

The Penang Automation Cluster and Its Role in the Automation Industry

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The Automation Industry in Penang

The automation industry in Penang is made up of a large group of indigenous companies (SMLs) which grew alongside the semiconductor industry in the last thirty years. These companies provided the necessary support and services to the many multinational and local manufacturing companies here. The thirty year collaboration between the manufacturing and automation industries has led to a synergistic diffusion of talent, skills and technology know-how. As a result, many capable automation companies of various sizes emerged.

Automation companies in Penang can be broadly classified as belonging to either one of two tiers within the informal two-tier system of the automation industry of Penang. The first tier consists of larger capitalised companies which have penetrated global markets by way of direct and indirect exports¹. Meanwhile, the second-tier consists of companies with smaller market capitalisation and manpower. These companies tend to be more specialised and are usually subcontractors for the first tier companies and operate mostly within the local market. Today, both the first and second tier automation companies are continuously challenged in their quest to remain relevant in providing support to the larger manufacturing houses as rapid technological advancement constantly changes their operating environment.

The automation industry in Penang also tends to cater more towards the semiconductor industry, and many key players are of the opinion that diversification to other industries and other markets is essential; in other words, more market breadth and market depth is needed to reduce reliance on any one source of business generation. Many automation companies in Penang are much too reliant on multinational corporations to create business and cash flow. Industry sources estimate that at least 50 percent of the local automation companies business is generated from these corporations alone.

At present day, industry sources estimate the annual export market potential of this industry to be at RM 2 billion on automation equipment alone. A typical first tier automation company in Penang exports approximately 70 percent of its products whilst the remaining 30 percent would be for the indirect export market. Export markets are sourced through participation in international tradeshows and exhibitions, subsidiary corporations overseas and international marketing offices. First tier automation companies do not seek local market penetration for two main reasons; the first being that the local market is highly competitive with the presence of smaller automation houses which engages in fierce price competition by nature of their lower operating costs. In this regard, first tier companies much prefer to international markets in aim of achieving a higher profit margin. Secondly, almost all multinational corporations in Penang have no in-house automation activities and thus these first tier companies with the added advantage of research and design development capabilities are able to carve a niche market for themselves.

In manufacturing, automation begins as early as product design to materials used in manufacturing processes and production operations. In circles, automation is also present in communication and networking, facilities controls, amusements and games. Automation leads to faster production, lower labour

¹ Indirect exports would mean engaging in business and providing automation equipment for the multinational companies based here.

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content, faster through-put, better quality and most importantly increases efficiency and lowers operating costs. Ultimately, the continuous technology changes which take place every day further intensifies the role in which automation plays in so far as manufacturing or non-manufacturing industries are concerned. Given this growth potential of this industry, Penang with its present advantage should not lose its foothold on this industry .

By far the largest challenge faced by automation companies in Penang is the inability for them to penetrate international markets on their own resource. More often than not, many automation related SMEs are small companies which tend to specialise in any one particular aspect of the manufacturing industry. Automation companies in Penang are also not spared of the common problems which affect the manufacturing and its related industries in Penang. The growth potential of these companies are curtailed by the competitive and small local market, the shortage of appropriately skilled human resource and the constant competition for the limited pool of available human resource to allow for expansion into research and design development activities. These factors have an enormous impact on output capacity in so far as production of automation equipment is concerned.

The Penang Automation Cluster

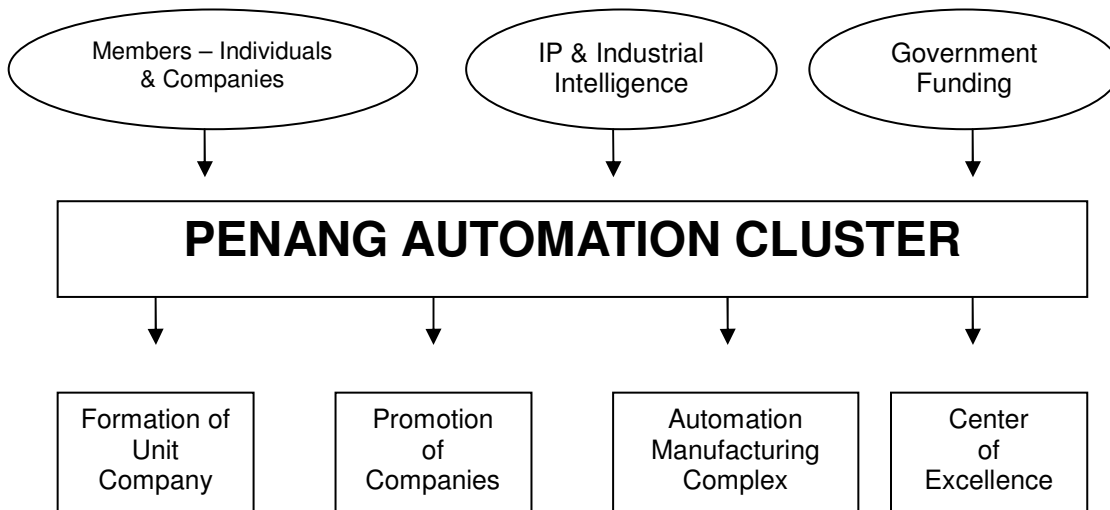
The Penang Automation Cluster (PAC) initiative is therefore a timely intervention to raise market awareness of the potential of this industry. The PAC is a state government initiative which was formed in 2005, under the umbrella organisation of investPenang² to support, promote and harness the full potential of the promising automation industry here. Presently, investPenang provides the PAC with grants and substantial subsidies for its activities such as international exhibitions. Together with investPenang, the PAC aims create a vibrant and dynamic automation industry here in Penang. This will enable its companies to compete effectively in the international arena and thus promote Penang as the center of automation excellence.

In order to achieve this, the PAC through its committee and investPenang, would need to bring together the various players within the industry in order to leverage on their core competences to jointly develop high technology solutions/products for the global market. At present, the PAC has about 50 members, many of which are directly related to the automation field. Most of these companies are involved in software design and development, mechanical design houses, fabrication and sheet metal work companies as well as plating companies. Other goals of the PAC include promoting technology expertise among member companies and individuals and providing a common facility for PAC members and creating a center of excellence for PAC members to develop larger scale projects/products through collaboration of member companies.

Industry players need to be involved in order to make the PAC initiative a viable one. The key challenge in ensuring the smooth launch of the PAC is the rate of participation. The success of the PAC in promoting Penang as a center of automation excellence hinges on the calibre of its members. At the moment, the 50 members represent just a small fraction of the total automation companies in Penang. As with all profit oriented businesses, companies are unwilling to commit their time and precious resources to such an initiative unless there are visible benefits in terms of increased profits or smoother operating conditions. Increasing profits and business opportunities for its members within the immediate time frame is difficult for the PAC to achieve as long as it is unable to build its membership towards the desired mass. In this regard, the PAC is faced with the task of convincing potential members of the benefits of such a consortium. In response, the PAC has outlined a short and long term strategy.

² investPenang (IP) is an entity of the State Government, whose focus is to sustain, rejuvenate and further promote the business milieu in the State of Penang, through continued investments and the high-technological development of its industrial sector.

The PAC Model



For the short term, the PAC is focusing on benefits by way of international promotion opportunities and technology transfer. The PAC will reach out to smaller automation companies by co-organising with the relevant government departments, a series of international road shows in which members will be afforded a highly subsidised rate for participation. Under normal circumstances, these smaller companies do not participate in these road shows due to the high financial cost of participation. As a result, they are unable to tap into international markets.

Secondly, the PAC will intensify the process of knowledge transfer within the industry by organising courses and seminars which will be conducted by the larger players for the purpose of training the smaller automation companies. The long term commitment of the PAC to its members is increase business opportunities within the international arena by way of inter-company collaboration and cooperation.

All in all, the PAC is seen as an initiative to improve the status of the smaller companies within the automation industry to achieve their fullest potential. While it is difficult to predict the effectiveness of the PAC into the long term, smaller companies within the automation industry, or those which have a direct influence on the industry have little to lose by joining the PAC as the immediate short term benefits are clear for all to see. If successful, the PAC will benefit the automation industry as a whole in that it will assist in the capacity and capability building of the entire industry.

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Hard Skills, Soft Skills

Hired on the basis of soft skills

The media these days has given much mention on soft skills, because of the increasing emphasis placed on these during job recruitment. Consequently, given large numbers of unemployed graduates in Malaysia, public universities have begun to introduce courses on soft skills to students in order to better prepare them for entering the job market when they graduate. But what are soft skills? Technically, soft skills are defined as “skills, abilities, and traits that pertain to personality, attitude and behavior rather than to formal or technical knowledge”¹ – in other words, interpersonal and human relations skills.²

Since much of the formal training most of us go through tended to be technical, i.e. hard skills, we are able to submit documentations for our education and training certifications as well as a record of our work experience. While an impressive enough resume will win us a job interview by being short-listed ahead of other hopefuls, it will be the soft skills that we display in front of the job recruiter that will finally land us the job we seek. Therefore, if you happen to be looking for a job out there, it will be useful to learn a bit more about the soft skills within ourselves less we turn up at job interviews less than fully prepared.

Listing the attributes for soft skills

It is relatively easy to find out what soft skills attributes are. For instance, The Smyth County Industry Council workforce profile showed that people most likely to be hired are those that possess the traits virtually every employer looks for: positive work ethic, attitude and desire to learn and be trained, these traits being referred to as “soft-skills”.³ In this workforce profile a list of 60 items (given in Figure 1 on page 5) were listed, which are the most important personal traits employees look for when selecting employees for jobs of any type. But looking at such a list alone brings us no closer to how we can obtain the needed soft skills for ourselves. Knowing what potential soft skills attributes are, is one thing, possessing them and being able to demonstrate such skills is yet another thing. In this regard, a list of soft skills alone offers little hint to how soft skills might be developed.

Michael Swiderski’s article (see footnote 2) gives a glimpse into what soft skills mean. He divides soft-skills into three components: social, psychological and communication and offers some examples of what sorts of soft skills fall into each of these. Remembering names and knowing how others feel are two examples in the social component. Building trust and promoting values are two examples in the psychological component. Able to think on one’s feet and being able to speak in front of a group are two examples in the communication component. Unfortunately, given that the list of soft skills attributes are long (See Figure 1) it becomes difficult to teach, not to say, learn soft skills within the confines of a course. Instead, the list looks more and more like personal dispositions that a person develops within oneself over one’s lifetime. Are we then suggesting that job recruiters are looking at a person’s character for the soft-skills that a prospective employee might or might not possess?

If soft-skills cannot be learnt, it can at least be developed

A recent issue of *Asian Wallstreet Weekend Journal*⁴ carried a fascinating article written by Peter Sanders, “Tearing up the rule book: famous for formal service, Ritz-Carlton asks staff to think for themselves.” The article reported that, for more than two decades, Ritz-Carlton staff, from any of its many hotels found across the globe, carried on them a card listing 20 rules that constitutes the Ritz-Carlton basics on how to pamper its guests. No more,

¹ Philip Moss and Chris Tilly (2001) *Stories Employers Tell. Race, Skill and Hiring in America*. Russel Sage Foundation. N.Y., p.44.

² Michael Swiderski (1987) “Soft and Conceptual Skills: The Often Overlooked Components of Outdoor Leadership. *The Bradford Papers Annual* Indiana University

³ Lee Ann Prescott (2004) “Wanted:Soft Skills” *Smyth County News and Messenger* (May 20th issue).

⁴ Fri-Sun June 30-July 2 2006

Figure 1: What are Soft Skills?

• Math	• Safety	• Courtesy	• Honesty
• Grammar	• Reliability	• Flexibility	• Team Skills
• Eye Contact	• Cooperation	• Adaptability	• Follow Rules
• Self-Directed	• Good Attitude	• Writing Skills	• Drivers License
• Dependability	• Advanced Math	• Self-Supervising	• Good References
• Being Drug Free	• Good Attendance	• Personal Energy	• Work Experience
• Ability to Measure	• Personal Integrity	• Good Work History	• Positive Work Ethic
• Interpersonal Skills	• Motivational Skills	• Valuing Education	• Personal Chemistry
• Willingness To Learn	• Good Common Sense	• Critical Thinking Skills	• Knowledge of Fractions
• Coming to Work On Time	• Use Rulers and Calculators	• Good Personal Appearance	• Wanting to do a Good Job
• Basic Spelling and Grammar	• Reading and Comprehension	• Ability to Follow Regulations	• Willingness to be Accountable
• Ability to Fill Out a Job Application		• Ability to Make Production Quotas	
• Basic Manufacturing Skills Training		• Awareness of How Business Works	
• Staying on the Job Until It Is Finished		• Ability to Read and Follow Instructions	
• Willingness to Work Second and Third Shifts		• Caring about Seeing the Company Succeed	
• Understanding What the World is All About		• Ability to Listen and Document What You Heard	
• Commitment to Continued Training and Learning		• Willingness to Take Instruction and Responsibility	
• Ability to Relate to Co-Workers in a Close Environment		• Not Expecting to Become a Supervisor in the First Six Months	
• Willingness to be a Good Worker and Go Beyond the Traditional Eight-Hour Day			
• Communication Skills with Public, Fellow Employees, Supervisors, and Customers			



Source: Smyth County News

because management is redefining the basics and has introduced instead a new card listing 12 service values to replace the 20 basics. A few examples listed in the article give us a pretty good idea how the new set of service values were very different from the traditional basics (See figure 2).

Figure 2: Basics versus Service Values

Examples from the traditional Ritz-Carlton Basics
<ul style="list-style-type: none"> • Our Motto is “We are Ladies and Gentlemen serving Ladies and Gentlemen.” • Use phrases like “Good Morning,” “Certainly,” “I’ll be happy to,” and “My pleasure.” • Do not use words like “O.K.,” “Sure,” “Hi/Hello,” “Folks,” and “No problem.” • Escort guests rather than pointing out directions to another area of the hotel.
Examples from the new Service Values
<ul style="list-style-type: none"> • “I build strong relationships and create Ritz-Carlton guests for life.” • “I am empowered to create unique, memorable and personal experiences for our guests.” • “I continuously seek opportunities to innovate and improve the Ritz-Carlton experience” • “I have the opportunity to continuously learn and grow.”

Such changes that the management at Ritz-Carlton are making are in response to the changing landscape brought about by today's less conforming world. Remember films we used to watch from the 20s, 30s or even 50s? Men dressed conservatively in suits accessorized with hats. But in contemporary movies clothing has become a part of one's freedom to express oneself. Performers on stage from the Frank Sinatra and Bing Crosby days followed a conformal standard, but today what to expect can be anybody's guess. For instance, Mr. Sanders's reported in his article that the "30-year-old in a T-shirt and jeans...could be worth millions." What all these mean is that no longer is it possible to meet the ever changing demands of the market place with a standard company philosophy or a predetermined set of conformal standards. As a consequence, hard skills (exact performance standards) that fall under the basics have to give way to soft-skills (the new service values) that Ritz-Carlton staff has to decide for themselves on what best to do to suit the situation at hand.

It has, therefore, become nearly impossible, these days, for any business to plan ahead, identify the needed core competency that the future market wants, develop the hard-skills associated with such a core competency, train the staff and launch into doing business. Instead, today's business needs to be highly flexible. Product life-cycles are extremely short due to rapid innovation and one can expect to be using new equipment, adopting different procedures or even selling an entirely different range of products or service many times over during one's career. Sure, hard skills – the technological know-how, remain the building blocks of any business but without the ability to adapt to the situation at hand, hard skills alone will not produce the intended results. The 12 service values at Ritz-Carlton give flexibility to the staff to interpret the situation and then decide how hard skills that they already possess are best applied within the broad policy framework of the hotel.

Innovation is the key

Whenever Ford or any other car maker needs a new engine or another part of a car, it first has to get its own people to design one to exact specifications and then go to one of its subcontractors so that the part can be fabricated. The car company tells what it wants, the subcontractor follow the instructions. Computers, on the other hand, are made following an entirely different business model. For the next generation of computers, the computer maker comes out with a wish list: displays that can do this and that, data storage of what capacity and speed, processor power, input-output devices and so on. Given the broad parameters of what the computer makers are looking for, display makers, disk-drive makers, computer chip designers, compete among themselves through research and development and innovation to meet the market demands. Competition is keen and unit costs kept low. As a result, what consumers experienced during the past two decades are lowering computer prices as computer products improved while car prices go up and up as they get better.

To become flexible and adaptive, business companies are quickly realizing that management cannot think of everything and yet stay one step ahead of the market. Instead management is making the switch to spelling out only the broad parameters of what they expect from their workers designated to carry out the tasks they have been employed for – in other words, a wish list from the management (just like the 12 service values at Ritz-Carlton). Workers have now to think for themselves as how best their hard-skills should be applied given the situation at hand. It is, in fact, an empowerment of the workers. They no longer have to seek the approval of the superiors each time they carry out their duties but instead workers are held accountable for their actions within the broad policy framework spelt out as a management wish list. Along the way professionalism is developed among the staff, as they begin to make their own decisions and take responsibility for their actions. They no longer have to be told by their superiors before they act.

It is for this reason that employees of the future have to become a knowledge worker, because management no longer wants to tell workers what to do and then closely supervise their every action. Instead, each worker is given his or her specific role to play within the organizational set up of the company, but workers are left to their individual ingenuity to perform these roles the best way they see fit.

One must thus be careful about what key performance indices or KPIs mean and how they should be applied. It is relatively easy to develop KPIs for hard skills – how fast or how much does a worker do a particular task he or she has been trained for by way of work performance. Speed and volume, while undeniably useful on the shop-floor within the fabrication environment is one thing. But as economies mature from factory “sweatshops” to the next production phase involving design and innovation, KPIs defined in terms of speed and volume become more difficult to apply directly. True, workers can be trained the procedural hard skills of fabrication quantified by speed and volume. However, artful creativity that comes from inspiration is virtually impossible to train. Instead, KPIs in the culture of innovativeness have to be evaluated in terms of impact factor or effectiveness, in other words, the extent to which the wish list has been satisfied from the fruits of the knowledge worker’s labour. No longer can a common yardstick be used as a KPI because out from the soft skills come many forms of innovative performance from different workers but all aimed to produce the common desired outcome. Thus the KPI has to be directed not at the work (hard-skills) but by the effectiveness (soft-skills) of the work (regardless of what was actually done) in relation to the desired goals.



Conclusions

The interesting, perhaps even strange, observation that an economist might have made when looking at the list of soft-skill attributes that employers say they want from the workers they hire, is “get real, honest workers with good disposition and attitudes?” this is just too idealistic! No, the economic interpretation of soft-skills is that the motivated worker does not have to be all these that employers look for. Instead, the economists say “give greed a chance.” In the hard-skills environment, workers are looked at only from how well they do the jobs they are trained for – speed and volume. There is little room for imagination, initiative or expression. There is little incentive to be motivated about. But in the soft-skills environment, individual workers know they can rely on their own ingenuity to fulfill whatever wish-list put out by management. This gives ample scope for innovativeness and therefore the motivation to do so is not that workers are honest, well disposed or have good attitudes but because they realize that rewards and recognition are based on the soft-skills they possess. § *Dr. Chan Huan Chiang*

International Headlines

Japan Maintains Growth

03 July 2006, The Asian Wall Street Journal

Japan continued to show signs of economic recovery as consumer prices rose for the seventh consecutive month while unemployment rate continued to drop in May. The core nationwide consumer price index was up by 0.6 percent y-o-y in May, driven mainly by higher crude-oil prices. The unemployment rate in May recorded a slight drop from 4.1% in April to 4.0% in May. The economy managed to see an increase of 130,000 jobs in May in comparison with the same period last year while the number of unemployed has dropped by 300,000.

Vietnamese GDP Growth Slows

04 July 2006, International Herald Tribune

Growth in Vietnam slowed in the first half of 2006, as industrial expansion and farm output were repressed by reduced oil production and animal diseases and storms respectively. Preliminary figures show that Vietnam's GDP expanded by 7.4% in the first half, which was a slower pace of growth in comparison with the 7.6% growth recorded in the first half of 2005. In the first half of 2006, Vietnam was hit by various challenges, which include a foot-and-mouth outbreak and the Typhoon Chanchu in May, causing human and material losses. Agriculture, forestry and fisheries sector had only expanded by 3.0%, the industry and construction sector grew 9.3%, while services sector and hotel and restaurant trade expanded 7.7% and 11.0% respectively in the first half.

China's Trade Surplus Swells To Another Record

11 July 2006, The Asian Wall Street Journal

China's trade continue to soar into yet another record month as trade surplus hit \$14.5 billion in June, cancelling the previous record of \$13 billion set in May. Albeit recording a slower 23.0% expansion in June than the 25% growth in May, the \$81.31 billion worth of exports recorded is indicative that foreign demands for Chinese-made goods remained strong. Imports moderated from a 22.0% growth in May to 19.0% in June, bringing the figures to \$66.81 billion. Slowing imports suggest that local firms may be acquiring foreign capital goods and raw materials at a slower pace. The trade surplus stands at \$61.45 billion for the first half of 2006, a 55.0% increase y-o-y.

Singapore Economy Slows But Stays Robust

11 July 2006, The Asian Wall Street Journal

Singapore's economy recorded a sluggish 1.1% growth in its GDP in the second quarter of 2006 from the first quarter of the year, slowing from a 7.0% expansion in the previous quarter. In year-on-year terms, the economy expanded by 7.5% in the second quarter, slowing from a revised 10.7% pace in the first quarter and the slower pace of growth has been attributed to slower biomedical production. Despite the deceleration of growth, the economy is still expected to rise above the official 5.0% to 7.0% growth forecast.

Japan's Central Bank Ends Zero-Rate Policy

17 July 2006, The Asian Wall Street Journal

Japan's central bank has discarded its five-year zero-interest-rate policy, indicating that the central bank believes the East Asian giant has entered an era of healthy economic growth and price stability. The bank raised its target for short term rate from zero to 0.25%. However, monetary policy will remain very loose for now and any future rate adjustments will come gradually. The central bank expressed that interest-rate levels will remain "extremely low" for the time being.

China GDP Jumps 11.3%, Defying Cooling Efforts

19 July, 2006, The Asian Wall Street Journal

China's economy continues to accelerate as the GDP expanded by 11.3% y-o-y in the second quarter this year, underscoring the mounting danger of runaway growth fuelled by huge trade surpluses. The growth was a full percentage point faster than the 10.3% y-o-y expansion recorded in the first quarter of 2006. Growth in the first half of 2006 was 10.9% y-o-y. The second quarter growth was the fastest growth recorded for any quarter in more than a decade, despite official efforts to slow the pace of growth by curbing investments, which has exploded because of the cash generated by booming exports. Excessive investment is feared to spawn overcapacity that will lead to falling profits and bankruptcies, which in turn could devastate Chinese banks and eventually cause the economy to come to a stand still.

