A one per cent solution?

San Francisco

THE US semiconductor industry's leading corporations and a self-employed engineer, Gilbert P. Hyatt, are getting ready for multimillion dollar negotiations following last month's announcement that the US Patent Office has awarded Hyatt a patent covering virtually every microprocessor in use today. The patent runs from its effective filing date of 1970, pre-dating the claim from the Intel Corporation team generally credited with creating the microprocessor. An Intel spokesman said last week that they are reviewing the patent, but have yet to decide its impact on the company or whether Intel would challenge it.

Hyatt's strategy is crucial. Because patents are not self-enforcing, Hyatt will have to take on the semiconductor makers in order to receive payment. Last week, Hyatt claimed some early successes, saying that he has nearly completed licensing fee negotiations with one major electronics corporation and that several other companies are already waiting to do business with him. Although he will not name the amount of money he is asking, Hyatt says he is looking for "a reasonable royalty that won't be a burden".

But even modest fees may add up to large amounts of money if the patent's validity withstands legal challenge. Ironically, if questioned in court, the patent may benefit from the 20 years it spent under review. Lawyers will now find it

hard to make new arguments but may attempt to narrow the patent's coverage to more specific types of microprocessors, or argue that Hyatt's claim is invalid because he did not actually transform the technology into working products.

Royalty fees in the semiconductor industry are typically one to five per cent of a company's revenues on that product.

According to Willis E. Higgins, a patent attorney familiar with the document, Hyatt is likely to ask for a fee of less than one per cent in hopes of avoiding a litigious response from the corporations. Even so, the inventor stands to become a multimillionaire. In addition to US claims, Hyatt also has the right to seek royalties from foreign companies for the microprocessors that they make, use or sell in the United States.

Hyatt developed his microprocessor at a small company called Micro Computer, Inc. that he founded in 1968, then dissolved in 1971. The engineer, who holds over 50 other patents, supports his research through consulting for the aerospace industry. This is his first profitable patent, and he says he plans to channel its proceeds into his current personal computer research, which involves a radical departure from current technology. As he matter-of-factly describes it, "Twenty-two years ago I developed the PC for the twentieth century. Now I'm working on the PC for the twenty-first century."

Elizabeth Schaefer

COMPUTER INDUSTRY

ICL deal threatens research links

London

THE British computer company ICL's continued involvement in collaborative European research projects is in question, thanks to the disquiet of other European companies over the sale of an 80 per cent holding in ICL to the Japanese company Fujitsu. The board of JESSI (the Joint European Submicron Silicon Initiative) will meet on 27 November, three days before the Fujitsu deal is finalized, to decide if ICL can remain a member.

JESSI was set up by a group of European computer companies to promote collaborative research on the fabrication of semiconductors, and so enable the European industry to compete with the United States and Japan.

ICL is not heavily involved in JESSI projects, as the company obtains semiconductors from Fujitsu. But a spokesman rejects the accusation that ICL will become an outpost of the Japanese industry, not entitled to participate in European projects: "We continue to regard ourselves

as a European-based company". He adds that the JESSI committee with which ICL is most strongly connected, concerned with applications for semiconductor materials, has said that ICL should not be expelled.

The European Commission seems to be taking a softer line over ICL's involvement in some 40 projects within its ESPRIT information technology research programme. In any case, US companies already participate in several European Communities research projects.

Filippo Pandolfi, Commission vice-president in charge of research, has said that projects must be reviewed case by case and that it will be for the partners involved in each to decide if they wish to continue collaborating with ICL.

JESSI officials also have a more immediate concern than the ICL question — last month's decision of the Dutch electronics company Philips to pull out of JESSI's advanced memory chip project, which accounts for about 20 per cent of JESSI spending.

Peter Aldhous

CLIMATE CHANGE CONVENTION

The long and winding road

London

As the attention of the world's environmental diplomats switches to negotiating a climate change convention, there seems to be a broad international consensus that the task must be finished in time for the United Nations conference on environment and development, due to take place in Brazil in 1992. But whether the convention should be an agreement with substantial measures to combat global warming or a bare-bones statement of concern is more contentious.

Now the Intergovernmental Panel on Climate Change (IPCC)'s report has been completed (see *Nature* 347, 9; 6 September 1990), the climate change circus moves to Geneva on 24 September, where government representatives will lay down the ground rules for the negotiations proper. These start in Washington in February 1991, at a meeting hosted by US President George Bush.

William Nitze, from the US Alliance to Save Energy, who helped begin the IPCC process during his time at the US State Department, believes anti-global-warming measures must be incorporated into the initial convention: a more general agreement "just won't cut it", he says. West Germany and the Scandinavian nations are likely to back this position, but the current generation of US negotiators will aim for an agreement along the lines of the 1985 Vienna Convention, which simply stated international concern over the thinning ozone layer. Firm targets on emissions of ozone-depleting chemicals were agreed only later, under the 1987 Montreal Protocol.

Stewart Boyle, from the UK Association for the Conservation of Energy, says that in the case of climate change there is no need for a two-stage process of convention followed by protocol. The Montreal Protocol had to wait for scientific review, he says, which in this case IPCC has already provided. But US determination to stress the uncertainties surrounding current climate predictions, despite their failure to water down significantly the conclusions of the IPCC report, may force negotiations into two stages.

The British negotiating team is preparing for an 'honest broker' role. The United Kingdom is one of relatively few countries so far committed to stabilizing carbon dioxide emissions (see *Nature* 345, 373; 31 May 1990), provided other countries play their part. But UK negotiators are determined not to let calls from some countries for the inclusion of rigid emission targets scupper the delicate convention negotiations.

Nitze says that the option of a more

substantial convention could be kept open almost until the last minute, by keeping controversial sections 'bracketed off' from the main text, to be included if there is a change of heart by the United States. He believes that some measures, including clauses on deforestation, strengthening climate monitoring and defining financial arrangements to help poorer countries to develop their economies while minimizing greenhouse gas emissions, may well be included.

The inclusion of carbon dioxide emission targets (themselves an interim step towards integrated controls encompassing all greenhouse gases) is far less likely. But the United States may find itself forced into conceding some targets if many nations produce their own emissions strategies before 1992. The positions of individual countries will become clearer during the two-day ministerial meeting which concludes the World Climate Conference in Geneva in November. The urgency with which the international community wishes to address climate change convention negotiations should also be evident in the meeting's final declaration.

IGBP GLOBAL CHANGE PROGRAMME

Stripped for action

Paris

AFTER two years of discussions, the special committee of the International Geosphere-Biosphere Programme (IGBP) on global change met last week in Paris to discuss details of a set of five honed-down 'core projects' which it expects governments to back over the next 10 to 20 years. Although data from these first projects are seen as essential if politicians are to make informed decisions on global change issues, IGBP officials are still concerned that not all governments are fully committed to the programme. A special problem will be the need to gather information from parts of the globe occupied by under-developed nations that lack their own research capabilities.

IGBP was put together by the International Council of Scientific Unions (ICSU) in September 1986 and, with the World Climate Research Programme (jointly sponsored by ICSU and the World Meteorological Organisation), is the coordinating power behind the international effort to understand global change. United Nations backing came with a General Assembly resolution passed in December 1989.

The Paris meeting exuded an air of self-congratulation, as though a difficult job had been well done. According to Marie-Louise Chanin, one of the 19 members of the IGBP special committee, any project not judged immediately relevant to a list of seven critical questions on global change was eliminated over the course of

European Communities (EC) partners failed to reach a common position on carbon dioxide emissions when ministers last debated the issue in June. Spain, showing little interest in the problem, is the main stumbling block. But another meeting is planned for 29 October, and it is possible that a general EC target can be set, within which Spain and the other southern European nations have some leeway. The slack could be made up by EC member states already committed to stronger action, such as the Netherlands and West Germany.

A firm emissions target from Japan will be influential, since the Japanese have been seen as part of the camp opposed to emissions targets which is headed by the United States and backed by the Soviet Union and Saudi Arabia. Japan has reasonably complained that, as the most energy-efficient nation in the developed world, it has already done more than most to address the emissions problem (see table). But Japan is expected to announce during October a plan to stabilize its emissions by 2000, albeit at a level marginally higher than today.

Peter Aldhous

meetings involving more than 500 scientists. The five surviving projects will look at global atmospheric chemistry, global ocean flux, biospheric aspects of the hydrological cycle, terrestrial ecosystems and global changes over the past 2,000 years. Several of these projects have already started.

IGBP now has 46 member nations but, says French Research Minister Hubert Curien, "there are some serious gaps, particularly in South America, Africa and Oceania". The problem for poorer countries, says Dr E. Diop of Senegal, is that they tend to be submerged by immediate problems such as drought and famine, and do not look for long-term causes and effects. IGBP now hopes to overcome this isolation by creating a series of regional research centres in developing countries. These will concentrate attention on synthesis and modelling projects particularly relevant to regional priorities, while providing opportunities for training and exchange.

Now that the planning phase is complete, said John Wood, of the marine sciences directorate at the UK Natural Environment Research Council (NERC), IGBP must be implemented. Core projects will be funded through national research agencies, with coordination ensured by 'core project offices' dotted around the world. So far, offices have been set up in Kiel and Berlin (Germany), Berne (Switzerland) and Paris. The Paris office, to be located at the University of

Room for improvement on emissions

THE table shows 1987 greenhouse gas emissions for a number of key countries, compiled by the World Resources Institute (WRI). Emissions of methane and chlorofluorocarbons have been converted to quantities of carbon dioxide with the same heating effect, and the figures include the effect

	GREENHOUSE GAS EMISSIONS (TONNES OF CARBON EQUIVALENT)	
	Total (millions)	Per capita
US	1.00	4.1
Soviet Union	0.77	2.7
European Communities	0.76	2.3
Brazil	0.47	3.3
China	0.44	0.4
Japan	0.23	1.9
W. Germany	0.17	2.8
UK	0.15	2.6

of deforestation on the carbon dioxide budget. The total emissions figures identify the main 'climate polluters', says Allen Hammond from WRI. He believes the ultimate aim of an international agreement should be to reduce emissions from these countries. When Germany is reunified, European Communities emissions will exceed those of the Soviet Union. But any agreement must also take account of the varying extent to which countries are able to make reductions. The per capita figures show, for example, that US emissions per head of population are more than twice those of Japan. If Japan is taken as a model energy-efficient economy, it seems that there may be scope for reducing greenhouse emissions in the US and to a lesser extent in the Soviet Union and the European Communities. Emissions targets based on per capita figures would also benefit developing countries such as China, with low per capita emissions. The high per capita figure for Brazil is explained by the high rate of deforestation in that country in 1987.

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Paris VI (Jussieu) will house the IGBP data and information system directory. Co-funded by the US National Aeronautics and Space Administration (NASA) and the French government, the office will serve as a clearing house for Earth observation satellite data, ensuring compatibility and links with other databanks. The centre will be directed by S. Ichtiague Rasool, scientific director at NASA in Washington, from 1 October.

One of the goals of IGBP is to be able to make long-term predictions of climate change. Woods thinks that this will be feasible in 20 years, but that a start needs to be made "in the next 2-3 years".

According to Woods, "if governments do not take this decision (to implement IGBP), they will have consciously decided not to base their policies on the best available predictions". Funding could be a problem, despite the political enthusiasm for global change research. This year, IGBP fell \$500,000 short of its \$1.6 million target budget for administration.

Peter Coles