ALEXANDER LEONTOVICH
Editor-in-Chief

LETTER FROM THE EDITOR

Dear Friends and Colleagues,

What does MILSET do? What are its main projects? And what do those who take part in the events and activities actually think about it? I suspect that only a few active members of our movement would be able to give real answers to these questions.

That is why we need a stage — a media platform where MILSET members and all those who are interested will find as much as possible about the movement, its history, goals, and activities.

Our stage is JOSE — this journal, which is currently published electronically to ensure open access.

The current edition was preceded by two issues of "The Journal of Science Education", which included presentations by the participants of the scientific and

pedagogical congress, held as part of Expo-Sciences Europe 2012 in Tula (Russia), and the presentations of the Russian delegation at the conference dedicated to the 25th anniversary of MILSET held in November 2012 in Puebla (Mexico). The issues were published on the MILSET website.

We monitored and analyzed the reaction of the community and decided to change one word in the journal's name. Thus "Education" was changed to "Engagement", as we at the Editorial Board believe that the journal's primary emphasis should be on engaging youth in science, technology, engineering, and mathematics (i.e., STEM) with a focus on strategies related to education, outreach, and promotion.

The problem our journal is trying to find a solution to is the declining interest in the natural sciences and engineering in the modern world. In many countries, young people are more focused on business, humanities, and law, while the development of our technical civilization, sophistication of technology, and environmental issues require more qualified professionals in the field of science and technology. It is therefore an important task to popularize scientific and technical skills and knowledge.

We want this journal to be understandable and interesting to all — teachers, students, scientists, workers — and hope that each will find something new and interesting. We are planning to publish articles by renowned scientists, popularizers of science and developers of teaching methods. We will highlight the practice of science education in different countries. In the journal you will also find popular articles about the most exciting areas of science and the challenges facing them, as well as materials on the history of MILSET and information about events in the field of science engagement and education all over the world.

Anyone can contribute — from venerable scientists to students.

Our journal is a MILSET platform where the widest audience can communicate, and I am convinced that it will be interesting to all. The demand for the journal depends on each of us — read and write!

ISSUE #3

Founded by The International Movement for Leisure Activities in Science and Technology (MILSET — Mouvement International pour le Loisir Scientifique et Technique)

EDITORIAL BOARD

FEATURE ARTICLE

RENI BARLOW
Innovative educator and school administrator for 19 years in the Scarborough and Toronto (Canada) District School Boards. From 2002 to 2013, restored Canada's oldest youth science outreach organization from near extinction to the national leader in engaging and celebrating Canada's young scientists. Recently retired, now pursuing consulting and contract opportunities in STEM education, outreach, and strategic development as founder/principal of Why? to Wow! Educational Consulting, Inc. President of MILSET Noram (North America) and Chair of the MILSET Strategic Planning committee.

ENGAGING YOUTH IN SCIENCE AND TECHNOLOGY — A CANADIAN PERSPECTIVE ON WHAT REALLY MAKES A DIFFERENCE

On October 4, 1957, about 15 months before I was born, the Soviet Union launched a tiny satellite — Sputnik I — into Earth orbit for the first time. That remarkable achievement ignited the space race and an unprecedented level of investment in science and technology education. Less than twelve years later, on July 20, 1969, I was a space-obsessed 10 year-old who joined millions around the world to watch grainy black-and-white TV images of Neil Armstrong's first step onto the surface of the moon. Kids everywhere dreamed of becoming an astronaut — completely ignoring the fact that, at the time, the first requirement was to be a member of the American or Soviet Air Force. Science didn't need a marketing plan back then.

One particular approach to science education experienced enormous growth during this period — the science project and science fair. The American National

Science Fair, known today as the Intel International Science and Engineering Fair (ISEF), was first held in 1950, but the concept spread rapidly to other countries in the late 1950s and early 1960s.

At its core, the concept was simple: students conduct research on some aspect of science and then present it as a display and an oral presentation to a group of judges. The winner of the first US national fair in 1950, eighteen year-old Alan J. Fletcher, demonstrated Newton's laws of motion — a low-level project by today's standards. Just ten years later, students were presenting original research and innovations; immortalized in the 1999 Universal Pictures film, October Sky, Homer Hickam won a 1960 US National Science Fair gold medal for his team's original rocket designs. Fast-forward 54 years: the 2014 winner of the Intel ISEF — widely regarded as the world championships of science fair — 15 year-old Nathan Han developed a machine learning software tool to study mutations of a gene linked to breast cancer.

Although the sophistication of science fair projects has grown dramatically since the days of Sputnik — top-level research by high school students is equivalent to Master's degree work — the selection of science and engineering as a career path in western countries, as well as participation in science fairs, has declined significantly. As the executive director of Youth Science Canada from 2002 to 2013, I worked to address this challenge.

Canadian 15 year-olds perform well on international (OECD PISA) measures of science achievement: 10th (of 65 countries) in 2012. Given this level of achievement, you would expect that a large percentage of Canadian youth pursue degrees and careers in science and engineering; however, that is not the situation. In 2011, the OECD ranked Canada 24th in the percentage of science and engineering degrees amongst its university graduates — only slightly higher than the US, ranked 31st. Canadian youth achieve well in science, but choose not to study science and engineering. Post-secondary science and engineering graduation rates for many other countries correspond more closely with their PISA rankings: China leads both lists; South Korea and Finland appear in the top ten on both, and the US ranks 28th in PISA and 31st in science and engineering degrees.

So what is happening in Canada? A major 2001 Statistics Canada study found that 89% of Grade 4 (ages 9–10) students agreed with the statement, "I like science." In Grade 8 (ages 13–14) the proportion was 68%, and in Grade 12 (ages 17–18) the percentage varied by discipline — 60% of biology students, 42% of chemistry students, and just 31% of physics students liked science. It

seems that the older Canadian students get — and the more science they study in school — the less they like it. Not a good situation for a country intent on building an innovation culture.

The data are more encouraging for scientific interest and importance. A 2010 Ipsos Reid study (n=2,600) found that 78% of Canadian students ages 12–13 agreed with the statement, "I am interested in science," compared with 67% of those ages 14–16 and 58% of those ages 17–18. Gender differences for all three groups were very small. Although there is a difference of 20 percentage points from the youngest to oldest age groups, it is roughly half the decrease in the proportion who like science.

So, what affects students' interest in science? The study identified three factors that appear to make a difference:

- Students need to view science as fun, inspiring, and important;
- Students value teachers who explain well and explicitly value hard work; and
- Age 12–13 is a critical period for making STEM decisions.

Most students in the study (68%), regardless of age, agreed with the statement, "Science is important" so this is not an area of immediate concern. The proportion of students that agreed with the statement, "Science is inspiring" was lower than desirable, but varied only 8 percentage points across the three age groups (44% of ages 12–13; 37% of ages 14–16; and 36% of ages 17–18). The perception of science as inspiring and important is relatively stable from ages 12 to 18; however, the perception of science as fun declines more dramatically by age — 58% of ages 12–13, 44% of ages 14–16, and 36% of those aged 17–18 — a decline of 22 percentage points over 6 years, which closely matches the drop in how much students like science.

Major factors that contribute to this decline are perceptions — increasing with age — that science is difficult, and to a lesser extent, complicated and boring. While 31% of students ages 12–13 agreed that science is difficult, the proportion is 64% by ages 17–18, an increase of 33 percentage points. In comparison, perceptions of science as "complicated" and "boring" increase by 19% and 10% respectively. Thus, it appears that Canadian students lose interest in, increasingly dislike, and ultimately avoid science because it becomes less fun, more difficult, and more complex.

Unfortunately, an increasing focus on science content in the classroom — and few opportunities to conduct their own investigations — characterizes the school science experience for most students, reinforcing the negative

perceptions that drive students from the subject. By the final year of secondary school in Ontario — Canada's largest province with approximately one-third of the national population — only 32% of students are studying biology, 23% chemistry, and just 14% are enrolled in physics. Rather than inspiring and encouraging students ranked among the highest science-achieving 15 year-olds in the world to pursue STEM, it appears that Canadian schools do the opposite. Secondary teachers have actually told me that their primary function is to be a filter — to weed out all but the very best and most dedicated students for senior elective classes — partly because that's who they want to teach, and partly because they believe that only those students can be successful in STEM.

The sport of ice hockey is Canada's passion: the nation is disappointed with anything other than gold medals for men and women at the Olympic and other international levels. Canadian children are introduced to hockey at a very early age by getting out on the ice (or the road in summer) to enjoy the fun of the game. The result is a large number of kids and teens who play recreationally — feeding a system that develops some of the world's best players. If we taught ice hockey (or any other sport) the way we tend to teach science — sit at a desk, read the chapter on passing, and then answer the questions — not many kids would play hockey. In many ways, science is like a sport. You become skilled at it by doing or playing it — over and over again — gradually mastering the skills, techniques, and knowledge of the rules and strategies to achieve excellence, enjoy the game recreationally, or appreciate it as a spectator.

Youth Science Canada has used this theme in two strategies to address the challenge of getting more students doing science: First, to continue to promote, support, and celebrate participation and excellence in project-based science through science projects and fairs — working to ensure that top national and local achievers in science fairs are afforded a similar level of recognition (medals, scholarships, local media coverage, etc.) to the best young athletes. The second, and more recent initiative — called Smarter Science — has been to train teachers through full-day workshops and resource materials that focus on the development of inquiry and critical thinking skills in Kindergarten (ages 4–5) through Grade 12 (ages 17–18).

Most elementary school teachers in Canada (about 95%) have no background in science beyond their secondary school experience. As a result, many have great difficulty teaching active, inquiry-based science; some are actually afraid of teaching it and employ a variety of techniques to avoid it — turning science into library research, a writing activity, or simply teaching the content are popular strategies. Canadian secondary school teachers are required to have specific

qualifications — a certain number of university-level courses — to teach science. However, few undergraduate science courses offer any research experience — most are lectures with supplementary (and highly prescribed) labs — with the result that few secondary teachers have ever actually done any scientific inquiry. Add the pressure of a curriculum overloaded with content and students who are bored, overwhelmed, or unmotivated, and the classroom situation is easier to understand.

Smarter Science focuses on the development of 35 process skills using an inquiry-based approach. Teachers provide engaging materials specifically related to to the curriculum and guide students through the process of learning to conduct investigations by observing, identifying variables, conducting genuine experiments, and then organizing, analyzing, and communicating their results. All of this is very familiar to those who work with project-based science, but it is a true revelation for many teachers, at all grade levels.

In Canada, as the MILSET member organizations in so many countries around the world know — students who are encouraged to develop and apply inquiry and critical thinking skills to an authentic research question or technological challenge can be deeply engaged by difficult and complex science and engineering — a process they describe as fun. Doing good science is not easy. The concepts and processes are challenging, and true mastery does require extensive practice and repetition — 10,000 hours, based on Malcolm Gladwell's assessment in his bestselling book, Outliers. But these factors that make mastering science — or video games, a musical instrument, or a sport — difficult are the factors that generate the passion, joy, and fun.

By promoting effective project— and inquiry-based science and technology, MILSET member organizations support the work of creative and inspiring teachers worldwide, and provide opportunities for youth to experience the "serious fun" of science that is often not available in school.

BEST PRACTICE

The Best Practice section is dedicated to the methods of science engagement and promotion. Here we will publish materials, that are useful for people and organizations working to engage youth in science. In the Best Practice section of this issue you can find the best papers presented at the Leader's Congress "Governmental and Non-governmental Organizations: Cooperation in the Sphere of Scientific and Technological Education" was held as part of ESI 2013 in Abu-Dhabi (UAE). To promote a mutually beneficial dialogue between non-governmental organizations and science, technology, engineering, and mathematics (STEM) education authorities.

ALFREDO MIRANDA
PhD (Mexico), Former President UPAEP University

UPAEP AND MILSET: A SUCCESSFUL COLLABORATION TO PROMOTE SCIENTIFIC CAREERS IN MEXICO

BACKGROUND

The nineteen eighties were a pivotal point in the transformation of human knowledge — from the behavioral sciences, physics and the quantum behavior of particles,, to the economic, political, social, philosophical, anthropological and legal sciences. Knowledge is not only doubling every five years; it is broadening and growing in depth.

One of the great global challenges of our time is to provide every human being access to this transformational process and the resulting knowledge and technological transfer to improve the quality of life and wellbeing of humanity.

This challenge is imperative for youth. The younger generation aspires to fully participate in the life of their societies. Many see themselves as agents of

social change, economic growth and development, and technological innovation. We have the responsibility to create the conditions to make their imaginations flourish, to open their minds, and to apply their energy and ideals to the creation of new visions to benefit society and the global community.

In Mexico, universities and non-governmental organizations are keenly aware of these disruptive times and complex conditions — and of the fact that government policies alone are not effective in promoting scientific and technological advancement. In response, we have created dialogue spaces to promote public policies and taken concrete action foster collaboration and to systematically establish scientific and technological development as a priority strategy for closing the gap between Mexico and developed countries. Bureaucracy and establishing a paradigm of scientific development as the engine for socioeconomic growth have been the major obstacles to convincing key government agencies and players, making this a very rough road.

OUR EXPERIENCE IN MEXICO AND UPAEP

UPAEP began its fruitful relationship with MILSET in 2003 through discussion with Jean-Claude Guiraudon of France, founder and then president of the organization, and possibly the best ambassador for the MILSET cause.

From the very beginning, Professor Roberto Hidalgo was fully committed to making this project a success. He had participated in MILSET activities as a high school student for several years. Professor Eugenio Urrutia, director of the Research Department at UPAEP, envisioned MILSET's potential to enable young people's awareness of research as a vocation, as seen in Roberto, becoming a strong sponsor and advocate for the initiative. Roberto and Eugenio approached the Department of Academic Affairs, which at that time was under my direction, to present the MILSET project, sharing their vision and UPAEP's potential role in it.

In March 2004, UPAEP, led and sponsored an initiative to launch a national network of higher education institutions, called "la RED" to promote scientific and technological activities among youth, starting with 16 institutions and a very small group of supporters. The first youth science event, "Expo-Ciencias," was held on the UPAEP campus with a small but very enthusiastic group of 50 students and professors.

Today, 9 years after its start-up, the RED network includes 82 institutions across Mexico, including Mexico City and 22 of the 32 states that comprise the

country. The network is a non-profit private entity, lean and flexible enough to effectively achieve its objectives. From the beginning, UPAEP has been a committed sponsor and host of the network office.

MAIN PURPOSES OF THE RED NETWORK:

- To coordinate, promote and popularize science and technology primarily among Mexican children and young people.
- To build awareness of science and technology education and careers, and to develop strategies to promote and attract Mexican youth to science and technology.
- To propose public policies that support research, development and scientific knowledge across Mexico.
- To collaborate with, and take advantage of the powerful MILSET organization and its global network of members.
- From 2003 to 2012 the Mexican RED National Expo-Sciences has welcomed 10,000 participants with 2,500 projects by children and youth from more than 1,500 schools.
- In addition, 933 young Mexican scientists, escorted by 491 teachers, have presented 582 projects in 28 countries, where they have received 27 medals, 54 first place awards and 35 international accreditations.

AT UPAEP THE IMPACT WAS EVIDENT FROM THE BEGINNING:

- There has been an increase in the number of students selecting a scientific degree program and developing research skills.
- More students have developed an interest in participating in research projects individually, or in teams supported by their professors.
- We created a specific scholarship for first-year students that includes a commitment to share their research at the national Expo-Sciences or MILSET science fair.

- The UPAEP budget for R&D grew 22 times in 10 years.

- Today there are 10 times more research professors accredited by the National Council of Science and Technology (CONACYT) as members of the national system of researchers at UPAEP.

Sharing the impact and results with other institutions, including different governmental agencies, created the appropriate environment to start spreading the initiative and consequently to gain support from several other stakeholders and key players in the government.

OTHER ACCOMPLISHMENTS

The RED network also organized the National and International Climate Change Congresses, two Russian-Mexican youth scientific expeditions in 2009 and 2011, activities with Germany, Hong Kong, and the Global Summit of Science Fair organizers in 2012.

The Mexican RED network signed an agreement with the Swedish Young Scientists Federation and the Nobel Foundation that allows the winner of the national science fair to attend the Nobel Prize ceremony on behalf of Latin American countries, and before the ceremony takes place, share in a weeklong intensive cultural and academic program, including the international Youth Science Seminar in Stockholm.

SUCCESS FOCUSED ON 3 KEY AREAS

- Institutional collaboration and the UPAEP leadership
- Government participation
- Events that set the milestones

One of the best ways to address the complexity of the twenty first century is collaboration, broadly understood as teamwork, sharing, and learning together. The initial group of higher education institutions that set up the RED network adopted this spirit. The UPAEP leadership was crucial to providing an initial staff fully dedicated to promoting these kinds of activities, and then the involvement of the academy together with the research department of the university. The university's infrastructure supported the initial staff during the start-up of this project. Shortly thereafter, the student affairs office joined the initiative and

promoted its participation while organizing the different types of expos, fairs, contests, and various other activities supported by the RED network.

The second step was to encourage and persuade different Mexican governmental agencies and institutions at the federal, state and local levels to work together to increase science and technology content, appreciation, and a supportive environment in the national educational system. This enabled different agencies to support RED activities with a complete and varied set of resources, such as economic, cultural and physical facilities. It was not easy. It was time consuming and daunting, requiring effort, passion and patience from everyone involved in the process, but step by step, various agencies joined UPAEP's effort, achieving collaboration between NGOs, the RED network, universities, and the government. At the same time, it was also necessary to highlight and demonstrate the strong positive correlation between the advancement of science, research and technology transfer and the country's socioeconomic development reflected in the prosperity and wellbeing of our emerging country.

MILESTONE EVENTS:

- In July 2006, The Third Latin American Expo Science ESI-AMLAT took place at Veracruz World Trade Center with the participation of 14 countries. The Veracruz state government sponsored the event together with UPAEP, Universia-Santander Bank, the Mexican Society for the Promotion of Science and Technology, and other Mexican government agencies, such as the Mexican Youth Institute, and the General Direction for Technological and Industrial Education.

- In June 2009, the Youth Climate Change World Congress was organized in Nuevo Vallarta at the Nayarit Riviera. Eleven countries were represented by 350 young scientists presenting 233 oral presentations or projects. The Nayarit state government partially sponsored the event, together with UPAEP, the Mexican National Council of Science and Technology and other important governmental agencies.

- From September to November 2009 and October through November 2011, two Russian youth expeditions to Mexico took place, focusing on geological sciences and a comparative study of anthropological and sociocultural aspects of the countries. MILSET Russia was essential for this collaboration.

- In November 2010 the Mexico-Germany Collaboration allowed professors from Saxony to exchange educational experiences from grammar school to university.

- During October 2011, the 18th National Week of Science and Technology was held in the Mexico City World Trade center, fully sponsored for the first time by the Mexican National Council of Science and Technology, CONACYT. A total of 404 projects were presented by 120 higher education institutions, 6 countries and more than 1500 participants.

- In December 2011 the director of the Hong Kong Innovative Technology and Education Association visited Mexico under a varied agenda, including a collaboration to start a program named "iCreate Robot". This program included a workshop on aquatic and terrestrial robots at UPAEP.

- During November 2012, with the full support of the Puebla State Government, the Global Summit of Science Fair Organizers took place. Participants from 23 countries attended this event to learn about cross-cultural experiences organizing scientific events, contests, and programs. Simultaneously we celebrated MILSET'S 25th anniversary.

- UPAEP also organized other initiatives, including: a scientific short film contest; the Pandillas Científicas (Scientific Youth Gangs), operating since 2009 with categories for tots, kids and youth; enlisting the Google Science Fair as a partner educator; and publishing a book of ideas in action to share the experience of the 2011 Mexican National Expo-Sciences.

CONCLUSIONS

- Having a champion to promote the project was critical to the startup and growth of the RED network in Mexico and the success of its relationship with MILSET.

- Support for the project from a leading institution such as UPAEP was essential. Having the institution's leader and executive team committed to the project was a very important factor.

- Passion for the collaboration and a commitment to make things happen ensured that the project focused on action rather than talk.

BEST PRACTICE

MARIANNA KWAI-CHONG FUNG
MILSET Executive Committee Member (Taiwan)

BUILDING A SUCCESSFUL SUPPORT SYSTEM FOR TAIWAN INTERNATIONAL SCIENCE FAIR: COLLABORATIONS OF GOVERNMENTAL AND NON-GOVERNMENTAL ORGANIZATIONS

BACKGROUND

Taiwan International Science Fair (TISF), initiated in 2002, is a competition gathering outstanding scientific research projects by young scientists from around the globe. Every year, TISF brings together more than 500 high school students from 20 nations to compete for awards. For details on TISF participation, visit the National Taiwan Science Education Center web site at www.ntsec.gov.tw. Domestic contestants, besides competing for grand awards, also compete to represent Taiwan at the Intel International Science and Engineering Fair (ISEF) as well as the MILSET Expo-Sciences International (ESI). TISF activities

include judging, opening ceremony, science cultural tour, student and teacher mixer luncheon, public visitation, as well as the award ceremony. The event strongly promotes academic exchange and cross-cultural communication. There is also a strong correlation between the establishment of TISF in 2002 and the improvement and consistency of the Taiwan team's performance at Intel ISEF.

BUILDING SUPPORT SYSTEM

Organizing a science fair is a major undertaking, which requires the collaboration of both governmental and non-governmental organizations. The success of TISF can be attributed to the support of government, news media, sponsors, academia, schools, teachers, parents, volunteers, international science fairs and expo-sciences communities.

GOVERNMENT INITIATIVES: FUNDING, PARTICIPATION & POLICY IMPLEMENTATION

The Government of Taiwan provides 70% of TISF event funding. The President of the Republic of China (Taiwan) and the Minister of Education support TISF by participating in the event. The President also honours the Intel ISEF delegation by receiving them at the presidential office. Further, in April 2004, the Ministry of Education introduced a new policy to facilitate university admission for TISF finalists: Intel ISEF grand award winners are granted automatic university admission, and finalists representing Taiwan at Intel ISEF, MILSET ESI and other international science fairs are granted governmental recommendation for university admission. This breakthrough policy is significant in the educational history of Taiwan and the country's intensely competitive university admissions process. Further, Intel ISEF Grand Award winners from Taiwan are eligible for scholarships in the amount of NT$50,000 to NT$200,000 (approx. US$1,700 to $7,000). Beginning in 2006, Taiwan's Intel ISEF First Place Grand Award winners are also offered tuition scholarships to attend prestige overseas universities. Taken together, these initiatives clearly demonstrate the government's commitment to supporting the science fair program, and particularly its top achievers.

NEWS MEDIA COVERAGE: CREATING PUBLIC AWARENESS

TISF distributes news releases to newspapers, magazines, TV and radio encouraging them to cover TISF events and students' stories. This coverage is

essential in attracting more students and projects to enter the fair, as well as ensuring continued public and governmental support.

PUBLIC-PRIVATE COLLABORATIONS AND PARTNERSHIP: BUILDING COMMUNITY INVOLVEMENT

SPONSORS

During a 2009 meeting with the Taiwan representatives to international science fairs at the Office of Executive Yuan, Former Premier Chao-Shiuan Liu announced, "We hope to inspire more corporations and foundations to sponsor for science fair." At the time, Liu also served as the President of the K. T. Li Foundation for the Development of Science & Technology. Currently, TISF-related events and activities, including the opening ceremony, award ceremony, delegations traveling to Intel ISEF and MILSET ESI, Young Scientists Mentorship Program, science forums, seminars and workshops are made possible through generous sponsorship by the K. T. Li Foundation (since 1993), GFC Foundation (since 1996) and Intel Corporation (since 2000).

ACADEMIA AND SCHOOLS

Professional scientists and engineers are invited to serve as judges, as well as mentors in the Young Scientists Mentorship Program. In addition, the academic community provides laboratory equipment and resources to students working on research projects. Schools offer science talent classes, science clubs, research curriculum, seminars, and workshops. Teachers make arrangements for students to work with mentors. Schools under the Department of Education of the Taipei City Government are also invited to be TISF partners in hosting overseas delegations.

INTERNATIONAL SCIENCE FAIRS AND EXPO-SCIENCES COMMUNITY

Each year, TISF invites more than 20 overseas science organizations to send high school students and teachers to the fair. This participation develops mutual understanding, educational exchange, and cross-cultural communication between domestic and overseas participants — as well as the international competitiveness of student participants. By networking and establishing cooperation, TISF maintains close contact with Society for Science & the Public (U.S. based organizer of Intel ISEF), MILSET, and other international science fair organizations to ensure Taiwan students participating in Intel ISEF, MILSET ESI, and other events have the most current information.

INTEL ISEF ALUMNI, TAIWAN

Intel ISEF Alumni, Taiwan was established in 2010. Its mission is to utilize the energy of Taiwan's Intel ISEF alumni to help improve the support system and to extend the tradition and team spirit to the newcomers. The alumni share their Intel ISEF experience, advise on competition rules and tactics, and coach Taiwan student representatives to international science fairs on judging interview skills and project presentation techniques. Additionally, they offer emotional support and help build the confidence of young finalists on the road to science fairs and expo-sciences. Finally, the alumni provide manpower by serving as judge assistants and performing administrative work during the TISF week.

CONCLUSION

Since the initiation of TISF in 2002, the number of participating students, projects and countries has increased steadily. Participating in international science fairs and expo-sciences encourages students to develop scientific research skills, innovative abilities and international perspectives. Organizing science fairs and expos for youth is a solid investment in a country's future, but collaboration with governmental and non-governmental organizations is vital to make these events successful.

It's a team effort! Together everyone accomplish more!

BEST PRACTICE

BABO BABAKWANZA
Digital Project Manager, CIRASTI (France)

DIGITAL EXPO-SCIENCES: MAKING SCIENTIFIC AND TECHNICAL CULTURE ACCESSIBLE TO A WIDER AUDIENCE

Digital technology is becoming increasingly inescapable in today's world. It constantly redefines our lives by facilitating access to information and culture, unleashes talent, boots collective creativity and innovation opportunities, and totally redefines our vision of the future. Making science fairs accessible to a wider audience using digital tools seems to be a relevant idea.

For some years, MILSET, The International Movement for Leisure Activities in Science and Technology, of which CIRASTI is a founding member, had asked its members to make use of this improved form of communication.

Thanks to the richness and diversity of its partners and its previous experience and expertise in the organization of scientific exhibitions, CIRASTI is announcing an ambitious, sustainable, and non-competitive Digital Expo-sciences project (Expo-

sciences being the French term for Science Fair), accessible without restriction to all youth — individuals and teams — using a computer, smartphone or tablet.

CIRASTI's Digital Expo-Sciences project has two main components:

- A digital platform providing users with a rich and complete experience ranging from the discovery of scientific and technical culture to the development and promotion of projects;
- A support programme involving our partners in schools, science-clubs and Fab-labs (Fabrication laboratories) providing young scientists with tutoring, guidance and technical assistance.

Our project aims to:

- Enhance the growth of Expo-sciences by reaching a new audience often distant from science centres;
- Provide an enabling framework for project development prior to science fair where young people can work together, share their experience, and be mentored by experienced tutors. These youth can then participate in the Expo-sciences, which will be adapted to the dual pathway;
- Establish a place for experimentation with innovative approaches to scientific collaboration allowing the sharing and pooling of scientific, technical, or industrial resources;
- Strengthen intergenerational exchange by the development of a chain of knowledge including parents, children, scientists, teachers, entrepreneurs, craftsmen, etc.;
- Propose technical solutions to make the Expo-sciences accessible to people with disabilities and in general to any person without prerequisites.

Our intent is not to replace traditional Expo-sciences with virtual exhibitions. The goal of our initiative is to use the best digital technologies to make scientific and technical culture accessible to a broader public.

Development of our project involves two distinct and complementary phases: The first focuses on the development of the Project Factory, a module dedicated to project development and collaborative work. The Project Factory will provide tutorials, guidance, how-to's, mentorship, and other necessary tools allowing young people to develop their projects in an interactive environment.

The second phase will aim to create a digital exhibition module: Expo-village, based on Web 3D technology where a virtual and immersive environment will literally carry the visitors to the heart of each Expo-sciences. This will also allow Expo-sciences organizers to overcome current limitations of venues and display stands, allowing them to unleash their imagination and create awesome virtual exhibition facilities. They will also have a set of useful tools for project assessment, surveys, statistical analysis and so on.

Using the CIRASTI web-based platform, young people will use specific tools to develop:

- Their concrete scientific and technical project, which can be presented at a real Expo-sciences; and
- Multimedia products, such as videos, retracing the project's development from idea to final outcome. These materials will be integrated into the Expo-village module, a digital Expo-sciences showcase.

We know that starting a new project can be a daunting task, so our approach aims to facilitate project development and improvement by creating a supportive, educational, and collaborative environment for young people based on the use of digital tools, while also creating links between the virtual world and real life.

To ensure the success of this project, we intend to increase the number of Expo-sciences in France, leverage partnerships with scientific organizations, promote Expo-sciences to various local agencies, and make them more innovative.

In France, digital broadcasting will begin in March 2014 and will be carried out by our national partners in middle schools, high schools and universities. Currently, technical tests are being organized in several regions of France, Tunisia, and Algeria and will continue throughout the spring of Expo-sciences 2015.

The official launch will take place in November 2015 at the Cité des Sciences et de l'Industrie in Paris during the Île-de-France (Paris area) Digital-Expo event.

This Digital Expo-sciences project has been selected as the winner of the call for innovative, scientific development projects — ESTIM NUMERIQUE 2013 — supported by the French government.

This project is not just another platform; we intend to create a real living community for knowledge sharing and collaboration. We are looking for operational partnerships within the MILSET network and have already begun working with Tunisian and Algerian youth science organizations. If you are interested, please contact us. We still have a huge amount of work to do.

ABOUT CIRASTI

CIRASTI is a French non-profit organization created in 1985 by informal education organizations. It is a network of regional organizations that promote scientific and technical culture and support youth-led projects and their presentation at Expo-sciences. CIRASTI relies on thousands of volunteers working with hundreds of permanent workers of its member organizations. CIRASTI coordinates and organizes Expo-sciences all across France. CIRASTI is approved by the French Ministry of Youth and is also a partner of the French Ministries of Research, Culture and Communication.

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MILSET HISTORY

MILSET is currently making a significant effort to set out the principles for the strategic development of the organisation. It is certain that our international movement has great prospects and possibilities, but in order to set the future course, it is important to reflect on how it began. This section of JOSE is devoted to tracing the history of MILSET.

Volume 1 Number 1 1st Quarter 1988

milset NEWS

MILSET was born last July in Québec City

The International Movement for Leisure Activities in Science and Technology known as MILSET held its founding meeting during last July's science fair, Expo-sciences internationale 1987 held in Québec City. Representatives of 46 organizations from 21 countries took part in this first gathering.

During the meeting, the task force on international cooperation, which had been set up at the Toulouse conference entitled Assises Internationales de l'Animation Scientifique et Technique Jeunesse in fall 1985 in France, proposed the creation of an international nongovernmental organization (INGO) dedicated primarily to promoting popular science for young people and fostering international exchange among organizations in the field. This idea was to become the MILSET movement.

Organizational details

At the founding meeting, an executive committee consisting of 19 people was elected, seven of whom will also sit on the MILSET Board. Both of these bodies, which are described in greater detail in other articles, will hold meetings at regular intervals.

Between now and the next general meeting to be held in France during Expo-sciences international 1989, MILSET intends to take part in all relevant events and to implement a number of technical support and promotional activities. Members are invited to send suggestions to the Secretary General in Paris or to the Assistant Secretary in Montréal at the addresses indicated on page 2.

The MILSET Board has undertaken to find the necessary financing to enable it to grow and keep active. Moreover, MILSET intends to depend on the strength of its members rather than on a top-heavy organizational structure that could soak up any grants or contributions received. The accent will therefore be on events capable of reaching out directly to members.

Groups from 20 countries are represented at the MILSET founding meeting

A new quarterly

In order to inform groups involved in popular science, MILSET News will be published quarterly by the MILSET movement. A committee based in Montréal will produce the newsletter with the help of staff from the Conseil de développement du loisir scientifique (CDLS). The editor is Michel Bois, assistant secretary of MILSET.

This newsletter is one of MILSET's first concrete projects and hopefully it will create ties among members and foster new popular science activities throughout the world.

What does the logo stand for?

To create an image to represent MILSET's basic principles would be a challenge for anybody. Carole Aumais described how she developed the MILSET logo.

The logo has the two basic elements representing popular science, the movement's main concern, and youth, its target clientele.

The computer-designed figure above the signature suggests the earth and represents both the many areas of popular science and the movement's international character. It is a single figure created with an endless line to reflect continuity of action and the cooperation among member organizations, two fundamental factors for achieving peace and development.

The stylized signature illustrates the dynamism and originality of young people. The first letter creates an axis around which the figure rotates to reflect the movement's leadership in the field. The signature also symbolizes the link between young people and popular science.

The elliptical and well-spaced orbits emphasize the movement's orientation towards the future and its open outlook on the world, whereas the modern and dynamic presentation reflects the ingenuity and creativity that MILSET hopes will develop among young people as they are exposed to science and technology.

MILSET's five objectives

The International Movement for Leisure Activities in Science and Technology sets forth five objectives in article 2 of its by-laws.

MILSET shall promote the practice of scientific and technological activities in leisure time, mainly for young people. It shall also contribute to the development of scientific and technological culture for all. Regarding its member associations, MILSET shall assist them by fostering cooperation and joint activities and by informing them of activities carried out. It shall also represent these groups wherever necessary and particularly in international organizations. Finally, MILSET shall take any other steps, such as organizing meetings or forums or publishing documents, in striving to reach these objectives.

MILSET is well received by all

The founding of MILSET last July was clearly a timely event. More than 60 organizations have already joined the movement and the Executive Committee is very encouraged by the interest the movement has inspired.

An official publication was needed to facilitate regular communication among member groups. MILSET News was therefore launched and this is the first issue.

The newsletter will provide information on activities planned by member organizations and on MILSET's own projects. It aims to promote cooperation among young scientists and thereby foster closer ties among peoples through a better understanding of different cultures, which is one of the movement's objectives.

As a public utility, Hydro-Québec considers the advancement of science and the development of careers in this field for young people to be priorities. Consequently, considering the long-term impact MILSET will have on the future leaders in science, it was only natural for the utility to lend its support to the new movement. By taking the responsibility for producing this newsletter, Hydro-Québec wishes to make a concrete and useful contribution.

It is to be hoped that young scientists will remain active in their respective organizations so that science will continue to progress in our world.

Maurice Huppé,
President of MILSET
Executive Vice-President,
Technology, International Affairs and IREQ

official organ of the International Movement for Leisure Activities in Science and Technology. This quarterly newsletter, which is distributed in more than 35 countries, is particularly oriented towards government agencies and nonprofit organizations working to develop and promote popular science among young people.

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A Cosmopolitan Executive Committee

At the MILSET general meeting, an Executive Committee was elected comprising 19 members from 10 countries on five continents. Executive Committee members, who will meet once a year, will provide leadership to the movement between general meetings. A seven-member Board was elected from among the Executive Committee members. The Board will meet three or four times a year to attend to organizational details and to carry out the decisions of the Executive Committee.

The members of the Board are listed below, followed by the other members of the Executive Committee.

Chairman
Mr. Maurice Huppé
Executive Vice President - Technology, International Affairs and IREQ
Hydro-Québec, Québec

Vice Chairman
Mr. Alain Van Winghe
President
Jeunesses Scientifiques de Belgique (JSB), Belgium

Secretary General
Mr. Jean-Claude Guiraudon
Vice Président
Association Nationale Sciences Techniques Jeunesse (ANSTJ), France

Assistant Secretary General
Mr. Michel Bois
General Manager
Conseil de développement du loisir scientifique (CDLS), Québec

Treasurer
Mr. Hubert Gourichon
Fédération Internationale des Échanges Éducatifs pour Enfants et Adolescents (FIEEEA), France

Advisors
Ms. Lisbeth Fog Corradine
Youth Science Activity Coordinator
Secretaria Ejecutiva del Convenio «Andres Bello» (SECAB), Colombia

Mr. Abdul Fattah Hassan
General Manager
Scientific Welfare
Youth Department, Iraq

Members
Mr. Adnan Al-Meer
Vice President
Club Science du Koweit, Kuwait

Mr. Juan Ruiz Barrionuevo
General Manager
Instituto de Investigaciones Cientificas y Ecologicas (INICE), Spain

Mr. Alain Bernard
Manager
Maison des Sciences et des Techniques de Poitou-Charentes, France

Mr. Cheik Dem
Manager
Fédération Internationale des Centres d'Entraînement aux Méthodes d'Éducation Active (FICEMEA), France

Mr. Saïd El Kharrati
International Coordinator
Association Bouregurегu Salé, Morocco

Mr. Michel Hallet
Secretary General
Les Jeunes et l'Espace, Belgium

Mr. Jean-François Le Borgne
Club Léo-Lagrange de Massy
France

Mr. Joao Palmeiro
Treasurer
Associaçao Juvenil de Ciencia, Portugal

Mr. Jacques Severs
General Manager
Jeunesses Scientifiques de Belgique (JSB), Belgium

Mr. Dimitri Sossai
International Representative
Arci-Ragazzi, Italy

Mr. Albert Varier
National Director
Fédération Internationale des Centres d'Entraînement aux Méthodes d'Éducation Active (FICEMEA), France

Mr. Shaun Visser
Châteauguay Valley Regional Science Fair, Québec

Maurice Huppé — Alain Van Winghe — Jean-Claude Guiraudon — Michel Bois — Lisbeth Fog Corradine

MILSET's founding members

MILSET was founded by representatives of five international organizations and of 41 national associations from 20 countries during a general meeting at the 1987 international science fair.

National associations

Belgium
- Centre d'Entraînement aux Méthodes d'Éducation Active (CEMEA) de Belgique
- Cercle scientifique interfacultaire de l'Université de Liège
- Groupe d'études aérospatiales
- Jeunesses Scientifiques de Belgique (JSB)
- Maison de la science / Institut de zoologie de Liège

Colombia
- Secretaria Ejecutiva del Convenio << Andres Bello >>

Costa Rica
- Universidad de Costa Rica

Czechoslovakia
- Socialisticky Svaz Mladeze (The Socialist Union of Youth of Czechoslovakia)

Egypt
- Al-Ahram Science Club

France
- Antenne française des Petits Débrouillards
- Association Bretonne pour la Recherche et la Technologie (ABRET)
- Association Bretonne pour la recherche
- Association Lilloise d'Information et d'Animation Scientifiques et Culturelles (ALIAS)
- Association Nationale Sciences Techniques Jeunesse (ANSTJ)
- Centre d'Entraînement aux Méthodes d'Éducation Active (CEMEA) de France
- Centre d'Initiation Scientifique et Technique à l'Étude des Milieux (CISTEM)
- Centre de Recherche et d'Information sur la Littérature pour la Jeunesse (CRILJ)
- Club Léo-Lagrange de Massy
- CONTRASTE
- Fédération d'Astronomie Populaire Amateure du Midi (FAPAM)
- Fédération régionale Midi-Pyrénées
- Francs et Franches Camarades (FFC)
- Les amis d'Anselme Lanturlu
- Ligue Française pour l'Enseignement et l'Éducation Permanente (LFEEP)
- DEVENIR (formerly Maison des Sciences et des Techniques de Poitou-Charentes)
- Club X 2000 OVE
- Union des fédérations régionales des maisons des jeunes et de la culture (UNIREG)

Gabon
- Association de loisir scientifique

Indonesia
- The Indonesian Institute of Sciences

Iraq
- National Union of Iraqi Students and Youth (NUISY)

Italy
- Arci-Ragazzi

Kuwait
- Science Club of Kuwait

Mexico
- Consejo Estatal de Ciencia y Tecnologia

Morocco
- Association Bouregurегu Salé

New Zealand
- Wellington Polytechnic

Portugal
- Associaçao Juvenil de Ciencia

Québec
- Châteauguay Valley Regional Science Fair
- Conseil de développement du loisir scientifique (CDLS)

Senegal
- Centre d'Entraînement aux Méthodes d'Éducation Active (CEMEA) du Sénégal

Spain
- Instituto de Investigaciones Cientificas y Ecologicas (INICE)

Sweden
- Swedish Federation of Scientific Youth

United States
- Tri-county Science Teachers

International organizations

- International Federation for Educative Children and Youth Exchanges (IFECYE)
- International Federation of Training Centres for the Promotion of Progressive Education
- Fédération internationale des Petits Débrouillards
- Youth and Space
- Arab Union for Science Clubs

IN THE BEGINNING...

Group of authors
Ksenia Salnikova, Carole Charlebois,
Jean-Claude Guiraudon, Michele Bois

ROOTS OF MILSET

The first organisation to develop international cooperation of scientific youth was the Collectif International de Coordination pour le développement des activités scientifiques, scolaires et extrascolaire Insert space (CIC). It was created in Montreal (Canada) in July 1967 during the Universal Exposition (Expo 67) at the initiative of Francis Walid from Jeunesses Scientifiques de Belgique. Its first president was Mr. Stevens de la Bays. The majority of members were from Europe and the Americas.

At the beginning of the 1980s it became clear to many people that it was necessary to coordinate international cooperation in the sphere area of youth scientific leisure activity. Some national organisations found international partners on their own and started exchange programmes. Others consulted UNESCO for help. While international cooperation was developing, progress was slow and needed an engine.

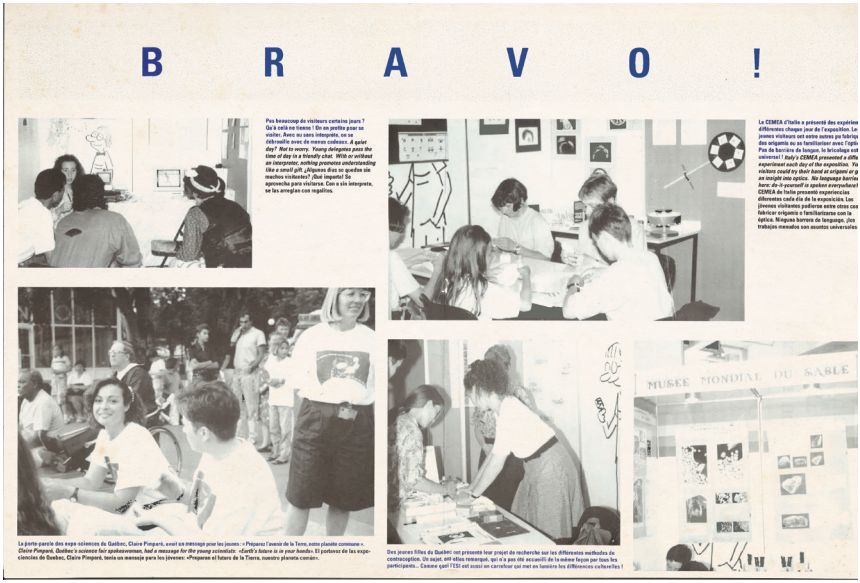
The first to develop a system of international student exchanges were re a number of French speaking countries, primarily Canada and France. Several people envisioned further development through the creation of an international platform uniting the national organisations from French speaking territories. Among others, Michel Bois, Executive Director of the Conseil de développement du loisir scientifique (CDLS) in Montreal (Canada) supported this idea. However his colleague from CIRASTI (France), Jean-Claude Guiraudon[1] had even greater global views: *"Jean-Claude suggested moving in all directions at the same time. And I allowed him to convince me easily and decided to rely on my friends. And they didn't disappoint my expectations and still remain very active, even now"*[2].

So, the voyage of MILSET set off from the French speaking harbour for international waters. These origins are the reason MILSET has a French name — Mouvement International pour le Loisir Scientifique Et Technique.

[1] Jean-Claude Guiraudon, president of MILSET from 1995 to 2007 , currently Honorary President of MILSET
[2] Michel Bois. from the article "Le MILSET: une idée qui fait boule de neige!¨

FIRST STEPS ON THE WAY TO MILSET

The United Nations declared the year 1985 as the International Year of Youth, which helped bring the MILSET idea to life. Within the UN framework for that year, several international conferences on youth leisure activities in science and technology were organized, including one in Toulouse (France). It was there that Jean-Claude Guiraudon and Michel Bois convinced their colleagues to found a new global organisation, which would promote and develop youth scientific and technological creativity. Several enthusiasts (including Michel Bois, Jean-Claude

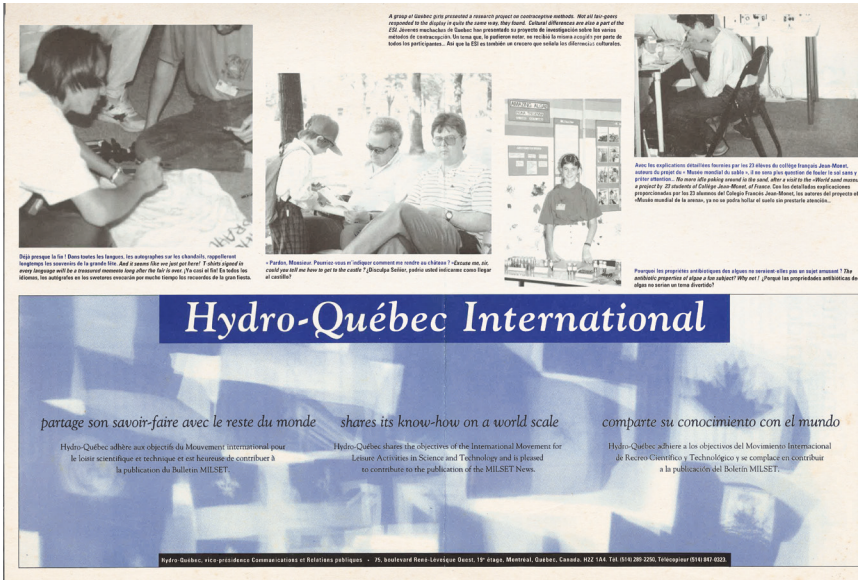


Guiraudon, Michel Hallet, Hassen Akkrout, Albert Varier, Juan Ruiz Barrionuevo, Enrique Padilla, and Adnan Al Meer) gathered to bring the idea to life.

The main project of the new organisation was to be a worldwide youth science exhibition, to be known as Expo-Sciences International (ESI). Regional and national science fairs had been held in a variety of countries since 1950, and some of them even used the name, “Expo-Sciences;” however, ESI would gather the best exhibitors from these national events, not to compete with each other, but to meet for an international celebration of science and technology. The main reason for the non-competitive aspect of the ESI is related to the fact that

MILSET did not want to discriminate against countries or organisations having fewer resources.

The organisers chose to test this type of exhibition before making it a worldwide brand by holding a preliminary Expo-Sciences in Toulouse in 1985. Hoping that the exhibition would be a success, the first ESI was planned for Quebec City (Canada) in 1987, and a subsequent ESI two years later in Brest (France). That level of advance planning *"brought a prospect for several years to come, in order to convince and motivate different national organisations"*[3] to join MILSET.



The founders of MILSET were very fortunate: everything went exactly according to their plans and expectations. The test in Toulouse was a success, with 35 delegations participating.

Following that brilliant performance everyone looked forward to the first official ESI in Canada.

[3] Michel Bois. From the article "Le MILSET: une idée qui fait boule de neige!¨

THE FORMATION OF MILSET

1987. This year is familiar to almost everyone associated with MILSET, as it marked the first ESI that took place in Quebec City (Canada).

The event was an especially significant challenge for its organisers (CDLS), because it was not simply an event, but a model for the long-term programme. Thus, it was important for the first ESI to be extremely successful — as a proof of the concept and to justify the importance of the entire mission on the international level.

At the same time it was a unique opportunity to get business interested in funding MILSET activities for youth. Bell Canada[4] sponsored the ESI in Quebec City and Hydro-Québec[5] agreed to fund some of the MILSET activities. Except for the French Government, Hydro-Quebec was the only MILSET sponsor for many years after.

ESI in Quebec brought together more than 500 participants from 20 countries to present their projects. Michel Bois spoke about the preparation for ESI–87: *"The ESI programme was designed in such a way to ensure that every participant and every delegation would get enough personal attention from organisers. Thus every participant could feel his (her) value for the whole community and believe in the importance of the science leisure activities and was motivated to succeed in his (her) sphere without entering a competition with other young people. That was the main idea behind everything that the CDLS team was doing while preparing for and holding the ESI–87!"*[6]

As part of ESI–87, representatives of 46 organisations from 20 countries participated in the **General Assembly** where MILSET was constituted and the Statutes and Charter of the Organisation were adopted. That 1st General Assembly was presided by Roger Lesgards, from France, President of Société Européenne de Propulsion. To manage the organisation the General Assembly elected an **Executive Committee** of 19 members; 7 of them formed the MILSET **Board**:

- Maurice Huppé (Vice-president — Technology, Hydro-Québec, Canada), and the first President of MILSET;

[4] One of the leading Canadian telecommunications companies.
[5] The Québec provincial company specialized in the production, transportation and distribution of electricity.
[6] Michel Bois. From the article "Expo-Sciences International de Quebec (1987).

- Michel Bois (CDLS, Canada)
- Jean-Claude Guiraudon (CIRASTI, France)
- Hubert Gourichon (FIEEA, France)
- Alain Van Winghe (JSB, Belgium)
- Lisbeth Fog Corradine (SECAB, Columbia)
- M. Abdul Fattah Hassan (Ministry for Youth, Iraq)

These 3 bodies were scheduled to meet on a regular basis. The second MILSET General Assembly was planned for Brest, France during ESI 1989. Between the General Assemblies the member organisations addressed their proposals and requests to the General Secretary (Jean-Claude Guiraudon) in Paris, or the Assistant General Secretary (Michel Bois) in Montreal.

In order to keep the members informed and maintain contact, it was decided to issue a MILSET Bulletin 4 times a year. The Bulletin was published in French, English and Spanish. A specially-created working group in Montreal, which included representatives of CDLS and Hydro-Québec, was charged with this task.

GOALS, EXPECTATIONS, DREAMS

The original version of the MILSET Statutes (Attachment 1) included 5 goals

1. To promote the practice of scientific and technological activities in leisure time, mainly for young people;
2. To contribute to the development of scientific and technological culture for all;
3. To assist member associations, facilitate the work of groups, foster collaboration and cooperation, and spread information on the activities carried out;
4. To represent member associations to the various concerned bodies;
5. To carry out other activity (meetings, symposia, publications) related to these objectives.

The founders viewed MILSET as dynamic, creative, and motivating organization, open to every country, which would strive to connect them and jointly inspire youth to undertake science and technology leisure activity.

The MILSET Charter (Attachment 2) included these goals, together with the support of talented young people from developing countries and special attention to environmental protection.

THE LOGO

It was not an easy task to graphically represent the fundamental principles of MILSET. According to the creators, the logo was designed to depict two basic ideas: **science leisure activities** — the sphere in which MILSET operates; and **youth** — its target audience.

The "hi-tech" figure represents a globe, which stresses the international scope of the movement and at the same time reflects the numerous fields of scientific leisure activity. The continuous line that forms the figure suggests the continuity and succession of MILSET, cooperation between its member organizations, and the fundamental principles of peace and development.

The "MILSET" signature is written in a "modern dynamic manner, typical of youth."

The hi-tech figure appears to turn around the first letter of the signature, which symbolizes the involvement of organizations from all over the world, as well as the union of youth and science.

Finally, the elliptical form of the orbits and their transparent structure symbolize that the movement is oriented toward the future and open to the world.

The modern dynamic style of the logo reflects the originality and creativity that MILSET aims to develop with youth through science and technology.

The article is based on the following materials:

1. Michel Bois "Le MILSET : une idée qui fait boule de neige!";
2. Michel Bois "Expo-Sciences International de Québec (1987).

ATTACHMENT 1

Mouvement International pour le Loisir Scientifique et Technique
International Movement for Leisure Activities in Science and Technology

MILSET Statutes

ARTICLE 1.

Those agree to the present By-laws herby establish International Non-Governmental Organization, governed by the French Law of July 1st, 1901 and the Decree of August 16th, 1901, to be known as the INTERNATIONAL MOVEMEMENT FOR LEISURE ACTIVITIES IN SCIENCE AND TECHNOLOGY - MOUVEMENT INTERNATIONAL POUR LE LOISIR SCIENTIFIQUE ET TECHNIQUE.

ARTICLE 2. OBJECTIVES

With reference to the United Nations Charter and the Universal Declaration of Human Rights, the objectives of the Movement shall be:

- To promote the practice of scientific and technological activities in leisure time, mainly for young people.
- To contribute to the development of scientific and technological culture for all.
- To assist member associations, facilitate the work of groups, foster collaboration and cooperation, and spread information on the activities carried out.
- To represent member associations to the various concerned bodies.
- To carry out other activity (meeting, symposium, publication) related to these objectives.

ARTICLE 3. HEAD OFFICE

The head office of the Association is to be situated in Paris, France

ARTICLE 4. DURATION

The duration of the association is without limit. In the event of its dissolution, such shall be pronounced in accordance with the conditions stated in Article 11.

ARTICLE 5. MEMBERS

Membership in MILSET shall be open to associations, groups, and individuals from any country, working with and for youth. Official language shall be French and English.
Three types of MILSET members shall be recognized:

1. Voting members: incorporated national and international associations, and other associations and groups co-opted by the Executive Committee.
2. Associated members: groups, associations, and individuals wishing to benefit from the activities and services of MILSET.
3. Honorary members: personalities or associations who through their involvement or competence provide MILSET with distinguished support.

ARTICLE 6. MEMBERSHIP

Any association or individual may request to become a member conditional upon agreement with the Charter and contribution to the pursuit of the objectives of the Movement; Membership requests shall be received by the Board, and accepted by the Executive Committee.

ARTICLE 7. RESOURCES

The resources of the association shall be composed of:

7.1 - Membership dues.
7.2 - Registrations fees and fees for participation in activities and events.
7.3 - Subscription and revenues from various publications.
7.4 - Payment for services rendered contractually or non-contractually.
7.5 - Grants and donations of any nature from states and public and private organizations.
7.6 - Assistance from UN organizations such as UNESCO, the EEC, etc…
7.7 - Revenue from its goods. The amount of annual dues shall be set for a period of 2 years by the regular General Assembly.

ARTICLE 8. REGULAR GENERAL ASSEMBLY

All categories members may participate in a regular General Assembly. Only voting members shall be entitled to vote.

8.1 - The assembly shall meet once every two years, upon notice of the Executive Committee or at the request of members holding one quarter or more of all vote.
8.2 - the board of the assembly shall propose the agenda.
8.3 - Proxy votes with written authorization, and postal votes shall be allowed. A voter shall not receive proxies from more than two members, aside from his own votes.
8.4 - Voting members from one country shall collectively hold 50 votes. The organizers of each country shall be responsible for distributing votes before the General Assembly, and informing the Board of the distribution. International associations, which are voting members, shall hold 50 votes.
8.5 - The Assembly shall elect an Executive Committee composed of 19 persons, chosen for their personal capability to make an effective contribution to the work undertaken by MILSET and with an attempt to have an equitable representation of the different areas of the world.
8.6 - notices of Assembly indicating the proposed agenda shall be sent at least ONE month before such Assembly, by the Board.
8.7 - All voting at the regular General Assembly shall be done by a show of hands, and ruled by an absolute majority of present and represented members. Voting may be by secret ballot if requested by the Executive Committee or one quarter of the voters.

ARTICLE 9. EXECUTIVE COMMITTEE

The executive Committee directs and manages the Association

9.1 - The Executive Committee shall be composed of 19 members, elected by the regular General Assembly, from the nominations made by members. Renewal of members shall take place every TWO years, for 10 and 9 members alternatively. At the first renewal, the 10 outgoing members shall be determined by a draw. Outgoing members may be re-elected. In the case of the resignation of a member, the Executive Committee may replace him until the next General Assembly, by cooperation. His term shall expire at the same date as that of the resigned member.
9.2 - The Executive Committee shall elect a Board.

9.3 - The Executive Committee shall meet at least ONE time a year.
9.4 - Work and research Committees may be formed wherever necessary, and all categories of members may participate.
9.5 - The executive Committee may invite any association or individual whose opinions it may judge necessary.
9.6 - The Executive Committee shall call regular or special General Assemblies, and prepare the groundwork.
9.7 - It shall draw up the internal regulations, and submit them to the vote of the General Assembly.
9.8 - It shall make decisions on the exclusion of members from the Association under the conditions stated in Article 11.
9.9 - Members of the Executive Committee shall receive no compensation in their capacity as administrators. Nevertheless the Committee may decide to reimburse, upon presentation of vouchers, the expenses incurred by those members who participate in management and direct activities of the Association.

ARTICLE 10. BOARD

10.1 - the Executive Committee from among its members shall elect The Board every TWO years. It shall be composed of at least one Chairman, one Delegated Vice-Chairman, one Secretary General, and one treasurer.
10.2 - The Board shall ensure the regular operations of the Movement with respect to the decisions of the General Assemblies and the Executive Committee.
10.3 - the Board shall prepare the files of the Executive Committee.
10.4 - The Board shall represent the Association in all legal capacities and is vested with all powers to this end; he is entitled to appear in court on behalf of the Association. In the case where he is unavailable, he shall be replaced by Delegated Vice-Chairman. The Chairman may delegate a part of his powers to other members of the Board.

ARTICLE 11. MODIFICATION OF BY-LAWS AND DISSOLUTION OF THE ASSOCIATION

Only a special General Assembly shall rule on any amendments to these By-laws, the dissolution of the movement, or its fusion with another association with similar objectives. Notices of The Assembly indicating the agenda and specific proposals shall be sent at least ONE month in advance. The special General Assembly shall be attended by voting members as defined in Article 5, who hold at least half the voters. Members unable to attend may be represented by another member of the association with a written proxy. One member may not receive more than two proxies from other members, aside from his own votes. If the quorum is not reached, the General Assembly will meet no later than weeks following, and will proceed no matter what the member of members present or represented. Un case of the dissolution of MILSET, its property shall be allotted to an international association it will designate and whose objectives shall be recognized as compatible, in accordance with international regulations on the allotment of collective property.

ARTICLE 12. RESIGNATION AND EXCLUSION

12.1 - resignation of a member shall be received by the Board who shall give an official acknowledgement to the member.
12.2 - The exclusion of a member shall be pronounced by the Executive Committee.

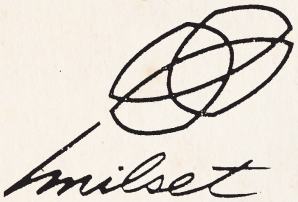
a) Upon failure of the member to pay dues.
b) Upon noting the impossibility for the member to continue participating in the work of the Association.
c) As a disciplinary action, after the hearing of the case of the concerned party, for an attitude or action of a nature which could compromise the reputation or the operation of the Association.

The exclusion may be pronounced temporary of definitive. The notice of exclusion is forwarded to concerned member by registered mail.

The concerned member may appeal the decision at the following General Assembly.

Adopted by the MILSET General Assembly, QUEBEC, July 16, 1987.

ATTACHMENT 2



CHARTER OF THE

INTERNATIONAL MOVEMENT FOR POPULAR ACTIVITIES

IN SCIENCE AND TECHNOLOGY

M I L S E T

DOCUMENT ADOPTED BY TASK FORCE ON INTERNATIONAL COOPERATION AS PART OF THE GROUNDWORK FOR THE CREATION OF AN INTERNATIONAL UNION OF ORGANIZATIONS PROMOTING POPULAR SCIENCE.

JANUARY 1986

THE TASK FORCE WAS COMPOSED OF THE FOLLOWING INDIVIDUALS :

MR. MICHEL BOIS, Conseil de développement du loisir scientifique Québec, CANADA

MR. ABDELHAMID FEKIH, Union arabe des clubs scientifiques pour jeunes.

MR. HUBERT GOURICHON, Fédération internationale d'échanges et d'éducation pour les adolescents.

MR. JEAN-CLAUDE GUIRAUDON, Association national sciences, techniques, jeunesses, FRANCE.

MR. MICHEL HALLET, Les jeunes et l'espace, EUROPE

MR. ALBERT VARIER, Fédération internationale des centres d'entrainement aux méthodes d'éducation active.

INTRODUCTION

The promotion of scientific activities outside an academic setting goes back a few decades in many countries. Interest in these activities, and the long term impact on the continuation of science in our society have been great enough, in many ways, to bring about numerous international exchanges

This charter was written as a basis for an international union of all organizations working with science and young people, which will hold its first general meeting in Québec City in July 1987.

The four main subjects dealt with in the following pages form the foundations of the International Movement for Leisure Activities in Science and Technology (IMLAST), which organizations joining IMLAST should agree to. The four subjects are : scientific and technological progress, scientific culture, protection of the environnent, and the promotion of international peace. The subjects are discussed after a general presentation of leasure science activities, and a summary of the characteristics which distinguish leasure science organizations from all those working with science or with young people. Finally, the objectives of the International Movement for Leisure Activities in Science and Technology are given.

CHARACTERISTICS OF ORGANIZATIONS WORKING IN THE FIELD OF LEASURE ACTIVITIES IN SCIENCE AND TECHNOLOGY

Organizations which work in the area of leasure activities in science and technology have some common characteristics which differentiate them from other organizations concerned with science or young people.

The organizations in question organize or promote **ACTIVITIES** dealing with **SCIENCE** or **TECHNOLOGY.** The **ACTIVITIES** are **CHOSEN** by the participants, and are held in a **LEISURE** setting with a certain **FLEXIBILITY**, despite the possible limitations imposed by the need for quality. The activities should encourage **DISCOVERY** and **CREATIVITY**, and can be done **INDIVIDUALY** or in a **GROUP.**

The activities chosen should be done using **SCIENTIFIC METHODS**, based on **OBSERVING, QUESTIONING, EXPERIMENTING**, and **ANALYZING.** These are the basic elements of the type of activities with the organizations are concerned, although they will differ depending on the participant's age groupe, level of education, and knowledge of the field in question.

Lastly, the activities are aimed mainly at **YOUNG PEOPLE**, without excluding other people who may gain from them. They must be **OPEN** to as many people as possible in order to promote the development of **SCIENTIFIC CULTURE**

SCIENTIFIC ACTIVITIES : AN EVERYDAY EXPERIENCE

Many people, both young and old, manage to mix science with pleasure within their everyday experiences, thus helping to get rid of the myth that science is only for a certain elite.

One night Bob notices the varying brilliance of the stars. He is intrigued, and the next day goes to the library and does some research in books on introductory astronomy. His increased interest leads him to do further research, and he joins an amateur astronomy club.

While Catherine is walking through her community, she notices an abandoned woodlot. As biology student, she decides to meet with her friends after class to start a project to put the lot to good use. They decide to study the plant and animal life of the woodlot to eventually turn it into a public nature interpretation centre.

Joan's family has just moved onto a farm. Joan is fascinated by plant science techniques, and makes a garden behind the house; she finds out about fertilizer and natural products which will make the healthiest and best growing plants. Better yet, Joan gathers together pieces of pipe, wood leather, and metal bars to make a pump which can bring water from the river to the garden in the dry season.

Julie's friend invites her to a meeting of his computer club. She has a few discussions with the other members and becomes so interested that the next day she askes permission from her teacher to use one of the school's micro computers to teach herself. Julie then decides to start her own club and considers organizing conferences for those who have bought small computers and are not sure what to do with them once the initial fun is over.

Scenes like these happen every day, everywhere in the world. The awareness of what makes up our surroundings and the wish to better understrand them are what push people to undertake scientific activities.

Scientific activities take the form of research for scientific information, experiments or simplification projects, technological models and "original inventions", which are done in spare time, individually or in group. Each person will have his or her own way of adapting an activity to his or her interest.

POPULAR SCIENCE FOR YOUNG PEOPLE AND SCIENTIFIC PROGRESS

Science and technology play an important role in today's world and offer new solutions to the many problems related to health and development. Young people therefore have an essential role to play, which they must prepare for from their early learning years.

The continuation of science is being prepared now. The encouragement of interest for science and technology in young people is therefore a goal to pursue. Schooling itself, however, is not sufficient for a person to choose to specialize in sciences. Many myths about the necessary intelligence must be eliminated.

The openness and the attractiveness of activities promoted by popular science organizations contribute largely to a positive relationship between young people and science. Although the age of the target group varies from one country to another, most organizations work with young people between the ages of 14 and 21 years. Some organizations aim to make children aware of science beginning at age 6 or 7.

Discovery, creativity, flexibility, and participation in individual or group activities give the activities an appeal that standard school programs can not easily offer. The organizations should strive to provide activities with a stimulating and adaptable framework for participants, particulary young ones.

In this context, popular science has a well defined role in the encouragement of those apt to change their interest for scientific leisure activities to one for a profession in science which will affect the society of tomorrow.

Scientific progress cannot, however, be measured only by the number of people who choose careers in science. It can also be evaluated by the general public's absorbtion of scientific information. For this reason we must emphasize scientific culture.

BRINGING SCIENCE TO PEOPLE TO DEVELOP SCIENTIFIC CULTURE

Scientific culture can be defined as our knowledge of the elements that make up our surroundings. The exact sciences help us understand the rules governing natural phenomena; environmental science help us understand what makes up our world; human sciences help us understand ourselves and our cultures; technology helps us to create new things, using our existing resources. Each field provides a person with references which allow him to solve problems and act on the resulting solutions.

The bringing of science to the people, or the development of scientific culture is a basic goal for all societies, from developing countries which have to continually try to improve living conditions to industrialized countries which must promote understanding of the technological changes which happen every day. The will to discover and understand the scientific phenomena and technology which affect us more and more should indeed be present in all of us.

Faced with environmental problems and technology, an individual require a scientific concern as well as the ability to be critical of the information spread on these subjects. One must be able to make an enlightened judgement on what is said and avoid believing everything that is said to be backed by scientifists.

The development of scientific culture therefore allows people to adapt their lifestyle to the progress of their society and to better contend with the challenges of the future.

Organizations promoting popular science have a special role to play since they are particularly apt to integrate science and technology with a person's general culture. Experience shows that the many activities undertaken help develop new approaches to certain fields and thus allow the coming together of modern and traditional science.

Lastly, besides organizing activities that are within easy reach of everyone, the organization should try to spread their scientific information, and promote their activities, as well as expose them to the public, and participate in others organized by other groups.

ECOLOGICAL AWARENESS AND PROTECTION OF THE ENVIRONMENT

Ecological and environmental questions are in the forefront of the concerns of many organizations promoting popular science. The natural sciences sparked the popular science movement in many countries, and more than any other field of science, attracted young people to discover the world around them. From the sixties onward, new technology meant an increase in the concerns of clubs, while an awareness of environmental problems updated the purposes of groups whose activities had been in the traditional fields.

Many groups are presently studying the environment, informing the public about protection and improvement of sites, pushing to improve attitudes toward the environment, and working in parks and reserves to make the public more aware of the importance of nature conservation, all to improve the balance and harmony between man and his environment.

Organizations promoting scientific leisure activities should therefore reserve a special place for the ecology and the environment and should support initiatives shich aim at public awareness of related questions.

SHARING EXPERIENCES AND WORKING TOWARDS INTERNATIONAL PEACE

Organizations which aim promote popular activities in science and technology should develop programs which will allow them to reach their target groups in their community, region, or country. The characteristics of each country, the prevailing problems, and the proposed solutions of each organization may become a source of inspiration and enrichment to all those who have shared in them. For this reason, as much as their resources will allow, popular science organizations should encourage international exchanges between two or more countries, with no barriers as to language, race, and religion.

Leasure activities in science, because of the nature of its goals and its impact on young people, becomes an excellent cause for useful exchanges amoung representatives of different cultures on a common subject, though seen through different mentalities. Aside from the direct consequence of new ideas for activities for each organization's target group the exchanges will promote a better understanding of peoples and cultures, and bring together representatives with the same goals regarding science and young people.

Particular attention should be paid to young people in these international exchanges. The organizations should do their best to include them in the activities and promote demonstrations and meetings for them.

The exchange of ideas on scientific questions seen from the point of view of leisure activities and discovery, gives way to interesting opportunities for peace and harmony which help balance out the all foo frequent antagonism coused by irresponsible use of science and technology.

It is therefore to pursue this goal that the founding of an international organization is proposed to promote popular activities in science and technology, exchanges, and a joint effort among the various organizations working in this field.

OBJECTIVES OF THE INTERNATIONAL MOVEMENT FOR LEASUREACTIVITIES IN SCIENCE AND TECHNOLOGY

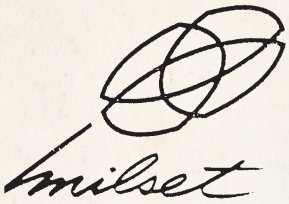
Promote activities in science and technology, in leasure context, mainly for young people.

Encourage the development of scientific culture for all people.

Promote cooperation and working together of member associations and groups, help them further their goals, and keep all those concerned abreast of activities.

Represend member associations to the various institutions concerned.

Carry out any other related activities (meetings, conferences, publications, etc...).



INTERNATIONAL MOVEMENT FOR
LEISURE ACTIVITIES IN SCIENCE AND TECHNOLOGY
(I M L A S T)

DRAFT OF BY-LAWS

ARTICLE 1 :

Those agree to the present By-laws hereby establish International Non-Governmental Organization, governed by the French Law of July 1st, 1901, and the Decree of August 16th, 1901, to be known as the **INTERNATIONAL MOVEMENT FOR LEISURE ACTIVITIES IN SCIENCE AND TECHNOLOGY - MOUVEMENT INTERNATIONAL POUR LE LOISIR SCIENTIFIQUE ET TECHNIQUE**

ARTICLE 2 : OBJECTIVES

With reference to the United Nations Charter and the Universal Declaration of Human Rights, the objectives of the Movement shall be :

- to promote the practie of scientific and technological activities in leisure time, mainly for young people.
- to contribute to the development of scientific and technological culture for all.
- to assist member Associations, facilitate the work of groups, foster collaboration and cooperation, and spead information on the activities carried out.
- to represent member associations to the various concerned bodies.
- to carry out other activity (meeting, symposium, publication) related to these objectives.

ARTICLE 3 : HEAD OFFICE

The head office of the Association is to be situated in Paris, France.

ARTICLE 4 : DURATION

the duration of the Association is without limit. In the event of its dissolution, such shall be pronounced in accordance with the conditions stated in Article 11.

ARTICLE 5 : MEMBERS

Membership in IMLAST shall be open to associations, groups, and individuals from any country, working with and for younth. Official languages shall be French and English.
Tree types of IMLAST members shall be recognized :

Voting members : incorporated national and international associations, and other associations and groups coopted by the Executive Committee.

Associated members : groups, associations, and individuals wishing to benefit from the activities and services of IMLAST.

Honorary members : personalities or associations who through their involvment or competence, provide IMLAST with distinguished support.

ARTICLE 6 : MEMBERSHIP

Any association or individual may request to become a member conditional upon agreement with the Charter and contribution to the pursuit of the objectives of the Movement, Membership requests shall be received by the Board, and accepted by the Excecutive Committee.

ARTICLE 7 : RESOURCES

The resources of the Association shall be composed of :

7.1 - Membership dues.

7.2 - Registration fees and fees for participation in activities and events.

7.3 - Subscriptions and revenues from various publications.

7.4 - Payment for services rendered contractually or noncontractually.

7.5 - Grants and donations of any nature from States and public and private organizations.

7.6 - Assistance from ONU organizations such as UNESCO, the EEC, etc...

7.7 - Revenue from its goods.

The amount of annual dues shall be set for a period of 2 years by the regular General Assembly.

ARTICLE 8 : REGULAR GENERAL ASSEMBLY

All categories of members may participate in a regular General Assembly.

Only voting members shall be entitled to vote.

8.1 - The assembly shall meet once every two years, upon notice of the Executive Committee or at the request of members holding one quarter or more of all vote.

8.2 - The agenda shall be proposed by the Board of the Assembly .

8.3 - Proxy votes with written authorization, and postal votes shall be allowed. A voter shall not receive proxies from more than two members, aside from his awn votes.

8.4 - Voting members from one country shall collectively hold 50 votes.

The organizers of each country shall be responsible for distributing votes before the General Assembly, and informing the Board of the distribution.

International associations which are voting members shall hold 50 votes.

8.5 - The Assembly shall elect an Executive Committee composed of 19 persons, chosen for their personal capability to make an effective contribution to the work undertaken by IMLAST and with an attempt to have an equitable representation of the different areas of the world.

8.6 - Notices of Assembly indicating the proposed agenda shall be sent at least I month before such Assembly, by the Board.

8.7 - All voting at the regular General Assembly shall be done by a show of hands, and ruled by an absolute majority of present and represented members. Voting may be by secret ballot if requested by the Executive Committee or one quarter of the voters.

ARTICLE 9 : EXECUTIVE COMMITTEE

The Executive Committee directs and manages the Association.

9.1 - The Executive Committee shall be composed of 19 members, elected by the regular Generaly Assembly, from the nominations made by members. Renewal of members shall take place every 2 years, for 10 and 9 members alternatively. At the first renewal, the 10 outgoing members shall be determined by a draw.

Outgoing members may be reelected.

In the case of the resignation of a member, the Executive Committee may replace him until the next General Assembly, by cooptation. His term shall expire at the same date as that of the resigned member.

9.2 - The Executive Committee shall elect a Board.

9.3 - The Executive Committee shall meet at least 1 times a year.

9.4 - Work and Research Committees may be formed wherever necessary, and all categories of members may participate.

9.5 - The Executive Committee may invite any association or individual whose opinions it may judge necessary.

9.6 - The Executive Committee shall call regular or special General Assemblies, and prepare the groundworK.

9.7 - It shall draw up the internal regulations, and submit them to the vote of the General Assembly.

9.8 - It shall make decisions on the exclusion of members from the Association under the conditions stated in Article 11.

9.9 - Members of the Executive Committee shall receive no compensation in their capacity as administrators. Nevertheless the Committee may decide to reimburse, upon presentation of vouchers, the expenses incurred by those members who participate in management and direct activities of the Association.

ARTICLE 10 : BOARD

10.1 - The Board shall be elected every 2 years by the Executive Committee from among its members. It shall be composed of at least one Chairman, one Delegated Vice-Chairman, one Secretary General, one Assistant Secretary-General, and one Treasurer.

10.2 - The Board shall ensure the regular operations of the Movement with respect to the decisions of the General Assemblies and the Executive Committee.

10.3 - The Board shall prepare the files of the Executive Committee.

10.4 - The Chairman shall represent the Association in all legal capacities and is vested with all powers to this end. He is entitled to appear in court on behalf of the Association. In the case where he is unavailable, he shall be replaced by Delegated Vice-Chairman. The Chairman may delegate a part of his powers to other members of the Board.

ARTICLE 11 : MODIFICATION OF BY-LAWS AND DISSOLUTION OF THE ASSOCIATION

Only a special Generaly Assembly shall rule on any amendments to these By-laws, the dissolution of the movement, or its fusion with another Association with similar objectives. Notices of Assembly indicating the agenda and specific proposals shall be sent at least one month in advance.

The special Generaly Assembly shall be attended by voting members as defined in Article 5, who hold at least half the voters. Members unable to attend may be represented by another member of the Association with a written proxy. One member may not receive more than two proxies from other members, aside from his own votes.

If the quorum is not reached, the General Assembly will meet no later than two weeks following, and will proceed no matter what the member of members present or represented.

In the case of the dissolution of IMLAST, its property shall be allotted to an international association it will designate and whose objectives shall be recognized as compatible, in accordance with international regulations on the allotment of collective property.

ARTICLE 12 : RESIGNATION AND EXCLUSION

12.1 - Resignation of a member shall be received by the Board who shall give an official acknowledgement to the member.

12.2 - The exclusion of a member shall be pronounced by the Executive Committee.

a) upon failure of the member to pay dues.
b) upon noting the impossibility for the member to continue participating in the work of the Association
c) as a disciplinary action, after the hearing of the case of the concerned party, for an attitude or action of a nature which could compromise the reputation or the operation of the Association.

The exclusion may be pronounced temporary of definitive. The notice of exclusion is forwarded to concerned member by registered mail. The concerned member may appeal the decision at the following Generaly Assembly.

Adopted General Assembly QUEBEC 16 juillet 1987.