

RESEARCH AND EDUCATION STRATEGY 2009–2012

VERSION 2



in real life

► VISION

Blekinge Institute of Technology is a globally attractive knowledge community within applied IT and innovation for sustainable growth.

What is BTH?

BTH is one of three independent institutes of technology in Sweden. BTH is not a traditional institute of technology and it is one of the most distinctly profiled higher education institutions in the country, with applied IT, innovation and sustainable development firmly in focus. The applied IT profile means that BTH conducts high-quality engineering research that is integrated with other disciplines, such as management, health science and humanities, to ensure sustainable development.

BTH has a unique combination of engineering and other disciplines, such as management, health science, humanities and social sciences. Through this combination, and using engineering as the starting point, BTH has very good prerequisites for contributing with education and research, not only within each discipline but also at the interface between engineering and the other disciplines. The latter offers the most important growth opportunity in a modern IT-based society.

In 1999, BTH was granted university status in engineering. Today we run third-cycle study programmes in “IT with applications” and in “Planning and Management”. BTH has also been granted the right to award MScEng degrees. Some 25% of full-time students are from other parts of the world, the majority from Asia and Africa. The proportion of female students is 38% and the proportion of net-based, full-time students is 24%.

BTH's research resources are concentrated on a selected number of research groups, thus creating strong areas of research and a knowledge base to support first-rate first-cycle programmes. BTH works closely with industry and the community and the development of BTH has contributed to the clear transformation of the region into a national and international cluster for IT and telecommunications.

In 2010, BTH had a turnover of SEK 484 million, of which SEK 149 million was from research. SEK 24 million came from commissioned courses, including advanced vocational training.

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Research

BTH receives funding from the EU, Vinnova, the Swedish Research Council, the KK Foundation, the Swedish Environmental Protection Agency, the Swedish Energy Authority, the Swedish Agency for Economic and Regional Growth, the Swedish International Development Corporation Agency (Sida), Nutek, Formas and others. BTH intends to raise the level of external research funding even further.

Several of the engineering research areas have attracted attention internationally. Research in applied signal processing is world-class and has been very successful with a whole series of patents. Several solutions that have emerged from research at BTH are now included in different products. In the software field, BTH researchers have been awarded the Telenor Nordic Research Prize, they have been included in international ranking lists and one is the editor of a distinguished international journal. Companies such as Ericsson and ABB consider the research to be of such a high standard that they have funded projects directly.

BTH's research environment within strategically sustainable development and sustainable product innovation has received excellent assessments in international scientific evaluations.

BTH is building environments where engineering expertise is combined with other subject areas, such as health science, management and humanities. Research

is often conducted in close co-operation with other Swedish higher education institutions. Partners include local authorities, Blekinge County Council, the Blekinge Region and a number of public agencies: The National Swedish Board of Building, Planning and Housing, Sida, the National Rail Administration, the Swedish Emergency Management Agency, the EU, the National Road Administration, the Swedish Post and Telecom Agency, the Swedish Competition Authority, the Swedish National Space Board and the Swedish Environmental Protection Agency. BTH has also a Centre for Spatial Development and Planning and the parties involved include Nutek, Vinnova, the Swedish National Board of Building, Planning and Housing, the National Land Survey of Sweden, Blekinge County Administration, the Swedish Environmental Protection Agency, the Baltic Institute and the Swedish National Heritage Board.

BTH carries on research with companies in the IT clusters NetPort and TelecomCity and in co-operation with companies such as Ericsson, ABB, Kockums, Saab, Volvo, SonyEricsson, Telenor, Deutsche Telekom (Germany) and Qualcomm (USA).

“BTH conducts world-leading research and education within strategically sustainable development and sustainable product innovation. This work is of considerable value to industry and society. The knowledge and methods that BTH develops and teaches provide good guidance in investment and product development decisions.”

LEIF JOHANSSON, CEO AB VOLVO



Education

IT is not just technology but a social need that affects all sectors of industry and public administration. Sweden needs higher education institutions that have the expertise and the will to develop the engineering study programmes of the future that satisfy the needs of young people and the community. BTH satisfies students' interests in IT, among other things by establishing the Karlshamn Campus with a focus on digital media and experience. BTH also works actively to attract foreign students into IT and telecommunications and other engineering programmes.

BTH's study programmes have work-integrated learning together with the IT industry. The students acquire experience of industry and can perform advanced study assignments and in doing so improve their worth on the labour market.

Research at BTH is highlighted in the study programmes through current examples and presentations. Degree projects are often linked to researchers and research projects. In many cases

degree projects and other projects are conducted in close collaboration with industry, public agencies, municipal authorities and the county council and are often connected to research projects.

BTH runs study programmes in co-operation with ten or so Swedish higher education institutions. BTH has study programmes that guarantee at least one term at Georgia Institute of Technology in the USA. BTH is also part of a European Master's programme with Universidad Politécnica de Madrid, Technische Universität Kaiserslautern or Libera Università di Bolzano. BTH also has exchange agreements with around 90 higher education institutions and "double diploma" agreements with seven higher education institutions. BTH is also popular among international students outside the exchange agreements.

BTH has extensive experience of international collaboration, including commissioned programmes with Sida as the principal.

Co-operation and role in the innovation system

Interaction with society permeates all activities at BTH. This is a contributing factor in the process of changing Blekinge from a region with a low level of education and heavy industry into a region with a high level of education and where the IT and telecommunications industries play a central role. BTH emphasises innovation and entrepreneurship in both education and research. It generates new knowledge, concepts and business ideas that have been developed into new products and services in new or existing operating areas.

The collaborating parties in the innovation system include Blekinge Business Incubator AB, the Blekinge Region, Innovationsbron Syd, ALMI and Blekinge County Council.

BTH plays an active role in the three regional innovation nodes: TelecomCity, NetPort and Soft Center. There is also close co-operation with Blekinge County Council and the local authorities in the region.

At the newly established unit BTH Innovation, there is the wise development arena. This is where short-term business development projects are run; from initial concept through to viable business concept.



Strategic initiatives

Focal areas

BTH has identified three strategic focal areas within research and education which with further reinforcement and development will pave the way for enhanced global competitiveness. The expertise within these focal areas will be characterised by applied IT and innovation for sustainable growth in accordance with the BTH vision.

1 Systems engineering with a specific focus on software-intensive systems.

BTH has a large number of areas of expertise that contribute to the development of complex technical systems of vital significance to Swedish industry. Companies that are developing the systems include Ericsson, SonyEricsson, ABB and Volvo. Expertise is required in areas such as processes, methods and techniques in the development of software, distributed and intelligent systems, computer systems engineering, interaction design, IT-oriented occupational science, acoustics, vibrations, signal processing, telecommunications, radio communication, product development, structural mechanics, digital audio and digital visual production, sustainability analysis, mathematics and industrial economics.

2 Sustainable development

This focal area supports ecological, economic and social sustainability. “Green” products are becoming increasingly important and a company’s sustainability offers a clear competitive advantage. Spatial planning is an area of vital significance to the build-up of a sustainable society. At BTH there are experts in sustainable product innovation, spatial planning, environmental consequence assessment, sociology, public health, health science and management.

3 Innovation

BTH has recently recruited two professors within the field of innovation to reinforce research and education within this area and to ensure that innovation will further permeate work at BTH. BTH is also a member of a Vinnova Excellence Centre within innovation: Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE). Key elements within this area will be the founding of companies, experience from the generation of patents, transfer of results to partners, proof of concept activities and incubator activities.

“Systems engineering” and “Sustainable development” reflect two growth-promoting technology shifts that have emerged in Sweden and abroad. By strengthening the field of innovation and linking “ICT-based innovation” to the first two areas, both in research and education, the conditions for sustainable growth will be reinforced even further.



13 target areas

The target areas are connected and also act as a driving force for each other. Each target area also has detailed objectives and activities although these are not presented in this document.

- 1 **Brand development:** Preserve and reinforce the brand “a globally attractive knowledge community within applied IT and innovation for sustainable growth”.
- 2 **Research:** BTH will by 2017 have a number of research environments within its profile with a total of around SEK 320 million per year.
- 3 **Global competitiveness:** Globally competitive study programmes with an excellent education environment (how we implement the education) and study environment (campus and a net-based learning environment).
- 4 **Strategic, prestigious collaboration:** BTH will develop 20 highly efficient collaboration platforms together with leading universities and other agencies within education, research, innovation systems and industry.
- 5 **Research and education for developing countries:** BTH will be a primary national resource for commissioned courses, higher education, research and innovative development.
- 6 **Innovation system:** BTH will be a driving force in the regional innovation system and it will be distinct and professional in this role.
- 7 **Recruitment and a broader recruitment base:** BTH will work to increase interest in academic studies, both nationally and regionally, within its profile and within engineering programmes in general.
- 8 **An attractive study environment and workplace:** BTH should be an attractive workplace. The culture will be permeated by innovation, development, learning, commitment, the brain, the heart, the hand and humour.
- 9 **Growth and operations in balance:** BTH will by 2017 have a turnover of SEK 800 million, of which half will be within research and PhD programmes.
- 10 **Students and partners in focus:** BTH will be a learning, innovative institute that works proactively and creatively to develop strategic and attractive offers to students, teaching staff and partners. Students and partners will be involved in the development of the Institute.
- 11 **Strategic leadership:** BTH will reinforce strategic functions for areas within the profile that are open to competition.
- 12 **Career paths:** BTH will have clear career paths that promote academic leadership.
- 13 **Professional organisation:** BTH will have an effective, professionally supportive organisation for core operations.

BTH vision

Blekinge Institute of Technology is a globally attractive knowledge community within applied IT and innovation for sustainable growth.

BTH mission

Blekinge Institute of Technology is charged with the task of contributing to sustainable growth in Sweden and to development in Europe and the rest of the world, both now and in the future. This will be achieved through high-quality education and research aimed at providing a scientific and technological knowledge base and will contribute to the provision of know-how and expertise within applied IT and innovation for a sustainable society.



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in real life