



Credit: Richard Lerner

Science Across Virtual Institutes (SAVI)

Science Across Virtual Institutes (SAVI) is an innovative concept to foster interactions among scientists and educators around the globe. It is based on the knowledge that excellence in STEM (science, technology, engineering and mathematics) research and education exists in many parts of the world, and that scientific advances can be accelerated by scientists and engineers working together across international borders. Virtual institutes that connect researchers with common interests and goals will have a great impact on solving important societal challenges.

The primary objective of SAVI is to facilitate collaboration among scientists and engineers from various countries. SAVI will build on relationships initiated via National Science Foundation (NSF)-supported teams of researchers, research institutes and universities. These virtual institutes serve as research hubs where new ideas originate, diversity is appreciated, multidisciplinary research is fostered, the next generation of globally engaged STEM researchers is nurtured and long-term professional relations are developed. SAVI will advance a new, interactive paradigm for conducting research well into the future.

Why SAVI?

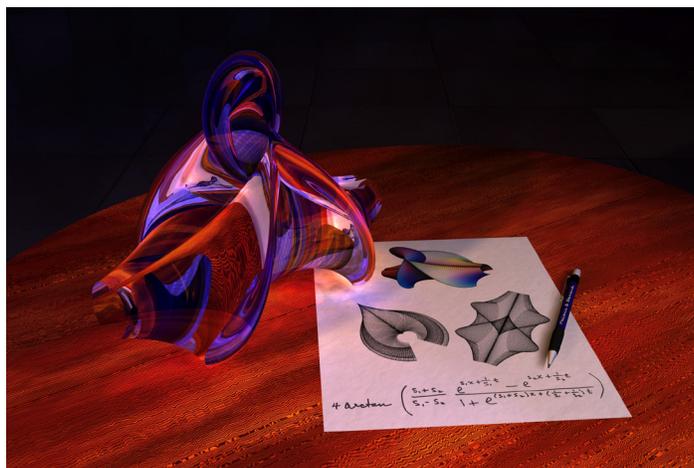
A virtual institute will serve as a catalyst to foster activities efficiently and economically, and will seek to:

- create a uniform platform for broad sets of international collaborations;
- bring leading researchers from various countries together, both virtually and physically to coordinate their work on problems or issues of common interest;
- create research partnerships among NSF-funded U.S. institutions and other institutions around the world to address global scientific challenges at the frontier;
- strategically leverage NSF funding with new funding opportunities from around the globe;
- leverage complementary intellectual strengths and share unique research facilities;
- mentor and train junior researchers by providing them with opportunities to network with research leaders within the U.S. and abroad; and
- create opportunities for scientific collaborations within the U.S. and across the globe to work across disciplinary, institutional, geographic, linguistic and cultural barriers.



Benefits of Partnership

SAVI will provide a mechanism for U.S. research communities to build long-term, structured collaborations with partnering countries in STEM fields. These partnerships will make a greater impact on research and education, which fuels economic growth, prosperity and well-being. With funding also made available from partnering countries, SAVI will provide a virtual yet structured framework to stimulate interaction and collaboration in emerging, new multidisciplinary research and education areas, in order to address important global challenges.



Credit: Richard Palais and Luc Benard, University of California at Irvine

SAVI Pilots

The following three SAVI pilot projects demonstrate SAVI principles and serve as examples of the diversity that is possible among envisioned virtual institutes.

Wireless Innovation Between Finland and U.S. (Wi.Fi.US) provides a platform for building long-term research and education collaboration between the U.S. and Finland in the field of wireless networking. Finland and the U.S. are world leaders in the field. Principal investigators (PIs) from nine U.S. institutions are involved in six active NSF awards in the area of dynamic radio spectrum access and have formed a virtual institute. SAVI Wi.Fi.US will connect them with a Finnish counterpart team, consisting of several individual PIs who are independently supported by the Academy of Finland and Tekes (the Finnish Funding Agency for Technology and Innovation).

The Virtual Institute for Mathematical and Statistical Sciences (VI-MSS) connects two existing NSF-funded national mathematical and statistical research institutes with several Indian research institutes. India and the U.S. have strengths in different facets of research in MSS, making it important to build a long-term, structured collaboration between the two countries in these foundational sciences that are a key to innovation in a data-centric world. VI-MSS will address many global challenges related to sustainability, cybersecurity, health and extraction of useful information from massive and complex data, among others. Partnering Indian institutes in this pilot are supported partially by the Department of Science and Technology (DST) in India.

The Physics of Living Systems Student Research Network (PoLS SRN) builds bridges of interactive communication between cadres of researchers worldwide who share research interests in the physics of living systems. It is a trans-institutional, community-based network of graduate students and their faculty mentors. The program focuses on the development of professional and social networks among students, many at disparate locations, with each possessing unique skills, expertise and experiences, but who share common research interests, issues, problems and solutions. The current network participants come from 11 U.S. institutions and institutions from Brazil, France, Germany, Israel, Singapore and the United Kingdom. International participants receive support from their own national funding organizations. PoLS SRN started with a small nucleus of researchers, has since expanded through inclusive workshops, and is still growing.

The Virtual Future

Virtual institutes in all fields of science and engineering, including biological, geological, social, behavioral, physical, statistical, mathematical and computational sciences, and STEM education are currently under consideration. Expansion will require investments from the partnering countries as well. Successes will be measured by the establishment of long-term professional relationships and their scientific output that will be sustained beyond the initial SAVI activities.

