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An Op-ed[1]

Agglomeration of professional engineering and architectural firms in Canada should create export opportunities but will it?

Innovation is just a regular part of an engineer's job!

Two drivers are impacting the future of professional engineering and architectural firms; acquisition and innovation.

Innovation occurs in professional engineering and architectural firms primarily in two forms; the use of technical tools which are adapted or developed internally to carry out client work and secondly, the ongoing solutions which engineers and architects apply to client's problems such as improving quality, better performance, cost reduction, aesthetics or improving safety. Some of this work should be classed as research and development and given an incentive through the tax system!

Acquisitions, notably with different impacts than organic growth, are driving consolidation of the industry regionally and globlally. Over the last decade or so, the six firms highlighted in this paper have acquired over 100 firms. This is just the tip of the consolidation iceberg!

Background

Professional engineering and architectural consulting companies are an underdeveloped asset in Canada's drive for value-added exports.

There is a lot of focus these days on start ups and various entrepreneurial initiatives which most believe are essential to improving Canada's standard of living, which has now fallen considerably at least when compared with the U.S. Most

Quick summary

Professional engineering and architectural firms in Canada need to address growth issues.

These firms are an underdeveloped asset critical to productivity and Canada's standard of living.

The industry is highly fragmented making the export of services difficult. Recent large acquisitions may change this dynamic.

The decline in the oil and gas sector has taken a toll but represents a major opportunity going forward.

While WSP and Stantec have grown substantially by acquisitions, SNC has been constrained.

In our opinion two firms' standout for their management effectiveness, financial performance and innovation; Stantec and Jacobs Engineering.

[1] An op-ed (originally short for "opposite the editorial page" though sometimes interpreted as "opinion editorial") is a written prose piece typically published by a newspaper or magazine which expresses the opinion of a named author usually not affiliated with the publication editorial board.

solutions focus on the need to export high-valued products; autos, electronics, but less so on professional services.

In Canada's backyard, however, a major asset has been overlooked; Canada's international reputation for its engineers and architects and the potenital to export engineering, technical, and architectural services. Canada needs to make sure that it is fostering this professional industry. There are issues to address!

The industry is growing but highly fragmented according to a Conference Board study[2] published in 2011 – admittedly a dated report, but findngs are still relevant. At the time, there were clouds on the horizon.

- The majority of interviewees aim to be at the 'leading' edge – proven technology – when serving client needs and not at the 'bleeding' edge; where new innovations take place. *The 'bleeding edge' is, however, where firms develop a competitive advantage globally.*
- Canada's 'exports of engineering and architectural services have not changed significantly in recent years'.
- Note is made of the fact that the 'ratio of R&D to revenues has steadily declined over time'. *This is true not only for this industry but for Canada as a whole.*
- Canada has 'been losing significant market share in the global export of engineering and architectural services'; down from 10% of global market in 2000 to 5.7% in 2010, making Canada the fifth largest exporter in the world. *There is no recent data available but the assumption is the Canada has not improved its global ranking.*
- CIDA, once a subtle reminder abroad of Canada's asset, is no longer positioned to communicate Canada's excellance. *Support for CIDA wained significantly under the Harper era and it is too early to tell what the current government might do to position Canada internationally – even though signs overall are positive. U.S. aid to foreign countries is a feature of U.S. exports of professional services.*

Contents of Op-ed

At the time of the report there were about '17,500 firms in Canada'. Eighty-four percent of these firms had fewer than 10 employees. Thirty large firms have more than 500 employees located in Ontario (16), Quebec (7), Alberta (6) and B.C. (1). The industry employed 283,000 for 1.6% of the total workforce in Canada. The industry in Canada today is regarded as fragmented.

[2] Conference Board of Canada. Best Practices of Canadian Engineering and Architectural Firms. Study conducted on behalf of Industry Canada.

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This op-ed examines three significant Canadian-headquartered engineering firms in order to understand how their initiatives for expanding their business in Canada and abroad impact the professional engineering and architectural market segment. For comparative purposes, two U.S. based and one U/K based organizations are also examined. All six firms are large and publically listed. Their goals are to dominate one of more sectors in the North American economy and to further establish themselves internationally. Competition is fierce! Acquisition has been a major force in their growth.

Major changes are underway in this sector which employs thousands of engineers – innovators in their own right – changes which could impact a firm's approach to innovation and research and development. The world of professional engineering is changing. With the consolidation of small and medium-sized engineering firms by larger portfolio-management-oriented companies, is there a possibility that compensation for engineers and architects will be impacted? Will engineering/architectural services be outsourced out of North America? How will professionalism be maintained given the rising portfolio management of the business?

The trend to consolidation and globalization is not new to many professions. Legal practices, accounting firms and advertising agencies are all undergoing a shift in their business models. Headquarters shift geographically. Management from the top can often emphasize financial returns and often the short term versus longer term. How are Canadian firms gearing up to participate in this global development?

All engineering and architectural organizations, no matter which strategy is adopted or markets targeted for acquisitions, seek to have a solid long-term relationship with clients. This is the driving force behind every acquisition. Ultimately, the acquiring organization seeks to expand their global reach, add to their skill set, and profit but most importantly, build on the bond already established between the acquired company and its customers. Value from the acquisition is best realized through the enhancement and development of this bond.

The six firms selected for this review operate over many sectors of the economy, often competing for business. The list of sectors served covers most of the economic spectrum.

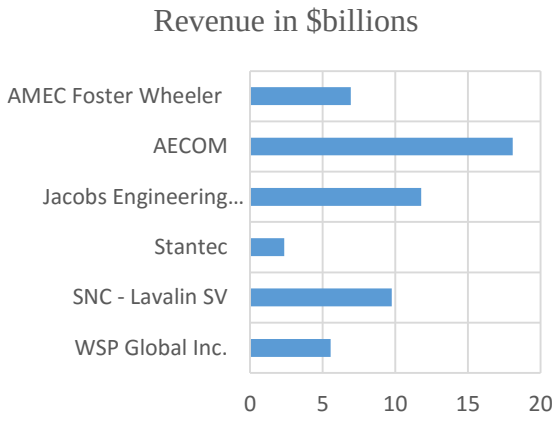
- Aerospace and technology – Jacobs Engineering
- Oil and gas – SNC, AMEC, Stantec
- Power – SNC, AMEC
- Environmental services – WSP, AMEC
- Petroleum and chemical – SNC, Stantec, Jacobs
- Clean energy – AMEC
- Infrastructure – Stantec
- Mining and metallurgy – AMEC, SNC
- Industrial – Jacobs, WSP,
- Buildings and property – Stantec
- Energy and resources – WSP, Stantec,
- Operations and maintenance – SNC
- Transportation and infrastructure – Jacobs

AECOM, the largest organization, is missing from this list, since given their size, they operate in almost all of the above sectors but choose to identify their business in terms of three top levels; design and consulting services, construction services and management services.

Three Canadian-based firms and their approach to growth

These three firms can be considered to be the leading consolidators of an otherwise fragmented industry.

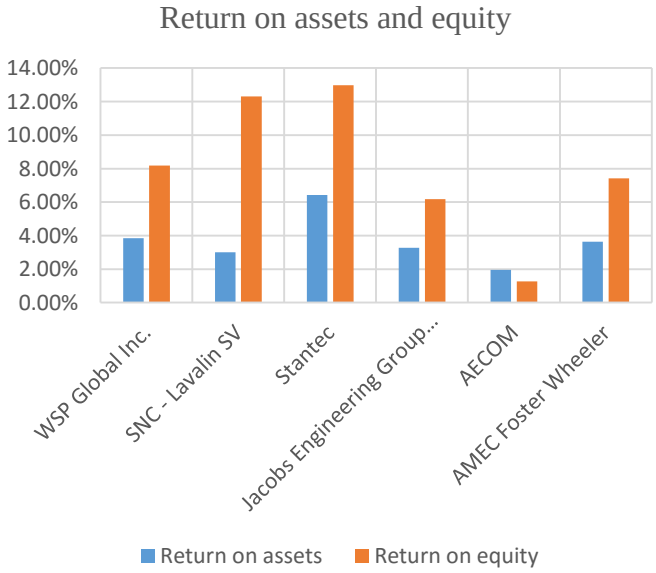
Three Canadian firms, Stantec Inc., SNC Lavalin Group Inc. and WSP Global Inc., stand out for their approach to growth mainly through acquisition with a lesser emphasis on organic growth. Through these firms, the industry becomes less fragmented and presumably better positioned to take advantage of growth opportunities in the U.S. and internationally.



For comparative purposes, highlights from three similar international firms are set out; Jacobs Engineering Group and AECOM of the U.S. and AMEC Foster Wheeler headquartered in the U.K.

SNC, over decades, has been the largest Canadian-based engineering firm in terms of employees and size of business. SNC's ability to grow has been temporarily constrained due to 'items-before-the-court' issues which have necessarily taken precedence with company management. WSP and Stantec have pursued an aggressive series of acquisitions which have catapulted them into new markets and added significantly to their market cap, providing enhanced North American and international presence.

Each firm has adopted a different path to growth; Stantec, making smaller acquisitions a bit at a time although this has just changed, WSP with both smaller acquisitions but also a major purchase of Parsons Brinckerhoff which almost doubled its size, and SNC, proceeding more apace, as it is able. AMEC Foster Wheeler and AECOM, which dominates the North American market, almost doubled their size through a major acquisition.



Financial performance[3] has varied. Stantec and SNC Lavalin have the best returns on equity most recently. All three U.S. based companies, by this same measure have lower performance than the three Canadian companies[4].

[3] Yahoo Finance information
[4] Yahoo Finance information

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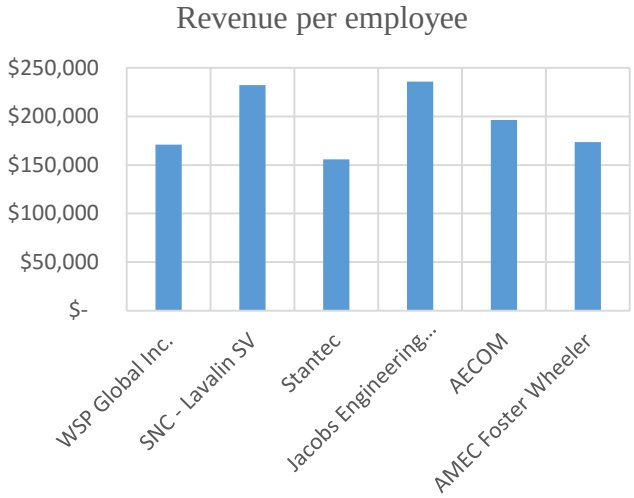
Revenue per employee varies according to markets served, the state of the economy overall, and contract realization but can also be distorted due to non-professional income – i.e. income from revenue producing investments. This would partly explain SNC's results.



Jacobs revenue per employee is highest and perhaps is an indication of their efficiency and effective management. This is a rough measure at best and does not include provision for exchange rates, nor the inevitable up-sizing or downsizing so prevalent in the industry as contracts come to an end, layoffs and hiring's occur, and acquisitions are assimilated.

The rate of acquisitions has a bearing on financial results as does the size or complexity of the acquisition; i.e. there is investment made for future gain and time is needed to integrate the newly acquired group into the existing structure. Some companies are more prepared for this step than others.

For several of these companies, the oil and gas sector is a major component of their business. Timing thus becomes important. Acquisitions made just prior to the slide in oil prices have had a definite impact on bottom line results, revenue per employee, and revenue. As oil prices regain lost ground, if this happens, this sector will once again be a driving force for new contracts and profits but the question is when.

In the following section we examine the recent history and strategic plans for WSP, SNC and Stantec and provide insight into the plans and actions of three global competitors based in the U.S. and the U.K.

Consolidation is taking place over a wide range of engineering and architectural firms as evidenced by the businesses of all six companies.

Stantec Inc.

Stantec builds its growth on small acquisitions – a bit at time (until recently) – with over 56 acquisitions in the last decade.

Overview of history

Stantec, formerly known as Stantec Technology Group until 1998, was founded in 1954 and is headquartered in Edmonton, Canada. Stantec is a firm which has been on a tare of acquisitions over the last decade and is an example of a firm which seeks growth primarily through acquisitions. Stantec wants to become a 'global leader in water and natural resources'.

Current size and sector business

Stantec now has 15,200 employees and 250 locations.

Revenue growth; 2007 to December 31, 2015.

	2007	2008	2009	2010	2011*	2012	2013	2014	2015
Gross Revenues $ billions	.955	1.352	1.520	1.513	1.683	1.870	2.236	2.530	2.877
Net Revenues $ billions	.831	1.130	1.243	1.226	1.379	1.554	1.832	2.075	2.374
EPS $ diluted	1.52	.64	1.23	2.07	.14	1.32	1.58	1.76	1.66

- 2/1 stock split in 2011

Gross revenue per employee averages $189,289 but ranges from from $162,593 in Canada to $211,739 in the United States and a considerable higher figure based on the same calculation for International work. As of December 31, 2015, there were 9,500 professional employees (62%), 4,100 technical persons (27%) and 1,600 support personnel (10%), a rough measure of the mix for most technical firms.

Stantec's business is now almost equally split between Canada (47%) and the U.S. (49%) with a small international component. While it has a diversified exposure in a variety of sectors, the primary business areas are in the buildings with 5.6% organic growth (26% of overall revenue), energyand resources where a retraction of business has taken place due to a downturn in the oil and gas sector (15% of revenue overall) and infrastructure with 5.5% organic growth (39% of revenue overall) and their newest platform; environmental services accounting for 20% of total gross revenues.

The 'Building' segment does not report the break out of its revenue but the annual report clearly reports that the bulk of revenue in this segment comes from health care, commercial, education and industrial buildings with minor amounts from science and technology buildings and airports and aviation.

The 'Energy and Resources' segment, now minus the new environmental platform, is mainly focussed on the oil and gas and powert being the largest revenue contributors with mining revenue the leaset significant.

Infrastructure revenues mainly derive from water projects, roadways and community development with bridges, transit and rail less significant.

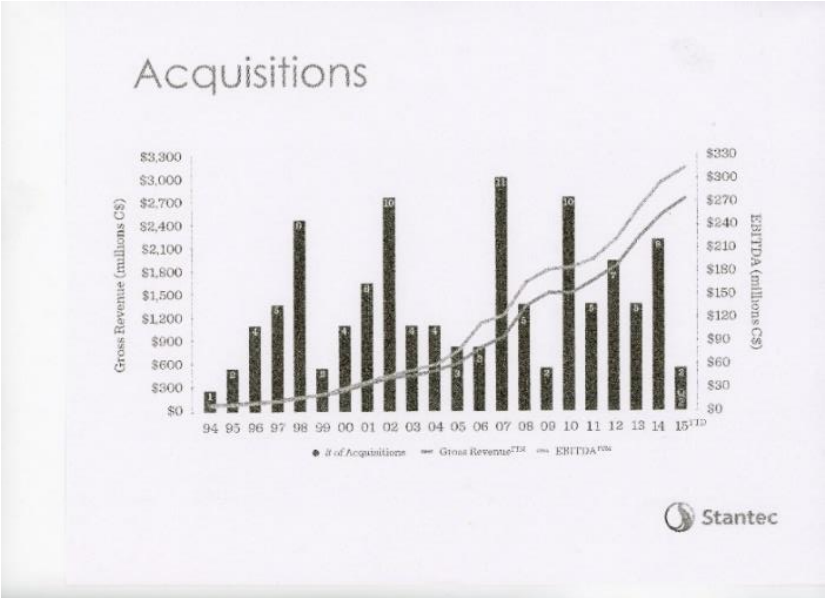
Revenues from the newly-established 'Environmental Services' segment are attributed to oil and gas projects, buildings, power with water following in size.

Stantec estimates that its NA market is well over $100 billion per year but more importantly viewed as 'fragmented and growing'[5].

Acquisitions of note

Stantec's acquisition, run is impressive.

The latest significant acquisiion, noted as an *amalgamation*, of MWH, is expected to close in the second quarter of 2016. MWH has 187 offices across 26 countries and provides a strengthening focus on water and natural resources. MWH had previously, in 2010, acquired Biwater Services Ltd., a UK based construction and engineering firm. For MWH, Stantec paid (yet to conclude) $793 million – or $116,617 per employee acquired or 'amalgamated'. MWH has 6800 employees world wide. The additions will lift Stantec's work force to nearly 22,000 people[6].



Acquisitions have for over a decade been a key part of Stantec's strategy as was demonstrated again in 2015 with the acquisitions of DessauDessau, Sparling, V1 Engineering, VA Consulting, Fary, Spofford and Thorndike and certain assets and liabilites of Kellogg Brown and Root Services for a total investment of $207 million, up from $187 million in the prior year.

Stock performance

Over the last two years the stock has not kept pace with the S&P 500.

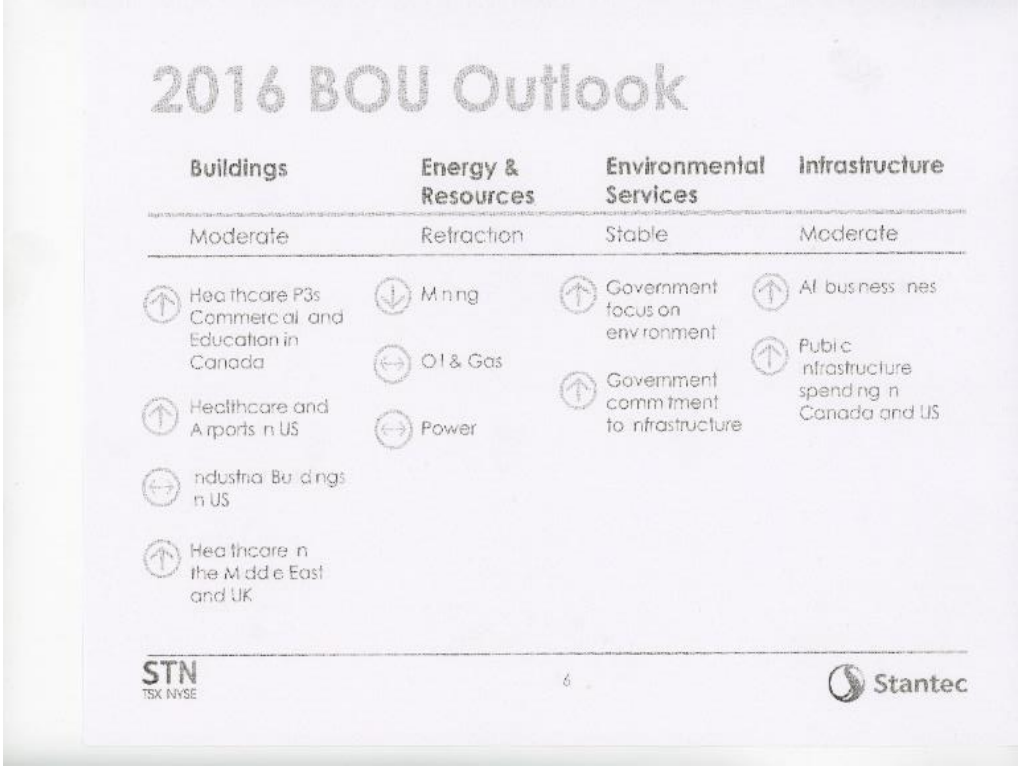
Strategic direction

Organic growth is also a target in each of their business sectors.

[5] Stantec Investor information, 2015.
[6] Financial Post march 30, 2016.

Stantec emphasizes that, in contrast to some of its competitors, it assumes 'no construction risk and no equity in projects'. Stantec's business model is to avoid construction and focus on design in order to, in their words, avoid the higher risks in construction.

There is some indication that their business model could change to include P3 and EPCM projects since that is the direction the industry is taking. They so far maintain that their approach 'offers higher margin opportunities and more conttrollable risk than pure construction companies and integrated engineering firms'[7].



Stantec's expressed desire is to cross-sell its engineering services and provide 'broader enhanced services globally'. Synergies will also derive from leveraging back office functions and operations.

As of early this year, environmental services has become the fourth platform or 'business operating unit'. Stantec regards itself as diversified with a focus on 14 sectors.

Stantec's outlook for 2016 is shown in the chart above. The outlook for the Energy and Resources segment comprising mining, oil and gas, and power, is flat or declining.

Stantec makes the point that their industry positioning is focussed on design and not construction as noted before nor operations and maintenance as these, according to Stantec have the effect of elevating the risk and lowering margins, even though the businesses are larger in terms of gross revenue.

Stantec has obviously built a business model that can relatively easily assimilate acquisitions. It has proven effective so far but the test may well be their ability to quickly bring on board the latest and biggest acquisition; MWH. While net revenues have tripled over the period examined, EPS performance remains flat. With this latest acquisition it is perhaps time to assimilate and grow the share price to the benefit of all shareholders.

[7] Stantec annual report 2015

SNC Lavalin Group Inc.

Constrained to making significant acquisitions by other priorities.

Overview of history

SNC was founded in 1911 and has been one of Canada's outstanding engineering and construction groups and a major player internationally. It is headquartered in Montreal, Canada.

Current size and sector business

SNC has been Canada's largest engineering services company for decades. It operates mainly in the oil and gas sector (41% of revenues), mining and metallurgy (8%), power (19%), infrastructure (19%), operations and maintenance (11%) and capital (investments in projects – 2%).

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenues $ billions	6.7	7.1	6.1	5.9	7.2	8.0	7.9	8.2	9.4
EPS $	1.00	2.07	2.38	3.15	2.50	2.03	.24	8.76	2.68

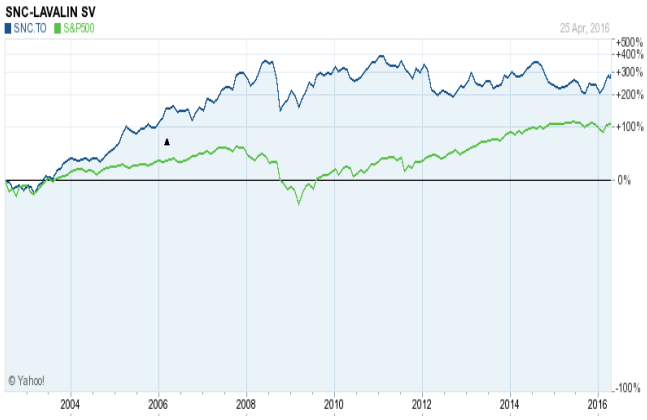
SNC currently has 37,000 employees across 50 offices with $10 billion in revenues; $270,270 per employee.

Significantly SNC does 60% of its business in Canada with the balance scattered at close to 6% to 7% of revenues in Latin America, Europe, U.S.A., Middle East, Africa and Asia Pacific.

SNC's revenues have not grown to the same extent as the two other firms presented in this op-ed. Year-over-year revenue did increase from 2014 to 2015, but was fairly flat over the decade. Market cap has declined since 2011.

Acquisitions of note

There were no acquisitions in 2015.



In June of 2014, SNC purchased Kentz Corporation Limited, a U.K. based supplier of oil and gas services with revenues of close to 1.2 billion pounds, and staff of 14,500, for a purchase price of $CDN 2.1 million or $144,827 per employee. Kentz had earlier in 2014 purchased Valerus Field Solutions.

There were no business acquisitions in 2013.

In 2012 there was one acquisition – of DBA with 100 people, seven acquisitions in 2011, five acquisitions in 2010 and five in 2009, bringing in 2900, 1200, and 1200 people respectively for a total of 5,400 people since before 2013.

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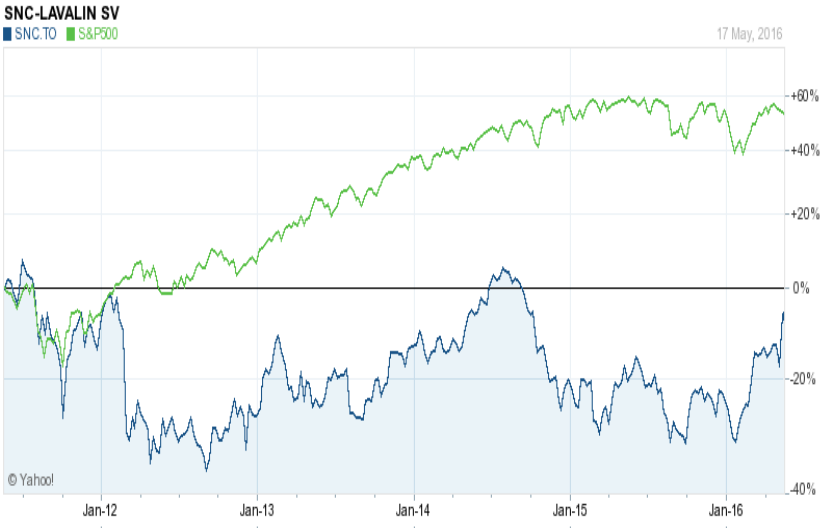
In 2007, nine acquisitions added 3,000 employees and three acquisitions in 2006 added a total of 170 employees.

Stock performance

Since 2004, SNC stock has moved ahead of the S&P 500 but since 2008 stock price has lagged the S&P 500 dramatically.



Strategic direction

The most recent major decision at SNC is to outsource IT services to the CGI Group. The second most important decision is to trim the organization to seek an improvement in financial performance. Similar to Jacobs, and because of its growing significance, SNC will retain responsibility for cybersecurity.

SNC differentiates itself from some of its competitors by offering capital investment services paving the way for participation in public/private sector contracts.

SNC's strategy is to join the ranks of 'the world's largest engineering firms' and to focus on its strengths in oil and gas and mining and metallurgy[8] and 'drive sustained growth in North America infrastructure stronghold'.

The strategy is not to change but there is a planned disposal of SNC's minority interest in Toronto-area toll road 407 International Inc. This will not happen until SNC's core engineering and construction business delivers stable and predictable returns[9].

Further, and attempting to address court-related issues, SNC (as well as WSP) have agreed to participate in Quebec's Voluntary Reimbursement Program. Following on the scandal which embraced the company, SNC has put forth a much tougher ethics and compliance program since 2012. Similar steps are being put in place to allow SNC to deal with Canada's federal government.

A settlement agreement with the African Development Bank was struck in 2015 but issues remain for the company to participate in World Bank projects. As of April 17, 2013, the World

[8] Company statement - 2016
[9] Globe and Mail September 14, 2015

Bank[10] announced a debarment of SNC for 10 years which can be reduced to eight years if the company complies with all conditions.

Robert Card was brought in October 2012 as a person with both private sector and government experience but stepped down as CEO after three years in office. Apparently shareholders were not satisfied with financial performance. Neil Bruce took over on October 5, 2015. Card will remain for a time to advise on handling federal government criminal corruption charges.

The current CEO, Neil Bruce, maintains that he has a clear mandate and a strategic plan to improve performance and results; streamlining the structure, focussing on delivery, fostering a performance-driven culture and growing organically and, *in due course*, through acquisitions. It seems evident that SNC priorities are, as they have been for the last five years at least, getting its own house in order before embarking on major acquisitions. One can expect a pick up in acquisitions once the current priorities near fruition. Bruce slashed its leadership team to 11 people from 21. The shift in focus moves SNC from crisis to improving profit.

In some senses, the issues raised by unethical practices has consumed the short-term future of SNC. Rumours abound that the firm, if it cannot settle fraud charges by the RCMP, has looked at the possibility of restructuring its business or selling itself if it does not find an acceptable resolution to the charges, according to sources with knowledge of the matter[11]. Further, and again as a consequence of being in a difficult position, it is rumoured that SNC has been approached "informally" regarding a takeover by at least two foreign engineering firms: Spain's Actividades de Construccion y Servicios SA, and Australia's WorleyParsons Ltd. Only time will tell as to the validity of these or other rumours that are bound to surround a wounded organization.

[10] The World Bank April 17, 2013.
[11] Glove and Mail June 3, 2015

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WSP Global Inc.

WSP chose the big gamble (acquisition of Parsons Brinckerhoff) on its route to growth.

Overview of history

Since 2006, WSP, on completing its IPO, has grown from 1800 employees with $176 in revenues ($98,000 per employee) to 34,000 employees with 6 billion in revenues ($176,470 per employee). WSP was formerly known as GENIVAR and founded in 1959. Headquarters is in Montreal, Canada. WSP has 500 offices across 40 countries.

Current size and business sectors

Sectors of interest; property and buildings, transportation and infrastructure, environment, industry and resources (which includes mining and oil and gas), and power and energy sectors. The firm also offers services in project delivery and strategic consulting.

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Gross Revenues $ billions	.257	.387	.477	.58	.62	1.257	2.016	2.902	6.064
Net Revenues $ billions	.206	.320	.395	.469	.529	1.020	1.677	2.349	4.486
EPS $		1.95	2.06	1.70	1.91	1.15	1.38	.98	2.03
Number of employees	2400	3400	3900	4500		13700	15000	32000	34000

Most recently, organic growth overall is at 3.2% but without the shrinking in the Canadian oil and gas sector it would be 7.8%, according to company information.

Acquisitions of note

WSP went public with an IPO in 2006, providing the funds and enhancing the business model that has facilitated the rapid growth through acquisitions.

WSP acquired Parsons Brinckerhoff (PB) as of October 31, 2014. This was a major acquisition by WSP and ended up doubling their staff. WSP, at the time of the PB acquisition had about 15,000 employees and PB[12] about 14,000. The combined firm has currently some 32,500 employees in 500 offices in 39 countries and plans to grow[13] to 45,000 by 2020. Prior to this

[12] Parsons Brinkerhoff, according to Engineering News Record, was named the 'tenth largest U.S. based engineering/design firm' in 2013.
[13] Wikipedia

period, PB[14] had itself had been acquired by Balfour Beatty in October of 2009 who, in turn, had acquired Halsall Associates in October, 2014.

Acquisitions do not come cheap but this purchase price was lower than many. WSP purchased PB for $1.24 billion or $88,500 per employee; recognizing that this includes all staff and not just engineers and technical personnel.

MMM Group, a large building services firm in Canada, was the largest acquisition in 2015 and acquired for approximately $425 million in a combination of cash and share issue to MMM employees. MMM brings in experience in P3 opportunities. WSP also bought Faveo Group, a project management firm based in Norway and Sweden.

Most recently – May 2016 – WSP stated that it would actively pursue tuck-in and strategic acquisitions. Acquisitions include a Finnish firm, PTS, focussed on project management in the building sector. WSP further entrenched its position in Sweden with the purchase of PRD Konsult in the power and energy fields and made of an entry into Mexico with the acquisition of DITEC, a structural engineering firm.

Stock performance
Over the last two years WSP stock has been both below and above the S&P 500 over the last two years but ending up close to this measure.

Strategic direction
After 21 years at the helm, CEO, Pierre Shoiry, is stepping aside[15] . L'Heureux, previously the CFO, is in place as the CEO. Mr. Shoiry will provide ongoing support as Vice-Chairman of the Board and will focus his efforts with the President and CEO and the management team in respect to acquisition activities and other strategic opportunities including extending its 'global footprint'. L'Heureux is going to foster 'a culture of organic growth and operational excellence'. The firm's strategic direction is therefore unlikely to change.

WSP desires to be the 'World's Best Global Pure Play Engineering Services Firm'. The goal is to lead in terms of technical expertise and innovation. This was reaffirmed in the May conference call. WSP's core values are; innovative, united, caring, trustworthy, passionate[16].

[14] PB had not helped their reputation by working on the Big Dig in Boston nor the Silver Spring Maryland transportation center, and may have been a sitting duck for acquisition
[15] Marketwired – March 15, 2016
[16] Annual report - 2015

WSP emphasize[17]s the need for a 'new national organizational model which will provide better collaboration, cross selling and knowledge sharing initiatives'.

U.S./International firm's growth plans

Three firms represent acquisition aggressiveness in similar markets; Jacobs and AECOM, based in the U.S. and AMEC Foster Wheeler based in the U.K.

Jacobs Engineering Group Inc.

Jacobs represents an interesting example of a U.S. firm taking steps to diversify, in this case, into the cybersecurity field with its recent acquisition of The Van Dyke Technology Group, a 180-person cybersecurity firm with a focus on solutions for enterprise networks and cloud-based IT environments.

No doubt the amount of work which Jacobs performs for the public sector, mainly federal, would have influenced the decision. Clients in the transportation and power sectors, potential targets for hackers, will benefit from this new initiative.

Jacobs has 49,900 employees. Revenues in 2015 were down 5%. The firm quotes that nearly '$10 billion in client savings from innovative value-based solutions' were achieved. The role of innovation is well recognized.

Jacobs stock has outperformed the S&P 500 by a considerable margin.

The firm has a focus on four global lines of business; aerospace and technology (24% of revenues/36% of operating profit), buildings and infrastructure (20%/29%), industrial (24%/14%), and petroleum and chemicals (20%/29%).

Jacobs most recently – Q12016 – is going through a restructuring of their business with a focus on savings with a headcount reduction of 4000+ with 80 offices impacted.

Jacobs was founded in 1947 and has grown both organically and by way of strategic acquisitions. Their approach to organization is notably different than other organizations. Since they wish to encourage collaboration across the organization and not have business units or groups compete with each other for contracts, profit centres are not a feature of how Jacobs organizes.

Jacobs acquisitions over the last three years include investments in;

[17] Conference call May 10, 2016.

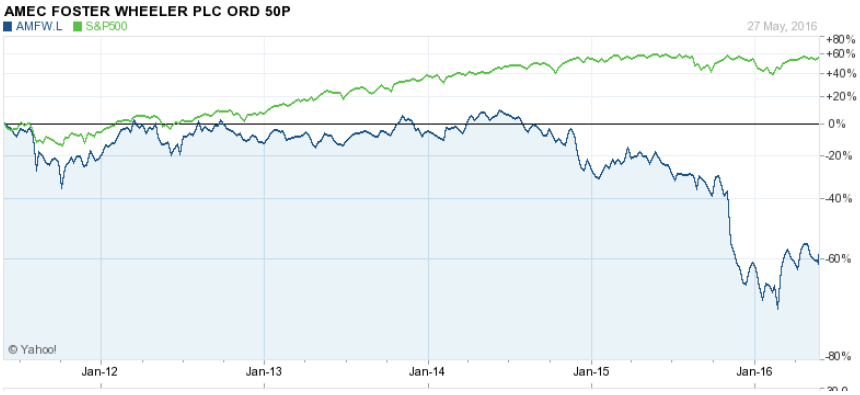
- China; chemical, petrochemical and pharmaceutical
- U.S.; systems integration, pipeline engineering, network development – wireless, nuclear decommissioning and construction, advanced engineering in the auto sector, professional services in architecture and related offerings, Van Dyke Technology Group – noted earlier
- Brazil; pipeline engineering (first investment ever)
- India; infrastructure and civil engineering
- Australia; consulting project management including information management and management consultancy, SKM (Sinclair, Knight Merz Pty Ltd– strategic consulting, engineering and project delivery founded in 1964 with 7,500 employees (2013). Its 'size and complexity' are noted in the annual filing
- South Africa; engineering services to a broad spectrum of sectors.

The pattern of investment is clear; mostly acquisitions occurring in the U.S. but obviously with an increasing desire to gain a foothold in large developing markets, particularly China, India and Brazil. There is no reference to acquisitions in Canada.

AMEC Foster Wheeler

This British-based consultancy, engineering and project management company's latest major acquisition was the purchase of the Swiss firm, Foster Wheeler, and because of the size and reputation of that firm, added the name to its moniker. The company now has 40,000 employees in 55 countries.

It is listed on the LSE and has an ADR on the NYSE. Operating in four markets; oil and gas (54% of revenues) clean energy (19%), mining (8%), and environment and infrastructure (9%) (E&I). Global power accounts for 8%.



Over the last five years AMEC Foster Wheeler's stock has not performed relative to the S&P 500

As with competitors, the company has engaged in series of acquisitions over its history dating well back before 2000.

Over the last decade the company was led by Samir Brikho. On arrival he found a company that, while in his view it had great potential, was not performing as it could. The company was 'relatively small on a world scale'[18].

[18] December 7, 2012 interview

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The company[19], had too many sectors (40) of which ten had made no profit in forty quarters, lacked a vision, drive and a strategy. Brikho's stated that his plan four priorities.

- to integrate the tools and processes in use throughout the firm. There were 19 different payrolls, 60 different sets of engineering tools, and 20 different accounting systems. The firm had never been integrated and was therefore ripe for change.
- to focus on people investment.
- the need to change the relationship with clients from being 'transaction oriented' to having a strategic longer-term view of the relationship.
- the need to improve financial performance.

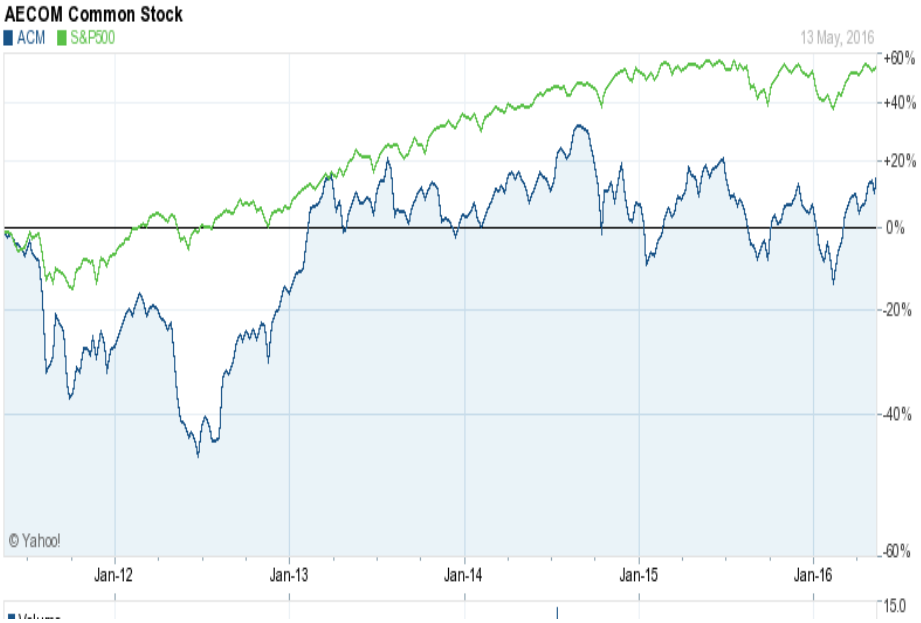
Much of this has been accomplished according to Samir Brikho.

Brikho, at age 57, stepped down in January of 2016 having been with the company for close to 10 years. In some contrast to other successions which place the retiring CEO at the Board level or as an outside consultant, Brikho has no further connections with the company, no continuing involvement with the Board.

One of the lessons learned from this experience is that the relatively simple act of executing an acquisition is not complete unless there is an ongoing integration process designed to take advantage of synergies in both administrative and markets aspects of the business.

AECOM

In business since the merger of five Ashland entities into an independent firm in 1990, but with parts of the organization going back to the early 1900s, AECOM now has 92,000 employees operating in 140 countries globally and a revenue of $18 billion for 2015. On forming an independent company in 1908, the organization was comprised of 3,300 employees and $387 million in revenue. More than 40 companies have joined AECOM. The firm became publically-traded in 2007 and is headquartered in Los Angeles, California.



AECOM operates in the Americas (35% of personnel excluding URS), Europe (14%), Asia/Pacific/Australia and New

[19] Reference December 7, 2012 interview with Samir Brikho.

Zealand (29%), Middle East (21%), and organizes its business into three very broad segments; design and consulting services, construction services and management services. The stock has not performed well relative to the S&P 500.

One of its six core values speaks to innovation; ‘we differentiate our company by challenging ourselves to look for new and better ways to deliver our expertise through innovative solutions that enable each client to realize its vision’.

In contrast to some firms AECOM makes no bones about its willingness and desire to participate in public private sector arrangements to not only design but to build, finance and operate infrastructure assets globally.

AECOM’s latest acquisition of URS Corporation in 2014 almost doubled the size of the organization. URS had, prior to this and in 2012, picked up Flint Energy Services, active in construction services in the oil and gas industries. 2014 saw the acquisition of Hunt Corporation, a U.S. based commercial (stadium construction) construction management firm. In Spain, AMEC picked up ACE Consulting a firm specializing in economic and social development sectors. In Africa, there were two acquisitions.

With URS, the firm has revenues of $18 billion with $12,599 (70% of total revenues) billion as U.S revenue, $1,385 Asia Pacific (8%), 1,308 Canada (7%), 1,770 from Europe (10%) and the balance of $.900 from other countries. With the consolidation of URS, design and construction services account for 44%, construction 37% and management services 19%.

While the revenue stream is heavily weighted to North America and indeed the U.S. the strategy seems clear; extend the business globally. The merger with URS is unprecedented in size.

AECOM was, for the first time, named by Fortune magazine in 2015, a World’s Most Admired Company.

Engineers/architects and innovation

With the trend to global consolidation of professional organizations well underway in other professions such as law and accounting, how will this impact engineers and architects?

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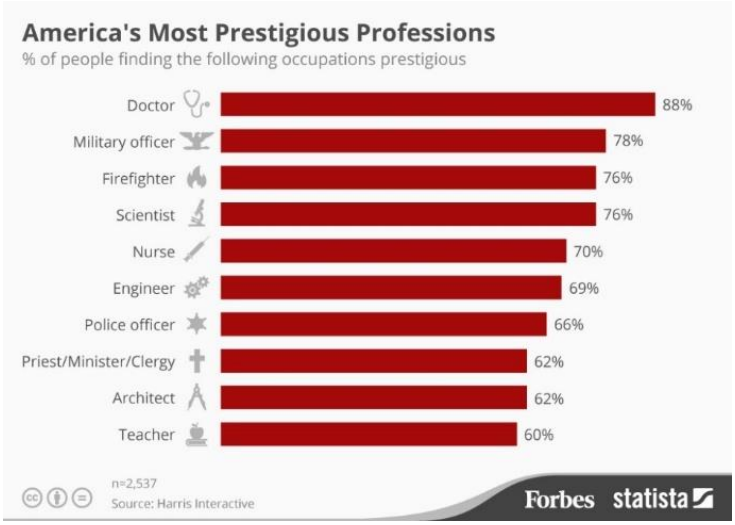

Engineers are critical to innovation. What is often forgotten is that engineers, as part of their regular job, innovate all the time. With a combination of math and physics, a mystery to many people, engineers are one of the most admired professions in the world. According to Forbes latest ranking, engineers are in sixth place and architects are eighth.

Compared to most profession on this list, engineers are reasonably compensated. Only doctors are probably higher. There is no mention of lawyers nor accountants or management consultants.

Unions typically represent the interests of firefighters, police officers, nurses and, depending where geographically one is located, teachers. Professional associations represent the interests of architects and doctors. Engineers are not represented in the same way. Their compensation suffers given the role they play in society as innovators and protectors of the public (floors falling as such). They do not put their own lives in danger, as do three of the professions noted, but they do place reputations on line for the work that is done.

For a different comparison one can look at other occupations. Online employment website Glassdoor recently published rankings revealing the best-paying companies in the United States. Consulting and technology firms offer particularly high salaries and they dominate the list[20]. Engineers dominate this sector and are paid more than those in professional engineering firms.

A management consulting firm, Chicago-based consulting firm A.T. Kearney comes first, offering its employees a total median compensation of $167,534, an amount unmatched by any other company. Strategy&, another consulting firm, comes second with median total compensation of $160,000. Silicon Valley companies also offer their employees high salaries with Juniper Networks, Google and VMware all making the list. Juniper Networks comes third overall with its median total compensation amounting to $157,000, according to Glassdoor. *This is compensation not revenue* per employee. Consulting firms would mark up this compensation typically by a factor of three or four.

By comparison, an average paycheck for an American worker comes to about $50,000 a year.

[20] Statista – Niall McCarthy April 25, 2016

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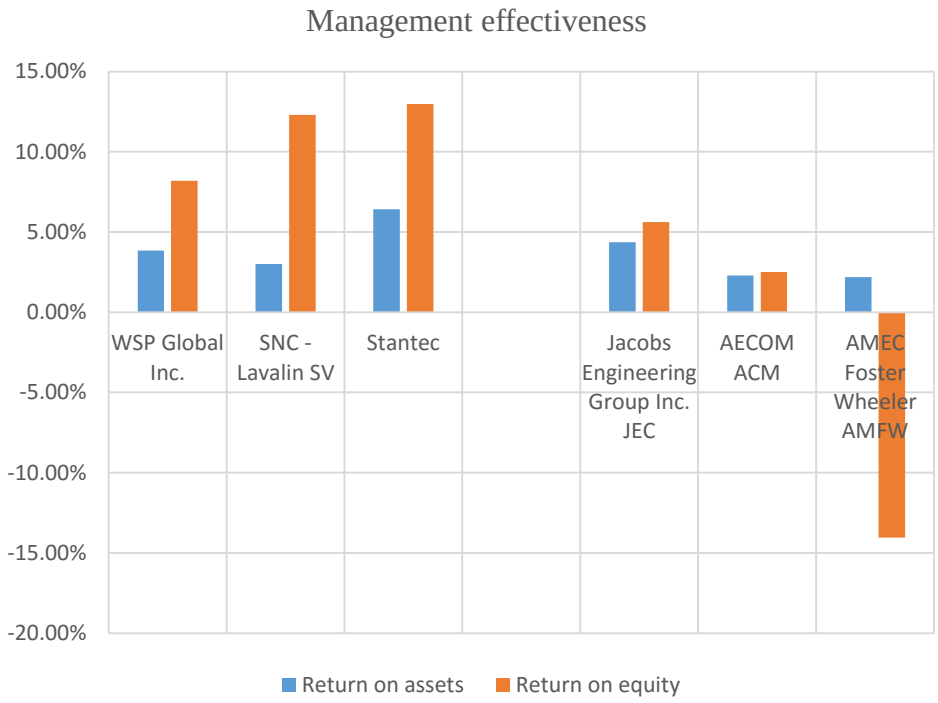
Financial measures



Two measures of management's effectiveness[21]; return on assets and return on equity are used to compare financial performance.

The latest numbers are shown to the right. The three Canadian-based companies have a consistently higher return on equity than do the three comparative organizations. Return on assets are highest for Stantec and Jacobs.

AMEC Foster Wheeler has a negative return on equity performance primarily due to the decline of the oil and gas sector business as the firm took a direct hit with the recent decline in oil prices. Earlier this year the firms return on equity was plus 7.41%.

Stantec has achieved its relatively favorable returns with its 'pure' engineering policy in place. As the firm strives to expand its global foot print, this policy will be re-examined, as has been indicated in their recent news releases and reports. Their acquisition of MWH may well provide a stepping stone into the P3 business model and represent significant opportunities for global expansion.

[21] See Yahoo Finance profiles and key statistics

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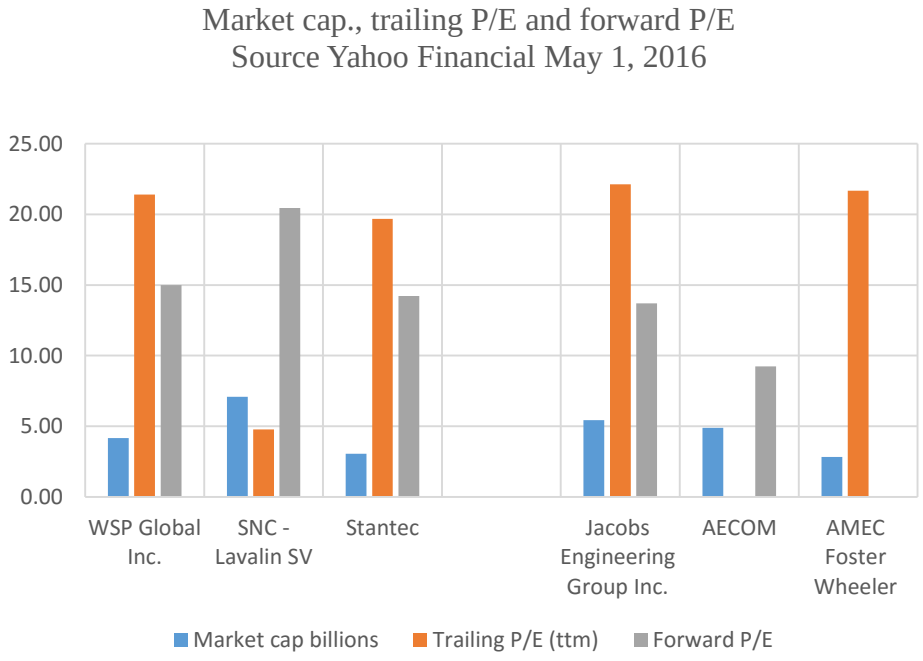
From an investment standpoint, the 'market', through the 'market's' P/E valuations, seems optimistic about three Canadian-based companies and Jacobs.

Based on our analysis, and giving significant weight to the inevitable issues of assimilation following from major acquisitions, we would favor, over the short term, Stantec – who seem to have honed their acquisition process, and Jacobs for their more limited expansion by acquisition and the market mix served[22] including the outlook for the U.S. economy.



[22] In the interests of full disclosure, the author has a modest investment in several of these public companies.

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Observations and conclusions

Acquisitions will continue apace and be the major contributor to growth of larger engineering organizations. Are Canadian-based firms up to the challenge?

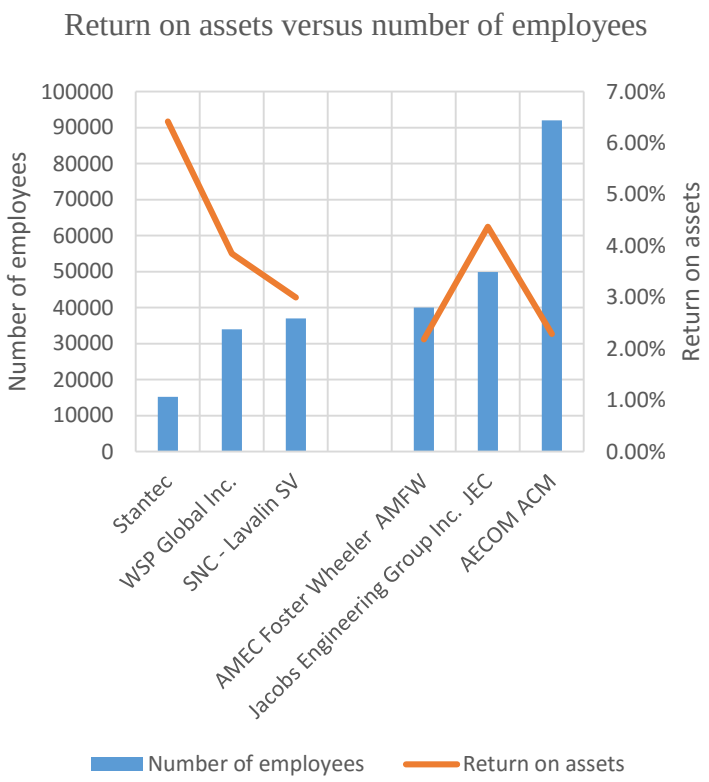
- U.S.-based firms are looking for acquisitions globally but not in Canada. On the other hand, Canadian firms with the objective of going global are searching for, and have made, significant acquisitions in the U.S. Several of these acquisitions have also placed the firm onto the global stage with opportunities for business in Australia, the U.K. and elsewhere.

- Canada's largest firm by far, has been constrained from growth and making acquisitions largely because of internal issues arising from unethical business practices.

- The void left by SNC, in Canada and especially in the Province of Quebec, has left the door open to other firms to make strategic acquisitions and this void will last for several more years.

- Engineering and architectural firms those which get into difficulties – sometimes financial but also for their reputation – become targets for other organizations.

- Successful acquisitions emphasize the integration of financial controls and back office operations. Acquisitions in engineering and architectural firms are different from those in retail or manufacturing in that integration at the professional level is seen as a plus for the whole organization and facilitates global expansion.



- Succession planning is key to smooth transitions by minimizing disruption in leadership, vision and strategy.

- Larger firms have an appetite for assuming build and operate risk but while there are other less risker approaches to growth, there is a growing interest in P3 ventures.

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- Diversification in terms of industries served and geographic territories can help firms weather the inevitable ups and down in industry segments and geographic areas. It does not pay to be beholden to a small number of clients nor to a few large projects.

- Acquisitions are an essential tactic to achieve growth, especially in the current competitive climate.

- A public offering – an IPO – can facilitate the acquisition route and may be an essential first step in growing by acquisition. Privately-held organizations may be at a disadvantage over the long term.

- If, as an organization, one is not in the top tier, and if there are limited prospects for gaining top tier status over the short term, the best strategy is to refocus on other opportunities.

- Just as in the corporate world, an organization with an explicit core value of innovation, will have a better chance of attracting scarce talent than a firm with a more pedestrian image.

- For Canadian-headquartered firms, there is a need to work with the federal government in order to better promote the use of Canadian talent on projects outside Canada.

- As always, working in the U.S., especially with government agencies of one form or another, will be a challenge for the newly-acquired firms in the U.S. and the retention of a U.S. branding will become important to the acquiring of project work.