Grand Challenges for Engineering

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Rarely has an idea captured the imagination of professional practitioners, policymakers, students, and the general public as rapidly and forcefully as the National Academy of Engineering’s Grand Challenges for Engineering (www.engineeringchallenges.org). Proposed in 2008 by a committee of 18 distinguished engineers, scientists, entrepreneurs, and visionaries, the Grand Challenges identify 14 goals that will make it possible for people all around the world to thrive. The idea was embraced immediately and has been accelerating ever since.

The NAE Grand Challenges are having an especially powerful inspirational impact on education. The Grand Challenge Scholars Program (GCSP) has been adopted by dozens of colleges and universities across the country, and President Obama recently announced a major initiative that is propelling it onto well over a hundred more campuses—including Case Western Reserve University.

There are also numerous activities centered on the Grand Challenges at the K–12 level. For example, a high school in North Carolina frames its entire curriculum on the NAE Grand Challenges, and another high school in the state of Washington has incorporated them across its classes. The principal of the Washington school said “they are the best educational motivator I have found in my career.” Other K–12 schools around the country are actively considering these models.

There has also been a series of large international events focused on the NAE Grand Challenges. Global summits were held in London in 2013 and Beijing in 2015, and the next is planned for Washington, DC in 2017. Before these international events, participating universities organized two national and six regional Grand Challenge summits to stimulate conversations on the importance of engineering and science in maintaining and enhancing our quality of life. A Business Week story about the first one summarizes the power of the NAE Grand Challenges: “Students may resist geek studies. But they'll flock in for the opportunity to change the world.”

Bio: Alton (Al) D. Romig, Jr.
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Alton D. Romig, Jr. is the Executive Officer of the National Academy of Engineering. Under Congressional charter, the Academy provides advice to the federal government, when requested, on matters of engineering and technology. As Executive Officer, Dr. Romig is the Chief Operating Officer responsible for the program, financial and membership operations of the Academy, reporting to the President. Prior to joining the Academy, he served as Vice President
and General Manager of Lockheed Martin Aeronautics Company Advanced Development Programs, better known as the Skunk Works ®. Dr. Romig spent the majority of his career at Sandia National Laboratories, operated by the Lockheed Martin Corporation. He joined Sandia as a Member of the Technical Staff in 1979 and moved through a succession of R&D management positions leading to appointment as Executive Vice President in 2005. He served as the Deputy Laboratories Director and Chief Operating Officer until 2010 when he transferred to the Skunk Works.

Dr. Romig graduated from Lehigh University in 1975 with a BS in Materials Science and Engineering. He received his MS and PhD in Materials Science and Engineering from Lehigh University in 1977 and 1979, respectively. Dr. Romig is a Fellow of ASM International, TMS, IEEE, AIAA and AAAS. Dr. Romig was elected to the National Academy of Engineering in 2003 and the Council of Foreign Relations in 2008. He was awarded the ASM Silver Medal for Materials Research in 1988.