Our vision is excellence in the surgical management of trauma and disorders of the musculoskeletal system.

Our mission is to foster and expand our network of healthcare professionals in education, research, development, and clinical investigation to achieve more effective patient care worldwide.

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The accident

Early in January 2008 a head-on collision near Chur, Switzerland, left Susanne Bäuerle, the AO’s Director of ORP/nurse education, with life-threatening polytrauma (ISS 27). Most significantly, her right leg sustained an open proximal tibial fracture (Müller AO Classification 41-C3), a comminuted fracture to the patella, and a Hawkins Type II fracture dislocation to the talus. The left lateral tibial plateau was also fractured, with minimal displacement.

On the day of the accident, AO member Dr Christoph Sommer, Head of Trauma Surgery at the Cantonal Hospital (Kantonsspital Graubünden) in Chur, washed out and debrided the open wound, applied a knee-spanning external fixator to the tibia, and reconstructed the patella. At the same time, his colleague Dr Karl Stoffel fixed the talus and performed a percutaneous screw fixation of the left tibial plateau. Seven days later, the external fixator on the right proximal tibia was replaced with a less invasive stabilization system (LISS) using minimally invasive plate osteosynthesis (MIPO) techniques.

In September 2008, the tension band wiring on the patella was removed and the knee arthroscopically mobilized. Removal of the LISS is scheduled for April 2009.

Surgeon and patient speak:

“Regaining normal movement takes time. My physiotherapists gave me innovative ideas, and every day I make time for balance, fitness, and outdoor exercises—it gives me satisfaction when I’ve done them.” Susanne Bäuerle

“Susanne undertook a terrific rehabilitation program that resulted in excellent functioning of both legs with sound healing of all fractures and no signs of talar necrosis.” Christoph Sommer
Spine surgery making the difference
How a firefighter reclaimed his private and professional life

The condition

John Ireland is from Colorado, where he works as an Emergency Medical Officer for the Pueblo Fire Department. He presented himself to Dr Michael E Janssen, AOSpine International Chairman, as he suffered from continuous pain which was affecting his lifestyle.

X-rays demonstrated a loss of disc space height at the L5-S1 level. An MRI scan was consistent with a substantial disease, vertical instability, marrow changes, disc resorption syndrome, and bulging of the disc at the L5-S1 motion segment. In addition, Mr Ireland had changes in the signal of the nucleus at the L4-5 level and normal signals of the L2-3, L3-4 discs. He was further evaluated with provocative discography demonstrating pain provocation at the L4-5 and L5-S1 motion segments.

After thorough evaluation and counseling, the patient elected for a surgical reconstruction to stabilize and preserve the motion of both L4-5 and L5-S1 levels. Mr Ireland was informed that movement of the diseased motion segment would be provided at the time of surgery by doing an extensive remobilization of the collapsed, degenerative discs of L5-S1 and less at L4-5.

As a firefighter, Mr Ireland was required to undergo governmental regulation physical performance evaluations prior to returning to his full occupation. He passed these at six months post-surgery and currently has no restrictions on his activities. His progress is monitored through a combination of physical examinations, functional improvement, and radiographic assessment every six months for the first decade after surgery.

Surgeon and patient speak:

“The biggest challenge in managing patients with difficult problems such as this case is based upon outcome measures that are directly reflected to patient selection, patient expectations, precise surgical technique, and a reasonable assessment of advanced technology.” Dr Michael Janssen

“I no longer have any pain or numbness in my back, legs or feet, stiffness or loss of mobility.” John Ireland

Dr Michael Janssen teaching his colleagues at an AOSpine event
Pre and postoperative images of the site of Mr Ireland’s degenerative disc disease
John Ireland is now able to enjoy his sporting pursuits once again
The accident

In February 2003, teachers Gavin Rees and Duncan Edwards collided while traversing a ski run in the French resort of Les Gets. Among Gavin’s injuries were major and multiple fractures of the cranium, frontal bone, nose, orbits, ethmoid bones, mid-face and anterior skull base, together with damage to his brain and leg.

At the University Hospital of Geneva, Gavin underwent a 19-hour operation performed by AO member Professor Michel Richter and his team. Gavin’s head injuries were so extensive that 130 screws and around 21 plates were used during his surgery—believed to be the highest number used in surgery in Europe. A month after the accident, Gavin was transferred back to Wales, where he was put under the expert care of Mr Adrian Sugar, Chairman of the AO Research Fund.

The surgeons speak:

“I think it is brilliant that Gavin and Duncan not only set out on this mammoth task but also achieved it. We are also very grateful for their efforts to raise funds for us.” Mr Adrian Sugar

“Gavin is testimony to what is possible when a patient has a positive frame of mind.” Prof Michel Richter
Tinni’s fractured tibia
Surgery and modern techniques spared this horse’s life

The accident

In August 2003, Tinni, an Icelandic horse, was found on his side in the paddock by his owner. An open tibia fracture was clearly visible. It was unclear how long the horse had lain there. The local vet’s first diagnosis was that the horse had to be put to sleep. Tinni’s owner was adamant an x-ray should first be taken before deciding on any drastic action.

The horse was sedated and taken to Zurich’s animal hospital (Tierspital) where he was x-rayed on his side. The results of these gave the horse a 50% chance of survival. The owner opted for surgery which was carried out in the hospital’s very modern operating room.

After induction, Dr Anton Fürst debrided the open skin wound, followed by an approach to the fractured tibia at a different site.

After manual reduction, the fracture was re-paired by two DCP plates at right angles relative to each other.

The postoperative x-rays revealed good reduction with all the implants in place. Tinni was kept in a sling to prevent him from lying down. After five weeks he could return home.

Ten minutes of hand walking daily was initiated after an additional month in a box stall.

Just six months later, Tinni was able to enjoy pasture exercise again.

The surgeon speaks:

“Tinni was successfully operated on thanks to the combination of an efficient rescue organization (GTRD), modern operating facilities in Zurich, and a diligent owner. Tinni’s own strength of character also played its part.” Dr Anton Fürst
“The Foundation is going to be different”

A talk with Paul Manson, President of the AO Foundation, and Markus Rauh, Chairman of the AO Board of Directors.

Which achievements or decisions in 2008 will have the biggest impact on the AO Foundation’s future?

Manson – I think it will be the establishment of the AO Trauma Specialty. The organization of our clinicians and how they relate to the AO Foundation is, I think, our most important mission.

Rauh – It was certainly the most important decision. However, parallel to this, the way we organize and perform our research activities is as important. The Foundation is going to be different in a year’s time to what it looks like now.

Manson – The strategic redirection of Research and Development activities is something that clinicians can use to help their clinical practices be improved by research.

Rauh – I agree with that. However, the future research scope has several dimensions. And the dimension you referred to is translational. We also want to be in exploratory research, it is more uncertain, it is more risky, and the establishment of powerful exploratory research with some free-wheeling activities in it is very important.

What are the AO Foundation’s specific assets in research?

Manson – We have a world-class research laboratory with famous people working in it and I know that there are people across the globe who would like to take advantage of our services. I don’t think there’s any other organization anywhere with our expertise in the science of rigid fixation.

Rauh – In this discussion we should not forget the role of clinical investigation, one of the unique strengths of the Foundation. Evidence is going to be the important topic in the future. Therefore we have to build up the quality and reputation of our clinical investigation.

Manson – I totally agree with you. We have a network of 10,000 clinicians across the world. That gives us an unparalleled chance to utilize their material to combine it with the expertise of the Clinical Investigation division to make good outcome conclusions. We want to do what works and what benefits patients—that is what we are all about.

Rauh – I think with the new structure of research, including clinical research, we have to decentralize but this does not mean scaling down Davos. Davos is going to be the central location of our resources that we own. At the same time we have to, and want to, work with third parties who are specialized in fields that we cannot cover ourselves.

Talking about resources, how about the AO’s financial situation?

Manson – We think we’ve also made great progress with regard to our financing. We now have financial outcomes and the ability to measure projects and services with regard to finances. There are facets of budgeting that are unpleasant but it is necessary to make better use of our resources.
“Better use of our resources”

Rauh – The main driving force we applied in the new financing procedures was driven by ownership. Those who want to do something also have to take the responsibility of financing it. In the past we have had different streams of those who did something and those who had to pay for it. This is a major change and I am very happy that our finance department has taken adequate actions and also has the adequate tools in place to implement this.

We have a fairly foreseeable financing strategy for the foundation and this financing strategy allows us to increase our budget by 5% year on year. This means we have more money annually. But this is still not adequate to meet all the needs and requests that come. Our endorsement from the Synthes sale and purchase agreement is subject to the current financial crisis, our losses in relative terms compared to the benchmark of the financial markets were significantly lower. On top of this, we have cash inflows from the cooperation agreement with Synthes that allow us to finance the organization without touching the endowments required to keep the central functions strong and yet to allow enough independence for the specialties to achieve all that they can achieve.

Rauh – One of the major changes in the bylaws was the composition of the AO Board of Directors (AOVA). Previously, the AOVA was comprised of regional representatives of this organization. In future we will take the chairman of the Specialties onto the AOVA. A similar structure is going to apply in the future to the executive management of the AO Foundation.

Manson – Trauma already has the majority of the people in the organization so I think it will come easily to them, a lot more easily than it did for Spine or CMF. Our emphasis is to keep the central functions strong and yet to allow enough independence for the specialties to achieve all that they can achieve.

Manson – The cooperation that could exist between various Regions is a synergy we want to capture in the new organization of the foundation.

Regionalization has long been the buzzword within the AO. What benefits are there of having an AO Europe Region?

Manson – I already see people from different European countries working together to achieve the goals of representation that we have set. I think that once they get used to working with each other they will have new dimensions of enthusiasm which just aren’t present by working by yourself as a single country.

Rauh – It would not be the right action to destroy the structures that have historically been set up and grown in Europe. It is our hope that step-by-step, through actions and projects, these sections and alumni chapters will come closer together and we will not have to impose a structure from the top.

Where do we stand in regard to AO Middle East?

Manson – AO Middle East is an important organization which will be incorporated into the international Trauma board. At first they will have nonvoting status but our intention is that they will be a full participating and voting member. We need to give them some time to complete a little more organization and to implement this.
allow all the other members of the Trauma board to develop some comfort with each other.

Rauh – AO Middle East is a fascinating organization, they have lots of motivation and we will do our utmost to give them their rightful place in the organization. The same applies to Europe’s AO MID. There are many excellent initiatives also going on there and we have to make sure they are not reduced to a somewhat minority position.

Are you pleased with the progress of the membership project, a strategic initiative for 2008?

Rauh – I have to admit the membership project has not reached the objectives that we expected and we have to review our plans in order to achieve the goals that we defined some time ago.

Manson – In retrospect I see what decisions should have been made differently. We need to focus on the basics. We also need to communicate all the wonderful resources someone gets from being a member—it is a very good investment. We now know in what direction to take the initiative and how to guide it to success, so I am optimistic.

So will the strategic direction of the membership concept change?

Rauh – No, the objective remains the same, but the way to get there will be driven a little more by milestones and by implementing different phases.

Membership is mostly about providing benefits. What have we done to align AO services with surgeons’ needs?

Manson – Our books are there, our world-renowned AO Knowledge Portal is there, our courses are there, our ways to relate to research are there, and CID is there. Everything they could want to do as clinicians is available through resources in the membership panel.

How do you feel about the jubilee activities that took place over the past year?

Manson – Initially, I was skeptical about the budget and undertaking such an immense program, but now I feel we couldn’t have spent the money better. It gave us a presence, it allowed us to celebrate an unusual history of real contributions to world health, and it provided an opportunity to convince the world of the AO’s achievements.

Rauh – We not only had festivities, we also had decentralized congresses and meetings, and we have the anniversary book, so we also have a sustaining element that will stay in the memories of all AO stakeholders and members. It was a great jubilee year.

Markus Rauh

During the meeting of the Board of Directors of the AO Foundation (AOVA) in Davos on December 13, 2008, Markus Rauh was elected Chairman of the Board for a third term, which expires with the handover to a successor at the Trustees Meeting 2011. Markus Rauh previously served as Swisscom’s Chairman of the Board of Directors. He is an Honorary Senator of the University of St Gallen and the initiator of Die Chance, a foundation to support young jobseekers in Switzerland.
Securing clinical relevance for the next 50 years

The AO Foundation continually looks to improve its activities. Strategic initiatives were very much to the forefront in 2008, guided by strategic work previously conducted.

In 2008, the AO Foundation continued to drive its key strategic initiatives with the objective of implementing the proposals and new structures as of January 2009. The main projects to better align AO services to the surgeons’ clinical needs were the relaunching of research and development activities as well as the establishment of a dedicated AO Trauma Specialty.

Refocusing Research and Development

The integration of the AO Research Institute (ARI) and the AO Development Institute (ADI) into a single Research and Development entity under the legal name ‘AO Research Institute Davos’ was prepared to be effective as of January 2009. This new structure will help the AO to focus its activities and resources on exploratory research, translational research, and research services effectively.

At the same time, AO Clinical Investigation and Documentation (CID) was transformed into the CID Competence Center, which will provide its services as a strong partner in clinical research. Transition Chairpersons were elected to the AO Research Advisory Council, the AO Exploratory Research Board, the AO Research & Development Committee, and the AOCID Committee. The Board of Directors (AOVA) approved charters regulate areas such as the generic scope of activities to be undertaken, funding, organizational structure, as well as the roles and responsibilities of members. These bodies will replace the former boards related to research, development, and documentation.

Another major step to further ensure top-quality research in the AO Foundation and its network was the AOVA’s decision to implement a standardized high-quality peer review process. This will ensure a separation of funding and reviewing under the responsibility of the Research Advisory Council.

AO Trauma on track

The AO set a milestone in strategically aligning its activities and services through the establishment of the AO Trauma Specialty. In 2008, the preparatory work necessary to launch the Specialty organization in January 2009 under the umbrella of the AO Foundation was successfully completed. The dedicated AO Trauma Specialty, with operational responsibility and budget accountability, will actively steer research and development as well as educational activities in its field.

The AOVA approved the charter of the new AO Trauma International Board in which AO North America and the European entities will be represented by two members each, AO Latin America and AO Asia Pacific by one member each. In addition, a Transition Chairperson was elected and an Executive Director was appointed.

Increasing AO Specialty orientation in governing bodies

As a consequence of the sharper focus on the Specialties’ needs, a proposal for a new composition of the AOVA was formulated. Pending approval by the Board of Trustees in 2009, seven physicians put forward by the International Boards will represent the AO’s Specialties.

Course and membership management

To leverage the global AO network as a strategic asset, the course and membership initiative was further developed. However, the project to manage global membership has not yet delivered the intended results and will be reconstructed in terms of both program and technology to align it more closely to the stakeholders’ specific needs.

Closing of Cooperation and Support Agreement

After seven years of intense negotiations, the AO Foundation could close the Cooperation and Support Agreement (COSA) with Synthes as of January 1, 2009. The signing of the document was a major breakthrough and established the basis for the continuation of the highly successful long-term collaboration.

Personnel news

Gregor Strasser resigned from his function as CEO of the AO Foundation to start a new challenge in the field of commercialization of high-tech innovations. He joined the AO Foundation in 2003 and was mandated by the Board of Directors to guide the strategic and structural reorganization of the organization. In this complex task, he was able to make valuable contributions through his strong personal engagement.

Marcel Dissel, who worked for the AO as external consultant, was appointed as the new CEO.

Thomas Kaup, interim Director of the AO Development Institute, decided to resign from his position as of January 31, 2009, to join a Swiss-based medical technology company. He was instrumental in preparing the transition of ADI into the new Research and Development structure.

In the course of the reorganization of the AO Foundation along Specialty lines, Piet de Boer has decided to step down as Director of AO Education in 2009. He will continue to work for the AO Foundation in his new role as an educational advisor.
A jubilee year to remember

The AO's 50th anniversary year involved so many people all around the world. Chris van der Werken reviews a selection of events from twelve memorable months.

A long time planning

In March we had the first highlights. For some people, it was the AO Davos Courses (1), and for me, it was an international event, the AO Asia Pacific Regional Meeting in Hong Kong (2).

In the middle of March we had the second event: The AO Davos Courses (1) and AO Asia Pacific Regional Meeting (2) were organized together to enable all participants to attend both events. This was a great opportunity to get together in a special atmosphere.

In May we had the third event: The AO Alumni Association held an Alumni event for the first time in May (3). This was a great opportunity to celebrate the anniversary of the AO. The event was held in Greece and was organized in cooperation with the local people from the town. Another notable event during the Trustees Meeting was the unveiling in the lobby of the AO Center (8) of the Mathys family's gift of a sculpture. The meeting was crowned by the gala dinner party (9 and 10). We were able to give so many people a sense of the jubilee year and to present them with the specially-commissioned anniversary book. The gala dinner was the event!

Cementing links

There was a tangible feel-good factor wherever I went in 2008. The anniversary celebrations added to the wider AO Family's sense of belonging. My instinct is that people are proud to be a part of this network.

The celebrations all went well and we did not make any grave mistakes like forgetting to include certain people, AO Sections or AO Regions. Last, but not least, we also kept within our budget.

More than just a party

The AO Alumni Association helped us to take advantage of this unique opportunity to express our gratitude to the network that made it so successful! They held three distinct events instead of their normal triennial meeting to enable us to have anniversary celebrations around the world. The first Alumni event was the European AOAA Jubilee Symposium which was held in Greece in April (4). Our celebratory events also included a scientific element. Symposia were organized together with or on the occasion of other existing events or congresses and so on. We did this at international events like SpineWeek (5), SICOT, EFORT (6), EACMFS, and ECVS. It made sense from a logistics/operational point of view since most people would be there anyway. In this way we could cut travel costs etc. Because we are a serious scientific organization the network also ‘bought in’ to this way of celebrating.

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Susanne Bäuerle’s life is back on track after life-threatening polytrauma.
Moving confidently into the future

the very positive results achieved so far in the various projects by Program members, who include external partners from Collaborative Research Centers (CRCs) and prominent universities. Guests from the Canadian Arthritis Network and AO Research Fund grant winners shared their results, which show great potential for treating and healing bone defects. An exchange of ideas for future research and identifying common interests led members of different institutes to commit to work together in the future.

Successful clinical research studies

AOCID concluded several important trauma studies in 2008. The scaphoid prospective multicenter cohort study compared the results of operative versus conservative treatment in patients with an acute, complete, undisplaced scaphoid fracture. Results showed that six months post-treatment, almost 90% of patients (83% of conservatively treated and 95% of operatively treated) undertook their normal daily routines. And a prospective case-series conducted at six European trauma centers evaluated the precision of deviation from the planned leg axis when using computer-assisted navigation in open-wedge high tibial osteotomy (HTO). The study proved that computer-assisted leg axis control is a very precise tool. The accuracy is high compared to standard, fluoroscopy-controlled procedure, but does not guarantee a perfect result.

Leading in product innovation

The Trauma TK-System approved 34 new products, including the angular stable locking system for intramedullary nailing featuring a biodegradable screw sleeve, and the variable angle screw system, which provides 50° angulation and was first introduced into the 2.4 LCP volar distal radius. Also approved were the midfoot fusion bolt for treatment of early-stage diabetic-neuropathic Charcot feet; headless compression screws (sizes 2.4–6.5 mm) for use in the hand and foot; and the 2.0 LCP distal ulna.

Education by and for trauma experts

Trauma courses worldwide increased by 15%, reaching more than 25,000 participants. A highlight was the first AO Specialization course—Elbow. The trauma bookshelf added two new books on the subject of osteotomies. ‘Osteotomies for Posttraumatic Deformities’ covers the art of treating posttraumatic deformities and joint preservation. ‘Osteotomies around the Knee’ is the first comprehensive review in English and was penned under the leadership of the Knee Expert Group. Also, six issues of Orthopedic Trauma Directions (OTD) were released.

Fracture Fixation in Osteoporotic Bone

Globally, the aging population is increasing—suffering fragility fractures. Leading AO surgeons recognized the growing clinical challenge of osteoporotic fracture management and defined it as one of the Foundation’s four clinical priorities.

The AO Clinical Priority Program (CPP) ‘Fracture Fixation in Osteoporotic Bone’ was launched in 2006 to achieve better understanding of osteoporosis, its effect on fracture fixation, and the healing process. The knowledge gained should lead to improved fracture care achieved in collaboration with related specialists, eg, geriatricians.

The CPP’s core team of researchers established a network involving the AO Research Institute, the AO Development Institute, AO Clinical Investigation and Documentation, and ten international academic partners.

The main focus is to devise methods to determine bone strength and techniques to maximize fixation in mechanically poor bone. These areas of investigation were identified and approached via several projects:

- Analysis of the influence of osteoporosis on the outcome and failure pattern of clinical studies
- Competitive analysis of different methods to determine local bone status
- Models to simulate osteoporosis
- Principles of implant anchorage in osteoporotic bone and improvement of fixation methods
- Interface with partners in AO Foundation, industry, and other relevant organizations in the field
- Classification and teaching of the knowledge acquired in the CPP

Four projects are completed and twelve are underway. International collaboration has led to three patents, sixteen published articles and six more in press. Knowledge gained has been used in teaching several AO Geriatric Fracture courses and in preparing the teaching module ‘Geriatric Fracture Management’. Relevant clinical output is expected within the next three years. This Clinical Priority Program has produced significant results in its first two-and-a-half years and is well accepted by AO surgeons and scientists due to its high clinical relevance and appropriate research methodology.

Implant surfaces—interface to the body

The AO Research Institute (ARI) work focuses on reducing excessive direct bone-on-growth from fracture fixation devices to prevent strong osseointegration, without reducing implant stability. Research in 2008 showed that polishing titanium LCPs and their bolting screws (in titanium alloy [TAMI]) significantly reduced removal time, and polishing TAMI 8.0 nails reduced removal torque and prevented direct osseointegration to the nails. This questions the general and unproven belief that direct osseointegration is required for fracture fixation implant stability.

1. Standard TAMI Nail—direct osseointegration
2. Polished Nail—no osseointegration
Europe: ongoing collaboration
At the German Congress for Orthopedic and Trauma Surgery in Berlin in October, AO Germany provided many faculty members, and the AO Foundation offered the very popular lounge. In Davos in December, the German-speaking Faculty Meeting again brought together almost 70 residents and senior surgeons from Austria, Germany, and Switzerland, continuing the tradition of solid cross-country collaboration.

North America: setting a strategic agenda
With the membership initiative and the development of the new Trauma Specialty in mind, a strategic agenda for new programs and development over the next five years was set down at a retreat in Philadelphia. Thirty-five participants from all levels of AO North America (AONA), Synthes, and the AO Foundation helped to create a set of strategic thrusts that are currently being initiated. This model has provoked interest by other Regions and the AO Foundation to adopt a similar approach. At the American Academy of Orthopaedic Surgeons’ annual meeting in San Francisco, AONA held a reception for AONA Alumni that also celebrated the AO's 50th birthday. During the Orthopaedic Trauma Association’s annual meeting in Denver in October, an AONA Alumni reception and a symposium by Larry Bone on osteoporotic fractures marked the AO’s anniversary. For the first time, the AO Foundation and AONA shared a booth, with tremendous success.

Latin America: emphasizing independence
In keeping with changes recommended by the AO Trauma International Board, at Thessaloniki in April, AO Latin America (AOLAT) took steps to support the efforts of AO Trauma Latin America (AO Trauma LAT) to become an independent Specialty. To further emphasize that independence, in October AO Trauma LAT formed its own administrative board. An additional milestone was the first-ever AO Seminar in Puerto Rico, which joined the Region in 2008. Reflecting the regional emphasis on continuing professional education, more than 50 courses took place, with the same number anticipated for 2009.

Asia Pacific: continuing development
Since AO Trauma Asia Pacific’s (AOTAP) inception in 2007, regional faculty interchange has significantly risen, particularly in China and India. Regional gatherings have also flourished. At the 2nd Experts’ Seminar in Tokyo, surgeons discussed problems related to trauma care, some of them region-specific. Osteoporosis-related topics were highlighted at the Asia Pacific AOAA Jubilee Symposium in Chiang Mai, Thailand, and at the SICOT/SIROT Triennial World Congress in Hong Kong in the context of an AO Jubilee Symposium. The Asian Surgeons’ Working Group, affiliated with the AO TK System and headed by Michael Schütz, continued to make progress. Two new implants were developed that are adapted to suit the Asian anatomy: the TomoFix small stature and the Asian femoral nail.

Middle East: strong local faculty base
Faculty training stayed at the forefront of AO Trauma Middle East’s (AOTME) activities in 2008. Two Tips for Trainers courses took place, one combined with a Clinical Trainers Course held over three days in Riyadh, Saudi Arabia. A core of well-trained and dedicated regional faculty has been established thanks to numerous local opportunities to obtain the latest medical training. A highlight was the fifth Regional Courses in Dubai in October that gathered trauma specialists from 17 countries. Faculty benefited from the participation of the UK’s Mathew Porteous as a faculty facilitator and mentor. Faculty exchange with AO Asia Pacific also featured highly in 2008: instructors from AOTAP participated in courses in Jordan and Saudi Arabia, while faculty from AOTME joined courses in Malaysia and Indonesia.

Reaching out to the emerging world
The AO Surgery Reference team has paved the way for an extra focus in 2009—emerging health systems. Till now, the AO Surgery Reference has addressed primarily first-world surgeons. Yet the greater part of the world’s population does not receive first-world levels of operative fracture care because access to edge implants, tools, and training is often expensive and unavailable to all. This is of special significance as trauma is one of the fastest-growing epidemics, rapidly becoming the leading cause of death in low and middle-income countries. By tailoring information to consider these limitations and to address issues such as complications, the absence of image intensification, and delayed fractures, the AO Surgery Reference will be more pertinent to these emerging health systems.

Anniversary activities

A lasting legacy
The AO’s 50th anniversary was commemorated with a series of exceptional events focusing on a disease of urgent global relevance—osteoporosis. The themes of the three AO Alumni Association (AOAA) Jubilee Symposia in Thessaloniki, Greece, in April; Chiang Mai, Thailand, in September; and Dubai, UAE, in October, were ‘Management of the Genic Fracture Patient’ and ‘What’s New in Fracture Fixation?’ At the SICOT/SIROT Triennial World Congress in Hong Kong in August, AO Foundation experts joined in during an AO Jubilee Symposium on new concepts in the management of osteoporotic fractures, the biomechanics of osteoporotic bone, osteoporosis drugs, and the new AOJK implants devised for fixation of osteoporotic fractures. An AO Jubilee Symposium at the DGU/DGOOC Annual Congress in Berlin in October examined new developments in osteoporotic fracture care.
AOSpine—a global vision

AOSpine is an AO Specialty comprised of spine surgeons, researchers, ORP, and healthcare professionals from all five continents—including some of the world’s foremost experts and thought-leaders in the field of spine surgery. AOSpine provides educational, research, consulting, and networking opportunities.

General developments in 2008
AOSpine celebrated its fifth year and continues to grow at a rapid pace. Worldwide, AOSpine has over 3,000 subscribed members and 7,500 associates. Membership benefits were increased with the introduction of the new web feature, CaseBase, where members can post cases they wish to obtain feedback on, comment on peers’ cases, and create their own discussion groups. Scheduled for release in 2009 is EBSS.live, an extensive database containing summaries of recently published clinical articles in a variety of spinal disciplines.

Preparations are underway for AOSpine’s first Global Spine Congress in 2009, which will draw more than 200 surgeons and researchers to San Francisco to present the latest techniques and innovations in spine care.

Clinical research
The AOSpine Clinical Research Committee launched a four-year plan in 2008 to focus spine research activities.

The primary purpose of the ‘Cervical Spondylotic Myelopathy (CSM)—International Multicenter Study’ conducted with AOCID support is to compare anterior and posterior surgical approaches in treatment of CSM in terms of surgical complications as well as neurological, functional, disease-specific, and quality of life outcome measures.

The ‘Riluzole Study’ conducted by AOSpine alongside international partners aims to develop acute care safety and pharmacokinetic profiles of riluzole in patients who have sustained a traumatic spinal cord injury.

The development of a spine outcomes instrument based on computer adaptive testing (CAT) methodology aims to create a new patient-reported spine outcome instrument using an innovative item response theory and CAT. The first phase of the study was completed in 2008, forming the basis for the pilot testing of future CAT items.

The AOSpine Research Network (AOSRN) held its kick-off meeting in Japan with a follow-up meeting in Switzerland focusing on intervertebral disc research. All seven of the first-year progress reports were accepted in 2008 and funding will continue in 2009.

Moving forward with spine education
In 2008, the AOSpine International Education Commission, in close collaboration and
A global vision

Regional activities

with the support of AO Education, enabled the AOSpine integrated lifelong learning path to make significant progress toward its goals.

The revision of the Faculty Development Program is in final preparation. Training resources for course chairpersons in order to optimize this key resource are planned.

A taskforce in charge of developing consistent AOSpine course curricula defined a set of AOSpine principles, and set out the competencies needed at the different stages of a surgeon’s career along the lifelong learning path.

A significant milestone was reached in 2008 with the approval by the AOSpine International Education Commission to proceed with a global AOSpine Case Library for educational purposes. The standardized cases assembled, reviewed, and edited by a pan-regional task force will form the backbone of future discussion groups on AOSpine Principles and Advances Courses.

From an administrative perspective, AOSpine’s online course management system has meant a huge step toward more consistency in courses and events, improved logistics, efficiency, and transparency.

Product innovations and development

Apart from the usual innovation and development projects, the AOSpine TK in 2008 focused on adjusting to the changes of the regulatory requirements for spine products. As a first result, the TK approval for spine products today is based much more on clinical evidence than it was in the past.

In 2008, further processes were created to ensure a reliable exchange of information with the AOSpine Education Commission. This will contribute to the new AOSpine course concept ahead of time by making sure the right products are integrated as early as possible.

The AOSpine TK will seek further cooperation opportunities with the industrial partners as well as internally with the other commissions in 2009.

From the many products developed in 2008, Zero P (Zero Profile) is among the most simple and therefore most innovative ones.

Zero P is a fusion cage developed to be screw-locked directly in between two vertebral bodies. Its safety and effectiveness was proven in extensive trial phase. More projects based on this new technology are in preparation.

Europe, Middle East, and Africa

In September, AOSpine Middle East (AOSME) was officially recognized as the fifth AOSpine Region by the AOSpine International Board. The Regions Europe, Middle East, and Africa (EMEA) are organizationally linked. AOSpine Europe (AOSEU) leads the development of the two other regions.

Within one year of its launch, AOSpine Europe (AOSEU) achieved a total of more than 1,000 subscribed members—becoming Europe’s largest spine society. Due to this growth, the number of EMEA support staff in Switzerland was increased to three.

Fifty educational events were held in the Region in 2008. A three-year educational planning process creating greater educational and operational efficiency was also launched.

The number of AOSpine country chapters in this Region increased to 26. Country council elections took place in the UK and Austria. Six more elections are planned for 2009. AOSEU further established regional committees for its portfolios of Research, Education, Reference Centers, Scientific Marketing, and Chairpersons/Governance.

AOSEU forged closer ties with the European Association of Neurosurgeons (EANS), resulting in joint AOSpine-EANS academic events. This collaboration led to a symposium on the role of imaging and navigation in spine surgery in Geneva and live tissue training on the management and avoidance of complications held in Strasbourg. The latter event included microsurgery practical workshops—a first for AOSpine.

AOSpine North America (AOSNA)

The 6th Annual Banff Fellowship Forum, a premier event for AOSNA, attracted a record attendance in 2008. Keynote speakers were Keith Luk and Robert A McGuire. This forum provides a networking opportunity for fellows to interact with their peers and to foster alliances with faculty and experts in spine surgery from around the world.

AOSNA continues to gain momentum in the area of clinical research and has three ongoing prospective multicenter studies. AOSNA also made its presence felt at major society meetings with multiple podium presentations on its studies at NASS, CSRS, AANS, and SpineWeek.

New to the 2008 AOSNA course curriculum was ‘The Aging Spine: Current and Future Concepts and Challenges’. Paul Matz and Ashraf Ragab created a program on the incidence and prevalence of spinal disease in the aging population with a focus on comorbidities that directly and indirectly affect bone.
Regional activities

AOSpine Latin America (AOSLA)

AOSLA hosted a total of 30 successful educational events in 2008. A highlight was the ‘To Fuse or Not to Fuse’ course which was held in Santa Cruz, Chile, and attracted participants from all over Latin America.

In addition to the course, the opportunity was taken to hold a separate session with all eleven AOSLA country chairpersons, the AOSLA Board and the Regional Director, on the day before the course began.

AOSLA decided to celebrate the AO’s 50th and AOSpine’s 5th anniversary with an important event in the beautiful Argentinian city of Buenos Aires—the ‘Complications and Controversies’ course which was chaired by Luiz Vialle from Brazil. A memorable moment was when Max Aebi, Marcelo Gruenberg, John Webb, and many other surgeons gathered to celebrate the success of the entire community.

In 2008, activities conducted by the AOSLA Task Force for Central America and the Caribbean Islands expanded to include well-attended courses and seminars in Costa Rica, Guatemala, Panama, and Jamaica. It is expected that in 2009 the chapters in Jamaica and Puerto Rico will be further developed.

Another very important event is the AOSLA Virtual Course with Germán Ochoa serving as Course Chairperson. This is an all-year event covering eight different topics. A total of 14 auditoriums in eight different countries will link more than 300 participants through live presentations and interactive features.

AOSpine Asia Pacific (AOSAP)

AOSpine China attended the 3rd International Congress of the Chinese Orthopaedic Association in Suzhou. This was the first time AOSpine independently attended a national orthopedic event in China. The myAOSpine China membership magazine was well-received by the Chinese surgeons, and helped to break down the language barrier.

AOSAP continues to drive its educational program forward. In 2008, there were 25 Spine courses in the region with a total of 400 participants.

The AOSAP board also started the preparations for the AOSpine Advances Course to be held in Kuala Lumpur, Malaysia, in October 2009.

This is the first of the regional-based AOSpine Advances Courses which will be held outside of the AO Davos Courses on alternate years.

AOSpine’s new corporate identity

In December 2008, AOSpine launched its new corporate identity to position the AOSpine brand more prominently among the spine community. It raises the flag of AOSpine and the AO Foundation, acting as an appealing beacon to the new partners, scientific bodies, and members AOSpine wishes to attract.

The visual elements of the new AOSpine identity will enable spine practitioners all over the globe to identify and to be proud of the organization working in their interests.

This feeling of being close to surgeons will also be achieved through the regional and country variants of the corporate identity.

Every element of AOSpine’s visual image has been changed—from business cards to publications to course programs. Modifications to the global corporate brand are made wisely to ensure the overall impact and uniformity of the AOSpine identity.

This means that the new AOSpine logo acts as an overarching identifier across all AOSpine activities. Consequently, the ‘international’ part of the old logo has been dropped because the new corporate identity is binding across the globe. AOSpine regions and country organizations retain the option of adding their region’s or country’s name under the logo.

The new slogan of ‘Exchanging, Advancing, Connecting’ expresses how AOSpine communicates its knowledge vaults to the spine community. One new design element is the AOSpine vortex, a swirling mass of lines which add dynamism to any page they appear on. The impression of swift movement mirrors the advances AOSpine has made in its short life.

The new corporate identity is clearly visible across the broad range of AOSpine publications.

Everyone involved in producing AOSpine material—course brochures, journals and so on—has been issued with a set of comprehensive guidelines on their use. Furthermore, they can also download templates for use from a password-protected area of the AOSpine website.

Through professional initiatives like these, AOSpine is well on the way to establishing itself as the leading provider of services for the spine community.

Anniversary activities

The highlight for the AOSpine Asia Pacific (AOSAP) Region in 2008 was the inaugural World Forum for Spinal Research (WFSR) held in January in Kyoto, Japan, and which formed part of the AO’s 50th anniversary celebrations.

AOSpine International created the WFSR as an academically independent platform, which fosters new ideas and progress in basic, translational, and clinical research of spinal disorders.
**AO CMF: focus on membership, planning, and the orbital**

AO CMF is an AO Specialty which uses modern techniques to achieve successful patient rehabilitation. In 2008, services to its members were improved and CMF research was driven forward.

**AO CMF**

AO Craniomaxillofacial (AO CMF) is comprised of surgeons from different areas of specialization. Today, AO CMF embodies a unique culture of teaching and learning, combined with research and development. The universal spirit of this community transcends borders and specialties, benefitting both patients and healthcare providers across the globe.

In 2008, AO CMF was very actively involved in the strategic initiatives and the ongoing change process of the AO Foundation. AO CMF is continuing to align all of its activities to directly meet the specific needs of CMF clinicians.

**General development**

AO CMF’s first commemorative anniversary event was the annual Advanced AO CMF Symposium in Snowbird, Utah. AO CMF North America celebrated the AO’s Jubilee with some invited AO CMF members from Europe.

At the jubilee celebration in Thessaloniki, Greece, AO CMF members enjoyed a series of short lectures, including a symposium focusing on orbital reconstruction. A hands-on planning and virtual surgery workshop completed this well-received event.

AO CMF also held courses at the other jubilee events hosted by the AO Alumni Association in Chiang Mai, Thailand, and Dubai, UAE. The AO CMF Middle East and North Africa Specialty Board took the opportunity to meet in Dubai.

**AO CMF Clinical Priority Program**

This AO CMF project entitled ‘Imaging and Planning in Surgery’ made progress with the publication of ‘A Guide to Research’.

The document was written by 24 experts who summarized the state of the art in their designated field and provided an up-to-date literature review. This comprehensive report will help take the CPP to the next stage of development.

**AO CMF membership overview**

In 2008, membership tripled to just over 800 members. Growth was achieved through a dedicated AO CMF Membership presence at various events worldwide and a significant increase in benefits available.
Exciting new developments

Membership presence in 2008
An introductory presentation about the Membership initiative was given during each of the courses attended. There was also a formal information point in the form of a Membership booth at six key events worldwide.

Outlook for 2009
An International Faculty Retreat will be held in 2009 which will provide an opportunity for AO CMF members to meet.

In 2008, AO CMF launched a new journal, CranioMaxillofacial Trauma & Reconstruction, which is edited by Paul Manson with the support of an editorial board. The journal is available free of charge to AO CMF members.

As the only journal serving all of the specialty groups interested in the facial region, it acts as a communications tool for many CMF practitioners.

AO CMF education activities
Progress was made in 2008 in two important regions. AO CMF tried a systematic new approach using several events to establish itself in India. Two sold-out AO CMF Principles Courses were held in Delhi in June and in Chennai in November.

To underscore the sincerity of their engagement, the International AO CMF Board held its November meeting in Delhi. Senior faculty could attend the AO CMF Principles Course to teach the almost 100 surgeons who took part on the course. In total, 144 surgeons were trained in AO CMF techniques in India in 2008 and more courses are planned for 2009.

The first steps in the Baltic nations were taken by holding a very successful AO CMF Principles Course in Tallinn, Estonia, in May. Eastern Europe will remain a focus in 2009.

Surgery Reference
The AO Surgery Reference Website launched its first CMF module in 2008—the mandible. This was the result of workshops held with authors throughout 2008. The Website’s functionality had to be adapted for CMF’s special requirements. The mid-face section is due to be released in summer 2009, the second of three planned CMF modules.

AO CMF member benefits in 2008
- AO CMF journal–CranioMaxillofacial Trauma and Reconstruction
- AO CMF portal
- AO CMF Surgery Reference
- Online AO CMF member directory
- Access to 6 current CMF scientific journals
- Access to archives for 23 CMF scientific journals
- 10% discount on all AO publications
- 10% discount on all AOCD services
- AO Dialogue

- Dedicated single point of contact and support
- Feedback opportunities and the chance to shape one’s own community.

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Member distribution within CMF Specialties

- OMF
- Omax
- ENT
- Neurosurgery
- Ophthalmology

A statistical orbital model with color and vector coded shape variation

Orbital image analysis in clinical CT data with unaffected orbits.

New products
In 2008, the TK System approved a new dedicated set for reconstructive procedures of the orbit. Based on the Matrix MIDFACE system, the Matrix Orbital Fracture Set contains the existing mesh plates, the curved orbital plate, and the respective screws. These sets include the new Preformed Orbital Plates featuring a 3-D shape closely approximating the topographical anatomy of the human orbital floor and medial wall in order to provide accurate reconstruction. Also in the set is the new retractor for mobilization and securing of soft tissue during surgery.

For the primary closure of the sternum, a number of titanium plates in various geometries were approved, as was a new instrument for cranial flap fixation in neurosurgical procedures allowing for pre-cramping, tensioning, and cutting the tube.

AO CMF studies
The condylar neck non-randomized study and the Orbita1 retrospective study were completed in 2008 by AOCD for AO CMF. The Orbita3 study is undergoing revision, and will compare the accuracy of the true-to-original reconstruction of fractures of the medial orbital wall and/or orbital floor. The condylar neck randomized controlled trial compared a minimally invasive endoscope-assisted technique to open surgery in patients with mono or bilateral condylar neck fractures.

The AO Research Institute conducted two promising projects on the orbit for AO CMF. The first focused on improving and facilitating complex orbital defect repair. To ascertain related 3-D anatomy of the orbit, a serial study was performed using clinical CT data of unaffected orbits. As a result, statistical models of the orbit, as well as of the difficult to repair posterior orbital floor/medial wall region, were computed to assess orbital form variability. Size as well as shape variations could be quantified in given orbits and compared to their mean shape. Besides optimized implant form, optimal implant positioning is considered to be the second key factor for optimum orbital wall restitution.

The second project aims to improve the predictability of postoperative eye position and function by proposing individualized anatomy-based surgical concepts. Different orbital parameters were evaluated in order to characterize orbital size and geometry in a meaningful way. Plans for a prospective clinical multicenter study based on this investigation are currently underway.
AO VET: recognized AO Specialty achieving positive results

AO VET is comprised of a global network of surgeons, scientists, and other specialists active in the field of veterinary surgery of the musculoskeletal system. AO VET’s mission is to advance the practice of veterinary surgery to improve patient outcomes through promoting experimental and clinical research, education, and development.

In 2008, the AOVA agreed to establish AO VET as a Specialty. AO VET Specialty Board then started the process to mold the present structures to become a modern and dynamic Specialty along the same lines as the other AO Specialties. AO VET is confident it can meet its goals but there are several tasks at hand:

A: To make AO VET membership attractive to small and large animal veterinarians across the world benefits have to be added. Free subscriptions to journals similar to the AO Alumni Association are being evaluated. Members should also be able to achieve certain status levels respective to their levels of engagement in AO VET.

B: The demand for AO Courses is rapidly increasing—especially in the small animal field. AO VET has to assign members to specific regions (AO Latin America, AO Asia Pacific, and AO Middle East) to help coordinate activities. Expansion is a goal as is the establishment of regional chapters similar to other AO Specialties.

C: Financial support from the AO Foundation has to be drastically increased. Funds are needed for faculty support due to the increased number of courses, research projects, the development of AO Surgery Reference programs, and fracture documentation projects.

D: AO VET wants to take the lead in establishing ‘approved’ animal models for live research. It offers its services in this to the other AO Specialties with the goals of reducing animal suffering, improving results, and reducing the number of animals used due to inadequate research design.

E: To be able to represent the Specialty at executive level, AO VET has also requested a seat on the AOVA. Initially, this can be as a guest, but future full membership is needed.

New products

The TK-System approved the 4.5 mm Narrow and Broad LCP Plates which resolve the clinical problem of fixation close to a joint. By eliminating the toenail at one end of the plate, and changing the end hole to a stacked comb hole, a cortex or locking screw can be used.

The Standard TPLO Jig and Saw Guides for small animals are designed to simplify osteotomy procedures.

An anvil facilitating the creation of acute bends in CRIF rods was developed. It adds to the existing Bending Pliers and works with any 3.0–5.0 mm rods.

Post-surgery, owner Marina Bächtold and Tinni can enjoy outdoor riding once again.
AO VET Regions

Europe
Small animal AO Principles as well as AO Advances Courses are offered at yearly or biennially intervals in Austria, France, Germany, Italy, Spain, and Switzerland. Every student at a German-speaking veterinary college interested in learning more about fracture management has access to a one-day introductory workshop on AO techniques. Biennially AO VET Principles Courses are offered in Oberdorf and Glasgow, and biennially AO VET Advances Courses in Davos.

‘AO VET United Kingdom’ was formed in response to increased activities in organizing veterinary courses. The first small animal course was held in November 2008 in Glasgow and will be followed by an equine course in 2010.

AO VET held a breakout session at the Second International Symposium on Biotechnology in Musculoskeletal Repair in Lausanne, Switzerland, in October. The session was entitled, ‘Animal models: which ones work in research and will be followed by an equine course in 2010.

In July, the first one-day small animal AO VET Symposium to be held in Taipei was attended by 120 participants. Dr Wing Tip Wong was the main lecturer, assisted by human orthopedic surgeons and local veterinary faculty members. The symposium was very well received and it is anticipated that regular courses will follow.

North America
A total of five AO VET courses were given in North America in 2008. Small animal AO Principles and AO Advances courses plus an equine AO Principles Course were held in Columbus, Ohio, in May. In addition, a small animal AO Principles as well as an osteotomy AO Masters Course were held in La Jolla, California, in July. In total, 794 participants from four continents attended these courses.

A Veterinary Technicians’ Course has been developed and will be offered in April 2009 in Columbus. This course provides education to technicians who assist both small animal and large animal surgeons in orthopedic surgery and familiarizes them with AO techniques. Other educational events for 2009 include three courses in La Jolla, California, in September.

Latin America
In August 2008, an AO VET Latin American Course took place in Buenos Aires, Argentina. It was chaired by Alessandro Piras and Esteban Mele.

Participants hailed from Argentina, Chile, Venezuela, and Brazil. Their enthusiasm was particularly evident during the laboratory sessions and the discussions. During the meeting, the two groups of vet and human surgeons presented an exciting series of short speeches on the current state of different fields in the two disciplines.

Two AO VET courses will be held in Mexico City in September 2009. The small animal AO Principles Course will be chaired by Dr Alessandro Piras, while the chair of the equine AO Principles Course is Prof Jörg Auer.

In memoriam
Dr Wade Oberlin Brinker passed away suddenly on August 8, 2008, aged 95.

Dr Brinker was a founding Diplomate of the American College of Veterinary Surgeons, the first President of the Veterinary Orthopedic Society, and the second President of AO VET. He is also called the father of small animal orthopedics.

On April 25, 2009, the Wade O Brinker Memorial Service and International Symposium will be held at the Kellogg Center of Michigan State University. Freek Meutstege, The Netherlands, and Don Piermattei, USA, both former Presidents, will be among the speakers at this symposium.

Anniversary activities
AO VET symposium in Basel and San Diego
AO VET sponsored a special symposium at the annual European College of Veterinary Surgeons (ECVS) scientific meeting held in Basel, Switzerland, in June. The current state of problem management within the four AO Specialties was presented.

A human specialist presented first on current issues in their specialty, followed by presentations from a small animal and a large animal surgeon.

These innovative half-day symposia proved to be very instructive and went over well with the audience. Equally appreciated was the welcome reception in Basel Zoo to which all participants, partners, and children were invited.

A similar symposium was held in San Diego in October during the American College of Veterinary Surgeons meeting.
The AO Foundation—a truly international organization

Continuing professional education and AO Jubilee celebrations were the highlights of local and regional cross-Specialty activities in 2008.

AO members are motivated by a common purpose—to bring improved fracture care to every corner of the world, including less developed nations, where today 37 joint development projects are underway.

The Foundation’s regionalization strategy, which empowers the AO Regions to represent it at regional, national, and local levels and to support the activities of the AO Specialties, there, recognized an important milestone in 2008 with the addition of the ever-expanding AO Middle East Region (AOME).

Elevating the quality of patient care globally through ongoing instruction of the AO principles and techniques as well as continuing education at all levels will ensure that the AO’s relevance to surgeons and ORP everywhere will continue well into the future.

Anniversary activities

Celebrating the global ‘AO Spirit’

As befits its role of bringing together in friendship surgeons and ORP of many nationalities for the common purpose of improving patient care, the AO Alumni Association memorably celebrated the AO’s 50th anniversary in three distinct international locales. With osteoporosis-related topics for discussion, European Alumni gathered in Thessaloniki, Greece, in April; Asia Pacific Alumni met in Chiang Mai, Thailand, in September; and Alumni from the Middle East assembled in Dubai, the United Arab Emirates, in October. In December, the Association also welcomed a new AOAA Committee: Klaus Dresing (President), Fiesky Nuñez (Vice-president), Kamel Afifi (Secretary), Yogesh R Parikh (Treasurer), and Cliff Turen (Advisor). As the AOAA enters its 20th year in 2009, they are certain to preserve the special ‘AO Spirit’ existing among the AOAA’s over 4,000 members.
Milestone achievements in AO Regions

News from the AO Sections: 

AO Austria: accent on innovation 

All AO Austria (AOA) courses ran extremely well throughout the year including the AO Principles and Advances Courses, as well as many specialized symposiums, seminars, and two ORP courses. Consideration will be given to adapting the format of the Advances Course. Continuing under the auspices of AO Austria, it was determined that the Masters Course could be more easily and economically offered using the excellent facilities for cadaver courses that exist at universities in Innsbruck, Salzburg, and Graz.

In addition, an independent ‘innovation shop’ is to be created at the University of Salzburg in 2009 in order to provide a platform for young surgeons to quickly and easily come up with ideas and create prototypes.

Also, a generous donation to the University of Salzburg from Hansjörg Wyss will provide for a top-class scientific and social program, the highlight of which was a fireworks display celebrating the AO Jubilee.

In 2008, AO Germany sponsored five experimental trauma projects. Together with three German trauma and orthopedic societies, it initiated a sponsorship of the Shoulder Prostheses Registry covering over 600 cases. This project offers a unique opportunity for quality control with clinics across the country and potentially across Europe.

AO Spain: education at the forefront

AO Spain (AOES) had a busy year offering 13 specialty meetings also took place. In addition, the Spanish Alumni Chapter conducted its traditional two scientific meetings, one in Zaragoza in June, and the second in Barcelona in November.

AO Switzerland: landmark events

Exactly 50 years to the day that the AO was founded at the Hotel Elite in Biel, AO Switzerland (AOSCH) commemorated the event with a special evening in November entitled ‘Between Nostalgia and the Future’. Some sixty guests were honored by the presence of three remaining AO founding fathers, Maurice E Müller, August Guggenbühl, and Walter Stähli. A scientific program followed the next day, focusing on current issues relevant to the future of the AO. Another instructive highlight was an AO Seminar on Distal Radius Fractures in Oberdorf in November.

AO United Kingdom: diversity in education

AO United Kingdom (AOUK) ran 31 courses in 2008, including, for the first time in North America, a Pediatric Fracture Course, and two new Tips for Trainers courses—one specifically for Scottish surgeons, as well as two PowerPoint courses, and the first-ever AOUK Vet course proved extremely popular. AOUK vets are developing a strong corps of faculty. The Anne Murphy bursary in 2008 went to Munawar Fazal from Pakistan, who completed a fellowship at Nottingham and attended the ORP Advances Course in Leeds.

In 2009, AOUK will run a Tips for Chairmen course to complement the Tips for Trainers course. Pelvic and Acetabular and Foot and Ankle courses, and another Current Concepts course are scheduled. AOUK will launch a pilot scheme, a short course for medical students interested in trauma surgery.

News from the AO Regions: North America: high standard of education

After undergoing significant changes to comply with new US guidelines for Continuing Medical Education (CME) and in recognition of the excellence of its educational offerings, AO North America (AONA) received an unconditional four-year CME reaccreditation.

In 2008, 58 courses brought together more than 3,500 participants and 1,200 faculty members. New courses were introduced including, for the first time in North America, a Pediatric Fracture Course, and two new Faculty Educator Courses (FEC). Starting in 2009, the plan is to hold FECs two-to-three times a year as pre-courses. In addition, CME faculty held a training and development forum for faculty members in August.

AONA also chose a new general manager, Paul Young, to provide critical support in the development of new programs.

Segovia was the setting for a special event in October commemorating AO Spain’s 37th anniversary and the AO’s 50th. A scientific meeting for AO VET, Trauma, and CMF members featured lectures on the past, present and future of AO techniques, as well as a presentation on ‘Osteotomies for Posttraumatic Deformities’ by Professor René K Marti. A traditional Segovian meal capped off this memorable occasion. In addition, the Spanish Alumni Chapter conducted its traditional two scientific meetings, one in Zaragoza in June, and the second in Barcelona in November.

AO Germany: relevant sponsorship

The addition of 20 new trauma members brought AO Germany’s (DAO) total membership to over 100, in addition to over 150 alumni members. At the annual AO tri-country meeting in May, some 153 participants from Germany, Austria, Switzerland, and a few from Eastern Europe, traveled to Dresden for a top-class scientific and social program, the highlight of which was a fireworks display celebrating the AO Jubilee.

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Exactly 50 years to the day that the AO was founded at the Hotel Elite in Biel, AO Switzerland (AOSCH) commemorated the event with a special evening in November entitled ‘Between Nostalgia and the Future’. Some sixty guests were honored by the presence of three remaining AO founding fathers, Maurice E Müller, August Guggenbühl, and Walter Stähli. A scientific program followed the next day, focusing on current issues relevant to the future of the AO. Another instructive highlight was an AO Seminar on Distal Radius Fractures in Oberdorf in November.

AO United Kingdom: diversity in education

AO United Kingdom (AOUK) ran 31 courses in 2008, including, for the first time in North America, a Pediatric Fracture Course, and two new Tips for Trainers courses—one specifically for Scottish surgeons, as well as two PowerPoint courses, and the first-ever AOUK Vet course proved extremely popular. AOUK vets are developing a strong corps of faculty. The Anne Murphy bursary in 2008 went to Munawar Fazal from Pakistan, who completed a fellowship at Nottingham and attended the ORP Advances Course in Leeds.

In 2009, AOUK will run a Tips for Chairmen course to complement the Tips for Trainers course. Pelvic and Acetabular and Foot and Ankle courses, and another Current Concepts course are scheduled. AOUK will launch a pilot scheme, a short course for medical students interested in trauma surgery.

News from the AO Regions: North America: high standard of education

After undergoing significant changes to comply with new US guidelines for Continuing Medical Education (CME) and in recognition of the excellence of its educational offerings, AO North America (AONA) received an unconditional four-year CME reaccreditation.

In 2008, 58 courses brought together more than 3,500 participants and 1,200 faculty members. New courses were introduced including, for the first time in North America, a Pediatric Fracture Course, and two new Faculty Educator Courses (FEC). Starting in 2009, the plan is to hold FECs two-to-three times a year as pre-courses. In addition, CME faculty held a training and development forum for faculty members in August.

AONA also chose a new general manager, Paul Young, to provide critical support in the development of new programs.

Segovia was the setting for a special event in October commemorating AO Spain’s 37th anniversary and the AO’s 50th. A scientific meeting for AO VET, Trauma, and CMF members featured lectures on the past, present and future of AO techniques, as well as a presentation on ‘Osteotomies for Posttraumatic Deformities’ by Professor René K Marti. A traditional Segovian meal capped off this memorable occasion. In addition, the Spanish Alumni Chapter conducted its traditional two scientific meetings, one in Zaragoza in June, and the second in Barcelona in November.

AO Germany: relevant sponsorship

The addition of 20 new trauma members brought AO Germany’s (DAO) total membership to over 100, in addition to over 150 alumni members. At the annual AO tri-country meeting in May, some 153 participants from Germany, Austria, Switzerland, and a few from Eastern Europe, traveled to Dresden for a top-class scientific and social program, the highlight of which was a fireworks display celebrating the AO Jubilee.

In 2008, AO Germany sponsored five experimental trauma projects. Together with three German trauma and orthopedic societies, it initiated a sponsorship of the Shoulder Prostheses Registry covering over 600 cases. This project offers a unique opportunity for quality control comparisons with clinics across the country and potentially across Europe.
Latin America: AOLAT’s joint anniversaries
The Executive Board met four times in 2008 and continued to develop the regional administrative infrastructure and strategies for research and education. At Puerto Iguazu, Argentina, in April, celebrations for the AO’s 50th anniversary and the Region’s 10th were combined with administrative meetings that brought together the executive boards of AO Latin America (AOLAT), AO Trauma LAT, AO Spine LAT, and AO CMF LAT. Joining them were the presidents of all AOLAT Alumni Chapters and members of different national boards. Academic activities ran parallel to administrative ones. All groups participated in social events like visiting nearby Iguazu Falls. The gathering reaffirmed the cooperation between the Specialties that has characterized the AOLAT Region from the start.

In education, a new Tips for Educators course was held in Buenos Aires in May in cooperation with AO Education. And for the first time in Argentina, and the third time in the Region, an AO VET Small Animal Course took place, underscoring the commitment to support AO VET activities in the Region.

Asia Pacific: AO Jubilee Symposium
The AO Asia Pacific (AOPA) organization settled into its second busy year of successful operations. Kanzo Shimurato assumed the role of chairman of the CMF board on the AOPA regional coordination board. Two major events in the Asia Pacific Region played a prominent part in the celebrations surrounding the AO’s 50th anniversary. An AO Jubilee Symposium spotlighted new concepts in the management of osteoporotic fractures at the SICOT/SIROT Triennial World Congress in Hong Kong in August. And some 72 participants traveled from 16 countries to take part in discussions on osteoporosis during the Asia Pacific AOAA Jubilee Symposium that took place in September in Chiang Mai, Thailand.

AO Middle East: growing fast
In 2008, Oman joined AO Trauma Middle East (AOTME), increasing its membership to ten countries. In total, 28 courses were held during the year, including two Tips for Trainees courses, reflecting the prominent role of locally-trained faculty drawn from the Region. The fifth Regional Courses in Dubai in October surpassed all previous ones. Well-chosen faculty from 14 countries instructed over 220 participants comprised of 17 nationalities in the AO Principles and Advances Courses in Operative Fracture Management, the AO CMF Advances Course, and the AO Spine Course. The Regional Courses attract ever-increasing levels of participation from Asia, Africa, and Europe.

At the AOAA Jubilee Symposium in October, a high-tech half-day and Jubilee Dinner for 150 participants marked the AO’s 50th anniversary along with the opening of the Region’s first AO Fellowship Center at Rashid Hospital in Dubai. AOME is firmly established and growing at a tremendous pace in the number and quality of activities, faculty development, organizational achievements, and social relations.

Introduction
The Socio Economic Committee (SEC) represents the social conscience of the AO Foundation. Its primary goal is to improve the care of the injured in developing countries by conducting or facilitating teaching events and programs, as well as by supporting the training of individuals involved in the programs.

Developments in 2008
The SEC continued to strengthen local ties, network with other organizations, and evaluate the effectiveness of its programs. The first ever SEC course was held in Mozambique which formed part of the collaboration with the East, Central, and Southern African Orthopaedic Association.

In organizational news, P M Desai has been replaced by R K Shah (Nepal) as a member of the SEC Executive Committee.

Regional reports
Africa
Nonoperative events were held in Ghana, Kenya (2), Malawi, Tanzania, and Zambia. The large number of ORP courses given in Africa underscored their importance.

Progress was made on the Reverse Fellowship Program in Ghana, while Malawi continues to be a center of SEC activity. A second orthopedic surgeon is training as a trauma Fellow there. Malawi is also the site of a prospective study on ORIF in 500 HIV positive patients.

Asia Pacific and South Asia
Four nonoperative courses were held in New Guinea in the latter half of 2008. A trauma workshop demonstrating a mixture of treatment techniques was held in Fiji.

Nepal, Pakistan, Bangladesh, and Sri Lanka have local coordinators in place. All bar Sri Lanka hosted SEC educational events in 2008, eg, two nonoperative courses in Nepal. Fellowship programs in this region are growing.

Outlook for 2009
The focus will remain on organizing appropriate educational support in developing regions and working with trusted partners. Funding will be decisive for any new SEC activities.

Work will continue on a manual of nonoperative fracture management.

Latin America
The program in Ribeirão Preto, Brazil, hosted 18 Fellows in 2008, bringing to 115 the number of Fellows since the program’s inception in 2000. Brazil’s other project in São Paulo accommodated a record 19 Fellows in 2008. This program still has the potential to grow in size, despite the negative impact of high living costs.

Project leader Prof Fernando De La Huerta has retired from the scholarship program in Cadaqués, Mexico. The project has been temporarily suspended until a new project leader matching SEC expectations can be identified.
Generating value for the clinical network

In order to achieve more effective patient care worldwide, the AO Foundation continually seeks to pursue its mission to foster its network of healthcare professionals in education, research, development, and clinical investigation.

With the full implementation of the newly merged Research and Development structure and the establishment of a Clinical Investigation Competence Center by the end of 2008, the strategic initiative to refocus the research activities in those areas where the AO can add maximum value took shape. Inputs from clinical practice remain the trigger for exploratory research conducted in cooperation with renowned partners. It is also a source of translation research to turn know-how into surgical concepts and products. Bridging the gap between exploratory research and clinical application is one of the AO’s most important activities and strengths. New surgical approaches and techniques developed by the AO have to pass through a stringent approval and certification process before being introduced to the surgical community. Clinical research is conducted before and after approval to gather objective data on safety and efficacy. Finally, the AO’s comprehensive educational programs bring new applications and techniques to the practicing surgeon who benefits from this added value in the operating room. Driven by clinical input, the AO’s value chain therefore resembles a circle which both starts and ends in the clinic.

The following pages give an overview of the AO’s key activities grouped by individual units. Projects which are directly related to individual AO Specialties, Regions or Sections are reported in the respective chapters. An overview of the organizational changes planned or already implemented can be found on pages 15–17.
Research and Development
Improving clinical practices

‘It is not the strongest of the species that survives, nor the most intelligent; it is the one that is most adaptable to change.’

Charles Darwin (1809–1882)

In September 2008, after a detailed analysis was conducted, the AO Research (ARI) and AO Development (ADI) institutes underwent major changes to adapt to the AO Foundation’s new specialty concept. The ADI was integrated into the ARI, and a focus on serving the AO network was introduced. The new ARI was well placed to meet its realigned goals and to retain its position as a world-leading institute in the field of fracture treatment.

Key activities

Preclinical Services: Experimental Surgery & Animal Facility (ESG)
ESG supports the AO network of surgeons, the ARI research programs and commercial research projects (see GCTM section) by providing high-quality animal experimentation. Experimental models included long, cancellous, and calvarial bone defects; osteotomy and infection models. A wide range of methods in the analysis of hard and soft tissue reactions, including micro-CT and histology, were used. In addition, studies were conducted to develop new animal models and also to refine existing ones.

Biomedical Services:
The individual groups of the program provide R & D services to the AO network in the following areas:

Biomechanical Research
Biomechanical Research performs biomechanical studies in close collaboration with surgeons to answer clinically relevant questions within a short time period. Mechanical testing and FE modeling are used to evaluate and improve new osteosynthesis devices and surgical procedures. In 2008, studies were conducted regarding new implant developments such as the DHS-Blade and the Angular Stabilizing Device. In vitro and in vivo studies have confirmed the potential of these new implant designs. The group also works on innovative solutions for osteosynthesis techniques to address developing countries’ and changing surgeons’ needs.

Medical Imaging
Medical Imaging provides services related to CT scanning and evaluation to determine local bone structure and quality in vivo and in vitro. Novel assessment methods are also developed. Digitized image data information is evaluated in order to improve preoperative planning, create new types of image-based surgical concepts, produce computer-based customized surgical aids, and to develop anatomically shaped implant prototypes.

Translational Research:
Musculoskeletal Infection
Implants are high-alloy susceptible to bacterial colonization. Infection treatment can be difficult due to the persistence of surface-adhering microorganisms often in a biofilm where their behavior is altered, protecting them from antibiotic therapies. This group works on mice and in vivo models for infection studies to understand bacterial behavior and aims to influence infection risk by implant design changes. Recent research revealed no significant difference in susceptibility to infection between titanium and cobalt chrome. In vitro and in vivo studies with polished implants have shown that material and/or topographical differences are no longer apparent in the animal models. It was also found that there was no difference in susceptibility to infection between standard and polished titanium. AO Trauma has decided to make infection a research focus field in 2009.

Implant Surfaces. While the necessity of osseointegration is indisputable for long-term devices, the occurrence of excessive bony on-growth can be a major stumbling block for fracture fixation device removal. In vitro and in vivo studies with polished implants have shown that polishing reduces operation time, easiness, and reduces screw stripping which is in part a result of changes in osteoblast cell phenotype through gene regulation and cell shape alterations. This work will be clinically guided by the AO Trauma Research Commission and in close collaboration with the TK Hand Expert Group. On the opposite side of the spectrum PEEK polymer, as used in spine cages, does not facilitate strong osseointegration. Work on directly modifying the surface chemistry (without coating) to remedy this problem is being conducted and in vitro results show increased mineralization on experimental surfaces.

Polymer Chemistry
Polymer Chemistry has successfully developed biodegradable, thermo-responsive hydrogels (based on hyaluronic acid and poly(N-isopro- pylacrylamide) using a ‘click chemistry’ reaction. These natural injectable materials have shown promising potential in cell studies, tissue engineering therapies, and will be used for mesenchymal stem cells/growth factors delivery in bone defect and disc regeneration medical applications.

High Precision Prototype Workshop
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Bone Defects. A strong effect has been shown of PRP (Platelet Rich Plasma) on BMSC osteogenic differentiation, and on endothelial progenitor cell proliferation and differentiation. A pilot sheep study showed the beneficial effect of this cell mixture together with PRP for large bone defect healing. This project forms part of the large bone defect Clinical Priority Program network.

Disc. Research related to intervertebral disc degeneration and regeneration has shown a strong effect of high frequency load and limited nutrition on intervertebral disc explants after seven days’ culture in a whole organ bio-reactor. Cell viability decreased under both culture conditions and declined even further when both parameters were combined.

Stem Cells. The mechanoregulatory effects on mesenchymal stem cell differentiation have been investigated in order to define the exact molecular mechanisms underlying initial stem cell differentiation toward the osteochondral lineage. It has been determined that mechanical upregulation of TGF-β is an initial and fundamental step in this process.

Global Clinical Trial Management AG (GCTM AG): Contract Research Davos

In 2008, the preclinical division of GCTM AG offered the full range of ARI services to commercial sponsors. Studies conducted included the use of BMP and cell treatments for the healing of critical sized long bone defects, tissue reactions to bone filling materials in cancellous bone and iliac wing defect models, in vivo Xtreme CT analysis of rabbit radial and calvaria defect models, fracture fixation models, efficacy testing of resorbable implants, large animal rotator cuff injury models, and ex vivo biomechanical testing of new orthopedic devices. In 2008, the turnover of GCTM AG Preclinical Division amounted to 1.6 million Swiss Francs (+ 10% vs. 2007). All projects were subcontracted to the ARI which provided the required resources.

The AO Research Fund

The AO Research Fund (AORF) celebrated its 25th anniversary in 2008. A total of 97 applications requesting over 15 million Swiss Francs (CHF) were received. These applications were subject to a rigorous vetting procedure by an appointed pool of experts. At the end of this process, 22 new projects were approved in 2008. Five of these are focus grants and the other 17 start-up grants. The AORF currently supports 36 projects to the tune of 2.18 million CHF.

The best research project is awarded the AO Research Fund Prize Award. This year’s prize went to Dr Wolfgang Köstler for the project, ‘Clinical applicability of computer-assisted arthroplasty using bio-engineered autografts’.

Providing a full range of services of the highest caliber to the clinical investigation community, AO Clinical Investigation and Documentation (AOCID) is an essential pillar of the AO that is highly valued both by internal partners and external customers.

Harvesting successful results

Following the reorganization of AO Clinical Investigation and Documentation (AOCID) in 2001, whereby its orientation was focused on conducting evidence-based trials, in 2008 these efforts bore fruit when a substantial number of study results were published in high-ranked medical journals.

Among these studies was a randomized controlled trial that looked at the patient benefit from endoscopically-assisted fixation of condylar neck fractures. Another study considered the open reduction and internal fixation of proximal humeral fractures using the LPHP system. And a third study analyzed the effect of unrepaired ulnar styloid base fractures on outcomes after operative treatment of distal radius fractures.

In 2009, a total of 18 clinical studies are recruiting patients, and six are in the planning phase, demonstrating that AOCID is on the right path to successfully meet the needs of its customers. In addition, an internal adaptation of the institute as required by the restructuring of the AO Foundation has been achieved through flexibility and excellent team spirit.

Sowing the seeds of research

Based upon the results of a small survey conducted during the 2007 AO Davos Courses, AOCID decided to conduct a more extensive analysis under the heading ‘We care about you’ that looked at the mental and psychological health of surgeons. Elements of their health that were measured included the SF36, blood pressure, and heart rate.

AO COIAC: answering a clear need

The AO COIAC version 3.0, the comprehensive injury automatic classifier, was made widely available to the surgeon community on the AO Portal. This is the first and most important step toward providing a more comprehensive and standardized documentation software tool for the AO community. Within the first month of its release, almost 600 surgeons registered to download the software.
Key activities

TK System
Widening its network, scope, and responsibilities

In 2008, membership increased to 134 surgeons worldwide including the first members from the Middle East. Regional events such as symposia to foster open clinical exchange were held in Europe, Asia, and, for the first time, in Africa.

AOTK approval was obtained for 63 new products for Trauma, Spine, Cranio-maxillofacial, and Veterinary surgery. A noteworthy addition is Epoa, a proximal humerus prosthesis for the better management of complex 3- and 4-part proximal humerus fractures and degenerative conditions. A strategy workshop to advance development activities in biotechnology was held and brought together the TK System, scientists, and partners. Selected projects were then distributed to clinical groups according to potential indications.

The TK System has taken charge of clinical studies on new devices. With the support of AOCD, studies are planned by the Expert Group which developed the new device. Enhanced clinical evaluation maintains the AO’s high clinical standard and is also necessary for regulatory and economic reasons. The respective AOTK gives final approval of a study.

CMF

The CMF TK System introduced a complete new range of systems for all areas of CMF trauma and reconstructive surgery: the AO System. The Matrix Working Group (WG) was dissolved after successful completion of the project. The first approved products from the Neuro and Sternal WGs have added to the spectrum of products available.

New Chairman of the TK System

Norbert Haas resigned as TK System chairman due to his role as President-Elect of the AO Foundation.

Tim Pohlemann, the new TK Executive Board and AOTK (Trauma) chairman, has over 16 years of TK System experience, including eight years chairing the Pelvic Expert Group.

TK Innovation Prize 2008

Alberto Fernandez Dell’Oca, a ‘surgeon-engi-neer’ from Uruguay, received the TK System’s highest honor for developing a number of ingenious tools for surgical procedures.

Outlook

A focus will be put on identifying new areas with potential. Priority will be given to navigation and technology integration, along with peri/intra-surgical tools (power tools, reduction aids, positioning, etc). Together with AOCD, the TK System will design innovative studies and enhance clinical evaluation to obtain highly ranked publications. An increased evidence level is required to maintain AO’s high clinical standard but also due to regulatory / economical changes.

Education

Tailoring education to the needs of the Specialties

In response to the reorganization of the AO Foundation along Specialty lines, AO Education (AOE) re-focused its efforts to meet the needs of the evolving Specialties.

Improved educational offerings

In general trauma, the AO Assessment Tool Kit (ATK) for the Principles Course was successfully completed. In addition, a group of course chairmen and leading educators was formed to create an assessment package for the Advances Course. The Barriers Project, which aims to help surgeons overcome local barriers to better patient care, consists of three courses each in India and Western Europe. The ATK’s efficacy in improving educational offerings was acknowledged at the AO Davos Courses when the Masters Course surpassed all previous approval ratings.

In a significant step for the CMF Specialty, a successful agreement was reached with Synthes about the need to differentiate between Synthes and AO CMF events. AOE also carried out a detailed analysis of CMF course assessments conducted over the past four years.

For AOSpine, AOE created an E-Learning faculty development program to complement the Tips for Trainers Program, and it provided a detailed analysis of the Spine courses carried out in 2008 compared to those of the other Specialties.

At the Foundation level, the seeds were sown to develop the educational tools that will be required by all Specialties to meet CME accreditation standards in 2012. Work also began on creating a lifelong learning concept with Synthes for surgeons in practice.

In February and April, a steering committee met with delegates from across the AO Regions and Specialties to discuss ORP future issues and the transformation of the ORP Alumni Chapter within the framework of the AO Foundation membership initiative.

The ORP Alumni Chapter continued to grow with the addition of 14 new faculty members, bringing its membership total to 82. New ORP faculty will continue to be supported in their pursuit of excellence in patient care. Just as existing faculty members will carry on fostering the best in educational opportunities at AO events and in their hospitals.
Organizational transparency and medical guidance

The 2008 AO Jubilee year was not only a period of festivities for the AO Foundation, but also a phase in which important governance decisions were made. These decisions reinforced the principle of clinical guidance by dedicated surgeons, the same standard under which the AO was founded over 50 years ago.

The uniqueness of the AO as a network based on strict medical guidance and a solid financial footing is also reflected in its organizational setup. This surgeon-driven organization, focused around the Specialties’ needs, receives operational support from the AO Foundation’s staff. Around 200 AO employees are organized along Specialty lines and the value chain.

As part of its strategic mission to strengthen the Specialty orientation, the Board of Directors (AOVA) made decisions regarding the governance of the AO network. Most importantly, the AOVA proposed a change of the bylaws, which define the future structure of the Board of the Trustees and the composition of the AOVA. Pending approval at the Trustees Meeting in 2009, the Trauma, Spine, and CMF Specialties will be represented by a defined number of clinicians.

The following pages give an overview of the AO’s financial development in 2008 as well as a detailed description of its governing bodies.

Academic Council (AcC)
AO Trauma International Board
AO Spine International Board
AO CMF International Board
Specialty AcC Veterinary
AO Exploratory Research Board
AO R&D Committee
AO Research Advisory Council
AOCID Committee
TK Executive Board

Board of Trustees

Board of Directors (AOVA)
Executive Management (AOEM)
AO Trauma
AO Spine
AO CMF
AO Research and Development
AOCID
TK Office
AO Education
Central services

Voting at the 2008 D-A-CH meeting Dresden
The year 2008 was marked by the implementation of the strategic initiative to refocus the research and development activities. As a consequence, the organization’s operating activities were in a phase of consolidation. Spending grew overall by 5% versus previous year whereas operating income increased by 17%. The financial result was affected by the downturn in the financial markets. The AO Foundation’s equity decreased by 133 million CHF to 946 million CHF by the end of 2008.

Increased operating income
Operating income includes the income from the Cooperation Agreement with Synthes of 50.7 million CHF, with an increase of 13% over 2007. Furthermore, other third party income amounting to 13 million CHF grew by 33% on last year’s result.

Operating expenses grew to 97 million CHF, representing a 5% increase over 12 months. On a like for like basis, this growth was 2.4% (excluding the expenses incurred by the AO’s 50th anniversary). The main cost categories were personnel expenses (30%), surgeons’ activities in the global network (18%), scientific and regional costs (totaling 13% and 12% respectively). Apart from other third party income of 13 million CHF, the financing of the organization’s operating activities is provided through the AO Foundation’s fund allocation (see table).

Total fund allocation by the AO Foundation amounted to 84 million CHF, an increase of 1% over 2007. On a like for like basis however, this was the equivalent of a 2% decrease. Research and Development was allocated 21%, followed by AOSpine (20%), and Regional Foundation Activities (13%). AO Management and Trustees’ activities includes expenses of 2.5 million CHF to fund the AO’s 50th anniversary events.

AO asset management
The financial result was affected by the negative development of the financial markets in the second semester of 2008. Overall, the return on the financial assets of the AO Foundation amounted to –11%, leading to financial assets worth 792 million CHF by the end of 2008.

The outperformance of AO Foundation’s asset management in comparison to the defined strategic asset allocation was driven by two reasons. Firstly, the Synthes stake, which has a high share in the portfolio, performed much better than the benchmark. Secondly, thanks to the cautious build-up of the portfolio, funds held in liquidity were significantly higher than the foreseen strategic asset allocation.

Focusing on quality with regard to investment selection, no write-offs due to distressed counterparties occurred in 2008. Looking ahead, there is no need to turn the current book losses into realized losses for the next three years, since the cash required by the AO Foundation can be met by new cash inflows.

Income structure

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<th>Year</th>
<th>Royalties</th>
<th>Cooperation Agreement</th>
<th>Other 3rd party income</th>
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<td>2008</td>
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Number of employees
(based in Switzerland)

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<th>Year</th>
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<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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<td>Value</td>
<td>191</td>
<td>200</td>
<td>239</td>
<td>245</td>
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Employees by institute/Specialty 2008
(full-time equivalents based in Switzerland)

<table>
<thead>
<tr>
<th>Institute/Specialty</th>
<th>2008</th>
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<tbody>
<tr>
<td>AO R&amp;D</td>
<td>29kh</td>
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<tr>
<td>AO Education and Publishing</td>
<td>16%</td>
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<tr>
<td>AO Central Infrastructure</td>
<td>14%</td>
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<tr>
<td>AO Management and Trustees</td>
<td>12%</td>
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<tr>
<td>Development</td>
<td>10%</td>
</tr>
<tr>
<td>Clinical Research</td>
<td>10%</td>
</tr>
<tr>
<td>AOSpine</td>
<td>7%</td>
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<tr>
<td>Technical Commission</td>
<td>2%</td>
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<tr>
<td>Regions</td>
<td>1%</td>
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</tbody>
</table>

AO Foundation fund allocation 2008

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>AO R&amp;D</td>
<td>16</td>
</tr>
<tr>
<td>Projects</td>
<td>10</td>
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<tr>
<td>AO Vet</td>
<td>5</td>
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<tr>
<td>AO CMF International</td>
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<td>AO Spine</td>
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<tr>
<td>Technical Commission</td>
<td>1</td>
</tr>
<tr>
<td>Regions</td>
<td>1</td>
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</tbody>
</table>

1 Including 50th Anniversary, Trustee Meeting, AOAN/AAC, Foundation Management, Finance, Communication and Events
2 Including AO Virtual Office, Knowledge Services, IT, AO Center
The Board of Trustees is the ‘AO parliament’, consisting of 174 leading surgeons from around the world, including ex-officio Trustees. The Trustees approve amendments to the charter and elect the members of the Academic Council (AcC). They function as ambassadors for the AO in their country or region and communicate the AO philosophy. They transmit AO information to national institutions and other AO surgeons and bring feedback regarding special needs into AO. Since each Trustee serves for a limited number of years, constant rejuvenation of the Board is guaranteed.

The Board of Directors implements the goals and proposals of the Academic Council. Its members include a majority of surgeons and nonvoting representatives of the AO’s industrial partners.

The Academic Council lays down the AO Foundation’s medical and scientific goals. Elected by the Board of Trustees, it has members representing the Specialties, from steering boards, and other ex-officio members.

The AO Executive Management implements the decisions taken by the AOVA, and supervises the activities of the operational functions of the AO Foundation. It consists of the CEO and representatives from the AO’s lead institutes and Specialties who are responsible for operational management within their respective areas.