Computing and Systems Technology Division

Communications

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About This Issue

by Peter R. Rony, Joseph D. Wright, and Jeffrey J. Siirola

A funny thing happened on the way to producing this summer issue of CAST Communications. Effective May 1, 1994, Joe Wright moved to Montreal to become President (and, in July 1994, President and CEO) of the Pulp and Paper Research Institute Canada. As Joe wrote: *"This is a prestigious organization that essentially does the long-range and critical research for virtually the entire Canadian pulp and paper industry. It has sites at Pointe Claire, Vancouver, Prince George, and campus sites at McGill, Ecole Polytechnique, and UBC. The move was precipitated by an irresistible opportunity and facilitated by an early retirement package..."*

The good news is the wonderful opportunity for Joe. The bad news is that one-third of the CAST Communications "virtual corporation" publishing triumvirate (Blacksburg, Mississauga, and New York) is now gone. In the interim, the production phase of the newsletter moves to Blacksburg for the Summer 1994 and perhaps Winter 1995 issues. The editor will miss the efforts of Colette Totino and Joe at Xerox.

This Summer 1994 issue was produced by the editor on an 80386-based personal computer equipped with Pagemaker 5.0 for Windows. The issue pages were printed at 600 dpi on a Hewlett-Packard LaserJet 4, then mailed to New York AIChE headquarters. The CAST logo was scanned and then reduced in size electronically. Unfortunately, the resulting image had the "jaggies," and was unacceptable. Printed versions of the CAST logo were cut and pasted from a prior issue. The editor will experiment with different formatting styles while the production process remains in Blacksburg. In this issue, we test a two-column newsletter.

In the Summer 1994 issue, we publish Part II of the CAST Division award address, **"Computers Systems, Languages, and Other Fragments,"** delivered by George Stephanopoulos at the November AIChE meeting in St. Louis. Given the widespread interest in Internet clients, the editor has invited a colleague at Virginia Tech, Harry M. Kriz, to contribute his Internet document, **"Windows and TCP/IP for Internet Access."** Harry works at the University Library at Virginia Tech, a perfect place for someone with his skills. The editor learned how to use Windows Internet client software during spring 1994. The software is much easier and more enjoyable to use than its DOS counterparts.

Kudos to Jeffrey Kantor for making available on Internet the information distributed on the CAST Area 10B email list. The format of the information, on World Wide Web, is outstanding. Most of the AIChE programming information contained in this printed version of the newsletter should be duplicated on the World Wide Web, with updates at least every month.

Jeffrey Siirola calls special attention of division members to **InCINC'94**, the first International Chemometrics Internet Conference (see Meetings and Conferences section). *"It is an all-electronic conference, not just the papers and proceedings but participation as well. It should be an interesting experiment. CAST is a co-sponsor."*

A tribute to David W. T. Rippin appears in this issue, courtesy of Professor Rex Reklaitis, co-editor of Computers and Chemical Engineering.

Computers, Systems, Languages and Other Fragments. Part II

Laboratory for Intelligent Systems in Process Engineering
M.I.T.

Note from Editor: Many of the cartoons [Figures 9, 22-30] in this paper have been reproduced from various books of the Argentinean master Quino (Joaquin Salvador Lavado) except those in Figures 26 and 27, which are part of the work of Nurit Karlin. CAST Communications has not obtained publication permission for these figures.

As stated by George, "Computers, Systems, Languages and Other Fragments" was the core of the after dinner presentation, given at St. Louis, as part of the annual ritual which follows an evening of CAST camaraderie, fine food and wine, and distribution of awards. As such, it was tailored to be entertaining, lightly provocative (with no trace of indigestion-causing substances), and sufficiently arousing to stem the rising tides of relaxation at that hour of the day.

The Flatland and How to Escape From It

What is the Flatland of this section's title? Well, it is the complete database of all the available knowledge. For example, imagine that you have a database that contains all knowledge available in the domain of chemical engineering, i.e.

o Procedures to generate the material, energy, and momentum balances for any physico-chemical system of arbitrary geometry

o Constitutive models, e.g. empirical, phenomenological, or molecular, to describe equilibrium and rate phenomena, both chemical and physical,, including the prediction of physical property values.

Then, if the sub-space of Figure 8, called Flatland, depicts the space of all available knowledge, everything outside the Flatland represents the knowledge which is not encompassed by the database. So, jumping out of the flatland implies that we have discovered (not invented) a new piece of knowledge. For example, the dog in Quino's cartoon (Figure 9a) has successfully jumped out of the Flatland by discovering the concept of filling and its relationship to essential needs. On the contrary, Quino's chimney cleaner and wheat harvester (Figure 9b and c) have been unsuccessful and are stuck in the Flatland.

Can a computer program operating on the knowledge of the Flatland help us jump out of it?

This question is filled with both wonder and marvel. We will assume that the database of the Flatland has been built around a formal logical system with sound foundations and no internal conflicts. This formal system is made up of a series of axioms, i.e. an alphabet and a series of rules, which allow us to go from one element to any other element of the Flatland.

The previous question has been at the core of the 20-th century's developments in mathematical logic. It started with David Hilbert,

who challenged his colleagues to prove that Principia Mathematica of Russell and Whitehead was "a formal system that was consistent and complete", i.e. it did not include any internal contradictions and that any statement made within that system could be proved to be true or false.

Goedel [3] in 1931 published a paper in which he proved that it was not possible to create a formal system that was both consistent and complete. The consequences of Goedel's theorem are very profound. They can provide the logical framework for viewing famous paradoxes such as:

Epimenides' paradox; All Cretans are Liars (Epimenides the Cretan)

Russell's paradox; A is the Set of all Sets that do not Include Themselves. Does Set A include itself?

In other words, using the Flatland of Aristotelian logic we cannot prove whether the above two statements are correct or not. Returning to the picture of the Flatland, what Goedel's theorem says is the following: You cannot have a computer program (which is based on some sort of a formal system, i.e. a consistent alphabet and set of rules), which can reflect upon itself and discover (not invent) a new dimension of knowledge.

So, a computer cannot escape the Flatland. It is stuck in it. Here, let's make the distinction again between invention and discovery. Working on the Flatland, we can generate by deduction new artifacts, which were not known before, but which lie on the same Flatland. In other words, we have invented artifacts or concepts which are linear or non-linear combinations of existing knowledge. In such cases we talk about invention. On the other hand, when you discover a new concept, you introduce a new dimension in the Flatland. You jump out of it. This new concept pre-existed your efforts. It is like discovering an element of Plato's World of Ideas.

On the other hand, formal systems in art can escape the Flatland and include "undecideable propositions". The most beautiful examples have come from Escher who has created a series of lithographs with "strange loops" (Figures 10, 11 and 12).

These ideas of the "strange loops", Goedel's theorem and their implications on what the computers can do, have been the subjects of two beautifully written books.

The first is by Douglas Hofstadter (a computer scientist) and is titled "Goedel, Escher, and Bach: An Eternal Golden Braid" and was distinguished with a Pulitzer Prize.

The second was written by Roger Penrose (a mathematician) and is titled "The Emperor's New Mind". These two books have had a profound influence in the articulation of the various ideas presented in this paper.

So, if the computer cannot jump out of the Flatland, then what?

Zeppo: We've got to think
Chico (with a dismissive hand gesture): Nah, we already tried dat

Well, not much help there. Let us see what other people have said:

"When all else fails, the future remains"
...Christian Bovee

True, but also useless. When in trouble, ask more people:

"All instruction given or received by way of argument, proceeds fro pre-existent knowledge", from Aristotle's Posterior Analysis.

So, it seems that Aristotle has told us, and Goedel has proved it, tha all the computer can do in a formal manner is deduction. That is not small potatoes. Especially, if the deduction has involved millions of logical steps, then the result of the deduction is like new knowledge to us. Nevertheless, it is an invention of the human mind, not a discovery.

Examples in science and engineering abound:

o Synthesis of new chemicals, materials, pharmaceuticals, naturally occurring analogs, commodity household items.

o Synthesis of new reaction schemes, chemicals' producing micro-organisms, manufacturing systems.

o Synthesis of manufacturing systems that possess automation level that have never been used, or known before.

o Synthesis of information processing systems that stretch to the limits our present understanding.

o Design of new transportation vehicles and systems that have revolutionized the human lives.

In other words,

"Machinery will perform all work--automata will direct all activitie and the only tasks of the human race will be to make love, study an be happy"
. . . The United States Review, 1853

and the dream dreamed by Americans in 1853 is still on target for i fulfillment.

On the other hand, Minsky [4] tells us that the

"generation of Common sense is not a simple thing. Instead, it is a immense society of hard-earned practical ideas-of multitudes of lif learned rules and exceptions, dispositions and tendencies, balance and checks."

What he is saying in other words is the simple Goedelian corollary that,

if you want the computer to create new knowledge (i.e. new facts common sense) you better write a computer program, which is ba on a system that is internally inconsistent or/and incomplete.

We do not have such a computer program today. Will it be possib tomorrow? I do not know. What an irony though. The deliberate systematic search for new knowledge can only be based on an unsystematic and potentially inconsistent frame, i.e. the human being itself. Nevertheless, the lesson is simple:

"Couple computer and human. Then you can jump out from the Flatland much more frequently than you have ever had in the past"

A wonderful illustration of this interplay is given by Mandelbrot's work. In Figure 13 you can see a small section of the mysterious and still not quite comprehensible world, unleashed by the Mandelbrot set. We may explore this extraordinary world as long as we wish, tuning our sensing devices to higher and higher magnifications. We find an endless variety: no two regions are precisely alike, yet there is a general flavor that we soon become accustomed to. The beetle-like creature of the Figure 13 emerges at yet tinier and tinier scales. Everytime, the neighboring filamentary structures differ from what we have seen before, and present us with fantastic new scenes of unbelievable complication.

As Roger Penrose has observed:

"The Mandelbrot set is not an invention of the human mind. It is a discovery. Like Mount Everest, the Mandelbrot set is just there."

The computer cannot discover such new worlds, but neither can the human without the computer.

Languages and Modeling: The Modern Babel

There is a plethora of lessons we can draw from computers and computer science, but one is in my opinion the most important of all: languages, their character and role in science and engineering. I am talking of course about the language that one needs to formalize a computer program.

Although it makes no difference to what I will be discussing, when I refer to a language do not think of it in terms of the programming languages that you are familiar with for writing computer programs, such as FORTRAN, C, C++, Pascal, COBOL, BASIC, LISP, or Smalltalk. Think of it as a high-level language that allows you to express your engineering and scientific declarative and procedural knowledge directly, not indirectly.

What is in a Language?

First, you need an alphabet. You will use the letters of this alphabet to describe your declarative knowledge. Examples are: the language of the real numbers, the language of the categorical variables, i.e. the qualitative variables, the language of the propositional logic, etc. Higher-level languages may include an alphabet whose letters are data structures describing in a generic way any chemical, chemical reaction, unit operation, physical property, equipment, process operation, controller, etc.

Second, you need grammatical rules which will relate the elements of your language in a meaningful manner. Examples are: theory of numbers, calculus, qualitative calculus, etc. Also, the various types of models you create to describe relationships among physical or other quantities are in some respect derivatives of your grammatical rules.

Finally, you need a syntax.

But, once you start talking about languages the specter of Babel looms on the horizon. It is really remarkable how little has changed since Biblical times on this front. For example, let us look at some beautiful examples of linguistic Babelisms:

Gracie: A truck hit Willy
George: What truck?
Gracie: The truck that didn't have its lights on
George: Why didn't it have its lights on?
Gracie: It didn't have to. It was daytime
George: Why didn't the truck driver see Willy?
Gracie: He didn't know it was Willy

This is an excerpt from a comedy routine of Burns and Allen, quoted by Roger Schank of Yale University, to illustrate the problems of language comprehension.

Birds can fly, unless they are penguins and ostriches, or if they happen to be dead, or have broken wings, or are confined to cages, or have their feet stuck in cement, or have undergone experiences so dreadful as to render them psychologically incapable of flight.

Wow! It is not easy to express accurately your knowledge. This example comes from Minsky's "The Society of Mind."

Married people possess a large amount of shared knowledge (hopefully). Here is what happens when two married people talk:

"Okay, where did you hide it?"
"Hide what?"
"You know."
"Where do you think?"
"Oh."

This example has been labeled "Conversation of Married People". It has been cited by Nicholas Negreponte of the MIT's Media Lab.

Oh! you might say. This is true for the natural language that the common folk speak, not that of scientists or engineers.

Let me digress for a short while and discuss something that has reached proportions of crisis. Actually, the situation in chemical engineering is very bad. Attend some of the sessions with subject matters removed from those of your personal expertise. Do not feel intimidated if some papers sound Greek to you. They are not in Greek, but in one of the rapidly proliferating new languages.

I was told that a sure way to notoriety is the following: First, create a new language, and Second, spend all your time teaching it to other people so that they can only converse in it. Anyone who does not speak it, well, is banished from the Flatland.

The chemical engineering life is a true Babel when it comes to the use of languages and models for the description of physical-chemical-biological systems and their behavior. We have all possible combinations among the different types of alphabets and grammars. For example, take any 1, 2, 3, or all 4 of the following classes of alphabets, e.g. Boolean, Categorical (i.e. qualitative), Order-of-Magnitude, Real-Valued Analytic, and combine them in any possible way with the grammars of any of the following classes of grammars: empirical, phenomenological, molecular, hybrid. With so many languages around is not surprising that one sees an abundance of dichotomies (see for example Warren Seider's CAST Lecture in 1992), acrimonious debates on the correctness of models, and a series of overlapping and contradictory research

efforts.

This is an area where Systems Engineering can play a very important role in the very core of Chemical Engineering.

There has been a lot of discussion about the fragmentation of our profession. Today chemical engineering is not as cohesive as it used to be 10, or 20 years ago. It is argued that the explosive expansion of the scope of the chemical engineering work has led to the loosening of the traditionally common language.

To me it is a clear and unambiguous example of Babelism. Of course one might argue that the differences in detailed science developed by the various Divisions of AIChE do warrant a certain break in communication and understanding. This is very hard to accept. Extremely small (if any) amount of truly new science has been discovered. Most of the so-called new science is an invention (not discovery) of the particular researcher and lies in the Flatland. Consequently, everyone should be able to understand it if they kept the same language.

Let me give you an illustration from the area of systems engineering.. I have known of the "Index" problem, encountered during the solution of sets of differential-algebraic equations for about ten years. It was only last month that I realized that it corresponds to the same mathematical problem that I had known as "Observability of Dynamic Systems". Then, I realized that a series of papers on how to spot Index problems and resolve them, were based on identical techniques and methodologies, which had been published on the Observability of Dynamic Systems.

Furthermore, it is amazing how many papers are identical, or very similar in the generic problem statement and the methodologies, if you manage to break through the barriers of the new languages they sport.

But let us return to our subject. In chemical engineering the needs for the creation of efficient languages abound. For example, consistent declarative languages are needed to describe:

o Plans and schedules all the way from the offices of corporate planning, to the management of operations of a particular plan, to the schedule of operations and control actions.

o Process trends from the finest level of sensor data, to the description of process operations and equipment, to the description of manufacturing plans, and how well they have fared against the plans.

o The overall behavior of a plant, its sections, its units, their subunits, their phases.

o Chemicals and their reactivity, chemical and biochemical reactions at any level of detail.

o Design activities for: process design, process control, fault-trees, etc.

o A language to describe the chemical engineering science in all its facets.

In attempting to construct the needed languages, what can we learn from other domains?

The Essential Language

A language should be as simple and non-redundant as possible. Figure 14 shows a wonderful print by Escher. It represents one of those exquisite examples of a simple and yet very powerful language. It is composed of one-letter alphabet (i.e. the Fish) and two grammatical rules. One of them generates a new line of fish, and the second rule spaces the fish in the new line. Then, you can construct the "word" of "Bird".

Jarvis Cheung developed a similarly simple geometric language composed of four triangles, which can compose descriptions of process trends of arbitrary complexity or simplicity.

In the Lobachevskian space of the disk, shown in Figure 15, Escher has used only one-letter alphabet, and 5 grammatical rules. The letter is the little "fish" and the five rules are; rotate 45, flip-horizontal, flip-vertical, zoom-in, zoom-out.

Penrose Tiles

Let us look at some other languages, which are very simple, but can create descriptions of tremendous complexity. Roger Penrose started with the two tiles of Figure 16 (a very simple language indeed), and developed an incredible variety of descriptions (see for example the designs in Figures 17 and 18). It is worth pointing out that the pieces of the worlds are not periodic, and as they expand they also vary.

Are these languages relevant to chemical engineers or are they just logical games for entertainment? Well, look at the construct of Figure 19, using Penrose's rhombuses. This necessarily non-periodic pattern has many remarkable properties, including the seemingly impossible quasi-periodic structure with five-fold symmetry. In 1984, Danny Shechtman, a physicist working at the National Bureau of Standards in Washington, DC., announced that he had discovered a phase of an aluminum-manganese alloy with quasi-crystalline structure of five-fold symmetry, as Penrose tiles had predicted. In fact this structure exhibited the 5-fold symmetry in tree dimensions, not just two as the Penrose tiles. Actually, Robert Ammann had already constructed a 3-dimensional quasi-periodic structure with 5-fold symmetry.

Here is an other example. Parametric solutions of the fluid flow dynamics can provide the information for the construction of "coherent structures" encountered in turbulence. But, if you are only interested in the configuration of the "coherent structures", a macroscopic phenomenon, why model and compute at a far lower scale? Proper averaging of physical quantities could lead to analogs of the Penrose Tiles, and thus allow the construction of 2-dimensional, or 3-dimensional configurations with non-periodic behavior (chaotic in the limit), but with clear macroscopic coherent structures, as Figures 18 and 19 imply.

Folding Molecules

Here is an other interesting example. Let's look at the following little game. Start at the center square shown in Figure 20. Pick up any direction to move and move along that direction by so many squares as the number in the central square. Repeat from the end of your last square. This little game offers a very simple language

for carrying out a wide variety of Monte Carlo simulations and has been found to reproduce fairly faithfully the folding structures of long macromolecules.

Recursive Languages

While most of the above examples deal with languages which construct non-recursive, non-periodic worlds, there exists a vast world where recursion is the king. Figure 21 [5] shows how 12 irregular geometric shapes can be bisected into pieces of the same shape as the original ones. This idea of recursive modeling of geometric pieces has started being used in the design and manufacturing of discrete mechanical parts.

Microorganisms have evolved through recursive refinement of their constituent biochemical transformations. Michael Mavrovouniotis is actually using such mechanism to generate the desired pathways.

Recursion seems to be at the heart of modeling many, both simple and very complex, physical and chemical phenomena. Repeated patterns of non-linear dynamics, fractal geometries etc. are simplifying the alphabets and grammars that scientists and engineers are using to describe their systems. Unfortunately, the present chemical engineering modeling efforts make very little use of recursion.

Systems and Systems Engineering

Traditionally, when we refer to Systems Engineering, we evoke concepts and images from mathematical programming, operations research, dynamic systems and control theory, solution of algebraic and differential equations, and other areas, which have found phenomenal relevance and applicability in a large number of chemical engineering problems. Systems' researchers from Chemical Engineering have in fact played a protagonistic role and have offered many fundamental contributions to all of the above areas. I am certain that in the future the role of the above areas will expand both in new areas of interest to chemical engineering, and new methodologies. The parallel expansion of the computer capabilities will fuel these developments with geometric if not exponential progression.

In the earlier sections of this paper I have tried to bring a different dimension to what one might call Systems Engineering; a dimension that is heavily influenced by the expanded capabilities of the computers and information technology. For many researchers the subjects that I touched upon are part of Cybernetics, a term that I personally like.

But, aside from the semantic content of the term we will use, it is important to recognize two things:

1. People working in the area of the so called Systems Engineering have not contributed to, neither have they capitalized on, the significant scientific advances made by our colleagues on the chemical-engineering-science side of our profession, e.g. catalysis, materials, biology, physical-chemistry, chemistry, etc. So, I now believe that Morton Denn was partly justified to make similar comments in 1989, at the Centennial Celebration of MIT's Chemical Engineering.

2. On the other hand, researchers and practitioners of Chemical Engineering Science have not employed the treasures of Systems Engineering, and they have been re-discovering techniques and methodologies, which constitute the bread-and-butter of process systems engineers. The polyglotism of the Chemical Engineering Science is a major stumbling block. It has to be remedied, and Systems Engineering can play a very important role in this direction.

Consequently, I believe that the current agenda of Systems Engineering should be expanded to include the "concerns" of the core chemical engineering science, leading to Micro-, Meso-, and Macro-Variants of Systems Engineering. An excellent example of these developments is the work of Michael Mavrovouniotis with his Molecular Systems Engineering.

So, what is Systems Engineering?

We need more time and space to fully cover this subject. So, I will describe it through admonitions:

Systems Engineering IS NOT:

(a) The cosmetic beautification of engineering systems (Figure 22),

(b) Standardization and cloning of even successful practices (Figure 23),

(c) The development of new and more efficient techniques for the reproduction of old paradigms (Figure 24), or

(d) A framework of uncritical inferences (Figure 25).

So, in closing, allow me the following liberal paraphrasing of Rutherford Aris and Misa Penn's ideas on modeling [6]:

Systems Engineering is not purely formalizable either in abstract terms (Figure 26), or in taxonomic views (Figure 27). It has structure, it has technique that can be taught and learned (Figure 28), but it also involves a personal touch (Figure 29) not only in trivialities but in deeper considerations of skill and suitability (Figure 30).

Table 1: The Students to Whom the 1993 Computing in Chemical Engineering CAST Award Was Dedicated

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Bhavik Bakshi Ohio State University
Matthew Realff Georgia Institute of Tech
Thomas Meadowcroft MIT, Station Director, Practice School
Pedro Saraiva University of Coibra
Chonghun Han MIT
Rama Lakshmanan
Kevin Joback Molecular Knowledge Systems
Christopher Nagel Molten Metal Technology
James Johnston Molten Metal Technology
John Carrier MIT
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WINDOWS AND TCP/IP FOR INTERNET ACCESS

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Abstract

Internet, the global network of computer networks, is arousing enormous popular interest. In part, this interest is being driven by the availability of free or inexpensive shareware software for Microsoft Windows. It is now technically simple for a personal computer to become a host on the internet. The casual user can find, retrieve, and view information gathered from around the world without having to learn complicated computer commands. In this paper, I describe the principal functions and services available via the internet. Then I outline the technical background and terminology needed by the beginner who wants to make his PC a host on the internet. Finally, I describe several Windows software packages and programs that facilitate using internet services. All the software is freely available over the internet.

Introduction

Internet, the world-wide network of computer networks, has captured the imagination of the general public. A year ago, the internet was barely mentioned in the popular computing magazines. Now it is the topic of articles in national news magazines, local newspapers, and grocery-store tabloids.

Awareness of the internet has spread primarily by word-of mouth. Computer pundits were not discussing the internet in Spring 1993 when I first began investigating the internet in my work as a librarian. Indeed, most pundits seem to have acquired internet access only in the Spring of 1994. Thus, computer magazines have not been helpful for those wishing to learn about the internet.

Now in June 1994, there is something of a feeding frenzy of interest in the internet. Bookstores are flooded with guides to the internet. Software vendors are rushing to market with collections of software designed for navigating the resources on the internet. It is almost as if the crest of the internet wave has passed. Pundits who did not have access to the internet last year are already writing negative opinions about the difficulties of navigating internet resources, and about the uselessness of those resources.

Complaints about the internet are many. Certainly it can be difficult to find information and resources on the internet. A great deal of information is invalidated, non-authoritative, or otherwise questionable. Some resources should not be available to children. Some would argue that some of the information should not be distributed even to adults.

It is important to remember that the internet is not a service. Rather, it is a means of gaining access to services and of retrieving information and other objects that can be represented electronically. In considering complaints about the internet, one might draw an analogy between the internet and New York City.

New York is big, complicated, and disorganized. The city's myriad resources can be hard to find. Some of what happens or what is available in New York should not be seen by children. For those wishing to navigate the complexity of New York, there are guide books, phone directories, magazine articles, and individuals with expert knowledge about areas of particular interest. One can navigate the complexity of the city by subway, taxi, and bus. One can even hire a private guide to conduct a tour of the city.

The internet can be compared to the streets of New York City. The services available on the internet have their analogies in the city's libraries, department stores, bookshops, art galleries, street vendors, and street-corner zealots passing out literature or lecturing the passing crowds. It is safe to assume that somewhere on the streets of the city there will be found information and services of interest to almost anyone. However, finding that information might take some time for someone who is new to the city and its resources. Similarly, somewhere on the internet there also will be found information and services of interest to almost anyone.

Traveling the internet requires only a few basic tools. First is a computer with a network connection to the internet. Such connections are common at universities, and becoming more common in businesses. If a direct network connection is not available, an alternative is to connect to the internet through the computer's serial port by dialing up a terminal server that offers a SLIP connection (Serial Line Internet Protocol). Either of these connections can be used with a variety of commercial or shareware software to make your local computer a host on the internet and to access services and information from the entire earth. This paper will emphasize the use of freeware and shareware versions of software running under Microsoft Windows.

Internet Services

The internet services of interest to most people consist of four basic functions. These are electronic mail (e-mail), internet news, file transfer between computers (FTP), and remote login to another computer (telnet). Access systems like Gopher and World Wide Web now supplement these basic internet functions by assisting the user in browsing and searching the internet for relevant information in a user-friendly manner.

Until recently, internet functions were accessible primarily through character-based interfaces using a variety of complex command sets. Thus, in 1992 and 1993, best-selling books on the internet contained page after page of screen displays or command sequences captured from UNIX-based systems executing basic internet functions.

Affordable internet software for Windows has become available only since Spring 1993. Prior to that time, Windows users were dependent for internet access on expensive, proprietary, commercial products in which each vendor's offerings were mutually incompatible with every other vendor's offerings. Publication of the Winsock applications programming interface provided a way for individual client software (such as a telnet or FTP client) to be compatible with every vendor's networking products. As a result, beginning in 1993 there was a blossoming of freeware, shareware and commercial internet software for Windows.

Of special interest has been the development of Windows interfaces to the World Wide Web, such as Cello and NCSA (National Center for Supercomputing Applications) Mosaic. The Web was

developed by the high energy physics community to distribute technical papers and other forms of data. WWW is now widely viewed as a means for educators, businesses, and hobbyists to distribute multimedia information to a world-wide audience. Graphical WWW clients enable publication of data over the internet in a manner which allows the user to view text, color graphics, sound, and video in a manner that approaches the usability, and surpasses the functionality, of a printed magazine.

E-Mail

Electronic mail is probably the most widely used internet function. A commonly used configuration requires that a user have an account on a POP (Post Office Protocol) mail server. The e-mail client software accesses the server and downloads any incoming messages to the user's PC. Mail composed at the user's PC is transmitted to the internet through the mail server.

Internet News

Internet news, also known somewhat incorrectly as USENET news, is a conferencing system made up of thousands of topical conferences known as news groups. Those familiar with electronic bulletin board systems will compare internet news to echo conferences. Others will draw an analogy to mailing lists such as listserv on BITNET. The user reads the news by using client software to subscribe to a selection of news groups. When the client software accesses an NNTP (Network News Transfer Protocol) server, the server downloads to the client a list of subjects for all unread messages stored on the server for the selected group. The user can then select any message for reading, post a response to the message to the group, or reply directly to the original poster of the message. The client software maintains on the user's PC a list of all available groups on the server, along with records of which messages have been read or skipped over. Only the messages selected for reading are actually downloaded to the user's PC.

FTP

FTP (File Transfer Protocol) allows the transfer of files between any two computers of any type. Thus, files can be transferred from PC to PC, PC to mainframe, PC to Mac, PC to UNIX machine, and vice versa. Any kind of computer file, whether it be a text file or a binary file representing software, graphics images, or sounds, can be sent. Of course, whether the file is usable on the receiving machine depends on the nature of the file and the availability of software to make use of the file.

TELNET

Telnet enables the user of a PC to login to a host computer at another site on the internet. The user's PC then acts as a dumb terminal attached to the remote host. Such access usually requires that the user have an account on the remote host. For instance, a student or faculty member at one university might have an account on a computer located at another university. An increasing number of commercial services are becoming available via telnet, including services such as the Dow Jones News Service and the Lexis/Nexis service. In addition, some services are available without charge. For example, hundreds of libraries in all parts of the world allow free remote access to their computerized catalogs and to some specialized databases.

Gopher

Gopher is a system that enables the user to find files and other internet services by navigating a system of menus and submenus. As a corollary, it provides a means for information providers to publish information on the internet in a discoverable manner. Prior to the development of Gopher at the University of Minnesota, information on the internet was located by asking friends and strangers where to look.

The first step in using a Gopher client is to point the client at the address of a known Gopher server. The client then retrieves that Gopher's menu of topics. Typically, many of the topics on a Gopher menu are pointers to yet other menu items on other Gopher servers. The fact that each item in the sequence of selections might come from different Gopher servers in widely scattered parts of the world is completely transparent to the user. The Gopher client software presents the many different Gopher servers as if they represented a single application on a single machine. Navigating such menus can lead the user to skip from one Gopher server to another, literally retrieving information from servers scattered around the world in just a few minutes.

Items on Gopher menus can be of many different data types in addition to menus listing choices of topics. When an item such as a text, graphics, or sound file is selected, the Gopher client transfers the file to the user's PC. Then, as an option, it may load the file into an appropriate "viewer" selected by the user. A simple text file could be loaded into Windows Notepad. A graphics file in GIF or JPEG format might be loaded into LVIEW, a popular freeware graphics viewer for Windows. A binary program file would simply be downloaded into a designated directory for use at some other time. Finding relevant Gopher menu items is facilitated through the use of Veronica, which is a database of the text of Gopher menus. Most Gopher servers will include Veronica access as a menu selection.

World Wide Web (WWW)

World Wide Web (WWW) is a system that enables users to find and retrieve information by navigating a system of hypertext documents. In a hypertext document, selecting a highlighted word or phrase causes a new document to be retrieved and displayed. Thus, WWW leads the user to skip from one document to another, retrieving information from servers scattered around the world. This contrasts with the simple menu displays used by Gopher.

Viewing a WWW document with a Windows graphical client such as Cello or Mosaic is much like reading a magazine. Information is displayed with typographic fonts and color graphics, and supplemented by sound that can be played by clicking an icon embedded in the document. Clicking on a highlighted word or phrase in the document retrieves yet another document.

Technical Details

It is helpful to know some internet terminology when working with your local network specialist or internet service provider to make your PC a host on the internet. The two most common modes of internet access are through a direct network connection or through a SLIP server.

A direct network connection involves installing a network interface card (NIC) in your PC. Most likely this will be an ethernet card. This card in turn is connected to your organization's local area network. Wiring usually consists of coaxial cable (as in thin-wire ethernet) or twisted pair telephone wiring (as in 10Base-T ethernet). The local network in turn must be connected to the internet, and it must be capable of handling TCP/IP data packets.

TCP/IP (Transmission Control Protocol/Internet Protocol) is the method by which data on the internet is divided into packets of bytes. Each packet is delimited with header information that includes the destination address where the packet is to be routed when it is transmitted over the internet. The local network and your PC may also be using other network protocols simultaneously with TCP/IP. For instance, your PC may already be connected to a network using Novell, LANtastic, or Windows for Workgroups network protocols.

Software Layers

Several layers of software are involved in implementing a direct network connection. A commonly used method is to first install a piece of software called a packet driver that deals directly with the network interface card. This is loaded under DOS from the AUTOEXEC.BAT file as a TSR (terminate and stay resident) program. A packet driver should be included with the software that comes with the card. If the manufacturer of the card does not supply a packet driver, free packet drivers are available in the Crynwr Packet Driver Collection as described at the end of this document.

The next layer of software is the TCP/IP driver, which can be implemented in a variety of ways. Until recently, this was often another DOS TSR program loaded from the AUTOEXEC.BAT file. Increasingly this layer of software is implemented as a Windows dynamic link library (DLL) or as a Windows virtual device driver (VxD), which does not require any modification of the boot files on the PC. This driver, which implements TCP/IP functionality for the system, is referred to as the TCP/IP protocol stack. The driver may be written to work with a specific network card, or it can be written to interface with a packet driver. In the latter case, a single TCP/IP driver can be used with any network card for which an associated packet driver is available. Thus, the packet driver specification eliminates the need for software vendors to customize their TCP/IP protocol stack for every network card on which it is used. When using a packet driver with Windows applications, another DOS TSR referred to as a virtual packet driver may be required to interface between the Windows- based TCP/IP protocol stack and the DOS-based packet driver.

When a direct network connection is not available, internet TCP/IP software can be used over serial lines to connect to a SLIP (Serial Line Internet Protocol) server that provides a connection to the internet. SLIP does not require the drivers used for a direct network connection. The Trumpet Winsock shareware package to be described later has all SLIP functions internal to the TCP/IP driver, which is configured through a Windows dialog box.

SLIP is less transparent to the user than is a direct network connection. The user first obtains an account on a SLIP server. Connecting to the internet involves dialing the SLIP server using normal serial communications software and establishing a SLIP connection. Once the connection is established, TCP/IP software running on the PC can be used just as if the PC was connected directly to the internet through a network card. SLIP users are well advised to settle for nothing less than transmission at 14,400 bits per second. Internet services such as World Wide Web transmit a great deal of data, especially when images or sound are being used. Slow modems and slow connections will discourage anyone but the most dedicated user from exploring the possibilities of the internet.

TCP/IP client applications work at the top of the layers of software so far described. Clients run independently of whether the computer has a direct connection or a SLIP connection to the internet. TCP/IP applications frequently are referred to as clients because they access a corresponding server (a daemon in UNIX terminology) on another machine. An FTP client, for instance, is the application on the user's machine that accesses the FTP server running on a host computer located elsewhere on the internet. Until recently, each TCP/IP client had to be written to interface with a particular vendor's TCP/IP protocol stack. Clients that worked with one vendor's TCP/IP driver would not work with a driver from another vendor. This restriction was eliminated with the development of the Windows Sockets Application Programming Interface, otherwise known as the Winsock API, or more simply Winsock. Winsock works in the layer between the TCP/IP client and the TCP/IP protocol stack.

Winsock

"Winsock" is the buzzword that dominates discussion about TCP/IP and Windows. All of the software to be described here is based on Winsock. The implementation of Winsock is transparent to the user, but it is helpful for the end-user to know how it supports Windows applications.

Winsock (short for Windows sockets) is a technical specification that defines a standard interface between a Windows TCP/IP clien application (such as an FTP client or a Gopher client) and the underlying TCP/IP protocol stack. The nomenclature is based on the Sockets applications programming interface model used in Berkeley UNIX for communications between programs.

When you launch a Winsock compliant client like HGopher, it calls procedures from the WINSOCK.DLL dynamic link library. These procedures in turn invoke procedures in the drivers supplie with the TCP/IP protocol stack. As described earlier, the TCP/IP driver communicates with the computer's ethernet card through tl packet driver.

The WINSOCK.DLL file is not a generic file that can be used on any system. Each vendor of a TCP/IP protocol stack supplies a proprietary WINSOCK.DLL that works only with that vendor's TCP/IP stack.

The advantage of Winsock to the developer of a client is that the application will work with any vendor's Winsock implementatio Thus, the developer of an application such as a Gopher client ha to understand the Winsock interface, but he does not have to knc the details of each vendor's TCP/IP protocol stack in order to make his client application compatible with that stack. Winsock also eliminates the need for an application developer to include own TCP/IP protocol stack within the application program itself an alternative to making his application work with a particular vendor's protocol stack. The use of protocol stacks internal to th

client results in conflicts when two clients try to access the single packet driver that is communicating with the network card. The ability to create applications compatible with any vendor's Winsock compliant protocol stack has resulted in a blossoming of Winsock compliant shareware applications since the summer of 1993.

The Winsock standard offers advantages to the end-user. One advantage is that several Winsock applications from different vendors can be used simultaneously. This is a marked improvement over earlier packet driver applications in which each application contained a built-in TCP/IP stack. Such applications cannot share the packet driver except through the added complexity of a packet multiplexer such as PKTMUX. A second advantage to the user is that any Winsock compliant application will run with any vendor's TCP/IP protocol stack and accompanying WINSOCK.DLL.

Unfortunately, some commercial vendors of TCP/IP clients are not yet taking advantage of Winsock capabilities. There are still TCP/IP clients that require dedicated access to the packet driver, and clients that will run only with the TCP/IP protocol stack supplied by one particular vendor. Fortunately, the clear trend is for all commercial vendors to make their applications more usable and portable through the use of the Winsock standard.

Software Descriptions

Once the required networking hardware is installed and an IP address is assigned, or once a SLIP account is obtained on a server, the user needs to install a TCP/IP protocol stack and a selection of TCP/IP clients. The remainder of this paper describes such software.

For each application, I briefly outline the installation procedures. I do this primarily to illustrate the simplicity of using Windows for internet access. Please be sure to read any text files included with each package in order to complete the configuration and to learn about all functions of the software.

I have installed all the software described here for many of my colleagues in the Virginia Tech Libraries. With some practice I have found that I can install a complete suite of TCP/IP applications in about half an hour. Some individuals who read the previous versions of this document were up and running in less than an hour after obtaining the software. They expressed their delight at the ease of networking with Windows.

DISCLAIMERS AND LIMITED WARRANTIES

I am not an expert on anything. I am just an enthusiastic end-user of these products in my daily work. Some of these products are in alpha or beta versions at this writing. Despite this, most are as stable and reliable as any commercial application. In some cases, the alpha or beta designation may arise from the fact that features are still being added by the authors. Indeed, some of these products have gone through several releases in the past few months as developers responded via the internet to feedback from users who reported bugs or requested new features.

I have used all of the client software with a direct connection to an ethernet network using a Western Digital or SMC ethernet card with the Trumpet Winsock shareware TCP/IP protocol stack and WINSOCK.DLL. In addition, I have used most of the clients with FTP Software's commercial package PC/TCP version 2.2. In the latter case I obtained the most recent version of FTP Software's WINSOCK.DLL file by anonymous FTP from ftp.ftp.com in directory /support/winsock under the name winsock.exe (a self-extracting ZIP file). The Trumpet and FTP products both use a packet driver interface to the network card. I have also used most of the clients on a Windows for Workgroups network using the Final Beta version of Microsoft's add-on TCP/IP package. This package is available by anonymous ftp from ftp.microsoft.com in the directory /peropsys/WFW/tcpip/vxdbeta under the file name MTCB3.EXE, a self-extracting archive file. I also have used most of the client software through a SLIP server using the Trumpet Winsock. Both a dialup connection to the SLIP server and a connection through an IBM/ROLM digital switch (modemless connection) were used at various times.

As discussed above, the client software described here should run with any TCP/IP protocol stack that offers Winsock support. If your PC is already using a network operating system that does not include Winsock support, you should check with your vendor to find out if Winsock support is available. If Winsock support is not available from your vendor, then it may be possible to install the Trumpet Winsock TCP/IP protocol stack over your existing network drivers using a small program known as a packet driver shim. Instructions for this configuration are included in the Trumpet Winsock documentation.

The information about version numbers, file sizes, and dates was verified on June 21, 1994.

TRUMPET WINSOCK (TCP/IP protocol stack and basic clients) (including telnet, FTP, ping, Archie)

Comment: You need this package (or some other TCP/IP protocol stack that supports Winsock) before you can use any of the client software described later. Trumpet Winsock does not require any additional network software. It's TCP/IP functions can be installed over other network software such as Novell or Windows for Workgroups using a packet driver shim. Instructions for such installations are included in the ZIP file.

Author: Peter Tattam, Trumpet Software International

Fee: $20 shareware fee. TSI has extended the free trial period until the final release of version 1.0B, which is in beta testing at this time.

Version: 1.0 Revision A

File name: twsk10a.zip February 3, 1994 120,569 bytes (includes the TCP/IP protocol stack) winapps.zip November 30, 1993 131,516 bytes (includes basic clients)

Available by anonymous FTP from: ftp.utas.edu.au in directory / pc/trumpet/winsock or by Gopher from info.utas.edu.au under menu item UTas FTP Archive/pc/trumpet/winsock

Installation:

1. Create directory C:\TRUMPWSK and unzip TWSK10A.ZIP and WINAPPS.ZIP into this directory.

2. Install software drivers.

Ethernet network:

a. Install packet driver for your ethernet card. The entry in my AUTOEXEC.BAT file is:

C:\ETHERNET\8003PKDR.EXE /B:240 /R:D000 /I:10 /E:61

b. Install WINPKT.COM virtual packet driver included in TWSK10A.ZIP. The entry in my AUTOEXEC.BAT file is:

C:\TRUMPWSK\WINPKT.COM 0x61

SLIP: No special drivers are needed because SLIP support is built into the Trumpet Winsock TCPMAN.EXE program.

3. In Program Manager, create a program group named Network. Use File Manager to drag and drop the EXE files in C:\TRUMPWSK into the Network program group.

4. Edit the PATH statement in AUTOEXEC.BAT to include C:\TRUMPWSK. This enables Winsock applications to find WINSOCK.DLL when they are launched.

5. Reboot the computer and start Windows.

6. Launch TCPMAN from the Network program group. Select Setup on the menu bar. Enter your IP address, gateway address, and nameserver address as assigned by your local network administrator. (Some SLIP servers do not use permanent IP addresses. Instead, the SLIP server assigns a temporary IP address at the start of the session. In this case, enter 0.0.0.0 as a dummy IP address.) If you are using ethernet, enter the software interrupt used by the packet driver. If you are using SLIP, check the SLIP check box and enter the appropriate COM port number in the SLIP port box. Exit from TCPMAN. The file TRUMPWSK.INI will be created in the C:\TRUMPWSK directory.

7. Launch any Winsock compliant application. TCPMAN.EXE will start automatically if it is not already running. (If you are using SLIP, you must first connect to the server and start a SLIP session. This can be done with the dialing function in TCPMAN.) Several clients are included with the Trumpet Winsock, including TELW.EXE for telnet, FTPW.EXE for FTP, WINARCH.EXE for searching Archie databases, PINGW.EXE to ping another machine on the network, and HOPCHKW.EXE to trace the path through the internet used to reach a particular host.

Note: The WINSOCK.DLL file for the Trumpet Winsock remains in the C:\TRUMPWSK directory. Some vendors may require that their WINSOCK.DLL be copied to the C:\WINDOWS directory. If you have used Winsock software from another vendor, but now want to try the Trumpet Winsock, be sure to remove the other vendor's WINSOCK.DLL so that it will not interfere with the Trumpet Winsock implementation.

Tip: The WINARCH client for Archie searching that is supplied in WINAPPS.ZIP defaults to searching the Archie server at archie.au. You can access a different Archie server by using a command line argument. For instance, to use the Archie server run by AT&T, use the command line winarch.exe -archie=ds.internic.net.

SLIP usage: Trumpet Winsock includes a simple dialing function. You can connect to your SLIP server by manually issuing the dialing commands. You can also write a script that will dial and start your SLIP session automatically. When your SLIP session starts, TCPMAN will use the address assigned by the SLIP server.

PITFALL: After dialing with TCPMAN.EXE and establishing the SLIP session, you must press the <ESC> key to escape from dialing mode and to re-enable the SLIP function in TCPMAN.EXE.

If you want to dial your SLIP server automatically, but you do not care to write your own dialing script for TCPMAN.EXE, a utility named DIALER provides a convenient means of dialing the phone and automatically starting the SLIP session. DIALER can be set up to automatically issue the commands and passwords needed to start the SLIP session. DIALER version 2.0A is available by anonymous FTP from:

ftp.demon.co.uk/pub/ibmpc/windows/utilities/dialexe.zip (May 27 1994, 31,072 bytes)

HGOPHER (Gopher client)

Comment: Version 2.4 of HGopher was the most recent sharewar version. However, HGopher has been sold to FTP Software Inc., which expects to issue a commercial version in the near future. Thus, version 2.4 is no longer available from its author. He still distributes Version 2.3 of HGopher, which is quite functional and will continue to be available as shareware. It will no longer be maintained or enhanced. Copies of version 2.4 may still be found at some anonymous FTP sites or at some Gopher sites.

Author: Martyn Hampson

License: Public domain. Mr. Hampson suggests you donate $10.00 to your favorite charity if you like HGopher.

Version: 2.3

File name: hgopher2.3.zip October 21, 1993 190,057 bytes (Yes that is not a valid DOS name. You will have to change it to something else when you download it.)

Available by anonymous FTP from: lister.cc.ic.ac.uk in directc /pub/wingopher or by Gopher from gopher.ic.ac.uk under menu item Networking/HGopher Information Center/The Hgopher distribution and Viewers

Installation:

1. Create the directory C:\HGOPHER and unzip hgopher2.3.zip (under whatever name you saved it) into this directory.

2. Create a new program item in the Network program group fo the program C:\HGOPHER\HGOPHER.EXE.

3. Launch HGopher.

4. Supply the addresses and other information in the dialog box for the menu selections Options Gopher Set Up and Options Network Set Up. For some types of information distributed via Gopher, you will need to configure the viewers using the Optio

Viewers dialog box. For example, you need to tell HGopher which telnet client to use, and which program to use for viewing JPEG or GIF image files. The HGOPHER.INI file and bookmark files are kept in the C:\HGOPHER directory.

TRUMPET FOR WINDOWS (internet news reader and POP mail client)

Comment: To read internet news, you need access to an NNTP (Network News Transfer Protocol) server. To use the mail functions, you need an account on a POP (Post Office Protocol) mail server. (I have not tested the mail functions in this application because I prefer to use PC Eudora for mail.)

Author: Peter Tattam. Trumpet Software International

Fee: $40.00 shareware fee. TSI has extended the free trial period until the final release of version 1.0B, which is in beta testing at this time.

Version: 1.0 Revision A

File name: wtwsk10a.zip August 28, 1993 167,601 bytes

Available by anonymous FTP from: ftp.utas.edu.au in directory / pc/trumpet/wintrump or by Gopher from info.utas.edu.au under menu item /pc/trumpet/wintrump

Installation:

1. Create the directory C:\WINTRUMP and unzip WTWSK10A.ZIP into this directory.

2. Create a new program item in the Network program group for the program C:\WINTRUMP\WT_WSK.EXE.

3. Launch the program.

4. Supply the address and other information in the dialog boxes for the menu selections File Setup and File Network Setup. NEWS.PRM and other configuration files will be created and stored in C:\WINTRUMP.

PITFALL: The list of available news groups on your news server is stored by Trumpet in the file NEWS.GRP. At times, Trumpet fails to fully update this file with new groups available from the server. You can force Trumpet to create a new and complete list of available groups by erasing NEWS.GRP before starting Trumpet.

PC EUDORA (full-featured mail client)

Comment: You will need an account on a POP mail server to send and receive mail at your PC. QUALCOMM sells a commercial version of Eudora for both Windows and the Macintosh.

Author: Jeff Beckley and Jeff Gehlhaar, QUALCOMM, Inc.

License: Shareware version is free

Version: Shareware: 1.4

File name: eudora14.exe December 16, 1993 275,600 bytes (self extracting archive file)

Available by anonymous FTP from:

ftp.qualcomm.com in directory /quest/windows/eudora/1.4

Installation:

1. Copy the file EUDORA14.EXE to the directory C:\PCEUDORA.

2. Execute EUDORA14 from the DOS prompt to unarchive the program files.

3. Create a new program item in the Network program group for the program C:\PCEUDORA\WEUDORA.EXE.

4. Launch the program.

5. Select Special Configuration from the menu bar and supply the required information.

6. Select Special Switches and set characteristics as desired.

7. Create mailboxes and nicknames to taste.

8. The file EUDORA.INI and other configuration files will be created in the C:\PCEDUORA directory.

Note: A revised version is in beta testing at this time. It is available by anonymous ftp from ftp.qualcomm.com in directory /quest/windows/eudora/1.4/beta under the file name eu142b16.exe (June 8, 1994 198,354 bytes)

WS_FTP (FTP client)WS_PING (ping client)

Author: John Junod

License: Public domain

Version: 94.04.24 (WS_FTP) 94.01.23 (WS_PING)

File names: ws_ftp.zip April 25, 1994 73,642 bytes ws_ping.zip January 27, 1994 59,373 bytes

Available by anonymous FTP from: ftp.usma.edu in directory /pub/msdos/winsock.files. Those who want to experiment with a beta copy of a newer version of WS_FTP can download ws_ftp.zip.beta from the directory /pub/msdos.

Installation:

1. Create the directory C:\WS_.

2. Unzip WS_FTP.ZIP into this directory.

3. Unzip the file WS_PING.EXE from its ZIP file into this directory also. (Full source code for WS_PING is included in the ZIP file with the name WSPI_SRC.ZIP. Source code for the current version of WS_FTP is not distributed. However, source code for the 93-12-05 version of WS_FTP can be downloaded from directory /pub/msdos/winsock.files under the name ws_ftp_s.zip.)

4. Create new program items in the Network program group for the programs C:\WS_\WS_FTP.EXE and C:\WS_\WS_PING.EXE.

5. Launch the programs.

6. The WS_FTP.INI file remains in the C:\WS_ directory. A file named WINSOCK.INI is created by WS_PING in the C:\WINDOWS directory.

NCSA MOSAIC for Microsoft Windows (World Wide Web browser) (and Gopher client)

Comment: An exquisite display of World Wide Web documents, including full color graphics and sound mixed in with text. Users should note the alpha version designation and use caution about saving work in any other running applications before launching Mosaic. As in previous versions, simply launching and then exiting from Mosaic permanently reduces by 3% to 5% the Windows user.exe resources on my machine. Launching Mosaic and exiting several times can lead to conditions that require you to restart Windows.

Mosaic is a 32-bit application and will run under Windows NT, Microsoft's advanced workstation operating system. Most users will be using Windows 3.1 and Windows for Workgroups, which are 16-bit applications. To use Mosaic with these systems, you must first install Win32s version 1.1.5 or later. This addition to the Windows operating system enables current version of Windows to run 32-bit code that is not Windows NT specific.

Authors: Ryan Grant, Briand Sanderson, Darian Woodford

License: Free

Version: 2.0 alpha 5

File name: wmos20a5.zip June 17, 1994 272,435 bytes win32s.zip May 12, 1994 1,269,110 bytes

Available by anonymous FTP from: ftp.ncsa.uiuc.edu in directory / PC/Mosaic

Installation:

1. Install Win32s following the instructions in the ZIP file. The files will be installed in the directory C:\WINDOWS\SYSTEM\WIN32S.

2. Create the directory C:\MOSAIC and unzip WMOS20A5.ZIP into this directory.

3. Create a new *program item in the Network program group for the program C:\MOSAIC\MOSAIC.EXE.*

4. Copy the file MOSAIC.INI to C:\WINDOWS. (You can put MOSAIC.INI in a different directory if you use a DOS environment variable to point to the correct directory.)

5. Edit the INI file following instructions in the file INSTALL.TXT.

6. Launch the program.

NOTE: You can avoid the added complexity of installing Win32s and the substantial demands it places on your PC by reverting to Mosaic version 2.0 alpha 2. This version is still available from NCSA's FTP server in directory /PC/Mosaic/old. Alternatively, you can use the WWW browser Cello as described below.

CELLO (World Wide Web browser and Gopher client)

Comment: This Web client may be more stable than Mosaic, but it lacks Mosaic's convenient bookmark menus. Users of Diamond Stealth video cards report problems with the mouse cursor, which virtually disappears when the mouse is moved. The listserv CELLO-L is busy with messages about CELLO development and about shareware for creating HTML documents for use on Web servers. Instructions for subscribing to CELLO-L are included in the Cello Help file.

Author: Thomas R. Bruce

License: Free

Version: 1.01a

File name: cello.zip March 17, 1994 328,429 bytes

Available by anonymous FTP from: ftp.law.cornell.edu in directory /pub/LII/Cello

Installation:

1. Create the directory C:\CELLO and unzip CELLO.ZIP into th directory.

2. Create a new program item in the Network program group for the program C:\CELLO\CELLO.EXE.

3. Launch the program.

WFTPD (FTP server)

Comment: I had not imagined I would want or need to use my I as an FTP server. However, I have found this product useful on a couple of occasions to transfer files from an IBM mainframe to my PC. This is far easier than trying to FTP to the mainframe from my PC. Even colleagues new to Windows and networking are beginning to find it useful to run their PC as an FTP server in order to exchange files with their colleagues. Note that WinQVT Net, which is described later, has an FTP server function also.

Author: Alun Jones

License: $15.00. The unregistered shareware version displays a message to anyone accessing the server that the owner is unable unwilling to pay the shareware fee. The shareware version is limited to five file transfers per session.

Version: 1.9c. Note that previous versions had a serious security bug and should not be used.

File name: wftpd19c.zip June 14, 1994 131,178 bytes
Available by anonymous FTP from: ftp.cica.indiana.edu in /pub pc/win3/winsock

Installation:

1. Create the directory C:\WFTPD and unzip WFTPD19C.ZIP into this directory.

2. Create a new program item in the Network program group for the program C:\WFTPD\WFTPD.EXE.

3. Launch the program.4. Complete the information in the Security dialog box to establish security control using access passwords and restricted home directories for those you authorize to access your PC. The file WFTPD.INI will be created in the C:\WINDOWS directory.

TELNET

The glaring deficiency in the Winsock pantheon of internet clients is the absence of a good stand-alone telnet client. Here is a brief description of some alternatives I have tried.

TELW

Comment: TELW.EXE is included with the Trumpet Winsock package in the WINAPPS.ZIP file. It is the first client that shareware users are likely to try. It is a minimal client with no configuration possibilities. It can be useful at times as a terminal/telnet viewer in HGopher.

WinQVT/Net

Comment: WinQVT/Net is an integrated package that includes telnet, FTP, FTP server, mail, and news reader clients. These client applications are normally launched from a console window. The telnet client is probably the best shareware Winsock telnet client available. You can select terminal emulations and customize the keyboard. The resizable telnet window includes scrollback and session logging. A deficiency is that telnet cannot be launched independently of the console window. However, if WinQVT/Net is already running, then an instance of the telnet client can be launched from another application by invoking the TNSTART.EXE program that comes with WinQVT/Net. This makes it possible to use this telnet client as the terminal/telnet viewer in HGopher.

Author: QPC Software

License: There has been discussion in alt.winsock and other news groups about the difficulty of getting any response to e-mail and fax messages from the author of WinQVT/Net. Paying the license fee may be difficult as a result.

Version: 3.97

File name: qvtws397.zip 288,373 bytes

Available by anonymous FTP from: biochemistry.bioc.cwru.edu (closed to public 9-5 weekdays) or by Gopher from biochemistry.cwru.edu under menu item CWRU Biochemistry FTP Archive/qvtnet

TRMPTEL

Comment: This is my favorite telnet client at the moment. It can be used as a terminal/telnet viewer with HGopher or with Mosaic and Cello. It is a very early release of a client that can be expected to become excellent in the near future.

Author: Peter Tattam

License: Free beta version

Version: 0.06

File name: trmptel.exe April 28, 1994 68,608 bytes

Available by anonymous FTP from: petros.psychol.utas.edu.au in directory /pub/trumpet/trmptel

EWAN

Comment: EWAN (Emulator Without a Good Name) is a promising newWinsock telnet client. It also can be used as a terminal/telnetviewer with HGopher or with Mosaic and Cello.

Author: Peter Zander

License: Free

Version: 1.0

File name: ewan10.exe June 15, 1994 129,155 bytes

Available by anonymous FTP from: ftp.lysator.liu.se in directory /pub/msdos/windows

NCSA TELNET

Comment: NCSA telnet is a standard in the DOS and Macintosh environments. The Winsock client is under development. A spokesman for NCSA has posted messages to the internet saying that the existing client was thrown together quickly, and it is not supported. A student has been hired to write a new version of the client, but it was said he had to learn TCP/IP and Windows programming. I have not found this client useful, but others may wish to experiment with it. No doubt NCSA will produce an excellent telnet client in the future.

License: Free

Version: beta 3

File name: wintelb3.zip October 21, 1993 55,834 bytes

Available by anonymous FTP from: ftp.ncsa.uiuc.edu in directory /PC/Telnet/windows

QWS3270

Comment: Telnet clients usually emulate a VT100 terminal or one of its variations, the standard for connecting to a UNIX host. However, telneting to an IBM mainframe requires emulation of an IBM 3270 terminal. QWS3270 provides the necessary functionality. I was especially pleased with the easily-configured 4 color capability that makes it easier to distinguish protected, unprotected, and highlighted text on a VM screen.

Author: Jim Rymerson

License: Free

Version: 3.1e

File name: qws3270.zip June 9, 1994 70,526 bytes

Available by anonymous FTP from: ftp.ccs.queensu.ca in directory /pub/msdos/tcpip

OTHER SOURCES FOR WINSOCK INFORMATION

It remains true that the best guide to the internet is the internet itself. The best software for navigating the internet is freely available on the internet.

Considerable information about the Winsock API, along with some application programs, is available at: sunsite.unc.edu in directory / pub/micro/pc-stuff/ms-windows/winsock.

The anonymous FTP sites that I list as sources for programs are the sites designated by the authors as their home sites. These sites will always have the latest version of the software.

In addition, copies of the software may usually be obtained by anonymous FTP from ftp.cica.indiana.edu in /pub/pc/win3/winsock. However, it is the case that this directory at CICA will not always contain the current versions. Check the directory /pub/pc/win3/ pending.uploads for text files that may describe new versions of programs that are still in the uploads directory and not distributed to their final directory location. Unfortunately, a recent policy change at CICA prevents anonymous users from viewing the uploads directory. Dates on the files at CICA may disagree with the dates on the files at the home sites. Note that CICA is the main internet site for Windows applications. It is usually busy, and you may have difficulty connecting. There are several other internet sites that provide mirror copies of the Windows collection at CICA. These are listed in the message displayed if you are denied access to CICA. The list of mirror sites is included in the file README in the /pub/ pc/win3 directory. When using CICA, it is helpful to download the file INDEX (ascii) or INDEX.ZIP from /pub/pc/win3. INDEX contains one-line descriptions of each file in the collection.

The news groups alt.winsock, and comp.protocols.tcp-ip.ibmpc carry discussions of the Winsock specification and Winsock compliant applications, as do the groups in the comp.os.ms-windows.networking hierarchy. Trumpet Winsock and related clients are discussed in several news groups in the trumpet hierarchy.

Information about specific clients may be found in groups devoted to that class of client. For instance, HGopher is discussed in alt.gopher and in comp.infosystems.gopher. Cello and Mosaic are discussed in the sections of the comp.infosystems.www hierarchy.

The BITNET listserv WIN3-L@UICVM carries discussions about all topics relating to Windows, including Winsock applications. Some news servers carry this listserv under the news group name bit.listserv.win3-l.

A comprehensive list of FTP'able Winsock applications is available from Larsen Consulting and Sales, Phoenix, Arizona, USA. To get a copy of the list, send an e-mail message to lcsinfo@lcs.com wit the Subject: FAQ. Nothing else should be in the message.

A FAQ (Frequently Asked Questions) about TCP/IP on PC-compatible computers written by Bernard D. Adoba is posted monthly on comp.protocols.tcp-ip.ibmpc. A copy can be obtain by anonymous FTP from rtfm.mit.edu in directory /pub/usenet-l hierarchy/comp/protocols/tcp-ip/ibmpc under the decidedly non DOS filename comp.protocols.tcp-ip.ibmpc_ Frequently_ Asked Questions_(FAQ). The version dated May 4, 1994 is 145,270 bytes. I downloaded this ASCII file to my PC and saved it under the filename IBMTCP.FAQ. It is also available under the name ibmtcp.zip from netcom2.netcom.com in directory /pub/mailcor IBMTCP.

An introduction to SLIP is available by pointing your Gopher client at gopher.vt.edu. Look down the menus through Computi Center.../Experimental file system/nyman/whatslip.txt.

The Crynwr packet drivers collection is available by anonymous FTP in the well-known Simtel20 collection, as well as through a variety of other methods. The primary publicly available site fo Simtel files is at oak.oakland.edu. The packet drivers are in the directory /systems/ibmpc/simtel/pktdrvr:

pktd11.zip November 22, 1993 435420 bytespktd11a.zip Nover ber 22, 1993 326152 bytespktd11b.zip November 22, 1993 344 bytespktd11c.zip December 14, 1993 81834 bytes.

An early version of this document (dated February 9, 1994) wa published in the "Toolkit" section of the March 14, 1994 issue "Global Network News." GNN is part of the "Global Network Navigator," a World Wide Web publication of O'Reilly Associa Articles in GNN are aimed at the reader with a general interest the internet and networked information. You can read GNN by pointing Mosaic or Cello at http://www.wimsey.com/gnn/ gnn.html.

The latest version of "Windows and TCP/IP for Internet Acces available by anonymous FTP from nebula.lib.vt.edu in the directory /pub/windows/winsock under the name wtcpip**.zip

I thank each of you who sent me personal messages following postings of earlier versions of this evolving document. I have received e-mail about this document from individuals on seve continents. Thanks to AJO at McMurdo Station for sending m message from Antarctica.

I am gratified to have been able to help many of you, and I appreciate the suggestions and information you have sent me. efforts in producing this document can be only a small and indirect repayment of the debt I owe to the developers who produce this software and to the many internet users who are willing to share information.

Please send error reports to me at hmkriz@vt.edu. I would b grateful for suggestions for improvements and additions to th document. Thanks again to everyone who replied to my begi questions over the past year. I greatly appreciate your patien and your willingness to share your knowledge.

David William Thacker Rippin, 1935-1994

by Rex Reklaitis

The Editorial Advisory Board, Publisher, authors and readers of Computers & Chemical Engineering as well as the CAST Division of the AIChE note with sadness the unexpected and untimely death of Professor David W. T. Rippin on 26 June 1994. He was an international leader in the process systems engineering field whose loss is deeply felt by all who knew and worked with him.

Professor Rippin completed his undergraduate and graduate education in chemical engineering at Cambridge University. Upon receiving the PhD in 1960, he was named NATO Postdoctoral Fellow at the University of Delaware (USA). He held appointments as Lecturer in Chemical Engineering at Imperial College, Senior Lecturer in the Simulation and Control of Chemical Processes at the University of Lancaster, and, since 1970, Full Professor of Chemical Engineering at the ETH-Zurich. Most recently, he has served as Head of the Chemistry Faculty and the Chemistry Department, ETH-Zurich.

He was a pioneer in the development of systems engineering methods and their application to problems arising in the synthesis, design, and operation of chemical plants and processes. His work spanned the development of mathematical models via chemometric, nonlinear parameter estimation, and statistical techniques to the formulation and solution of design, control, and scheduling problems which arise in batch processing. In these fields he advised 51 doctoral dissertations and authored over 100 technical papers. He received the Medal of the City of Paris (1986) and in 1990 was elected Foreign Member of the Academy of Technological Sciences of Russia.

In addition to his prolific research work, Professor Rippin was prominent in professional and scientific affairs on a truly international level. As Swiss representative to the European Federation of Chemical Engineering working parties on Computer Aided Process Engineering and Chemical Engineering Education, he was involved in the organization of the annual technical conferences, most recently called the ESCAPE series. He had also served for many years as chairman of EURECHA, the European Committee for the Use of Computers in Chemical Engineering Education and was actively involved in the Foundations of Computer Aided Process Design (FOCAPD) and Operations (FOCAPO) series of specialist conferences as member of organizing committees, conference co-chair (FOCAPO'93), session chair, and lecturer. He was co-chair of the NATO Advanced Study Institute on Batch Process Systems Engineering (1992) and member of the International Program Committees for the Process Systems Engineering series of conferences, including PSE'94 held in Korea in May 1994. Since the creation of Computers & Chemical Engineering, he served, first as member of the Editorial Advisory Board (1977), then as Associate Editor (1983), and, since 1986, as Co-Editor, helping to nurture the growth and enhance the stature of this journal.

Professor Rippin is survived by his wife, Anne, and three children, Jane, Jonathan, and Thomas.

CAST Area 10B Information Available on World Wide Web

by Jeffrey C. Kantor

Date: Mon, 11 Jul 94 18:21:53 EST
From: jeff@control.cheg.nd.edu (Jeffrey C. Kantor)
To: CAST10_Email_List@control.cheg.nd.edu
Subject: The CAST10 Email List is now on the World Wide Web

The information distributed on the CAST10 Email List is now available via the World Wide Web. It is located at URL

http://control.cheg.nd.edu/cast10/

If you're not already aware of the World Wide Web, then you may want to look into it. It's like gopher, but typical client software is much richer and, in my opinion, more intuitive. NCSA Mosaic is a widely used client to access the Web, and it is available by anonymous ftp to ftp.ncsa.uiuc.edu for Unix, Mac, or PC platforms. I do not use any graphics, so text-based web clients (such as lynx) should work fine.

The Web is all the rage on the internet right now, so your local computer gurus should be able to assist you in getting a client set up for you if you don't already have one.

The WWW will be used to archive the information that is posted on the Email List. Currently there are listings of upcoming meetings, job and postdoc openings, and a few links to other internet resources of interest to CAST.

I will continue to gather and distribute announcements as on the Email List as always. The new feature is that these announcements will also be archived and available via the Web.

Take a look, and let me know what you think. Suggestions and advice are always welcome!

Jeff Kantor Kantor.1@nd.edu

Heat Transfer Research, Inc. (HTRI) Releases New Educational Tool

By R. S. Kistler

The ST-5 Computer Program: HTRI's ST-5 Computer Program is the industry standard for single-phase heat exchanger design and rating software. It has been used for over thirty years to successfully design and rate heat exchangers in the process industry. Over 25,000 runs per month are made worldwide using ST-5.

Until now, the sophisticated technology used by ST was only available to HTRI members. That has changed with the availability of the ST Educational Version. Features of the ST Educational Version include:

o Full calculational power. Both the ST Educational Version and ST-5 give the same answers.

o HTRI's complete Stream Analysis Method for shellside single-phase heat transfer and pressure drop on plain and low-finned tubes.

o HTRI's proprietary methods for tubeside single-phase heat transfer in the laminar, transition, and turbulent regions.

o Full support for the most common shell, TEMA E class R Baffles may be segmental, double-segmental, segmental with no-tubes-in-the-window, or RODBaffles. Plain and low-finned tubes are handled; straight and U-tubes are allowed.

o The ability for students to control the leakage streams present in the heat exchanger. This will allow students to determine the effect from fouling and other deposits.

o "Construction element" input selection. This will give students experience with how heat exchanger elements are normally specified in industry.

o The ability to quickly and easily investigate the effect of construction elements on the overall performance.

o Quick and easy conversion between unit sets. Student can work in any convenient unit system, then convert the answers and inputs to another system.

o A graphical user interfacc for input data panels with "point-and-click" selection. Full graphical, context-sensitive help is included. The interface will run under DOS or in a DOS shell under Windows.

In the Classroom:

o HTRI's ST Educational Version will enhance every students' curriculum in heat transfer. The User's Guide includes a well-written introduction to heat exchanger technology. Thismanual can be used for classroom instruction and in design lab courses where students are expected tolearn by doing. The Educational Version may be used:

o In process heat transfer courses to explain the design of heat exchangers and how construction elements (e.g., baffle cut and spacing) affect performance.

o In undergraduate heat and mass transfer courses to give an introduction to heat exchanger technology.

o In process design projects to give an accurate picture of heat exchangers in the process flow sheet.

o In unit operations to provide a quick and relevant introduction to heat exchangers.

o As a short course on heat exchanger design. Most importantly, students will have a chance to use industry technology prior to graduation. They will increase their employment opportunities and become a valuable asset to their prospective employers.

Computer Requirements:

The ST Educational Version is written for an IBM PC with the following requirements:

o Microprocessor: 80386 with 80387, 80486DX, or Pentium
o 4 M-bytes RAM
o Hard disk drive with 4 M-bytes available storage
o MS-DOS or PC-DOS version 5.0 or later.

About Heat Transfer Research, Inc.:

Heat Transfer Research, Inc. is an international research consortium providing advanced research and software tools in the areas of heat transfer and fluid dynamics. Established in 1962, HTRI products are currently used by more than 400 companies worldwide. The full version of ST is available to HTRI members. It has many enhanced capabilities, including:

o Additional baffle styles and baffle options.
o All TEMA shell styles.
o A full design option.
o A full simulation option.
o Full input of all construction details.
o A greatly expanded physical property data bank.
o Advanced file manipulation capabilities.

Ordering the Program:

For more information on the ST Educational Version, including a special tutorial diskette, HTRI membership information, or to receive our newsletter, please write to:

Heat Transfer Research, Inc.
ST Educational Version
1500 Research Parkway, Suite 100
College Station, Texas 77840
USA

FAX: 409-260-6249
Phone: 409-260-6200
E-Mail: EMJ8871@ZEUS.TAMU.EDU

HTRI, ST, and ST Educational Version are trademarks of Heat Transfer Research, Inc. All othertrademarks mentioned are property of their respective owners.

MEETINGS AND CONFERENCES

To submit a paper for consideration at any event listed below, please contact the corresponding session chair or co-chair directl For further information or details about each of the four CAST Division programming areas, contact the appropriate Area Chair noted in the masthead. For general information concerning CAS Division sessions and scheduling, or to correct errors in this listi please contact Jeffrey J. Siirola (CAST Division Programming Chair), Eastman Chemical Company, PO Box 1972, Kingsport, 37662-5150, 615-229-3069, 615-229-4558 (FAX),

siirola@emn.com.

First International Chemometrics InterNet Conference (InCINC'94)
September 26 - November 18, 1994

Cosponsored by CAST Division

The North American Chapter of the International Chemometrics Society (NAmICS) is sponsoring the First International Chemometrics InterNet Conference. This on-line conference will be held September 26 to November 18, 1994. Papers have been submitted electronically and will be downloaded over the network by conference participants. Organized discussion periods will follow over the Internet.

There will be ten sessions at InCINC'94. The session titles and chairs are listed below. Five sessions will be run in parallel and participants may subscribe to any of the current sessions. Each session will include four papers, which will be discussed for one week each. Session chairs will moderate the discussion of the papers. A special issue of Chemometrics and Intelligent Laboratory Systems will be published with the conference papers and summaries of the discussions.

Session Titles

Session 1: Chemometrics and Education. Bruce Wilson, bewilson@emn.com.

Session 2: Chemometrics: Philosophy, History, and Directions. Aloke Phatak, alokep@syd.dms.csiro.au.

Session 3: Data Rectification/Validation. David Himmelblau, twk@faculty.che. utexas.edu.

Session 4: Chemometrics in Dynamic Systems. Ali Cinar, checinar@minna.acc. iit.edu.

Session 5: Non-linear Alternatives to Neural Networks. Lyle Ungar, ungar@ central.cis.upenn.edu.

Session 6: Speculative (Half-Baked) Ideas for Future Research. Dave Duewer,dlduewer@enh.nist.gov.

Session 7: Data Filtering and Compression. Mike Whitbeck, whitbeck@maxey.unr.edu.

Session 8: QSAR/Chemometrics in Molecular Modeling. Dora Schnur, dmschn@blt.monsanto.com.

Session 9: Detection of Process Shifts. Jim Pollard, pollard@shell.com.

Session 10: Second Order Methods. Age Smilde, asmilde@anal.chem.uva.nl.

Registration begins	8/15
Manuscripts available at ftp site	9/09
Registration packets mailed	9/12
Conference sessions 1 - 5	9/26 - 10/21
Conference sessions 6 - 10	10/24 - 11/18
Informal discussion period	11/28 - 12/02

Papers will be available to participants in several formats including a multi-platform document interchange format, the native document format, and ASCII text with no figures. Hard copies of the papers will be provided at an additional charge. The optional registration fee of $30 will include a certificate of participation, a copy of the final proceedings as published by Chemometrics and Intelligent Laboratory Systems, and a diskette with a copy of the document viewing program required for reading conference papers with embedded graphics.

For more information, contact the conference chair, Barry M. Wise, bm_wise@ pnl.gov or co-chair, Charles Lochmuller, clochmul@ultl.chem.duke.edu.

1994 Hong Kong International Workshop on New Directions of Control and Manufacturing (HKIWNDCM '94)
Kowloon, Hong Kong
November 7-9, 1994

Recent years have seen the rapid development of control and manufacturing. Many new theoretical and application areas are emerging. The objectives of this workshop are to provide a forum where worldwide researchers and practitioners may meet and discuss the new trends in these fields, as well as to disseminate the new ideas and technologies in Hong Kong, China, and East Asia. General topics of interest will include discrete event system theory and application (Petri nets, logical modeling and analysis, automata theory, perturbation analysis), system performance evaluation, control and optimization of computer and communications networks, robotics, robust and optimal control, optimization methods, adaptive control and identification, production planning and scheduling, modeling and optimization issues in manufacturing, and new approaches in the areas of control and systems. For further information, contact Lixin Wang, The Hong Kong University of Science and Technology, Kowloon, Hong Kong, 852-358-7068, 852-358-1485 (FAX), eewang@uxmail.ust.hk.

1994 AIChE Annual Meeting
San Francisco, California
November 13-18, 1994

The CAST Division is sponsoring the following sessions at the San Francisco Annual Meeting:

Area 10a: Systems and Process Design

1. Design and Analysis

2. Process Synthesis

Joint Area 10a and Area 10b Session

1. Design and Control

Joint Area 10a and Area 10c Session

1. High Performance Computing in Computer Process Design

Joint Area 10a and Area 8e Session
1. Process Simulation in Integrated Circuit Manufacturing

Joint Area 10a and Area 15c Session

1. Modeling, Simulation, and Computer-Aided Bioprocess Design

Area 10b: Systems and Process Control

1. Advances in Process Control

2. Nonlinear Control

3. Model Predictive Control

4. Model Identification and Estimation for Process Control

5. Plant-Wide Control

Joint Area 10b and Area 10c Sessions

1. Statistics and Quality Control

2. Process Operations and Fault-Tolerant Control

Joint Area 10b and Area 8e Session

1. Process Control in Electronic Materials Processing

Joint Area 10b and Area 15c Session

1. Biosensors and Bioprocess Control

Area 10c: Computers in Operations and Information Processing

1. Advances in Optimization

2. Monitoring, Detection and Data Interpretation in Process Operations

3. Intelligent Manufacturing Systems. (Cosponsored by the International Cooperation Committee of the Society of Chemical Engineers, Japan)

Area 10d: Applied Mathematics and Numerical Analysis

1. General Papers in Applied Mathematics and Numerical Analysis

2. Engineering Applications of Chaos and Fractals

3. Computational Integral and Spectral Methods in Chemical Engineering Applications

4. Nonlinear Dynamics and Pattern Formation

5. Probabilistic Models

Division-wide Poster Session

1. Recent Developments in Modeling, Optimization, Computation Monitoring, and Control

In addition, CAST plans to again cosponsor Educational Compute Software demonstrations throughout the Annual Meeting.

1995 AIChE Spring National Meeting
Houston, Texas
March 19-23, 1995

Meeting Program Chair: Chen-Hwa Chiu, Bechtel Corporation, 3000 Post Oak Road, PO Box 2166, Houston, TX 77252-2166, 713-235-2863, 713-235-3037 (FAX).

The CAST Division is planning the following program at the Houston National Meeting. A final call for papers for this meeting appears later in this issue. Deadline for submission of abstracts is August 19, 1994.

Area 10a: Systems and Process Design

1. Design and Analysis. Antonis C. Kokossis, University of Manchester Institute of Science and Technology (Chair) and Kare A. High, Oklahoma State University (Co-Chair).

2. Process Synthesis. Oliver M. Wahnschafft, Aspen Technology Inc. (Chair) and Urmila M. Diwekar, Carnegie Mellon University (Co-Chair).

3. Batch Process Design and Scheduling. Iftekhar A. Karimi, E. I. du Pont de Nemours & Company (Chair) and Urmila M. Diwekar Carnegie Mellon University (Co-Chair).

4. Electronic Process Data Exchange - Tutorial Review of the PDXI Project. Neil L. Book, University of Missouri - Rolla (Chair) and Rudolphe L. Motard, Washington University (Co-Chair).

Joint Area 10a and Area 10c Session

1. Emerging Technologies in Process Design and Synthesis. Luke E. K. Achenie, University of Connecticut (Chair) and Anthony Skjellum, Mississippi State University (Co-Chair).

Joint Area 10a and Area 16e Session

1. Design for Waste Minimization. Mahmoud El-Halwagi, Aubur University (Chair) and Antonis C. Kokossis, University of Manchester Institute of Science and Technology (Co-Chair).

2. Waste Minimization in Refineries. Amy Ciric, University of Cincinnati (Co-Chair) and Jeffery Yen, Elf Atochem North America (Co-Chair).

Area 10b: Systems and Process Control

1. Economic Benefits of Process Control. Brian Ramaker, Shell

Development Company (Chair) and Jack Williams, Shell Development Company (Co-Chair).

2. Novel Applications in Process Control. Andrew E. Farell, University of South Carolina (Chair) and Eugene Boe, Profimatics, Inc. (Co-Chair).

3. Applications of Statistics in Process Control. Derrick J. Kozub, Shell Development Company (Chair) and S. Joe Qin, Fisher-Rosemont Systems (Co-Chair).

4. Control Strategies and Integration of Design and Control. Michael Nikolau, Texas A&M University (Chair) and Randel M. Price, University of Mississippi (Co-Chair).

Joint Area 10b and Area 1b Session

1. Contributions Honoring Frank R. Groves, Jr. Ralph W. Pike, Louisiana State University (Chair) and Armando B. Corripio, Louisiana State University (Co-Chair).

Area 10c: Computers in Operations and Information Processing

1. Developments in Supply Chain Design and Optimization. Gary E. Blau, DowElanco (Chair) and Joseph F. Pekny, Purdue University (Co-Chair).

2. Process Operator Training. John C. Hale, E. I. du Pont de Nemours & Company (Chair) and Paul I. Barton, Massachusetts Institute of Technology (Co-Chair).

3. Automated Supervision of Processes. Ramaswamy Vaidyanathan, Amoco (Chair) and Bhavik R. Bakshi, Ohio State (Co-Chair).

Joint Area 10c and Area 9d Session

1. Process Systems Engineering for Environmental Applications. Stephen E. Zitney, Cray Research Inc. (Chair) and Karen A. High, Oklahoma State University (Co-Chair).

First International Plant Operations and Design Symposium

Also at the 1995 AIChE Spring National Meeting, CAST is cosponsoring a block of sessions being organized by the South Texas Section and cosponsored by the ISA Houston Section focusing on practical solutions to process plant needs. Sessions in Computing and Advanced Process Control are expected to include:

1. Case Histories of Dynamic Simulation for Plant Operations and Start-up Improvement.

2. Applications of Computer Integrated Manufacturing.

3. Applications of Advanced Process Control.

4. Process Simulation in Refining.

5. Computing Tutorial and Demonstrations.

6. Improving Productivity with Computers.

Third SIAM Conference on Control and Its Applications
St. Louis, Missouri
April 27-29, 1995

The Third SIAM Conference on Control and Its Applications will be held at the Adam's Mark Hotel, St. Louis, April 27-29, 1995. The conference will be organized around several major themes chosen to highlight both significant recent developments and challenging open questions in control theory, systems theory, and their scientific, engineering, and industrial applications. The major themes of the conference will include control of large heterogeneous computer networks, control in dynamics and mechanics, convex optimization in control and systems theory, control and identification of distributed parameter systems, stochastic control filtering and estimation, adaptive control, hybrid event systems, discrete event systems, robust control, industrial and aerospace applications, nonlinear systems, dynamic programming, computational and algorithmic methods in control, and control of fluids. For further information, contact SIAM, 3600 University City Science Center, Philadelphia, PA 19104-2688, 215-382-9800, 215-386-7999 (FAX), meetings@siam.org.

Fourth IFAC Symposium on Dynamics and Control of Chemical Reactors, Distillation Columns, and Batch Processes (DYCORD+ '95)
Helsingor, Denmark
June 7-9, 1995

DYCORD+'95 (Dynamics and Control of Reactors, Distillation Columns and Batch Processes), organized by the Danish Automation Society, will be held June 7-9, 1995 in Helsingor, Denmark. Main topics include dynamic modeling, model verification and calibration, simulation, new control methods, applicability of control methods, experiments with distributed control systems, multivariable quality control, optimization methods, minimization of feed and utility costs, and computer-aided process and plant design. For further information, contact the international program committee chair James B. Rawlings, Department of Chemical Engineering, University of Texas, Austin, TX 78712-1062, 512-471-4417, 512-471-7060 (FAX), dycord@che.utexas.edu or the Danish Automation Society, Copenhagen Science Park Symbion, Fruebjergvej 3, DK-2100 Copenhagen O, DENMARK, 45-3917-9980, 45-3120-5521 (FAX), symbjeba@inet.uni-c.dk.

ESCAPE-5
Bled, Slovenia
June 11-14, 1995

The ESCAPE symposia series is organized annually by the Computer Aided Process Engineering Working Party of the European Federation of Chemical Engineers. ESCAPE-5, in collaboration with the engineering branch of the Slovenian Chemical Society, will be held in Bled, Slovenia on June 11-14, 1995. ESCAPE-5 will give special emphasis to process synthesis, integration, design, and retrofit; process flowsheeting, simulation, optimization, and process data estimation, reconciliation, and management; process dynamics, safety, and control; process operation, economics, and computer integrated manufacturing;

computing, graphics, and numerical methods; and expert systems, artificial intelligence, logic, and neural networks in process systems engineering. For more information, contact the conference secretariat Dr. Kravanja, Department of Chemical Engineering, University of Maribor, Smetanova 17, PO Box 224, SLO-62001 Maribor, SLOVENIA, 38-62-25-461 x-648, 38-62-227-774 (FAX), escape5@uni-mb.si.

IFAC Workshop on Fault Detection and Diagnosis in the Chemical Industries Newcastle upon Tyne, United Kingdom June 12-13, 1995

For information of this fault detection workshop, contact Professor A. J. Morris, Department of Chemical and Process Engineering, University of Newcastle upon Tyne, Newcastle NE1 7RU, UNITED KINGDOM, 44-91-222-6000, 44-91-261-1182 (FAX), julian.morris@newcastle.ac.uk

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1995 American Control Conference (ACC)
Seattle, Washington
June 21-23, 1995

Cosponsored by CAST Division

The American Automatic Control Council will hold the fourteenth American Control Conference June 21-23, 1995 at the Westin Hotel in Seattle, Washington. Held in cooperation with the International Federation of Automatic Control (IFAC), this conference will bring together people working in the fields of control, automation, and related areas from the American Institute of Aeronautics and Astronautics, American Institute of Chemical Engineers, American Society of Mechanical Engineers, Association of Iron and Steel Engineers, Institute of Electrical and Electronics Engineers, Instrument Society of America, and the Society for Computer Simulation.

Both contributed and invited papers will be included in the program. The ACC will cover a range of topics relevant to theory and practical implementation of control and automation. Topics of interest include, but are not limited to robotics, manufacturing, guidance and flight control, power systems, process control, measurement and sensing, identification and estimation, signal processing, modeling and advanced simulation, fault detection, model validation, multivariable control, adaptive and optimal control, robustness issues, intelligent control, expert systems, neural nets, industrial applications, and control education.

AIChE, through the CAST Division, normally sponsors about 6-7 invited sessions for the ACC meeting. We also submit on the order of 40-50 contributed papers which fill up about 5-6 more contributed sessions. The purpose of invited sessions is to foster the development of new or speculative ideas and approaches. We expect papers in mainstream areas can be submitted as contributed papers.

The deadline for submission of contributed papers and invited session proposals in September 15, 1994. For further information, contact the general chair Masayoshi Tomizuka, Department of Mechanical Engineering, University of California, Berkeley, CA 94720, 510-642-0870, 510-643-5599 (FAX), tomizuka@euler.berkeley.edu. The AIChE review chair is James B. Rawlings, Department of Chemical Engineering, University of Texas, Austin, TX 78712-1062, 512-471-4417, 512-471-7060 (FAX), jbraw@che.utexas.edu.

The following sessions are the tentative invited sessions sponsored by AIChE for the 1995 ACC meeting. To submit a paper for an invited session, please send the chairmen listed below a 500-1000 word abstract by September 1, 1994. Recall also that you can submit contributed papers to the meeting by submitting a five page paper to James B. Rawlings, Society Review Chair, AIChE, by September 15, 1994. Do not submit the same paper as both invited and contributed, however.

Please contact the session chairmen for further details concerning the scope of their sessions. The chairmen must submit their final proposed sessions and all paperwork to Pierre Kabamba, Vice-Chair for Invited Sessions by September 15. The sessions are then reviewed and final acceptance is made at the program committee meeting in December. The following sessions list the title, then chairmen.

1. Nonlinear Process Modelling and Control

Mike Henson
Phone: 504-388-3690
FAX: 504-388-1476
email: henson@nonlcontrl.che.lsu.edu

Yaman Arkun
Phone: 404-894-2871
FAX: 404-894-2866
Email: yaman_arkun@chemeng.gatech.edu

2. On Line Process Monitoring

Joe Qin
Phone: 512-835-2190
FAX: 512-834-7200
Email: qin@turtle.fisher.com

Joel Braatz
Email: rdb@beethoven.che.caltech.edu

3. Process Control Applications to Batch Reactors

Srinivas Palanki
Phone: 904-487-6149
FAX: 904-487-6486
Email: srinivas@palanki.eng.fsu.edu

Thomas Badgwell
Phone: 713-527-4902
FAX: 713-285-5478
Email: tab@rice.edu

4. Biomedical Control Applications

Frank Doyle
Phone: 317-494-9472
FAX: 317-494-0805
Email: fdoyle@ecn.purdue.edu

Martin Pottman
Phone: 302-695-8703

FAX: 302-695-2645
Email: pottman@esspt8.dnet.dupont.edu

5. Industrial Applications of Nonlinear Process Control

Prodromos Daoutidis
Phone: 612-626-7246
FAX: 612-625-8818
Email: daoutidi@cems.umn.edu

Masoud Souroush
Phone: 215-895-2227
FAX: 215-895-5837
Email: masoud.soroush@cbis.ece.drexel.edu

6. Integration of Modelling, Identification, State Estimation and Control

Jay Lee
Phone: 302-695-1929
FAX: 302-695-2645
Email: lee@esspt0.dnet.dupont.com

Oscar Crisalle
Phone: 904-392-5120
FAX: 904-392-9513
Email: crisalle@bitrun.che.ufl.edu

7. Process Control Education

Tunde Ogunnaike
Phone: 302-695-2535
FAX: 302-695-2645
Email: ogunnaike@essptd.dnet.dupont.com

8. Plant Wide Control

Frank Allgower
FAX: 49 711 685 6371
Email: ali@isr.uni-stuttgart.d400.de

Jim Downs
Email: jjdowns@emn.com

Vice Chairman for Invited Sessions

Pierre Kabamba
Phone: 313-763-6728
FAX: 313-763-0578
Email: kabamba@um.cc.umich.edu

AIChE Society Review Chair

James B. Rawlings
Phone: 512-471-4417
FAX: 512-471-7060
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Third IFAC Symposium on Nonlinear Control Systems Design (NOLCOS 95)
Tahoe City, California
June 26-28, 1995

Sponsored by the International Federation of Automatic Control Technical Committee on the Mathematics of Control and organized by the American Automatic Control Council and the Institute of Theoretical Dynamics, University of California, Davis. This symposium will present the state of the art in the design of nonlinear control systems. It will explore current theoretical developments as well as their latest applications to engineering problems. The symposium will provide a forum for the presentation and discussion of papers which describe new design methodologies for the control of nonlinear plants and will feature novel applications of these methods. The program will include invited survey papers by leading international authorities and encourage wide ranging discussions by all participants on basic problems and future directions. The range of topics to be discussed includes applications of nonlinear control, algebraic theory of nonlinear systems, geometric theory of nonlinear systems, discrete-time nonlinear control systems, stability and feedback stabilization, nonlinear observers and filters, optimal control of nonlinear systems, variable structure systems, robust and H-Infinity control, adaptive control of nonlinear systems, singular purturbations in nonlinear control, expert control for nonlinear systems, and computational methods for design and control. Deadline for submission of draft manuscripts is August 31, 1994. For further information, contact David Q. Mayne, Institute for Theoretical Dynamics, University of California, Davis, CA 95616-8618, 916-752-8832, nolcos@itd.ucdavis.edu.

Intelligent Systems in Process Engineering (ISPE '95)
Snowmass Village, Colorado
July 9-14, 1995

Co-sponsored by CAST Division and CACHE Corporation

The first International Conference on Intelligent Systems in Process Engineering is scheduled for July 9-14, 1995 at Snowmass Village, Colorado. The objectives of this conference are to present an overview of the state of the art of intelligent systems theory and practice in process engineering, to discuss the impact of intelligent systems applications in several process industries, to examine emerging trends in intelligent systems applications, to provide a forum for in-depth discussions between university researchers and industrial practitioners on the practical challenges in developing and applying intelligent systems, and to develop a better understanding of the tools available through demonstrations to stimulate wider implementation of intelligent systems.

Conference themes include monitoring, analysis, and support of process operations (monitoring, analysis, and interpretation of process data; diagnostic advisors and decision support in the supervision of process operations; process safety and HAZOP analysis); intelligent control systems (expert and fuzzy control; neural control; autonomous control); intelligence in integrated manufacturing and processing (synthesis of operating procedures; logic and heuristics in optimal planning and scheduling; computer-integrated process operations); intelligence in modeling and numerical computing (logic and combinatorial optimization; qualitative

simulation; intelligent assistants in modeling and simulation; supervision and learning in numerical computing); knowledge-based product and process design (molecular-based knowledge in product and process engineering; knowledge-based approaches from reactions to processes; safety, operability, and environmental considerations in process design); intelligence in computer-aided design environments (integrated and cooperative engineering design; CAD environment of the future; the process design engineer of the future); industrial applications of intelligent systems to support process operations; industrial applications of intelligent systems to support engineering design; and future prospects for vision-speech- robotics, virtual reality, and man-machine interaction in process engineering.

The conference is being organized by George Stephanopoulos, Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, 617-253-3904, 617-253-9695 (FAX), geosteph@athena.mit.edu, Venkat Venkatasubramanian, School of Chemical Engineering, Purdue University, West Lafayette, IN 47907-1283, 317-494-0734, 317-494-0805 (FAX), venkat@ecn.purdue. edu, and James F. Davis, Department of Chemical Engineering, Ohio State University, Columbus, OH 43210-1180, 614-292-0090, 614-292-3769 (FAX), davis@kcgl1.eng.ohio-state.edu. For an application for attendance, contact David M. Himmelblau, CACHE Corporation, PO Box 7939, Austin, TX 78713-7939, 512-471-4933, 512-295-4498 (FAX), cache@utxvm.cc.utexas.edu.

5th IFAC Symposium: Automated Systems Based on Human Skill Joint Design of Technology Organisation
Berlin, Germany
September 25-28, 1995

As the previous four Symposia of the same name, this Symposium will bring together researchers, developers and users of automated systems. The areas of discussion are:

1. Manufacturing, e.g. metal and textile industries, etc.
2. Process control, e.g. chemical engineering, food production, power plants, etc.
3. Traffic control, e.g. ground transportation of people and goods, air traffic control and cockpit design, etc.
4. Administrative processes, e.g. information networks, Computer-Supported Cooperative Work (CSCW), etc.

Emphasis will be on how to design such systems integrating developers and users in the design process. It means joint engineering of production processes, information technology and work organisation. It may lead to re-defining the roles of human operators in process automation. The Symposium will take place in Berlin in order to allow a wide participation from Eastern Europe. The conference will last three days.

Half of the symposium will be structured by presentation of papers and discussions. The remaining time will be dedicated to "on-site" workshops given in factories, service organisations and public administrations in Berlin (former East and West). Presentations of implementing information technology and automation will be shown at these sites. The visits and presentations will be closely related to the lectures and seminars of the Symposium. They link theory and practice and allow in-depth discussions.

1995 AIChE Annual Meeting
Miami Beach, Florida
November 12-17, 1995

Meeting Program Chair: Tim Anderson, Department of Chemical Engineering, University of Florida, Gainesville, FL 32611.

The CAST Division is planning the following sessions at the Miami Beach Annual Meeting which have been approved by the Meeting Program Chair. A first call for papers for this meeting appears later in this issue. Deadline for submission of abstracts is March 1, 1995.

Area 10a: Systems and Process Design

1. New Topics in Process Synthesis. Ka Ng, University of Massachusetts, (Chair) and Richard Colberg, Eastman Chemical Company (Co-Chair).

2. Advances in Process Synthesis. Oliver M. Wahnschafft, Aspen Technology Inc. (Chair) and Urmila M. Diwekar, Carnegie Mellon University (Co-Chair).

3. Design and Analysis. Vivek Julka, Union Carbide Corporation (Chair) and Stratos Pistikopoulos, Imperial College (Co-Chair).

4. Advances in Process Design. Mahmoud El-Halwagi, Auburn University (Chair) and Amy R. Ciric, University of Cincinnati (Co-Chair).

Joint Area 10a and Area 10d Session

1. Computational Approaches in Systems Engineering. Antonis C Kokossis, University of Manchester Institute of Science and Technology (Chair) and B. Eric Ydstie, Carnegie Mellon University (Co-Chair).

Joint Area 10a and Area 12a Session

1. Modeling and Simulation in Pilot Plants. Shiah Cherney, Chevron Research and Technology (Chair) and Reed L. Christiansen, Eastman Chemical Company (Co-Chair).

Area 10b: Systems and Process Control

1. Advances in Process Control. Ahmet N. Palazoglu, University of California - Davis (Chair) and David T. Dalle, Amoco Chemical Company (Co-Chair).

2. Nonlinear Process Control. Derinola K. Adebekun, Praxair, In (Chair) and Masoud Soroush, Drexel University (Co-Chair).

3. Model Predictive Control. Jose Romagnoli, University of Sydney (Chair) and Thomas A. Badgwell, Rice University (Co-Chair).

4. Control System Performance Monitoring and Diagnosis. George N. Charos, Amoco Research Center (Chair) and Carlos I Garcia, Shell Development Company (Co-Chair).

5. Control Relevant Identification and Estimation. Gerardo Mijares, M. W. Kellogg Company (Chair) and Richard D. Braat

University of Illinois (Co-Chair).

6. Batch Process Modeling, Monitoring, and Control. Srinivas Palanki, FAMU/ FSU College of Engineering (Chair) and Michael J. Henson, Louisiana State University (Co-Chair).

Joint Area 10b and Area 10c Session

1. Issues in On-Line Optimization for Control. Babatunde A. Ogunnaike, E. I. du Pont de Nemours & Company (Chair) and Alan B. Coon, Aspen Technology Inc. (Co-Chair).

Area 10c: Computers in Operations and Information Processing

1. Progress in Computer Integrated Manufacturing in the Chemical Process Industries (Cosponsored by the International Cooperation Committee of the Society of Chemical Engineers, Japan) Venkat Venkatasubramanian, Purdue University (Chair) and Shinji Hasebe, Kyoto University (Co-Chair).

2. Planning and Scheduling. Patrick McCroskey, Dow Chemical Company (Chair) and Thanos Tsirukis, Air Products and Chemicals, Inc. (Co-Chair).

3. Computing for Plant Operations. Jorge A. Mandler, Air Products and Chemicals Inc. (Chair) and Lyle H. Ungar, University of Pennsylvania (Co-Chair).

4. High Performance Computing for Process Engineering. Mark A. Stadtherr, University of Illinois (Chair) and Stephen E. Zitney, Cray Research Inc. (Co-Chair).

Area 10d: Applied Mathematics and Numerical Analysis

1. Pattern Formation and Dynamics. Vemuri Balakotaiah, University of Houston (Chair) and Hsueh-Chia Chang, University of Notre Dame (Co-Chair).

2. Parallel Computing Applications in Chemical Engineering. Antony N. Beris, University of Delaware (Chair) and Sangtae Kim, University of Wisconsin (Co-Chair).

3. Chemical Engineering Applications of Stochastic Processes. Doraiswamy Ramkrishna, Purdue University (Chair) and Kyriakos Zygourakis, Rice University (Co-Chair).

4. Numerical Issues in Fluid Mechanics, Transport, and Materials Processing. Pedro Arce, FAMU/FSU College of Engineering (Chair), Andrew N. Hrymak, McMaster University (Co-Chair), and Jorge Vinals, FAMU/FSU College of Engineering (Co-Chair).

Joint Area 10d and Area 15c Session

1. Mathematical Modeling in Cellular Biology. Kyriakos Zygourakis, Rice University (Chair) and Douglas A. Lauffenburger, University of Illinois (Co- Chair).

Division-wide Poster Session

1. Advances in Computing and Systems Technology. Michael L. Mavrovouniotis, Northwestern University (Co-Chair), James B. Rawlings, University of Texas (Co- Chair), Joseph F. Pekny, Purdue University (Co-Chair), and Hsueh-Chia Chang, University of Notre Dame (Co-Chair).

Educational Computer Software Demonstrations (Joint Effort with Group 4)

Douglas J. Cooper, University of Connecticut (Coordinator) and David B. Greenberg, University of Cincinnati (Coordinator).

Computer Process Control V (CPC-V)
Tahoe City, California
January 21-26, 1996

Cosponsored by CAST Division and CACHE Corporation

The fifth Chemical Process Control Conference is tentatively scheduled for the third week of January, 1996 at Granlibakken Conference Center near Tahoe City, California. In the tradition of previous conferences in this series, CPC-V will focus on advances that have taken place recently in the process control field. These will be put in perspective, used to define practical needs and intellectual challenges in the area, and to help narrow the gap between process control theory and application. The organizers of this conference will be Jeffrey C. Kantor, Department of Chemical Engineering, University of Notre Dame, Notre Dame, IN 46556, 219-631-5797, 219-631-8366 (FAX), jeffrey.kantor@nd.edu and Carlos E. Garcia, Shell Development Company, P.O. Box 1380, Houston, TX 77251-1380, 713-493-8876, 713-493-8936 (FAX).

1996 AIChE Spring National Meeting
New Orleans, Louisiana
February 25-29, 1996

Fifth World Congress of Chemical Engineering
San Diego, California
July 14-18, 1996

and

1996 AIChE Annual Meeting
Chicago, Illinois
November 10-15, 1996

The CAST Division is planning to program at both the Spring National and Fall Annual AIChE Meetings as well as at the World Congress of Chemical Engineering in 1996. Topics will be developed this November at CAST area programming meetings in San Francisco. All interested parties are invited and encouraged to participate in these discussions to help formulate these and other future CAST programs. Times and locations for these meetings (Areas 10A, 10B, 10C, and 10D Programming) will be listed in the Committee Meetings Schedule available in the Meeting Registration area. Your input is essential!

CALL FOR PAPERS

Fourteenth IASTED International Conference on Modelling, Identification, and Control
February 20-23, 1995
Innsbruck, Austria

SPONSORS:

The International Association of Science and Technology for Development (IASTED)
Technical Committee on Modelling and Simulation
Technical Committee on Control

LOCATION: Congress Innsbruck Igls, Innsbruck, Austria

SCOPE: Modelling, Systems, Identification, Control, Applications

LANGUAGE: The working language is English, but French and German may be used.

SUBMISSION OF PAPERS:

The abstracts submitted for review should be prepared for "regular" or "short" papers. The "regular papers" must be up to the standard expected for publication in an international journal. An abstract of a regular paper should be at least 500 words in length, should present a clear and concise view of the motivation of the subject, give an outline of the paper, and a list of references. For "short papers" the abstracts should have a maximum of 250 words.

Three copies of the abstracts for both categories of papers should reach the IASTED Secretariat in Zurich, Switzerland (Fax: 01-261-0083) before October 15, 1994. Authors should provide a maximum of five key words describing their work, and must include a statement confirming that if their paper is accepted one of the authors will attend the conference to present the paper. Please include the full name, affiliation, address and fax number of the corresponding author. Notification of acceptance will be mailed by November 10, 1994. Authors of an accepted paper are requested to make an advance payment of SFR 300 to IASTED by December 15, 1994.

All accepted papers (regular and short) will be published in the conference proceedings. The papers must be received at the conference prior to presentation.

IMPORTANT DATES:

October 15, 1994: Send three copies of abstracts to:

IASTED Secretariat
P.O. Box 354
CH-8053 Zurich
Switzerland

November 10, 1994: Paper acceptance letters will be mailed.
December 15, 1994: Advanced payment of 300 SFR due.

For more information please contact:

IASTED Secretariat
P.O. Box 354
CH-8053 Zurich Unit #80
Switzerland
Tel: 01-261-0044
Fax: 01-261-0083

IASTED Secretariat
4500 - 16 Ave. N.W.
Calgary, Alberta
Canada T3B 0M6
Tel: 403-288-1195
Fax: 403-247-6851
E-mail: iasted@istd.cuug.ab.ca

Final Call for CAST Sessions
1995 Spring National Meeting
Houston, Texas
March 19-23, 1995

The names, addresses, and telephone numbers of the session chairs are given on the next several pages, are brief statements of the topics to receive special emphasis in selecting manuscripts for these sessions. Prospective session participants are encouraged to observe the following deadlines which have been established, but may be changed, by the Meeting Program Chair:

August 19, 1994: Submit an abstract (camera-ready) on a completed original new-version AIChE Proposal-to-Present Form to the SESSION CHAIR and a copy also to the co-chair.

September 2, 1994: Session content is finalized authors are informed of selection.

January 20, 1995: Authors submit, if desired, any revision to the abstract (camera-ready) to AIChE.

February 17, 1995: Authors submit final manuscript to AIChE.

March 19, 1995: Speakers bring hard copies of visual aids to be distributed to the audience at the presentation.

Please note that there is an AIChE limitation that no person may author or co-author more than four contributions at any one meeting nor more than one contribution in any one session.

Proposal-to-Present forms may be obtained from each session ch or directly from Peter Knox, Programming Director, American Institute of Chemical Engineers, 345 East 47th Street, New York NY 10017-2395, 212-705-7950, 212-752-3294 (FAX), petek@aiche.org.

Area 10a: Systems and Process Design

1. Design and Analysis.

Papers are solicited related to recent developments in process design and engineering analysis. The contributions can be new approaches or industrial applications and are expected to demonstrate useful and efficient methods in the context of process integration and optimization of chemical processes. Design methodologies based upon short-cut design methods, conceptua

design approaches, and algorithmic procedures are all welcome. Areas of potential application include, but are not limited to, process synthesis and retrofit problems, design of energy recovery networks, reaction and separation systems, and batch processes.

Chair

Antonis C. Kokossis
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kokossis@umist.ac.uk

Co-Chair

Karen A. High
School of Chemical Engineering
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405-744-5280
405-744-6187 (FAX)
high@master.ceat.okstate.edu

2. Process Synthesis.

Process synthesis, a key step in chemical process design, is concerned with identifying the basic flowsheet structure to be used from a typically large number of alternatives. The process economics and a number of other quality measures such as controllability, safety, compliance with environmental and other regulations, largely depend on the results of this conceptual design phase. The session will focus on new developments and applications of process synthesis methodologies such as mathematical programming approaches, heuristic strategies, thermodynamic methods, etc. Areas of application are not limited but contributions considering environmental issues are especially welcome. Also, papers addressing problems and future trends and challenges in process synthesis research are sought.

Chair

Oliver M. Wahnschafft
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wahnschafft@aspentec.com

Co-Chair

Urmila M. Diwekar
Department of Engineering and Public Policy
Carnegie Mellon University
Pittsburgh, PA 15213
412-268-3003
412-268-3757 (FAX)
urmila@cmu.edu

3. Batch Process Design and Scheduling.

The sudden increase in the production of high-value-added, low volume specialty chemicals and biochemicals in recent years has generated a renewed interest in batch processing technology. The most outstanding feature of a batch process is its flexibility. However, this flexibility and the unsteady state nature of operation pose challenging design and operations problems. This session will focus on the issues related to design, operation, and scheduling of batch plants. This session seeks papers dealing with all aspects of the design of batch processes including retrofit, trade-offs between design and operations, design under uncertainty, industrial case studies, new design strategies and methodologies, etc. Also of interest are topics related to sequencing and scheduling of batch plants such as resource-constrained scheduling, production planning, scheduling and planning in the face of uncertainties, and methodologies for scheduling.

Chair

Iftekhar A. Karimi
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703-946-1587
703-949-2949 (FAX)

Co-Chair

Urmila M. Diwekar
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urmila@cmu.edu

4. Electronic Process Data Exchange - Tutorial Review of the PDXI Project.

This half-day tutorial session is organized by the staff and consultants of the AIChE Process Data Exchange Institute to review and present the results of the PDXI project conducted at the University of Missouri - Rolla since Fall 1991. A comprehensive overview of the reports and products of the PDXI effort will be presented. This includes the scope of the project, the methods used to represent and organize process engineering data and how to use the neutral file specification developed in the project to facilitate interfaces between common design calculations and computer programs. The scope of the data processed by PDXI covers a broad range of process engineering needs. The data model can handle physical properties, process simulation, equipment design data, units and dimensions, geometric data, and a range of attributes used to tailor the data exchange procedure to a variety of specific process configurations. The evolution and extensibility of PDXI project capabilities into the future will also be discussed.

No papers are being solicited for this tutorial session.

Chair

Neil L. Book
Chemical Engineering Department
University of Missouri - Rolla

Rolla, MO 65401-0249
314-341-4422
314-341-6033 (FAX)

Co-Chair

Rudolphe L. Motard
Department of Chemical Engineering
Washington University
St. Louis, MO 63130-4899
314-935-6072
314-935-4434 (FAX),
motard@wuche.wustl.edu

Joint Area 10a and Area 10c Session

1. Emerging Technologies in Process Design and Synthesis.

Emerging technologies such as neural networks, genetic algorithms, fuzzy logic, AI methodologies, and MILPs are finding increasing uses in process design and synthesis. These uses have resulted in the need for faster turn around in computation time, increasing the need for high performance computing. To recognize and address these needs, papers are sought in these emerging technology areas. Such papers should address the use of parallel processing and any combinations of these emerging technologies for process design and synthesis. Papers should indicate if process design and synthesis benefited from the absolute performance (capability) or cost-benefit (capacity) sense of parallel processing and these other technologies, as appropriate. Comparisons to related work in other fields is considered important.

Chair

Luke E. K. Achenie
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achenie@brc.uconn.edu

Co-Chair

Anthony Skjellum
Department of Computer Science
Mississippi State University
Mississippi State, MS 39762-5623
601-325-8435
601-325-8997 (FAX)
tony@cs.msstate.edu

Joint Area 10a and Area 16e Session

1. Design for Waste Minimization.

Papers are solicited related to the application of waste minimization technologies in the chemical process industry. In particular, the session welcomes contributions in terms of new and innovative designs, implementation of existing approaches, and successful case studies. Priority will be given to contributions which illustrate the usefulness and effectiveness of a particular technology in waste reduction via recycle/reuse or in-plant modification. These approaches can be based on short-cut methods, optimization, or simulation design tools. Research and development results where industry and academia have collaborated are also invited.

Chair

Mahmoud El-Halwagi
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205-844-2064
205-844-2063 (FAX)
mahmoud@eng.auburn.edu

Co-Chair

Antonis C. Kokossis
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UNITED KINGDOM
44-61-200-4384
44-61-236-7439 (FAX)
kokossis@umist.ac.uk

2. Waste Minimization in Refineries

Papers are being solicited for a general session on waste minimization in refineries and related operations. Topics for this session include case studies and practical experiences with waste minimization, recent developments and applications of waste management methodologies in process refineries, and developments and applications of new design, retrofit and control techniques that emphasize waste reduction.

Co-Chairs:

Amy Ciric
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Telephone: (513) 556-2761
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email: aciric@mikado.che.uc.edu

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Elf Atochem North America
900 First Ave PO Box 1536
Telephone: (215) 337-6508
Fax: (215) 337-6609

Area 10b: Systems and Process Control

1. Economic Benefits of Process Control.

What are process control systems worth when going from manual to automatic? Electronic or pneumatic to distributed control systems? Basic to advanced control algorithms? Multiple control rooms to consolidated control centers? This session will focus on justification of control systems. Papers are sought in the following areas: methods used for justifying control system

implementation when plant data is or is not available; how do you convince management to continue to support existing control systems or to support the installation of new control systems; how do you measure the contribution of control systems; what is the value of stabilizing your plant operation through process control; and how do you justify the cost of reinstrumentation in existing plants.

Chair

Brian Ramaker
Shell Development Company
PO Box 1380
Houston, TX 77251-1380
713-544-8188
713-544-8936 (FAX)

Co-Chair

Jack Williams
Shell Development Company
Box 1380
Houston, TX 77251-1380
713-544-8852
713-544-8936 (FAX)

2. Novel Applications in Process Control.

This session aims to highlight novel applications in process control. Papers, for example, may involve applications requiring interesting control strategies or tackling challenging processes. Industrial case studies and applications are strongly encouraged.

Chair

Andrew E. Farell
Department of Chemical Engineering
University of South Carolina
Columbia, SC 29208
803-777-8022
803-777-8265 (FAX)
farell@mv3800.engr.scarolina.edu

Co-Chair

Eugene Boe
Profimatics, Inc.
325 Rolling Oaks Drive
Thousand Oaks, CA 91361-1200
805-496-6661
805-373-5108 (FAX)

3. Applications of Statistics in Process Control.

Papers are requested related to the use of statistical technologies for process control work. Example specific areas of interest include: use of plant data for monitoring and diagnosis of automated feedback controllers; tools for process monitoring and analysis; monitoring of plant performance using advanced multivariate statistical technologies; the use of statistical estimation approaches for prediction, parameter estimation, inference, or optimal filtering; and novel use of statistical data based models in process control applications. Papers dealing with both practical applications and theoretical developments are welcome.

Chair

Derrick J. Kozub
Shell Development Company
PO Box 1380
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713-544-8028
713-544-7246 (FAX)
kozub@shell.com

Co-Chair

S. Joe Qin
Fisher-Rosemont Systems Inc.
1712 Center Creek Drive
Austin, TX 78754
512-832-3635
512-834-7200 (FAX)
qin@fisher.com

4. Control Strategies and Integration of Design and Control.

The objective of this session is to examine the "big picture" of control system development and how strategies are developed and applied to the integrated process/control design effort. Preference will be given to papers which focus on broad control design strategy issues and integration methodologies. Contributions on plant-wide control or methodologies for the solution of standard industrial control problems will be welcome.

Chair

Michael Nikolau
Department of Chemical Engineering
Texas A&M University
College Station, TX 77843-3122
409-845-0406
409-845-6446 (FAX)
m0n2431@venus.tamu.edu

Co-Chair

Randel M. Price
Department of Chemical Engineering
University of Mississippi
University, MS 38677
601-232-5350
601-232-7023 (FAX)
cmprice@vm.cc.olemiss.edu

Joint Area 10b and Area 1b Session

1. Contributions Honoring Frank R. Groves, Jr.

Professor Frank R. Groves, Jr., Horton Professor Emeritus at Louisiana State University, is retiring this year after a long and distinguished career. This session will honor him by having invited papers from his former students in control, thermodynamics, and related areas.

Chair

Ralph W. Pike
Department of Chemical Engineering
Louisiana State University
Baton Rouge, LA 70703
504-388-3428
504-388-1476 (FAX)

Co-Chair

Armando B. Corripio
Department of Chemical Engineering
Louisiana State University
Baton Rouge, LA 70703
504-388-3061
504-388-1476 (FAX)

Area 10c: Computers in Operations and Information Processing

1. Developments in Supply Chain Design and Optimization.

As industries continue to strive to reduce manufacturing costs including working capital while improving product quality, they have been focusing on the entire product supply chain from raw materials suppliers to end product consumers. This session will address all aspects of the supply chain from management to design and control. Subjects of particular interest include: application of simulation techniques to supply chain design and control; logistics network modeling and control; integrated approaches to planning and scheduling; and dynamic approaches to management and control. Presentations of industrial experiences with supply chain methodologies are encouraged. Abstracts should summarize the scope of the work, the methodology employed or developed, and significant conclusions and accomplishments.

Chair

Gary E. Blau
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9410 Zionsville Road
Indianapolis, IN 46268
317-337-3137
317-337-3215 (FAX)
gblau@dowelanco.com

Co-Chair

Joseph F. Pekny
School of Chemical Engineering
Purdue University
West Lafayette, IN 47907-1283
317-494-7901
317-494-0805 (FAX)
pekny@ecn.purdue.edu

2. Process Operator Training.

Papers are requested which report new and improved ways to conduct process operator training. All aspects of training are of interest - both computer based techniques (such as dynamic simulation and computer based training), as well as the role of people in the learning process. Reports of improved ways to present information, to test for understanding, and to reproduce process behavior accurately are sought. Insights on what subject materials, especially how to accomplish more complete process understanding, would be welcome. While the focus is on operators, papers will be considered which address training of other manufacturing personnel, engineers, and chemical engineering students.

Chair

John C. Hale
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Newark, DE 19714-6090
312-366-3041
302-366-4889 (FAX)
hale@pccvax.dnet.dupont.com

Co-Chair

Paul I. Barton
Department of Chemical Engineering
Massachusetts Institute of Technology
Cambridge, MA 02139
617-253-6526
617-258-5024 (FAX)
pib@mit.edu

3. Automated Supervision of Processes

Papers are invited for presentation in a session on the automated supervision of processes of interest to the chemical processing industries. Papers may employ knowledge-based systems, neural networks, statistical or model-based techniques to automate monitoring, fault diagnosis, or control of continuous or batch processes. Submissions can deal with laboratory, pilot-plant, or production-scale applications, or with computer-simulated case studies. Contributions that advance theory in the area of automated process supervision are also welcome.

Chair

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708-420-4678 (FAX)
vaidya@nap.amoco.com

Co-Chair

Bhavik R. Bakshi
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Columbus, OH 43210-1180
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614-292-3769 (FAX)
bakshi@kcgl1.eng.ohio-state.edu

Joint Area 10c and Area 9d Session

1. Process Systems Engineering for Environmental Applications.

Environmental regulatory initiatives in the 1990s reflect the need for pollution prevention at the source prior to release to the environment. Process systems engineering technology can facilitate the challenging task of developing and implementing successful pollution prevention strategies. This session will focus on the use of process systems engineering methods and software tools for environmental applications. Topics of particular interest include process synthesis and simulation technology for addressing environmental issues, stochastic modeling for determining the environmental effect of process uncertainties, process optimization with environmental objective functions, and novel control strategies for reducing wastes and emissions.

Chair

Stephen E. Zitney
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Eagan, MN 55121-1560
612-683-3690
612-683-3099 (FAX)
sez@cray.com

Co-Chair

Karen A. High
School of Chemical Engineering
Oklahoma State University
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405-744-5280
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high@master.ceat.okstate.edu

First International Plant Operations and Design Symposium

The first International Plant Operations and Design Symposium will include a block of five or six sessions in Computing and Advanced Control during the 1995 AIChE Spring National Meeting. The focus of the symposium will be Practical Technology for Process Plant Solutions. The sessions will include Case Histories of Dynamic Simulation for Plant Operations and Start-up Improvement, Applications of Computer Integrated Manufacturing, Applications of Advanced Process Control, Process Simulation in Refining, Computing Tutorial and Demonstrations, and Improving Productivity with Computers.

Block Chair

Joseph A. James
Hoechst Celanese Chemical Group
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Houston, TX 77258-0910
713-474-6550
713-474-6291 (FAX)

Computer Simulation in Industrial and Process Simulators
1995 Simulation Multiconference
Crescent Hotel
Phoenix, Arizona
April 9-13, 1995

Sponsored by The Society for Computer Simulation

The 1995 Simulation Multiconference brings several conferences together, providing a variety of formats for presenting and learning about aspects of simulation and simulators. Additional to the conferences, featured speakers, vendor exhibits, formal seminars, and informal gatherings provide opportunities for participants and attendees to meet diverse individual and corporate objectives. The conferences include Simulators International, High Performance Computing, Mission Earth, Military Government and Aerospace Simulation, the 28th Annual Simulation Symposium, and Simulators for Emergency Management.

The International Simulators Conference will feature several sessions on computer simulations in industrial and process simulators. Authors are invited to submit abstracts describing their work in these areas. Topics of interest in industrial and process simulators include, but are not limited to computer simulation aspects of:

Systems and Process Design: Process Systems Integration, Process Synthesis, Design and Analysis, Flowsheet Simulation, Batch Process Engineering, Unit Operation Engineering Analysis

Design and Control

Systems and Process Control: Nonlinear Control, Process Monitoring and Control, Model Predictive Control Industrial Applications, Advances in Process Control, Modelling and Identification

Process Plant Simulators: Full Scope Applications, Modelling Methodology and Application, Part Task ApplicationsQuality Assurance, Control System Interfaces, Dynamic Process Plant

Models: General Operation Models, Development Tools/Platforms

Bioprocess Modeling, Monitoring, Optimization, and Control

Computers in Operations and Information Processing: Optimization, Computer Integrated Manufacturing, Parallel Computing Applications

Applied Mathematics and Numerical Analysis: Analysis of Complex Systems, Nonlinear Analysis, Characterization of Process Systems, Applied Mathematics and Methods

Knowledge Based Systems and Artificial Intelligence in Process Engineering

Three copies of a 300-word abstract or a draft paper should be submitted to the session organizers by October 14, 1994. Notification of acceptance will be sent on November 18, 1994. Full papers will be published in the conference proceedings and should be submitted to The Society for Computer Simulation by January 20, 1995. Abstracts should be sent to:
Dr. Maurice J. Ades
Westinghouse Savannah River Company

1991 South Centennial Parkway
Aiken, SC 29803

1995 Simulation Multiconference
Crescent Hotel
Phoenix, Arizona
April 9-13, 1995

Sponsored by The Society for Computer Simulation, The IEEE Computer Society, The Association for Computing Machinery

The 1995 Simulation Multiconference brings several conferences together, providing a variety of formats for presenting and learning about aspects of simulation and simulators. Additional to the conferences, featured speakers, vendor exhibits, formal seminars, and informal gatherings provide opportunities for participants and attendees to meet diverse individual and corporate objectives. The conferences include Simulators International, High Performance Computing, Mission Earth, Military Government and Aerospace Simulation, the 28th Annual Simulation Symposium, and Simulators for Emergency Management.

SIMULATION IN PETROCHEMICAL, CHEMICAL, AND MANUFACTURING INDUSTRIES:

The International Simulators Conference will feature several sessions on simulation in petrochemical, chemical, and manufacturing industries. Authors are invited to submit abstracts describing their work in these areas. Topics of interest include, but are not limited to:

Steady State Simulation of Chemical Processes and Unit Operations
Transient Simulation in the Chemical Industry
Real Time Simulation
Real Time Systems and Controls
Emission and Air Pollution Controls
Training with Simulation Tools
Use of Simulation Tools in the Petrochemical and Chemical Industries

Three copies of a 300-word abstract or a draft paper should be submitted to the session organizers by October 14, 1994. Notification of acceptance will be sent on November 18, 1994. Full papers will be published in the conference proceedings and should be submitted to The Society for Computer Simulation by January 20, 1995. Abstracts should be sent to:

Dr. Ariel Sharon
c/o The Society for Computer Simulation
PO Box 17900
San Diego, CA 92177-7900
619-277-3888
619-277-3930 (FAX)

HIGH PERFORMANCE COMPUTING:

The High Performance Computing conference will address the following topics in relation to computer simulation:
High Performance Computing and Applications
Parallel Algorithms and Numerical Methods
Methodologies to Exploit High Performance Computing Architectures and Communication Networks
Visualization and Validation of Large Scale Computer Simulations

Authors are invited to submit abstracts describing their work in these areas. Applications of interest include, but are not limited to:

3-D Computational Fluid Dynamics Models
Combustion Systems Simulation
Predictions of Weather, Climate, and Global Changes
Models of Turbulence in Fluid Flows
Computational Solid Mechanics Applications
Nuclear Reactor Safety Analysis
Computational Ocean Sciences and Systems
Nuclear Fusion Applications
Computational Chemistry
Life Sciences and Medical Applications
Automotive Applications

Three copies of a 300-word abstract or a draft paper should be submitted to the session organizers by October 14, 1994. Notification of acceptance will be sent on November 18, 1994. Full papers will be published in the conference proceedings and should be submitted to The Society for Computer Simulation by January 20, 1995. Abstracts should be sent to:

Dr. Adrian Tentner
Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439
tentner@pepper.ra.anl.gov

COMPUTER SIMULATION IN WASTE MANAGEMENT AND ENVIRONMENTAL SCIENCES:

The International Simulators Conference will feature several sessions on computer simulations in waste management and environmental sciences. Authors are invited to submit abstracts describing their work in these areas. Topics of interest in waste management include, but are not limited to computer simulation aspects of:

Waste Operations
Mixed and Hazardous Wastes
Waste Processing and Storage
Disposal Facility Siting
Waste Distruction and Stabilization
Regulation and Licensing
Waste Process Monitoring and Control
Waste Minimization

Topics of interest in environmental science include, but are not limited to computer simulation aspects of:

Environmental Monitoring
Environmental Sampling and Analysis
Environmental Transport
Environmental Restoration and Remediation

Three copies of a 300-word abstract or a draft paper should be submitted to the session organizers by October 14, 1994. Notification of acceptance will be sent on November 18, 1994. Full papers will be published in the conference proceedings and should be submitted to The Society for Computer Simulation by January 20,

1995. Abstracts should be sent to:

Dr. Maurice J. Ades
Westinghouse Savannah River Company
1991 South Centennial Parkway
Aiken, SC 29803

VISUALIZATION, VALIDATION, AND VERIFICATION OF COMPUTER SIMULATIONS

Part of the High Performance Computing conference will feature several technical sessions on visualization, validation, and verification of computer simulations. Authors are invited to submit abstracts describing their work in these areas. Topics of interest include:

Advances in the visualization of computer simulations
Verification and validation results and scenarios
The role of visualization in development and validation of computer models
Parallel computing for improved performance and visualization
Artificial Intelligence applied to verification of simulations
Validation activities in licensing
Advanced numerical methods for improved accuracy of computer models

Three copies of a 300-word abstract or a draft paper should be submitted to the session organizers by October 14, 1994. Notification of acceptance will be sent on November 18, 1994. Full papers will be published in the conference proceedings and should be submitted to The Society for Computer Simulation by January 20, 1995. Abstracts should be sent to:

Dr. Adrian Tentner
Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439
tentner@pepper.ra.anl.gov

28th ANNUAL SIMULATION SYMPOSIUM:

The Annual Simulation Symposium is a forum for the interchange of ideas, techniques, and applications among practitioners of simulation in industry, government, and academia. This international Symposium is the oldest continuously operating conference/ symposium dedicated to simulation. The paper sessions are designed to generate an interactive discussion of concepts, methodology, and results between authors and the audience. The structure of the Symposium also provides for a degree of collegiality and continuity in the discussions of the various topics presented during the week.

In recent years, the Symposium has provided a forum for traditional simulation topics in discrete-event, continuous, digital, and analog simulation. Along with the traditional subjects, this year's Symposium is seeking papers in the following topical areas:

Parallel and Distributed Simulation
Neural Network Models and Simulation
Artificial Intelligence and Simulation
Object-Oriented Simulation
Simulation Languages, Tools, and Environments
Animations and Virtual Reality
Simulation of Multiprocessor/Parallel-processor Architectures
Network Modeling and Simulation
VLSI Circuit Simulations
Simulation of Distributed Systems and Databases

The Ira M. Kay Memorial Prize of $500 is awarded to the best pape presented at the Symposium. Authors of top papers are also encouraged to submit a follow-on paper to the International Journal in Computer Simulation.

Three copies of a 300-word abstract or a draft paper should be submitted to the session organizers by October 14, 1994. Notification of acceptance will be sent on November 18, 1994. Full papers will be published in the conference proceedings and should be submitted to The Society for Computer Simulation by January 20, 1995. Abstracts should be sent to:

28th Annual Simulation Symposium
c/o The Society for Computer Simulation
PO Box 17900
San Diego, CA 92177-7900
619-277-3888
619-277-3930 (FAX)

COMPUTER SIMULATION IN INDUSTRIAL AND PROCESS SIMULATORS:

The International Simulators Conference will feature several sessions on computer simulations in industrial and process simulators. Authors are invited to submit abstracts describing their work in these areas. See preceding Call for Papers.

American Control Conference
Seattle, Washington
June 21-23, 1995

AIChE Invited Session on Nonlinear Process Identification and Control

Abstracts are sought which describe novel techniques for nonlinear process identification and control. Priority will be given to abstracts which focus on new methods and/or theoretical analyses. Application oriented abstracts should be submitted to the AIChE invited session on Industrial Applications of Nonlinear Process Control.

To submit a paper for this session, please send a 500 word abstract to each of the chairman listed below by September 1, 1994.

Chairman:

Michael A. Henson
Department of Chemical Engineering
Louisiana State University
Baton Rouge, LA 70803-7303
Phone: 504-388-3690
Fax: 504-388-1476
E-mail: henson@nonlcontrl.che.lsu.edu

Co-Chairman:

Yaman Arkun
School of Chemical Engineering
Georgia Institute of Technology
Atlanta, GA 30332-0100
Phone: 404-894-2871
Fax: 404-894-2866
E-mail: yaman_arkun@chemeng.gatech.edu

AIChE Invited Session on Control-Relevant Modelling, Identification and Estimation

We are soliciting abstracts for papers and presentations in the area of modelling, identification and estimation, which specifically address the issue of their relevance to control. Some exemplary issues are: modelling requirements for closed-loop control, integrated identification and control, and interaction between estimation and control. Both theory and application papers will be considered. Selection will be based on how explicit the relationships between the proposed modelling / identification / estimation techniques and control requirements / performance are made. Interested people should send abstracts to the chair or co-chair by September 1. The contributors are expected to provide the full papers by the usual March deadline.

Chair:

Dr. Jay H. Lee
Chem. Engr. Dept.
Auburn University
Gainesville, FL 32611
Temporary address Ph) 904-392-5120
(valid until Sept. 20)fax) 904-392-9513

Dr. Oscar Crisalle
Chem. Engr. Dept.
University of Florida

DuPont Central Research
and Development
Experimental Station
P.O. Box 80101
Wilmington, DE 19880-0101
(use Dr. Tunde Ogunnaike
c/o Jay H. Lee as recipient).
Ph) 302-695-1929
fax)302-695-2645
e-mail) lee@esspt0.dnet.dupont.com

First Call for Papers
International Federation of Automatic Control
Third IFAC Symposium on Nonlinear Control Systems Design
(NOLCOS 95)
Tahoe City, California
June 26-28, 1995

Organized by:

Institute of Theoretical Dynamics, University of California, Davis
American Automatic Control Council (AACC)

Sponsored by:

IFAC, The International Federation of Automatic Control,
Technical Committee on the Mathematics of Control

Scope of the Symposium:

The symposium will present the state of the art in the design of nonlinear control systems. It will explore current theoretical developments as well as their latest applications to engineering problems. The symposium will provide a forum for the presentation and discussion of papers which describe new design methodologies for the control of nonlinear plants and will feature novel applications of these methods . The program will include invited survey papers by leading international authorities and encourage wide ranging discussions by all participants on basic problems and future directions. The beautiful location and excellent conference facilities will facilitate this.

The range of topics to be discussed includes:

Applications of nonlinear control
Algebraic theory of nonlinear systems
Geometric theory of nonlinear systems
Discrete-time nonlinear control systems
Stabilizabilty and feedback stabilization
Nonlinear observers and filters
Optimal control of nonlinear systems
Variable structure systems
Robust and H-Infinity control
Adaptive control of nonlinear systems
Singular perturbations in nonlinear control
Expert control for nonlinear systems
Computational methods for design & control

Location

The Granlibakken Conference Center is located in a picturesque mountain valley near Tahoe City, CA. It is an hour drive from Reno Airport, two hours from Sacramento and four hours from San Francisco. The Conference Center has ample meeting rooms and lodging in one, two and three bedroom townhouses with kitchens. On the grounds is a large heated pool, six tennis courts and nearby there is hiking, river rafting, golf and boating on Lake Tahoe. Accomodations are on the American plan with three full meals. There are reduced rates for accompanying persons. Participants may wish to extend their stay and enjoy the scenic location.

Instructions to Authors and Organizers of Special Sessions:

Prospective authors are invited to submit 3 copies of a draft of the full paper in English to the Chair of the IPC:

Professor David Q. Mayne
Institute of Theoretical Dynamics
University of California
Davis, CA 95616-8618
nolcos@itd.ucdavis.edu

Manuscipts should not exceed 15 double-spaced pages and should include the author's title and affiliation, full address, telephone, e-address, a 200 word abstract and keywords. Talks will be thirty minutes in length including discussion.

A Special Session consists of four papers on a coherent theme

within the scope of the symposium. Proposals for Special Sessions should include title and affiliation, full address, telephone, e-address of the organizer(s), a 500 word description of the theme of the session and the four draft manuscripts as described above.

Deadlines:

Submission of draft manuscipts and proposals for Special Sessions: August 31, 1994
Notification of acceptance: November 15,1994
Submission of full paper: January 15,1995

Publication and Copyright:

The material submitted for presentation at an IFAC meeting (symposium, conference, workshop) must be original, not published or being considered elsewhere. All papers for presentation will appear in the Preprints of the meeting and will be distributed to the participants. Papers duly presented will be archived and offered for sale, in the form of Postprint volumes, by Elsevier Science Ltd., Oxford, UK. The papers which have been presented will be further screened for possible publication in the IFAC journals Automatica and Control Engineering Practice, or in other, IFAC affiliated journals. The abstracts of all papers presented will also appear in Control Engineering Practice. Copyright of material presented at an IFAC meeting is held by IFAC. Authors will be sent a copyright transfer form. Automatica, Control Engineering Practice and, after these, IFAC affiliated journals have priority access to all contributions presented. However, if the author is not contacted by an editor of these journals, within three months after the meeting, the author is free to re-submit the material for publication elsewhere. In this case, the paper must carry a reference to the IFAC meeting where it was originally presented.

IFAC SYMPOSIUM ON NONLINEAR CONTROL SYSTEMS DESIGN
Granlibakken Conference Center,Tahoe City, CA, June 26-28, 1995

Name:_____
Mailing Address:_____
e-Address:_____

__ I wish to receive further information
__ I intend to submit a paper
__ I intend to organize a Special Session entitled
_____

I suggest further annoncements be sent to
_____

Suggestions for the International Program Committee
_____
_____

NOLCOS 95
Institute of Theoretical Dynamics
University of California
Davis, CA 95616—8618
916-752-0928 (ITD Office)
916-752-3185 (A. J. Krener)
916-752-8832 (D. Q. Mayne)
nolcos@itd.ucdavis.edu

First Call for CAST Sessions
1995 AIChE Annual Meeting
Miami Beach, Florida
November 12-17, 1995

The names, addresses, and telephone numbers of the session chairs are given on the next several pages, as are brief statements of the topics to receive special emphasis in selecting manuscripts for these sessions. Prospective session participants are encouraged to observe the following deadlines which have been established, but may be changed, by the Meeting Program Chair.

SPECIAL NOTE TO AUTHORS SUBMITTING ABSTRACTS FOR ANNUAL MEETING SESSIONS SPONSORED BY CAST

Because of the large number of anticipated presentation proposals for annual meetings and the limited symposia space available, and also to maximize the number of good proposals that can be accepted, and to generally improve the quality of CAST sessions, all proposals for Fall programming must be accompanied by an extended abstract and will be received directly by the corresponding Area Chairs and then rated by panels of session chairs for selection and allocation to specific sessions. The extended abstracts may include figures and tables that might help to better convey the content of the work. If the research work has been presented previously, the authors must include a paragraph stating how the propose paper differs from previous presentations.

Because of this centralized selection process, the deadline for recei of proposals is ONE MONTH EARLIER than formerly:

March 1, 1995: Submit an abstract (camera-ready) on a completed original AIChE Proposal-to-Present Form and also six copies of an extended abstract of approximately 550 words for use by the selection panel to the corresponding AREA CHAIR. It is appropriat to indicate for which session the contribution might best fit.

May 1, 1995: Session content is finalized authors are informed of selection.

September 1, 1995: Authors submit, if desired, any revision to the abstract (camera-ready) to AIChE.

October 1, 1995: Authors submit final manuscript to AIChE.

November 12, 1995: Speakers bring hardcopies of visual aids to be distributed to the audience at the presentation.

Please note that there is an AIChE limitation that no person may author or co-author more than four contributions at any one meeting nor more than one contribution in any one session.

Proposal-to-Present forms may be obtained from each session chair or directly from Peter Knox, Programming Director, American Institute of Chemical Engineers, 345 East 47th Street, New York, NY 10017-2395, 212-705-7950, 212-752-3294 (FAX), petek@aiche.org.

Area 10a: Systems and Process Design

NOTE: PLEASE SUBMIT PROPOSAL-TO-PRESENT FORM AN SIX COPIES OF AN ADDITIONAL EXTENDED ABSTRACT FO

ALL AREA 10A SESSIONS TO THE 1995 AREA CHAIR:

Michael F. Malone
Department of Chemical Engineering
University of Massachusetts
Amherst, MA 01003-0011
413-545-0838
413-545-1647 (FAX)
mmalone@ecs.umass.edu

1. New Topics in Process Synthesis.

We solicit papers that deal with all methods and philosophies for conceiving chemical process systems. Areas that are not well-developed or that have not received adequate attention in the traditional process synthesis literature are particularly encouraged. Topics of interest include reaction path and reactor network synthesis, synthesis of novel separation schemes, overall flowsheet synthesis, integration of synthesis, operability and control, synthesis of plants for the manufacture of advanced materials (polymers, inorganics, semiconductors, pharmaceuticals, biomaterials, etc.), synthesis of plants involving solids processing steps, and other nontraditional areas (environmental applications, synthesis issues in capital planning, etc.). Submit extended abstract to Michael F. Malone, Area 10A Chair at address above.

Session Chair (For Information Only)

Ka M. Ng
Department of Chemical Engineering
University of Massachusetts
Amherst, MA 01003-0011
413-545-0096
413-545-1647 (FAX)
ng@ecs.umass.edu

Co-Chair

Richard Colberg
Eastman Chemical Company
PO Box 1972
Kingsport, TN 37662-5150
615-229-3184
615-229-4558 (FAX)
rcolberg@emn.com

2. Advances in Process Synthesis.

Process synthesis, a key step in chemical process design, is concerned with identifying the basic flowsheet structure to be used from a typically large number of alternatives. The process economics and a number of other quality measures such as controllability, safety, compliance with environmental and other regulations, largely depend on the results of this conceptual design phase. This session will focus on new developments and applications of process synthesis methodologies such as mathematical programming approaches, heuristic strategies, thermodynamic methods, etc. Areas of application are not limited, but contributions considering environmental issues are especially welcome. Also, papers addressing problems and future trends and challenges in process synthesis research are sought.

Submit extended abstract to Michael F. Malone, Area 10A Chair at address above.

Session Chair (For Information Only)

Oliver M. Wahnschafft
Aspen Technology Inc.
Ten Canal Park
Cambridge, MA 02141
617-577-0100
617-577-0303 (FAX)
wahnschafft@aspentec.com

Co-Chair

Urmila M. Diwekar
Department of Engineering and Public Policy
Carnegie Mellon University
Pittsburgh, PA 15213
412-268-3003
412-268-3757 (FAX)
urmila@cmu.edu

3. Design and Analysis.

Papers are solicited on recent developments in process design and analysis. Areas of interest include, but are not limited to new process modeling methodologies, design and analysis of integrated continuous and/or multipurpose plants and tightly coupled process subsystems, techniques for the design of specific units, design under uncertainty, use of molecular structure and properties in design, techniques to analyze the operability (flexibility, controllability, reliability) of process plants, design and analysis of novel separation systems, and design for waste minimization.

Submit extended abstract to Michael F. Malone, Area 10A Chair at address above.

Session Chair (For Information Only)

Vivek Julka
Union Carbide Corporation
PO Box 8361
South Charleston, WV 25303
304-747-5949
304-747-5448 (FAX)
vivek@medinah.atc.ucarb.com

Co-Chair

Stratos Pistikopoulos
Centre for Process Systems Engineering
Imperial College
London SW7 2BY
UNITED KINGDOM
44-71-225-8131
44-71-581-9488 (FAX)
e.pistikopoulos@ic.ac.uk

4. Advances in Process Design.

Papers are sought in the area of designing chemical engineering systems. Design may be at the level of individual unit operations or

integrated processes. Priority will be given to papers that provide systematic and generally applicable frameworks and can be extended to a wide spectrum of applications.

Submit extended abstract to Michael F. Malone, Area 10A Chair at address above.

Session Chair (For Information Only)

Mahmoud El-Halwagi
Chemical Engineering Department
Auburn University
Auburn, AL 36849-5127
205-844-2064
205-844-2063 (FAX)
mahmoud@eng.auburn.edu

Co-Chair

Amy R. Ciric
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University of Cincinnati
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Joint Area 10a and Area 10d Session

1. Computational Approaches in Systems Engineering.

Papers are sought which discuss recent and projected advances in computational and algorithmic procedures. The contributions are intended to address issues related to the implementation of new and existing technologies for the successful design and operation of chemical processes. The session welcomes developments of new algorithmic methods in engineering analysis, advanced reasoning techniques for chemical design applications, applications of process integration methods, and efficient optimization approaches.

Submit extended abstract to Michael F. Malone, Area 10A Chair or to Ioannis G. Kevrekidis, Area 10D Chair.

Session Chair (For Information Only)

Antonis C. Kokossis
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Co-Chair

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Joint Area 10a and Area 12a Session

1. Modeling and Simulation in Pilot Plants

Papers are solicited for a session on modeling and simulation in pilot plants. Topics of interest include, but are not limited to use of process or kinetic models to plan experiments, pilot plant data as input to models, pilot plant data as input to decision and risk analyses, use of decision and risk analyses to guide experimentation, and statistical design of experiments in the modeling process.

Chair

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Co-Chair

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Area 10b: Systems and Process Control

NOTE: PLEASE SUBMIT PROPOSAL-TO-PRESENT FORM AND SIX COPIES OF AN ADDITIONAL EXTENDED ABSTRACT FOR ALL AREA 10B SESSIONS TO THE 1995 AREA CHAIR:

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512-471-7060 (FAX)
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Area 10b: Systems and Process Control

1. Advances in Process Control.

Papers are sought that address recent developments in the control of chemical process systems. Priority will be given to papers that discuss novel theories and innovative strategies. Papers which demonstrate the application of existing theory to new problem areas are also welcome. Area of research is open, but papers dealing with nonlinear control, model predictive control, control system monitoring and diagnosis, process identification and estimation, and batch process control will be considered first for other available sessions.

Submit extended abstract to James B. Rawlings, Area 10B Chair at

address above.

Session Chair (For Information Only)

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Co-Chair

David T. Dalle Molle
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2. Nonlinear Process Control.

Contributions are sought in the general area of nonlinear control. Papers dealing with both theoretical developments and applications of techniques are solicited in model predictive control, differential geometrical control, robust control, adaptive control, and nonlinear dynamic analysis of control systems.

Submit extended abstract to James B. Rawlings, Area 10B Chair at address above.

Session Chair (For Information Only)

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Co-Chair

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3. Model Predictive Control.

This session will focus on recent advances made in the area of model predictive control. Both theoretical and application-oriented papers are welcome. Topics may include, but are not limited to theoretical analysis of MPC controllers, alternative formulations of the MPC control problem, MPC-oriented modeling and identification, MPC implementation issues, and real time applications.

Submit extended abstract to James B. Rawlings, Area 10B Chair at address above.

Session Chair (For Information Only)

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Co-Chair

Thomas A. Badgwell
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4. Control System Performance Monitoring and Diagnosis.

Performance monitoring and diagnosis control systems to detect and avoid potentially costly problems is of significant benefit to the process industry. Multivariate statistical methods have proven to provide a framework for both monitoring and diagnosis. Neural networks also have been successful in fault detection. Artificial intelligence and fuzzy logic are alternative approaches. We solicit papers which address the theoretical and application problems associated with control system performance monitoring and diagnosis. Topics include, but are not limited to process chemometrics or other multivariate statistical methods, fuzzy logic, neural networks, and artificial intelligence for monitoring and diagnosis of control systems.

Submit extended abstract to James B. Rawlings, Area 10B Chair at address above.

Session Chair (For Information Only)

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Co-Chair

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5. Control Relevant Identification and Estimation.

This session intends to present theoretical or application papers addressing identification and estimation issues as they pertain, or are related, to process control problems. Areas of interest include, but are not limited to parametric/non-parametric modeling to achieve specific control objectives, identification and estimation to enhance controller robustness, design of experiments and refiltering for better process identification, and evaluation of existing identification or estimation methods from the perspective of closed loop control.

Submit extended abstract to James B. Rawlings, Area 10B Chair at address above.

Session Chair (For Information Only)

Gerardo Mijares
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Co-Chair

Richard D. Braatz
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6. Batch Process Modeling, Monitoring, and Control.

Papers are sought in all areas of batch process modeling, monitoring, and control. Papers which describe experimental applications will be given high priority.

Submit extended abstract to James B. Rawlings, Area 10B Chair at address above.

Session Chair (For Information Only)

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Co-Chair

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Joint Area 10b and Area 10c Session

1. Issues in On-Line Optimization for Control.

Papers are solicited which describe new developments, methodologies, and/or applications in the general area of on-line optimization for process control. The main issues addressed by the paper should be clearly described in the abstract. Priority will be given to papers with aspects not covered in the other process control sessions. Papers dealing with actual experimental and industrial applications are encouraged.

Submit extended abstract to James B. Rawlings, Area 10B Chair or Joseph F. Pekny, Area 10C Chair.

Session Chair (For Information Only)

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Co-Chair

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Area 10c: Computers in Operations and Information Processing

NOTE: PLEASE SUBMIT PROPOSAL-TO-PRESENT FORM AND SIX COPIES OF AN ADDITIONAL EXTENDED ABSTRACT FOR ALL AREA 10C SESSIONS TO THE 1995 AREA CHAIR:

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pekny@ecn.purdue.edu

1. Progress in Computer Integrated Manufacturing in the Chemical Process Industries. (Cosponsored by the International Cooperation Committee of the Society of Chemical Engineers, Japan)

Contributions are sought describing methodological developments, implementations, and experiences with all aspects of CIM in the process industries. Subjects of particular interest include integration of application areas such as plant information systems, monitoring, diagnosis, control, scheduling, planning, optimization, and design, as well as developments within application areas themselves that focus on integration issues. Presentations of industrial experiences with CIM technology and critical discussions of limitations/advantages of current approaches are also

welcomed. Abstract should summarize the scope of the work, the methodology employed, and significant conclusions and accomplishments.

Submit extended abstract to Joseph F. Pekny, Area 10C Chair at address above.

Session Chair (For Information Only)

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2. Planning and Scheduling.

Many companies are currently faced with the challenge of reducing working capital while providing improved customer support, particularly reduced product lead times. This has resulted in renewed interest in all aspects of supply chain management, but particularly in the areas of production planning and scheduling. This session will address all aspects of production planning and scheduling including, but not limited to reactive scheduling, industrial case studies, resource constrained scheduling, planning and scheduling under uncertainty, novel scheduling methodologies or problem representations, mathematical or heuristic optimization/simulation methods, integrated approaches to planning and scheduling, and support tools. Priority will be given to papers addressing issues of importance to industrial planning and scheduling problems.

Submit extended abstract to Joseph F. Pekny, Area 10C Chair at address above.

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Co-Chair

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3. Computing for Plant Operations.

Papers are sought on advances in the application of computers to improve plant operations. Both industrial and academic contributions are welcome. Topics of interest include, but are not limited to process data management and reconciliation, fault detection and diagnosis, on-line modeling and dynamic simulation, advanced control and its implementation in host computers and/or DCSs, on-line optimization, operator training and operator advisory tools, knowledge-based systems, and information systems for plant operations and plant data management. Case studies (successes or failures) may include details of the implementation, new techniques and/or software tools applied, and the economic impact of the application.

Submit extended abstract to Joseph F. Pekny, Area 10C Chair at address above.

Session Chair (For Information Only)

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4. High Performance Computing for Process Engineering.

Impressive gains in computer technology, in particular vector and parallel processing architectures, as well as advances in the numerical techniques used to take advantage of this technology, make possible today the solution of larger-scale and more realistically modeled chemical process engineering problems. Papers describing applications of such technology and techniques in process operation, optimization, simulation, and other areas of process engineering are sought. Also sought are papers describing numerical algorithms and codes for better exploiting vector and parallel processing in such applications.

Submit extended abstract to Joseph F. Pekny, Area 10C Chair at address above.

Session Chair (For Information Only)

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Area 10d: Applied Mathematics and Numerical Analysis

NOTE: PLEASE SUBMIT PROPOSAL-TO-PRESENT FORM AND SIX COPIES OF AN ADDITIONAL EXTENDED ABSTRACT FOR ALL AREA 10D SESSIONS TO THE 1995 AREA CHAIR:

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hchang@bach.helios.nd.edu

1. Pattern Formation and Dynamics

Papers in the area of nonlinear dynamics and pattern formation are solicited. Potential topics include spatial, temporal, and spatio-temporal patterns in various chemical engineering applications such as reactors, catalysts, fluid flow, control, heat and mass transfer, separations, etc. Papers can treat either theoretical, computational, or experimental aspects.

Submit extended abstract to Hsueh-Chia Chang, Area 10D Chair at address above.

Session Chair (For Information Only)

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Co-Chair

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2. Parallel Computing Applications in Chemical Engineering.

Presentations on parallel computing and its applications in chemical engineering are solicited. We plan to include a wide range of topics from massively parallel algorithms on commercial machines to coarse grained approaches on networked workstations.

Submit extended abstract to Hsueh-Chia Chang, Area 10D Chair at address above.

Session Chair (For Information Only)

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Co-Chair

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3. Chemical Engineering Applications of Stochastic Processes.

Submit extended abstract to Hsueh-Chia Chang, Area 10D Chair at address above.

Session Chair (For Information Only)

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Co-Chair

Kyriakos Zygourakis
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4. Discretization Methods in Computational Strategies for Chemical Engineering Applications.

The goal of this session is to provide a forum for the discussion of recent developments in the field of PDE solution methods for stead

and unsteady state problems in chemical engineering applications. Problems in the areas of fluid dynamics, transport phenomena (with and without reaction), and materials processing are of particular interest. Boundary integral, finite element, and boundary element methods have been used to address problems which feature complicated domains, moving and free interfaces, and transport in multiphase systems. The session welcomes contributions dealing with the implementation of the techniques to any of the fields listed above, as well as fundamental contributions that address issues such as uniqueness of solutions, non-homogeneous boundary conditions, adaptive gridding strategies, and the use of integral equation methods. Furthermore, papers that focus on the use of computational algorithms on vector or massively parallel computers will be considered.

Submit extended abstract to Hsueh-Chia Chang, Area 10D Chair at address above.

Session Chair (For Information Only)

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Co-Chair

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Co-Chair

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Joint Area 10d and Area 15c Session

1. Mathematical Modeling in Cellular Biology.

Submit extended abstract to Hsueh-Chia Chang, Area 10D Chair at address above.

Session Chair (For Information Only)

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Co-Chair

Douglas A. Lauffenburger
Department of Chemical Engineering
University of Illinois

Group-wide Poster Session

1. Advances in Computing and Systems Technology.

Posters describing recent original results of interest in any of the areas of process design, control, operations, information processing, applied mathematics, and numerical analysis are solicited. In order to accommodate late-breaking news, submissions will be accepted up until September 1, 1995, although earlier submissions are helpfu and welcome. Submit an extended poster abstract stating the new results to all of the CAST Area Co-Chairs listed below. Submissions with multiple authors should be made by the person who will prese the work if accepted. It should be clearly indicated if this work has been submitted for consideration in another session. Electronic submissions are strongly preferred.

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DIPPR Liason Forum

by George Thompson, Chairman, Liason Chairman

The Liason Forum is held in conjunction with the AIChE Annual Meeting, specifically--in the case of the San Francisco meeting--on the evening of Sunday, November 13, 1994. From 7:30 to 8 PM, Dr. Mildred Green, President of Technical Data Bases Services, Inc. will describe TDS's new DIPPR 15th Anniversary version of the DIPPR Project 801 database. From 8 to 10 PM, Dr. Peter R. Rony will present a three- part talk on current aspects of computers and communications: Part I. CD-ROM Technology. Part II. The Wide, Wide World of the Internet. Part III. The Decline of the Information Gatekeepers. All members of the CAST Division are welcome to attend.

CACHE 25-Anniversary

by Peter R. Rony, Editor, CACHE 25th-Anniversary CD-ROM

Members of the CAST Division are reminded of the special event, "Computers in Chemical Engineering Education--25 Years of CACHE," on Wednesday, November 16, 1994 at the San Francisco AIChE meeting. Session 183 will be held in Grand Ballroom A from1:00 to 5:00 PM.

Some Comments on the Production of This Issue of CAST Communications

by Peter R. Rony, Editor

The creation of this copy of the newsletter from raw, text files required several man-days starting during a weekend in July 1994 and finishing during the August 27-28, 1994 weekend. The use of Pagemaker version 5.0 proved to be a slow and awkward process for a novice user. Either because of the editor's unfamiliarity with the software, or perhaps because of software deficiencies, the process of cutting and pasting "threads" (specially recent additions to the Meetings and Calls sections) was tedious and did not always work as initially expected.

The newsletter was created in three parts: beginning, middle, and end. Just before the proofreading process began the "beginning" section was inadvertently copied over the final and best draft version of the "middle" section. All the careful page formatting disappeared in one frustrating instant. 94SUM11.PT5 was comfortably esconced in bit Siberia, from which it would never be retrieved.

Spell checking of the imported text files of the original July 1994 contents--the two feature articles as well as the original Meetings and Calls sections obtained from Jeff Siirola--demonstrated only two errors, both of which were corrected. The communication from HTRI had three run-on word pairs, which were left as is. The 5th IFAC announcement used the European spelling or organisation. Finally, the NOLCOS '95 announcement on pages 32-33 in this issue contained several spelling errors, all of which appeared in the original email announcement. A ballpoint pen was used to touch up the errors, which could not be corrected electronically.

Why did the over-writing of the middle by the beginning sections occur? Pagemaker 5.0 has the quirk that when you open an existing *.PT5 file, it comes in as an "Untitled-x" file rather than as a file with the original filename. In order to save initial changes, one must first type in--just once--the original file name; it is a dumb software feature. Your editor did this operation correctly perhaps 50-60 times, but goofed up on the 61st time (lack of concentration?) and, whoops, the "middle" section was lost...overwritten by the "beginning" section. Fortunately, a high-quality draft of the entire issue already had been carefully printed on a 300 dpi laser printer.

The reader will observe that shaded heading boxes and "ad boxes" are not present in this issue as they were in the Winter 1994 issue; such formatting and editorial features created an additional formatting burden the pursuit of which was not justified by the editor's inexperience with Pagemaker. Time will be required to shake down desktop publishing software to yield a production process less cumbersome than the this issue's use of Pagemaker 5.0 for Windows.

Nominations for Area 10B Programming Vice Chair

by Ali Cinar, checinar@minna.iit.edu

At the end of 1994, CAST Area 10b Programming Vice Chair, Dr. Jim Rawlings, will become the 10b Programming Chair. By a deadline of August 31, 1994, suggestions for candidates for the Vice Chair position have been solicited.

The responsibilities of the Vice Chair include the organization of the AIChE sponsored invited sessions at the American Control Conference, the processing of all contributed papers to ACC submitted to the Vice Chair (sending them out for review, ranking them, and so on), attendance to the ACC programming meeting, and providing assistance to the Chair. After serving as Vice Chair for two years, the Vice Chair becomes the Area 10b Programming Chair and focuses on the preparation of Area 10b sessions in all AIChE meetings. There is a significant amount of secretarial and organizational work in both positions. In 1996, there will not be an ACC meeting due to the 1996 IFAC World Congress. However, the Vice Chair is expected to contribute in the organization of sessions at the IFAC Congress.

Candidates for the position should be members of CAST, should have chaired sessions in the past, should have access to electronic mail and should have good secretarial support.