

SIMON FRASER UNIVERSITY
OFFICE OF THE VICE-PRESIDENT, ACADEMIC
MEMORANDUM

S.93-63

As amended by
Senate 6/12/93

To: Senate
From: J.M. Munro, Chair, SCAP
Date: November 9, 1993
Subject: SCAP 93-33 - ^{Institute of} Human Factors and Interface Technology Institute

passed

SCAP considered the recommendation of the Centres and Institutes Governing Committee which forwarded the application for the establishment of the Human Factors and Interface Technology Institute.

SCAP recommends that

"Senate approve and recommend to the Board of Governors the establishment of the ^{Institute of} Human Factors and Interface Technology ~~Institute~~ as outlined in the attachment S 93-63 "

J.M. Munro

- c. A. Watt
B. Clayman

**MEMORANDUM
OFFICE OF VICE PRESIDENT, RESEARCH**

TO: Alison Watt
Secretary, Senate Committee
on Academic Planning (SCAP)

FROM: Dr. Bruce P. Clayman
Vice President, Research
(Acting)

RE: Human Factors and Interface
Technology Institute (HFIT)
—new Centre approval—

DATE: 15 October 1993

I attach a proposal from Dr. Ron Marteniuk, Dean, Faculty of Applied Sciences, for the formation of the Human Factors and Interface Technology Institute.

The Governing Committee for Centres and Institutes recommends that the Institute be granted approval by SCAP at its meeting on November 3, 1993. Once approved by SCAP the proposal is to be forwarded to the next meeting of Senate, followed by a submission to the Board of Governors.

Governing Committee:



Dr. Bruce P. Clayman
Vice President, Research
(Acting)



Dr. John M. Munro
Vice President, Academic

M E M O R A N D U M
S I M O N F R A S E R U N I V E R S I T Y
F A C U L T Y O F A P P L I E D S C I E N C E S

DATE: September 30, 1993
TO: Jock Munro, Vice-President Academic
and
Bruce Clayman, Vice-President Research
FROM: Ron Marteniuk, Dean, Faculty of Applied Sciences
RE: Proposal for the Establishment of a Human Factors and Interface Technology Institute (HFIT)t

The attached proposal represents the effort of several faculty at SFU and presents the necessary details, called for by SFU Policy R40.01, for the establishment of HFIT.

I approve this proposal and send it to you for consideration.



Ron Marteniuk, Dean

RM/lc

Enclosure

cc: T. Calvert, Director, Research and Computing, Faculty of Applied Sciences
D. Weeks



Memo

To: R. Marteniuk; Dean, Faculty of Applied Sciences
From: Daniel J. Weeks, School of Kinesiology
Date: September 20, 1993
Subject: Human Factors and Interface Technology Institute (HFTI)

In accord with Simon Fraser University policies and procedures for Centres and Institutes, a proposal for a Human Factors and Interface Technology Institute is attached for your review and consideration. A draft was circulated in the School of Kinesiology and strong support was obtained from the faculty.

CC: Tom Calvert; Director of Research and Computing, Faculty of Applied Sciences

RECEIVED
SEP 20 1993
FACULTY OF
APPLIED SCIENCES

PROPOSAL FOR A HUMAN FACTORS AND INTERFACE TECHNOLOGY (HFIT) INSTITUTE

The proposed Institute will stimulate, encourage, and enhance human factors and interface technology research, by providing a focus and resource base, for collaborative and multidisciplinary research that will promote technological transfer to a wide array of applications.

HFIT will be a schedule A centre. The administrative officer will be the Dean of Applied Sciences.

The Director of the HFIT, nominated, elected, and recommended by members of the HFIT through the Dean of Applied Sciences, will be a full time employee of Simon Fraser University, appointed by the President, upon recommendation of the Governing Committee for Centres. The term of the Director shall be for three (3) years, renewable.

The Director shall submit an annual report on all HFIT activities, and a financial statement showing all revenues and expenditures; for the twelve (12) months ending March 31 each year, no later than June 30 of each year.

HFIT will act in accordance with all university policies, and in a manner consistent with the goals and objectives of Simon Fraser University.

Membership shall be by application to the Director, and a majority vote of the membership, subject to appeal (for Simon Fraser University personnel only) to the Administrative Officer, whose decision shall be final.

Membership shall be for a three (3) year term, renewable at the discretion of the Director, subject to appeal (for Simon Fraser University personnel only) to the Administrative Officer, whose decision shall be final.

An Advisory Board representing a cross section of individuals from university administration, research, industry, government, and appropriate interest groups, will be assembled to provide guidance to HFIT.

PROPOSAL FOR A HUMAN FACTORS AND INTERFACE TECHNOLOGY (HFIT) INSTITUTE

Introduction

Human Factors considers people to be at the centre of any situation. For example, the design of human-computer interfaces, the redesign of a work area, or the development of new products, all require human factors input to ensure that the situation systematically considers the physical, psychological and social characteristics of people.

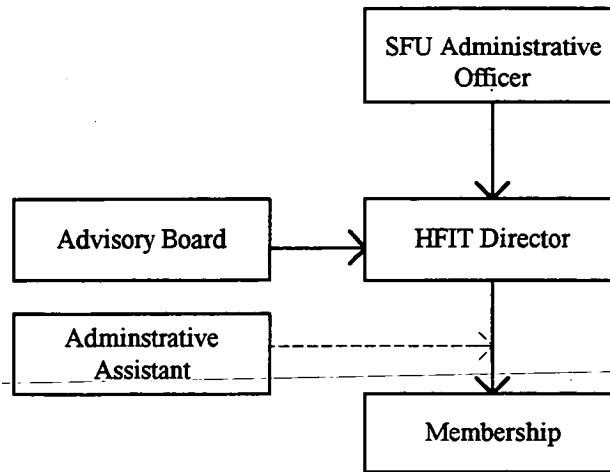
It is this systematic, human-centered approach that allows human factors to provide a competitive edge in a tight economic environment.

Objectives

Consistent with the goals and objectives of Simon Fraser University, the specific objectives of HFIT are:

1. To coordinate existing human factors research at Simon Fraser University and to provide a focal point for human factors researchers in different disciplines.
2. To establish a high-profile facility for human factors and interface technology at Simon Fraser University.
3. To create a network for research and development within British Columbia, Canada, and internationally, and to promote co-operation with major institutions, organizations, and industries.
4. To promote the development of future personnel in research and development, with expertise in human factors.
5. To promote the dissemination of knowledge in the community through consulting services, seminars, workshops, and lectures.

Organizational Structure



Terms of Reference & Membership

1. Administrative Officer

Under Simon Fraser University policy for Centres and Institutes, HFIT will be a Schedule A centre with the Dean of Applied Sciences as the Administrative Officer.

2. Director

The Director is a full-time employee of Simon Fraser University, recommended by the Administrative Officer. The Dean of Applied Sciences will use Simon Fraser University policy A13.01 as a guide in identifying a person to be recommended as Director. The principle in appointing a Director will be that the recommended person will be nominated and elected by members of the Institute, through the Dean of Applied Science, to the Governing Committee for Centres.

The Director's term will be three years, renewable.

The Director approves all contracts to be undertaken in the name of the Institute, in conjunction with the Administrative Officer.

The Director submits an annual report on HFIT activities, including a financial statement, to the Administrative Officer for the 12 months ending March 31, no later than June 30.

At least twice a year, the Director calls a meeting of the membership to discuss policy and direction of the Institute, and any other concerns of general import.

3. Members

Membership shall be by application to the Director, and a majority vote of the membership, subject to appeal (for Simon Fraser University personnel only) to the Administrative Officer, whose decision shall be final.

Membership shall be for a three (3) year term, renewable at the discretion of the Director, subject to appeal (for Simon Fraser University personnel only) to the Administrative Officer, whose decision shall be final.

The Institute shall encourage the widest possible membership of qualified researchers, to promote the application of human factors and interface technology in as many fields and domains as possible, and to encourage the cross-fertilization of ideas.

Any member may withdraw from the Institute by delivering a written letter of resignation to the HFIT Director.

4. Advisory Board

The members of the Advisory Board represent a cross section of university administration, research, industry, and government personnel assembled to provide guidance to the Institute.

The primary task of the Advisory Board is to help HFIT grow in size and scope, while remaining committed to its mission.

All Advisory Board meetings are open, and HFIT members are encouraged to attend.

Advisory Board membership shall consist of: the Administrative Officer, the HFIT Director, two corporate members, two external researchers, one provincial government representative, and one federal government representative. In addition, others that are deemed capable of making an exceptional contribution to the activities of the Board may be included. For example, representatives from private societies concerned with the aged or persons with disabilities.

Invitations for membership are issued at the sole discretion of the HFIT Director, except for those positions specifically designated for Simon Fraser University personnel.

Membership is for a three (3) year renewable term.

The Advisory Board bears no legal responsibility for the actions of the Institute, and exercises no direct control over the actions of the Director, Institute members, or staff.

Membership

The charter members of HFIT are listed below. Expansion of the membership through joint research with colleagues at other institutions and research specialties is a high priority.

Mr. Stephen Brown
Kinesiology

Dr. David Goodman
Kinesiology

Dr. Eric Banister
Kinesiology

Dr. Christine MacKenzie
Kinesiology

Dr. Tom Calvert
Computing Science

Dr. Ronald Marteniuk
Kinesiology

Dr. Arthur Chapman
Kinesiology

Dr. Igor Mekjavic
Kinesiology

Dr. David Darvill
MPR Teltech

Dr. James Morrison
Kinesiology

Dr. John Dickinson
Kinesiology

Dr. Daniel Weeks
Kinesiology

Dr. John Dill
Engineering Science

Dr. Hal Weinberg
Psychology

Affiliations

In order for HFIT to endure it must promote a defining characteristic not met by other institutions. Since collaboration is a primary goal of HFIT, affiliations with other institutions will be sought, where such affiliation brings contact with exceptional research. Preliminary enquiries have been made and interest is evident. Thus, the defining characteristic will be an overall strategy to use HFIT as a catalyst in establishing a de facto centre of excellence in human factors based at Simon Fraser.

The Environment

A decade ago it would have been difficult to find many people outside of the human factors profession who could tell you what human factors or ergonomics was. However, today things are quite different. Human factors and ergonomics are frequently in the news. The current interest in human factors arises from the fact that technological developments have focused attention on the need to consider the human in such

developments. Most notably, the incident at the Three-Mile Island nuclear power station highlighted the human factors deficiencies of the control room. Similarly, a common marketing strategy for new products such as automobiles and computers is to advertize their ergonomic features.

There is an active and growing concern for human factors and ergonomics-related research at Simon Fraser University. Current faculty research projects include, examination of human work in extreme environmental conditions, the cognitive components of human-machine interactions, the design and use of peripheral devices in human-computer interactions, and protocol analyses of controller operations in large-scale industrial control environments, among others. As well, a number of faculty benefit from the presence of MPR Teltech on the SFU campus by engaging in collaborative and contract research. In addition to these research activities, the academic presence of human factors at SFU will soon be formalized by the inclusion of an undergraduate human factors stream in the School of Kinesiology. Thus, establishing the HFIT Institute at this time will provide a focal point around which the continued development of human factors research and teaching at Simon Fraser University can be ensured.

HFIT will enter into an environment of growth and interest in the need for human factors and ergonomics expertise in a wide range of human-machine systems and work environments. With respect to human-machine interactions, the ease/dis-ease with which we can effectively and efficiently learn and use information technology products and services often reveals a large gap between the currently available technology, and its understandability, usability, and accessibility by the end users. Individuals experience difficulties, frustration, and disillusionment as they proceed with their daily activities, e.g., using an automatic banking machine from an unfamiliar bank, making menu selections on a telephone or screen for a novel or first-time use, using available hardware and software to accomplish daily tasks. Put simply, more human factors considerations of usability are needed in evaluating, designing and developing user interfaces for effective human-machine interaction.

With the emphasis on computer technology and the cognitive aspects of work it is easy to forget that human work activities still often require physical effort. Various occupations and work environments require workers to engage in demanding physical activity. As a result back injuries resulting from overexertion account for about 25% of all occupational injuries. Interestingly, such injury is not restricted to occupations requiring intense physical labour. For example, the incidence of back injury among nurses is higher than most other occupational groups. It is unlikely that all physical labour can be eliminated and physical work will continue to be a part of the working environment. However, the risk to which workers may be exposed can be reduced through the application of sound human factors principles. Thus, an important component of HFIT will be to address the strength and endurance characteristics of humans as they expend energy to perform work.

Despite the widespread acknowledgement of the importance of human factors expertise, a full understanding of the potential of human factors is lacking. Ideally there should be

two-way communications between universities and industries in planning for technology research and development. The industrial "pull" model of technology transfer suggests that, based on market needs, the desired technology should be developed in collaborations between university researchers and industry. This is preferable to a technology "push" model whereby university researchers develop research programs and technology, and technology transfer occurs through traditional University/Industry Liaison offices, only to find a lack of fit with market needs from the industry's perspective. Consequently, the HFIT Institute will provide an environment in which industrial/academic interactions will promote effective technology transfer.

The Market

The Information Technology industry makes a significant contribution to British Columbia's economy. Estimates for early 1993 indicate that the industry in BC generates \$1.8 to \$2.3 billion in gross annual sales and employs 30,000 to 35,000 people. These figures include the subsidiaries of BC Tel, but not BC Telephone itself. In addition, BC Tel, through its provision of telecommunication services, generates \$1.7 billion in annual gross revenues and employs 13,000 people. The products include communications, electronics, computer hardware and computer software. The products and services provided by these industries touch the lives of every individual living in BC (of all ages, demographic groups and occupations). The primary focus of the Institute will be to understand the characteristics associated with the human user of these products and services.

With the growth of the Information Technology industry in BC and the increased development of interactive computer systems and user interfaces in communications, transportation, entertainment, business, and household activities, highlighting human factors considerations could create a competitive advantage for the BC information technology industry both in the area of user interface technology and technology products in general. Applications developers who apply human factors principles and processes, including usability testing, are producing exciting interactive systems. Conversely, those who do not quickly find out that "not meeting customer needs" is one of the top three reasons for new product failure. Further, the United States, Western Europe and the Pacific Rim are the primary export markets of the BC Information Technology industry. Consequently, as HFIT evolves, the probability increases for bringing in industrial partners from outside the province to join with industrial and academic partners within BC. For example, based on past interactions between SFU/BC Trade, it appears that a number of Korean companies (e.g. Samsung, Korean Automobile Technology Center) may be interested in including human factors considerations in the design of their products and services.

Other developments should also increase the demand for human factors and ergonomic expertise. Federal and provincial regulations for ergonomic standards are beginning to emerge. In 1988 the U.S. Congress passed a law requiring the FAA to expand its human

factors research program to improve aviation safety. Further two growing markets for human factors and ergonomic expertise include the design of medical devices and products and services for the older adult. The United States National Research Council estimates that the demand for human factors specialist will exceed the supply into the year 2000.

Budget

The Institute initially requires only a modest start-up budget to cover some publicity and administrative costs, since research activities will utilize existing facilities, personnel, and funding. Initial support will be provided by the CSS office. All subsequent funding for HFIT, which is incremental to existing levels of support, should come from sources external to Simon Fraser University; the exception being the normal internal applications for funding to which all personnel, groups of personnel, and institutes are entitled.