STRATEGIC ISSUES AND TRENDS

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Mass Migration Changes the Face of Engineering

Demographic forces and globalization will drive international migration to unprecedented levels by 2029. The Institute for Alternative Futures forecasts that there will be more than 390 million international migrants in the year 2029. The number of migrants has more than doubled since the turn of the century, from 175 million international migrants at century's close to 390 million today, and is larger than the current populations of the United States and Germany combined.

There are a number of forces driving this unprecedented migration, including:

- A rapidly aging population in the developed world
- A growing population of younger and better educated workers in the developing world
- The continued growth of multinational companies and other institutions
- Globalization driving the worldwide integration of economic, cultural, political, religious, and social systems

Societies in the industrialized world, from the United States to Japan, are aging rapidly which is driving demand for younger workers. By the year 2030, fifteen percent of the population in the developed world will be over the age of 65 – the highest percentage in history. Developed nations, especially in Western Europe and the developed Asian nations, will struggle to replace retiring workers while India, Africa and the Middle East will have young, growing populations looking for work.

Europe will be the most affected by the mass migration of African and Middle Eastern workers. America will see increased immigration from Latin America, while Japan will attempt to delay widespread migration as long as possible – instead looking for technological solutions, such as advanced robotics to fill labor demand. Countries in both the developed and developing world will see higher levels of internal migration and urbanization leading to increased demand for water, energy and transportation infrastructure.

Multinational companies are creating a global corporate culture that is driving migration at the highest skill levels. Well known companies such as IBM and GE have expanded their global reach over the last decade. Newcomers, such as India's Tata Steel and China's Haier, used the recent economic boom as an opportunity to buy smaller, older industrial companies in developed nations. Increased globalization of leading companies is likely to continue as the world economy recovers. In the process, these companies will create corporate cultures that cross national boundaries. While each culture is unique, they collectively provide a

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common set of soft skills and a frame of reference which makes mass migration easier.

The creation of a global corporate culture is part of a larger process of globalization that is integrating economic, cultural, political, religious and social systems. Skills transfer is easier where economic and cultural backgrounds are similar and global culture encourages migration, which in turn causes further integration. As these forces feed off each other, they create momentum for mass migration.

Engineering is a global profession and engineers have been at the forefront of the mass migration trend. Immigrants make up a large portion of engineers and engineering students in the U.S., Canada and Australia. The European Union is also looking to increase the number of highly skilled migrants through new immigration programs such as the proposed Blue European Labour Card. Engineering is also one of the most mobile professions, with engineering talent often migrating both within and between developed countries.

ASME Implications

The engineering profession will be challenged over the next 20 years to create global standards for an increasingly global engineering workforce. Engineering schools have been emerging rapidly in developing countries such as India and Mexico. However, rapid growth has left many of these engineering graduates without the skills needed to be successful. ASME can play a constructive role with its partner organizations worldwide to improve the education and skills of the global engineering workforce.

Engineers will work and travel across national boundaries, creating a membership of world citizens and they will expect their professional organizations to have a global perspective as well. ASME will need to accommodate these changes occurring in the global engineering workforce; and it will need to reflect that global membership with their leadership, their product offerings and membership services. Virtual and online products and services will be in high demand by a technologically savvy and highly mobile membership.

Mass migration will impact the following ASME strategic objectives:

- Better serve our core customers (C1)
- Secure, serve and incorporate emerging markets and technologies (C2)
- Stimulate & support diversity and active participation in all Communities of Interest (I1)
- Develop new and expanded market relevant content (I2)
- Provide effective representation and advocacy for the engineering profession (I3)
- Improve coordination and effectiveness of internal/external communications (I4)