

<u>Force</u>	<u>Description</u>
1. <b>Aging Population:</b>	<p><b>Drives economies and organizations to respond to this large market need, including healthcare and virtually every segment of the economy.</b></p> <ul style="list-style-type: none"> <li>• As developing societies embrace freedom of choice, as we have seen in North America, Europe, and Japan, women will choose to enter the workforce rather than stay at home. This will result in smaller families, and as disease and war decrease and survivability increases, the need for large families will be replaced by smaller ones. In the interim, there will be an inverse pyramid of the elderly, whose care will be on the shoulders of a smaller youth society.</li> <li>• We see in the US that 85% of the federal budget goes to entitlements: Social Security, Medicare etc. As the population ages this will only get worse. We must address it to survive.</li> <li>• Aging populations provide both challenges and opportunities across generations, individuals, societies, communities. The challenges include changes in health, independence, economic productivity, well-being, social capabilities. The opportunities include longer, more productive lives, learning, appreciation and respect across the wisdom of generations; connectedness; learning and work at ages once considered retired. Whole communities, products, processes, investments are made, directly aimed at boomers, senior, etc.</li> <li>• World is now older. This trend in countries like Europe and China reshapes the customer requirements for product and preferences.</li> <li>• Quality of life is an important factor for all people, but as our population ages the quality of care is a significant factor. As education increases birth rate decreases and the populations average age increases. We see this occurring already in many European countries and even in China. So how do we provide for the aged and maintain a young vibrant workforce?</li> <li>• Simply put – it is a fact of life – nowhere is it more important than in China, US and Europe where birth control and improved health care have resulted in highly skewed age distributions.</li> <li>• The largest and strongest (political power and shareholders) population within the near future will be what is referred to as the “baby boomers.” This population will drive change, reform and various trends globally.</li> <li>• As the health of the aging population is improved through technology, these individuals will be a net user of resources which will place a strain on those that are providing the supporting resources such as healthcare, retirement funds, and so forth.</li> <li>• As our population ages, work force and training needs will be focused in that direction. Products will be more focused on the aged. Older people will control the economy more than currently.</li> <li>• The costs associated with healthcare for aging population in the U.S. as well as the financial borrowing needed to sustain social security and the role of government officials and elected officials in protecting ‘sacred cow’ programs will continue to drive the deficit spending without a corresponding offset in tax revenue and substantial gains in gdp and productivity. The likely results may be more healthcare rationing, failure to adjust salaries of healthcare providers, and continued misuse of expensive healthcare technology.</li> <li>• While the USA and other industrialized nations face dramatic population shifts toward an aging population within their own societies, developing economies of the 3<sup>rd</sup> world are evolving with the classic younger population base. This is to be</li> </ul>

- expected until the life expectancies in these societies is gradually increased as improvements in diet and high quality medical attention become available. The impact of these diverse trends will result in distinct differences in quality priorities. The societies with an aging population will have expectations of personal service that are different from a younger, more self-reliant age group. Dramatic differences tend to exist, based on age group, for virtually every aspect of our lifestyle from what we eat, to what we wear. Entertainment and recreation for youth is typically different from a more mature adult; and, the medical needs of an aging population are different from the needs of a more youthful population.
- Will result in different perceptions of quality and the systems needed to deliver it.
  - As populations age, there are many differences that need to be considered including slower adaptation of technology in a world where technology changes are occurring exponentially and working longer thereby not infusing new talent and ideas into the organization. An aged population will require more services that support that lifestyle such as healthcare in a system that is already overburdened and taxed, requiring quality tools to enhance efficiency and effectiveness.
  - Change of markets.
  - Old people form the most growing market. They own a lot of money for consume and investment.
  - Elderly people represent a large and financially strong market segment. Price-elasticity for healthcare related products tends to enable substantial profit margins, making this an interesting market for companies.
  - Aging population drives market creation, knowledge transfer issues, and economic shifts.
  - The shift in the demographics of the population. Truly this is not really the aging population, although length of life will be an issue, it is more the shift in the demographics of the majority of the people on the earth such as where they live and what they value.
  - Aging population (in developed and developing countries) will create both challenges and opportunities. The growth in products and services that will serve the needs of people in their golden age is obvious. This implications of this trend are particularly significant in the healthcare, financial services, and leisure industries. On the other hand, the growing population of able bodied retirees will form a previous pool of talents who can serve the roles of consultants, members, or volunteers in industry and the community.
  - It will become an issue also in the developing countries. It is not only related to health but also to mentality (security, nationalism...)
  - Other need have to be met in a larger scale.
  - Modern healthcare is expanding average life span. People are living and working longer. Elderly people represent a large and financially strong market segment. Healthcare related products are going to be interesting market for companies.
  - We have not found real solutions to this problem. If you look to the demography of countries you face a real problem.
  - In some regions population is older than in others; products and services have to be adapted accordingly.
  - This is a demographic fact happening everywhere. Increased education level in many countries contribute significantly to this trend.

- For the first time in recorded human history, people age 65 and over will outnumber children under age 5. In 2005, 1 in every 10 of the earth's inhabitants will be => 65. Never again will we return to the young populations that our ancestors knew. The triumph of medical, social and economic advances over disease, fertility and child mortality rates have reshaped the age structure of the population from younger to older because more people are surviving into older age. Global aging is a success story. Naturally there may be sudden dips in the aging population trend line. Overpopulation will cause a rise in communicable diseases and the "promised" pandemic could result in a significant die-off of the population, especially in emerging countries. Nevertheless, the impact of our success in holding the Reaper at bay is beginning to and will continue at a much more rapid pace to have consequences on every facet of society, including quality. The strains of an aging population on societal responsibility to provide company pensions, social security and entitlement programs, acute healthcare, ambulatory care and long-term health care, and the drain on infrastructure to provide roads, manage government, and the myriad public support systems and resources required to get through the exigencies of daily living is unimaginable. It is this lack of imagination that is keeping governments from moving aggressively in reforming systems now before the effects of aging population come to bear. The cost of waiting to act may be disastrous financially and socially. However you embrace as quality, a common denominator shared by most is that quality principles and tools can address problems, develop effective and efficient solutions and implement solutions to ensure requirements are met. If governments and individuals do not deploy these tools to address the challenge of an aging population, then denial is the most probable cause of inaction. Denial is deadly. Pain, fear, and anxiety can keep us from seeing a problem until it crashes down upon us and we can no longer deny its existence. Therefore, it is incumbent upon the stewards of quality to expand the boundaries of quality and offer strategies and tools to break through the denial and create a readiness to take on the most daunting of problems, whether that be aging population, energy crisis, water or food shortages. Change management methods/tools exist for this purpose. However, change management has never gone mainstream. It is seen as the quirky tool in the "soft and fuzzy" tool bag of some notable consultants such as Kotter, Hamel, Handy and Bennis. The word "change" is enough to create sweat droplets on the fiercest of CEOs. Perhaps, it is time to revisit this discipline and bring it into the light. In any case, the future of quality may see the blending of psychology, marketing and other disciplines to strengthen their ability to influence individuals and organizations to embrace windows of opportunity for change before it is too late.
- Improved healthcare and quality of life worldwide will enable the baby boomer generation to prosper in their older years. This market segment has enormous needs and buying power.
- Working in healthcare, I see the forces of an aging population (combined with increasing rates of obesity and chronic diseases) dramatically increasing the demands on the system at a time when the workforce is also aging. We need new care systems to keep the elderly well at home, new ways to support the elderly in staying healthier and independent, and new systems of care that allow health care workers to stay on the job longer without the fatigue and strains of the current work design.

- Need for physical and mental supports drives development of new technology. Aging drives need for increased healthcare and personal services. Longer employment and extended earning power for the skilled and competitive further exacerbates the rich/poor divide. Fewer births in primary economies reduces population among the rich nations while increased birth rates in third world countries increases economic and resource pressures.
- It's a growing demographic with needs that are not adequately understood by most.
- People are living longer as baby boomers approach the point in their lives when they have retirement disposable income for the things that they wanted to do while working and couldn't. They will also start needing more and more healthcare resources.
- Aging population is educated, economically sound and technologically alert. These class of people will have the buying power and will influence buying habits. At the same time more attention needs to be paid to healthcare and related services. Quality will be primer concern for the aging population.
- It might be great forces to generate demands of new products and services for its needs. A new concept of future quality might be conceived these trends.
- The challenge of aging has been a key issue faced in countries in Europe and the fastest aging population in Asia such as Japan, Singapore, South Korea and Hong Kong. The government support for the elderly becomes a burden. However, aged people are generally spend more on health care related products and services which will benefit hospitals, medical device suppliers and other area such as life insurance, business of death etc. This create new opportunities and a potential boon for the investors by addressing the specific needs of senior citizens.
- The demographics of the aging population will mean more resources (particularly government resources) will need to be directed toward retirement costs and healthcare costs.
- The growing importance of aging population especially in industrialized countries. This group of customers will drive the activities of organizations in many different industries.
- This is a common theme in discussions I've had with large organizations.
- In the USA, there is definitely an aging population, creating huge markets. There is, also, just plain population growth in many geographical areas, ethnicities, and religious sects of the world, with most of that growth coming in segments of the population which (1) can least afford it, or (2) may have long-term goals in mind for the world.
- Sustainability of pension systems will be a major concern for gvmt's, companies and employees, and may have significant impact on the economy. Adoptability of elderly people to fast changes can be a problem. Demands for new products and services will provide new business opportunities. New forms of employments will need to be developed.
- Aging of population will mean more resources will need to be directed toward retirement costs and healthcare costs.
- Leads to migration and associated issues. Need to build capabilities of people wherever available in quality concepts and techniques.
- This becomes a must.
- The increased longevity of the population combined with an unstable economy will keep us working well beyond the traditional retirement age. While this may be

for personal fulfillment in some cases, in most cases it will be driven by necessity. Employers will struggle with their moral and legal obligations to long-term employees and a need to add new employees with fresh ideas and technology-friendly skill sets to their rosters to remain competitive. The ever-increasing need to health care for an aged population will have a significant impact upon the economy as well as on the health care profession. This impact will include draining resources from the technology, manufacturing, and service sectors as students and new employees follow the money into the healthcare profession.

## 2. Faster:

**Everyone is required to learn faster in order to stay ahead of the problems currently being created.**

- Knowledge ages quickly.
- Changing technology creates more opportunity for new market entries. This puts pressure to be “first” without sacrificing quality.
- Speed is more than learning faster. It will be a major factor in everyone’s ability to fully participate in a meaningful way in life.
- To survive in any enterprise one is required to change faster, improve faster, deliver faster.
- Attention spans are being reduced, competitive offering will be first to consumer mind.
- It’s not just about learning faster, it’s about communicating, moving, producing, delivering, adapting, competing, responding... all about speed. Yet, what is lost, sometimes, in the pace toward faster is “better” or “improved” or an appreciation for differences or distinction. How fast is fast enough? How fast is too fast for safety, quality, the experience of getting to the end point?
- This is as old as the Bible. In more recent years Goethe wrote more or less like this: intelligent people anticipate themselves to the facts. To be pro-active is like this. We have to be just in time and nowadays time is going faster.
- The world is moving at such a high rate of speed learning is key. Use of the talent in a global workforce provides knowledge that moves products and services even faster. No sooner are these products and services released when they are taken to the next level. Knowledge must move with these innovations.
- This will likely have an impact on the quality body of knowledge, which is still for the most part oriented toward longer term operations and problem solving and organizations that are “going concerns.” By the time that a particular QMS method or program gets understood by an organization and gets implemented, it could be obsolete to the problems that might have arisen in the interim.
- Faster in this first variant means WASTE of TIME and EFFORTS of PEOPLE leading them to sharp competition instead of them to be FASTER to be more polite and helpful between each other. The First variant FASTER will influence negatively on People Quality Life. In the Second variant FASTER will play substantive role to increase People Quality Life (PQL).
- Internet is driving speed up in information distribution. This will dictate all aspect of our life.
- The society is much faster than the past. We have to accelerate in order to stay competitive.
- This happens particularly to the urban population which is increasing rapidly.
- The speed of innovation is driving a need for faster learning. In health care, research is being done at an amazing rate, and a physician who reads two journal articles a day will be hundreds of years behind at the end of a year. Need new ways for workers to access needed info and skills in real-time.
- Competition and technology have increased the rate of change, learning and market growth. Global communication provides almost instant awareness of new ideas and application of new knowledge to innovative competition.
- Everyone required to learn faster. The “quality geeks” are in danger of being seen as impediments rather than solutions. The Market will continue to become more competitive and those that react quicker to change or new opportunities will prosper and gain a competitive advantage until other organizations can mirror

this success. Organizations that are able to drive change and improve quality quicker than their competition will be able to seize new opportunities and grow their business by attracting new customers and sustaining existing customers. This will require the resources in the organization to react quickly to change and make quick decisions that will allow them to take advantage of new opportunities through new and improved products/services.

- As life cycles shorten building in and actually driving operational excellence will come more from design functions than operational functions...so quality assurance professionals may work more in planning functions than operations functions... regardless then balance needs to be understood.
- We are living in an environment where changes in technology and others happened every now and then and as a result, our futures are getting uncertain. TO learn fast in order to stay ahead and survive becomes a way of life in future as what you know today will never be good enough for tomorrow.
- Americans are impatient and want it now.
- Learning faster will be for sure a real demand for all active people, independently of their field of activities. Under these circumstances quality approach has to be reviewed and adjusted to this high speed of all involved and activities.
- In today's ever changing market and technological advances individuals are creating opportunities that change the landscape daily.
- It is said that in 2020, half-life of knowledge will be 75 days. Even assuming as an alarm to the speed of knowledge generation and evolution, it is quite clear that everyone needs to equip himself or herself to learn faster for minimum hope to be synchronized with change.
- As we move with new innovation and technology the learning curve is becoming shorter and to be in the game everyone needs to learn faster to stay ahead of the problems and resolve quickly to move forward.
- This topic is much richer than the requirement of learning. Speed, or faster, will increase over time. Perhaps it will be limited by our ability to adopt, but the pace of change will quicker which will pressurize every aspect of quality. Speed will demand being first to market. Speed will short product life cycles. Faster will be the mantra of organizations and the traditional tools of quality – control and improvement – will need to adapt to this environment.
- Learning faster will be a real demand for all people, independently of their field of activities. Quality approach has to be reviewed and adjusted to this fast speed.
- Consumers and industry are becoming increasingly obsessed with having the newest technology immediately. We all routinely exchange our cellphones, netbooks, laptops, and televisions not because of reliability or obsolescence, but to obtain the latest and greatest technology. Items are now manufactured to last for shorter periods of time and repairing products is no longer economically realistic. On the job, we see new software, hardware, and business models evolving on a continuing basis, and the old reality of completing one's education before entering the workforce has been replaced with a need for lifelong on the job training and retraining.

### 3. Accelerating rate of technological change.

- Consumer demand for innovation in technical products will remove many current players from the marketplace.
- The technology is accelerating.
- Products are obsolete before they are actually worn out. This has a tendency to waste resources that were used to create the products. Raw materials, energy, brain power and so forth.
- The reasons for this selection relate to the previous answer. In addition, there will be a gap between the time it takes for developing the competency of an organization's employees in a particular quality discipline and the time at which it might already be obsolete to the problems at hand. This could also destabilize the quality occupations themselves, since organizations might need instant access to a specialized and up to date technique that is not available internally, and thus need to contract out. This could accelerate the outsourcing of the quality practitioner.
- Means rapid obsolescence, changing the basic concept of quality.
- As we move in the next decades we need to accept the changes that are taking place in an accelerating mode, one needs to be adaptive to survive.
- Accelerated technological and social change leading to employment of transformational sciences found in quality.
- Speed of change and accelerating technology change: Recommend changing "faster" to "speed of Change" and "technology" to accelerating technology change and collapsing 21<sup>st</sup> century technology and technology tools into this group. We are changing at rates never before experienced and the speed of change is accelerating. Change drastically impacts our businesses, schools, our healthcare system, our communities, and certainly our personal lives. The world is changing in ways that we cannot fully comprehend and most certainly cannot fully predict, let alone manage. The pace of this change is what is amazing. Based on population growth, the worldwide economy doubled every 250,000 years from the "Stone Age" (2.5 million years ago) until the Agricultural Revolution (about 10,000 BC), at which point the economy began doubling every 900 years. The industrial Revolution of the mid-1800's caused the world economy to double every 15 years, which is 60 times faster than the agricultural era. Ray Kurzweil (inventor, futurist, author, and MIT-trained scientist) claims that the rate of change itself is growing exponentially. There's even a phrase for it called Moore's Law (named after the founder of Intel, Gordon E. Moore). This phenomenon describes a long-term trend in computing hardware, in that since the invention of the integrated circuit in 1958, the number of transistors that can be placed inexpensively on an integrated circuit has increased exponentially, doubling approximately every two years (Moore, "Electronics Magazine", 1965). Some might argue that the speed of change is the result of the Age of Oil. Oil through the magic of chemistry and technology has enabled countries to produce food at phenomenal levels to support a never-ending growth rate in populations. Technology leads to innovation and innovation leads to greater speed of change. You get the picture... change leads to accelerating the pace of change. Some of this change is discontinuous change. Technology is allowing us to live through "avatars" never leaving the house. Our avatars (email addresses and credit cards) provide us with access to medical information and treatment, try on clothes at online stores, order everything we need to eat, drink and entertain. Telepresence by Cisco puts us across the room from our clients who are on the

other side of the world. The implications on quality are enormous on all sectors. The toolbox of quality principles and processes should get regular workouts as decision-making needs to be agile and rapidly respond to changes. The organizational performance excellence playbook is huge. It must include best practices for planning for the ST and the LT, listening to the VOC to tape into emerging needs, improving and innovating key work processes and work systems to adapt quickly to changing technology, training and developing the workforce to ensure new skills are in play and dealing with the stresses of pressure of rapid change through communication, conflict resolution. The educational system must change. What a student learns about technology as a sophomore in high school is out of date by the time they graduate. When I went to high school, I took a course in textiles because my home town was the largest textile factory town in the world. What do we need to train students of today to prepare them for jobs and careers in the 21<sup>st</sup> century? Technology in healthcare is a success story. The mortality rate is decreasing, fertility is improved and disease is being wrestled to the ground. Technology and its unending promise of solutions is also an enormous threat. We look to technology to address social problems like pollution energy crisis, climate change, hunger and myriad of social problems. However, it is unlikely that technology will solve all problems and it is folly to believe that it can do so. To this point, the mandate is for quality to keep the human side in tandem with the technology side. This balance is essential to addressing problems not as algorithms, but as systems that include humans. Our humanity is key to our survival. With robots quickly reaching the level of human brain power, just think what would happen if the gap between robots and humans closed. Would a robot algorithm decide that oxygen quickens rust and rust is dangerous to robots, therefore “exterminate humans” to be free of the need for oxygen. Now, that is a line right out of Dr. Who.

- The specific technology of modern computer science. In my father's day, robotic replaced manual labor is such things as putting products into boxes. Then in my day, computers allowed people in India or China to compete with me for my work. Virtually any work can now be done to some degree by computers, even work requiring independent thought and creativity. For example, the IBM computer Watson beat previous Jeopardy champions in a televised competition. How do we manage the quality of work done by computers?

#### **4. Increased requirements for speed and responsiveness**

- ... I was in a hurry and impatient... probably like most people in business. We have been trained to expect collapsing cycle time especially in the information technology fields.
- This relates to technology, which affects the availability of data, the efficacy of tools, and customer expectations. The notion of value and the techniques to meet its requirements are thus a rapidly moving target.
- Western economies are more and more based on service industries, in which speed and responsiveness are important dimensions of quality.
- We customers – consumers and B2B – are an impatient lot. And that seems to be increasing along with the continued accelerated pace of technology offerings.
- Both are more important than before, because market change very quickly, decisions must be rapid...
- Internet and communications technology leads consumers to demand instant gratification – speed and responsive.
- As we move forward, everyone expects resolutions as quickly as possible. In our line of business, 10 years ago we used to provide monthly summary reports, well today a report is expected almost daily. If an issue is detected then corrective actions are required within very short time frame.

**5. Social Responsibility: Organizations become socially responsible by realizing they must play an important, self-enlightened role as stewards of the planet and that being responsible is good business.**

- Companies can no longer only care for profit.
- The new standard and the GRI will increase the awareness for social responsibility in connection with quality development.
- On the good side, we are seeing Family and Religion be of more interest in value to the young people of today in the social activities and schools. It will increase in importance and can drive a major culture change throughout the world. On the other side, there will be an increased focus on the good and bad that surrounds the Muslim Religion with the normal Muslim population and the terrorist Muslim population.
- Social responsibility is linked with values and concerns about the world and real needs.
- Any organization have to recognize one of residents in Gaia. So, any company or organization have to know their own responsibility to society.
- That is part of the reason, the other reasons are the more governments are legislating against polluters, eg in OZ they just introduced a carbon tax, to force improvement in a cleaner environment and better Quality of land, sea and air.
- No company is able to survive now without the right image and contribution to society. The development of the environment and stakeholders around the company is mandatory to get Government support, people recognition, talent attraction.
- There is no way to be different. It is not an option for companies. The stakeholders demand stronger personal and organizational behavior into SR direction. Organizations must learn to be social responsible. But it is necessary to have core values regarding Social Responsibility. Quality must integrate SR into the leadership education and business model, including strategy approach.
- I would say that not only organizations shall be social responsible. Individuals must be that and the result will cover all the society. More than ever our Planet will depend on this. This force came to stay.
- Despite our banking system with its world class fraud, consumers are beginning to expect more of all companies. This is more advanced in Europe, but the American public is slowly waking up to social responsibility.
- People's acceptance of an organization is increasingly dependent on its social responsibility (SR) performance. The principles of SR are elucidated in ISO26000. Organizations will gain significant benefits in creating shared values, i.e., services that will enable the society to grow and bring financial rewards to the organization. Quality professionals can play a crucial role in such initiatives as reducing carbon footprint, developing products or reconfiguring value chains that serve unmet societal needs.
- It would be another important function for our politicians but it will be actively supported by organizations and maybe large companies will use it as a way of differentiation.
- Today, organizations are answerable not only to their board but also to the society and their Nation and also to the world community. So the responsibility encompasses in each organization on product life cycle management, green environment and also human friendly products. The organization also must fulfill corporate social responsibilities in and around their areas of operation/region in

enriching human values and building a healthy society. This includes community developments, research projects, in creating sustainable world.

- Business leaders have to consider themselves like parents in the family. They have to think about the future of their children and the children of their children. Any main strategic goals of any business systems of improvement and excellence should be linked like Quality-Cost-Delivery-Safety-Moral: QCDSM. First of all we have to explain that Business and Society are the same body of human civilization. All organisms of this body should be balanced and support each other despite of their different functions having one goal: to survive and increase PQL of this body. We must not permit mussels and stomach and booty call to chew up our mind. Thus, this body needs harmony of it's development where QUALITY is a "ROAD MAP".
- Organizations must take larger social responsibility.
- Yes, I do agree that being responsible is good business because in the eyes of society a company that shows concern for its immediate community and actual or potential consumers is worth getting one's patronage. Companies that take care of their societal responsibility gains merits from their customers. Expectations of high quality service will thus evolve and the company will then be duty-bound to improve their quality.
- Organizations are becoming more aware of the role social responsibility has and the importance this places on an organization's reputation. Organizations are not only asked to produce high-quality services and products, but also those that are environmental friendly and socially response. "Go Green."
- It will become more and more important to combine, at all level, the economical aspect with social and environmental aspects; anybody will be obliged to optimize the decision, now often treated, on the contrary, separately and in a conflicting way. Social Responsibility is, in fact, and will be more and more the new Charta of values of the global Community (ISO 26000). Without a new comprehensive Code of conduct the world will not able to govern increasing conflicts and govern the new opportunities of sustainability. Sustainable development will require globally responsible governments, companies, and individuals.
- To create potentials and engagement, it requires a leadership culture which causes motivation at peoples.
- Combined with the responsibility on natural resources is SR; social equalness is the basis for freedom and development.
- The society will enforce a tacit contract on the enterprises force them to be socially responsible.
- If an organization cannot contribute to society in a meaningful way, it will be replaced by one that can.
- Just common sense and an expanded view of what the leader's role is overdue.
- It is becoming more and more expected that the business community contribute to addressing the major social challenges of the day, such as poverty, education, disease, etc.
- It is becoming more and more expected that the business community contribute to addressing the major social challenges of the day, such as poverty, education, disease, etc. Quality has a role to play in this.
- The world is a closed system. Cultural isolationism is not sustainable. Nature will blance itself in the long term, without regard to the survival of the human race.

Either the human race recognizes the need for interdependence or it will destroy itself.

- Until now most companies have ignored the basic principles of Corporate Social Responsibility. The new generations will not accept this situation. Consumer pressure will cause companies to become more socially responsible with the way they run their companies. The recent publication of Social Responsibility Standards will pressure economic player in every areas to meet the criteria of the principles of SR, which results in changing the ways of their economic behaviors even though it does not go to be management system standards.
- Social Responsibility will increasingly be demanded by consumers. This is now becoming prevalent in the corporate world as business leaders discover that they can do well by doing right.
- All businesses and organizations have to bear social responsibility in terms of curbing pollution, saving energy usages, helping communities, retraining displaced employees and working with disadvantaged people.
- It will be future guide, code, and standard which organizations keep up in their business worldwide. It will make a new domain of competition in global markets.
- Always a need to be a good citizen.
- Consumer pressure will cause companies to become more socially responsible with the way they run their companies.
- As we become more diversified as a result of globalization, communications and consumer awareness pressure will come to bear in the form of social responsibility. As stewards of our environment we will we measuredmon social conscience.
- Social responsibility (CSR) as defined “the responsibilities of private enterprises for sustainable development” will be a strategic issue for companies. CSR initiatives can/should cover economical (ethical business practices...), environment (climate change, natural resources, alternative energy...), and social (peace, employment, diversity management,...) issues.
- Our customers demand a focus on social responsibility and it is the right thing to do as a good global citizen.
- SR will become the umbrella for managing all things of social impact, Environment, ethics, human rights. As our world shrinks through new media, and the planet’s finite resources become scarce, consumers and employees will force greater accountabilities of organizations. As it becomes obvious to leaders that SR and improved top and bottom lines are interrelated a great deal more attention will be given to using the concepts, techniques, and tools of quality and employing those who have mastery of them.
- The pressure of NGOs becomes much more influence in the future.
- Consumers are becoming increasingly aware of the role of companies and industries in protecting the environment and in encouraging socially responsible actions. Customers vote with their dollars and include SR in their purchasing decisions. This has a generally positive result as companies transition from environmental compliance (doing what is legally required and little more) to environmental awareness and proactive support of green initiatives. Momentum is increasing, and will continue to increase, as companies realize that eliminating waste and reducing the need for environmental remediation is not only socially responsible, but profitable as well.

**6. Ethical Considerations: The ethical aspects of more issues and decisions will be more visible and important.**

- More aware consumers will punish infringements.
- Principles and values are critical for any activity.
- As a human being, we have to keep “life” safe. After all, we would like to get peaceful ethical security.
- Stakeholders will demand more ethical behavior and transparency of the leaders and organizations. Ethical become more integrated into the business daily routine. Quality methodology need to learn how to handle with ethics, transparency, new educations contents and design business process to manage ethical considerations into daily routine.
- Totalitarian states and lack of moral values has undermined societies in many parts of the world. This is an issue that has been a focus of many of the protest organizations as well as terrorists. Indeed, the Wall Street and banking ethical crises have made it clear that there is a need for increased morality in work.
- As businesses enter and grow in new markets, cultural and societal requirements will vary and must be well understood. Decisions that impact ethical issues will be critical for both short and long term outcomes. Risk versus benefit equations and outcomes may not be the same depending on the application or environment but will be judged in the public domain.
- Mankind has to improve ethical and moral responsibility otherwise they destroy the world. Especially large technology based catastrophies and terrorism.
- Thanks to the ubiquity of the internet and the popularity of social media, people are much better informed about various issues and decisions made by organizations that will affect them directly or indirectly. The series of high impact scandals and massive product recalls that received extensive media coverage constantly remind the public to be alert to the ethical behavior of all types of organizations. This drives the publication of ISO26000.
- The influence of the different religions will become more visible, in principle these have a lot of similarity but who will reach the human being and how will this communicated. The media and communication tools will become even more important.
- Ethical considerations will assuming more and more importance as business is done across the globe, i.e. Design may be in one continent, manufacturing will be in another continent, assembly in third continent and consumer may be in the fourth continent. So, the basic moral and ethical values assume paramount importance in conducting business. Because business is done across the globe, the ethical practices are becoming mandatory as people from different countries have practices differ based on culture, religion and governance.
- Moral aspects will dominate influencing on PQL and on their culture of production and services. We (quality professionals) have to show the right way of development in all spheres of people’s life leading them from the quality prism to understanding that they can survive when they consider the QUALITY as an instrument of increasing their PQL.
- Since 2000, we have seen the camage due to personal greed and lack of ethics by business leaders. We need to instill ethics at home front, in schools and universities and reinforce them in the organizations. This is the foundation and without it the sand castle of businesses will collapse.

- As people get more educated and more concerned with fellow employees, the importance of ethical behavior will surface and could lead to improvement of quality relationships through time.
- The quality of rapid and effective reporting and communication worldwide will make it difficult for anyone to get away with anything.
- Ethical considerations will be more visible because of transparency via more open media (internet, etc.) and Boards, and political structures (governments, courts) – performance in this area will be a measure of the company/organization's "loyalty" and "fidelity" to its own values and value.
- Ethics in all fields will play a key part. Corruption, bribery and favoritism will not work in modern day when all books are open. With Ethical consideration everything will be scrutinized carefully.
- The moral standards of a person who take charge of an organization will have a great impact for the future of the organization. In worst case, the society and economy will also be affected, such as what was happening in 2008 financial crisis. Ethical considerations are therefore vital in all aspects of our daily activities and more control will be put in place.
- This is directly tied to almost all my other choices. The degree of trust in the information we receive is paramount to globalization, social responsibility, etc.
- As the globalization increases it will be necessary to have all ethical considerations and more transparency will be expected.
- Ethical behavior and social responsibility are joined at the hip. Pollution might also be included. As ethical behavior goes, so goes quality. Strongly positive ethical behavior fosters trust and creates an environment and an example that will encourage others to follow suit and be creative about ways to foster quality. Negative ethical behavior leads to distrust and cynicism and will result in lack of interest at best, and negative and vengeful acts at worst. In the latter case, quality will not even be on the roadmap, but for those who see things through a quality metric, the result will be a quality disaster.
- This is a challenge for quality professionals even today and will grow with time.
- Ethical issues will become a focus for selection of people in leading positions of society.

## **7. Global Responsibility – combines Ethical Considerations/Pollution/Social Responsibility/Environmental Concerns**

- This title of the force should be Social Responsibility. All the other issues like ethics, pollution and environmental concerns etc. fit within SR.
- The prospect and positioning of this phrase, and its possibilities, are both sobering and inviting. The linkages are being responsible for the globe, and for each other around the globe provide promise.
- Although there are global economic and political divides, quality must recognize that a macro vision must always be held to assess the changes. Partnership, collaboration, and new business ventures will be required to address these global issues.
- As more and more countries regulate what materials and chemicals can be used and transported, how they are disposed of, etc. – these areas of critical importance to product development, manufacturing and distribution.
- With increased globalization comes increased global responsibility, in all aspects. Individuals, organizations and governments (to varying degrees) are already turning their attentions to all aspects of global responsibility. One has only to pay attention to advertisements, campaigns, regulations, etc. to see the change in focus happening real-time. Quality must respond to this changing focus – proactively versus reactively.
- Ethical Considerations, anti-corruption, Environmental Concerns, are all included in Social Responsibility (see ISO 26000 and Global Compact International).
- Because of the intricate relationship among these factors of disturbance.
- Drifts and difference of income among people in the same nation and between nations will create difficult conditions for growth and, add to that the growing issues of racial and national problems, climate changes, shifts of power,...
- These are the biggest challenges facing the survival of the planet and will require different approaches to quality.

**8. Innovation: Consumer desire for innovation will continue to increase as companies move into more global markets and consumers will modify and improvise products that do not meet their needs.**

- There will always be new ideas, those not innovating will lose.
- Technical capabilities, customer demand, and passion for profit is driving Malthusian change in products. No just consumer desire. There is a self perpetuating model driven what doing what is now possible, and now possible, and now possible...
- Innovation is the driving forces for quality development.
- Capitalization of the high tech companies in the US and around the world now far exceed the old order of companies. Google vs. GE for example while other former giants are struggling to survive e.g. Kodak. To stay viable orgs must innovate or die.
- Innovations requires the compliace of the products get success.
- Innovation will enable us to measure the physical and chemical properties of manufactured items with even greater accuracy and precision. Innovation will bring new products into the market that will require quality assurance and quality control methods.
- Innovation: Quality is defined by features (and lack of defects) so desirable features will be associated with quality.
- More time in society to perform non survival work. With basic needs met, more innovation.
- Without innovation, we can nothing to progress for getting quality of life.
- It is one of the most importants reasons to believe in Quality. People associates Quality to Innovation. This is the key to new business such as Facebook, Twitter.
- Innovation seems as a buzzed word today. It is a mistake. To be more one player in the business arena is not enough nowadays. Quality and innovation are 2 faces of the same the competitiveness' coin. There is no competition in quality and innovation concepts. Both are necessary to be applying. Quality answer the question: Are my products or my services fit to my purposes in terms of functionality, cost, prices, and expectations for the life cycle and so on? It is related to excellence in business process and customers needs. Innovation, by the way, answer: How different can I offer/create a new product, service or business model to delight the customer or create a new market or a new demographic niche? It is related to maintain alive the business. Innovation is a motor to create the future and maintain the enterprise.
- How we deliver product and consumer goods will be important. How we move toward instantaneous engineering and manufacturing methods will determine how we preserve resources and consume less energy in the product process. Bespoke does not necessarily mean expensive or wasteful. It can mean considered and efficient.
- Consumer are far more informed on products and service via social media. Demands are expected to increase as the use this knowledge to drive change.
- Consumers will determine ways to move products into the white spaces or into adjacent markets. This will create the need to modify the products. Some modifications may be implemented too quickly without evaluating the possible adverse effects of the new use of the product. This could result in hazards that were not considered.

- Customer desire for innovation has advanced at a rapid pace in the last few years/decades, and the pace is accelerating. This will continue to have an impact, pushing quality beyond the current requirements. As products and services innovate, the quality of those must match the innovation pace.
- To paraphrase cosmologist Dr. Michio KaKu, Phd concerning the near future of advances in electronic technology: “Moore’s law states that computer power doubles roughly every eighteen months. By 2020, microprocessors will likely be as cheap and plentiful as scrap paper, allowing us to place intelligent systems everywhere. This will change everything around us, including the nature of commerce, the wealth of nations, and the way we communicate, work, work, play, and life. This will give us smarthomes, cars, TVs, clothes, jewelry, and money. We will speak to our appliances, and they will speak back. Scientists also expect the Internet will wire up the entire planet and evolve into a membrane consisting of millions of computer networks, creating an “intelligent planet.” Because of revolutionary advances in our ability to etch ever-smaller transistors onto silicon wafers, scientists expect this relentless drive to continue to generate newer and more powerful computers up to 2020, when the iron laws of quantum physics eventually take over. By then, the size of microchip components will be so small – roughly on the scale of molecules – that quantum effects will necessarily dominate and the fabled Age of Silican will end.”
- The only way to compete with mass produced, low costs copies of products from other countries or cheap competitors will be to stay ahead of the game with new products, services and features.
- Will result in shorter ‘production runs’, a changing balance between physical and service products. Changes concepts of failure, with complex systems little understood at a fundamental level by consumers.
- Today we live in a world of video and communications. People, particularly younger people do not know what it means to be “disconnected”. This “always online” access to information and entertainment will fuel the desire for innovation.
- Globalisation needs continuous innovation of products, processes, systems and know-how. Especially SMEs will only survive and grow by globalization if they are highly inventive.
- Profit margins for innovative products tend to be high, whereas commodity products often lead to price-based competition, thus eliminating profit margins.
- Customization + mass production causes to produce the goods, which have too many options. I mean the mobile phones have all new options regardless of their benefit for users. The customers in developing countries are young and somehow these options are their hobbies or learning tools. On the other hand, competitors prefer to deploy all options, because Producing new generations of the products in this way doesn’t need materials, but will attract the customers. Continuing this process causes the growth of knowledge base industries.
- The speed of new products and services will drive requirement for new quality systems.
- Globalization of the marketplace, emergency of the developing economies as rapidly growing markets, introduction of new and disruptive technologies, the changing demographics are factors that are perpetually changing the business environment. Business as usual is likely to cause an organizations decline. An organization’s ability to delight customers with innovative products and services, create innovative business models, introduce new tools and methodologies for

productivity improvement, will differentiate between winners and losers in today's volatile business environment.

- Innovation is needed in the changing world. What about availability of natural resources? We will further learn from Biotechnology and need to implement the advantages.
- Today, Product Life Cycle is becoming shorter and shorter like Computer Industry. When you order a computer that is the latest, but when you install it is already obsolete. This is because of rapid development of technology. So innovation not only in product but also in processes, people, systems and management style. Education & skills are becoming necessary to meet the challenges for an organization/country in delighting the customers. Of-course innovation means either 'maximising principle' or 'minimising principle' in the product and services. For eg. Cell Phone is becoming smaller and smaller but Television set is becoming larger and larger. What the organization needs is to understand the principles of innovation in their design of product/processes and building people to manage the organization. If we innovate, we prosper and we do not innovate, we perish.
- Innovation has to be classified as INNOVATION when and where it improves and makes easy people life only and increase PQL. As for other variants it has to be considered a waste of money, resources and time. So we have to include into INNOVATION understanding the meaning of QUALITY as a direction to PQL increasing.
- 21<sup>st</sup> century will be marked with very high rate of innovation due to spread of knowledge to all corners of world. Developed world's monopoly on science & technology will be diminished.
- Innovation can lead to quality enhancement. In a highly competitive environment, survival could have greater assurance if more and more innovative work are performed to ensure that one's company maintains its lead over the others. Such competitive activities will surely focus on making better and better innovative products and/or services. In time, quality will be enhanced.
- Today's technology is tomorrows history. Customer's demands have changed drastically.
- INNOVATION OK, but not only. Innovation is not related only to product, but also to process, organization, management systems, human aspects and culture, infrastructure, work environment and technology, and relations with relevant interested parties. Innovation is now the most important weapon for the competitiveness and growth. New habit, lower organizational structures, new technologies will improve the rate of change and will modify quickly previous choice. Creativity at all levels will be a factor of increasing relevance. Innovation becomes more important also in Public Sector and in Not for Profit Sector. Link to – 10-8-17-18-19
- Innovation is the most important factor for the progress and the improvement in the conditions of our planet.
- Innovation will, in the face of more and more competition, will more and more become an essential strategy for both success and survival.
- Innovation is one of the key success factors in today's fierce competition, which makes it necessary to invest in research and innovation to find ways to differentiate products and services according to the customers' needs.

- Expectations for better, faster, smaller and cheaper are increasing, and this new way to think needs to be adapted into healthcare. We are still making care that is increasing in complexity and cost.
- Never ending rising expectations from each of the company's stakeholders. As Prof. Kano said that Quality is "Attractive quality." People and society, in general will like only those products and services which attracts them. Only those entities will survive the market forces, who will innovate themselves to meet the expectation and need and so attracts Future generations.
- Innovation is part of many of these forces and will be the tools that will ensure sustainability in the future.
- As we innovate more... quality assurance in the design functions becomes more critical vs that in operations. The management of change to enable speed with some business risk balance changes.
- Innovation is the mother of all advancements and improvements in quality of life. Innovative products and services will place heavy demand on quality consideration.
- Invention or development goes first, then innovation follows in every areas of society as well as in qualities. Innovation leads to a generation of a new concept of quality.
- The needs from various parts of the world will be different, it is vital for the company to continue their business by innovating, strengthen and design products and services that meet by the specified customers to meet their ever changing life style and help their productivity.
- There is nothing more to purchase when you have two cars, 4 flat screens, 2 phones, etc.
- Innovation is the source of opportunity for companies and consumer's desire is the key trigger for innovation as well as technological innovation.
- This force is taking momentum everyday and customers are demanding new products and new services. There is a clear and direct connection between "attractive quality" (Kano Model) and innovation and consumers express new requirements and expectations.
- Even today in our business our consumers expect innovation, then will continue to increase as companies move into more global markets and consumers will modify and improvise products that do not meet their needs.
- Innovation will always be with us. Today's communications and technology make it easier and easier to innovate. Most think of innovation as a positive; there are millions of examples of such. Keep in mind that creativity and innovation can also be used negatively, especially by those individuals and groups that are disgruntled. There are many examples of this, too. Either way, innovation is a force affecting quality.
- Innovation will be the core business process for companies trying to adopt to the pace of changes, (shortening product life cycles, opportunity to address global markets,...). Business models, processes, operation management will all be areas to address for innovative approaches. Government services will significantly benefit from innovation practices enjoyed by private sector.
- Customer will continue to favor products and services that are innovative; a big portion of the income will come from products that do not exist now.
- The global customers will be much better informed with new technologies.

**9. Innovation Development – combines innovation (consumer desires) and innovation (all work will be data-driven and standardized)**

- Without innovation any company won't last and will be excel by the competence.
- Innovation is transforming a good idea to reality. It is expected that 80% of future 20 years products have not been invented! High education and development are working together to shape the new trends.
- Technology enhances the capacity for innovative products and services to enter the market.
- For competitive advantage we cannot stay where we are. Incremental innovation is the key to survive. Companies need the skills to translate the customer desires in the right products and services.
- Innovation is now a condition to survive; of course is related to changes in needs of consumers; ICT is a important part of innovation

## **10. Sustainable Innovation: Combines Innovation and Social Responsibility**

- This combination is quite new. The innovation should more oriented on environmental aspects within social responsibility.
- Innovation must be oriented to demand triple bottom line aspects, not just economic factors. The best innovations are related to creation new products, services, business model and technologies that promote the people welfare in all aspects.
- Sustainable solutions are in more demand than “quick fixes.” We have all been victims of quick fixes, which ultimately we are confronted with helping develop sustainable solutions. Most notably, look at the recent dilemma with the “BP Oil Spill” a quick fix was not the answer to this disaster but a sustainable solution that addressed the social harm caused by this event.
- Sustainable innovation is the theme of our university’s new strategic plan and the theme of at least ten other universities we benchmarked. Academia is waking up, and many companies are seeing this as their future.
- Social responsibility is strictly connetted with sustainability (see also Iso 26000)
- All innovations have to be sustainable, which means to combine economy with social and ecology.
- It will be necessary innovation for sustainability.
- Innovation will be needed for successful implementation of Social Responsibility.
- Man driven changes invariably has some harmful impact on the natural environment. Therefore need to minimize this while balancing with shareholder value through quality.

**11. Consumer Awareness: Consumer awareness, knowledge, and savvy will increase due to the global availability of technology and information.**

- Everyone knows everything.
- The broad availability of technology has made people more aware of what is possible. This applies to technical products. Customers do not seem to be driving improved service.
- The growth of individualism as societies become freer, will result in having more choices. This includes choice of products. Information technology will make it easier for people to know what alternatives are available.
- The future customers will not be cheated. Their scepticism will be still larger. They will not accept that product do not last a long time.
- Information is much more available and consumers use this knowledge to guide selection decisions.
- The tools available to consumers, the information overloaded and consumed, has created a more aware, demanding, discriminating consumer. That demands more from suppliers. Consumers make known their satisfaction, dissatisfaction, their delight and their unbridled criticism in very public forums, and influence the crowd, as well as the individual. The investment in tracking consumer sentiment, and responding to it, creates a marketplace unto itself, an almost alternate experience to the one-on-one product or service experience of the individual. A single rant can make or break, the next best thing.
- In the economic world, if consumer doesn't buy a product/service, these economic system will be broken, and any progress of human will not be performed.
- I agree with that statement, as well as many of the National Consumer Affairs Departments are more and more interested in the quality and safety of consumer products., toys etc. They also issue periodic information about Product recalls, also report on fines issued to the offending producer, sales shop or business. Choice is one such magazine in OZ.
- The customer now expect more, better, faster and cheaper. Globalization has increased availability of new product and people wait now for better. Information is so easy to get that the knowledge of products is on hand everywhere in the world.
- Consumer awareness will be stronger. Knowledge, technological possibilities, political, economic, social, ethical and environmental influences are items additionally taking into consideration by consumers. Products and service characteristics alone are just specific parts of the decision making process.
- This should be titled, "Access to Information," as it is but a part of a deeper shift in the way information and then knowledge is created, shared, and used. Social networking is a part of this, as humans share their experiences with other humans and bots. Transportation platforms (cars, trucks, and planes) are starting to talk to each other. We rely on GPS to provide us with geospatial information. All these data sources and flows will provide the consumer with information, unfiltered by classic marketing methods. Instead software designers and AI will do the filtering. Government, business, and community leaders will become more accountable because of transparency. Quality professionals will continue to be challenged by data quality and use/misuse. We will experience more pressures to provide "instant answers" in lieu of deep understanding.

- Knowledge and power will be the demands on the future, especially from the “baby boomer” population. With access to more and more information via social media (i.e. FDA FOI) consumers will demand and expect more from companies.
- Consumer awareness will affect expectations, and expectations are drivers of what the customer perceives as value. Value – are not just the absence of product physical defect or service errors – is now considered a key dimension of quality.
- I see it all the time when I got to developing countries. They want to have the latest and greatest for the rising middle classes in India, China, and Latin America. They have money to spend.
- The existing trend in increased consumer awareness and customization of product will spawn opportunities for new market opportunities to satisfy the precise needs of targeted consumer markets, thereby displacing a growing proportion of existing ‘commodity oriented’ sales volume.
- The information explosion is just beginning to be felt. From Consumer Reports to Angie’s List to blogs and Travel Advisor and multiple other web sources everyone is a critic and it is far easier for accurate product and service ratings to be found on almost everything. As consumers get better information (not just more data), they will make better choices.
- Search engines, the Internet and mobility puts information, of all kinds right at our finger tips. People will have an insatiable desire for instant information, to make informed decisions.
- Internet enables consumers to buy on a global market, and simultaneously facilitates comparisons of price and the sharing of experiences among clients. Consumers have more information and more options to choose from.
- The intelligent and genius people in developing countries have access to knowledge and information because of Internet; it means that they can realize their vision into their designs. In previous decades, it was not possible for more than 60% of the people (developing countries). This trend causes more immigration to developed countries as well. Because of the differences between the cultures, sometimes we see “unusual qualities.” But in this trend we will see more common and general tastes. I am not sure if it is good or bad for the cultures, however it is perfect for continental companies. After some decades the NGOs will try to survive the nations and cultures.
- In this age of the Internet and social media, news, opinions, and information spread like wild fires and they are not bounded by geo-political borders (except in countries where publicly available information is censored). The Jasmine revolution in Tunisia and its after shocks elsewhere in North Africa and the Middle East bear witness to this phenomenon. This trend makes consumers much more aware of contentious issues; they are more knowledgeable and savvy in making choices. Before making a purchase decision, they do online research on the products and crowd source recommendations on Facebook. After the purchase, they remain engaged with the brand by following discussions in social media. With rapid diffusion of IT and telecommunications technologies, mobile communication and access to the Internet become affordable even in rural and less-developed communities. This helps to significantly enhance consumer awareness in those places as well.
- Companies have meet consumer needs in a better way.
- As consumers get more and more aware of the possibility of obtaining their quality requirements their demand for better products and services will increase.

In response, companies will turn to the use of globally available technology and information, if they expect to remain in the highly competitive markets where the consumer is KING.

- Consumers have access to more and more information about products, goods, services, technologies, performance, prices, etc. and will be able to pick and choose from a list of global alternatives. Consumers are more and more demanding.
- Consumers' demands are increasing; USPs have to be addressed, communication has to be improved
- Electronic communication will continue to become more and more available, educating consumers to an unprecedented level worldwide.
- This force is a result of global information and increased technology. The cycle continues to feed upon itself for faster and broader understanding of the next competitive offering.
- Customers are becoming more and more sophisticated and demanding as they are aware of the various possibilities due to the information and technology, but mainly due to what other customers experience. Consumers are becoming smarter, so companies will need to become smarter too in order to understand what all stakeholders will need, rather understanding what they say they need.
- Consumer awareness is being enabled by increased availability of information through sources such as the Internet. This increase in available information will allow consumers to rely less on Madison Avenue type advertising and more on facts.
- Increased access to competitive comparisons and customer feedback will make for strong buying decisions or consequences for poor quality.
- Consumers are and will continue to use technology to understand product design and sourcing more and more... this will put pressure on companies to disclose more. As companies disclose more, they must notify more (known changes)... and this slows overall development. We will need skilled people in selling change to consumers... whereas historically, change has occurred without consumers or competition knowing (change for the good of consumers... which makes the change driver more competitive.)
- Consumer might be smarter and smarter in their consumption behaviors due to the advancement of social network systems. Many new criteria such as safety or environment as well as price and quality for them to choose goods might be set.
- With vast information about products/services available almost instantly via latest information technology, consumer generally are well informed of the product/services they are interested. The approach for marketing a product/service will not be the same again. Instead of telling the potential client about the products/services, they would like to know more what the seller can provide.
- Smarter consumers push innovation higher.
- Because of the development of consumer awareness, quality aspects related to products/services and their producers will need to change and add new dimensions and standards.
- New technologies make information available for everybody and influence the customer behavior.
- As communications technology advances consumers have huge amounts of information available to them for educating themselves on the products they use.

- The internet with the access to information continues to change buying behavior and redefine industries.
- The reasons are already expressed in the definition of this force. Globalization, connectivity and cultural issues are key players and their impacts are much broader than we can imagine.
- Especially in the consumer market, and slowly moving into the service sector, the consumer awareness, and knowledge is increasing as we do not know where the next competitor will come from, therefore, consumer awareness will be every necessary.
- Consumer awareness and social media are joined at the hip. There are many more outlets today for instant and informative (and often erroneous) communications, and this increasing trend shows no sign of slowing down. It is definitely a force impacting quality.
- The internet, and other social media, are informing consumers at the speed of light and putting a host of fact, and opinion based, information on their decision screens. As product differentiation fades, and cycle time of competing offers collapsing, consumers will be making every better informed decisions about their consumption and using ever more sophisticated decision algorithms before committing their dollars. Our consumption radius, once limited by what was within a walking or driving radius will become global.
- Because of the development of consumer awareness, quality aspects related to products and their producers will need to change and add new dimensions as standards.

## 12. Customization:

**Product and service customization will increase as consumers become more knowledgeable and aware of other competitors.**

- We all expect tailored products and services.
- As individualism grows, people will want things that bring value to their lives. This will be different for each person. Mass produced products include a bucket of common solutions that consumers must pay for, whether they want them or not. More efficient will be the ability to customize your products so you can pay only for what addresses your needs.
- Everybody is day by day more demanding in the quality because of the competence.
- Customization relates to increasing choice of grouping of “offering features” which appeal to consumers. Customers with more choices will prefer offering customized to their needs.
- More purchasing power world wide and the need to consider self unique will drive customerization. In turn, products and services will have to meet these needs and organizations will be judged by the quality of same.
- All products must satisfy the specific customer requirements. The products are now global but if no customization the success is very poor and limited.
- Technology will facilitate shorter ‘production’ runs, and enhance the fuller satisfaction of individual needs (compared with the partial satisfaction resulting from larger production runs, and limited customer options). Means that quality systems will need to be more agile/flexible.
- Consumers value customization, and companies who can offer this flexibility have an advantage.
- Availability of more supply sources for consumer products via Internet, will result in market fragmentation. Customers will gravitate to suppliers that are flexible to cater to their specific needs.
- We can create customized care in health care and mass customization methods adopted from manufacturing..will need innovation methods and new designs.
- Customization plays an important part to the consumers. Housing industry, Clothing business, furniture industry etc are affected by customization. Travel and tourism also offer customized services.
- Dynamic Customer taste and needs changes requires special design to accommodate for wide range of options availability to consumers.
- The voice of the customer continues to get stronger and they are very particular about what they want.
- Consumers and companies recognize that the old adage of one size fits all is no longer sustainable and that every customer has unique needs and challenges to need to be satisfied.
- When you combine the forces of globalization and the internet people are able to seek different product features and choices easily. Manufacturers and services providers need to find ways to tailor offerings with a greater degree of individual customization.
- A key competitive discriminator will be the ability to balance the customization demands of the consumer, which will also continue to demand increasingly competitive pricing. The quality professional has a key role in assisting leadership with assessing and striking that balance.

### **13. Consumer awareness and customization – combined to recognize products and services that appeal to customers for a variety of reasons**

- These forces work together when the customer selects products that fit a very specific need. No success can be obtained if a need is not covered and Quality perception is made up perceptions.
- Consumers have access to more and more information about products, goods, services, technologies, performance, prices, etc. and will be able to pick and choose from a list of global alternative. This is a proliferation of the current use of the Internet on an almost constant basis. More information will become available and the data will be more timely and accurate.
- Being able to offer variety while reducing statistical variation presents a challenge for many organizations.
- Meeting needs of consumers is important.
- Consumers will select more and from whom buy based on the company profile on CSR.
- Today vast information and communication resources which are available at our fingertips makes it easy for use to search and compare the best alternatives for meeting our demands and requirements even for the least important goods or services. This derives competition to even higher levels and the consumer consciousness and expectations necessitates the producers at all sectors to focus on quality and customization of the product or the service which they offer. Therefore consumer awareness and customization will be another driving force for quality in the near future.
- Customers have gain power over companies in the sense that they can access all the information they need, can compare all they want, and have the power to decide what to buy.
- This increases variety and hence the way we manage quality.

#### **14. Social media**

- Social media is changing the lives of the young in the world. How they interact, how they communicate, how they purchase. Predicting where this force will go is difficult but very important.
- Mobilisation of personnel, influencing of government, change of social conditions have all been controlled by social media. As resources deplete and people stay more centered in their communities the need to gain information, to communicate and to influence will be further driven by social media.
- Social media is everywhere... we are continuing to be challenged with social media. The challenge today and in the future is "how" companies/organization use social media to advance their cause.
- Facebook, and platforms like it, is changing how business access their customers. Its changing how people "recommend" productions/services to their friends. Word of mouth is now drive by the speed of the Internet versus in person interactions.
- I am seeing the impact of social media on the young generation of the world. They won't be ever tired of it. Some people are addicted and some have the most happy and effective time with social media. May be for old and not young generation it is something that getting familiar with is not easy but for the young generation it is a way of life. It makes the life complete for them so we will see very huge consequences.
- Just look at what happened in Egypt and what is happening in other parts of Africa. The Social Media has created quiet revolution. Its power will continue to grow.
- We have already seen how big influence social media has had to everything. It gives enormous possibilities also in the field of professional quality.
- Social media is changing everything – just ask Egypt! More quality evaluations will be done through social media in the future, as opposed to Consumer Reports (evaluation by professionals). This can already be seen on travel websites, such as Orbitz, etc., where customers can post very negative comments about hotels, restaurants, etc. How does one manage one's quality image in the social media, which cannot be controlled?
- If information is the raw material of the future than social media is the distribution in which quality must play a role.
- Face Book, Twitter, Internet, e-mail and television have become mind changers and molding the beliefs and opinion of people.

**15. 21<sup>st</sup> Century Technology: 21<sup>st</sup> century technology will startle communities, businesses, and organizations with its constantly fluctuating rate of change, which results in disruptions and discontinuities.**

- Kind of a Schumpeter thing, I think. Creative destruction will enable better solutions in the future. The role of quality, I think, is to assure that solutions add value, and not risk.
- Technology influenced the quality development directly and generally.
- IT will be a driving force in how many of today's initiatives such as Innovation become an expected outcome of all activities. We are seeing the beginning of this with Cloud Computing.
- Technology aspects can have influence in company decisions about products and services.
- This technology will change the world – not at once but in the long run. The revolts in Tunisia, Libya and Egypt would not have been possible without this technology.
- Transformational change brought by breakthrough technology will put pressure on quality in the face of speed.
- Culture and Civilization will always progress by aged technology. The latest technology will be required.
- Disruptive technologies will replace that which is considered the norm. This will increase at a faster pace as information and innovation accelerate. We are going to need to learn to plan, manage, and measure in new ways. Standards will continue to change as well.
- This includes modes of communication, transportation, products, manufacturing, etc. The rate of change will increase. How we anticipate, and build quality into this change will be very challenging. Great technology alone is not the answer – it is how we apply that technology to solve problems and avoid introducing unwanted unintended outcomes.
- Rapid technology change increases risk of early obsolescence, and thus changes the concepts for investment, production, quality (a throw-away society where failure is thought of differently).
- Technology will change quickly and in ways we can not yet anticipate.
- See also innovation.
- The rate of change in the technological field is so rapid that sometimes we even miss changes that are happening. For eg. The quantum of technological advancements that happened in the last century is happening less than 50 years in this century and the same quantum will happen within 25 years in the future – i.e. the quantum of changes in the technological area is exponentially increasing. This is due to rapid developments that are taking place in all fields – be it health-care engineering, material sciences, aeronautics, marine, bio-engineering, precision engineering, nano technologies, etc. Secondly, I also see cross application of technological improvements from one discipline to other – For eg. Robotics in Surgery. We will be seeing more and more deployment of technological innovations across various disciplines. This poses challenges to each organization in understanding emerging technologies, replacing existing technologies with a view to continuously improve quality levels, reduce cost and leadtime of products and services. Another challenge arising out of technological changes is to unlearn old practices, methodologies & skills and preparing people in managing new technologies with appropriate skills. These technological

changes also force every organization to revisit their customer profile, product profile and processes and employing competencies.

- Every society/community is being impacted to one degree or another by the impact of technology. Be it simple thing like email replacing post mail or availability of cell phone & TV signal in the remotest areas of the world. These technological changes will impact every aspect of life for 8Billion + humans beings on this planet. Latest Middle east uprisings encouraged by facebook is a perfect example.
- New technological developments are and will be changing the world. A step-function shift is on the way in most technology resulting that organizations are being forced to handle significant technological changes on all fronts. Technology, innovation and creativity produce a big change in the way communities, businesses, and organizations act. This involves generation of new ways of working.
- Linked to last one, but we are seeing small technology tools put health care testing and results management into the hands of the patients.
- Technology is changing very rapidly, and impacting virtually all work. Most work is becoming computerized, including professional work, such as writing computer code (done now by computers). How should we manage the quality of automated work?
- The access to technology by a greater proportion of the population – around the world – demand a response from organizations, businesses and even governments. Communications technologies, database technologies, media technologies have enabled the public to impact businesses, communities and governments. Smart grids, feedback systems, internet purchasing are increasing in sophistication and use. Technology advances eliminate intermediate/middle providers of services.
- Technology discontinuity makes a new domain of products and services. Convergence of current technologies results in developing new methodologies of quality management, sometimes mismatching between technology and quality management methodology might pose a grave danger to its consumers.
- The word startle is a good word to describe what is happening. It changes the intelligence of people creating less need for research.
- Technology develops at higher speed than its users and consumers may adapt the change. Quality of all involved factors will be highly influenced by this development, not always in a positive manner.
- This includes technology tools and nanotechnology. Like innovation and communications, this seems to be increasing at an accelerating rate. This will impact quality needs, tools, and methodologies. Quality of design, production, use, repair, and decommissioning will have to be built in.
- Technology applied in every field is affecting the way we do business and how we understand and apply quality management, no matter if we are talking about social media, social networks, information technology, manufacturing processes.
- 21<sup>st</sup> century technology which include bio and nano, and new labels that have not yet been applied will challenge quality concepts and tools to evolve. At the same time there is a growing realization that quality need not chase technology as increasingly there will be needs for simple quality in as yet unpracticed places. Public Safety, mental health, laboratories, are all examples.

- Technology develops at higher speed than its users and consumers may adapt to the change. Quality of all involved factors will be highly influenced by this development.
- Quality professionals are often not well equipped in this area. As disruptions grow need to develop new ways to deal with it will grow.
- Technology as an umbrella topic or aggregator is much too large and too diverse. To achieve focus and hence action, disaggregation seems to be more appropriate. Some but not all of the relevant areas of interest follow:
  - a. Technology as a source of new manufacturing and service processes
    1. There are dozens, and maybe hundred of new “game changing” technologies that are being developed today. Most will probably fail. Those technologies that will succeed will change manufacturing and services in dramatic ways that will make today’s quality professional a much less valuable player, unless he or she changes to adapt. For instance, robotics currently are very quickly replacing high transaction rate repeated step processes that have significant human content. Detecting and responding to robot problems and errors will require not only new skills, but the organizational relevance that says a quality professional, as opposed to a mechanical or electrical engineer, would even be involved in a robotic activity correction.
    2. 3-D printing is even more off the scale in terms of doing things differently. This involves feeding three dimensional specifications to printers that have the capability of spraying materials that will assume shape of the three dimensional design. It is currently in use.
  - b. Technology as a consumer enabler
    1. Internet as a consumer enabler provides for newer perfect market information, something only economists talked about two decades ago. The ability to comparison shop wherever the product or service exists, the advantage of hearing other consumer views, the variety of choice of product or services at all available feature and price levels will significantly expand the power of the consumer to make informed choices. For instance, BCG reports that it took the travel industry only five years to move from 28% to 60% of the market, and on line music sales went from zero to forty percent of the market in eight years. The implications range from more aggressive and diverse competition to concern about what the social networks are saying about “my product.”
  - c. Technology as a market enabler
    1. Folks in Africa, who have never been in a bank, are now getting banking services by cell phone. They are also receiving market conditions from a market place that used to be hours distant by foot. When one has to walk three hours to carry the fruit or flax to the market, market knowledge (are they buying today?) becomes very important. It’s an enabler.
    2. On line rare book sellers compete instantly and world-wide for specific titles. Companies as varied as auto parts suppliers to medical service providers are using internet approaches to access for themselves new ways of finding and serving customers who want to talk about tea. This is “everybody’s back fence neighbor.”

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3. This view is important for the market provider who is searching for new ways to attract, listen to and service customers. The quality plan needs to address the issue.

**16. Technology Tools:                      Individuals will use technology tools to enhance the human capacity, including memory, attention, and the ability to stay alert and focused.**

- We cannot live without the technology in our life.
- Technology tools will allow greater automation, reduction of errors, support better decisions using more information etc.
- Technology tools will be constructed by using the wisdom of human being. They are proof of body of knowledge.
- Technology enables the production of innovative goods. NO matter how difficult is a process if technology can make a production process faster and easier the potential to put a good product in the market in que quantity and price required for customers is high.
- Technology will continue to develop and help those who use these medium. Just look at Wii – this was developed to help senior citizens move and it worked. We will soon have computer that will function with our eye movement, these are only a few advances we see on the horizon, today. Stay tuned there is more to come.
- Decision making will rest even more on technology – which will lead to many ethical considerations... or the loss of ethics in the decision making process.
- Yesterday the iPad 2 was introduced, need I say more.
- Big advances.
- Nowadays we have more communications via social media. Communications between the young generations of all countries, with a high range of variation, works as bees who pollen. Requirements, needs, expectations, and demands transfer all over the world. We will encounter the same immense awareness in all markets. It means that the customers in all geographical markets will change their demands in the same way of developed countries. Using the technology tools comprehensively, makes the communities being more powerful. In addition, for the individuals using technology tools make them being more certain about themselves. We think these abilities are the fruits of our knowledge and we can live more comfortable, but we are not sure if it is the best way to be happy too. For example staying alert and focused all of the time will make us more excited not tranquil!!! May be “Quality of life” has to be increased in some real ways.
- There will be new technology tools.
- Look at the rapid growth of technology tools in phones, computers, iPads, smart pens, etc. Coming generations will become more and more dependent upon these tools.
- Needed especially in healthcare where knowledge is proliferating at an extremely fast rate, and the sciences demand constant learning. The electronic health record is a start but new tools will help everywhere from the patient’s home to the physician office to the hospital and more.
- The aging population needs technological support systems to remain competitive. These supports provide additional opportunity for those with increased knowledge and experience to contribute longer to the development of new technologies, economies and increased rate of change.
- The import of technology plays a vital role in changing the quality of life. With the aid of technology, individual will be able to improve his daily activities and every aspect of his life and do things faster. Our life is very much different as compared to 10 to 100 years ago. We are able to do many things and much easier with the new discovery in technology in internet, computers, smart-phone,

surgeries/medical treatments for illnesses with the help of equipment that improve the accuracy of the process and faster, etc.

- Technology is a key force in life. Can't live without it. Adds simplicity and complexity at the same time.
- We may just compare our life today with some few years ago and it clearly proves that the same will happen with a greater rate in coming years. We get surprised how we lived in near past without today's ICT facilities.

## **17. Technology – combines Technology tools, 21<sup>st</sup> Century technology, and Nanotechnology, etc.**

- It is all about technology it happening and needing to happen.
- Technology is required in any activity currently making process more effective.
- Technology and the 21<sup>st</sup> Century technology tools – those we know and use already, those that have yet to be invented – underlie all other themes of this study – for good, and for negative consequences.
- Quality progress appears to be evident in most Technology Sectors around the world. Especially in the Health sectors, the Aerospace and Automotive as well as the electronics, computers and internet and phone sectors, and progressing by the hour.
- These three may be titled, “technological Change.” Man and machine are merging: many of the analytical processes will be done faster and better by machines, allowing humans to focus on the underlying comprehension. Automation will continue to make order of chaos. Quality professionals will require deeper understanding of systems and patterns. Risk will continue to increase, as we depend on imperfect machines to provide us with benefits, but magnifying errors. Bioengineering and bio-hacking will open up entirely new applications for quality professionals in the health care, energy management, and structural design areas.
- Technology will continue to accelerate at an exponential pace, replacing goods and services that are commonplace today. This will be caused by the need to find alternatives to depletion of common natural resources, changes in global consumer demand, aging population, changes in global economies, etc. Tools and methods that we know of today will need to be altered to meet the changes introduced by new technology.
- The development of existing and new technologies will be fast and it will influence our life. All relevant technologies are to be considered, especially the so-called NEW technologies with high risks.
- Today, consumers are expecting products to have novelties, multi function, user friendly, light weight, low cost. This could be achieved only through bringing in contemporary technology in product design and process design. The challenge is how we are abreast with developments that are taking place in various fields of technology, i.e. Mechanical Engineering, Electrical Engineering, Aeronautical Engineering, Construction Engineering, Precision Engineering, Bio-Engineering, Electrical and Electronics, Engineering, Material Sciences. Organisations needs to spend significant time and effort in understanding these developments and also application of relevant technologies in their product design, processes so that they meet changing customer needs. There are many examples in the world where technology developed in one discipline is applied elsewhere resulting in significant raise in quality standards and product capabilities, i.e. organizations have to spend significant revenue for Research & Development.
- Companies have to consider this.
- The latest technologies in the 21<sup>st</sup> century are responsible for the many developments worldwide. Such technologies also include technology tools necessary in the improvement and/or development of quality. Together, these technologies can be utilized for the continuous enhancement of quality on a global scale.
- New technologies have great influence on everything. This should cover all new technologies including e.g. nano-, bio- and infotechnology. Combine all them

together into this category. Nowadays you cannot any more consider different technologies separately.

- Technology is today's driving force. It is everywhere in our lives. We work, eat, travel, etc. with it. Its role and use in our daily lives including our work environment is becoming bigger and bigger. With the changes in the society such as aging population technology plays a very important role in health sector, too. That is why nanotechnology has become increasingly important just like the rest of the 21<sup>st</sup> century technology.
- With the development and introduction of intelligence systems people will rely more on technology tools rather than own intelligence. Technology tools will become smaller, more affordable, more powerful and more useful. People will become more dependent upon their use as a memory aid, organizer, and information/communication aid. New technological developments are and will be changing the world. Accelerating rate of technological change will continue. This will provide rapid benefits and also challenges.
- Category: Technology; Technology Force: Disruptive Technology. Technology has always created disruptions in all areas of our society but the pace and magnitude of the disruption is increasing to the point where it is becoming increasingly difficult to project future scenarios involving technology. Innovation in technology is outpacing innovation in the society that uses it and even our ability to imagine what our society might be like very far into the future – which is a major disruptive force in itself. I think all the technology forces listed here could be combined under the umbrella of “disruptive technology.” Category: Socio Techno – a combination of social and technology. Macro Force: A connected world the internet, social networks, mobile technology, citizen journalism, virtual life, etc. are a confluence of social and technological forces, creating an “alter-ego” for society that lives in a different dimension – different perceptions and behaviors around time, space, reputation, identity, belonging/bonding, and other social norms. The interconnectedness of everyone in this virtual world has created levels of awareness that have never existed before in human history. It includes increased consumer connectedness and awareness that shape how quality is defined by the consumer. This increased level of global awareness is already having a major impact on other aspects of society and I believe this is just the tip of the iceberg. This is a brave new world or 1984- Big Brother, depending on other forces shaping (and warring over) this virtual world.

## **18. Bioengineering**

- Continued advances in materials, science, nanotechnology, and micro computers will create new opportunities for extending life and will require sophisticated quality assurance methods to manage.
- Bio-engineering will continue to ramp up and offer solutions targeting specific diseases to improve health-care.
- Biomolecular research is being driven by the explosive growth in computers and robots to automate the process of DNA sequencing. This process will continue unabated until roughly 2020, until literally thousands of organisms will have their complete DNA code unraveled. By then, it may be possible for anyone on earth to have their personal DNA code stored on a CD. We will then have the Encyclopedia of Life. This will have profound implications for biology and medicine. Many genetic diseases will be eliminated by injecting people's cells with the correct gene. Because cancer is now being revealed to be a series of genetic mutations, large classes of cancers may be curable at last, without invasive surgery or chemotherapy. Similarly, many of the microorganisms involved in infectious diseases will be conquered in virtual reality by locating the molecular weak spots in their armor and creating agents to attack those weak spots. Our molecular knowledge of cell development will be so advanced that we will be able to grow entire organs in the laboratory, including livers and kidneys.
- Increasing embedding of products in humans means that there are additional (social, psychological) dimensions to fitness for purpose.
- Big advances, ethics
- Length and quality of life and ability to cure many diseases will be significantly impacted.

## 19. Talent:

### **Finding the right talent to meet company needs becomes increasingly difficult, as companies move in a global direction.**

- Talent will be courted, so we need to take care of them to keep them.
- Education takes years to complete. That which we learn as children will be obsolete when we reach working age. The key will not be just to teach facts, but to instill the love of learning, exploration, creating, and sharing. Rote learning will never keep up, and this is the advantage the US has, at least for 1-2 more generations. This is how we must develop future talent.
- People must be prepared to do activities and improve them, it is the first resource that any company must take into account.
- Talent? It does not exist another enable like this to shape Quality. The good works comes only from talented people.
- Talent is talent. But talent needs to learn in teams approach. The companies need a talent with cooperation skills. It is more difficult to find. Additionally how to retain the talent people nowadays in a world with a generation "Y"? And with a bureaucratic and rigid structure predominant in many organizations nowadays? Quality in people practices needs progress.
- Talent will become a transient commodity as the market continues to globalize. Where the need arises the market will mobilize to work on a global initiative in a particular sector, country or industry. Mobilisation of talent will be driven by available energy resources and the need to maximize effort.
- This trend will continue to grow and the distance between those "who know" and those "who don't" will expand as corporation/companies downsize, right-size to satisfy their stakeholders. Organizational knowledge will leave companies quicker than they can recover, as U.S. jobs move off-shore.
- Talent could be a problem with a potential language barrier. It seems that most of the technical talent resides in individuals that are not US citizens. This could mean that there will be a language barrier. Providing information to foreign nationals may result in copy of our technology allowing other nations to leap frog our products. This may be a particularly perplexing problem with military applications.
- It is a problem now, especially when you set up international operations to find local talent at local salaries. Competition is greater for talent and it is pushing up wages and benefits.
- More and more we are hearing from companies considering new site locations that the availability of the appropriate talent is their number one consideration rather than tax breaks or other subsidies.
- Globalization is only successful if product development and manufacturing is able to serve the unique regional requirements. More companies will need to decentralize functions and staff with local talent.
- Today, you see globally demands on human capital are on the increase and people are finding it difficult to locate talent with adequate experience. Secondly, more and more, we are losing on the knowledge domain, we lose expertise and people tend to become generalist and keep switching from one job to other mostly driven by "currency" and not professional satisfaction. We are now seeing in the world, human capital is becoming not a national source but a global source and we see the whole world is becoming a borderless state. In such a scenario, talent building, nurturing, and management are assuming critical dimension in managing businesses. This is applicable not only in industries but also in

educational institutions, Government, healthcare, logistics, and the whole business domain. Since in many countries the average age is going up probably the retirement age will also significantly increase and the biggest challenge would be how to make people learn new skills and knowledge at an age above 60 to keep in line with business requirements.

- Organizations must find talent people in order to be successful.
- Talent management needs to come in the new world with deep understandings of what keeps the younger generations fulfilled and committed, and how to design the waste out of work so that all effort is fulfilling and focused on meeting the needs of the customer.
- Advanced skills are required to compete in the new technological economy. The rich/poor division widens when those who can, take advantage of new technologies to drive markets, trade and cash flow.
- As product is made in one part of the world but sold in another, the demand for workers who understand “quality” in the eyes of very different cultures becomes very important... and recruiting this diversity (and ensuring they are rewarded by managers in a geography) can be a challenge.
- With the increase in global economic competitiveness and companies move in a global direction, company need to depend highly on people who have the knowledge in this capacity in order to be successful. Thus chasing for the right people/talent for the right job will be an asset to the company to achieve their next higher performance level. However, it will not be an easy task to source for right people as countries like China, India and others are also looking for the best people within their own country.
- The required skills for the work environment will be a mix or integrated strong skills of technical and soft skills where it will be very difficult to find in our typical universities.
- A common theme in conversations with large organizations. Finding and retaining the best talent is a goal and a challenge. I’ve also heard that the US is not graduating enough of the right professions (engineers) to sustain current pace.
- Finding the right talent to meet company needs will becomes increasingly difficult, as companies move in a global direction and the talent pool will be global.
- This should read “Finding the right talent to meet employment (“employment” replaces the word “company”) needs....” Talent, the part that is not inherent in a person, can be greatly enhanced by education and training. This requires “basics” and “advanced learning.” The basics are those things that must be known and understood to be able to grasp the more advanced education and training needed to provide the “talent” necessary. Unfortunately, basic education received in K-12 (and to a lesser extent training) today in the USA is the result of 40 years of decline in public sector education due to incompetent government interference, lack of good pay based on merit, inability to jettison and ineffective or incompetent teachers (especially in science and math) and focus on things other than teaching and learning. This is not such a problem in many other countries, and it is the beneficiaries of education and training in other countries who are making up the “talent” base today.
- Quality is about people. The search for talented people will continue to influence the way we administer this administrative school.
- Its getting more difficult to find talent that possesses the technical depth required along with the strategic perspective to operate effectively in a global environment.

- Education is key for global activities.

## **20. Education, Training, and Learning – combines Faster/Personalized Learning/Community/Training/Education and Certification**

- Education takes years to complete. That which we learn as children will be obsolete when we reach working age. The key will not be just to teach facts, but to instill the love of learning, exploration, creating, and sharing. Rote learning will never keep up, and this is the advantage the US has, at least for 1-2 more generations.
- Education, Training and Learning have been long time driving forces of quality. I am sure that this will be stronger in the future.
- Education costs and minimum job requirements will continue to drive the working population into this abyss. It is important that education be addressed in a way that makes it readily available to everyone without concern for costs. If we keep going the way we are going with Education, we will force the Rich-Poor division in the US as it is in other countries.
- While nationally standardized examinations and graduation rates both indicate that the current generation is the best educated in American history, the amount of knowledge to learn to be successful in any field continues to expand faster than the educational system can keep up. Unfortunately, many of the comments by ASQ members about education are wholly emotional and not based on any data or knowledge of the education sector.
- I selected ETL because it is important to continually educate the global workforce, especially all top management, about Quality, Safety and Product and Process Improvement opportunities and techniques i.e. QMS certification and Lean Six Sigma.
- Education provides the tools to develop future Quality India is an excellent example of what high level education creates for a country. New Software development comes from new and emerging educated towns.
- Education and learning will need to keep up with innovation and change in all sectors. Web-based, dynamic opportunities will continue to increase.
- The growth of more and more advanced degree programs offered via the internet is a sign of the times for many academic institutions... many of the not-for-profit organizations are still offering classroom style training and education... more movement is needed in these organizations to provide e-offerings.
- These areas have to evolve to meet a changing world and changing needs in Quality! There should be a learning strategy to provide a continuum of learning for quality.
- The thirst for “instant information” will drive unprecedented change to our learning models. Access and availability to knowledge will test the notions of “just in time” learning.
- 21<sup>st</sup> century helps people to train themselves by everything and wants them to be trained and developed. This is a survival factor. Customization will extend to way of life and having personal time with technology tools. We won't need to pass general lessons, while we want to live in our own way of life. Self-learning help us to save our time for living not becoming ready to live.
- To be competitive in the world approaching 7 billion people, only differentiator will be the capacity to learn new knowledge through education and training and applying that learning to accomplish business goals.
- Important to develop people.
- The combination of education, training and learning is perhaps one of the fastest ways to promote the appreciation and practice of quality. With this combination

- progress can be accelerated and faster application of quality in products and services can be expected through time.
- An important force in creating an adequate people resource to staff new jobs created by new technology. This education/training/learning should include philosophy, methodology, techniques of quality along with teamwork and self motivation and achievement orientation.
  - In the Era of Knowledge all these field are stiktly linked: continuous learning personalized is fundamental; but also is essential a basic education, longer than now, to prepare for all changes in a longer active life.
  - It is a fact that effective use of knowledge, information, and know-how is of crucial importance for the success of both companies and persons alike. We need to invest in education and training in order to be able to add value.
  - Non traditional learning will be “traditional” in a fast moving world. Learning will be continuous and more virtual.
  - Same reason for Talents. You may consider combining with Talents.
  - How do we make knowledge acquisition and application faster? How can we track the ROI on it as well?
  - The very heart of quality is education, certification, gaining a common understanding of the concept and the methodology, and also as a differentiator among professionals.
  - Life long learning will be a must for workforce to adopt to new requirements and a motivational factor, “learning technologies” will be a growing business segment as cognitive sciences and Info/Communication technologies are expected to provide customized learning methods.

## **21. Education and Talent – Combine**

- This force should be Talent with education being a solution to making sufficient talent available. As technology increases just like a lack of available natural resources will occur so will a lack of people resources.
- A combination of talent (for anything) and educating in the same field is unbeatable. For instance: A combination of practical education and some theoretical education some few years later is very important. Too many people are “over-educated.”
- As populations age, fewer people are entering the workforce and those that do may not have the right skills to match requirements. Additionally, as global demand increases, finding individuals with global experience and talents will be scarce. More and more jobs are switching to virtual-based, limiting true global experience or travel. The way in which people learn will have to change with demographics of the workforce. Skills and experience may outweigh the need for a diploma or degree as finding the right talent may be scarce.
- The most pretty raw materials are man and woman with their know how and skills. It must be increased by learning and by finding the right talents in the globalized world.
- Talents must be recognized and promoted specifically.
- With globalization, an important factor in determining the winner is talent.
- Required talent in enterprise will change all the time and will diverse. To find the right talent for new opportunity will be the key issue in future growth. Finding talent to quickly learn and begin contributing to the “bottom-line” of a company will be a challenge for most U.S. companies. The “knowledge drain” is speculated to be enormous. In many cases, the competition for the right people is harder than for customers.
- There is no substitute for these attributes. Our world demands that if we want quality products the credibility and trust of those products is evidenced by the level of education and talent that is employed by the respective companies.
- Clearly the topic of talent and education is taking on significant new meanings, just as work itself is yielding to new understandings – in many instances neither limited by place or time. Conventional definitions of work and personal time are blurring and technology is making it possible for work to be done anywhere – without regard to age, gender, or ethnicity. Education once thought of as early in life investments that last a lifetime will of necessity change as the rate of change antiquates the idea of higher education in favor of lifelong learning.

**22. Natural Resources: Constraints will increase on supply and usage of natural resources as more global economies begin to develop.**

- Many products contain elements that are or will be scarce.
- Need for and lack of water will drive geopolitical alliances and wars, interrupting commerce.
- I feel that water will become a scarce resource and just be one of many that become scarce due to people taking resources for granted.
- As the third world countries emulate the western world there will not be enough resources available to support everyone at the levels the western world currently consume.
- The limited supply of some “Natural Resources” will imply increasing future cost, greater competition for those resources.
- More people, growing to +9 billion in 2040-59. This will call upon quality to reduce waste and redundancy.
- It is obvious that the limited resources will impact the future of Quality. The use of non renewable resources makes a product expensive and with low people acceptance. The availability will become critical to create processes and sustain them.
- As resources deplete the ability to deliver a greatly expanded manufacturing and logistics base will retract. Efforts to create close to source will be considered. Primary production, heavy industry and commodities creation will be replaced by recycling industries as the indicator of a countries wealth and as an index of GDP.
- Limited resources are available in many categories of raw materials. Forests are needed to preserve the climate, but there is a need for developing nations to “develop” their land. This continuing trend will yield a crisis. In addition, some national governments are in the process of “cornering the market” on certain critical commodities (e.g., rare earths) which will give them an unfair future advantage in the development of high technology products.
- As third world countries begin to utilize more of our global resources, we need to project supplies, usages, alternatives, and constraints.
- As underdeveloped countries increase demand for water, healthcare, electricity, construction materials and so forth there will be a burden on limited resources. We will need to determine how to obtain additional resources quickly or limit the resources that are known.
- As projected in a book written by “The Club of Rome” in the 1960’s, The Limits to Growth, the exhaustion of natural resources, coupled with substantially increasing world population, could see a calamitous decline in the world population, thereby creating a true “new world order.”
- Gas and cement. We are running out of fossil fuels this century. Huge demand for construction materials in developing countries.
- Pent up demand for energy supplies to feed the world’s expanding energy needs will open fresh commercial opportunities for redistribution of coal and oil to parts of the globe where ecological restrictions permit. The USA stands to benefit richly in this market. Expanded utilization of natural gas deposits, breakthroughs in coal liquefaction, and recovery of oil from vast existing North American shale deposits should satisfy domestic energy demands for the foreseeable future and will dramatically expand the role of the USA as an exporter of energy resources.
- Rare earths controlled by China, need any other examples?

- Expansion and development of 3<sup>rd</sup> world nations to become 1<sup>st</sup> world nations, will increasingly draw upon our natural resources.
- Natural resources are becoming increasingly volatile and drive the search for alternates, increasing the difficulty of maintaining quality products.
- With the rapid growth of an increasing number of developing economies, the usage of natural resources – water, fossil fuels, minerals, timber, agricultural land – will increase exponentially if current practices are not changed. Furthermore, climate change, economic forces (cost of extraction), geopolitics, environmentalism, and urbanization are imposing constraints on the supply of these resources. Waste elimination and enhancing effective use of natural resources are the way out in this dilemma. Quality professionals can play a significant role in solving this problem.
- The most risk. We talk about energy and availability of drinking water as a main problem, followed by nutrition and access to raw materials (rare metals). Nuclear energy will become more important.
- That is closely linked with MORAL aspects. Saving of NATURAL RESOURCES is the main principal approach in QUALITY assessment of people activity. Availability of huge natural resources and it's thoughtless exploitation for the endless of small group of people's beneficitation leads to dead contradictions between people and to collapse of human civilization. QUALITY can be considered as a Road Map how to explore and use and save natural resources existed. Article of famous Russian philosopher Ivan Ilyin "Salvation through Quality" was written in 1928 and now is actual for all nations world wise. Please read it in [http://www.benchmarkingclub.ru/about\\_en.html](http://www.benchmarkingclub.ru/about_en.html)
- These are serious general constraints and must be taken into account also by the quality initiatives and activities.
- Natural resources are limited. Companies will shift their business to developing economies as those markets are not saturated, young and growing. Quality must adapt in order to support the changing and challenging different requirements.
- This is one of the bigger challenge to survival on the planet Earth. Natural resources are limited. Current rates of consumption are not sustainable. Quality management requires to focus on conservation and finding alternatives to the consumption driven economies with appropriate quality models. Quality must adapt in order to support the changing and challenging different requirements. Increasing the use of recycle and less use of natural is a responsibility and function of the new enterprises. The need for effectiveness and elimination of waste will be high. Eco-design will began more and more important. Tools to reduce waste will grow in demand. Transformational science approaches will flourish. Radically rethinking our consumption and waste flows will call forth more quality breakthrough methodologies.
- The globe is not able to carry such a population; natural resources are limited, so we need to use it carefully, we need to take over responsibility for the future and future generations, awareness of this has to be improved; we've got just one chance because we've got just one planet.
- There is keen awarenss now, more than say ten years ago, of this issue.
- With global markets expanding and consumers demanding the same goods and services everywhere, we will have to become smarter on how we use our resources in sustainable ways.
- It is a global concern that natural resources are becoming more and more scarce as a result of uncontrolled and poorly planned industrialization. The increasing

emphasis of this issue will necessitate to focus on quality-derived solutions to this globally critical issue.

- Key natural resources are becoming scarce, and not just oil. Precious metals as well. These cannot be replaced, and it will require creative thought to address the shortfall. This has significant implications for business and industry, and therefore quality.
- The earth has a limited supply of natural resources. Power bases will strengthen around control of natural resources while the need to find alternative supplies drives development of new technologies. Those who are skilled enough to use the new technologies and powerful enough to capture control will prevail.
- Constraints on natural resources (e.g. oil, water, minerals) will result in creating new and innovative alternatives. Increasing the use of recycle and less use of natural is a responsibility and function of the new enterprises.
- Demand is increasing world-wide to the point that without significant innovation, there will not be sufficient resources to sustain current levels of consumption, let alone increases.
- Supply and demand for diminishing resources (fuels and natural resources for manufacturing products) will become scarcer and command higher prices – while conservation efforts protect the same. More emerging economies (such as China, India, So. America) demand more and more natural resources, drawing them away from existing economic giants.
- A time will come when natural resources such as pollution free air and potable water will be scarce. Additionally, place to live and oil will not be available freely. Quality will play an important role to manage and improve the natural resources.
- Constraints of natural resources will create new ways of production and consumption. It will accelerate the development of alternatives.
- As the global economies begin to develop, naturally the demand for the natural resources such as food, water, construction materials, energy consumption etc. will be raised. The by-product/wastes generated by the industries will make the environments/situation worse. Awareness of preserving the resources and finding a substitute will be challenging and cannot be ignored.
- Lack of oil.
- Constraints on natural resources will have (already has) as result the need for a different quality approach for all kind of products/services and companies producing them and using natural resources.
- The availability of some natural resources constrains the degrees of freedom for certain industries, new technologies and solutions are needed.
- Globalization is increasingly forcing higher costs of goods by consuming countries which will lead to higher prices of raw material and natural resources in countries that have them to be able to balance their budgets. In addition, naturally, resources will decrease due to its use.
- Our population is expanding, our natural resources are decreasing and we are not being the stewards of those resources in a manner that will compliment our population.
- Constraints on natural resources will have (already has) as result the need for a different quality approach for all kind of products/services and companies producing them and using natural resources.
- Shortage of natural resources is likely to be the biggest threat to the survival of the planet. Hence quality methodologies for more effective use of current

resources and quality for developing alternative sources using innovative quality tools will become important

- The customers will have more tools to evaluate the sustainable development.
- Over the next 15 years, the resource issue will be the major driver for all countries and economies. U.S. peak oil occurred in the mid-80s. Global peak oil occurred in 2010 and there is no alternative energy source developed. Peak countries such as India and China are experiencing extraordinary growth in development and their energy requirements are catching up with the U.S. which consumes the largest share of global oil production. Ethanol is one viable solution but the net energy (energy remaining after production energy is deducted) is one-fourth that of a gallon of oil energy. Remember, the energy in oil was processed millions of years ago by nature. The cost to us was nothing. The energy produced by Ethanol has a processing cost. Furthermore, if you use all the farmland in the U.S. to produce corn for ethanol, then you would only meet one quarter of the annual demand for oil in the U.S. The net energy of hydrogen fuel is in the negative. Hydrogen does not exist in an ancient pool as does oil and therefore it has to be made, which consumes more energy than the hydrogen fuel delivers. The net energy of nuclear power is debatable, but the threat to the planet from nuclear power is clearly a risk at a Chernobyl level. Water shortage is already being experienced by California, Arizona, and Nevada and across the world and the quality of useable water is an emerging topic of discussion. These two shortages impact the cost of food and goods, which puts further challenges on countries to balance their budget as they pay higher and higher prices to import food. Most of the fruits and vegetables sold in the U.S. come from Mexico and South America. What happens when other countries are willing to pay more than the U.S. for this produce. Australia, the largest wheat producer in the world, has a devastated wheat harvest because of the floods. China who has never imported wheat is increasing their reserves through imports because they see the coming food shortage. If oil/diesel prices increased as expected, farmers will weigh the cost of producing an acre of wheat/corn versus the profit or lack of it to work the land. Given the financial deficit and lack of government to be able to do much with to address our predicament, we are heading into the perfect storm: peak oil, food/water shortages and economic stagflation/deficit. Some predict that in 15 years, the U.S. as we know it will revert to city states or regional territories, where communities drive economies and the well-being of their people. The one thing we do know is that the current state cannot continue for much longer. Look what is happening in the Middle East with Tunisia, Egypt and possibly other governments toppling because food is either at impossible prices or is not available and people are at unrest. How does this impact the future of quality? Well, we might revert to a "world made by hand" as we transform into a post-industrial world. Quality will move into the realm of the individual and towns.
- Category: Environment; Environment Force: Increasing climate instability, environmental stresses and resource scarcity create a global crisis of unprecedented proportions, requiring innovation and transformation at all levels of society – from macro/global to micro/personal habits. There will be incessantly become the focus of our entire interconnected global society, sometimes creating collaborations and breakthroughs, sometimes creating intense conflict and perhaps even war. This force is the #1 tipping point for our entire future – which way we tip is still very uncertain. What role can/should Quality play in this? Is

Quality, as it's defined and practiced today, equipped to deal with a crisis of this magnitude and complexity?

- Natural resource scarcity, worldwide, is a big deal and one that will influence much of the world's commercial activity. Consider the obvious: oil, the chase for natural gas in the country, water, the big worldwide problem, and special metals that are increasingly being restricted from export for political reasons. Include energy production as a resource, and coal and nuclear energy become additions to the list. There are very few organizations that will not be impacted by one or more of the above.

**23. Environmental Concerns: Consumers will demand that producers reduce environmental impact and publicly act on environmental concerns.**

- Consumers demand more environmentally friendly products.
- The sustainability depend more and more on environmental protection. The consumers will include the environmental aspects into the new dimensions of quality.
- Oil spills, coal ash, and coal mining disasters will generate public demand for effective quality planning and assurance for energy producing industries to protect the environment. Unwanted inclusion of toxic materials in consumer products will create higher demand for assurance of product quality. Long term storage of high level radioactive waste from hundreds of nuclear reactor sites will require high levels of quality assurance in the packing, shipping, and storage of highly toxic materials.
- This is an imperative – we must be concerned about the long-term negative impact of chemicals, wastes and human actions on the environment.
- This should be combined with Natural Resources and Alternative Energy as “Sustainability.” Human use of the Earth’s resources continues to increase. This depletes some resources, such as water and rare earths, and forces us to consider alternative resources, such as GM food and biofuels. Quality professionals will pay increasing attention to life-cycle costs and environmental labeling. Through systems analysis, we will provide advice on how to lower waste while increasing value.
- Reduction in environment impact comes with a dollar cost. We want cleaner environments but we do not want to spend the dollars to achieve the desired result.
- The exhaustion of natural resources necessitates decisive action in the maintenance of natural resources.
- The intelligent folks in the U.S. (all four or five of them) are beginning to see the immense future costs our lack of environmental policies and practices are creating. Finally, the costs associated downstream are becoming clearer and people are asking that the companies causing the problems be held responsible.
- These two decades, consumers tried to make the producers concerned about the nature, it was not effective. We encounter more air, water, nature and sonic pollution, the producers think it is something normal beside the products. The difference between the consumers and producers is the point. The consumers don’t want to give their life for the products. The producers don’t want to give their profits for the quality of life. We need some other parties to solve this problem. Rules and regulations have to be changed. I don’t think the customers need some serious help from the social authorities. “Quality of life” has to show the people their rights. The qualiticians can’t sit aside when they assert there is a better way to live. If the people deserve a better way of life they want to reach this way.
- Conservation of natural resources, reduction of carbon footprint, protection of wildlife habitat are gaining acceptance as approaches to address environmental concerns in organizations’ pursuit of financial growth.
- It will be a discussion concerning environment, costs and new will be how to keep our responsibility for the world of the young generations.
- Today, in the world, environmental awareness as well as environment responsibilities are on the increase. There is a huge drive to conserve natural

resources and practice 3R (Reduce, Recycle and Reuse). The challenges are in the areas of product design, process design and disposable waste, both hazardous and non-hazardous. Every company is busy with zero discharge in the areas of water and waste. These requirements dictate organizations understanding environmental regulations, steps & methodologies in meeting these requirements and also on long-term develop products and processes which are environmental friendly.

- Japanese program KID's ISO 14000 supervised by ISO and UNESCO can be vivid example of how Quality can play to help next generations to survive. It is too late to change the present generation we have to think about next one we have to teach OUR CHILDREN NOW HOW TO SURVIVE IN THE FUTURE! We are concerned but we have to act, this program is one of the variants for our work.
- Environment is becoming more and more important.
- Company's environmental concerns will be attuned with consumers' expectations. For instance, a manufacturing company is expected to take care of their waste materials to prevent possible negative impact on the community where they are situated. These actions will require quality planning so that all issues regarding environmental concerns are properly addressed.
- This is a catch-all for sustainability and climate change. Our increasing use of resources both depletes them and has worldwide consequences. Quality professionals must begin to understand how environmental consequences affect product design, realization, and delivery.
- Yes, but this is only one facet. New laws and new standard will change Environmental requirement. Environment is a question of survival, and a question of culture and awareness. Environmental culture is a part of Social responsibility.
- As environmental concerns increases, the development of eco-products will be accelerate.
- This ties in with consumer demands for Social Responsibility.
- Environmental concern has been on everyone's mind for the past 20+ years. Environmental care cannot be neglected. General public is more aware of its impact on their lives and health.
- The impact on the environmental issues has been a topic where everyone is concerned. Government as well as Private sectors are encouraged to engage in this issue which is affecting on everyday life. By complying with the environmental laws in their workplace may not enough as more are looking for a proactive approach to preserve the world with a green environment. As we are to see and face issues such as global warming/climate changes, air/water pollutions, etc. the demand from the consumers/public to focus on environmental care will definitely increase.
- Our natural resources are being deplete and the environment is being dramatically impacted by our lack of caution and care. As these issues become more influential on our daily lives the demands and expectations will be greater.
- This is the most critical issue to our life on the planet in its broadest meaning. Our basic life is clearly in danger by environmental devastation and soon very effective initiatives should be taken at all level from global to the lowest.
- Environmental responsibility will be a big issue as consumers will demand that producers reduce environmental impact and publicly act on environmental concerns.
- In future will be more communication about environmental success of a company.

- The combination of overpopulation and environmental abuse in selected regions will have a deleterious effect on the global environment. Society will eventually realize the impact of low-cost and environmentally irresponsible manufacturing in China, and will place greater consideration upon the consequences of their purchases on the environment.
- The cost of dealing with the environmental threats, and the timing, has significant ramifications politically and economically, and both domestically and internationally. In terms of quality, the abundance of the past that made certain practices permissible or affordable no longer exists and new approaches must be found. In terms of the trade position of the U.S. relative to the ROW, the position is precarious and politically, within the US the problems seem almost intractable. Like natural resources, this is a stand alone item.

## **24. Climate Change**

- Water, drought, violent weather will impact markets, as they have in Australia, China and other world locations. This may cause changes in production locations.
- I fear that our endeavours to avoid pollution are too weak and too late. Therefore, our life will be highly influenced by the changes of the climate.
- The rapid environmental changes in the world today are closely associated with climate change. There are so many occurrences which have wreaked havoc on people and countries and many of these are traceable to climate change. There is an urgent need to have a better understanding of the nature of climate change. Otherwise calamities will definitely slow down quality progress.

## **25. Protection of Environment - combines Environmental concerns and natural resources**

- People become more demanding of environmental quality if they become richer. IN the US and Europe, but also in developing economies, consumers will value products that are “climate neutral”, and have a controlled burden on environmental resources.
- We are depleting our natural resources much faster than creating them. We can not sustain this accelerated rate of consumption in isolation. It has terrible repercussions on environmental concerns.
- I believe that environmental concerns and natural resources can be combined under this heading. Protection of environment is key for economies in order to find and use the necessary resources to develop and quality is definitely part of this.
- Quality must play a role in reducing waste, of all kinds, the consequences in a world that will increasingly compete for resources like never before are critical.

**26. Alternative Energy:                      Scientists look to other sources as fuel, including algae biofuel.**

- Oil will run out.
- We have to discover the new energy for future progress of society. Present natural energy will dry up soon.
- Again, it is happening and as the public becomes more aware of the climatological and financial impact of petroleum the attractiveness of alternative fuels will surge causing significant changes in the way we use energy and define “developed nations.”
- Our current dependence on energy sources must change. Based on governmental, economic, and natural resource partnerships, agreements, costs, and operations, we will need alternatives. The future of strong economic outcomes is dependent on new energy sources.
- Most energy has undesired consequences. Nuclear has the problem of disposal of the used radioactive material. Fossil fuel generation results in environmental concerns. Renewable energy offers the best solution but the infrastructure is not in place to handle and distribute the output.
- Many different sources of alternative energy will exist as better storage methods become available.
- The current reliance on fossil fuels is unsustainable to meet the predicted growth of global energy demand. We need to look for alternative and renewable sources of energy. Making the transition may introduce technological, financial, environmental, social and management risks. The concepts, tools and methodologies of life cycle costing, risk (impact) analysis, and change management in the quality profession will be put to good use in such endeavors.
- In 15 years actions will related to improve the costs and efficiency of alternative energy, special in the world of mobility. Nuclear fusion will be propagated.
- Alternative Energy must be developed when it can reduce wastes, make easy people life, safe nature and help people to increase their level of Quality LIFE. For example it is production of biogas using biowaste of people and animals life.
- With increasing population will necessitate increase in fuel requirements. As such, alternative sources will have to be tapped. The identified possible fuel substitutes in turn will need to be carefully studied and its effectiveness as a substitute should first be established. Therefore, there will be greater urgency for further studies to ensure that the increasing fuel demands can be efficiently met by the newly developed alternative energy resource.
- The development of alternative energies is also needed urgently, however, to compensate for the relieving previous resources, around our planet in front of further increasing to protect environmental damage.
- Earth’s natural resources gave us a head start. It is now up to us to determine how to live in a way that is sustainable for this and future generations.
- Alternative Energy sources will be required as current sources are exhausted.
- As natural resources are short supply list, an alternative and sustainable source of energy has to be found. Managing and improving alternative energy will need quality sources as manufacturing needed quality during 19<sup>th</sup> and 20<sup>th</sup> century.
- Limitation of natural resources, rising prices of natural resources, and concerns over environment will be causes of the development of alternative energy.
- This will be a challenge for years to come due to cost and availability of current energy resources.

- This is a true vital issue which is directly related to our life. With the increase in energy demand and its direct impact on quality of life in one hand and the limitations in fossil fuels in the other hand, there are serious imperatives for seeking other resources for replacement.
- This would be better called “Energy” and include both alternative energy and future energy. It is a no-brainer to realize that alternative energy should continue to be pursued. However, it is ALSO a no-brainer that it will be decades before the amount of alternative energy available to support the world will be in place. Quality can come into play in a big way in ensuring the negatives of offshore drilling, terrestrial drilling, coal, nuclear power, and other PROVEN energy sources are minimized in relation to the benefits they provide.
- The only way for having sustainable future is to develop and use sources of alternative energy.

**27. Future Energy – combines Natural resources, alternative energy, pollution, environmental concerns, and destabilization**

- Today's global political climate is a validation of the need to look at alternatives. Costs and pollution need to be reduced.
- The world will need to shift from one that depends on oil for energy and power as supply decreases while oil prices increase. Economies will evolve from ones that are impacted nearly solely based on the price of oil, to ones that are not. Constraints on natural resources (e.g. oil, water, minerals) will result in creating new and innovative alternatives. Technology (impacting energy) will continue to increase at an exponential pace, replacing dependence on oil, etc. to alternatives.
- Combination has to be found, mix of sources.
- Because this combination will make it necessary the humanity to change its consumption habits, consuming much less fossil energy.
- Energy is one of the key success factors for production. As the natural resources continue to diminish with time, we need to invest in finding alternative energy methods. If we cannot meet the energy demands, then we cannot produce high quality products and services.

**28. New Dimensions of Quality: A new collection of competencies will be needed if quality is to have much relevance in a world changing at an accelerating rate.**

- By now, we were in pursuit of higher quality of products or services by economic companies. However, if we think about the future quality. Life of nature might be a real life as a human being. Any convenience might not need to have.
- Quality is a wide concept, an alive concept. For some organizations, a magic management practices – like magic words – to solve all kind of problems, indiscriminately. It is a mistake. The quality structure (system think, concept and practice tolls, in this order) I think is the main differential of quality methodology. To be successfully in many situations I think is need to think how quality can help my organization in this new scenario? And apply quality not as a commodity way but customized according the organization maturity level.
- Education, expectations, innovation, and disruptive technologies will require new and constantly changing competencies and measurement systems. This will be a very dynamic body of knowledge.
- This force should be titled, “Transformation of Quality.” As we integrate management systems – and even question the value of management systems – we are forced to understand the basic principles of environmental, safety, occupational health, security, and other classic controls. We will apply pattern recognition and systems thinking to understand the whole. For the first time every, our profession will deeply explore, expand, and implement the principles of risk management, where quality is but one of several components. Stand-alone quality functions are coming to a close. This will allow our (new) profession to contribute to the government (including political) and business interest in GRC principles.
- Quality is a dynamic element. The same way that at the beginning were only two dimensions (x and y); Descartes added the 3<sup>rd</sup> axis (z) and Einstein brought the 4<sup>th</sup> dimension (time), so is Quality. I think that Quality has “n” dimensions and probably we are around the 5<sup>th</sup>. Could be a good idea to write a book about “The Quality Dimensions.” I choosed this force because it means a day by day challenge.
- The new collection of competencies will include the determination of what the true voice of the customer is, and how to use that input, along with technological and business practices, to deliver value. The rapid diffusion of information will continue to affect expectations, which in turn will affect the perception of value.
- It is not integrated. It remains somewhat functional. Tools have a jargon that is designed to confuse those who don't work in quality. It is like doctors developed their latin nomenclature around the science of medicine to make it a unique way of communication.
- The rise of instant access to information and consumerism, will weigh heavily on dimensions of quality. Brand loyalty will be a thing of the past. Consumers will demand innovation and quality to keep their interest.
- Many of the proven quality tools are reaching their useful life (Baldrige, TQM, SPC, Six Sigma), and alternatives (or blends or hybrids) will need to be developed to assist organizations (and individuals) to find innovative means for improving productivity and performance. Baldrige has evolved from a quality model to an excellence template. Six Sigma has evolved to Lean Sigma, New tools, or adaptations of existing tools will be required to meet the growing changes in society as it shifts from one of production to one of service.

- Quality Management is more or less effective in the fields of products, services, processes and restricted to manufacturing and service industry. It must expand in the fields of government, administration, health care and it must enter the areas of politics, the public, medias, quality of life as individuals and societies. A.o.
- Quality must be able to contribute to the full range of challenges, not just the “typical” quality capabilities.
- Quality is moved over the centuries in the following steps: Quality by Accident – Quality by Inspection – Quality by Assurance – Quality by Prevention – Quality by Perfection and – Quality by Creation. We are in an era where every organization must create Quality, i.e. Engineer Quality in their designs, processes, people, application and disposal of products. This forces organizations to relook in the areas of awareness, appreciation, alignment and actions relating to quality domain, i.e. new methodologies, new tools going away from conventional 7 QC tools to New QC tools to Shainin, Design of Experiments, Mahalanobis Taguchi Methods. This also needs pushing down quality maintenance functions to shop-floor level and quality innovation function to managerial level. So the need of the hour is to learn how to continuously “innovate Quality.”
- MORAL dimensions of Quality is logical and most understandable for everybody. We can get many allies and supporters applying this approach world wide.
- Rapidly emerging technologies challenge the traditional quality tools, techniques, and thinking. Can we, as a profession, evolve quickly enough to stay relevant?
- The strategic changes that the world will be facing – quality must be agile and adaptable to address the huge changes. Traditional thoughts on quality, while they may still be relevant, will not be sufficient to address the accelerated rate of change. New thoughts and competencies will be required. Future will demand that we have far greater skills and competencies in our ability to evaluate, measure, predict – quality outcomes. The definition will go beyond product and/or service to a broader understanding of quality – the experience, the impact on environment, the entire life cycle will be part of the quality. Quality as a organizational function may go away – while quality becomes a part of every discipline – finance/HR/development/sales service/etc.
- It is not about quality alone. We need an integration of many disciplines.
- All of us believe quality must expand into our daily lives and in all sector, also in politics, communities, public affairs, or, for example, in the fashion and tourism! Many aspects, mainly of intangible nature, are not, now, sufficiently developed. Existing tools are still not sufficiently applied and well integrated to specific jobs: it is not easy understand and decide which tools apply when and for what. Quality will become more able to govern together the three dimensions: economical, social, environmental, always more combined and linked, both at micro level and macro level. But the main factor will be the increasing weight of knowledge-based economy vs. current economy; the knowledge-based economy changes completely the chain of value of economics (If I have a dollar, and you have a dollar, and share them, after exchanging we always a dollar a piece. If you have an idea and I have an idea, and we exchange them, after each of us will have two ideas – Dan Zadra). Which Quality in the Knowledge-based economy?
- Quality must include all areas of the life, it is necessary to integrate the quality in the public service, in the politics, in the society.

- If information is the raw material of the future than quality of information will be a whole new world of science and work.
- The concept of quality will be expanded into more broad way as society becomes more complexities. That is the reason why we seek to new solution of quality management.
- New dimensions of Quality will be required in order to define new aspects related to new technologies, changed environmental and social life.
- 20 years ago we did not know we needed software quality assurance, 10 years ago we did not know we needed quality in airport security, what do we need in the next decade?
- There is a real need to have a broader definition of quality with new dimensions. We may start from an objective understanding of “quality of life” and imagine what are the main ingredients to encompass all dimensions. We may need to imagine and think about many other aspects mostly of intangible nature.
- Quality will continue to evolve, no matter if we deal with methodologies, concepts, systems, philosophies, and more importantly, the way quality interact and complement other “managerial theories.”
- New dimensions of Quality will be required in order to define new aspects related to new technologies, searching for lternative energy, changed environmental and social life.
- This is obvious rapid changes will need new competencies.
- The Top Management must become more knowledge about Quality issues.
- Quality has already transitioned from a compliance-based activity to an additional dimension to the culture of business and companies. Lean Six Sigma and the application of customer-oriented quality practices has led to an expanded skill set for quality professionals. The inspector or quality engineer of the past has been replaced by a professional with more evolved soft skills, great general business acumen, and a technical understanding of process controls and preventive action. The “enforcer” has been replaced by the coach, who guides Operations, Engineering, Finance, and Marketing teams to act cohesively and serve the needs of the customer. Quality professionals that adapt will find greater satisfaction, respect, and compensation. Those incapable of adapting will be flipping hamburgers.

## **29. Integrated management systems**

- I selected Integrated Management Systems (IMS) because ever prudent Business, designer, producer, maintainer or service industry provider large and small deserves to have an IMS that is cost effective, reliable, efficient and achieves the expected quality, safety, reliability, social responsibility and customer satisfaction goals and requirements. Instead having to maintain and re-certify 3 or more individual management systems. Simplicity makes Dollars and Sense.
- The need for rapid response to changing market place will demand tightly integrated management systems.
- Quality as a stand alone subject is over.
- An integrated management system is very powerful... as we customize more we need our IMS's to become somewhat modular (so we can pick and choose based on customer/company governance requirements). In driving operational excellence cost-effectively... a global IMS with some modularity is extremely powerful. This is a key quality assurance lever and will continue to be so.
- From a quality perspective, I don't hear many new tools emerging. The discussion is about to integrate the tools that already exist. Large organizations will need to deal with this soon.
- We tend to put forward quality tools as independent and sole saviors of problems that business experience. The truth is found in integrating them better!

### **30. Integration of the quality management discipline with the fields of operations management and management science in business schools, and industrial engineering in engineering schools.**

- The companies and organizations can fulfill the requirements of the quality developments if they use a quality oriented operational management system.
- Quality is an attribute of every business process so incorporating quality and increasing quality integration in those processes should lead to enhanced quality performance.
- Costs continue to escalate and it makes sense to integrate the quality discipline into the fields that share the same tools and process understanding. These disciplines need to be integrated to present a wholistic approach to learning and supporting standards, measurement, and improvement.
- Modern academic training in schools of business administration now includes quantitative and system methods in coursework. The use of systems and quantitative data is now an expected managerial skill. This, plus the technology tools that automate much of the calculations and flow charting, are increasingly making the stand-alone quality function obsolete. Indeed, there are now universities that are finding it challenging to maintain and grow their majors in operations management, especially as organizations also become flatter and less tolerant of "overhead" staff. This is bound to have an impact on the stand-alone quality professional.
- Many of the proven quality tools are reaching their useful life (Bladrige, TQM, SPRC, Six Sigma), and alternatives (or blends or hybrids) will need to be developed to assist organizations (and individuals) to find innovative means for improving productivity and performance. Integrating the quality management discipline into different fields of operations management and management science will result in a new toolkit of organizational improvement tools and techniques. New regulations and global standards will force changes in how quality management and quality tools evolve over time.
- The OR/MS discipline thrives and grows, whereas the quality discipline is faced with declining numbers of members and students. It does not make sense to study quality in isolation of other operational goals, such as speed, flexibility, cost and reliability. Especially for applications of quality improvement in the services and healthcare industries, traditional quality goals, such as variation reduction should be combined with traditional OR/MS topics such as capacity management, resource utilization, throughput-time reduction, and so on. Lean Six Sigma is a successful example of the integration of ideas and methods originating in the quality disciplines (the Six Sigma part), and ideas and methods from the OR/MS community (Lean and Theory of Constraints).
- We must integrate quality management with operations, supply-chain management, project management, etc. in not only business schools and industrial engineering but also in all education discipline. Quality management must become the foundation and way of life in every thing one does.
- The quality community has yet to fully extend their expertise to embrace the reality of the complex systems that will require management in organizations of the future. Process thinking will increasingly yield to system thinking. And mechanistic approaches will yield to organic approaches as organizations come to terms with the limitations of mechanistic approaches.
- We have noticed that operations management is a much better way to study the performance of companies than from the angle of quality management. Also it

looks that operations management is much better organized in academy than quality management.

- The quality management must be an integral component of the education in all courses of studies as well as find entrance everywhere as a management method.
- The integration of these disciplines and schools are necessary in the new field of industrial ecology.
- For cost, quality and productivity efficiency, integrated management system need to be created.
- Quality is not any more a department or a sole function/position. Quality is becoming more and more the way we run businesses. So, in the future, quality will evolve in the sense that it will merge with other management philosophies.
- The Quality Department of the past is already giving way to enlightened Operations, Finance, Engineering, and Marketing professionals who have blended quality tools and techniques with their subject matter expertise. Much of the Lean Six Sigma activity is already centered outside of the traditional quality organization, often because other organizations were early adopters of new tools and practices. In many cases, quality professionals fail to recognize or put forth the energy required to deploy new practices within their organizations, leaving a void that other functions are more than willing to fill.

### **31. Systems thinking approach: considering the basic definition and explanation.**

- This is related to the expectation that integrating quality will improve overall performance.
- Technology has made a system out of about everything. Everything is now connected via computers. For example, the news is now a complex web of “traditional media,” such as the evening news and newspapers, as well as talk radio, internet bloggers, social media (twitter, Facebook, etc.). This is just one example where a few simple venues have been replaced by a more complex system. We have talked about systems thinking for a long time, but now it is truly needed.
- Quality can teach systems thinking as an underpinning to the future of Quality. Demings systems thinking is more important today for successful global leaders than ever.
- Looking at organizations and opportunities from a systems perspective will allow organizations to take actions that are more efficient and effective, as well as sustainable.
- Systems thinking will enable to understand the business as a purposeful system. We can better manage complexity with systems thinking approaches.
- As a valuable managerial skill, thinking systemically will be the norm in the future; quality has a lot to contribute to that and is a great example of systemic thinking.
- If quality does not grow to embrace ever more complex system models it will be left behind. Mechanistic notions of organizations will evolve as our appreciation of organic systems grows and our ability to create and test models makes systems workable concepts.

### **32. Managing Complexity**

- Speed, Education, IT, Healthcare, Resource Management, Family, and Religion will provide a living and working environment that will be both exciting and challenging to future generations.
- Interdependency creates increased complexity. Quality approaches and tools will be needed for better problem solving and transformational thinking.
- Our world is increasingly smaller and more complex. Advances in technology and innovation drive us to be innovative in our daily lives, and in all our approaches – including quality. What worked in simpler processes, organizations, networks, etc., does/will not work now. The complexity we face in everyday activities, and especially in business, requires a different approach than the simpler situations we were used to dealing with before.
- Organizational complexity is now a function of both internal and external factors, as well as the interaction between the two. It also requires the involvement of all levels of the organization, including the executive. In contrast, traditional quality methods, with the possible exception of Six Sigma, have been oriented toward the lower-to-middle levels of decision making and to internal operations. It is now an essential requirement that strategic planning and its implementation integrate the organization's business with its operational practices and resources as well as with the external economic, technological, political, legal, environmental, financial market variables. The quality body of knowledge is not strong in this area, and even when these are addressed, this is not where the C-Level decision makers go to get competency and assistance.
- Customisation/personalisation, access to information/opinion, variety of products/services offered, disaggregation of the logistics chain, all lead to complex systems that need to be managed. A disruptive change to the observable production system that provided the foundation for the theory of quality.
- This is THE MUST today in all activities in organizations and societies. Complexity must be combined with networking, agility, tacit knowledge, etc.
- Processes are getting faster, information is provided faster and globally, complexity is increasing; new approaches have to be identified.
- Whether an individual or an organization is to succeed or fail depends very much on this capability; this is already happening.
- Similar to complexity of everything. Now that everything is hopelessly complex (just open the hood of your car and look at all the wires!), we need means of managing complexity, so that it doesn't manage us.
- Increasing complexity is the result of globalization and the growing demand for individual problem solutions.
- Resilience will be the prime concern for companies due to ever accelerating pace of change and growing uncertainties. Destabilization in many areas would require agility, flexibility (i.e. readiness for unpredictable). Risk management will be a major discipline for business continuity.
- The process is probably one of understanding complexity and the associated risks, vs trying to manage it, as it is likely unmanageable.

### 33. Globalization:

**Globalization contains many facets and creates enormous opportunity and complexity, including global supplier networks and consumers.**

- Products will be developed, assembled across the world as supply chains become faster and better managed. Globalization will continue to change politics and economies as we all try to cope with emerging markets and production locations.
- Globalization will be the main driving forces for quality, of course in connection with other driving forces. Only the products and services will fulfill the requirements of the globalized market which are the best of their categories.
- Companies must think about global products to survive.
- Globalization is a must for the most companies.
- Globalization is a living, breathing, uncontrollable, hugely important transformative force. If viewed with open minds and welcoming policies, there can be cross-cultural and cross-market fertilization, growth, response and respect. Yet, of late, the differences, biases, politics, insulation, protectionism, have been carrying the day, delivering fear rather than collaboration, partnerships, advancing standards of living, care, etc.
- Globalization is not Internationalization. As a member of Gaia, we have a view of wide range.
- Globalization demands a complex organizational learning. Different cultures, values, business approaches, customer needs, customer behavior, stakeholder's demands and forces. The premium: new markets and opportunities. Quality and innovation are crucial in this scenario. The organizations must be integrated into local culture as a regional business and, at the same time, maintain the global overview for the enterprise success. Quality became complex with decentralization and coordination approaches. Leader's education is a key factor.
- This trend continues unabated over the 15 years of the study. We will continue to see global trends and relationships expanding in complexity and coverage of different topical areas. The world continues to shrink in so many ways!
- Here again, this is not a new concept, yet one that North America will continue to struggle with as more and more "blue and white" collar jobs disappear... to be replaced with global networks.
- Globalization introduces complexity and there will be constraints and forces that counter globalization. From a strategic quality perspective this will challenge trends in standardization either regional or global versus local markets and requirements.
- Globalization is a fact of life today, and it will only increase in the future. Quality, including regulations, will be impacted by this globalization and will have to stay ahead of the requirements being defined in new ways or rapidly changed. For example export and import requirements.
- The main relevance of globalization is that it adds a plethora of new variables to the mix of what quality disciplines must increasingly address. It also adds new dimensions that system and statistical tools were never designed to address. These new dimensions include the cultural, linguistic, internal political, and geopolitical factors. These can affect ethical practices and limit the value of quality practices. Globalization also affects the perceived value proposition of making investments in quality and has political implications. For example, prior to the wholesale export of US manufacturing to China, quality in American

manufacturing was supposed to make the American worker and enterprise more competitive via-a-vis other countries – and thus justify government investments such as the Baldrige Award program. But now, questions are being raised as to why the American taxpayer should support such programs if they help China and other low-wage countries lower the living standards of Americans.

- The globalization of society leads to many ethical and moral dilemmas, resolved on through challenging negotiations and, sometimes, conflict and conflict resolution.
- The U.S. moved from protectionism to globalism in three decades. The horse is out of the barn. Saving costs and increasing revenue are powerful stimuli for the next decades, eventually, an equilibrium is possible but not likely since we are used to spending more than we make.
- Industry and all major business operations throughout the world typically recognize that profitability is key to their survival. In order to maximize profitability it is necessary to drive costs down while maximizing quality. In a global economy this is best achieved through modularity and specialization. In the automobile market it is increasingly difficult to distinguish brand uniqueness when sourcing of the constituent parts is both diverse and global. Volkswagen, for instance, would rather purchase a completely designed and pre-tested suspension and ride control assembly from a catalog of available choices than have to design and build this highly sophisticated and complex assembly themselves. There is a trend toward modular engineering in the world today that has been forced by the competitive aspects of surviving in a global economy.
- Obvious
- Globalization is already started to affect us in many ways
- Today, because of globalization, the business environment is changing very fast, rapid pace of globalization on technological progress have changed, market conditions and competitive strengths and today business potential depends on quality, speed, technical superiority, service and product differentiation. Globalisation brings to surface many technological advancements, demanding customer requirements, excess global capacity, pressure on cost reduction and economic challenges in all regions. This groups itself into the following challenges for organizations – stronger competitiveness, higher productivity, higher growth, consistent products, continuous quality improvement, and environmentally responsible company. Organisations today are striving hard to improve in the following areas: Flexibility – increased product complexity, decreasing the production depth, faster reaction, global market place, and meeting global standards like ISO, OHSAS
- We have to explain to everybody that Quality means Quality for everybody. There cannot be Quality for poor people and different Quality for rich people. Globalization provides the standards of understanding of these kind approach. Finally it will unite everybody and everywhere. First of all we have to provide people with the hope for best PQL, if we cannot do it they will do something else, but it will bring much disorders and contradictions and clashes between different levels of PQL.
- We live in a global village with distances being shrunk due to cheaper & faster communication channels.
- Countries are more and more dependent on other countries over the entire globe.
- Because of the speed in worldwide travel and transport systems, globalization will be inevitable. There will be international linkages in the form of people and

material networking and exchanges. The higher quality worker will be more demanded by higher quality organizations. Consistently high quality material suppliers will also be demanded and this will be known through global networks of information and exchanges. Eventually, extent of globalization will dictate the quality of goods and services worldwide.

- This is a big general trend and it must have great impact also into professional quality related development in order to ensure the relevance of the quality profession as a whole.
- Our market is no longer local or national but global. Organizations are looking for new ways to conduct business at a cheaper costs and this means looking at ways to drive cheaper labor into their business models. The task is how to do this without adversely impacting quality as the cost of poor quality could greatly outweigh the cost savings from global sourcing.
- Yes, Globalization will continue and intensify. Globalization contains many facets, both positive and negative and will create enormous opportunity and complexity, including global supplier networks and consumers. Quality is crucial in this scenario and will become common standard for many product, so diffusing business approaches, customer needs, and customer behavior. Different will be the situation for many services, for tailoring of product and services related to habit, language, culture, applicative knowledge, maintenance support and post delivery up-grading.
- Globalization increases complexity enormously; neither ideas and information nor processes and products are limited to a specific region; thus all societies will change dramatically.
- This is an overarching fact. With instant communication and the ease of flow of the M's of manufacturing and service, this has to be a very important consideration.
- With the advent of technology and communication tools, the world is becoming a smaller place with relatively equal opportunities for everyone.
- Globalization is an inherent characteristic of the world. The human race may have discovered globalization over the past 100 or so years. The world as a living system has always been global. The human race either learns to capitalize on the total interconnectedness of world resources or it will not survive. It is entirely possible that only a limited number of humans will survive a series of major natural or man-made catastrophes.
- Economies are linked in global dependencies. Technologies enable seamless interactions around the world. Disparities in labor markets (wages) promote global alternatives.
- Globalization will change the ways of competition, production, consumption, and trade pattern.
- Boundaries are vanishing, each one is coming closure. Whole globe is a small market. Only those products and services will survive which are globally acceptable.
- Global business activities generate many different challenges for companies: new product development has to consider the constraints in the different target markets, supplier networks and design centers are spread around the world. The coordination of these activities is getting more complex. Management has to consider different cultural frameworks, etc.

- Globalization continues to be a necessity and a challenge. Although many organizations have gone global, some are finding it difficult to achieve the desired results.
- The world is much smaller, access to other markets greater and the demand to share the wealth of talent and capitalize on the availability of local assets is required.
- A vehicle can have parts manufactured in 40 different countries. Globalization is the norm and a common understanding of quality is needed, since customer – all over the world, understand and demand high quality products and services.
- Globalization is a tide that will not be turned back, and while earlier studies have placed “Globalization” at the top of the force parade, it will certainly stay there, requiring organization to come to terms with global supply chains, global platforms, the case for global standards, and ultimately the need to understand differing customer needs based on cultural and economic considerations. There are powerful and subtle differences of globalization that have yet to be understood. If competition was once delineated based on borders, and economy understood only as discrete nations, new world views are beginning to emerge.
- Boundaries are vanishing, each one is coming closure. Whole globe is a small market. Only those products and services will survive which are globally acceptable.
- Delivery of tomorrow becomes a high global responsibility.
- Internet connectivity has reduced the practical size of the globe and our partners and suppliers that typically were within a day’s drive are now scattered around the world. We purchase and partner with companies for political as well as economic reasons, and the drive for consistently lower labor costs will result in the continued exploitation of China and India. This transfer of manufacturing will continue to have the collateral impact of the transfer of wealth to those regions. Americans will continue to be challenged to find a role in global manufacturing, and will continue to rely upon the defense industry and public sector employment to bolster a failed economy. Opportunity will be plentiful for quality professionals that are willing to relocate, develop an understanding of cultures beyond their own, and continue their professional development at a pace that exceeds that of their colleagues.

**34. Shifting Market Focus: Companies will shift focus from developed economies to developing economies because the populations in these markets are young and growing, which makes them rising consumers, producers, and providers of capital, talent, and innovation.**

- Demographics will change, new requirements born.
- The emerging markets China and India will have great influence in future Quality requirements and design. The new economies have such a great impact in population and consumption that companies are redesigning products to meet these fresh markets.
- New business opportunities and mainly cost reduction (actual technologies and products) and innovation (new products, services, partnerships) will be drives for this shifting. Additionally new demanding economies open opportunities for using actual products and new according the culture and needs for these markets.
- The regulatory environment is far more conducive to companies in several countries, vs. the U.S., when introducing new products, when testing products and so forth. This trend is expected to continue, as this is not a new phenomena.
- How quality is defined in these markets will need to be defined by these consumers and markets and that may or may not be different from what we do today and how we approach this today. Will products and services developed for these markets be able to have broader entry into established economies because they are of higher value and lower costs?
- Population drives consumption and productivity. Population shifts will also precede economic and political power and control.
- You can get higher growth rates.
- China, India and other emerging economies represent huge human capital, and they are growing markets, thus offering a large potential for profit.
- The young generations of developing countries are not active these decades. They have many things to be amused. Their parents, society, and government full support them. This is a perfect situation, with some unknown consequences. You know a brave generation train a conservative generation and I should say a protector generation train a lazy generation. In developing countries, the young generation has many challenges. They learn to solve their problems and to try to reach their wishes. This is not an easy life, but a fruitful one. In future decades, we need a curious and creative generation to find some problem to solve. The protected generation is not motivated to find problems. In developing countries the young people can going on without problems.
- This trend demands innovative products and services that will cater for the unmet needs of the emerging economies. The new pool of young talents and capital that will be available in these economies will be a major driver of future growth in the global market.
- Companies will see these as market opportunities but may be unable to manage the supply chain, understand differences in customer requirements and preferences, and manage a workforce that is dramatically different with what has been managed in the past.
- This is a big general trend and it must have great impact also into professional quality related development in order to ensure the relevance of the quality profession as a whole.

- The market will shift to where the money is. Some industries will move to emerging markets because the economy is now able to support developing countries, or the government has decided to encourage development of manufacturing plants. Advanced nations will recognize new markets generated by technologies and innovation.
- Markets will change from west to east due to the number of citizens; companies have to decide on their strategy, are eastern countries markets, supplier or source of resources; are companies producing their goods in the western world and deliver these to eastern countries, are they importing mass-products from there or are companies moving to produce in eastern countries.
- The emerging economies will be the major drivers of innovation and growth in energy consumption.
- The world is small... and the lessons we are learning from low- and middle-income countries abound. Learning is happening across industries, cultures and countries and professions.
- The developed countries have saturated markets. They are not growing. The developing world, especially the "BRIC" economies, are growing much more rapidly. Quality expectations and systems will be different than in developed countries; they have to.
- This is just another layer of change... as we change our systems must change.
- New business models will emerge with the technological advancements and developing economies. Internet brought e-commerce and whole marketing strategy got changed. Aging population in some countries vs young population in other countries will place a different kind of demands on businesses. BRIC (Brazil, Russia, India and China) countries will become super power in terms of economy.
- As growing demand creates a new market, so growing purchasing power will shift market force from saturated markets to growing markets.
- Companies functioning in developing countries (already current reality) will have to adjust to the local competencies and cultures having as results a new/modified approach for quality aspects and dimensions.
- Pricing demands, supply demands and availability of basic components needed to support the world economy will require companies to look for opportunities to lower prices while utilizing resources that are reliable and local.
- This force will be a decisive one in future as due to globalization and new technologies, the new economies with their highly populated markets will collectively represent the biggest portion and therefore, will determine global market behavior.
- Companies functioning in developing countries will have to adjust to the local competencies and cultures having as results a new/modified approach for quality aspects and dimensions.
- The companies started already with this new focus.

**35. Increase Global Trade:      Increased flow of global goods and trade results in pricing transparency and new networks of engaged customers.**

- Currently information moves the speed of light, expectations are that product and services also increase in speed.
- For the development of a company. Global trade is needed because attractive market will spread widely.
- The world economy is recognizing that buying the best from the right place provides a competitive advantage and quality handicap.
- Will change the logistics systems across multi-cultures, multi-legal boundaries. Increases the role of trust in providers vis-à-vis innate quality.
- Specialization
- The world will be open due to the communication possibilities.
- The increased flow of global goods will be from other countries into USA as the US becomes increasingly more dependent on goods and services we cannot or will not produce here.
- Increased global trade is currently having significant impact in many ways. This impact will continue to increase with increased trade.
- Emerging economies off shore. Global trade continues to reflect the natural development and progression of the world economy.

**36. Destabilization: Energy, finance, climate, and healthcare will continue to destabilize, making it difficult for long-term planning.**

- The trends of the past three years have seen destabilization in all of these areas. There are significant political forces pushing in different directions with different agendas. The net result is stagnation of progress and continued debate about what is or what is not the best path forward (for their own consistency).
- Whether it is a revolution, a tsunami or earthquake, etc., we have to think about the supply chain differently in the future and how to assure market access for our products. What will Quality Management do differently to better anticipate these, have plan B's, or recover quickly and effectively from these while driving costs down?
- These factors have been de-stabilizing for some time and will continue to do so. This destabilization makes it difficult to plan for the long term, unless it is planning for destabilization and chaos.
- Most of the quality body of knowledge is based on relatively long-term data analysis and business transformation. The traditional variables have been internal and operational. The notion of long-term seems to be shrinking daily due to factors external to the organizations that implement these quality strategies.
- The overuse of energy and natural resources, coupled with global economic competition, will result in destabilization of critical institutions: education, medical care, possibly security, and perhaps even governments.
- They already are having the effect. We are moving too slow in adjusting to these forces therefore they will continue to destabilize. They are big forces that need constant focus by everyone. Right now, we are still an individualistic society that is working under the demand and supply equations promoted by Adam Smith in the 18<sup>th</sup> century. However, there are notable examples of change but not on a widespread basis and not well publicized in the media.
- Economies and nations will continue to be unstable caused by the influence of external forces such as balance of trade, labor rates, unemployment, inflation, interest rates, etc. The nation's population will have more and more access to global information in which to compare and rate its own national performance. The rise and fall of economies and collapsing economies will shift global power, influence, and demand. Countries will have to shift infrastructure and services to match the current environment.
- These factors are not very manageable. Climate trends show that environmental impact is very serious. Unfortunately, these 4 factors have a very powerful interaction on each others. You can examine their relation by assuming a situation that one of these 4 is in a crises. You will realize that the other 3 will soon increasing their risk rates. It means we are not dealing with 4 separated factors. They are in a single system. They are the sub system of sustainability systems. And sustainability and survival is in front of "quality" researches. If we save the life as a worth full asset, we could give the live creature, "quality" as a gift.
- Geopolitics, climate change, financial volatility, and migration of talents are difficult to predict with a high degree of certainty, and they may have profound implications to the business environment. Thus, organizations have to closely monitor these patterns, and be prepared to act effectively in a timely manner to deal with adversity or to exploit rare opportunities. These are the functions of risk

management and strategic management that emphasize both preparedness, agility and adaptability.

- Before everybody is willing and able to understand the changes in our climate are visible a period of destabilization will happen.
- Yes. It seem very unlikely the situation could change in the next 5-10 years. Each of these forces disrupt society in various ways that don't appear to be rationally controlled by the private, public, or world bodies. In the global economy we are now linked in a tapestry. The inter dependant nature of world economy will allow disproportionate influences on national economies. Global demand for services and good will impact supply and demand in certain parts of the world. We have to consider Quality as a stabilizing factor because Quality means look also at medium term, use Pareto law in evaluating trends, means prevention, means attention to remove causes not only effects. (But I am not sure destabilization is the more suitable word.)
- Because of the high uncertainty caused by such a combination combination
- Energy, finance, and healthcare are industries driven by profit, but necessary by even those who cannot afford them.
- Long-term planning is difficult with today's level of destabilization, and that shows signs of increasing in the future.
- Destabilization will be a short-term problem that will be resolved with a dynamic equilibrium.
- Economic pressures, global dependencies, demand for natural resources, and faster developing technologies put pressure on a world wide scale. Every facet is linked to other faces. The global system of economies, governments, technologies and markets result in shared volatility.
- Signs of destabilization already seen in the world due to political and economical forces.
- As infrastructure declines and budgets continue to be unpredictable, there will be increasing pressure to deliver value in this environment. Quality systems oftentimes come under pressure in destabilized and uncertain environments.
- One need look no further than to recent actions in the Middle East and their impact upon gas and oil prices to find a typical example of destabilization. World leaders in office for decades are falling, and with the transfer of power comes unstable commodity prices, fluctuations in supply, and a weak Wall Street. Energy supplies are constantly at risk from both political instability and commodities trading, and the development of long-term product pricing and product strategies remain at risk of drastic changes in energy of raw material pricing.

### 37. Global Power Shift

- There is a global power shift – in China and India power will rise, US and European power will decline in influence.
- This has started to happen after the Cold War was over. Everybody has taken note of the rise of countries like China, India, and certain Muslim countries.
- China, India, and Brazil economical growth and ability to compete. China is now the 2<sup>nd</sup> economy in the world.
- Category Economic Economic Force: Global Power Shift. I chose Global Power Shift as the umbrella term, because I believe this describes the biggest impact on the world economy and Quality. For example, I believe that China will most likely replace the U.S. as the dominate economic world power (which I believe will most likely happen sooner than 15 years from now) and the dollar will most likely be replaced by the Euro (which is already being seriously considered by world economic leaders) and then perhaps by the yuan (a logical consequence of China as the dominant economic power). If this occurs the way it has occurred throughout history – the dominant power rising, the former dominant power falling – it will be like the American economic empire replacing the British economic empire. Will quality still be defined in Japanese & American terms, as it tends to be today, or will it take on new meanings, dimensions, characteristics, and practices, based more on Chinese culture and the cultures of other emerging economic powers? Will this cause ongoing global instability and if so, what role does quality play when the world remains indefinitely in a “survival” mode?
- Emerging Nations
  - a. The consideration of emerging nations can no longer be a view of undeveloped or even underdeveloped areas that lack sophistication or economic power beyond agricultural exports. Emerging nations, especially in Asia have growth rates that are significantly higher than the U.S. or Europe and they have products and services that are both sophisticated and competitive. Further, the average age of both workers and the general population in emerging nations is much younger, and this impacts what they consume and how they work.
  - b. One surprising phenomena is the somewhat sudden appearance of very large firms, especially in India, that have global reach.
  - c. An informed quality strategy needs to carefully consider how it will deal with and respond to these emerging nations. Step one is to examine assumptions.
  - d. The conclusion is that if we are to prosper as a country, we really need to understand what the emerging nations want and need that we can provide.

### **38. Globalisation/Market Volatility/Shifting Market Focus/Increase Global Trade**

- Products will be developed, assembled across the world as supply chains become faster and better managed. Globalization will continue to change politics and economies as we all try to cope with emerging markets and production locations.
- The rise and fall of economies, and collapsing economies will shift global power and influence. Countries will have to shift infrastructure and services to match the current environment. For example, although China was once the low cost country of choice due to lower labor costs, rising labor costs will force China to compete globally on other factors such as a glut of supply or technology leadership.
- Globalization will offer many opportunities to improve the world, especially in developing countries. But it also has a lot of threats, i.e. by an increase of power of large and rich countries, companies and individuals.
- We should combine these factors since they are highly correlated.
- Because it seems to me there are many and evident the linkages between.
- Because of the strong relationship among them, increasing complexity and uncertainty.
- Nowadays anything that happens anywhere in the world affects the rest of the world almost instantly. In an age of communication, it is no more possible to keep anything local. Each political or economical change in anywhere in the world results with market volatility. Shifting market focus is a reality of today's business world in connection to the global shift which has been a popular subject for the last ten to twenty years. The aging population of the developed countries in the last two decades has resulted with a shift of workforce, which the richer natural resources in the developing regions of the world has been attracting more and more investors from developed countries. This is one side of the equation for producers. The other side of the equations is the demand and the target market for these products and services. The vibrant, young population in the developing countries has been the driving force for new product development for some time now and this will be the case for the coming years.
- As applications harness the power of information, people will have information they need to assess quality, performance and pricing like never before.
- Combination and repeat of previous forces.
- Could be combined to shifting global powers.
- Such rapid changes in market and global trade requires new approaches and mind set of the quality professional.

### **39. Global Financial Stabilization – combines Globalization**

- Increasing globalization provides opportunities but also with risk. As we've seen in the past few years, the economic collapse of one country has a domino effect on the economies of others, and the global economy overall.

#### **40. Healthcare**

- Healthcare was once a right but has become a privilege. Demand will try to reverse this model as healthcare becomes a commodity.
- The aging population and obese population need to be motivated to take responsibility for their health. Companies need to lead the way and make this a requirement of employment and a major initiative in their outreach with community activities. This is not a problem that will go away as the aging population passes on.
- I would call it healthcare, from cell formation, to science, to children, to families to senior and aging and end-of-life care. I would also call it call to wellness and healthy lifestyles. Again, technology intervenes and can accelerate. Again, globalization and culture affect this area.
- Big cost
- With an aging and wealthy population, the luxury of advanced healthcare is a substantially growing market.
- Healthcare will look different to us as the healthcare on star trek
- Aging population, increasing costs and medical technology are really challenges for the future. Healthcare will be on the agenda for many years.
- Aging of the population, increasing demands of chronic disease, costs spiraling out of control and causing the US to be less competitive in all global markets, impact of health care reform on the health care providers and all business/government in the country.
- With the many advances in technology, and with the increase in aging populations, this arena is exploding in activity, and opportunity for quality improvement. While many efforts are focused on error prevention and efficiency in healthcare, the costs continue to rise, especially for medications. In some cases, 90% of the cost is to pay off old lawsuits and build up the bank of new lawsuits, thanks to politicians, lawyers, and lack of tort reform.
- The growth of citizens wanting access to healthcare, along with an incredible frontier of health based technologies that are hard to even imagine will require quality to be embraced in healthcare as the expense will be intolerable without taking waste out. I quite comfortable adding mental health into the healthcare label.
- Healthcare costs in the U.S. The United States cannot compete with the rest of the world with health care costs here double what they are in the next worst country. Paying double for care that ranks no higher than 19<sup>th</sup> in almost every dimension is just not sustainable. The cost of health care in each automobile produced in the U.S. is greater than the cost of the steel.

## NEW FORCES

### 41. Integrity

- It is larger than Ethics, Global Vision, integrates Increase Global Trade, Rich-Poor Division, Globalization and Destabilization.

### 42. Competitiveness

- a. The ability of US to compete in world markets has suffered greatly and has resulted in the export of the jobs that inform today's unemployment rate. Multi-nationals have responded by going off shore and the outsourcing movement has done the same for many services. What has been clear in the past is the direct link between competitive position and standard of living. Again, in the past, the prosperity of America has come from ability to compete. This ability needs to be restored or at the very minimum, not allowed to deteriorate further.
- b. I would think improved competitiveness for the US would be at the top of the list.
- c. In fact, I may be missing something, I consider its absence to be significant.

### 43. Management Appreciation for Quality

- a. In the 1980's, Japan did the US a great favor. It provided us with a clearly defined threat and one that could change the way we live. The threat was with quality products. The threat was real, it was important, and it was getting more destructive, the longer we did nothing.
- b. It was the greatest rallying point we could hope for and the rally did take place and change was made and the US became a lot better at producing products and services, and many of its customers returned. The threat of superior competition was the wakeup call for a great many US executives. They became willing to get better, and quality management provided the ability to get better.
- c. For somewhat unrelated reasons, Japan went into a decade long economic slump, and the perception of the threat diminished.
- d. Today, the U.S. is threatened, but the threat is not focused. It is less apparent. We are becoming the boiling frog. Most CEO's are vitally aware of competition and how to deal with it, but quality is not the weapon of choice it once was. (This is my perception only. I may be completely wrong!)
- e. It is much tougher today to talk a CEO into adapting quality management as the means to improve. Assuming this is true, or at least partially true, it is a threat to the quality professional.