastructure		
5.1. Air access	20	3.0%
5.2. Highway network & congestion	10	1.5%
5.3. Availability of public transport	20	3.0%
5.4. Quality & reliability of telecommunications	30	4.5%
5.5. Reliability of power supply	20	3.0%
	100	*15.0%*
6. Real estate		
6.1. Availability of industrial sites	0	0.0%
6.2. Availability of office space	100	5.0%
	100	*5.0%*
7. Living environment		
7.1. Cost of living	30	1.5%
7.2. Attractiveness for international recruits	15	0.8%
7.3. Safety	25	1.3%
7.4. Quality of schools	30	1.5%
7.5 Personal taxation for expatriates	0	0.0%
	100	*5.0%*
8. Language Skills		
8.1. Mastery of English (as corporate language)	100	5.0%
Total weighted score	*100*	*5.0%*
		100.0%

3. Specialist Software Development

Project Profile

Labour

- Computer and IS Managers (5)
- Team Leader (4)
- Senior Programmers (20)
- Computer Programmers (60)
- Telecommunications Engineers (20)

- Total = 109

Property

Site :

- Surface 1.00 hectares

Building (m^2) :

- Production - 0
- Warehouse – 0
- Laboratory – 0
- Office – 2,500
- Total – 2,500

Utilities and Taxes

Power :

- Monthly 270,000 kWh

Water :

- Daily 83,380 L

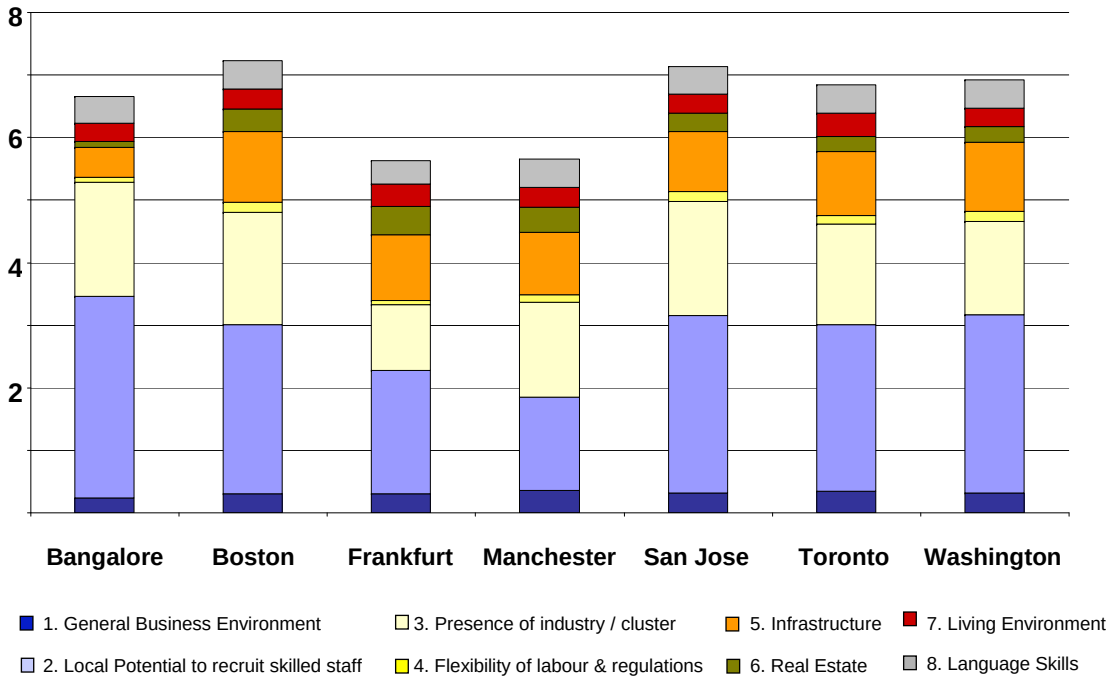
Income Taxes :

- Profit markup 10%

3. Specialist Software Development

Quality Dimension

Specialist Software Development
Total Weighted Quality Scores



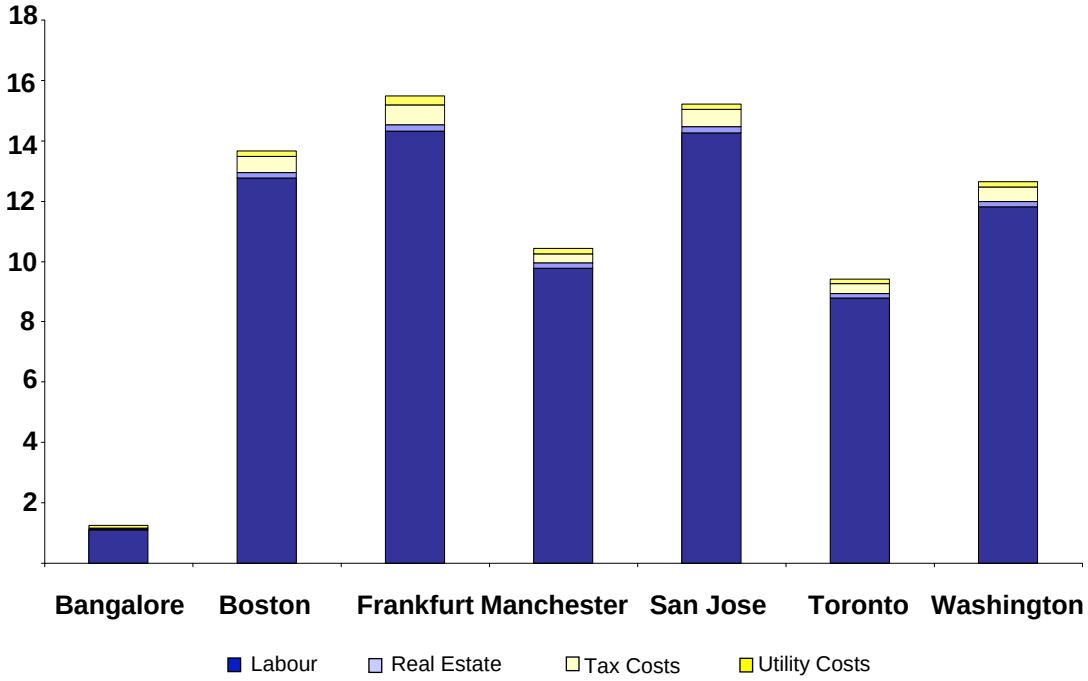
Key Observations

- Altthough not top ranked, Toronto has a similar quality offer to Boston, San Jose and Washington.
- Boston and San Jose have a stronger presence of universities and research institutes in computer programming captured in the ranking for the presence of industry / cluster.
- Washington (135,000) people has almost twice the amount of employees in computer systems design when compared to Toronto (72,000). This leads to a higher score in the potential to recruit skilled staff.
- Bangalore has a significant advantage over the other cities in the potential to recruit skilled staff but not in overall quality. The employees in the computer and related activities sector in Bangalore (279,000) is estimated at almost four times the number of Toronto (72,000) (source Dunn & Bradstreet)

3. Specialist Software Development

Cost Dimension*

Specialist Software Development
Annual Operating Cost (million USD)



Key Observations

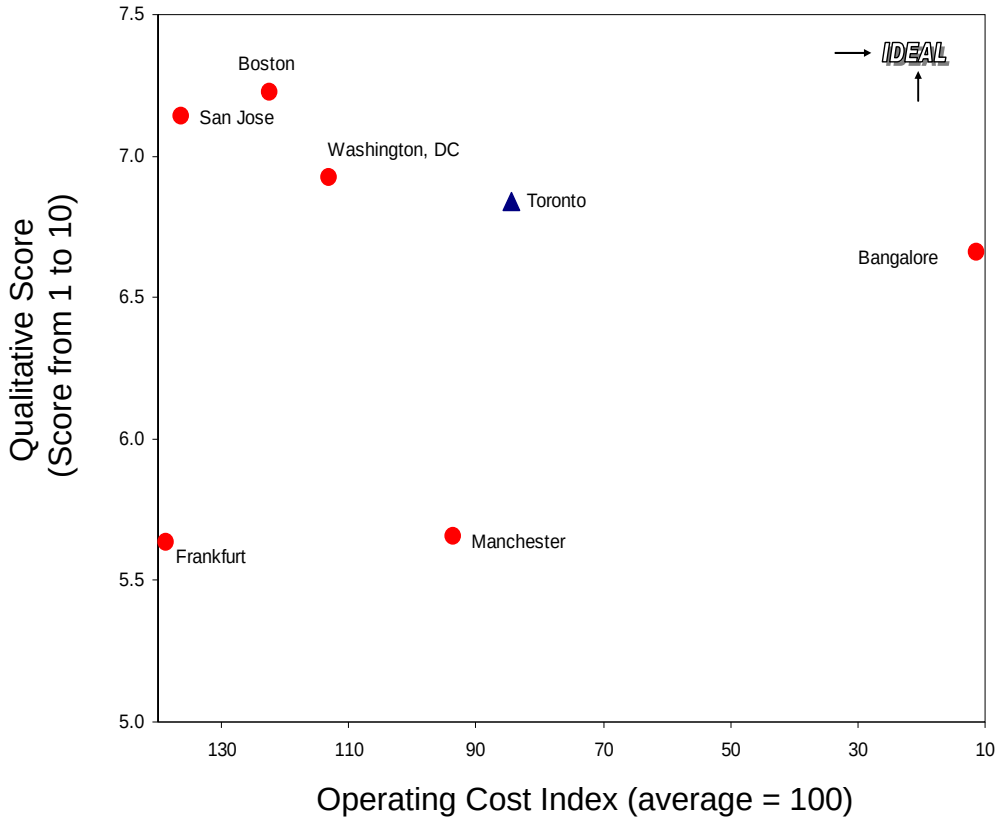
- Bangalore offers a significant cost advantage in labour compared to all other regions in the study.
- Salaries comprise the largest part of the operating cost for a specialist software development company. The salaries in Bangalore including benefits and bonuses are approximately 15% of the analogous salary in Toronto.
- The Toronto region is the second lowest in labour costs but significantly more expensive than Bangalore.

Note: * Only location-specific costs are included

3. Specialist Software Development

Cost – Quality Map

Specialist Software Development



Key Observations

- Bangalore is closest to the ideal position.
- The cost advantage combined with the quality rating positions Bangalore as a leader.
- The Toronto region has a cost advantage within North America but ranks below several other cities on the quality dimension.

4. Digital Media

Project Specifications

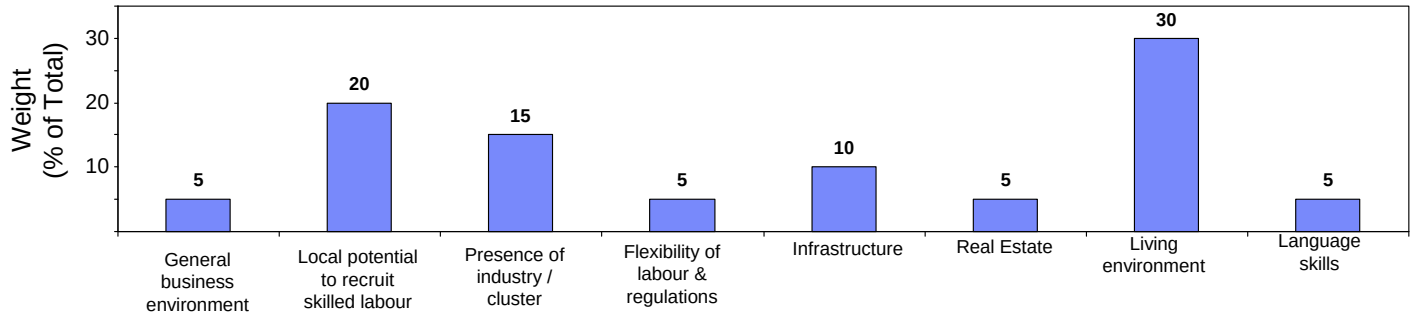
Activities

A provider of interactive multimedia and digital entertainment. The company may produce downloadable and online games or other interactive media. The company is responsible for the entire sales cycle from idea generation, development to sales and marketing.

Key Project Drivers

- Availability of graphic designers, software developers, multimedia artists, animators
- Universities with strong animation/graphic design programs
- Quality of life attractive to creative class

Weights



4. Digital Media

Location Subcategories

- Highest weighted subcategories;
  - Cost of Living
  - Presence of industry specific employees
  - Presence of experienced employees (subsector)

Location factors	weight	overall weight
1. General business environment		
1.1. Economic and financial stability	5	0.3%
1.2. Political stability	5	0.3%
1.3. Quality of support from local government & development	25	1.3%
1.4. Business permitting procedures	0	0.0%
1.5. Availability of financial support for setting up (incentives)	25	1.3%
1.6. Corporate Taxation	5	0.3%
1.7 Business Ethics and Bureaucracy	5	0.3%
1.8 Compliance privacy regulations, information security , IP rights	30	1.5%
1.9. Risk of natural disaster	0	0.0%
1.10 Time zone	0	0.0%
	100	*5.0%*
2. Local potential to recruit skilled staff		
2.1. Overall size of labor market	5	1.0%
2.2. Presence of industry specific workers	40	8.0%
2.3. Presence of experienced employees	40	8.0%
2.4. Presence of non-experienced staff (student population)	10	2.0%
2.5. Overall tightness in labor market (unemployment)	5	1.0%
	100	*20.0%*
3. Presence of industry / cluster		
3.1 Market proximity (access to customers)	10	1.5%
3.2 Presence of industry base	20	3.0%
3.3 Importance of university / R&D	30	4.5%
3.4 Presence of similar operations	40	6.0%
	100	*15.0%*

Location factors	weight	overall weight
4. Flexibility of labor & regulations		
4.1. Working time regulations	20	1.0%
4.2. Hiring flexibility	35	1.8%
4.3 Firing flexibility	35	1.8%
4.3. Work permits	10	0.5%
	100	*5.0%*
5. Infrastructure		
5.1. Air access	5	0.5%
5.2. Highway network & congestion	5	0.5%
5.3. Availability of public transport	25	2.5%
5.4. Quality & reliability of telecommunications	55	5.5%
5.5. Reliability of power supply	10	1.0%
	100	*10.0%*
6. Real estate		
6.1. Availability of industrial sites	0	0.0%
6.2. Availability of office space	100	5.0%
	100	*5.0%*
7. Living environment		
7.1. Cost of living	30	9.0%
7.2. Attractiveness for international recruits	20	6.0%
7.3. Safety	25	7.5%
7.4. Quality of schools	25	7.5%
7.5 Personal taxation for expatriates	0	0.0%
	100	*30.0%*
8. Language Skills		
8.1. Mastery of English (as corporate language)	100	10.0%
		100.0%

4. Digital Media

Project Profile

Labour

- Business Development (10)
- Marketing Manager (5)
- Product Manager (6)
- Marketing Assistant (10)
- Project Manager (3)
- Author/scriptwriter (4)
- Head game designer (4)
- Team Leader - Art Director (8)
- Computer programmers (40)
- Junior Computer programmers (8)
- Animation Director (4)
- Technical Director (4)
- Multi-Media Artists and Animators (32)
- Graphic Designer (4)

- Total = 142

Property

Site :

- Surface 1.00 hectares

Building ($m^{2)}$:

- Production - 0
- Warehouse – 0
- Laboratory – 0
- Office – 2,500
- Total – 2,500

Utilities and Taxes

Power :

- Monthly 270,000 kWh

Water :

- Daily 83,380 L

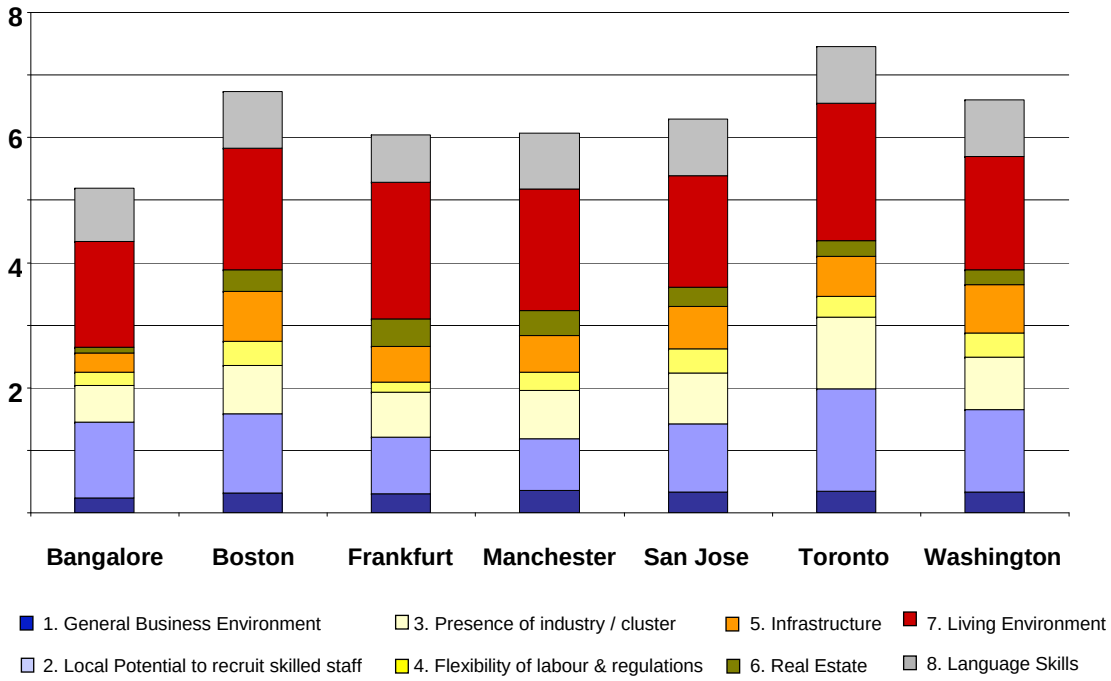
Income Taxes :

- Profit markup 10%

4. Digital Media

Quality Dimension

Digital Media
Total Weighted Quality Scores



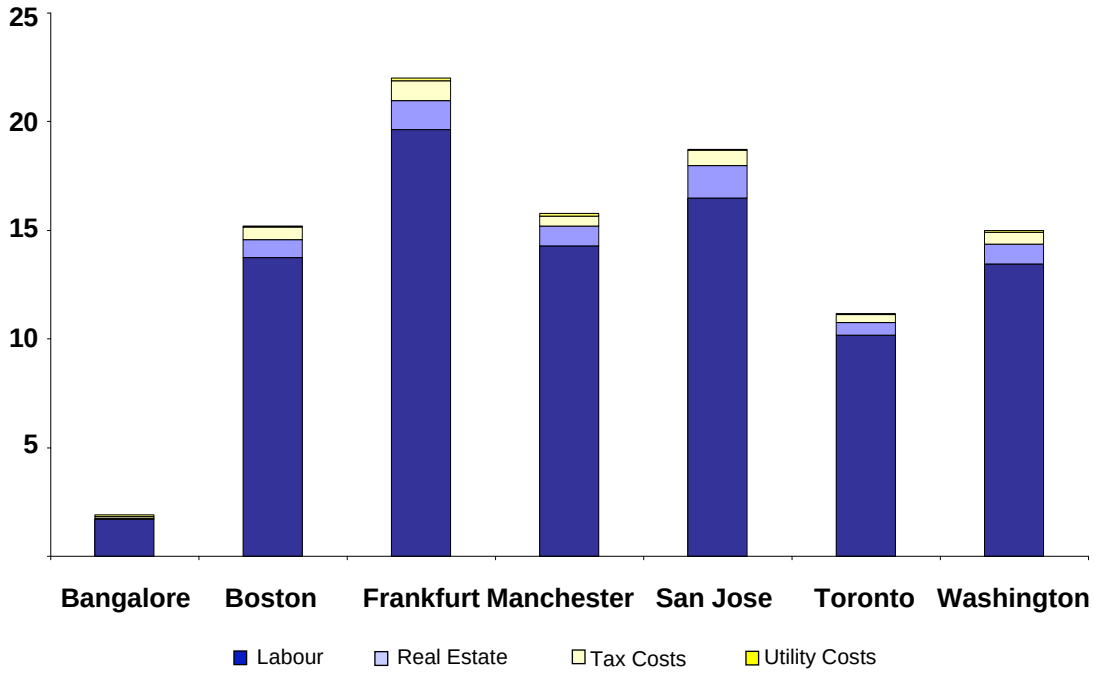
Key Observations

- Toronto ranks first on the quality dimension.
- The living environment is a positive for Toronto. The region ranks first in terms of safety and attractiveness to international recruits. When the competition for talent is high and the talent highly mobile the attractiveness of the region is important for talent retention.
- Toronto ranks first in the potential to recruit skilled staff. The Toronto region has access to computer programming talent and creative media talent. This is a differentiator between Toronto and the other regions.

4. Digital Media

Cost Dimension*

Digital Media
Annual Operating Cost (million USD)



Key Observations

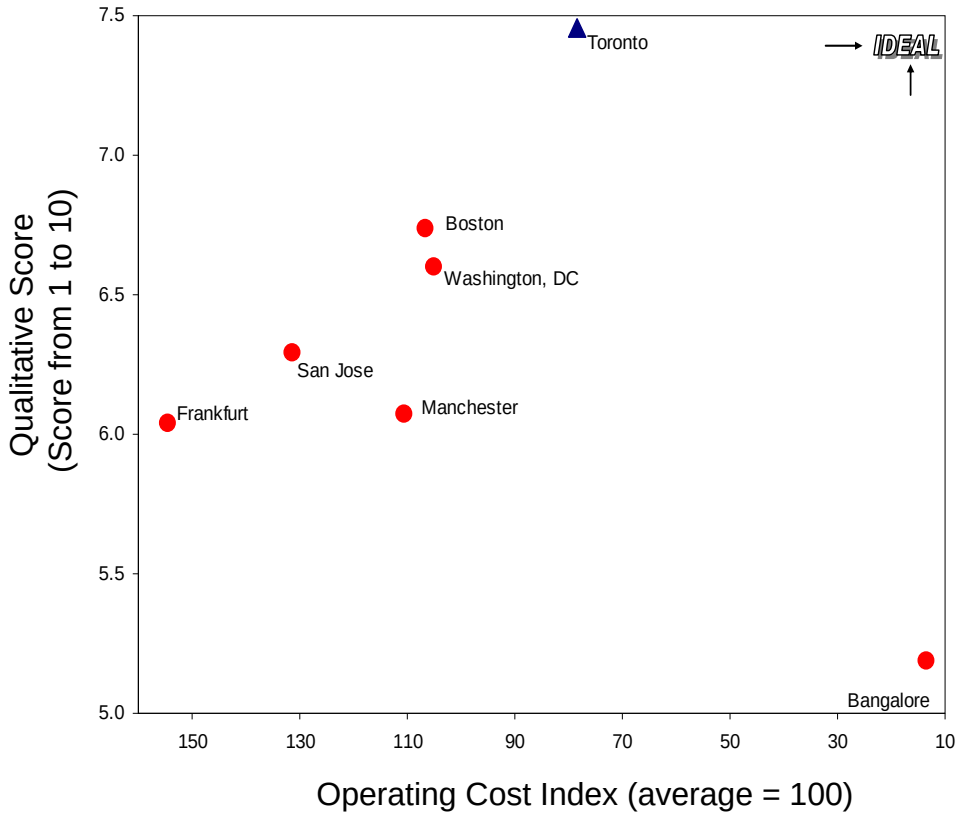
- Toronto has the second lowest operating cost for Digital Media.

Note: * Only location-specific costs are included

4. Digital Media

Cost – Quality Map

Digital Media



Key Observations

- Toronto combines high quality with low cost.
- The region is separated from all others implying a strong niche opportunity.

Overall conclusions and competitive positioning

Sub sector	Most competitive regions	Value proposition	Strengths and Weaknesses for Toronto *(based on location category relative weightings)*
Next Generation Electronics	▪ Toronto, CA ▪ Boston, USA ▪ San Jose, USA	▪ Toronto is a cost competitive player against other NA alternatives, and has a quality offer better than many, especially where market proximity in important	➢ Market proximity (S) ➢ Presence of experienced employees (W) ➢ Cost relative to offshore options (W)
Professional Shared Services	▪ Toronto, CA ▪ Manchester, UK ▪ Boston, USA	▪ Toronto has a significant quality and cost comparative advantage for middle office financial shared services, with a wide range of languages available when needed by multinationals	➢ Presence of experienced employees (S) ➢ Presence of industry base (S) ➢ Language skills (S) ➢ Cost – Quality Relationship (S) ➢ Working time regulations (W) ➢ Cost relative to offshore options (W)

Overall conclusions and competitive positioning

Sub sector	Most competitive regions	Value proposition	Strengths and Weaknesses for Toronto *(based on location category relative weightings)*
Specialist Software Development	▪ Bangalore, IN ▪ Toronto, CA ▪ Washington, USA	▪ Toronto has a cost advantage with nearly similar quality against NA competitors, and a much stronger cost and quality offer against European competitors	➢ Presence of industry base (S) ➢ Cost-Quality relationship (S) ➢ Cost relative to offshore option (W)
Digital Media	▪ Toronto, CA ▪ Boston, USA ▪ Washington, USA	▪ Toronto offers a very strong combination of quality and cost advantages for digital media development much of it based on the strong existing base of related creative industries	➢ Presence of similar operations (S) ➢ Quality of Life for “creative class” (S) ➢ Attractiveness for international recruits (S)

Mitigating weaknesses

Area	Options
Presence of similar operations	▪ Collect and publicize better data on subsector presence ▪ Catalyze subsector industry associations
University / R&D	▪ Provide better numbers on funding for R&D ▪ Provide comparisons of local universities with the world ▪ Incorporate nearby centers of excellence to increase evaluation

Mitigating weaknesses (cont…)

Area	Options
Infrastructure	▪ Telecom reliability ▪ World class (i.e. bandwidth) tools to attract companies
Real Estate	▪ Create incubators and special buildings

Agenda

Introduction

Methodology

Global Investment Trends

Toronto's Competitive Position in ICT Sector

- 1. Next Generation Electronics
- 2. Professional Shared Services
- 3. Specialist Software Development
- 4. Digital Media

Recommendations

Initial Key Recommendations for Workshop Discussion (1 of 2)

- Give high priority to helping Digital Media sector and especially emerging companies to grow quickly to leverage and maintain existing competitive advantage, which many other regions are recognizing and now moving to exploit
  - Incentives that align with the knowledge economy, R&D, higher income incentives
  - Work with universities to further assess the market and develop related programs and majors
  - Leverage existing sophisticated film and television marketing and support services to create a broader approach to attracting digital pioneers
  - Consider transitional/retraining programs to help creative class types assess and move to digital media opportunities from related design/communications/software/film sectors

- Develop a better understanding of Financial Shared Services and increase proactive marketing to prospects which need to operate in a near shore or NA environment
  - Create a convincing story using the cost advantage, multilingual capability and large pool of talent
  - Look to work with leading companies or a group of companies to make business easier (tools, technology, information)
  - Work with universities to create an understanding of opportunities for finance/human resources/operations grads in the shared services environment and potential for upward mobility

Initial Key Recommendations for Workshop Discussion (2 of 2)

- Encourage the further expansion of the specialist software development sector
  - Identify specialty niches that could be expanded (i.e. finance convergence of leading technologies unique to the Toronto region, industry)
  - Build on industry strengths such as finance. An often stated disadvantage of software development in India is the lack of industry knowledge
  - Research and expand the definition of what makes up the specialty software development sector so that it becomes a stronger cluster
  - Consider the current focus in the US on ICT projects to track threats and communicate during emergencies.

- Form or invigorate industry partnerships in each of these ICT sectors to increase articulation among the players and build on convergence opportunities
  - Develop understanding of trends and likely changes in each of the industry sectors, (e.g. innovation in business models, as well as in products and services
  - Develop supplier networks to develop new businesses and to attract suppliers from outside the region to add to the cluster
  - Increase communication among various levels of education and corporate R&D to create better understanding of opportunities and collaboration

- Market the strength of the university undergraduate programs

Next Steps – ICT Strategy Development and Implementation

- Competitive positioning
  - -Benchmarking and Competitive Positioning Analysis
- Improved competitive positioning
  - - Stretch goals
- Changes needed to achieve Improved competitive position
- Priorities based on ROI
- Comprehensive ICT strategy development
- Leveraging Regional/Local resources to reach objectives
- ICT strategy implementation
- Consensus and capacity building
- Change/ transformation to achieve results

Completed	Workshop Session	To Be Considered

Recommendations based on Workshop Session (1 of 3)

- Improve access to information by aligning data with American sources commonly used for city selection.
- Apply a component approach to understanding companies. Use this to match local strengths with client needs in the component areas.
- Identify the strengths within the region and highlight opportunities that span these areas
  - Strategically evaluate the Toronto region by analyzing potential opportunities that are not replicable.
  - Build on the unique strength of Toronto using convergences
- Look at policies and procedures to reduce the real and perceived risk for companies operating in cross border environments (i.e. loss of control)
- Tap the full potential of the local employment pool. Look at how transition and training programs can reinforce key skills in the region.

Recommendations based on Workshop Session (2 of 3)

- Stimulate activities of the “seedling” companies to help them grow through incubation/acceleration/university technology transfer programs. These efforts can attract bigger companies through acquisition.
- Foster partnerships between universities and private companies.
- Leverage the university R&D and intellectual capital to grow companies in the Toronto area.
- Ensure the business environment is competitive with other comparator cities. If this is not done, companies may move to better environments.
- Differentiate between the needs and decision making criteria for small, medium and large companies. Develop information and marketing collateral materials tailored to these groups.
- Get first hand knowledge to assist in providing action for the future.
  - Investigate the decision process for site selection of organizations in the area.
  - Investigate the reasons why companies are not picking Toronto when shortlisted.
  - Talk to the decision makers for core business functions at companies.

Recommendations based on Workshop Session (3 of 3)

- Build on the MaRS model to create additional opportunities for convergence and commercialization.
- Start earlier in the education and training for entrepreneurs.
- Apply best practices for identifying and developing commercial potential at universities in the region (ex. Stanford)
- Create buzz similar to that created by a conference in Rhode Island. A possible idea involves the creation of an innovation component for a current or new cultural event.
- Integrate economic development activities within the universities. For example, institute a vice president/chancellor of economic development position similar to the role at many universities in the USA.

APPENDIX

What can this process provide:

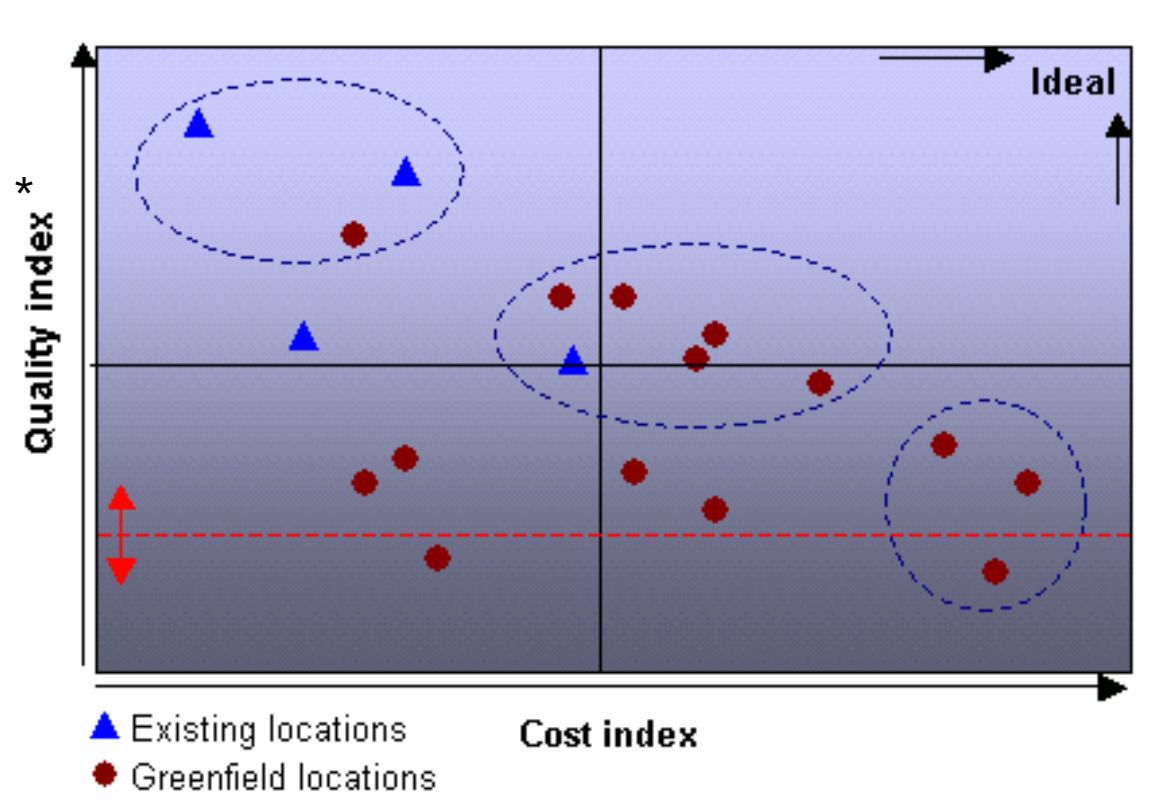
- An improved understanding of the corporate investor's perspective for new ventures, expansions and relocations;
- An objective reality check of assumptions about economic sectors;
- A better understanding of the screening process and data;
- A competitive benchmarking for defined sub-sectors;
- Insight to strengthen negotiating position when closing deals;
- Help for all regions to adapt strategies that build upon strengths and improve their product offerings and positions; and
- Help for aligning policies, strategies and programs.

Subsector and Competitor Selection Criteria

- Subsectors
  - Strong level of investment activity in geographically mobile projects
  - Good alignment with Toronto's strengths as perceived in research and discussions
  - High quality and quantity of jobs created

- Competitor Cities
  - Global coverage
  - Were competitors in past projects
  - Believed to be strong in several of the selected subsectors
  - Of a size and stature commensurate with Toronto

Different companies will pick different “sweet spots” for identifying short list candidate locations.



Note: For purposes of this project we define quality index as a set of factors such as General Business Environment, Labour availability, Presence of industry / cluster etc.

Drivers of the knowledge economy

- The presence of ICT companies
- R&D expenditure (private and public)
- Education quality, availability and level of attainment
- Living environment
- IT infrastructure

Best Practices

- Align incentives to support a knowledge economy
  - Use incentives to support the region's economic strategy.
  - Stress innovation incentives instead of job creation incentives.
- Invest in the infrastructure for innovation (i.e. Colleges, universities, broadband access)
- Improve the skills of the workforce
  - University and college programs
  - Supply and quality of scientists and engineers
- Catalyze and support industry clusters
- Link workforce and economic development
- Proactively use the internet to provide business assistance
- Collect economic data related to the new economy
- Policies that make the internet more accessible

Possible questions for the new economy

- Are workers continually upgrading their skills?
- Are companies investing in technological breakthroughs and is government supporting the technology base (e.g., funding research and training scientists and engineers)?
- Are regional clusters of firms and other institutions fostering innovation?
- Are research institutions transferring knowledge to companies?
- Are policies supporting the widespread adoption of advanced information technologies and e-commerce?
- Are local economic development efforts organized in ways that fit with new realities?

IBM Global Business Services

IBM Global Business Services
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In addition to the contributions of our partners above, TRRA would like to acknowledge additional funding from the Toronto Economic Development Company (TEDCO), the City of Toronto and CISP funding from Canada's Department Foreign Affairs and International Trade.