JOIN ASTIN NOW!
ASTIN is a well-established worldwide leading forum of risk and actuarial professionals of non-life insurance industry. Created as the first Section of the International Actuarial Association (IAA) in 1957, ASTIN stands for ‘ACTUARIAL STUDIES IN NON-LIFE INSURANCE’.

Whilst adhering to the highest standards of the actuarial profession maintained by the IAA, ASTIN’s mission is to generate value for its members. This is achieved by helping them develop their professional skills, and also by engaging with academia and industry to drive innovation and promote meaningful, quality research in the field of economics and mathematics of non-life insurance, and their applications to quantitative risk management.

As a well-established global professional forum, we draw upon the values of ASTIN brand. Our intellectual base and wealth of knowledge have been developed across decades and have resulted in ground-breaking research. In our quest for excellence, we consistently demonstrate an uncompromising pursuit of knowledge and understanding.

Our vision is for ASTIN to serve the non-life insurance industry globally by ensuring that, when it comes to providing insight and finding solutions to quantitative risk management issues, our members are trusted and therefore in demand for their valued professional skills.
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Dear fellow ASTIN members,

2018 / 2019 presented another productive and eventful year for ASTIN. We held a successful colloquium in Berlin as part of the 31st International Congress of Actuaries. For the first time in the history of ICAs, the Virtual ICA was introduced in Berlin, which enabled ICA sessions to be broadcast live online, and attracted a much broader audience from around the world. This was made possible thanks to the support of a number of institutional partners from the global actuarial community, as well as several Sections of the IAA, and we are proud to have contributed to this success.

Over the past year, we strengthened our focus on research, innovations and initiatives that improve our services and add value to our members. This is now part of our five-year budget plan to which ASTIN has committed to increase its spending to support these activities.

We are currently going through the IAA restructuring and will not stand still. We, along with other IAA Sections, have always played an important role within the IAA, and in particular in achieving one of its strategic goals, advance, by promoting the advancement of scientific knowledge and skills of the actuarial profession through solving important problems, fostering innovation and promoting meaningful research. We plan to continue playing that role in the future within the newly restructured IAA. In particular, we aim to work closely with the General Insurance Committee and various relevant working groups of the IAA to achieve this goal and promote the general insurance community internationally.

I am confident that we are on the right track and believe we are best positioned to reinforce our status as a leading global forum of non-life actuaries and risk professionals.

Finally, let me take this opportunity to thank you, ASTIN members and volunteers, for your engagement and contributions. It is due to your collective effort that ASTIN continues to grow from strength to strength. I look forward to greeting many of you soon at the IAA Colloquium in Cape Town, South Africa.

Kind regards,

Frank CUYPERS,
ASTIN Chairman
Dear members and friends of ASTIN,

I am delighted to present our 2018/2019 Annual Report. It was another strong year for ASTIN, and I am happy with the results we achieved. These results attest to our commitment to fulfilling ASTIN’s mission which, in essence, is “to generate value for its members by helping them develop their professional skills, and also by engaging with academia and industry to drive innovation and promote meaningful, quality research”.

The main highlights of the past twelve months include the successful launch of three new working parties, the delivery of five webinars and co-organising two regional non-life insurance events in actuarially developing regions.

We continued focusing on implementing our initiatives aimed at improving the ways we engage and communicate with ASTIN members, our stakeholders within the IAA and also the wider community of risk and non-life insurance professionals outside the IAA. You can see the positive results of that work as you browse our new website and read our annual reports and bimonthly newsletters.

We have also introduced the ASTIN Local Chapters initiative as part of our strategy to expand and strengthen ASTIN’s position locally at the regional level, and some good progress has already been made.

Looking ahead, I see the ASTIN Board continue to focus on further increasing the ASTIN profile and adding more value to membership. As part of its strategic planning, the Board has identified and is currently focusing on five strategic areas of research and development: Financial Stability and Regulatory Changes, Data Science in Insurance, Extreme Weather Events and Catastrophe Risk, Cyber Risk and InsurTech. This will help us define a more structured view on how we should prioritise and conduct our research. We will continue to put a great deal of effort into other initiatives that are currently being developed and implemented.

I invite you to read this Annual Report in full to further learn about ASTIN’s past achievements, what we do now and what we plan to do in the future.

I am most grateful to our Board and to all members and volunteers for their work and contributions throughout the year. I am very excited about the future, and I look forward to updating you on progress we make in the coming year.

With kind regards,

Yuriy KRVAVYCH,
ASTIN Secretary
ASTIN is a well-established worldwide leading forum of risk and actuarial professionals of the non-life insurance industry. ASTIN is the first and oldest section of the IAA. It was founded on October 16, 1957 in New York City.

Whilst adhering to the highest standards of the actuarial profession maintained by the IAA, ASTIN’s mission is to generate value for its members. This is achieved by helping them develop their professional skills, and also by engaging with academia and industry to drive innovation and promote meaningful, quality research in the field of economics and mathematics of non-life insurance, and their applications to quantitative risk management.

Today ASTIN has over 1,380 members in nearly 70 countries. ASTIN Colloquia are held each year, every four years in conjunction with International Congresses of Actuaries. Jointly with other IAA Sections, ASTIN publishes the ASTIN Bulletin – the internationally renowned, refereed scientific journal of the actuarial profession. ASTIN also organises working parties and webinars and provides training and bursaries to young researchers in developing economies.

ASTIN’s vision is to serve the non-life insurance industry globally by ensuring that when it comes to providing insight and finding solutions to quantitative risk management issues, our members are trusted and in demand for their valued professional skills.
RESEARCH AND DEVELOPMENT

ASTIN has identified and is currently focusing on the five strategic areas of research and development outlined below. The research is conducted via ASTIN Working Parties (AWPs) and the results are published on the ASTIN website and also presented at ASTIN webinars.

Each AWP is a self-organised group of risk and actuarial experts with a focused applied research goal. The ASTIN Board provides support to AWPs by ensuring appropriate governance, adequate funding and access to the IAA infrastructure.

ASTIN regularly organises various topical webinars, which are used to share knowledge and expertise among ASTIN members and the wider non-actuarial community. Over the last five years ASTIN has produced several webinars.

For more details on ASTIN research and development, please refer to Working Parties subsection in this report or visit the ASTIN website.

1 - FINANCIAL STABILITY AND REGULATORY CHANGES

ASTIN focuses on the changing regulatory landscape and studies how new changes impact the insurance industry. The upcoming IFRS 17 Standard is of particular interest. It introduces significant changes to insurance reporting, impacting all insurers reporting under IFRS. The new Standard applies separately to all insurance and reinsurance contracts and takes effect from January 1, 2022.

ASTIN is currently running two working parties on IFRS 17 with the intent to study the impact of this new Standard on non-life insurers, products and markets.

2 - DATA SCIENCE IN INSURANCE

The data science along with technological advances in computing power introduces a quantum leap in the quality of insurance analytics. It promotes innovation in how risk is differentiated, products are designed and priced, and claims reserved and settled.

Over the last two years ASTIN successfully completed three working parties on Big Data and Insurance Analytics and also Machine Learning and Applications to Non-Life Reserving.

3 - EXTREME WEATHER EVENTS AND CATASTROPHE RISK

Over the last two decades the trends of climate change have shown growing evidence of increasing frequency and intensity of extreme weather events. The damage caused by heatwaves, fires, floods, storms, earthquakes and other natural catastrophes affect millions of lives and the economies of entire regions. Catastrophe modelling technologies have been used by insurers, reinsurers and capital markets to support strategic decision making in risk taking, risk management and capital setting. It is important for the actuarial profession, and in particular for non-life actuaries, to understand how the existing catastrophe modelling technologies and methodologies should be adapted to allow for emerging trends of climate change and be able to perform more forward-looking projections rather than relying solely on historical data.

ASTIN plans to do research in this area and organise relevant working parties in the near future.

4 - CYBER RISK

It is fair to say that cyber risk is a newly emerging risk. It rapidly evolves with technological advances and growing digitisation. Whilst its phenomenon is yet to be fully studied and understood, it is already evident that the insurance industry is getting ready to deal with complex systemic risk of cyber given its highly pervasive nature compounded with complex technological interconnectivity.

ASTIN has recently launched its first working party on cyber risk and plans to do more research in this area in the future to study the phenomenon of cyber risk and develop efficient methodologies for quantifying it.

5 - INSURTECH

Rapid digitisation and technological advances are bringing changes to the insurance industry by allowing the use of big data and advanced analytics. The traditional insurance value chain is destined to be transformed in the future as the result of increased use of more granular big data and predictive modelling, artificial intelligence and cognitive computing, wearable devices and telematics, and smart utilities and the internet of things. As the new digitally-oriented iGeneration enters the insurance market, insurers will have to offer products and services that suit their lifestyle and needs, and also revolutionise the ways the risk is taken and managed to increase operational flexibility and enable more efficient use of capital.

ASTIN wants to play a key role in studying the potential impact of InsurTech on the insurance industry and deepen its understanding of how non-life actuaries should adapt to embrace these new changes. The recently launched AWP on Automated Cars and Insurance starts this research activity.
ASTIN COLLOQUIA AND EVENTS

ASTIN colloquia are held annually. These are truly international, well-attended events that attract risk and actuarial professionals from all over the world. They bring together academics and practitioners and provide an ideal environment for continuing professional development through the exchange of knowledge and expertise among participants from different countries across a wide range of disciplines.

ASTIN colloquia involve keynote speakers and invited lecturers, plenary sessions, parallel sessions, ‘practitioner corner’ panel discussions and specialized actuarial workshops. All papers submitted are carefully pre-selected by Scientific Committee and distributed to all participants in advance for prior reading, to allow more time to debate proposed ideas.

ASTIN Colloquia usually take place in attractive and iconic places, which offer a friendly and collaborative atmosphere to the professional stimulation of working sessions through social and cultural activities.

To help promote the actuarial profession in actuarially emerging regions, ASTIN also organizes regional events, a mix of seminars and workshops, jointly with local actuarial associations and other Sections of the IAA.

ASTIN BULLETIN

ASTIN Bulletin was established in 1958. Over decades ASTIN Bulletin has been evolving and it is now widely regarded as the leading international refereed journal of the actuarial profession covering the full breadth of practical and theoretical work in actuarial science.

GRANTS AND ASSISTANCE

A portion of ASTIN income has been always devoted to the development of actuarial science in actuarially emerging countries. In the past, ASTIN donated 18 important actuarial textbooks to 120 universities and actuarial associations across the emerging world. These recipients were also granted free access to ASTIN Bulletin. ASTIN has sponsored seminars in India, Croatia, Latvia, Poland, Zimbabwe, Chile, and Hong Kong.

ASTIN members have taught the principles of loss reserving, experience rating in motor insurance, financial economics in insurance, applications of stochastic processes, and stochastic models for life contingencies to actuarial students and practitioners.

Today ASTIN continues to support actuarially emerging countries. One of the examples of this activity is our ongoing Benin project, which serves to support the development of actuarial education in Benin. Through this project, ASTIN is committed to provide financial resources required to run the newly created actuarial study program.
ASTIN OVERVIEW

Dr. Frank CUYPERS
Chairman
Country: Switzerland
Qualification: PhD in Theoretical Physics; Fellow of DAV and the Swiss Association of Actuaries
Experience: Chief Actuary, Prime Re Solutions
Main areas of expertise: actuarial engineering

Michiel VAN DER WARDT
Vice-Chairman
Country: The Netherlands
Qualification: MSc in Actuarial Science; Fellow of the Actuarial Society of the Netherlands
Experience: Freelance Senior Non-Life Actuary and Risk Manager
Main areas of expertise: enterprise risk management, Solvency II

Dr. Yuriy KRVAVYCH
Secretary
Country: UK
Qualification: PhD in Mathematics (Kiev), PhD in Actuarial Studies (UNSW, Sydney)
Experience: Managing Director, Guy Carpenter
Main areas of expertise: enterprise risk management, risk intelligence and capital optimisation, Solvency II

Eberhard MÜLLER
Treasurer
Country: Germany
Qualification: Dipl. Math., Aktuar DAV, CERA
Experience: Managing Director, Riskmueller Consulting GmbH
Main areas of expertise: enterprise risk management, Solvency II, reinsurance

Dr. Agnieszka BERGEL
Member
Country: Portugal
Qualification: PhD in Actuarial Science; Fellow of the Portuguese and the Polish Institutes of Actuaries
Experience: Assistant Professor at ISEG, University of Lisbon
Main areas of expertise: risk theory, actuarial education

Éric DAL MORO
Member
Country: Switzerland
Qualification: Engineering Diploma, Qualified Actuary (Institute of Actuaries of France); Fellow of the Swiss Association of Actuaries
Experience: Head of Group P&C Reserving, SCOR Switzerland
Main areas of expertise: reserving, Solvency II, IFRS 17

Adrian Folke ERICSSON
Member
Country: UK
Qualification: BSc in Actuarial Science
Experience: Director, Dynamo Analytics

Dr. Roger M HAYNE
Member
Country: USA
Qualification: PhD in Mathematics; Fellow of the Casualty Actuarial Society; Member of the American Academy of Actuaries
Experience: Associate Adjunct Professor in the Department of Statistics and Applied Probability at the University of California, Santa Barbara
Main areas of expertise: reserving, risk management
**ASTIN OVERVIEW**

**Pierre MIEHE**
**Member**
Country: France  
Qualification: Certified Actuary (IA and CERA); Fellow of the French Institute of Actuaries  
Experience: Director, Milliman  
Main areas of expertise: non-life insurance pricing, reserving and risk modelling

**Kirsten SASADY**
**Member**
Country: Denmark  
Qualification: MSc in Actuarial Mathematics; Fellow of the Danish Society of Actuaries  
Experience: Senior Actuarial Manager, PwC  
Main areas of expertise: risk management, IFRS 17, Solvency II

**Kenji SHIRAI**
**Member**
Country: Japan  
Qualification: Fellow of the Institute of Actuaries of Japan  
Experience: Deputy General Manager, Tokio Marine Group & Nichido Life Insurance Co  
Main areas of expertise: reserving, risk management

**Prof. Emiliano VALDEZ**
**Member**
Country: USA  
Qualification: PhD in Mathematics; Fellow of the Society of Actuaries  
Experience: Professor and Interim Director of the Graduate Programs in Actuarial Science at the University of Connecticut  
Main areas of expertise: mathematical statistics and probability, actuarial statistics and data science, dependence modelling

**Dr. Enrique DE ALBA**
**IAA Delegate**
Country: Mexico  
Qualification: PhD in Statistics; Associate of the Society of Actuaries (SOA); Fellow of the International Society for Bayesian Analysis (ISBA)  
Experience: Professor Emeritus of Instituto Tecnológico Autónomo de México; Associate Editor and Co-Editor of the North American Actuarial Journal  
Main areas of expertise: actuarial statistics

**Dr. Dieter KÖHNLEIN**
**IAA Delegate**
Country: Germany  
Qualification: PhD in Mathematics; Chartered Enterprise Risk Actuary (CERA); Fellow of the German Actuarial Association DAV  
Experience: Senior Actuarial Manager, Mazars  
Main areas of expertise: actuarial audit, Solvency II

**Prof. Hans BÜHLMANN**
**Honorary Chairman**
Country: Switzerland  
Qualification: PhD in Mathematics; Fellow of the Swiss Association of Actuaries  
Experience: Professor Emeritus, Swiss Federal Institute of Technology (ETH)  
Main areas of expertise: risk theory, credibility theory, insurance mathematics

**Prof. Jean LEMAIRE**
**Honorary Chairman**
Country: USA  
Qualification: PhD in Mathematics; Associate of the Society of Actuaries  
Experience: Harry J. Loman Professor of Insurance and Risk Management and Director of the Actuarial Science Program of the Wharton School of the University of Pennsylvania  
Main areas of expertise: mathematical statistics and probability, bonus-malus systems in automobile insurance
ASTIN SECTION COORDINATORS

The IAA Secretariat coordinates the work of the ASTIN Section providing administrative support to the ASTIN Board and members of the ASTIN Section.

Christian LEVAC
the IAA Secretariat
ASTIN Section Coordinator
Director, Communications and Membership
Email: christian.levac@actuaries.org

Juan LAVERDE
the IAA Secretariat
ASTIN Section Coordinator
Administrative support
Email: juan.laverde@actuaries.org

ASTIN SECTION VOLUNTEERS 2018 / 2019

We currently have five ASTIN Section volunteers:

Prof. Jan DHAENE
Country: Belgium

Dr. Walther NEUHAUS
Country: Norway

Bor HAREJ
Country: Slovenia

Roland VOGGENAUER
Country: Switzerland

Salma JAMAL
Country: France

Over the last year they were instrumental in helping the ASTIN Board run working parties, organise events and lead new initiatives.
ASTIN KEY EVENTS

HIGHLIGHTS 2018-2019

June - July 2018

New appointment: IAA Sections Spokesman

The IAA Sections have mutually agreed to appoint Michiel van der Wardt, Vice-Chairman of the ASTIN Board, as the Spokesman of the IAA Sections in the IAA. In this new role, Michiel will inform and consult with the IAA Sections on strategic issues and inform the relevant IAA bodies and stakeholders when the Sections come into consensus.

June - July 2018

ASTIN Webinars

The following webinar has been organised and held by ASTIN:

- Phase 2 Big Data - 26 July 2018

A recording of the webinar alongside a PDF of the presentation can be found on the ASTIN website and are freely accessible to ASTIN members.

June 2018

International Congress of Actuaries in Berlin

ASTIN Colloquium was held as part of the 31st International Congress of Actuaries (ICA) in Berlin on 4-8 June 2018. Overall, the ICA 2018 attracted a record number of participants, 2,741 delegates, from 103 countries, and offered a rich scientific program. More than 500 speakers and moderators across all seven IAA Sections contributed to 125 scientific sessions and 364 presentations. The ASTIN Section was represented by 63 papers, five of which won a best paper award. For the first time in the history of ICAs, the Virtual ICA (VICA) was introduced in Berlin. Thanks to the support of a number of institutional partners from the global actuarial community as well as several sections of the IAA (including ASTIN), many ICA sessions were broadcast live online in addition to being recorded. This allowed a much broader audience from around the world to follow the high-value content presented during the ICA and preserved this valuable knowledge.

June - July 2018

New initiative: ASTIN Local Chapters

The aim of this initiative is to formally establish ASTIN local (regional) chapters, which can become the elementary building blocks of ASTIN International as a section of the IAA in mid- to long-term. This initiative envisages strengthening ties with ASTIN’s existing local chapters in Scandinavia, Germany and Switzerland and also establishing and further fostering new ones in those regions where ASTIN is not currently well presented. Our ASTIN members Kirsten Sasady (Chair of ASTIN Denmark and ASTIN Board member) and Roland Voggenauer (Chair of ASTIN Germany) are the driving force behind this initiative.
New joint ASTIN-AIDA Working Party on the topic of self-driving cars

ASTIN has set up a joint working party with AIDA (the International Insurance Law Association) on the topic of self-driving cars with an aim to explore where the intersections between legal and actuarial work are in this area. Work is currently in progress, and it has been agreed that AIDA members of the Working Party would be in Cape Town at the IAA Colloquium in April 2019 to co-present its findings to the ASTIN community.

August - July 2018

New ASTIN Working Party on “Implications of IFRS 17 on Non-Life Insurers, Products and Markets”

The aim of this working party is threefold. Firstly, it is focused to develop an inventory of the changes in financial reporting that non-life insurers are likely to experience. Secondly, it considers the behavioural changes of rating agencies, regulators, reinsurers, investors, customers and company management in light of each of these changes. Finally, it assesses the impact of the behavioural changes on markets, products, and companies’ operations. The Working Party is intended to focus exclusively on non-life insurance, without precluding coordination with any similar initiatives being undertaken with respect to life insurance. This Working Party is run jointly with the General Insurance Committee of the IAA.

August - October 2018

ASTIN Webinars

The following two webinars have been organised and held by ASTIN:
- Synergy between Machine Learning and Traditional Methods in Non-Life Reserving – 4 September 2018; and

A recording of each webinar alongside a PDF of the presentation can be found on the ASTIN website and are freely accessible to ASTIN members.

September 2018
ASTIN KEY EVENTS

October 2018

ASTIN’s new website
The new ASTIN website has been launched. This was part of our promotional campaign aimed to showcase ASTIN’s importance to the actuarial profession and non-life insurance industry, raise its brand awareness and increase its membership base.

November 2018

ASTIN Five Year Budget Plan
The ASTIN Board has endorsed the five-year budget plan, according to which ASTIN plans to increase its spending on new initiatives aimed at enhancing the value ASTIN brings to its members. The new initiatives due to be implemented in the near future include the following projects:

- Members’ outreach
- ASTIN Local Chapters
- ASTIN Expert Helpline
- Global Actuarial Research Network (GARN)
- ASTIN Masterclasses

This new budget plan will be presented to ASTIN members for their review and approval at the ASTIN General Assembly in Cape Town in April 2019.

November - December 2018

ASTIN Regional Events – Jamaica and Mexico
Following the success of ASTIN Colloquium in Panama in 2017, ASTIN held the following two joint events in the region:

- Kingston, Jamaica, 30 November 2018 - Joint CAS-ASTIN Workshop as part of the Annual Conference of the Caribbean Actuarial Association; and
- Mexico City, Mexico, 3 December 2018 - Joint One-Day AFIR-ASTIN Seminar together with Colegio Nacional de Actuarios (CONAC).

These were successful events which attracted many local participants and provided an opportunity for ASTIN to contribute to the development of the actuarial profession in the region.

November - December 2018

The IAA Meeting in Mexico and the IAA restructuring
The main topic of the discussions in Mexico was the IAA restructuring, which is aimed at revisiting the IAA’s strategic objectives as well as changing the IAA structure to ensure the IAA efficiently operates to achieve its strategic goals. The following new strategic objectives of the IAA were proposed in Mexico:

- Influence: Supranational Relationships
- Assure: Promotion of the Profession
- Advance: Development of Competence

The IAA Executive Committee recognises the fact that ASTIN and other IAA Sections continue playing an important role within the IAA, and in particular in achieving the latter strategic goal, Advance, by promoting the advancement of scientific knowledge and skills of the actuarial profession. ASTIN is also envisaged to work closely with the General Insurance Committee (GIC) and various GI working groups of the IAA to achieve this goal and promote the general insurance community internationally. Examples of that already taking place include the ASTIN Working Party on Implications of IFRS 17 on Non-Life Insurers, Products and Markets launched in 2018 jointly with the GIC. The new structure of the IAA will be finalised and approved within the next year.
New ASTIN Working Party on "Cyber Risk"

This new Working Party has been launched with the intent to assess the economic loss associated with cyber events that would eventually lead to a cyber loss index for possible use in the risk transfer market. It is expected that the outcome will benefit the society and several economies around the world.

January 2019

ASTIN Webinars

The following two webinars have been organised by ASTIN:

- Are Cyber Risks Insurable? – 6 February 2019; and

A recording of each webinar alongside a PDF of the presentation can be found on the ASTIN website and are freely accessible to ASTIN members.

February - March 2019

ASTIN Board changes

The following changes to the board structure took place throughout the year:

- New member admitted at the ASTIN General Assembly in Berlin in June 2018: Emiliano A. Valdez (USA). Emil joined ASTIN in 2017 as an ASTIN Board volunteer to lead and coordinate the work of ASTIN Working Parties. Emil will continue acting as ASTIN Working Parties Coordinator whilst serving on the Board.
- Outgoing members of the Board: Éric Dal Moro (France), Adrian Ericsson (UK) and Enrique de Alba (Mexico).

We welcome Emil onto the Board and wish him every success in his new role. We say goodbye to outgoing members and thank them for their hard work.

June 2018 - April 2019

ASTIN Key Events
Today ASTIN has over 1,380 members in nearly 70 countries. ASTIN Colloquia are held each year, every four years in conjunction with International Congresses of Actuaries. Jointly with other IAA Sections, ASTIN publishes three times per year the ASTIN Bulletin – the internationally renowned, refereed scientific journal of the actuarial profession. ASTIN also organises working parties and webinars and provides training and bursaries to young researchers in developing economies.

For more information about our activities please visit ASTIN web page on www.actuaries.org
ASTIN WORKING PARTIES

Emiliano A. Valdez is a Professor of actuarial science at the University of Connecticut, USA. He is a Fellow of the Society of Actuaries, holds a Ph.D. from the University of Wisconsin, and is the interim director of the graduate programs in actuarial science at Connecticut. He held academic posts at Nanyang Business School in Singapore and the University of New South Wales in Australia. From 2013 to 2015, he was the Director of the actuarial program at Michigan State University. He has received the Edward A. Lew Award, the Halmstad Memorial Prize, and the Hachemeister Prize, in recognition for his research work. He also has years of industry experience working as an actuary. For the ASTIN Board, he is the coordinator of the ASTIN working parties where he facilitates and provides project oversight. He also acts as the liaison between the working parties and members of the Board.

ASTIN Board encourages and supports applied research through its program called ASTIN Working Parties (AWP). It involves a self-organised group of experts with a clearly defined scope of applied research that is expected to be completed within a reasonable timeframe. The research topics fall within the purview of non-life insurance, are meant to be timely, useful in practice and provide added value to ASTIN membership. In addition to fostering applied research, the AWP also aims to tap into the intellectual potential of ASTIN membership.

There are currently five ASTIN working parties actively in progress. These working parties will produce results to benefit non-life insurers in pricing, reserving, and risk management.

The final reports of completed projects are fully accessible to ASTIN members and can be downloaded from our ‘Working Parties’ web page on the IAA website www.actuaries.org
ECONOMIC CYBER LOSS INDEX FOR PARAMETRIC COVERS
Project Leader: Simon Dejung, SCOR (Zurich, Switzerland)
Project period: January 2019 – December 2019
Summary:
The primary aim of this Working Party is to assess the economic loss associated with cyber events that would eventually lead to a cyber loss index for possible use in the risk transfer market. The leader of this AWP has commenced to organise workshops to examine this concept study, with the first such workshop held recently in Zurich and attended by experts in IT security metrics and alternative risk transfers. The outcome of this AWP is expected to benefit the society and several economies around the world.

AUTOMATED CARS AND INSURANCE
Project Leaders: Sara Landini (Italy), Kyriaki Nousia (UK) and Przemyslaw Klusik (Poland)
Project period: October 2018 – September 2019
Summary:
This is a joint Working Party intended to be a cooperation between lawyers from AIDA (International Insurance Law Association) and actuaries from ASTIN. The aims can be broadly described as evaluating the types of risks and liabilities for adverse events associated with automated cars, which includes examining possible new legal regulation and suitable ways of risk management. With 35 volunteer members, this AWP has sub-divided the group to focus on parts such as the existing legal regulations in various countries, the technology and existing contracts and transfer of risks. The initial results are expected to be presented at the IAA Colloquium in Cape Town in April 2019.

IMPLICATIONS OF IFRS 17 ON NON-LIFE INSURERS, PRODUCTS AND MARKETS
Project Leader: Walther Neuhaus (Norway)
Project period: October 2018 – October 2019
Summary:
This Working Party has three complimentary goals. Firstly, to develop an inventory of the significant changes in financial reporting that non-life insurers are likely to experience. Secondly, to consider the behavioural changes of rating agencies, analysts and other parties impacted by insurance. And finally, to assess these impacts from an actuarial point of view. With 13 volunteer members from 11 countries, this group has identified significant areas that require deeper investigation such as the possible effects on premium setting, taxation and portfolio transfers. This Working Party is run jointly with the General Insurance Committee of the IAA.
The initial results are expected to be presented at the IAA Colloquium in Cape Town in April 2019.

THE PAA UNDER IFRS 17
Project Leader: Kirsten Sasady, PwC (Denmark)
Project period: November 2017 – December 2019
Summary:
This Working Party explores the Premium Allocation Approach (PAA) in calculating liabilities under the IFRS 17, accounting standards for insurance contracts. The group has been working on a description of best practices in the market regarding the implementation of the PAA in companies.

AGENT-BASED MODELS, NETWORKS AND CELLULAR AUTOMATA IN RISK MANAGEMENT
Project Leader: Magda Schiegl, Hochschule Landshut (Germany)
Project period: November 2017 – May 2019
Summary:
This Working Party aims to describe models and methods in complex systems for measuring and managing risks. The group has completed reviewing published articles and initiated drafts of several parts of the final report. The group intends to submit the work as a review paper in a refereed publication. This work is near completion, and the final report is expected to be published by May 2019.
INTERNATIONAL CONGRESS OF ACTUARIES (ASTIN SECTION)  
BERLIN 2018

The 31st International Congress of Actuaries (ICA) was held in Berlin on 4-8 June 2018. The ICA is the largest established international forum of actuaries that has been regularly organised and held since 1895. Hosted by the Deutsche Aktuarvereinigung e.V. (DAV), the ICA 2018 attracted a record number of 2,741 delegates from 103 countries and offered a stimulating scientific program. More than 500 speakers and moderators across all seven IAA Sections contributed to 125 scientific sessions and 364 presentations.

ASTIN SECTION AND BEST PAPER AWARDS

The ASTIN Section was represented by 63 papers, five of which won a best paper award, as listed below.

- **ICA Best Paper Awards:**
  - ‘Modelling Dynamic Policyholder Behaviour through Machine Learning Techniques’ by Marco Aleandri (Sapienza University Rome, Ageas)
  - ‘Neural Networks Applied to Chain-Ladder Reserving’ by Mario Wüthrich (ETH Zurich)
  - ‘Pricing of Cyber Insurance Contracts in a Network Model’ by Matthias Fahrenwaldt (Heriot-Watt University), Stefan Weber and Kerstin Weske (both Leibniz University of Hannover)

- **ASTIN Best Paper Awards:**
  - ‘The Transition Towards Semi-Autonomous Vehicle Insurance: The Contribution of Usage-Based Data’ by Montserrat Guillen (University of Barcelona)
  - ‘The Impact of Insurance Premium Taxation’ by Anna-Maria Hamm and Stefan Weber (both Leibniz University Hannover)

The ASTIN Board thanks all the contributors who submitted their papers to ASTIN Section, as well as presenters and moderators of ASTIN sessions, and congratulates the above listed recipients of the best paper awards.

VIRTUAL ICA

For the first time in the history of ICAs the Virtual ICA (VICA) was introduced in Berlin. Thanks to the support of a number of institutional partners from the global actuarial community as well as several Sections of the IAA (including ASTIN), many ICA sessions were broadcast live online and were also recorded. This allowed a much broader audience from around the world to follow the high-value content presented during the ICA and helped to secure this knowledge in a sustainable manner. The recorded actuarial content (more than 180 hours) is available on the ActuView website at www.actuview.com to members of the IAA Sections and also the IAA Member Associations who provided their sponsorship.

Since the launch of the VICA platform at the ICA in Berlin in May 2018, over 2,200 users from over 105 countries have so far registered to date at ActuView. The total of 315 videos available online have been accessed and viewed over 45,000 times.
ASTIN REGIONAL EVENTS

ASTIN’s core mission is to provide practical research and education to benefit non-life actuaries around the world. This targets not only ASTIN members but also actuaries practicing in non-life insurance globally. ASTIN’s 2017 Colloquium in Panama City was an excellent opportunity that offered presentations on cutting-edge research as well as introductory workshops aimed at assisting those in Central and South America better understand non-life actuarial science.

To continue the momentum gained in Panama, in 2018 ASTIN held two local events in the region: one in Jamaica and another in Mexico.

**Time:** November 2018  
**Event title:** Joint CAS-ASTIN Workshop, Jamaica  
**Event description:** The US Casualty Actuarial Society (CAS) and ASTIN have teamed up to provide a non-life insurance track of sessions for the Annual Conference of the Caribbean Actuarial Association that was held on 28-30 November 2018 in Kingston, Jamaica.

The joint CAS-ASTIN Workshop was delivered on 30 November 2018. ASTIN representative, Axel Wolfstein (Germany), presented an abridged version of the basic ratemaking workshop earlier presented in Panama City in 2017, whereas Ron Kozlowski (USA) and Cynthia Potts (Canada), CAS representatives, presented on the future of motor insurance and IFRS 17 respectively. Overall, it was a successful event that provided an opportunity for ASTIN to contribute to the development of the actuarial profession in the region.
**Time:** December 2018  
**Event title:** Joint One-Day AFIR-ASTIN Seminar, Mexico  
**Event description:** Following the IAA Council and Committee meetings in Mexico City, the AFIR-ERM and ASTIN Sections hosted a joint one-day seminar together with the Colegio Nacional de Actuarios (CONAC) on 3 December 2018. This event attracted around 100 local participants, predominantly from Mexico.

The following topics were presented at the seminar:
- "The future of the actuary" by Norma Alicia Rosas, President of La Comisión Nacional de Seguros y Fianzas (CNSF), Mexican Insurance Regulator  
- "Machine learning and its latest breakthroughs" by Dr. F. Cuypers, Chairman of the ASTIN Board  
- The IFRS 17 topic was presented as a live play where participants (E. Dal Moro, M. Dionne and D. Finnis) impersonated the "working actuary", the "CEO" and the "financial analyst"  
- "Applications of Cellular Automata" by Dr. F. Cuypers, Chairman of the ASTIN Board  
- "Innovations in Product Design to Manage Longevity and Long-Term Care Risks" by Prof. Ermanno Pitacco

It was another hugely successful event for ASTIN and its members.
ASTIN WEBINARS

ASTIN regularly organises its topical webinars jointly with the IAA Secretariat. They are used to share knowledge and expertise among ASTIN members and the wider non-actuarial community.

ASTIN webinars are open to ASTIN members only and are free of charge.

OUR RECENT WEBINARS

Over the last year we have organised five webinars:

- 26 July 2018 – Phase 2 Big Data
  by Louise Francis (CAS, USA) and Axel Wolfstein (Germany)
- 4 September 2018 – Synergy between Machine Learning and Traditional Methods in Non-Life Reserving
  by Salma Jamal (France), Greg Taylor (Australia) and Lorenzo Invernizzi (Italy)
- 18 September 2018 – Individual Claim Development with Machine Learning
  by Bor Harej (Slovenia)
- 6 February 2019 – Are Cyber Risks Insurable?
  by Michel Dacorogna (Switzerland)
- 14 March 2019 – Microinsurance Challenges from an Actuarial Perspective
  by Inma Peña (Spain)

A recording of each webinar alongside a PDF of the presentation can be found on the ASTIN website and are freely accessible to ASTIN members.

OUR UPCOMING WEBINARS

We are preparing the following webinars in 2019:

- Operational Risk … Let’s talk about it by Eberhard Müller (Germany) and Yuriy Krvavych (UK)
- Results of AWP on PAA in IFRS 17 by Kirsten Sasady (PwC, Denmark)
- Results of AWP on Agent Based Models and Cellular Automata by Magda Schiegl (Germany)
- Hurricane Frequency and Climate Change by Dimitris Papachristou (Bank of England, UK)
- Pareto Folding by Marie Kratz (ESSEC, France)

For more details about ASTIN webinars please refer to ‘Our Activities’ web page on ASTIN website.
The ASTIN Board plans to increase spending on new initiatives aimed at enhancing the value ASTIN brings to its members. The new initiatives due to be developed and implemented in the near future include the following projects:

- Members’ outreach
- ASTIN Local Chapters
- ASTIN Expert Helpline
- Global Actuarial Research Network (GARN)
- ASTIN Masterclasses

Some good progress towards achieving this plan was made last year.

MEMBERS’ OUTREACH

ASTIN has improved its policies and practices of engaging and communicating with its members, stakeholders within the IAA and also the wider community of risk and non-life insurance professionals outside the IAA. They are now much more transparent and effective. This is evident from the following results:

- Launch of new ASTIN website – the website has been redesigned to accommodate the changes required to ensure it is up to date, relevant and appealing to ASTIN membership.

ASTIN LOCAL CHAPTERS

The aim of this initiative is to formally establish ASTIN local (regional) chapters, which mid- to long-term can become the elementary building blocks of ASTIN International as a section of the IAA. This initiative envisages strengthening ties with ASTIN’s existing local chapters in Scandinavia, Germany and Switzerland and also establishing and further fostering new ones in those regions where ASTIN is not currently well presented. ASTIN members Kirsten Sasady (Chair of ASTIN Denmark and ASTIN Board member) and Roland Voggenauer (Chair of ASTIN Germany) are the driving force behind this initiative.

Last year Kirsten and Roland visited Turkey and Italy where they met with local representatives from the Actuarial Society of Turkey and the Ordine Nazionale degli Attuari (Italian Actuarial Society) and discussed the possibilities of establishing an ASTIN local community in these regions. Both regions are very supportive of this initiative and will take the necessary steps to take it further and implement it.

ASTIN also prepares to hold talks later this year with representatives from Russia and countries of the Caucasus to discuss the possibilities of developing local ASTIN chapters in these countries.

MEMBERS’ OUTREACH

- Launch of ASTIN Annual Report and ASTIN Newsletter – formal annual report and bimonthly newsletter have been introduced in June 2018. They are fantastic communication media that are used to share the information with ASTIN members and keep them updated with the latest news and current affairs.

- Enhanced membership support – the new membership support team is led by ASTIN Section Coordinators, Christian Levac and Juan Laverde, from the IAA Secretariat.
ASTIN EXPERT HELPLINE

The Expert Helpline is envisaged to be an open access online question and answer (Q&A) exchange platform for the global actuarial community. Our aim is to facilitate rapid worldwide dissemination of actuarial best practice by connecting actuarial practitioners and academics. Initially, the platform will be dedicated to actuarial practice in general insurance but could be extended later to include other areas of actuarial practice.

The Q&A will be visible to anyone, but only ASTIN members will be permitted to ask questions. The ASTIN Board will establish a “Pool of Experts” to respond to questions raised.

The platform is currently in the implementation phase and is planned to be integrated inside the ASTIN website to allow seamless access for ASTIN members. The existing IAA webpage infrastructure requires some adjustments to access rights to support its main features. The platform is expected to be launched at the end of 2019.

GARN

Global Actuarial Research Network (GARN) is an open access online research exchange platform of the global actuarial community. It will be used to facilitate rapid worldwide dissemination of research ideas through posting working papers by actuarial practitioners and academics.

Unlike existing popular online research networks such as Social Science Research Network (SSRN) and Research Gate (RG), which cover a very wide range of science branches and disciplines, GARN will be dedicated solely to research and its applications to actuarial practice, and hence will be an ideal platform for connecting both actuarial practitioners and academics.

GARN will be segmented by areas of actuarial practice including but not limited to Non-Life Insurance, Life Insurance, Pension, Health, Investment and Enterprise Risk Management. Each of the areas of actuarial practice will be further split into sub-areas of research interest.

We are currently planning our activities and explore various implementation options. We will be providing further updates on how it progresses throughout the year.

ASTIN MASTERCLASSES

ASTIN plans to produce a series of online masterclasses on a wide range of non-life insurance topics taught by the greatest minds of the actuarial profession and renowned authorities on risk and insurance.

The online masterclasses will be fully interactive providing ASTIN members with free access.

We are currently at the activity planning stage exploring various implementation options. We will be providing further updates on how it progresses throughout the year.
ASTIN Bulletin was founded in 1958. Over decades it has evolved and is now widely regarded as the leading international refereed journal of the actuarial profession, covering the full breadth of practical and theoretical work in actuarial science.

ASTIN Bulletin was awarded the Thompson Reuter Impact Factor. It publishes three issues per year comprising about 30 articles in total. The journal is published by Cambridge University Press, and fully supports online submission of articles.

ASTIN Bulletin is published in both print and online, in January, May and September. An electronic copy of the ASTIN Bulletin is distributed to members of the ASTIN, AFIR-ERM, LIFE and PBSS Sections of the IAA as part of their section membership dues. Members wishing to receive a paper copy must contact the IAA Secretariat.

ASTIN Bulletin publishes papers that are relevant to any branch of actuarial science and insurance mathematics. Papers should be quantitative and scientific in nature and might draw on theory and methods developed in any branch of the mathematical sciences including actuarial mathematics, statistics, probability, financial mathematics and econometrics.

The journal welcomes papers that present significant and original theoretical developments and papers that present significant and original applications of mathematical, statistical or econometric theory to problems arising in insurance, pensions and finance. The journal especially welcomes papers opening up new areas of interest to the international actuarial profession as well as papers that describe open problems that have arisen in practice.

For more information about the bulletin, please visit ‘ASTIN Bulletin’ web page on the IAA website www.actuaries.org

Editors:
Benjamin Avanzi (new)
Daniel Bauer (until mid 2019)
An Chen
Łukasz Delong (new)
David Dickson (until mid 2019)
Catherine Donnelly
Montserrat Guillen
Michael Merz
Ruodu Wang

Journal Manager:
Christian Levac

Editorial Board:
Yar Babad
Maria de Lourdes Centeno
Arthur Charpentier (new)
Marcus Christiansen
Griseida Deelstra (new)
Jan Dhaene
Mary Hardy
Jean Lemaire
Gary Parker
Robert Reitano
Julien Trufin (new)
Andreas Tsanakas
Steven Vanduffel
Gary Venter
**Overview**

ASTIN Bulletin is maintaining its position as the leading international actuarial journal with a bias towards more practically motivated and more statistically oriented research papers compared to some other actuarial journals. Last year the International Congress of Actuaries (ICA) took place in Berlin. This was an excellent opportunity to meet various stakeholders of ASTIN Bulletin. The overall feedback about the journal was extremely positive. The feedback described the journal as outstanding with its contents becoming increasingly more topical with excitement and great efforts of its contributors showcased throughout the production.

**Key Action Points**

The initiative of making articles shorter, more concise and more attractive to readers is highly appreciated and wholeheartedly supported by the contributors. ASTIN Bulletin wants to be exposed more to the recent trends in data science – there is a strong need of the actuarial community to receive better support in machine learning topics. We hope to support this initiative by recruiting new members to our Editorial Board in this area. David Dickson will retire as Editor of ASTIN Bulletin by mid 2019. After having served as Editor of ASTIN Bulletin for 10 years, David Dickson has decided to gradually reduce his responsibilities, also planning his retirement at The University of Melbourne. It is sad to see David leave as I highly appreciate David’s expertise. I would like to kindly thank David for his immense support of ASTIN Bulletin, and I wish him all the best for his “third” life!

Retired from the Editorial Board in 2018 is Uwe Schmock. Many thanks to Uwe for supporting ASTIN Bulletin on the Editorial Board for 15 years!

A big thank you goes to all editors for their invaluable contribution to the huge success of ASTIN Bulletin. I also wish to sincerely thank all the many anonymous referees, without whom the journal could not function. Last but not least, great thank you to our journal manager Christian Levac who has been instrumental in running this journal so smoothly.

**ASTIN Bulletin, Volume 48, 2018**

In total, during 2018 we published 42 research articles\(^1\), amounting to 1,341\(^2\) pages (see the table below). Volume 48 contains a good mixture of applied and theoretical papers over all IAA research areas: ASTIN type – 15; AFIR/ERM type – 14; Life & Pension type – 13; Health type – 1.

In addition, we published an editorial and an obituary for Gunnar Benktander.

The updated impact factor for 2018 is not available yet. This impact factor is determined from citations in 2018 referring to papers in 2017 and 2016. We observe a slight decrease in this impact factor from 2016 to 2017. There is no particular reason for this decrease, it is mainly due to the fact that this indicator is volatile (not based on sufficient volume).

Our impact factor is in line with, although slightly below, our peers Scandinavian Actuarial Journal, Insurance: Mathematics and Economics and Journal of Risk and Insurance.

The final acceptance rates are stable between 20% and 25%. This acceptance rate is consistent with the other high-quality international journals in insurance.

**Administration**

Submissions are handled effectively on an online submissions system. At the point of acceptance our administrative officer, Christian Levac, takes over and acts as a liaison between the authors and the publisher, Cambridge University Press. Cambridge provides us with a strong electronic presence and all Section members can log on through www.actuaries.org to access the most recent papers including papers that have been accepted but not yet published via their FirstView system.

**Outlook**

We continue in our efforts to make the publications shorter, more concise and more attractive to readers. We emphasise that ASTIN Bulletin is the preferred journal of choice for actuarial research. Our publications have a clear actuarial focus presenting interesting statistical work with practical relevance.

ASTIN Bulletin has strengthened its position in the area of data analytics and machine learning. This is considered as an extension of the (already) strong focus in actuarial statistics. In fact, these computational methods are an important addition to the actuarial toolbox, and we aim at publishing even more interesting, inspiring and useful work in this area.

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\(^1\) Including 1 editorial and 1 obituary

\(^2\) Including 1 editorial and 1 obituary
PRIZES

Each year the Hachemeister Prize is awarded to the best paper presented at the ASTIN colloquium. The prize was established in 1993 in recognition of Charles A. Hachemeister's many contributions to Actuarial Studies in Non-Life Insurance (ASTIN) and his efforts to establish a closer relationship between the Casualty Actuarial Society (CAS) and ASTIN.

The 2018 Hachemeister Prize was awarded to the following two papers:

- "A Cost of Capital Risk Margin Formula for Non-Life Insurance Liabilities" by Glenn Myers (USA); and
- "Territorial Risk Classification Using Spatially Depended Frequency-Severity Models" by Peng Shi (USA) and Kun Shi (USA).

The first paper provides a Bayesian MCMC stochastic loss reserve model for simulating future cash flows of the liability. The model allows using an arbitrarily large number of equally likely parameters making it possible to describe any future state in the model’s time horizon including those states used for calculating a cost of capital risk margin. It shows how to use the MCMC output to calculate the cost of capital risk margin for both an ultimate time horizon and a one-year time horizon and also analyse the effect of diversification in a risk margin calculation for multiple lines of insurance.

The second paper introduces a spatially dependent frequency-severity modelling framework to produce territorial risk scores. It applies to the aggregated insurance claims where the frequency and severity components examine the occurrence rate and average size of insurance claims in each geographical unit. The paper uses a town level claims data of automobile insurance to demonstrate applications of the model outputs in ratemaking and market segmentation.

AWARDS

ASTIN also provides ‘ASTIN Best Paper Award’ to the best papers written and presented by young actuarial researchers.

ASTIN BEST PAPER AWARD – BERLIN 2018, ICA

Last year, 110 papers were initially submitted to the ASTIN Section for the presentation at the International Congress of Actuaries (ICA) in Berlin. Following the first round of selection by the ICA Organising Committee, 17 papers were selected. The ASTIN Board then chose the two best papers. These are:

1. "The impact of Insurance Premium Taxation" by Anna-Maria Hamm, Moritz Hildebrandt and Stefan Weber
2. "The transition towards semi-autonomous vehicle insurance: the contribution of usage-based data" by Montserrat Guillen and Ana M. Pérez-Marín

Both articles focus on important yet separate practical problems in today’s insurance industry. The first paper deals with the taxation on insurance premium and its effect on the cost of insurance, its demand, fiscal revenues and profitability of insurers. The second paper studies the importance of telematics in driving positive policyholder behaviour that leads to better risk selection and control of moral hazard in motor insurance.

They both deserve a special mention and equal recognition for their contribution.

GRANTS AND ASSISTANCE

ASTIN provides financial assistance to support actuarially emerging countries. One example of this activity is our ongoing Benin project, which serves to support the development of actuarial education in Benin. Through this project, ASTIN is committed to providing financial resources required to run the newly created actuarial study program.

Each year, ASTIN also provides two types of financial assistance:

1. ASTIN Working Party (AWP) Travel Grants for valuable contribution to AWP research work; and
2. ASTIN Bursaries for researchers from developing economies. Below provides the list of recipients of financial assistance and grants from ASTIN for 2019 colloquium in Cape Town, South Africa.

2019 ASTIN BURSARIES

(IAA COLLOQUIUM, CAPE TOWN, SOUTH AFRICA)

1. Cristina Maro (Brazil – consultant)
2. Joseph Theuri Gitonga (Kenya – academic)
3. Appolinaire Woundjague (Kenya – PhD student)
BENIN PROJECT

Since 2010, ASTIN has funded the actuarial study program at the Department of Actuarial Sciences and Financial Mathematics from Ecole Supérieure d’Actuariat ISM-Adonal of Cotonou, Benin. This initiative is a joint effort of ASTIN together with the Seminar for Finance and Econometrics of the Ludwig-Maximilian-University (LMU) Munich Germany, the State University of Benin (UAC) and also the private Business School ISM-Adonal in Benin. Between July 2013 and December 2016, this initiative was also financed by the German government. The program attracts actuarial students from all over the sub-region including Ivory Coast, Togo, Cameroon, Congo, Central African Republic, Senegal and, of course, Benin. A twofold actuarial programme was launched in 2016:
- the Bachelors programme at ISM Adonaï Benin (a private Business School), and
- the Masters programme at Abomey-Calavi University (State owned university).

Many of the students have graduated and some are still attending courses. To date, there are 29 graduates graduated with Bachelors degree and 17 with Masters degree.

Within the framework of these programme, many seminars and lectures were organised. The lecturers and practitioners are invited to Benin from Europe, USA and South Africa, due to the lack of specialist in the region. For the year 2018, eight international lecturers and practitioners lectured in the Masters programme. The list consists of:
- Dr. Ruprecht Witzel (Switzerland),
- Prof. Jan Dhaene (Belgium),
- Prof. Akim Adekpedjou (Missouri, USA),
- Dr. Franck Adekambi (Johannesburg, South Africa),
- Mr. Elie Sani (France),
- Mr. Hamza Hanbali (Belgium),
- Mr. Stefan Gross (Germany), and
- Mr. Guillaume Moussa (Germany).

Many activities have been carried out with regards to the promotion of actuarial projects. Some of them listed below:
- placement of one student from Benin for internship with the German insurance company General Munich from January 6, 2018 to April 5, 2018;
- participation of one graduate in the 31st international Congress of Actuaries in Berlin from May 31, 2018 to June 6, 2018;
- organisation of workshops and seminars to attract more companies as sponsors of the programme;
- organisation of the second West African conference on Actuarial Science and Finance on October 18-19, 2018 in Cotonou. The main theme of the conference was “Role of Actuary in Furthering the Financial Inclusion Initiatives in West Africa.” Forty-three participants were recorded from Germany, Belgium, South Africa, Togo and Benin.

ASTIN funding is continued to be used to cover the cost of travel and accommodation for teachers from Europe. It is expected that the need for teachers from abroad will reduce over time thanks to more graduates who can provide lectures. The Benin project will continue benefit from ASTIN funding for some time. In the future, part of the funding will also be used to support a junior teacher as well as a PhD student to lecture in Benin. In addition, some money will also be used to develop study materials.
REFLECTING ON ASTIN’S PAST, PRESENT AND FUTURE

Throughout its history ASTIN has evolved and broadened its boundaries to areas ranging from the well-established Rate-making and Reserving to more contemporary Risk and Capital Management, and newly emerging Data Science and Machine Learning.

All these achievements would not have been possible without a number of ASTIN’s prominent figures. Those who laid the foundations of the classical risk theory, those who founded ASTIN, and those who further developed its intellectual base.

This Annual Report provides a series of interviews with ASTIN prominent figures reflecting on ASTIN’s past, present and future.
Prof. Hans BÜHLMANN
Honorary Chairman

Professor Emeritus at the prestigious Swiss Federal Institute of Technology (ETH) in Zurich. Was elected Honorary Chairman of ASTIN in 1995, after serving ASTIN as Editor (1985-1985), Vice-Chairman (1971-1972) and Chairman (1973-1974). Hans is the IAA Medallist (2001) and was inducted to the IIS Insurance Hall of Fame (1998). Served as President of ETH and also on government committees related to actuarial issues. He is the recipient of many prestigious awards of the actuarial profession and holds honorary doctorates from the universities of Amsterdam (The Netherlands), London (UK), Waterloo (Canada), La Sapienza Roma (Italy) and Heriot-Watt (Scotland). Author of numerous research publications and great contributor to the columns of ASTIN Bulletin, great teacher and academic advisor. Hans has made a long-lasting impression on the teaching, research and practical applications of quantitative methods of risk theory and credibility theory around the globe.

This interview was conducted by Yuriy Krvavych via correspondence on 5-7 March 2019.

Yuriy Krvavych (YK): Hans, welcome and thank you so much for agreeing to be interviewed.

Hans Bühlmann (HB): Yuriy, thank you so much for arranging this interview. It gives me a chance to address the ASTIN community at least through my writing. So often did I participate in ASTIN colloquia and I always enjoyed tremendously meeting personally with my ASTIN colleagues and friends. Due to my age this is unfortunately getting rather difficult. The more I am grateful to communicate in writing.

YK: Hans, you did your PhD in Mathematics at ETH Zurich under the supervision of Prof. Walter Saxer (ETH Zurich) and also at the University of California, Berkeley under the supervision of Prof. Michel Loève. That means your mathematical genealogy can be traced back to such great mathematicians as Bernoulli brothers, Euler, Lagrange, Poisson, Weierstrass, Dirichlet, Fourier, Lipschitz, Darboux, Kronecker, Hadamard, Klein, Lévy and Pólya. I presume this must have been posing a great sense of responsibility throughout your life for you to continue the succession of generations of great mathematicians.

But I also imagine there must have been something special enigmatic in your life that brought you to the world of mathematics, perhaps your first mathematical étude that made you realise that mathematics is powerful and beautiful.

Do you remember that special moment in your life?

HB: As a pupil in the Gymnasium I liked the mathematics lessons, as well as the courses in foreign languages and it was by no means clear what I would want to study later. At one time I even thought that I might become a priest. Mathematics finally became my first choice. The choice was probably motivated by the search of truth, which in the times of my youth was a preoccupation driving discussions, particularly among young people. This also explains my growing interest in probability theory. It was fascinating to discover, that mathematics could explain phenomena even beyond deterministic mechanisms.

YK: You have always had a special interest in and love for probability theory, and it happened that at the time you started your PhD study at ETH there was no one able to supervise you on this subject. Your PhD supervisor at ETH, Prof. Walter Saxer, sent you to Berkeley so you could write a thesis in probability theory. You wrote it there under the supervision of one of the famous probability theorists, Prof. Michel Loève.

What was the topic of your PhD Thesis and what are your recollections of the time you spent at Berkeley working with Prof. Michel Loève?

HB: My curiosity in probability theory has been satisfied gradually. During my mathematics studies at ETH, Professor Walter Saxer was my teacher in this subject. At that time, he was the only lecturer in this field at ETH. His approach was analysis
driven, corresponding to the pre-Kolmogorov analytic treatment of probability. Also, in this approach many fundamental topics in probability can be treated, e.g. weak law of large numbers, central limit theorem, distributions of finite number of random variables including characteristic functions, etc. Still, to get acquainted with the "more modern" measure theoretic approach to probability, Prof. Saxer sent me to Berkeley with the goal to write a thesis in probability theory with Prof. Michel Loève. Loève was a great teacher. He taught me the measure theoretic concept of "probability space". The discovery that a random variable could be seen as a measurable function on such a space came to me like a revelation!! And then Loève led us through his, then just published, book "Probability Theory, Volume 1". My thesis (printed by California University Press in German!!!) was on "Exchangeable Random Variables and their Limit Theorems". The concept of exchangeability has been launched by Professor Bruno De Finetti, professor in Trieste and later in Rome. For (0-1) variables De Finetti had proved, that the probability law of (infinitely) exchangeable random variables could be represented as a weighted product measure. I was successful in providing a proof for general random variables and hence derive corresponding limit theorems.

In Berkeley, I also had the chance to interact with such impressive statisticians as Jerzy Neyman, Betty Scott, David Blackwell and Eric Lehmann. It was a wonderful time, which has given me a lot: a deep understanding of statistics, an active insight into modern research and also a great insight into American culture in the 1950's.

YK: Hans, you made an amazing career of esteemed professional combining two different vocations in one: academic mathematician and actuarial practitioner. After your PhD study you started working at Swiss Re as an actuary and later formed the non-life actuarial department there. During your tenure at Swiss Re you went back to Berkeley to complete your habilitation thesis titled "L^2-Martingales and Orthogonal Decomposition", and then came back to Zurich to combine your full-time job at Swiss Re and teaching at the University of Zurich, where you received your 'Venia Legendi'. After moving to ETH and becoming a Professor and Chair of the Department of Mathematics there, you kept in touch with the insurance industry, and in particular Swiss Re – you served on the Swiss Re Board for 24 years. You also served as President of ETH and on various government committees related to actuarial issues.

What was the main inspiration in your life? What was it that kept you going to achieve all this?

HB: After returning to Switzerland, I started to work at Swiss Re. This step of my career launched me into the world of financial risk. Swiss Re was the perfect place for this encounter. There, as a young actuary, I learned how to apply my theoretical knowledge to solve concrete problems. This process of using theory to clarify practical issues is a challenging endeavour which has fascinated me my whole life. Later, at Swiss Re I also had a lucky chance to start the non-life actuarial activities. What a great opportunity to promote actuarial thinking in non-life pricing, reserving and retroceding!

As much as I liked my work at Swiss Re, I could not resist the opportunity to accept the offer from ETH to become Walter Saxer’s successor. I always liked teaching and interacting with young people. I have done that at ETH for a period of more than 30 years.

In my answer to your 2nd question, I mentioned that in the 50's and 60's stochastics (i.e. probability theory and mathematical statistics) were underrepresented in many Continental European Universities, including ETH. I have accepted the task to propagate these subjects with great enthusiasm. In particular, to bring the stochastic thinking also into actuarial science.

YK: You just said that you have always liked teaching and enjoyed interacting with students, and you also once said that teaching is part of your genes. Obviously, generations of students completed your courses. You have 25 PhD descendants.

Hans, what are the qualities and skills that you think a great teacher should possess?

HB: David Blackwell, one of my most impressive encounters in Berkeley and my favourite ideal as a professor of statistics and probability, once told the following story:

Two University Presidents were in an art exhibition standing in front of a painting of Jesus Christ. One president observed: "A great teacher!". The other replied: "Yes, but he did not publish anything!". To me, this story is a message telling that teaching means reaching out to the spirit and the heart of the audience. In a good lecture there is a feeling of understanding between the teacher and students. This feeling keeps the students going and nurtures the enthusiasm of the teacher.

YK: You are part of the global actuarial profession – you are one of your prominent figures. You are the IAA Medalist (2001), Honorary President of the Swiss Association of Actuaries, Honorary Chairman of ASTIN, and Honorary Fellow of the Institute and Faculty of Actuaries (UK), Finnish Actuarial Society and Institut des Actuaires (France).

What is an ‘actuary’ for you and what qualities and skills you think a good actuary should possess?

In particular, what role do you think mathematics should play in shaping up a good actuarial professional?

HB: The world has become more complex and many professions can no longer claim that they are the only group hosting certain skills. Actuaries, traditionally the only profession coping with financial risk and uncertainty, are now confronted with financial engineers, accountants, data scientists and quants who also use probabilistic models. In this multitude, what is then the trade mark of the actuarial profession? The best answer to this question for me is that actuaries are the "conscience of insurance". By advocating this ethical foundation, I want to emphasise that fairness, long-term sustainability and open and honest reasoning are the basis of actuarial conduct. Mathematics is a powerful tool and a very precise language to achieve these goals. It is the responsibility of each individual actuary to use it wisely.
YK: Over the last two decades or so, we have been observing signs of 'softisation' of professional actuarial qualification requirements – we have seen examples of actuarial education curricula changing towards those focusing more on soft skills rather than quantitative skills. Also, according to 2017 TheCityUK Report (London, UK), the financial services sector does not attract the best talent anymore.

Do you think there is a risk of the actuarial profession getting disrupted by newly emerging professions of InsurTech quants and data scientists and thus eventually getting evolved towards something that resembles traditional risk compliance/controling or even accounting? And if yes, what needs to be done to ensure the actuarial profession sustains in the future and continues to serve the society the way it has been serving thus far?

HB: The multitude of professions, who nowadays operate in the area of financial risk and uncertainty offers different affinities to the role of mathematics. Mathematics can be used as a solid basis or only as status symbol to impress others. The actuarial profession must clearly stand for the central role of solid mathematics. The great successes of actuarial history, like establishing a long-term analysis of financial risk and technical risk, etc., have been achieved through the use of solid mathematics. The great successes of actuarial history, like giving a rational methodology to experience rating, like modelling the financial long-term equilibrium of life insurance, like giving a rational methodology to experience rating, like establishing a long-term analysis of financial risk and technical risk, etc., have been achieved through the use of solid mathematics. Historical evidence is a success story for solid mathematics. If we continue to stand on this basis, actuaries will also serve society well in the future.

YK: Hans, you are our ASTIN legend. You were instrumental in developing ASTIN as you served ASTIN as its Vice-Chairman (1971-1972) and Chairman (1973-1974) and also as a Chief Editor of ASTIN Bulletin (1985-1985). You call yourself a 'second-generation ASTIN person', but we know that you have actually started that generation and worked closely with ASTIN’s founding fathers.

When did you first join ASTIN and what are your memories of ASTIN from those times?

HB: My first ASTIN experience was the ASTIN Colloquium in Trieste 1963. I was thrilled to meet personally with Bruno de Finetti, Jimmy Savage, Ove Lundberg, Edouard Franckx and Jan Jung, to mention just a few of the participants. Above all, I was impressed by the pioneering spirit of the colloquium as a platform for propagating the new developments of probability theory and mathematical statistics in the area of insurance. This propagation was then not generally accepted in all actuarial bodies.

Of course, ASTIN and particularly the further colloquia, in which I participated, stand for an enormous number of encounters with great mathematicians, deeply involved actuaries and cherished friends. I cannot enumerate them all, but I allow myself to name three persons who had a great influence on my actuarial thinking.

Bruno de Finetti: I worked on de Finetti’s exchangeability in my doctoral thesis. Later I discovered that he had written pathbreaking publications on the problem of risk retention (where he used mean variance optimisation, later applied by Markowitz), on the use of martingales, on the value of a company through the use of expected, discounted dividends. De Finetti was a rather introvert person; at first, he gave the impression of a shy man. But his thinking was extremely deep, and the influence of his ideas worldwide was enormous.

Bill Jewell: I have written many papers with Bill. The interesting aspect of our friendship is how we got to know each other. Bill had without knowing me discovered my early contributions to credibility theory. He immediately started to work on extensions. What a wonderful happening, when at the ASTIN Colloquium in Colchester, UK (1973) we met in person for the first time! The personal friendship that grew out of these initial contacts is one of the most valuable experiences of my life.

YK: Since its creation, ASTIN has been playing a very important role in shaping up the modern actuarial profession – most importantly, it brought in the modern concepts of probability theory and ‘legalised’ the use of the classical theory of risk in insurance.

ASTIN’s main achievement is the introduction of Bonus-Malus system, credibility theory and stochastic analysis to the insurance industry. It gave birth to the so-called generation of ‘actuaries of the second kind’ (non-life actuaries) and also paved the way for making it possible to later establish the AFIR Section and the generation of ‘actuaries of the third kind’ (investment actuaries) associated with it.

Today, whilst drawing upon the values of its brand, ASTIN continues playing the role of a pioneer by broadening its horizons and focusing on such contemporary areas of research as Integrated Risk and Capital Management, Data Science and InsurTech.

ASTIN has definitely fulfilled its initial purpose by revolutionising the actuarial profession in the second half of the 20th century. Do you think ASTIN’s new mission is now to contribute to developing the next generations of actuaries of new kind – e.g. ‘actuaries of fourth kind’ (modern risk managers) and ‘actuaries of fifth kind’ (InsurTech quants)?

Where do you see ASTIN in the future, say in 10 to 20 years from now?

HB: ASTIN stands for a very active and dynamic body devoted to serve the insurance industry on one side but also society in general. I strongly believe that this basic understanding should also be applied in the future. In particular, I would wish that mathematics remains a strong pillar of future developments. To
clarify this wish I should add that mathematics is not only a tool for calculations but a culture of thinking. Within this framework there is a wide range for evolution. Old people, like me, should not interfere with this evolution and clearly state that it is each generation’s responsibility to carry on the torch.

**YK:** ASTIN is the first and oldest section of the IAA. The IAA is currently being restructured with the intent to revisit its strategic objectives as well as change its structure to ensure it efficiently operates to achieve its strategic goals. The IAA Executive Committee recognises the fact that ASTIN and other IAA Sections continue playing an important role within the IAA by promoting the advancement of scientific knowledge and skills of the actuarial profession.

**Hans,** you once said that you would insist on applying ‘the principle of subsidiarity’ when it comes to the IAA and how it operates and engages with its sections. Could you please elaborate on this?

**HB:** The principle of subsidiarity states that in any social organisation decisions should be taken at the most immediate (lowest) level competent to take this decision. More directly: upper levels should only decide, where the competence of the lower level is lacking. This principle of subsidiarity belongs, for example, to the basic values of the European Community.

As far as the IAA is concerned, I should recall that in 1998 it was restructured in a fundamental way. From a (rather loose) association of individuals it was changed into an association of associations. The change was prepared by a task force which I chaired. It was by no means easy to convince all national actuarial associations to accept the fact of a new “upper level”. The advocacy of the principle of subsidiarity made a consensus possible. At the IAA meeting in Zurich in 2015, Rob Brown, then president of the IAA, gave a presentation, where he explicitly referred to the principle of subsidiarity. I strongly believe that this principle should also apply to the relations between the IAA and its Sections. Without the implied flexibility, ASTIN would have hardly had a chance to develop as prosperously.

**YK:** What do you think attracts people to ASTIN today? Can you please tell us what we do well, and what should be improved?

**HB:** Yuriy, I am very impressed how the present ASTIN Board under the chairmanship of Frank Cuypers is managing ASTIN. I hope that this standard of leadership, that you have achieved, will bear fruit and has a long-lasting effect on the future development of ASTIN.

**Hans,** at the end I would like to ask you a few blitz questions.

**YK:** What is your favourite book of all times and what do you read these days?

**HB:** Johan Huizinga “Homo Ludens”, Fritz Stern “Der Traum vom Frieden und die Versuchung der Macht”.

**YK:** If “… excellence is not a skill …”, what is it then, if you have to use your own words?

**HB:** Excellence is a perspective from the outside.

**YK:** Your favourite actuarial joke?

**HB:** No favourite.

**YK:** Your favourite destination?

**HB:** California.

**YK:** Your next ASTIN Colloquium?

**HB:** I do not exclude Paris 2020. Dominus providebit!

**YK:** Hans, I really enjoyed our conversation. Thank you again for being with us today.
TALKING WITH PROMINENT FIGURES

This interview was conducted by Yuriy Krvavych in Lausanne at UNIL on 20 February 2019.

Yuriy Krvavych (YK): Hans, welcome and thank you so much for agreeing to spend time with me today. It is my honour to be here and talk with you - a great mathematician and one of the prominent figures of the actuarial profession.

Hans Gerber (HG): Thank you very much for your kind words, Yuri. Welcome to Lausanne!

I remember when we first met in November 1997 at a Mathematical Conference at the Steklov Institute of Mathematics in Moscow. That event was organised by Prof. Albert Shiryaev (Russia).

The UNSW (Sydney, Australia) has played an important role in your life and also in the career of my last PhD student, Benjamin Avanzi. You received your doctorate from UNSW (I was one of the examiners of your PhD thesis), and Benjamin is now an associate professor at UNSW. I would have never imagined that the Secretary of ASTIN would come all the way from London to interview me. I am honoured and a bit nervous.

YK: Hans, you did your PhD in Mathematics at ETH Zurich under the supervision of Prof. Hans Bühlmann – another titan of the actuarial profession and great mathematician. That means your mathematical genealogy can be traced back to such great mathematicians as Bernoulli brothers, Euler, Lagrange, Poisson, Weierstrass, Dirichlet, Fourier, Lipschitz, Darboux, Kronecker, Hadamard, Klein, Lévy and Pólya.

I presume this must have been posing a great sense of responsibility throughout your life for you to continue the succession of generations of great mathematicians. But I also imagine there must have been something special enigmatic in your life that brought you to the world of mathematics.

Do you remember what that was and how it all started?

HG: During my time at high school I was good in mathematics without even doing much homework. So, I decided to study mathematics without having a clear idea of what I was going to do following graduation. Soon after, I discovered that if you study mathematics, you do need to do your homework. The first shock and challenge for me was the course in Linear Algebra. At that time, there were basically three job opportunities available for a mathematician: an actuary, a high school teacher, or working with computers. I decided to become an actuary, presumably working at an insurance company. At that time in Switzerland there were no professional qualifications in the form of a fellowship. So many future actuaries chose to obtain a PhD before starting practicing. It was not even possible to get a PhD in Actuarial Science. I began doctoral research in mathematical analysis, but only had a modest success in my first year. Then an important event happened: Professor Hans Bühlmann joined ETH Zurich and accepted me as his PhD student.

YK: What was the topic of your PhD Thesis and what made you dedicate your academic career to the field of
Can you please tell us a bit about this period of your life and insurance?

HG: The topic of my PhD thesis goes back to an idea of Bruno de Finetti and to some follow up papers of Karl Borch. Both were founding fathers of ASTIN. In a stock company, we assume that the goal is to maximise the expected discounted dividend payments until possible run. This was a provocative alternative to the classical ruin theory. Professor Bühlmann asked me to analyse the optimal dividend problem under the more realistic assumption that the income process of the company is modelled by a compound Poisson process.

After completing my studies, the plan was to work as an actuary at a Swiss company. In fact, I already had a contract with the largest life insurer in Switzerland. I never had the ambition of an academic career, but I did want to spend some time in the United States. I was lucky to get two separate one-year appointments – one at the University of Rochester with Julian Keston from 1969 to 1970 and another at the University of Michigan (which had a prominent actuarial programme) from 1970-1971. On my return from America, I started my job with a Swiss company. Later that year, the University of Michigan was looking for a new professor and they contacted me. So, after some serious soul searching with my wife, you know what happened next.

YK: You spent more than a decade in the US working in academia, and here I am referring to your professorship at the universities of Rochester and Michigan. There you were collaborating with the US Society of Actuaries (SOA) and risk and insurance scholars from the Huebner Foundation for Insurance Education. This resulted in you contributing to writing these two celebratory books:

- ‘Actuarial Mathematics’ – the SOA textbook that you co-authored with Bowers, Hickman, Jones and Nesbitt
- Your monograph ‘An Introduction to Mathematical Risk Theory’ (published by the Huebner Foundation)

The two gems – the first one remained the most popular and prescribed textbook for professional actuarial exams for decades; and the second one presents the Risk Theory in the new original way by combining the traditional Cramér-Lundberg’s theory of risk with de Finetti and Borch’s ideas of insurance economics and also by bringing in the concept of martingale and linking the risk theory with financial mathematics.

Can you please tell us a bit about this period of your life and breakthroughs in your research?

HG: My family spent wonderful years in Ann Arbor, Michigan. I was an Associate of the SOA. But, instead of taking the fellowship exams, I spent my time and energy on research. Working on the Actuarial Mathematics textbook was a real learning experience for me (and perhaps for the other four authors). We met regularly and mostly on weekends. There was an exchange of ideas and also of opinions, sometimes about educational details.

In contrast, An Introduction to Mathematical Risk Theory monograph was a lone ranger project. Luckily, David Cummins gave me some valuable advice.

I enjoyed teaching in the US. Actuarial courses prepared the students for passing the professional exams, and the students were fully motivated in view of this common goal.

The next soul searching in my life took place in 1981, when I received an offer from the University of Lausanne, which I accepted. After my return to Switzerland, Hans Bühlmann encouraged me to write a concise book about Life Insurance Mathematics. On the cover page of the first edition, the premium is presented as the sum of a squirrel and an umbrella, illustrating the decomposition of the premium into the savings and risk components. Did actuaries anticipate Doob’s decomposition theorem? In that regard I am most grateful to Dr. Walther Neuhaus (Oslo, Norway) and Professor Henk Boom (University of Manitoba) for the English translation and to Professor Sam Cox (Georgia State University) who contributed with the exercises for the later editions.

After my visits at the University of Manitoba, I was (and still am) working together with Professor Elias Shiu (now at the University of Iowa). The most cited papers in a series of joint papers are “Option Pricing by Esscher Transforms” published in the last volume of the Transactions of the Society of Actuaries (TSA) and “On the Time Value of Ruin” published in the North American Actuarial Journal (NAAJ).

YK: You are co-founder of IME (Insurance: Mathematics and Economics) – the forum of actuarial academics with the interest in risk theory and insurance mathematics and economics. You are also one of the founding editors of the IME Journal.

Can you please tell us a bit about this, and the role IME played in your career?

HG: The IME Journal was founded by three Belgian Professors, Marc Goovaerts, Etienne De Vijlder and Jean Haezendonck. Before the first issue was published, they had asked me to join the editorial team. The idea was to have a journal that was mostly aimed at the international academic community. The same need was sensed in North America, where several years later the TSA was converted into the NAAJ. Today IME Journal is highly ranked. This matters for academic promotions. Since 1997, the IME International Congresses are held annually and typically at universities with actuarial programs.

It is beneficial to have several journals with different editors in the field – ASTIN Bulletin, IME Journal, Scandinavian Actuarial Journal, NAAJ, European Actuarial Journal, etc. This is a good protection against monoculture.

YK: You were holding the position of Professor and Head of the Department of Actuarial Science of the University of Lausanne from 1981 to 2009 and have ten PhD descendants. You are also the founder of the International Actuarial Summer School at the University of Lausanne.

Do you like teaching and what role it played in your research career? What is required to become a great teacher?

HG: When I arrived in Lausanne, there was the Institute of Ac-
TALKING WITH PROMINENT FIGURES

I am juggling with 8 apples. [ed.: YK demonstrates how he can do that].

HG: Yes, I can. [ed.: YK demonstrates how he can do that].

HG: Great! I can easily juggle 2 apples. But I can also easily beat your maximum number – I can juggle 8 apples, and here is how. [ed.: HB pulls two 4 x packs of apples in a plastic packaging out of his bag and starts juggling with the two packs]. As you can see, I am juggling with 8 apples.

I anticipate the introduction of a ban on the use of plastic in the not too distant future. There goes the trick with the apples! Here is an idea of how to save it. Replace the two packs of apples with sugar cubes that come in two cartons, each containing 200 sugar cubes. Thus, instead of juggling 8 apples, we now juggle 400 sugar cubes! What a quantum leap!

HG: I am very glad you ask me this question about ROLEX. Let me show you something about recent progress in probability theory:

Let \((\mathfrak{w}, \mathcal{F}, P)\) be a probability space.

It is difficult to imagine actuaries being involved in the 1968 movement. Perhaps in a specifically actuarial 1968 movement? Then this would be ASTIN. In any case, ROLEX and ASTIN are mysterious names associated with good quality. But ROLEX is more about the tradition, whereas ASTIN is more about the originality.

HG: I am very glad you ask me this question about ROLEX. Let me show you something about recent progress in probability theory:

Let \((\mathfrak{w}, \mathcal{F}, P)\) be a probability space.

YK: Hans, you are known for your incredible sense of humour. There is an interesting anecdotal story about your involvement in the preparation of ASTIN Colloquium in Zurich in 2005.

HG: Do you really want to know about that? On the day following March 31, 2005, Paul Embrechts learned from 'reliable' sources that for good reasons, the ASTIN Colloquium 2005 in Zurich had to be postponed. An emergency meeting between Paul, Hans Bühlmann and Marc Chuard (at that time President of the Swiss Association of Actuaries) followed. The problem was solved when Hans Bühlmann’s wife Gerdi told the three men to check the date in the calendar. Would you like to know how Paul got his revenge on me? Every year on April 1 I expect...
something ‘equally entertaining’ from him. I have been afraid of answering the phone or opening letters. But every time there is nothing. This is Paul’s revenge.

YK: What attracts you to ASTIN today? Can you please tell us what you think we do well, and what should be improved?

HG: First of all, my sincere congratulations to the new format of the Annual Report of ASTIN. Another quantum leap, indeed! The ASTIN Bulletin is a success story, in spite of its name.

ASTIN Colloquia are a fantastic forum for both academics, especially students and young researchers, and practitioners to meet and exchange ideas. I wish the colloquia are more affordable and accessible for academics to attend. How about resuming having some of the colloquia on university campus? In terms of style and format, these days, ASTIN Colloquia are ranging somewhere between International Congresses of Actuaries and IME International Congresses. Quo vadis?

YK: Where do you see ASTIN in the future, say in 10 to 20 years from now?

HG: I am perhaps old enough but certainly not wise enough to give you a good answer. One thing I would perhaps suggest is to get China more involved in ASTIN. This region has a lot to offer. How about having ASTIN Colloquium in China? Incidentally, Astin Tagh is a mountain in China. Nomen est omen?

YK: Hans, at the end I would like to ask you a few blitz questions if that’s ok with you.

HG: Yes, sure.

YK: How would you briefly describe Hans Gerber?

HG: In English? That’s easy: John Tanner (Hans = John and Gerber = Tanner). This has some advantages. For example, the Gerber-Shiu function now becomes the Shiu-Tanner function, which better reflects the merit of my favourite co-author.

YK: What is your favourite book of all times and what do you read these days?

HG: Feller’s Volume 2 was important for me. A good friend just gave me “Love & Math: The Heart of Hidden Reality” by Edward Frenkel (Professor of Mathematics from Berkley) and I look forward to reading it.

YK: If “… excellence is not a skill …”, what is it then, if you have to use your own words?

HG: An accomplishment.

YK: Your favourite actuarial joke?

HG: Charly Hewitt’s answer might be: q – 1 = p (with an appropriate story). To avoid hurting somebody’s feelings, I like to make jokes about myself. I once asked a group of students (a large calculus class of 300 students) what the difference was between me at the age of 26 and now.

Here is the answer – at 26: the (doctoral) thesis, and now: the two (hip) prostheses.

YK: Your favourite destination?

HG: Hong Kong, without hesitation.

YK: Your next ASTIN Colloquium?


YK: Hans, I really enjoyed our conversation. Thank you again for your time today.

HG: It was my great pleasure. I too enjoyed our conversation.
Harry J. Loman Professor of Insurance and Risk Management and Director of the Actuarial Science Program of the Wharton School of the University of Pennsylvania. Was elected Honorary Chairman of ASTIN in 2008, after serving ASTIN as Treasurer (1982-1997), Vice-Chairman (1998-2007) and Chairman (1985-1990 and 2002). His books on bonus-malus theory has won book-of-the-year awards in Europe (The Geneva Association) and in the USA (American Risk and Insurance Association), and have been translated into French, Spanish, Russian, Korean, Japanese, and Mandarin. He has lectured in 86 countries.

ASTIN was founded in New York on October 16, 1957. The first ASTIN Colloquium took place in La Baule, a charming seaside resort in Western Brittany, on June 11th and 12th, 1959. The only topic of the meeting was bonus-malus theory. According to ASTIN legend, when Général de Gaulle was elected President of the 5th Republic in December 1958, he instructed French insurance companies to start using bonus-malus (BM) systems. French actuaries, needing all the help they could get, then convened the first ASTIN meeting, and La Baule became known as the birthplace of BM theory.

A wonderful story, but is it a true one? Did De Gaulle, as one of his first tasks, really phone the Institut des Actuaires Français to require insurers to introduce BM rating? An invitation to lecture at the International Conference on Risk Analysis, Ruin Theory, and Extremes, held in La Baule in 2016, gave me the opportunity to play a role of an actuarial Sherlock Holmes (or, given my Belgian citizenship, an actuarial Hercule Poirot) and investigate this legend.

I was surprised to discover at the library of my university a full collection of Transactions of the International Congress of Actuaries starting from the very first congress held in Brussels in 1895. Browsing through these Transactions proved to be a captivating exercise, leading to three main conclusions:

(a) Before the World War II, you could be an actuary without knowing your Greek alphabet. Papers mostly contained extensive tables, no formulae.

(b) Until the late 1950s, papers were published in four languages, equally represented: English, French, German, and Italian. Early issues of the ASTIN Bulletin contain papers in English and French (with a single paper in German). Thirty years later, English took over as the only acceptable language for ASTIN.

(c) Fascinating articles, dealing for instance with the insurability of patients affected with tuberculosis, or rating factors for people returning from colonies, convey a message to all of us: what we are doing now with much confidence can possibly become irrelevant during our career. We need to constantly re-tool ourselves.

Reading these Transactions and my complete collection of the ASTIN Bulletin led to definite conclusions: 53 actuaries from eight countries attended the La Baule meeting. Eleven papers were presented, nine in French, two in English. Many of the papers were published in issue 1.3 of the ASTIN Bulletin, with some French contributions appearing in the “Bulletin de l’Institut des Actuaires Français” and the “Bulletin de l’Association des actuaires diplômés de l’Institut de Sciences Financières et d’Assurances.” The papers presented (with translated titles) were:
• E. Franckx (Belgium): Bonus theory.
• F. Bichsel (Switzerland): A method for calculating an adequate refund for years without claims.
• P. Delaporte (France): Some problems of mathematical statistics posed by motor insurance and no claim bonus.
• P. Depoid (France): Study of the frequency and of the no-claim bonus in a portfolio “tous risques modernes”.
• J. L. François (France): Bonus and extra premium in motor insurance; their effect on administrative processes with particular reference to billing operations.
• Prof. Fréchet (France): Essay on a study on series of casualties considered as a stochastic process.
• D. B. Martin (Canada): Automobile insurance: the Canadian accident-free classification system.
• C. Philipson (Sweden): The Swedish system of bonus.
• J. Sousselier (France): Bonus, deductible and extra premiums for claims.
• P. Thyrion (Belgium): Contribution to the study of no claim bonus in motorcar insurance.
• Thépaut (France): Political and administrative aspects of no claim bonus.

Reading these ground-breaking papers left me very humbled. Having worked extensively on BM, I felt that I did not contribute as much as these eleven pioneers did introducing all the tools commonly used today in BM analysis and figuring out most practical issues. E. Franckx models BM systems using Markov Chains (called, with a hint of French pride, “Chains de Markoff – Poincaré”). F. Bichsel uses Bayes theorem to calculate posterior premiums. P. Delaporte introduces the negative binomial model. C. Philipson provides an early model for bonus hunger. These early ASTIN members built the foundation of BM theory in a two-day meeting. I felt that my contributions in this area were not much more than a slight improvement of their innovative work.

The practical article of A. Thépaut demonstrates that participants of the inaugural ASTIN Colloquium had figured out the pros and cons of BM systems. Thépaut lists such advantages as:

1. The insured is encouraged to drive prudently.
2. The insured is encouraged not to notify claims of minor importance.
3. The frequency of claims in the majority of categories is too small to award significant bonuses.
4. The distribution of the bonus involves general expenses out of proportion with the amount distributed.
5. The institution of BM should be accompanied by a tariff increase, considering the expenses of the bonus and the cost of its management.
6. For commercial reasons, the bonus will soon become a definite premium reduction, independent of the notifications of claims.
7. The application of BM is a cause of conflicts between the company and the insured.
8. It is abnormal to distribute bonuses in a line of insurance generally in deficit.
9. In order to be equitable, the bonus should include graduated rates taking into account the frequency of claims, which further complicates the administration of BM systems.
10. The auto insurance market is sufficiently competitive to enable supervisors to allow companies to set premiums and policy clauses freely, without the need of a government-imposed BM.
11. BM may lead to reprehensible behaviour by insurers (hiding premium increases under the disguise of a BM system).

Evidently, Thépaut believes that disadvantages far outweigh advantages. He hates the very idea of implementing BM, but he knows that he is going to lose this fight, due to the attractiveness of the BM idea among consumers. The time for BM arrived when the rapid expansion of Western economies after the WWII had made cars affordable for many. I witnessed the popularity of BM in my own family, as my father worked for an insurance company that launched the first BM system in Belgium in 1962. Actuaries of the company had figured out that the introduction of BM would decrease premium income, and consequently offered consumers a choice: either a “flat” premium, or a BM with an initial premium that was 20% higher. Over 95% of policyholders chose the BM, and the company doubled its market share within three years. Supervisory authorities then made this BM compulsory for all companies. Clearly, this early enthusiasm for BM rating by policyholders has faded away over the years, up to the point that insurers now feel compelled to weaken the effects of accidents by offering protection clauses or even entirely forgiving the first accident. Why did consumers become so risk-averse over the years?

Did my actuarial detective work succeed? Did De Gaulle really request French insurers to introduce BM? The answers lie in Thépaut’s article. As was the case in many continental European countries, French insurers were using government-approved premiums. Motor insurers had a bad year in 1958, and consequently requested a tariff increase. Supervisors approved it but linked their agreement to the implementation of BM in order to diminish negative public reaction. Did De Gaulle himself convey this message to French insurers? No, unfortunately for the ASTIN legend, as Thépaut constantly refers to supervisory authorities, never to the President himself. The Colloquium in La Baule took place because it was the right time for BM to be introduced, and not because the President of France requested it.
TALKING WITH PROMINENT FIGURES

Dr. Greg TAYLOR

Greg Taylor is a Fellow of the Institute and Faculty of Actuaries, and a Fellow of the Institute of Actuaries of Australia. He holds a doctorate in actuarial mathematics and a doctorate in theoretical physics. He is an Officer of the Order of Australia and has been awarded a Gold Medal by the Institute of Actuaries of Australia, and a Finlaison (Silver) Medal by the Institute and Faculty of Actuaries.

DR. GREG TAYLOR:
SOME ASPECTS OF ASTIN HISTORY

Although I spent the eight years 1969-1976 as an academic, I practiced as a consulting actuary for 35 years, the major part of my career. During these years, I endeavored to maintain contact with academia, at different times serving terms as a professional associate at the University of Melbourne and University of New South Wales.

ASTIN has been a lynchpin in the maintenance of this contact, as it has provided an international forum for the discussion of both theoretical and practical developments in general insurance. Most of the greatest minds of this field have participated in this forum at one time or another.

Attendance of semi-academic conferences does not usually feature high among the priorities assigned to a consultant, and so my attendance of ASTIN Colloquia over the years tended to be haphazard, but I did manage successful argument of my case reasonably often. The ASTIN section of the IAA website lists a total of 45 Colloquia up to and including 2017, of which 36 fell within the period of my own activity in the field, and I managed attendance of 18.

My tender age had precluded my involvement in the tumultuous years of ASTIN formation, recorded in the memoirs of Gunnar Benktander and Paul Johansen. My first contact with ASTIN occurred at the 1973 Colloquium, conducted at the University of Essex, UK, complete with accommodation in student quarters. Colloquia were very much less formal in those days. I well remember Hans Bühlmann clattering down the stairs of the lecture theatre in the middle of a participant’s presentation to expand on some finer point which the lecturer had not done justice.

Whereas today’s official dinners typically include segments of highly professional entertainment, the 1973 version consisted of a sing-along, led by Bobbie Beard, and always commenced (I gathered) by Bobbie’s rendition of “Ten Green Bottles”. This phase of the evening proceeded in merry style until someone realized that, unusually, an Australian was present, and I was prevailed upon to mount the stage for a solo performance of “Waltzing Matilda”.

That confronting experience aside, my attendance established a number of valuable contacts, which enabled me to communicate with the giants of the profession over subsequent years. My sabbatical year fell due in 1975, and included a period working with Bobbie Beard in the UK Department of Trade, and a period working jointly with Hans Bühlmann at the ETH and Gunnar Benktander, Baruch Berliner and Hans Schmitter at Swiss Re in Zurich. In the same year Bill Jewell visited me at Heriot-Watt University in Edinburgh, and I visited Hillary Seal in Lausanne.

The same year saw an ill-fated attempt of mine to attend the ASTIN Colloquium in Portugal. The journey to ASTIN was intended to cover 10 weeks, commencing in the UK, my entire family of four travelling and living in a slightly dilapidated motor home, covering thousands of kilometres of Europe, whose climax was to be a journey through Spain to the southern Portuguese border, and on to the Algarve.

Although this odyssey produced many hilarious adventures, the humour evaporated when our travels finally brought us to the Spanish side of the Portuguese border, only to reveal that the Spaniards, annoyed by some of the anti-Franco graffiti posted by the Portuguese on the Spanish side, had closed the border one or two days ahead of our arrival. We waited several days in vain for the border to open, and, in a masterpiece of anti-climax, our odyssey concluded in ignominious retreat. Later, our ASTIN friends made haste to inform us that we had missed one of the best colloquia ever.

In the late 1970s, I formed an association with the “Belgian group”, consisting of Marc Goovaerts, Etienne De Vylder, Nelson De Phil and Jean Hazendonck. In addition to enduring friendships, the swapping of ideas with this group generated a fertile period of research for me. The journal Insurance: Mathematics and Economics was born under the stewardship of this group and one or two others.

An interesting series of conferences, somewhat related to ASTIN, in content at least, commenced in 1986. The principal organizers were Dave Cummins and Richard Derrig from the US, Teivo Pentikäinen from Finland, and Stewart Coutts from the UK. The series consisted of only three conferences, over the years 1986 to 1993, but their effects were profound.

The US is marked by a species of economist known as an “insurance economist”. These are trained in economics, and then specialise in insurance matters. One can find their publications in the Journal of Risk and Insurance, and like journals. They are usually not actuaries. The first of the said conferences, in Philadelphia, brought this group and actuaries face to face for the first time.

Initially, each group was contounded by the other. It is far to say that, over the next one or two days, the two developed at times into warring factions, each seeking to defend its own approach. As time passed, and further conferences ensued, it gradually dawned on each that the other had value to offer. This produced a substantial expansion of the actuarial sphere of interest (and that of the economists).
Thomas Mack is a Fellow of DAV (Germany). He has built his professional career working as a Chief Actuary at Munich Re in Munich. Thomas developed the famous 'Mack Model' that is used to derive the non-parametric statistical estimate of reserve variability. Thomas is an active member of ASTIN and a great contributor to the columns of ASTIN Bulletin. He has been awarded the Hachemeister Prize twice, in 1994 and 2009.

**DR. THOMAS MACK: MY ASTIN MEMORIES**

In 1974, when I started working as a mathematician at Munich Re, Munich, I was the first mathematician there who had to work exclusively in non-life. Of course, there were many life actuaries, but they were not easily available for other branch departments (Fire, Motor, Liability and so on). In the 1970s, this situation was typical for many continental European countries. Mainly the reinsurance companies employed one or two non-life actuaries, there was no specific actuarial education available and colleagues with non-life experience almost did not exist. Any examinations for the admittance to the German Association of Actuaries (GAA) had not yet been introduced; a mathematician working in an insurance company was simply called an 'actuary'. Thus, I had to find the necessary knowledge by myself. At least, my life colleagues had a good library including the books by Beard/Pentikäinen/Pesonen and Bühlmann from 1969 and the ASTIN Bulletins starting with volume 5 of 1969. But even there, I found only a few parts that really helped me in the daily practice, most were rather academic. Anyhow, this was the best that was available to us, and over a long time, people in a similar position like me were envious for not having the old volumes of the ASTIN Bulletins, which only started to be published on the internet in the 90s.

My bosses at the time, which were not mathematicians, frequently mentioned that there existed a long-standing Casualty Actuarial Society (CAS) in the US, so I decided to visit their Spring Meeting 1977 in Washington DC. I did not know that it was held in conjunction with an ASTIN colloquium, but thanks to this nice coincident I was introduced to ASTIN colloquia. For me, this was the beginning of a long and happy relationship. I took part in all subsequent ASTIN colloquia until my retirement in 2006 with the only exception of three colloquia which took place outside of Europe. I enjoyed these colloquia very much, the place where practitioners and academics discussed solutions for practical problems and applications of theoretical developments. It was exactly what I was looking for in my whole professional career. In addition, it was easy to talk with other participants and to exchange thoughts on problems and procedures even during excursions, meal breaks and receptions. Thus, my first participations in the ASTIN colloquia were extremely helpful to my own education. The atmosphere was like at university – titles did not matter. Thus, the personal contacts I made there accompanied me for the rest of my professional and personal life. Among my personal ASTIN friends there are such famous names: Alois Gisler, Hans Bühlmann, Björn Sundt, Gunnar Benktander, Giovanna Ferrara, Gary Patrik, Gary Venter, Paul Embrechts and so on. Some of them together with a few others and myself are members of the RESTIN group, founded by Gunnar Benktander in 1974, which I was invited to join in 1991. This group not only consisted of some frequent participants of ASTIN colloquia, but also organised its own yearly meetings of the same kind but within a much smaller and more familiar circle of about a dozen of actuaries. There, in 1992, was the last time I met Charles Hachemeister, one of the few US actuaries regularly visiting ASTIN colloquia, and whom I had always admired for his brilliant argumentation and his excellent sense of humor. Unfortunately, although being rather young, he suffered from brain cancer and died shortly after. In his memory, the CAS established the Hachemeister Prize, which is awarded every year to an ASTIN paper with particular relevance to US actuaries. I am happy that two of my papers were given this honour (in 1994 and 2009).

In Germany, the GAA started organising actuarial examinations in non-life insurance only in 1989. Those first ones had only a very few exam candidates. Of course, actuarial beginners were in the same situation I was in at the beginning of my professional life, i.e. there was still a great need for an actuarial textbook. Thus, I started working on such a textbook that would be based on a stochastic approach. I put together all my knowledge and non-life insurance experience to cover such topics as Basics, Tariff Calculation, Reserving and Reinsurance. A lot of research had to be done to fill in many existing gaps. This resulted in producing papers for ASTIN Bulletin. One of them was dedicated to a stochastic model for the Chain Ladder method, which later became known as ‘Mack Method’. Six years and 400 pages later I was finally satisfied with the results of my research, and in 1996 the textbook "Schadenversicherungsmathematik" was published. It has been serving as a basis for the actuarial non-life examinations in Germany.

To summarise, I would say that "ASTIN was my life" or even sharper "Non-Life was my life". Nowadays, such life of a pioneer seems not to be feasible anymore, but the practice of non-life insurance is constantly presenting new challenges and ASTIN is still offering young actuaries a professional life filled with fascinating problems and great friends from all over the world.
MESSAGE FROM
THE TREASURER

The full year 2018 unaudited reports for ASTIN were received from the IAA on February 14th, 2019. The audited accounts usually will not differ substantially.

Good news and bad news!

Good: The 2017 deficit of 65,714 CAD stayed well within the budgeted deficit of 80,330 CAD.

Bad: It should have been even 12,000 CAD less! The total income of 102,436 CAD (2017: 91,193 CAD) was 27,136 CAD higher than budgeted. Increased membership (from 1,340 members in 2017 to 1,383 members in 2018) contributed 4,050 CAD to this development while the majority of 11,780 CAD came from (unbudgeted) book sales and other revenues. Also, the interest and investment revenue of 19,015 CAD was nearly twice the expected amount. The flip side of the coin was another unrealised investment loss of 14,802 CAD (2017: 13,786 CAD) which again wiped out the majority of the interest and investment revenue.

The overall expenses (including unrealised investment losses and section administration) were 168,061 CAD (2017: 107,959 CAD) which is 12,521 CAD more than budgeted. While many positions were balancing each other (bursaries were 30,852 CAD less while colloquia and other initiatives together were 30,580 CAD higher), Not budgeted were the expenses for the materials prepared for the ICA 2018 like the ASTIN Annual Report and the ASTIN video which appeared to be very good investments as we could welcome more than 100 new ASTIN members in 2018.
The overall membership number, however, increased by 43 to 1,383 only as we had to suffer a decline in membership rates in certain countries (e.g. France lost 27 members, The Netherlands 17 and Japan 11). Nevertheless, we are convinced that our continued transparency about the value proposition of ASTIN will help us to increase our membership base further.

**BUDGET 2019**

During 2019 and over the following four consecutive years we will continue to spend the excess of ASTIN funds for meaningful purposes, such as bursaries, various projects and initiatives. The budgeted deficit of 188,147 CAD includes 25,000 CAD of expenses for running strategic projects and initiatives including ActuView (the continuation of the VICA platform) and the local ASTIN chapters initiative. The Benin project will receive another 15,000 CAD and expenses for bursaries, especially for the IAA colloquium in Cape Town, are also set at 15,000 CAD. The amount of 50,000 CAD is budgeted for supporting the implementation of ASTIN initiatives, such as Expert Helpline, Masterclasses and GARN.
ASTIN MEMBERS

- Denmark: 173
- United Kingdom: 155
- France: 127
- United States: 119
- Netherlands: 112
- Germany: 103
- Japan: 96
- Norway: 80
- Switzerland: 73
- Sweden: 36
- South Africa: 34
- Italy: 30
- Finland: 28
- Canada: 22
- Ireland: 20
- Spain: 16
- Belgium: 13
- Israel: 13
- Bermuda: 10
- Iceland: 9
- Australia: 8
- Austria: 8
- Hong Kong: 8
- Singapore: 8
- Mexico: 6
- Portugal: 5
- Lebanon: 4
- Poland: 3
- China: 2
- Chinese Taipei: 2
- Colombia: 2
- Czech Republic: 2
- Egypt: 2
- Estonia: 2
- Greece: 2
- Guernsey: 2
- India: 2
- Kenya: 2
- New Zealand: 2
- Nigeria: 2
- Peru: 2
- Trinidad and Tobago: 2
- Argentina: 1
- Bahrain: 1
- Brazil: 1
- Cayman Islands: 1
- Chile: 1
- Costa Rica: 1
- Côte d’Ivoire: 1
- Dominican Republic: 1
- Gabon: 1
- Georgia: 1
- Honduras: 1
- Jamaica: 1
- Kyrgyzstan: 1
- Liechtenstein: 1
- Luxembourg: 1
- Macedonia: 1
- Mauritius: 1
- Namibia: 1
- Philippines: 1
- Republic of the Congo: 1
- Slovakia: 1
- Slovenia: 1
- South Korea: 1
- Suriname: 1
- Ukraine: 1
### ASTIN STATEMENT OF FINANCIAL POSITION
As at December 31, 2018

#### ASSETS

<table>
<thead>
<tr>
<th>Category</th>
<th>31 DEC 18</th>
<th>31 DEC 17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chequing/Savings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash in bank accounts</td>
<td>C$ 140</td>
<td>C$ 18,380</td>
</tr>
<tr>
<td>Cash in investment accounts</td>
<td>42,612</td>
<td>1,008</td>
</tr>
<tr>
<td>Short-term Investments</td>
<td>87,265</td>
<td>369,148</td>
</tr>
<tr>
<td>Total Chequing/Savings</td>
<td>130,017</td>
<td>388,536</td>
</tr>
<tr>
<td><strong>Other Current Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other receivables</td>
<td>10,412</td>
<td>6,033</td>
</tr>
<tr>
<td>Prepaid Expenses</td>
<td>241</td>
<td>111</td>
</tr>
<tr>
<td>Total Other Current Assets</td>
<td>10,652</td>
<td>6,144</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td>140,669</td>
<td>394,680</td>
</tr>
<tr>
<td><strong>Fixed Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Software - Cost</td>
<td>19,234</td>
<td></td>
</tr>
<tr>
<td>Computer Software - Amortization</td>
<td>(2,244)</td>
<td></td>
</tr>
<tr>
<td><strong>Total Fixed Assets</strong></td>
<td>16,990</td>
<td></td>
</tr>
<tr>
<td><strong>Other Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term investments - Bonds</td>
<td>407,761</td>
<td>446,327</td>
</tr>
<tr>
<td>Long-term investments - Stocks</td>
<td>218,962</td>
<td></td>
</tr>
<tr>
<td><strong>Total Other Assets</strong></td>
<td>626,722</td>
<td>446,327</td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td>C$ 784,382</td>
<td>C$ 841,007</td>
</tr>
</tbody>
</table>

#### LIABILITIES & NET ASSETS

<table>
<thead>
<tr>
<th>Category</th>
<th>31 DEC 18</th>
<th>31 DEC 17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deferred revenue</td>
<td>C$ 550</td>
<td>C$ 2,200</td>
</tr>
<tr>
<td>Other payables &amp; accruals</td>
<td>13,246</td>
<td>2,507</td>
</tr>
<tr>
<td><strong>Total Other Current Liabilities</strong></td>
<td>13,796</td>
<td>4,707</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>13,796</td>
<td>4,707</td>
</tr>
<tr>
<td><strong>Net Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrestricted surplus</td>
<td>836,300</td>
<td>853,066</td>
</tr>
<tr>
<td>Excess (Deficiency) of Revenue over Expenses</td>
<td>(65,714)</td>
<td>(16,766)</td>
</tr>
<tr>
<td><strong>Total Net Assets</strong></td>
<td>770,586</td>
<td>836,300</td>
</tr>
<tr>
<td><strong>TOTAL LIABILITIES &amp; NET ASSETS</strong></td>
<td>C$ 784,382</td>
<td>C$ 841,007</td>
</tr>
</tbody>
</table>
# ASTIN STATEMENT OF REVENUE & EXPENSES - ACTUALS VS. BUDGET

For the twelve months ended December 31, 2018

## Ordinary Income/Expense

<table>
<thead>
<tr>
<th></th>
<th>31-Dec-18</th>
<th>Annual Budget</th>
<th>$ Variance</th>
<th>% Variance</th>
<th>31-Dec-17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Book sales &amp; other revenue</td>
<td>C$ 11 780</td>
<td>C$ -</td>
<td>C$ 11 780</td>
<td></td>
<td>C$ 6 456</td>
</tr>
<tr>
<td>Interest &amp; investment revenue</td>
<td>19 015</td>
<td>10 000</td>
<td>9 015</td>
<td>90%</td>
<td>16 898</td>
</tr>
<tr>
<td>Membership fees</td>
<td>69 350</td>
<td>65 300</td>
<td>4 050</td>
<td>6%</td>
<td>67 300</td>
</tr>
<tr>
<td>IAA Section Fund Income</td>
<td>2 291</td>
<td>2 291</td>
<td></td>
<td></td>
<td>539</td>
</tr>
<tr>
<td><strong>Total Income</strong></td>
<td>102 436</td>
<td>75 300</td>
<td>27 136</td>
<td>36%</td>
<td>91 193</td>
</tr>
</tbody>
</table>

| **Expense**            |           |               |            |            |           |
| Amortization           | 2 244     | (2 244)       |            |            | 411       |
| Bank charges & service fees | 35       | (35)         |            |            | 1 000     |
| Bulletins              | 15 084    | 30 000       | 14 916     | 50%        | 14 474    |
| Bursaries              | 29 148    | 60 000       | 30 852     | 51%        | 24 719    |
| Gifts and Awards       | 3 259     | 5 000        | 1 741      | 35%        | -         |
| Other Initiatives      | 10 314    | 2 500        | (7 814)    | (313%)     | -         |
| Committee & Representation | -       | 1 000      | -          | -          | -         |
| Loss(gain) on foreign exchange | (904)   | -           | 904        | 1%         | 1 387     |
| Meetings               | 25 266    | 2 500        | (22 766)   | (911%)     | 8 557     |
| Office & overhead      | 39        | 150          | 111        | 74%        | 106       |
| Printing               | 5 760     | 250          | (5 510)    | (2 204%)   | 31        |
| Professional services  | 11 452    | 3 000        | (8 452)    | (282%)     | 4 063     |
| Telephone & teleconference | 2 558    | 1 300       | (1 258)    | (97%)      | 1 380     |
| Travel - general       | 13 808    | 3 000        | (10 808)   | (360%)     | 5 791     |
| Web seminars           | 833       | 250          | (583)      | (233%)     | 267       |
| **Total Expense**      | 118 898   | 108 950      | (9 948)    | (9%)       | 61 186    |

| **Net Ordinary Income** | (16 461) | (33 650) | 17 189 | 51% | 30 007 |

## Other Income

| **Unrealized gain/loss-investment** | (14 802) | (15 000) | 198   | 1%  | (13 786) |
| **Section Administration**         | (34 451) | (31 680) | (2 771) | (9%) | (32 987) |
| **Net Other Income**               | (49 253) | (46 680) | (2 573) | (6%) | (46 773) |

## Excess (Deficiency) of Revenues Over Expenses

| **Ordinary Income/Expense** | C$ (65 714) | C$ (80 330) | C$ 14 616 | 18% | C$ (16 766) |
Our vision is for ASTIN to serve the non-life insurance industry globally by ensuring that, when it comes to providing insight and finding solutions to quantitative risk management issues, our members are trusted and in demand for their valued professional skills. To realise this, we envisage continuing our current fruitful activities in the long run, and plan the following in the near future:

- Complete the development of ‘Expert Helpline’, an online facility for addressing members’ queries, and launch it in 2019.

- Work further to complete the development of ‘ASTIN Masterclasses’, a series of online professional education courses on different risk and non-life actuarial topics, with the intent to launch the first online masterclass by the end of 2019 and schedule other classes in the series over the period between 2020 and 2022.

- Continue developing our GARN initiative with the intent to launch it in 2020.

- Continue strengthening ASTIN’s presence around the globe in local regions by helping establish ASTIN local chapters.

- Continue cooperating with other professional forums of risk and insurance professionals outside the IAA who remain relevant to ASTIN’s mission and vision, and also to the work we do.
FUTURE ASTIN COLLOQUIA

2020

PARIS
France

2021

ORLANDO
FLORIDA
THE SUNSHINE STATE

2022

SYDNEY
THE ETERNAL CITY

2026

TOKYO