rilem

A reflection on 75 years
of networking in construction
materials and structures
"Distinguished, Relevant and Enduring"

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FOREWORD FROM THE RILEM PRESIDENCY

There are many things that make RILEM unique. For those who know RILEM well, the list may be endless. Here, however, we would like to focus on three principal features. These are the characteristics that have been at the core of RILEM since its formation in 1947, and have grown in importance over the last decades.

CONTINUITY. RILEM has the distinctive feature of having presidents who are actively supported by their predecessors and successors, with their mandate of three years extended to a nine-year commitment including their terms as vice-president and past president. In recent years such close collaboration has been crucial for implementing and driving forward ideas and strategies. We metaphorically stand on the shoulders of giants, who have been leaders in our history. We steadily progress together, building on the strength of the foundation laid by them.

A CLEAR VISION. RILEM continuously evolves to integrate new technical frontiers, the interests of its members, the requirements of society, and other challenges. This evolution is implemented through a strategy plan that is regularly revisited. The meeting in Brussels in 2014 was a milestone for the three of us. After that meeting the implementation of the "RILEM Road Map" has quietly but firmly gained momentum and we are honoured to have been witnesses to these changes, working together along a path that, due to circumstances, was not always straight but has always focused on the same goals.

OPEN ACCESS. RILEM's main mission is to encourage the transfer and application of knowledge worldwide. The scientific documents produced by the rigorous and voluntary work of our members cannot be appreciated enough. We are an organisation that does not profit financially from the dissemination of our publications, and we are proud of this! Our open-access policy means that we ensure that all can benefit from our publications. Furthermore, we welcome into the RILEM family, young members, academic staff, industry representatives and anyone who can contribute to the advancement of knowledge related to construction materials, systems and structures.

We believe these three characteristics are important cornerstones for RILEM; they have marked our 75-year history and provide a sound foundation for the future.

In this anniversary booklet, we are pleased to present colourful glimpses of our history and our ambitions for the future. We do hope you will enjoy reading this volume, which includes many an interesting and touching story.

Last but not least, we would like to express our heartfelt gratitude to Mark Alexander, Past President and Editor of this 75th anniversary booklet for RILEM. He took the responsibility on his shoulders and has done a remarkable job. As we stated earlier, we stand on the shoulders of giants who have led us in the past, and Mark has demonstrated the strength and breadth of his shoulders.

Prof. Ravindra Gettu, *RILEM President, 2018–2021*
Dr Nicolas Roussel, *RILEM Vice-President, 2018–2021*
ir Johan Vyncke, *Immediate Past President, 2018–2021*
March 2021

Prof. Ravindra Gettu, RILEM President, 2018–2021 (centre) flanked by Dr Nicolas Roussel, Vice-President (left) and ir Johan Vyncke, Immediate Past President (right)

Prof. Mark Alexander

PREFACE

It has been a rare privilege to be involved in the writing and production of this "RILEM History" booklet. In September 2015 the RILEM Bureau decided to produce a publication that would bring RILEM's history up to date, since the last booklet on RILEM's history and development was produced in 1997 (and an even earlier booklet was produced on RILEM's early history, in 1977).

Originally, this assignment was to be undertaken by Prof. Wolfgang Brameshuber from RWTH Aachen University. Sadly, Wolfgang passed away before he could commence the work, which would have had a strongly academic flavour (recruiting history students at Aachen to do most of the research and writing).

Subsequently, the task of lead author and editor passed to me, but this change removed the possibility of a serious research project being undertaken. Also, I suggested that the booklet should take a distinctly "people focus", trying to capture the human side of RILEM by soliciting personal anecdotes and reflections from RILEM's varied membership. Nevertheless, key historical developments since the turn of the present century have also been recorded and briefly elaborated.

The booklet consists of three main parts, together with an introduction and a conclusion. The parts deal with RILEM's initial formation, developments and impact in the new millennium, and RILEM people and their stories. The conclusion looks to the future of RILEM and its ongoing development. Each part can be read on its own, but a reading of the whole will give a rich picture of the RILEM association as we know it today.

The editorial and production team certainly hope that all RILEM members, as well as those from the wider scientific community, will enjoy reading this booklet and appreciate their reminiscences of RILEM, as well as looking with anticipation to the future!

ACKNOWLEDGEMENTS

I am indebted to the following people for their invaluable help in researching, compiling, writing and producing this booklet:

- Elly Yelverton, who did most of the research and preparation of the written material, as well as sourcing illustrations, compiling the appendices, and numerous other tasks,
- Johan Vyncke, for enthusiastically supporting the project along the way, and for providing input at critical junctures; also for providing material for the section on RILEM Impact in Part II, and the conclusion,
- the RILEM SG office, viz. Judith Hardy, Anne Griffoin and Fanta Sylla, for being always ready to assist and provide the necessary links, sources and information. Judith in particular managed the production process towards the latter stages of the project,
- Daniela Ciancio, the RILEM Implementation Manager, for great assistance in compiling the Impact section in Part II, and for general critical input,
- the RILEM Presidency, viz. Ravindra Gettu, Nicolas Roussel and Johan Vyncke, for their constant support,
- several past presidents and key office-bearers who provided input and critical reviews of the material; in particular Arnon Bentur, Peter Richner, Geert de Schutter, Carmen Andrade and Sid Mindess,
- Lynette Alexander, my long-suffering wife, who proofread much of the material,
- and, most importantly, to all the RILEM members who took the trouble to send in their contributions by way of personal reflections, which form the most important part of this booklet. Merci beaucoup!

Mark Alexander
Cape Town, March 2021

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Dr Robert L'Hermite

RILEM

Réunion Internationale des Laboratoires et Experts des Matériaux, systèmes de construction et ouvrages/International Union of Laboratories and Experts in Construction Materials, Systems and Structures

The year 1947 was a momentous one for professionals, practitioners and researchers concerned with building and construction. In that year, RILEM was born in Paris, France, when Dr Robert L'Hermite, then director of the Laboratoire du Bâtiment et des Travaux Publics, called together 16 participants, mainly from Europe, but also from the USA, Brazil and Argentina, for a crucial meeting in Paris. These individuals were mostly the heads of national materials laboratories in their home countries, and therefore had key roles in the re-construction that would be needed after the Second World War. L'Hermite put to the participants at this meeting that it was necessary to form an association of directors from testing and research laboratories, to provide the expertise and technical advice needed following the terrible destruction of European and other cities during World War II.

The original French acronym "RILEM" stood for "Réunion Internationale des Laboratoires d'Essais et de Recherches sur les Matériaux et les Constructions" (International Union of Testing and Research Laboratories in Materials and Constructions). The purpose of the new organisation at that time was to foster international cooperation between testing and research institutes of the building industry. In 1949, at a meeting held in Italy, guidelines were drawn up to ensure that RILEM was run efficiently as an association. By 1954 the by-laws and statutes had been put in place.

Dr L'Hermite and his colleagues were certainly inspired to form what would become such an influential and highly significant association over succeeding years. Since 1947 RILEM has grown immensely in stature and status, and now forms an integral part of research and practice in the field of construction materials and structures around the world.

Today RILEM has modified the original acronym, in order to emphasise the association's dominant focus, not only on matters technical, but also on its people, which ultimately make the organisation what it is and what it has accomplished. The new focus also encompasses its worldwide activities, covering some 90 countries, and growing every year. As of February 2021, RILEM has approximately 2,400 members in these countries and has generated many important documents for use by researchers, for those involved in drafting codes and standards, and by industry. These arise from RILEM's core work, which harnesses the talents and expertise of world-leading scientists and practitioners. These experts collaborate in technical activities through RILEM's many previous and current technical committees, in its global educational activities through its many courses and symposia that are organised annually, and finally through its publishing activities via the highly regarded flagship journal, *Material and Structures*, and the recently launched (2016) open-access journal *RILEM Technical Letters*.

Materials and Structures

RILEM Technical Letters

The Annual RILEM Week is always a highlight and has been held since the inception of RILEM. Since 1995 it has been held in over 20 countries. Attendance at these events has grown over the years, and numerous discussions and workshops have been held and papers presented. Over the last decade, demand for such RILEM events has grown to such an extent that RILEM instituted, in March 2018, its first RILEM Spring Convention held in Barcelona, and this is already becoming a successful annual event.

At the Annual RILEM Weeks and Spring Conventions, Technical Workshops organised by the Technical Committees are held, with contributions by experts and emerging researchers alike in key research areas. Forced by the new reality of worldwide pandemics, the 2020 events were moved online, with the Spring Convention in Guimaraes, Portugal, doing this literally as the meeting opened. This also demonstrates a strong trait of RILEM – the ability to be nimble and agile, and respond quickly to changes in our operating environment. Further, all RILEM publications can be obtained online and free of charge, and thus RILEM can reach even more key people and practitioners.

1st RILEM Spring Convention 2018

PREVIOUS BOOKLETS ON RILEM'S HISTORY

Booklets on the background and history of RILEM were published as *The Thirty Years of RILEM* in 1977 and *RILEM 50 Years in the Service of Building Materials and Structures* in 1997. These contain a wealth of information on RILEM's history and development up to the end of 1997 and are downloadable from the History section of RILEM website.

The Thirty Years of RILEM

RILEM 50 Years in the Service of Building Materials and Structures

It was agreed at the 2015 Annual RILEM week that a publication should be compiled for RILEM's 75th anniversary in 2021.

The initial proposal for a comprehensive and authoritative document on the history of RILEM was made in 2015 by then-Bureau member and valued RILEM colleague, Prof. Wolfgang Brameshuber. It was to have been undertaken largely by graduate students under his guidance, but Prof. Brameshuber sadly passed away shortly after agreeing to the assignment. In 2016 the then-Immediate Past President, Prof. Mark Alexander, presented a revised and refocused proposal, which was approved in 2017 by the Bureau and General Council.

The revised proposal substantially changed the focus of the publication from a comprehensive historical account of RILEM, to a booklet to capture and reflect more the personal experiences of the many different people who are or have been involved in RILEM. This booklet differs from the previous two RILEM publications mentioned above, taking a personal line, and capturing people's "RILEM experiences". It tells the "RILEM story", as seen through the eyes of its active members. At the same time, the booklet reflects on the growth and development of RILEM over recent decades.

COMPILING THIS BOOKLET

Invitations to contribute to the 75th anniversary Booklet were sent to several hundred RILEM members from September 2018 to July 2019, requesting reflections on either their personal experiences while being involved in RILEM, or their experiences as RILEM office-bearers. Responses were received from approximately 135 members, and selected extracts can be found in Part III: "RILEM people and their stories". The entire process was a considerable exercise of soliciting, obtaining, and then sorting and editing the many and varied contributions. The complete set of contributions can be found in the Appendix (which is online in the History section of RILEM website). During this process, tremendous help was received from RILEM's previous Secretary General, Ms Pascale Ducornet, the current Secretary General, Mrs Judith Hardy, and Head of Publications and Communication, Ms Anne Griffoin, as well as Management Assistant, Ms Fanta Sylla, who provided contact details and much other information.

This booklet is laid out in three substantive parts, together with an introduction and a conclusion as follows:

INTRODUCTION: RILEM: A distinguished and enduring scientific association.

PART I: RILEM: Formation in 1947 and the period to 1997 – briefly tracing RILEM's origins from 1947, and its early and later development into the prestigious organisation it had become by 1997.

PART II: RILEM: Development and impact in the new millennium – how RILEM grappled with the challenges of this later period, and successfully transformed itself into a thoroughly relevant and modern organisation.

PART III: RILEM people and their stories: Reflections by its members – this is the "heart" of the booklet, with personal anecdotes and reflections from a wide range of RILEM members, allowing a perspective on RILEM through the eyes of its members.

CONCLUSION: RILEM and the future.

Parts I and II are largely background, and give information on RILEM's early origin, and how it has transformed itself into a dynamic, relevant organisation in the 21st century. The "heart" of the booklet is Part III, which traces the experiences and reflections of RILEM people over the course of their association with RILEM. This section puts the human face on RILEM and its activities.

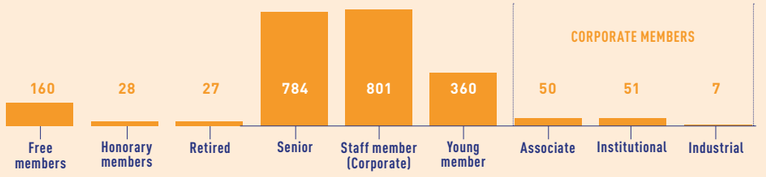
CONCLUSION

RILEM continues to be a pre-eminent global scientific and engineering organisation, with an influence beyond its relatively small but enthusiastic and active membership.[1] We hope this booklet will bring back pleasant memories for current and past RILEM members, and we look forward to celebrating 100 years of RILEM in 2047!

Mark Alexander, Editor, and Elisabeth Yelverton, Editorial assistant.[2] Cape Town, March 2021

Prof. Wolfgang Brameshuber

1. Details of RILEM membership per category as of November 2020



2. The compilation and editing of this publication was undertaken by Prof. Mark Alexander, ably assisted by Ms Elly Yelverton. Other contributors are mentioned in the preface.

PART I

RILEM

FORMATION IN 1947 AND THE PERIOD TO 1997

RILEM | *Formation in 1947 and the period to 1997*

Dr Robert L'Hermite

Prof. Gustavo Colonnetti

RILEM'S ORIGIN

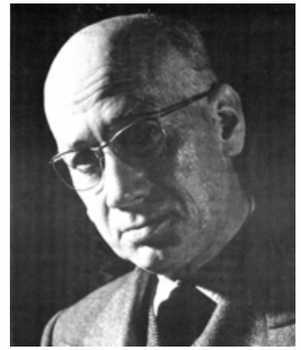
The International Union of Laboratories and Experts in Construction Materials, Systems and Structures – RILEM[1] – was founded in June 1947, during the post-war period when reconstruction was of vital importance. The prior year – 1946 – Dr Robert L'Hermite had discussions with influential colleagues such as Prof. Ros from Zürich, with the idea of organising a meeting to explore how to promote the ongoing exchange of information on building materials and structures. L'Hermite and Ros proposed the names of Prof. Campus, Prof. Colonnetti and Prof. Torroja, and these five eminent scientists and engineers became the founders of RILEM, together with others, in a meeting in Paris in 1947.

At the 1947 meeting, laboratory directors, mainly from national building and construction laboratories representing 13 countries in Europe (including Scandinavia), but also from Argentina, Brazil and the United States, were invited by L'Hermite to renew international relations interrupted by the war, and to consider the enormous task of rebuilding the shattered cities of Europe. Sessions were held in Paris on 17–20 June 1947, convened by L'Hermite, who at that time was director of the Laboratoires du Bâtiment et des Travaux Publics in Paris, France. It was decided to form an association for directors of laboratories and research institutes devoted to building construction and civil engineering. Since this founding meeting, which was later counted as the first RILEM annual meeting, L'Hermite has become a towering figure in RILEM, his name lending sustained stature and weight to the activities of the association.

The participants and founding members at the first meeting in 1947 were:

- S. Bechyne, *Czechoslovakia*
- J. L. Bienfait, *The Netherlands*
- F. Campus, *Belgium*
- G. Colonnetti, *Italy*
- E. L. Da Fonseca Costa, *Brazil*
- S. A. Delpech, *Argentina*
- E. Forslind, *Sweden*
- W. Glanville, *United Kingdom*
- G. Hansen, *Denmark*
- R. L'Hermite, *France*
- F. Lea, *United Kingdom*
- W. Olszak, *Poland*
- M. Rocha, *Portugal*
- M. Ros, *Switzerland*
- E. Torroja, *Spain*
- M. P. White, *United States*

1. Réunion Internationale des Laboratoires et Experts des Matériaux, systèmes de construction et ouvrages



Prof. Eduardo Torroja

One of the key founders of RILEM was Prof. Eduardo Torroja, who was elected President of RILEM in 1951. From the beginning, Torroja was a strong supporter of the activities of the new association. One of the roles of the presidents at that time was to invite members to the association's annual General Council, which was held in Madrid that year, chaired by Prof. Torroja. Subsequently, Madrid became a popular venue for RILEM meetings, particularly strategy meetings, over the years.[2]

At subsequent sessions, the participants determined methods of international co-operation among their testing and research institutes, so that results of materials and structural testing could be disseminated for the building industry. In 1949 the association also laid down guiding principles drafted by Robert L'Hermite and Raoul Dutron, the Secretary General at the time. After several annual meetings, in 1952 in The Hague, Prof. Lobry de Bruyn proposed the name RILEM (Réunion Internationale des Laboratoires d'Essais et de recherches sur les Matériaux et les constructions), in English, the International Union of Testing and Research Laboratories on Materials and Constructions. (As explained in the introduction, the name has been amended in recent times to reflect the new ethos and focus of the association.)

Meeting in Capri, 1948

2. RILEM has always organised key "Strategy Meetings" at important junctures in its history. These have helped to steer the association towards the future organisationally, to embrace the latest technological and scientific challenges, and to explore future needs. Key Strategy Meetings and similar events over the years have been:
- The first "Long Range Plan": Brno, 1983, after a proposal by Dr James R. Wright in 1981 at Casablanca.
- 1987: First RILEM Congress in Versailles, on the occasion of the association's 40th anniversary.
- 1987: RILEM Strategic Workshop: Madrid I – "New Prospects for RILEM".
- 1992: RILEM Strategic Workshop: Madrid II – "New Prospects for RILEM".
- 1994: Key objectives established for RILEM, under the impetus of Mr Jacques Baron.
- 2000: Congress and Workshop for all Chairs of TCs, Paris.
- 2006: RILEM Strategic Workshop: Madrid III.
- 2014: Brussels Strategic Workshop, which also produced the "RILEM Roadmap".

Further details can be found in Part III: RILEM Developments in the New Millennium.

EARLY DEVELOPMENTS IN RILEM[3]

The structure of RILEM has evolved over time, but the Bureau and General Council were established at an early date and have been the key to the association's successful development and management over the years.

THE GENERAL COUNCIL

This is RILEM's main decision-making body and votes on all important decisions submitted by the Bureau, including matters brought forward by the standing committees. In earlier times the General Council was a relatively closed body, consisting of National Delegates and in some cases, National Representatives, without direct representation by ordinary RILEM members. National Delegates and National Representatives were proposed by the national member groups.

Honorary Members, as well as representatives of the Titular and Industrial Members, were also invited later to attend the General Council. In essence, the work and identity of RILEM in the earlier years was very much focused on the participating countries with key representatives. In later times the focus shifted to the importance of individual members who are not attached to a specific country in their work in RILEM.

THE BUREAU

The Bureau consists of members elected by the General Council to exercise control of current affairs and ensure that the statutes are observed. The Bureau is responsible to the General Council, and, together with the fulltime staff, helps to oversee RILEM's day-to-day operations.

Until 2013 (when the Development Advisory Committee – DAC – came into being by transforming MAC, see below), the Bureau was assisted by three standing committees: the Management Advisory Committee (MAC), which evaluated conformity to RILEM Recommendations; the Technical Advisory Committee (TAC), which submitted proposals such as working programmes for new Technical Committees and determined the objectives for conferences and workshops; and The Coordinating Committee (CC),[4] responsible for the overall coordination and monitoring of the work and output of the Technical Committees. The TAC and Coordinating Committee were created in the period 1967–1969, while the MAC came into being in 1996 (see below).

The Bureau is assisted by the Secretariat General (SG), who is responsible for implementing decisions and managing daily activities, operations, and finances of the association, as well as other functions such as RILEM Newsletters, communications, and various RILEM publications. In earlier years these publications were mainly the *RILEM Bulletin* which later transitioned to the journal *Materials and Structures*. The issuing of testing recommendations was also very important, and started already in 1948 with the publication of the RILEM-CEMBUREAU method for testing cement. Many recommendations have followed since and a first edition of a collection of RILEM Recommendations was published in 1994. Today the SG is also responsible for the RILEM website.

3. Details of RILEM's earlier structures and objectives, as well as a list of technical committees for the first 30 years, can be found in *The Thirty Years of RILEM*, as well as *RILEM – 50 Years of Experience in the Service of Building Materials and Structures*, both available in the History section of RILEM website.

4. The Coordinating Committee, in the period before 2013, effectively became the "Joint TAC/MAC meeting". In 2009, when the position of DD was created (see Part II), the joint TAC/MAC meeting was transformed into the "Director of Development Meeting", and in 2010 it was further transformed into the "Development Meeting".

RILEM'S MISSION AND OBJECTIVES

RILEM is an international, non-governmental, non-profit association, with the purpose of encouraging and improving international cooperation in the fields of science and technology of building and construction, specifically in scientific research of building materials and structures.

The main objective of RILEM in earlier years was the unification of testing methods and the provision of recommendations. The Technical Committees were chosen for their knowledge in the relevant fields of research, and recommendations on test methods, which had to meet international standards, were put forward for RILEM publication. In order to disseminate information, a periodical journal *Materials and Structures* has been published since 1968, containing predominantly research articles.

According to earlier Statutes, the purpose or mission of RILEM was:

- to exchange information and co-operate in experimental research and tests on construction and on the materials thereof, in the laboratories of various participating countries,
- to study test methods with special reference to their perfection and unification,
- to facilitate the exchange of scientific investigators,
- to collaborate with national or international associations in realising their objectives,
- to organise symposia and specialised meetings.

This broad mission remains foundational to RILEM even today, although circumstances have changed enormously since RILEM's origin. This in itself is testimony to RILEM's enduring relevance and importance in the modern world – that, while still being guided by its founding charter, it remains relevant today by adapting to modern demands.

To illustrate the essential continuity of RILEM's mission and objectives, the 50th anniversary booklet (1997) noted that RILEM's key objectives were defined so that each member could recognise their place within the association and participate in its work, under the following six key objectives:

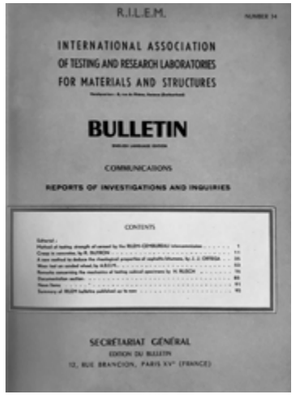
Screenshot of the RILEM website

TC Workshops and Symposia

- to identify and make widely known important new or emerging knowledge in the fields of building materials and structures,
- to provide a framework within which interdisciplinary teams of experts can freely discuss their approaches to the solution of specific problems, to prepare syntheses, and to suggest new orientation for research and application,
- to promote dissemination of the most recent results of research on building materials, both in engineering practice and in materials testing,
- to promote exchange between basic and applied research,
- to facilitate transfer of recognised and standard testing techniques among members in all countries,
- to promote progress in materials' testing concerning reliability, rapidity and cost savings, related to quality systems and certification procedures for the building materials' industries.

The differences between the earlier objectives and these 1997 objectives are salient, showing how the association was already moving to a more internationalist perspective. A critical earlier objective was the unification of testing methods; recently, the mission of the association has expanded to embrace the advancement of scientific knowledge related to construction materials, systems, and structures, and to encourage transfer and application of this knowledge worldwide.

Also, in earlier years, between two and four symposia were organised annually, to encourage sharing of knowledge, and to establish closer co-operation among the participant countries.


R.I.L.E.M.

INTERNATIONAL ASSOCIATION OF TESTING AND RESEARCH LABORATORIES FOR MATERIALS AND STRUCTURES

BULLETIN

COMMUNICATIONS

REPORTS OF INVESTIGATIONS AND INQUIRIES

CONTENTS

SECRÉTARIAT GÉNÉRAL

Bulletin 1, March 1951

OTHER IMPORTANT EARLY DEVELOPMENTS

It is not the purpose of this anniversary booklet to fully describe all the major developments in RILEM over its 75-year history. Nevertheless, the following major developments in the period to 1997 are noted below.

- From 1951 RILEM published a Bulletin, which in 1959 became a new series of Bulletins. This was followed in 1968 by a printed bilingual periodical titled *Materials and Structures.*
- In 1961 the proposal by Prof. Simon Delpech to start a transatlantic RILEM group was adopted. The first session of the Latin American Group took place in 1963 in Argentina. This group (called GlaRILEM) had Prof. Luis M. Machado as Secretary. (After Prof. Machado's premature death in 1980, Dr Roberto Torrent took over as Secretary of GlaRILEM.[5])
- In 1966, the first so-called "American meeting" was held in Mexico. This meeting marked the starting point of the modification in RILEM's structure, firstly by forming a Preparatory Group which became the Advisory Committee in 1967, as well as establishing Technical Committees. All of these were in place by 1969.
- Honorary Titles and Distinctions were established for RILEM members who had worked actively in a sustained way in the interest and for the development of the association.
  - In 1967, the association's 20th anniversary, the RILEM Medal was introduced, to be granted each year to an eminent research scientist. To mark the high level of merit required of the medal holders, the first RILEM Medal was bestowed upon Prof. Ferdinand Campus, one of RILEM's founders. The medal was renamed the Robert L'Hermite Medal in 1981, in honour of the President-Founder of RILEM. Since then, each year the Robert L'Hermite Medal is awarded to an outstanding researcher younger than 40, not necessarily a member of the association, who has made exceptional written scientific contributions in the fields of construction materials and structures. The publications in *Materials and Structures* are a natural source of identifying possible candidates.
  - In 1993 the General Council established an honorary title of RILEM Fellow, bestowed upon RILEM Senior Members who have made exceptional contributions to RILEM in their capacity as research scientist, engineer, technical leader or educator. Fellows tend to be selected from past or present chairs of RILEM Technical Committees or Standing Committees, although not exclusively so.
    (Additional awards were introduced after this period and can be found in Part II of this booklet.)
- Through the years, RILEM maintained flexibility in its organisation, gearing towards efficiency and responsiveness, intended by its founders in 1947. However, some structural modifications were made when deemed necessary. By the end of 1997, in addition to the Bureau, General Council, and Secretariat General mentioned above, RILEM consisted of the aforementioned Standing Committees MAC, TAC and CC which all reported to the Bureau. RILEM also kept up with advances in information technology, with the introduction of RILEM's internet webserver in 1996, thus making communication and information more readily available for members and researchers worldwide.

Founding of the Latin American Group, Argentina 1963

L'Hermite Medal, awarded to young researchers and scientists for outstanding published work

5. GlaRILEM subsequently became moribund, but was effectively reinstated with the formation in 2010 of the Regional Group Lat-RILEM. See more in the RILEM Worldwide section of the website.

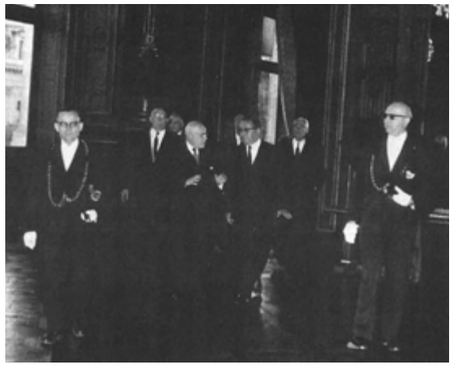
Materials and Structures, *1971*

- In 1997 a separate company called RILEM Publications SARL, a subsidiary of RILEM, was established to promote publishing within RILEM. The RILEM SARL also later assumed publication of *Materials and Structures* from the first publisher E & F SPON (Imprint of Chapman & Hall), before commencing a collaboration with Springer Nature in the 2000s.

This brief review of RILEM, from its formation until just before the dawn of the new millennium, clearly reflects an association that, particularly in recent decades, has become increasingly robust and self-sustaining, able to reinvent itself to adapt to the challenges and demands of changing times. This self-sustaining aspect is well illustrated in the development of RILEM in the new millennium, which is covered in Part II.

A selection of photographs of RILEM meetings and gatherings, from Thirty Years of RILEM *(1977):*
Capri 1948, Madrid 1952, Lisbon 1953, Casablanca 1955, Haifa 1960, Dresden 1968 and Prague 1969.
As can be seen, RILEM was already very people oriented and realised that meeting face-to-face to share ideas was important, and this has not changed.

These meetings were arranged mostly in Europe and immediate surrounds, although Lat-RILEM was established during this period. RILEM has expanded its membership and today is represented all over the world.



PART II

RILEM

DEVELOPMENT AND IMPACT IN THE NEW MILLENNIUM

PART II

RILEM | *Development and impact in the new millennium*

RILEM, as an association of people working as individuals and in organisations, has a strong emphasis and focus on people. Its acronym contains the word "experts", indicating this people-focus. RILEM's people encompass a wide range of individuals: scientists, researchers, practitioners, professors, students and corporate members, that is industrial and scientific organisations with their staff members.

In its development since the turn of the new millennium, RILEM has taken on a truly international flavour, culture and activity, extending its involvement worldwide, covering about 90 countries. It represents a vibrant and dynamic organisation, constantly evolving to meet the needs of its members and its constituency, in touch with the latest international developments in construction materials and structures, and reaching out to areas of the world where it does not yet have a significant footprint. In contrast to many similar associations around the world, RILEM has grown, especially in its individual membership in recent decades, reflecting its people-centred focus.

This transformation of RILEM in the 1990s and into the new millennium did not occur by default or chance. It came about due to a series of focused decisions by a succession of presidents and the RILEM Bureau, and ratified by the General Councils. This section maps out some of these developments, as well as RILEM's worldwide activities. This section also provides a brief overview of RILEM's scientific and educational impact in the fields in which it works, since ultimately this is the heart and soul of RILEM.

RILEM logo

1. RILEM: TRANSFORMATION OF ITS ETHOS AND CULTURE: C. 1995–2010

RILEM was founded primarily as an association of laboratory directors from Europe – although the Americas were also represented. As mentioned, the formation of RILEM at that time reflected the needs of the vast rebuilding of housing and infrastructure following the devastations of World War II, and the need for innovations to meet challenges such as mass housing by prefabrication methods. Many national governments formed building research institutes at that time, creating the focus for research and innovation within a framework of national laboratories.

In its early days RILEM was also a strongly French-based organisation,[1] the first meeting being held in Paris. (The salary of its Secretary General was even paid by the French Government at one time.) RILEM has always had its head office in Paris, at one time even at one of the selective French Grandes Écoles École Normale Supérieure ENS Cachan (now ENS Paris-Saclay). All this was appropriate for the period of its formation and early development, and suited the association well in terms of its objectives at that time.

This outdated model was inadequate not least for the needs of the developing countries, for the scientific and technical knowledge and expertise that RILEM could provide.

However, particularly from the 1990s onwards, this model (covered in Part I), became inadequate for the needs of a fast-changing world, where much of the research and innovation was no longer carried out in national laboratories. This outdated model was inadequate not least for the needs of the developing countries, for the scientific and technical knowledge and expertise that RILEM could provide. Membership fees were prohibitively expensive for people in these countries, and the strong institutional and corporate member culture was not suited to growth in numbers of individual members. A visitor to the RILEM head office in the 1980s or early 1990s would have left with the strong impression that RILEM was not highly responsive to the new realities of a world in rapid transition.

RILEM had to transition from its predominant Eurocentrism to a global engagement, or risk becoming irrelevant to the modern world. It had to grapple with the reality of a tectonic shift from developed to developing countries in terms of scientific development and population growth, and it had to begin to meet the huge demand for knowledge coming from the developing world. Specifically, the growth of China and other Asian countries with emerging economies, including India, demanded a different response. There were also exponential advances in information technology, communications, networking, and growth in student PhD enrolments worldwide, all of which demanded renewed strategies from RILEM.

The actions of several bold and determined RILEM presidents, Dr Carmen Andrade, Dr Ake Skarendahl and Prof. Arnon Bentur, in the first decade of the 21st century and new millennium drove RILEM to face its future imaginatively, and to be willing to adopt new methods and paradigms. This resulted in the association reimagining and reinventing

1. Legally, RILEM is a non-profit association, constituted conforming to article 60 of the Swiss Civil Code (See RILEM Statutes for details, in the Introduction section of the website).

2002 General Council in Madrid, under Dr Carmen Andrade's presidency, where the new trends were significantly pushed forward

itself, and emerging as a substantially transformed organisation, yet retaining the strengths and imperatives that had driven it throughout its existence – imperatives such as technical and scientific excellence, production of knowledge for the building and allied industries that could serve as a basis for new standards and practice, and networking that allowed these to develop. In the words of a RILEM Fellow and Honorary Member, Prof. Karen Scrivener: "At the first RILEM week I attended, in Paris in 2000, I realised there was already a revolution going on to transform RILEM from an organisation managed by a selected and restricted group of National Representatives, to a much more open democratic institution with a more important role of the technical experts we see today".

During this period, long-standing financial difficulties that were hindering the further development of the association were also tackled and resolved. This permitted RILEM to face the future positively with increasing financial strength, and helped to unlock many possibilities, some of which are illustrated below.

2. STRATEGIC OBJECTIVES – 2010–2015; AN OPPORTUNITY TO MOVE PURPOSEFULLY INTO THE FUTURE

Flowing from key strategic workshops from around the turn of the millennium, driven by successive presidents, there was a major endeavour to transform RILEM.

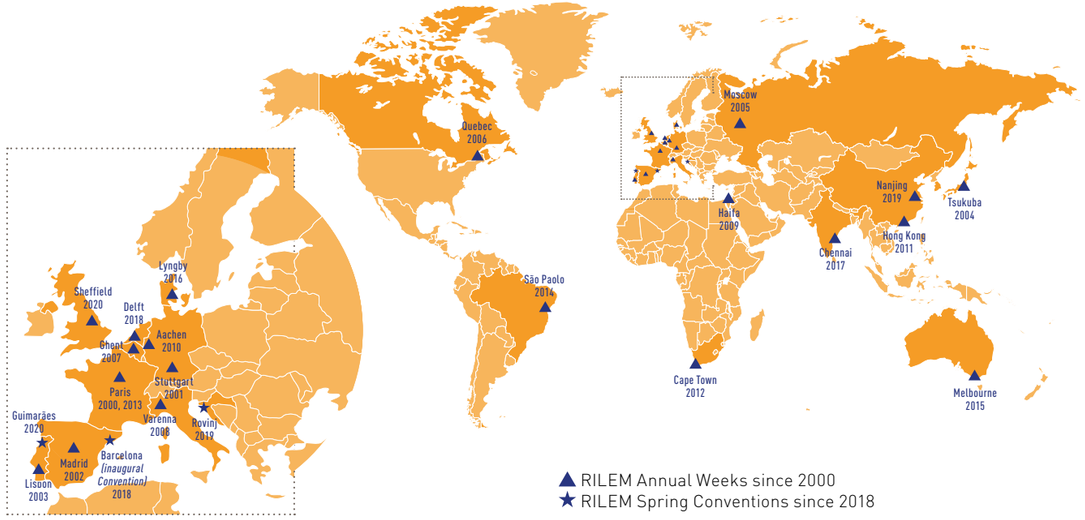
Voting rights were moved from the National delegations to all active members participating in the General Council. New publication strategies were adopted, using inter alia, the World Wide Web for distributing RILEM reports without charge to all interested stakeholders globally. All these changes culminated in restructuring of the Secretariat General, and the appointment on a part-time basis of an external Director of Development (DD) by 2009. The appointment of Prof. Dr ir. Geert de Schutter as DD literally launched RILEM into a new orbit. The DD would be a high-profile position reporting directly to the Bureau and not form part of the Secretariat General. Geert continued in this role until 2014, by which stage major advances had been made in terms of clarifying RILEM's strategic objectives and modus operandi for moving forward. It should be mentioned that the various office-bearers and Bureau members that worked with Geert over this period enthusiastically adopted the new directions and strategies that were being developed collaboratively.

Prof. Geert de Schutter, Director of Development, 2009–2014

The shift that RILEM underwent was brought about with goodwill on all sides and a real commitment to effect change. This undoubtedly led to benefits for all members and, indeed, the wider scientific community that RILEM serves. These benefits include a significantly wider RILEM international footprint and impact worldwide, the re-establishment of a Regional Latin American grouping (Lat-RILEM), as well as RILEM Regional Groups in China (CHN-RILEM) and the former Soviet Union countries (CIS-RILEM). Regional Groups were established to overcome language barriers and to encourage and facilitate development of RILEM technical and educational activities on a regional level. Similarly, a Japanese National group was officially created, although Japan has had a long association with RILEM, even before the RILEM Annual Week in Japan in 2004.

1st Spring Convention

There has been tremendous growth in RILEM regional activities, and demand for RILEM events worldwide outstrips opportunities. This demand led to the launch of the annual RILEM Convention in 2018, following a RILEM Spring meeting held in connection with the ACI Convention in Detroit in 2017, with the view to coordinate these meetings with the RILEM Annual Weeks. The Conventions would be held preferably somewhere in Europe, normally around March or April each year, with the RILEM Weeks being held alternately within and outside Europe.



From left to right:
• Prof. Mark Alexander, Past President, 2012–2015, University of Cape Town, South Africa;
• ir Johan Vyncke, Immediate Past President, 2015–2018, BBRI, Belgium;
• Prof. Ravindra Gettu, President, 2018–2021, Indian Institute of Technology, Madras, India.

Furthermore, an "unwritten rule" has become embedded in RILEM in the new millennium, that presidents should be selected alternately from Europe and the rest of the world, with a suitable mix of academic and "industrial" or professional candidates. This has led to new energy and vigour being breathed into the association by introducing new worldviews and ways of working. Not least, this has also led to RILEM being much more positively viewed by the global scientific community.

In consequence, mainly from 2010–2016, RILEM signed six International Memoranda of Understanding (MoU) with (a) National Groups – Brazil, Japan and the Russian Federation, and (b) Regional Groups – Lat-RILEM (Latin America), CHN-RILEM (China) and CIS-RILEM (Russian Federation), giving RILEM greater regional representation and impact. At the same time, other MoUs were signed with local or regional cognate associations in different parts of the world, particularly Asia and Oceania (see section 3).

From about 2010 onwards, there has been phenomenal growth in membership in several countries, including: Belgium from 54 members to 119 members, China 3 to 176, France 110 to 240, India 7 to 191, United Kingdom 40 to 110. See comparative Table of Individual Membership by Country, 2008, 2012 and 2021:

	Pre DD	After DD	Current
Country	2008	2012	2021
Albania	0	0	2
Algeria	2	0	4
Argentina	4	8	13
Armenia	0	0	2
Australia	14	8	39
Austria	4	5	19
Azerbaijan	0	0	2
Bangladesh	0	0	4
Belarus	0	0	2
Belgium	54	53	119
Bolivia	0	0	1
Bosnia and Herzegovina	7	1	0
Brazil	7	9	46
Bulgaria	1	0	0
Burkina Faso	0	0	1
Cambodia (Kampuchea)	0	0	1
Cameroon	0	0	2
Canada	33	29	46
Chile	1	1	6

	Pre DD	After DD	Current
Country	2008	2012	2021
China	3	50	176
Colombia	0	0	5
Croatia	7	7	19
Cuba	0	0	3
Cyprus	1	3	4
Czech Republic	13	20	27
Denmark	19	22	39
Ecuador	1	1	0
Estonia	0	0	2
Ethiopia	0	0	5
Finland	12	8	21
France	110	120	240
Georgia	0	0	2
Germany	82	94	156
Ghana	0	0	2
Greece	11	14	15
Guatemala	2	1	1
Hong Kong (now included in China)	4	-	-
Hungary	0	0	2

	Pre DD	After DD	Current
Country	2008	2012	2021
Iceland	4	3	3
India	7	12	191
Iran, Islamic Republic of	1	0	7
Iraq	0	0	5
Ireland	1	2	3
Israel	13	9	14
Italy	58	76	136
Japan	58	63	72
Kuwait	0	0	21
Kyrgyzstan	0	0	2
Latvia	0	1	0
Lebanon	0	0	3
Liechtenstein	1	1	0
Lithuania	0	0	8
Luxembourg	4	1	2
Macau	0	0	0
Malaysia	1	2	6
Malta	0	0	1
Mauritius	0	0	2
Mexico	1	2	9
Morocco	1	0	4
Nepal	0	0	1
Netherlands	41	37	73
New Zealand	4	2	2
Nigeria	1	1	6
Norway	31	23	22
Oman	0	0	1
Pakistan	1	1	6
Paraguay	0	0	1
Peru	1	0	0
Philippines	0	0	2
Poland	12	13	41

	Pre DD	After DD	Current
Country	2008	2012	2021
Portugal	26	30	55
Romania	1	0	2
Russian Federation	11	10	6
San Marino	0	0	1
Saudi Arabia	1	0	14
Serbia	3	2	5
Singapore	0	1	4
Slovakia (Slovak Republic)	0	1	1
Slovenia	13	14	22
South Africa	11	11	26
Spain	56	46	71
Sri Lanka	0	0	2
Sweden	38	43	45
Switzerland	53	54	82
Taiwan	0	1	1
Tanzania, United Republic of	0	0	3
Thailand	1	0	6
Togo	0	0	1
Trinidad and Tobago	0	0	1
Tunisia	0	0	1
Turkey	4	3	17
Uganda	0	0	6
Ukraine	3	2	0
United Arab Emirates	0	0	1
United Kingdom	40	35	110
United States	52	43	86
Venezuela	1	0	0
Vietnam	0	0	1
Zimbabwe	0	0	0
Total Members	**953**	**1005**	**2252**
Total Countries	**63**	**54**	**91**

Signing of the agreement between RILEM and Concrete Institute of Australia (CIA) Left: Mr David Millar, Executive Director CIA; Right: Prof. Mark Alexander, RILEM President

Despite these efforts, global regions that remain less developed for RILEM are Africa and parts of Oceania. For the former, the reasons are largely the lack of scientific opportunities in much of the continent, especially sub-Saharan Africa, and the impossibility for many African scientists to afford RILEM fees and travel expenses, even with RILEM's progressive discounted fee structure. For the latter, RILEM has good relationships with Australia and New

Venue for the Strategic Workshop, Brussels, March 2014, Belgian Royal Military Academy

Strategic Workshop, Brussels, Belgium

Zealand (having MoUs with organisations in these countries), but the geographical separation of Oceania from the main "centre" of RILEM, which is still in Europe, often hinders more active membership for many individuals. Encouragingly, the first African RILEM Technical Committee was formed in 2018,[2] and further developments in Africa are being actively pursued.

A challenge that RILEM might face going forward is retention of membership globally as isolationist tendencies build around the globe; on the other hand, the rapid development, since Covid-19, of holding virtual meetings online is facilitating new contacts and ways of networking, and including people who may have been excluded in the past.

2.1 KEY STRATEGIC ACTIONS 2010–2015

RILEM has consistently recognised that, to remain relevant and at the cutting edge, it must rethink its strategy regularly and be sufficiently nimble to move fast to exploit opportunities. As an association, it has been singularly successful in doing this. In the period 2010–2015, four strategic actions were identified and driven forward with the commitment of many individuals working voluntarily for the association, together with the Director of Development. These are elaborated briefly below.

ACTION 1: RILEM STRATEGIC WORKSHOP, BRUSSELS, MARCH 2014

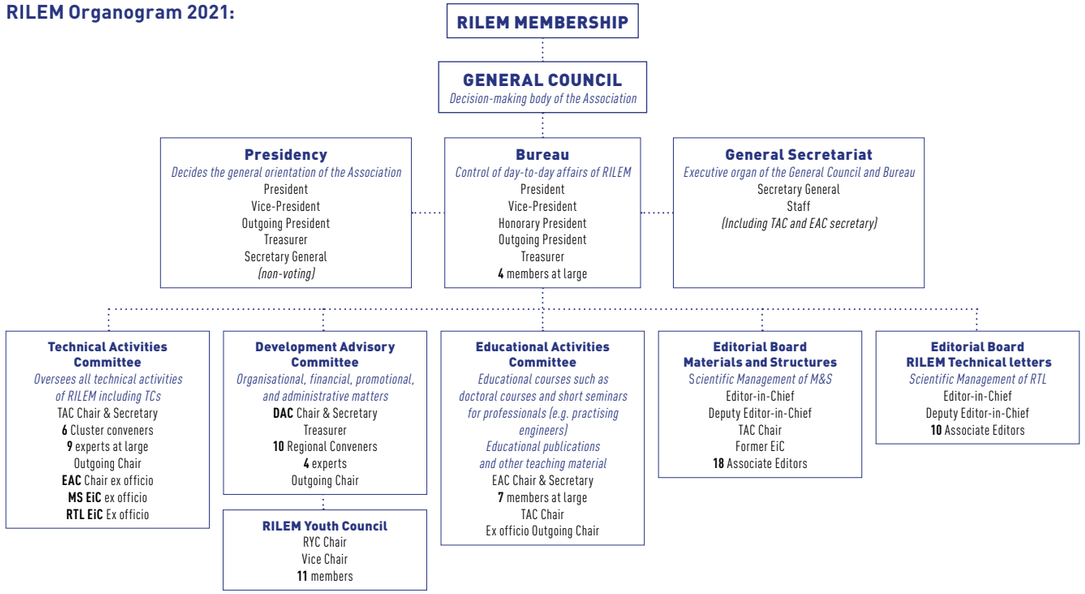
At the start of the mandate of the Director of Development, Geert de Schutter, a first version of the so-called RILEM ROADMAP was written already in 2009 as "a detailed plan of a way of further developing RILEM". It was informative but needed further fleshing out. Discussions were held in the RILEM Standing Committees, elaborating this "way forward". Towards the end of the DD's mandate, in early 2014, an updated version of the ROADMAP was presented, showing the situation at that time, with further challenges. This document served as a starting point and key resource for a strategic workshop held in Brussels in March 2014.

This RILEM Strategic Workshop, co-organised by the Belgian Building Research Institute, the Royal Military Academy, the University of Liege and the University of Ghent, was held at the Royal Military Academy, Brussels, offering an inspiring setting. Plans for this workshop were conceived at the RILEM General Council in Paris, September 2013, and followed earlier RILEM traditions of involving the RILEM membership in drafting strategic views for the future. Similar events were held, inter alia, in Madrid in 1987, 1992 and in 2006 (see Part I). Following a participation call by the then RILEM President Mark Alexander, some 80 participants were welcomed to Brussels to debate RILEM's future. As articulated by the RILEM President at the opening of the workshop: "The purpose of the workshop is to consider where RILEM has come from in the recent past, and which strategic directions it needs to adopt going into the future." The workshop was very successful in refining the RILEM ROADMAP, and in providing clear directions for the future. (See Section 2.2 below for more details on strategic actions from the workshop).

ACTION 2: EVOLUTION OF RILEM ORGANISATIONAL STRUCTURE

The post-2010 period saw key organisational changes in RILEM. The Educational Activities Committee (EAC) became a standing committee, and the MAC (Management Advisory Committee) was transformed into the DAC (Development Advisory Committee). The Board of Editors (BoE) of the journal *Materials and Structures* was strengthened with the addition of new Associate Editors, and Regional and National Groups were defined and incorporated within the RILEM structure. Regional Conveners were defined, and National Delegates were transformed into National Conveners. The current organisation of RILEM is shown in the figure below.

RILEM Organogram 2021:



2. TC 291-AMC: Use of Agro-Based Materials as Cementitious Additions in Concrete and Cement-Based Materials

Strategic actions

The RILEM Organogram is significant for its relatively flat structure, giving all RILEM members active in the various standing committees and technical committees a real voice in the organisation. Also, since 2011, every RILEM member has the right to sit on the General Council, in contrast to earlier periods, and may bring points of discussion and vote on key matters. The technical nature of RILEM, reflected in the strong emphasis on technical committees, is also seen in the organogram, as well as the reality of a worldwide presence through the regional convenors (RCs).

ACTION 3: RILEM INTERNATIONALISATION

RILEM is currently organised in ten global regions. Considered alphabetically, these are: China; East Asia; East Europe and Central Asia; Europe; Latin America; Middle East and North Africa; North America and Caribbean; South Asia; Pacific; and Sub-Saharan Africa. RILEM regions can be seen on the RILEM WORLDWIDE website section.

For each region, DAC proposes a Regional Convener, with Bureau approval and ratification by General Council. The Regional Convener (RC) monitors the regional activities including the existing Regional Group (RG), National Groups (NGs), activities of the National Conveners (NCs), and relations with International Partners in the region. National Conveners generally chair the National Group and coordinate the activities of their respective countries.

Also functioning under DAC, following a decision by the General Council in 2020, is the RILEM Youth Council (RYC) and community forum. The RYC comprises young researchers from the various RILEM regions worldwide, with the purpose of attracting and motivating young RILEM members, by encouraging participation in RILEM activities, increasing awareness of RILEM events, and showcasing the achievements of RILEM young members. The RYC will also manage the RILEM youth community forum and organise activities such as regular seminars and networking events throughout the year.

The internationalisation of RILEM has not been limited only to creating a much greater global footprint, but has also included opening higher offices in RILEM to more people internationally. For instance, although not written into the rules, it is now aimed to select presidents in turn from the academic world and industry, and from emerging or developing regions of the world, and Europe or the developed countries. In this way, RILEM remains very much in touch with the whole scope of developments and the needs of its members.

ACTION 4: ENHANCE COMMUNICATION, ADMINISTRATION, NETWORKING AND IMPLEMENTATION

In the RILEM Roadmap referred to above, a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis was undertaken and refined at the Brussels workshop in 2014.

- Key strengths were identified as technical activities; international reputation; excellent workshops, symposia and conferences; truly international character; free distribution of technical documents; networking with experts; and the *Materials and Structures* journal.
- Weaknesses were seen as communications; slow implementation of decisions; low industrial support.
- Opportunities were viewed as expanding and linking with developing countries of the world.
- Threats included economic crises; evolving publication models; multiplicity of languages; and worldwide pandemics (this last point tragically realised during the Covid-19 global pandemic, which has disrupted most of the world, as well as RILEM).

Developing countries such as China, India and Brazil, with large populations and strong economic growth, have a huge demand for construction materials. Concurrently, they have a need for fundamental state-of-the-art information. Colleagues in these countries can benefit from the RILEM network, while RILEM can profit from the economic growth in these countries, extend its activities further globally, and become the leading international organisation in materials and structures.

To enhance communication and administration, the Secretary General's (SG) office was strengthened with the appointment of Ms Anne Griffoin as Head of Publications and Communication, in 2015. After the retirement of our long-serving and stalwart SG, Ms Pascale Ducornet in 2019, a new SG, Mrs Judith Hardy, was appointed in 2019, and Ms Fanta Sylla was recruited as Management Assistant, also in 2019.

Mrs Judith Hardy,
Secretary General

Ms Anne Griffoin,
Head of Publications and Communication

Ms Fanta Sylla,
Management Assistant

Ms Pascale Ducornet,
Secretary General, 2007–2019

Dr Daniela Ciancio
Implementation Manager

Flowing from the Brussels Strategic Workshop was also the realisation that while RILEM was excellent at casting vision and strategy, we were less successful with implementation of strategic decisions. Consequently, RILEM appointed an Implementation Manager, Dr Daniela Ciancio on a consultancy basis, as from March 2019 (see next page).

Meanwhile, the essential work of RILEM continues via its technical committees and its educational and publishing activities, while the "business" of the association is conducted at its twice-yearly meetings (typically March and September) of the Standing Committees as well as the Bureau and General Council. Participation and work in all these activities is undertaken by many individuals who invest their time freely in the inspiring work of RILEM.

2.2 RILEM STRATEGY: ACTIONS POST-BRUSSELS 2014 AND THE ROADMAP

The outcome of the 2014 Brussels Workshop delivered five, clear strategy actions going forward in the second half of the 2010s. These were embedded in a revised RILEM ROADMAP (2015). It was vital to implement these actions if RILEM were to continue to develop in the ways envisaged and desired. Briefly, these strategy actions concentrated on the following issues:

- Young people – The goal was to attract and involve considerably more young people in all our activities;
- Links with industry – Bringing research results into practice was recognised as an essential goal, and as such links with industry had to be further developed and enhanced;
- Open access (OA) publication policy – Taking account of emerging new business models, it was considered imperative to open up possibilities for RILEM members to publish freely in open access form in both *Materials and Structures*, and to invest in starting a new OA journal, *RILEM Technical Letters*;
- RILEM website – The RILEM website was seen as the essential communication instrument for the future. The need to make the site much more accessible, interactive and attractive for our members and also for the wider community was clearly recognised;
- RILEM promotion and follow up – It was considered essential to monitor and promote the actions described above, and produce excellent promotional material.

RILEM technical letters

RILEM Technical Letters

These strategy actions clearly needed energetic and decisive steps for implementation. These are detailed further in section 2.3 below.
Over the years, RILEM's goals have also been expanded and enhanced; these can be found in the introduction section of the website.

2.3 CONSOLIDATING AND STRENGTHENING RILEM'S ACTIONS AND CORE ACTIVITIES; STRATEGIC IMPLEMENTATION THROUGH APPOINTMENT OF AN IMPLEMENTATION MANAGER, 2019

With the tremendous growth and development of RILEM that occurred flowing from the DD's work, the association was presented with the challenge after 2015 of how to implement the many excellent initiatives that had been workshopped and agreed upon, but were lacking implementation. This led to the appointment of an Implementation Manager, Dr Daniela Ciancio in March 2019, to help in key actions planned for the future, including bringing in younger members, establishing better links with industry, leveraging the open-access publication strategy, and facilitating better RILEM promotion and follow up. This appointment was intended to provide the capacity and energy to drive RILEM forward in terms of its strategic objectives. At the same time and as already mentioned, a new SG, Mrs Judith Hardy, was appointed in May 2019, who began to restructure the head office operation, building on the legacy of the previous SG, Ms Pascale Ducornet.
An efficient team comprising Mrs Judith Hardy, Ms Anne Griffoin, Ms Fanta Sylla and Dr Ciancio is working hard to realise further strategic objectives, such as outsourcing the website, developing infrastructure support for better conference services, and developing a business plan for RILEM which should include assurance to members of "value for money". In addition there is the need to increase the association's membership and follow up on the DAC activities.

3. MAJOR MILESTONES IN THE NEW MILLENNIUM

Some major milestones accomplished in RILEM in the last two decades are chronicled below, cryptically and for the record, but also to illustrate the dynamic nature of RILEM in responding to the global challenges that it continually faces. (Some of these repeat earlier information, but are given here for completeness.)

3.1 INCLUSIVITY OF ALL RILEM MEMBERS IN GENERAL COUNCIL

2011: RILEM Week 2011, Hong Kong, all paid-up members allowed to sit on General Council.

3.2 NEW PROCEDURE TO ELECT THE VICE-PRESIDENT

From 2001 the procedure for electing the RILEM Vice-President was gradually democratised. Previously the Bureau would select a candidate for approval by the GC, with no direct input from members. The procedure was changed so that members could elect a Selection committee, tasked with presenting a list of possible vice-presidents to be considered in a second step by the Nominating Committee. This procedure was further modified in 2013, defining more clearly all election procedures and replacing the Selection Committee by a Recommending Committee elected by the members from among their peers; this committee provides the names of three candidates for the Bureau to consider and then take to the GC. Arnon Bentur was the first VP elected under the 2001 method and Ravindra Gettu after the 2013 modification.

3.3 COMMUNICATION

2007: RILEM website restructured to be more user-friendly, links to all available material and greater free access to RILEM publications on the web.

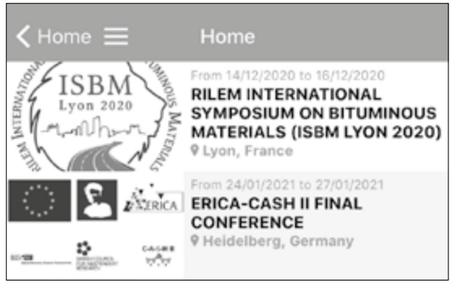
2011: Further development and applications. The website is now continually evaluated and redesigned.

2015: RILEM present on social media.

2017: Complete makeover of the website and development of the RILEM app.

3.4 PUBLICATIONS

2006: Printing and distribution of *Materials and Structures* journal outsourced to Springer Publishing.



2010: Decision to publish a newsletter twice annually. Past issues of RILEM Newsletters can be found on the Newsletter Archives section of RILEM website.

2016: Commencement of publication of an Annual Report; record of activities, achievements, members, regional information, partnerships and a preview for the following year.

2016: RILEM and Empa, Switzerland, reached a sub-contract agreement whereby Empa undertook editorial functions for the journal. This agreement ended in 2019, and was transferred to University of Sheffield, United Kingdom.

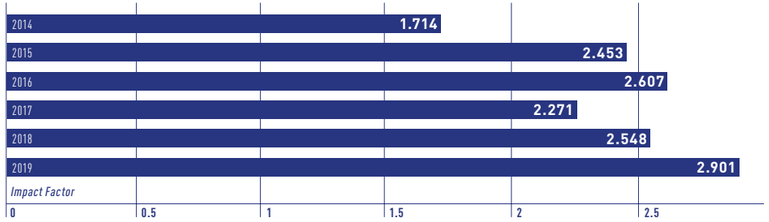
2016: Nicolas Roussel and Mateusz Wyrzykowski started as editors of a new open-access journal, *RILEM Technical Letters*, which was very favourably received.

2019: A new publication and counterpart of the Annual Report, the Technical Report, to showcase the work done by the Technical Committees, the heartbeat of RILEM.

2019: The biannual newsletter was replaced by the bi-weekly Bits&Bobs on T&T (Bright In-House Talks and Statements & Brilliant Outsourced Businesses and Stories on Tuesday & Thursday).

2019: *Materials and Structures* celebrated 50 years of existence, with an impact factor growing to 2,901.

2020: STARs in a Nutshell. From 2020, selected STARs (state-of-the-art report) are being condensed into a two-page document, called "STAR in a Nutshell". This useful document represents a brief overview of the contents available in the STAR. The purposes of these "STARs" are to: 1) provide initial guidance to a non-expert reader, 2) inspire more comprehensive reading of the STAR, and 3) clarify the relevance of the contents before downloading the full STAR for further details.



Materials and Structures *impact factor, 2014–2019*

RILEM Annual Report

RILEM Technical Report

Renewal of JCI-RILEM Partnership in 2015 (original agreement 2007)

Signing of Memorandum of Understanding between fib *and RILEM*

2020: ROC & TOK. Also in 2020, a series of online workshops were launched, called RILEM Online Conferences & Transfer of Knowledge (ROC & TOK). In the new online environment forced by the Covid-19 pandemic, these workshops are expected to be a great success. The first workshop (2 May 2020) on "Recent Advances in Science and Technology of Concrete", was organised by the Indian Institute of Technology Madras, Chennai, India, and had more than 9,000 people registered. Workshop videos are available online on the RILEM YouTube Channel.

3.5 RILEM REGIONAL GROUPS

2009: RILEM Russia website went online.

2010: Lat-RILEM was instituted.

2012: Approval of the RILEM China group, with an official launch in 2014.

2016: Launch of CIS-RILEM group and official launch of the Japanese National Group.

3.6 COLLABORATIONS AND PARTNERSHIPS ESTABLISHED OR RENEWED SINCE 2000

Collaborations established with the American Concrete Institute (ACI), the Japanese Concrete Institute (JCI), the Chinese Ceramic Society, and the International Society for Asphalt Pavements (ISAP).

2008: Partnership between ISAP and RILEM signed.

2009: Partnership between ACI and RILEM signed.

2010: Partnership agreement between IBRACON and RILEM successfully negotiated; LEMIT (Argentina) formally became a corporate member.

2014: Partnership agreements signed with the Korean Concrete Institute (KCI), International Academy of Engineering (IAE) and the Indian Concrete Institute (ICI).

2015: Renewal of the partnership between the Japanese Concrete Institute (JCI) and RILEM.

2015: Partnership agreements signed between RILEM and CIA (Concrete Institute of Australia) and NZCS (New Zealand Concrete Society, now Concrete NZ).

2015: MoU was signed with *fib* as an international partner.

2017: Collaboration negotiated with ALCONPAT as an international partner.

2017: Collaboration negotiated with ASMATEC as an international partner.

2018: Collaboration negotiated with the Argentinian Association of Concrete Technology (AATH), as an international partner.

2018: Formation of the AATH–RILEM partnership.

2019: Renewal of the partnership between the Concrete Institute Australia (CIA) and RILEM.

2020: Partnership between the Institute of Concrete Technology (ICT) and RILEM signed.

2020: Partnership between the European Demolition Association (EDA) and RILEM signed.

2020: Partnership between the European Association for Construction Repair, Reinforcement and Protection (ACRP) and RILEM signed.

2020: Renewal of the partnership between the Japanese Concrete Institute (JCI) and RILEM.

2020: Renewal of the partnership between ALCONPAT and RILEM.

2020: Renewal of the partnership between the Korea Concrete Institute (KCI) and RILEM.

2020: Review of the establishment of a new partnership with the Russian Association of Structural Concrete (ASC) and RILEM.

2020: Discussions with the African Engineering Education Association (AEEA).

Online signing of the RILEM-ICT partnership

RILEM PARTNERS IN 2020

Delft EAC Course

First recipients of the RILEM Travel Grants, Delft, 2018

3.7 APPOINTMENT OF DIRECTOR OF DEVELOPMENT (DD) AND IMPLEMENTATION MANAGER (IM)

The Director of Development (Prof. de Schutter) was appointed for the period 2009–2014. By 2019 the full fruition of the work of the DD was clearly visible, with the appointment of an Implementation Manager in 2019 (Dr Daniela Ciancio), and the reorganising and strengthening of the SG's office in Paris.

3.8 STANDING COMMITTEE (SC) RESTRUCTURING

2010: Education Activities Committee (EAC) became a separate SC, not part of the TAC, to promote RILEM educational activities worldwide: educational courses, doctoral courses and short seminars for the profession; also, promotion of educational publications such as textbooks and other teaching material.

2013: Restructuring of MAC into DAC, with DAC starting activities in 2014.

3.9 RILEM AWARD OF "GUSTAVO COLONNETTI MEDAL" AND FREE MEMBERSHIP FOR STUDENTS

2009: PhD students following an EAC course are given a three-year free membership.

2015: As TAC Chair, Nicolas Roussel proposed introducing the Gustavo Colonnetti Medal. Starting in 2016, each year up to two Colonnetti Medals are awarded to researchers younger than 35 who have made an outstanding scientific contribution to the field of construction materials and structures.

2017: RILEM Poster Award for the student judged to have presented the best poster at the Annual RILEM Week, in terms of the poster criteria. The selection is made by a judging panel chosen by the RILEM Honorary President. The awardee receives a certificate from the TAC Chair at the conference. This has proved immediately successful and helped to attract a further cohort of bright young scientists, engineers and researchers to the RILEM Weeks.

2018: RILEM introduced student Travel Grants to enable promising PhD students to attend the Annual RILEM Week in a given year and to present a poster to explain their work.

3.10 RILEM YOUNG MEMBERSHIP

The former RILEM Student and Affiliate membership categories were merged in 2020, into the new Young Membership category, in order to facilitate the participation of our younger members in the activities of RILEM. A Young Member is a student holding a Bachelor degree and enrolled in any postgraduate educational program (Diploma, Master's or PhD), or a young research scientist or an engineer who is at the early stage of their career, under the age of 35. The fees for Young Members are only 25 euros per year. As always discount by country is applicable. RILEM Young Members are invited to participate and contribute to the activity of the RILEM Technical Committees. More can be learned about benefits and discounts on the RILEM Membership section of the website.

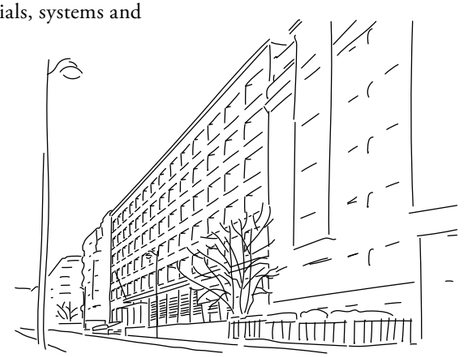
3.11 NEW HEAD OFFICE QUARTERS

2016: In January, RILEM moved from its rather inaccessible and limited offices in Bagneux, 10 km south of Paris centre, to central premises at CSTB (Centre Scientifique et Technique du Batiment), 4 avenue du Recteur Poincaré 75016 Paris, close to the centre of Paris and very accessible, with excellent facilities and meeting rooms.

4. RILEM IMPACT – SCIENTIFIC, TECHNICAL, AND EDUCATIONAL

RILEM has had substantial impact in the scientific and engineering worlds over its long history. As mentioned in the introduction, RILEM is a pre-eminent international scientific and engineering organisation, with an influence beyond the proportion of its relatively small but enthusiastic membership.

RILEM's main mission is the compilation, collation and worldwide dissemination of information and scientific knowledge in the areas of construction materials, systems and structures. Consequently the heart of RILEM is the work of its Technical Committees and its educational activities, represented by the work of TAC and EAC, respectively. A glance at the various Clusters within TAC illustrates the wide scope and range of its work. It is not possible in this limited publication to do justice to the scope and range of the work of RILEM TCs in the last 20 years. For example, 128 TCs have been established since 2000, 89 of which are closed and 39 are currently active (February 2021). The same remark applies to the vital work of RILEM's educational activities (see page 87). In all these areas, RILEM has had, and continues to have, major impacts in the areas in which it works.
Tribute must be paid to all the TAC, TC and EAC members and contributors over the years, for their work and voluntary contributions. The sheer magnitude of the work that has been contributed to the worldwide



New RILEM Headquarters, 4 avenue du Recteur Poincaré, Paris

scientific community by virtue of these RILEM member contributions is staggering, in terms of both time and value. One of RILEM's strengths has always been to engage the best scientific minds worldwide for their knowledge and expertise, and make this available to the global scientific and engineering communities. This is greatly facilitated by firstly, RILEM's non-bureaucratic style of managing TCs whereby TC chairs and members have great freedom to pursue their topics, and secondly, by RILEM's open-access policy whereby the work of its Technical Committees is made available freely via the RILEM website.

Although it is impossible to cover the full scope of RILEM's impact in this limited space, nevertheless a few examples are given here to illustrate the work of RILEM TCs. For example, it is almost obligatory to mention the "RILEM tube test", developed in 1980 by TC 25-PEM and still today one of the most-used on-site non-destructive procedures to assess surface absorption.
It is notable how much of this work has been carried through to codes and standards, which are used regularly all over the world. In many ways, RILEM has provided the scientific knowledge for code and standard drafting, and this allows its work to be translated into practice. This is the case, for instance, with the CIF (Capillary suction, Internal damage and Freeze thaw) and CDF (Capillary suction of De-icing solution and Freeze-thaw) tests for measuring frost and freeze-thaw resistance of concrete, respectively developed by RILEM TCs 176-IDC and 117-FDC. These procedures are now included in the Technical Specification CEN/TS 12390-9:2016 of the European Committee for Standardisation.
Further examples are:

RILEM TC 162-TDF LED THE WAY TO THE CREATION OF EN 14651 (2005). RILEM TC 162-TDF: *Test and design methods for steel fibre reinforced concrete,* initiated in 1994 and chaired by Prof. L. Vandewalle, released several round-robin test reports and five recommendations, published in *Materials and Structures* between 2002 and 2003. One important outcome of this TC was the recommendation of a bending test on a notched beam, which led to the European Standard EN 14651 that has become a benchmark for the characterisation of the toughness of FRC worldwide.

RILEM TC 267-TRM IS DEVELOPING A NEW TEST METHOD TO MEASURE POZZOLANIC REACTIVITY OF CALCINED KAOLINITIC CLAYS, THAT HAS BECOME ASTM C1897-20 (2020). TC 267-TRM: *Tests for reactivity of supplementary cementitious materials,* chaired by K. Scrivener and co-chaired by R. Snellings, was established in 2015. The TC has developed a new laboratory procedure, adopted by ASTM in 2020 with the release of "ASTM C1897-20, Standard Test Methods for Measuring the Reactivity of Supplementary Cementitious Materials by Isothermal Calorimetry and Bound Water Measurements".

INTERNATIONAL RECOGNITION FOR RILEM MEMBERS' EXPERTISE ON CONCRETE DURABILITY (2010). In recognition of their knowledge and expertise, Prof. Carmen Andrade, CSIC, Spain; Prof. Mark Alexander, University of Cape Town, South Africa, and Prof. Geert de Schutter, Ghent University, Belgium, were invited to the Marine Durability Technology Symposium in Guangzhou City, China, in May 2010, to present state-of-the-art information on Concrete Durability. The symposium was organised on the occasion of the start of the construction of the Hong Kong-Zhuhai-Macau bridge, today the longest sea crossing and the longest open-sea fixed link in the world. The Chinese engineers of this majestic infrastructure welcomed the presentations and appreciated the crucial contribution of RILEM towards the successful and durable design of this bridge.

Group: Marine Durability Technology Symposium, including RILEM members

Prof. Ole Jensen

Likewise, the EAC has provided high level doctoral courses over the years. Between 2010 and November 2020, 102 doctoral courses have been offered, in topics as varied as multi-scale modelling, concrete microscopy, and modelling of localised inelastic deformations. Participants in RILEM doctoral courses also benefit from a three-year free membership (with 160 such members in 2020). These courses are targeted mostly at young scientists and engineers, studying in their respective fields (relevant to RILEM's interests). In turn, these scholars and practitioners have themselves made contributions to RILEM TCs and other activities, thus perpetuating the creation and dissemination of knowledge. Again, we acknowledge the tremendous work of the EAC and its members who provide these courses, compiling the material and offering them at a high level. In particular, the energetic work of the first Chair of EAC, Prof. Ole Jensen, is acknowledged.

Within RILEM, there exists a peculiar and rather wonderful dynamic, which gives it great energy and impact. This dynamic is fuelled by the voluntary aspect of its enthusiastic membership, but also by the palpable sense by its members of being in an organisation which strives for scientific excellence. This undoubtedly brings out the best in RILEM members and contributes to the ongoing impact that the association has in the world of science and engineering.

PART III

RILEM

PEOPLE AND THEIR STORIES: REFLECTIONS ON RILEM BY ITS MEMBERS

RILEM | *People and their stories: reflections on RILEM by its members*

1. INTRODUCTION

RILEM has had a major impact on its members over the 75 years of its existence. Many people who started in the organisation working in a technical committee or on some educational event, became convinced of the value and benefit that RILEM offered to its members and the wider scientific and industrial community, and eventually became involved in one or other of the standing committees. All of this was done on a volunteer basis, with members meeting their own costs of travel, accommodation and the like, usually quite gladly, even at the level of the presidency. The question may legitimately be asked: Why? What would cause someone to make substantial personal sacrifices of both time and cost in order to immerse themselves in the organisation called RILEM?

> *Long-lasting and enduring friendships have also been forged on the anvil of many of RILEM's technical committees; one becomes aware of a wider circle in which one is included.*

Of course, the answers to these questions vary as widely as the people and personalities in RILEM. But underlying most of the answers would be a common theme: RILEM brings together the best minds in the world to work on common problems, and the stimulation of working in such groups and feeling that one is making a genuine and valued contribution amongst one's peers are sufficient reward for the sacrifices. As C. S. Lewis said in a famous lecture about penetrating the "inner ring" of one's profession, "You will be one of the sound craftsmen, and the other sound craftsmen will know it".[1] Long-lasting and enduring friendships have also been forged on the anvil of many of RILEM's technical committees; one becomes aware of a wider circle in which one is included, that represents a lifelong network yielding great personal and professional benefit. As a vivid illustration, view Dr Roberto Torrent's "RILEM Story" on the RILEM YouTube channel.

The thoughts expressed above come through again and again in the personal reflections that were painstakingly gathered over the period of work on this booklet. Some of these reflections have been extracted and will be presented later. However, all the submissions made by various people have been captured and placed in a permanent repository, for ongoing reference.

1. C. S. Lewis, "The Inner Ring", Memorial Lecture, King's College, London, 1944.

1.1 CALLING FOR CONTRIBUTIONS FOR THE BOOKLET

As mentioned in the introduction, invitations to contribute to the booklet were sent to several hundred RILEM members, requesting input on their experiences with RILEM. Responses were received from more than 130 people, over a period of two years. It was a major task to solicit, receive, collect, edit and collate all the responses, and to engage in considerable correspondence with individual members during the process.

The dynamism and diversity of RILEM, at RILEM Annual Week in Delft

Many contributions confirmed the relevance of RILEM's research and development work in the fields of construction and of materials, not only in concrete, but also in masonry, asphalt, timber and other construction materials.

Nearly all contributors mentioned that they found RILEM to be like a "family", and that they always felt welcome and included in the conferences, symposia, technical committee meetings and workshops, as well as making lifelong friends and establishing collaborative networks. They found that they were able to discuss research matters of mutual interest with these colleagues, and ask for advice without feeling that their questions or opinions would be looked upon as irrelevant. This maybe reflects the fact that the life of a researcher can be quite lonely at times, often highly competitive and exacting, and RILEM was a "safe space" in which people could allow their own personalities to emerge and be accepted. The extracts in this section are just a few of these examples.

The reflections and anecdotes of RILEM member responders are arranged according to the various RILEM functions and organs: the Bureau and the Standing Committees, the Technical Committees, the Corporate members, the Secretariat-General, and so on. While the submissions have been edited where needed, the "feel" of the original contributions have been retained as far as possible. Enjoy reading these personal reflections!

2. REFLECTIONS OF INDIVIDUAL RILEM MEMBERS: A SELECTION

As a start, a few general reflections and anecdotes are given below. These clearly indicate an immense appreciation for the opportunity of working with researchers and colleagues from across the world, and together making a difference in the field of construction materials and technologies.

I have always deemed RILEM to be a forum for researchers determined to expand the frontiers of engineering knowledge with a powerful sense of engineering that integrates the micro and macro dimensions.
C. Andrade

Without any doubt I highly appreciate my work with RILEM and my contacts with numerous personalities whom I had occasion to meet, together with the charming ladies of the RILEM secretariat.
A. Brandt

I have always experienced it as a privilege to be part of the large RILEM "family". Through the intensive collaboration in TCs, PhD schools and conferences, many colleagues have become lifelong friends.
N. de Belie

The most valuable part of RILEM has always been bringing researchers together. If this continues over the next 75 years, I predict that RILEM will remain a healthy, vibrant and crucial part of the international building materials research community.
E. Garboczi

I wish RILEM to continue being the flagship in implementing the achievements of modern building science into practice and promoting advanced construction materials and technologies around the world. Long live RILEM!
K. Kovler

RILEM is an indispensable community in the world of construction materials and structures. It provides knowledge and great advances in these fields.
F. Moreno-Navarro

"RILEM means getting to know the world", as Gerd Wischer, former CEO of the VDZ once tried to sum it up. And right he was: RILEM stands for collaboration across an international network of passionate colleagues around the world.
C. Muller

For 75 years RILEM has motivated a great number of scientists from all over the world to work for quality in construction in terms of safety, durability, sustainability and economy to meet the needs of a changing world, for a better future.
I. Papayianni

I had the opportunity to participate at various symposiums and workshops organised by RILEM, and was captivated by not only the excellent technical level of the research works presented, but also by the openness to new ideas, materials and experiences, which distinguished these events.
E. Tartari

This is a very powerful organisation. While seasons change, may RILEM stay strong in its roots of providing high level scientific discussions leading to measurable changes in manufacturing, and using and specifying construction materials.
J. Weiss

2.1 RILEM INDIVIDUAL MEMBERS

Individual members include senior members (the normal membership grade), young members, retired members, honorary members (exceptionally nominated by the General Council) and corporate (staff) members.

It is important to acknowledge the hard work of so many individuals, who by virtue of their sheer numbers, cannot be mentioned by name here, but who did (and do) a lot of work for RILEM, and for free!

An excellent response was received from this group (some of whom, of course, also fell into the other groups such as RILEM officers). All felt that being a member of RILEM had been beneficial to their careers, with exposure to research experts from different parts of the world. Many had begun as "ordinary" members, then worked their way up to becoming members of Technical Committees, possibly culminating in membership of DAC, TAC and sometimes EAC.

There were also those who had been recognised for the time they had dedicated to research and RILEM itself, by being awarded the L'Hermite or the Colonnetti Medal, or for scientific service by way of becoming a RILEM Fellow or RILEM Honorary Member.

REFLECTIONS – INDIVIDUAL MEMBERS Respondents felt that being a RILEM member benefitted their careers, giving them exposure to a global group of research experts. They appreciated the ability to work their way up through the organisation, serving on various RILEM Committees. Recognition by colleagues of various RILEM awards was also much appreciated.

The anecdotal part is so rich. Every RILEM Week or TC Committee was an opportunity for unforgettable memories. The trip from Chennai to the Temple of Mahabalipuram in a tuk-tuk was one of these. Then there were the countless evenings spent until 3 am discussing science and other topics with RILEM friends …
S. Amziane

My first RILEM Week in Hong Kong in 2011 was an amazing experience. As a recent graduate I was meeting many of the world-leading scientists in my field. Now I have the honour of calling many of them my friends.
S. Bernal Lopez

At the meeting of TC 032-RCA in Dubrovnik, Professor Mehta told me about his early morning walk in the old city and the sense that he was a person from the past. He said that it was like a mystery in the space so early at dawn. The next day my husband and I had the same experience. It was incredible and unforgettable.
D. Bjegović

I continue to think that the future is bright for RILEM in its quest to assume leadership in the technical field of construction materials.
K. Khayat

At Saint-Remy-les-Chevreuse Laboratory, Professor L´Hermite was explaining the difficulties of performing representative rheological tests under constant loads. I asked him, thinking about Eduardo Torroja flexural tests, why he did not use a box full of water and control the level periodically. His answer: have you thought of the box size? I had not.
L. Lima

I was sitting in a bus in São Paolo during the DMBC conference and realised I had Prof. Mark Alexander sitting next to me. I freaked out at the beginning, but then his nice conversation calmed me down.
J. Martirena-Hernández

Of course, we had a lot of fun and nice social events. I remember when at a meeting in Nantes in 2007, we were all invited to the famous Les Machines de l'île. I found myself suddenly trapped within a big fish like in a cage. In 2010 in Madison we had the opportunity to go to the museum and sit on a Harley Davidson.
M. Partl

I would like to mention a memory I will never forget from 9-11-2001. After a three-day meeting of RILEM TC 200-HTC, I was driving back from Stuttgart to Delft on the German autobahn, but there was none of the speed of around 200 km/hr. Everybody was listening to the 9/11 news on the radio and the few cars that were on the highway all just stood still. At that moment you think that the world just stopped.
E. Schlangen

RILEM was very important in my career and allowed me to knit an extraordinary network of contacts (with many of whom I established friendly relations), that I still preserve with care.
R. Torrent

In recent decades RILEM has been blessed by an outstanding series of pro-active presidents who have completely transformed the organisation for the better. Carmen Andrade, Arnon Bentur, Peter Richner, Mark Alexander, Johan Vyncke and Ravindra Gettu. These and many others, I am happy to count as friends and mentors I have encountered through RILEM.
K. Scrivener

Through RILEM we have not only promoted academic research progress and enhanced academic exchange, but it is also a great platform to socialise with leading global researchers in the field and enlarge our network. I wish RILEM a wonderful future.
F. Xing

I am a member of several other excellent organisations but there is something unique about RILEM that makes it so special to me!
H. Baaj

2.2 RILEM OFFICE-BEARERS

RILEM office-bearers comprise the Presidency (President, Vice-President, Past President), Treasurer, Honorary Presidents (the person hosting a RILEM week in their home country and institution in a given year), the Bureau (members elected by the General Council), Standing Committee (DAC, TAC, EAC) chairs and members, Technical Committee chairs and TC members, and the Boards of Editors of the two journals. This group was asked specifically to reflect on their highlights and lowlights with RILEM, challenges they had encountered, and how RILEM might continue to develop.

PRESIDENCY Members of the RILEM Presidency all agreed that over the past decade or so, RILEM had become a more streamlined association, with contacts in every corner of the world, mention being made of Lat-RILEM and CHN-RILEM. The Education programme as well as the PhD student travel grants programme to attend RILEM Week should help to encourage younger scientists to become involved in RILEM's activities.
Most elaborated on the changes and progress made during their term of office, which spans a nine-year period as Vice-President, President and then Past President. In general, although they felt satisfied with outcomes over this period, there had been some tremendous hurdles to be overcome, and progress was often slower than was desired.

Honorary presidents consider this an honour and believe that it exposed RILEM delegates to different cultures from around the world. Below are some reflections from presidents, vice-presidents and honorary presidents – past and present.

REFLECTIONS – RILEM PRESIDENTS RILEM presidents agreed that, over recent decades, RILEM had become a more streamlined association, with contacts in every corner of the world. Most elaborated on the changes and progress made during their term of office, feeling satisfied with the outcomes, but acknowledging the hurdles that had to be overcome. Honorary presidents considered this role an honour, allowing RILEM delegates to visit different countries and cultures from around the world.

In 1986 I joined the TAC, which I subsequently chaired, and later also the MAC, followed by sitting on the Bureau culminating in my being elected President in 2000.
C. Andrade, President, 2000–2003

Based on the experience from the organisational work in RILEM, as well as the specific experience I had from leading a TC, I accepted an offer to join the Bureau. I enjoyed working on the organisational structure. The procedures within RILEM led me to be president for three years, chairing General Council meetings in Moscow, Tokyo and Quebec.
Å. Skarendahl, President, 2004–2006

My presidency period was marked by being one of the last stages of a long-term effort of turning RILEM from an organisation with national emphasis, into one based on participation and activities of scientists and engineers representing various areas of technical activities, organisations and countries.
A. Bentur, President, 2006–2009

It was a real pleasure for me to organise the RILEM week in Ghent, Belgium in 2007. This was done in collaboration with my alma mater, Ghent University.
C. de Pauw, Honorary President, 2007

Pride, Enthusiasm, and Inclusivity – three words to describe my feelings about RILEM as its current President. I wish very much that these continue as attributes of our spirit in the years, if not decades, to come.
R. Gettu, President, 2018–2021

Organising the 14th Durability of Building Materials and Components Conference in São Paulo was a highlight. The most difficult challenge was to merge the interests of the Brazilian professionals with the trending topics in international research. This is essential to research and RILEM contribution is to be appreciated by the society at large.
V. John, Honorary President, 2014

Among my various RILEM activities, the most memorable one was the organisation of the RILEM Week in Hong Kong in 2011. I believe this event has served as an effective introduction of RILEM to China and facilitated the formation of the RILEM China National Group in 2014.
C. Leung, Honorary President, 2011

Together with my colleagues in the Bureau, I tried to make RILEM more inclusive and more global. We continued to offer membership fees which scaled with the GDP of a country, to make it easier for colleagues from developing countries to become active members of RILEM.
P. Richner, President, 2009–2012

At the 72nd RILEM week in Delft we organised a RILEM Travel Grants competition, offering these grants to 14 young (under 35) researchers from developing countries. One of the highlights also was a breakfast with the RILEM Presidency and the Travel Grant winners. These kinds of supporting actions should be continued.
E. Schlangen, Honorary President, 2018

RILEM has a secretariat based in Paris. Thanks to the tremendous and untiring input from many individuals who served as highly active volunteers, we successfully managed the transition to the Secretariat's new structure, as put into place at the Strategic Workshop held a few years previously. In general, working with RILEM members was a pleasure. A travel grant for PhD students was implemented in 2018, for which students were very appreciative. I believe everyone in service has done their utmost during my period as president.
J. Vyncke, President, 2015–2018

During the period of my presidency, RILEM would celebrate its 50th anniversary. For this event we published a special volume: Fifty Years of Evolution of Science and Technology of Building Materials and Structures – Selected RILEM Publications with Particular Impact to Further Evolution in this Field.
F. Wittman, President, 1994–1997

Undoubtedly the highlight was the privilege to lead such a diverse and truly excellent group of people and a dynamic organisation, as well as the opportunity to interact across such a wide range of remarkable people.
M. Alexander, President, 2012–2015

RILEM has moved fast and far on the topic of open-access knowledge. I am not aware of any other scientific association that distributes, for free and for all, the vast majority of the technical documents produced by its Technical Committees. I am proud to have been the founder and implementer of a new project that started in 2015 and that today is a successful reality, i.e. the open-access journal RILEM Technical Letters.
N. Roussel, Vice-President, 2018–2021

BUREAU AND STANDING COMMITTEE MEMBERS

The reflections given here emphasise appreciation for RILEM's progress in becoming a more international organisation, and for all the work that is done by its members who are, after all, volunteers.

I became a member of the Bureau of RILEM and it was a privilege to be part of a team of very prominent people under the leadership of Johan Vyncke.
T. Bittencourt, Bureau member

My highlight could be that I always get a positive financial result at the end of the 12 years where I was treasurer. My lowlight is probably the fact that despite 12 years as treasurer, I continue to think that accounting is really difficult to understand for a scientist. It is not the same logic as science: ☺.
R. Francois, Treasurer

Key personalities I met were some of my colleagues in RILEM Technical Activities Committees and Bureau.
L. Lima, Bureau member

Based on the experience from the organisation work in RILEM, as well as the specific experience I had from leading a TC, I accepted an offer to join the Bureau work. I enjoyed working in the organisational structure.
Å. Skarendahl, President, 2004–2006

In recent years I have seen more RILEM activities in China and increasing involvement of Chinese researchers and engineers in RILEM Committees. The internalisation effort of RILEM has been fruitful in China. I hope RILEM will continue to reach out to various parts of the world, especially the developing countries.
C. Leung, DAC member

I am more than happy when I have a look at today's website of RILEM which has a separate header called RILEM Worldwide.
P. Richner, DAC member

Being one of the two female representatives of DAC, I appreciate the kind encouragement for gender balance.
Q. Tian, DAC member

Soon after receiving the Robert L'Hermite Medal in 2010, I was invited to join the TAC as an expert and then as Convener of Cluster D.
N. de Belie, TAC member

I had the privilege of joining RILEM as a member of TAC by invitation of my dear friend Ravindra Gettu.
T. Bittencourt, TAC member

Most of my highlights directly reflect the activities, such as conferences, TCs and more recently the TAC meetings.
E. Koenders

In 2010 I met Prof Ravindra Gettu for the first time and he invited me to join as a TAC expert, which I accepted without hesitation.
K. Li, TAC member

The experience as a member of the TAC gave me a new and broader insight into the work by other TCs and RILEM activities.
L-O. Nilsson, TAC member

Exchanging information and discussions on research activities at TAC meetings … were meaningful not only for myself but also for Japan.
T. Noguchi, TAC member

In 2014 I was invited by Ravindra Gettu, to join as a member of TAC as an expert. In addition, since 2018 I have chaired TAC Cluster C.
G. Plizzari, TAC member

The work of TAC has shown me how important it is to encourage active participation of existing members and to attract new motivated ones. This is essential for the development of RILEM and for the scientific community which receives a strong input from the activity of the RILEM TCs.
E. Sassoni, TAC member

I accepted an offer to join the Bureau. I enjoyed working on the organisational structure. And I have found it extremely valuable to devote time to RILEM. I have never had any doubts about the value of the return I received for the activities.
W. Schmidt

I was incredibly honoured to have been invited to serve as a TAC Expert since 2016.
J. Provis, TAC member

EDUCATION ACTIVITIES COMMITTEE Following the Brussels Strategy Workshop of 2014, the Educational Activities Committee concentrated on expanding RILEM's visibility to PhD and other postgraduate students, encouraging them to become active members.
Courses were developed and successfully held in different parts of the world. The introduction of Travel Grants for students to attend RILEM Week has been highly effective.

The EAC should make growing use of professional seminars (i.e. practising engineers).
A. Gonçalves, RILEM fellow

In my opinion, a potential field that could be further developed is the educational part of RILEM, in terms of e-courses for PhD and MSc students, etc. In this way RILEM may become more familiar to young students who are interested in construction materials.
E. Koenders

RILEM supports various PhD courses and this provides a solid basis for learning opportunities for PhD students and the possibility of them to make valuable connections.
D. Snoeck, Colonnetti Medallist

My PhD students were impressed and inspired by travel grants to attend RILEM Week in 2018, to present their research papers.
G. van Zijl

Starting from 2007 the RILEM doctoral courses on MMC, initiated by colleagues of Microlab, Delft TU and Dr J Dolado from Tecnalia, Spain, were successfully run 12 times.
G. Ye, TC Chair

RILEM State-of-the-Art-Reports

TC CHAIRS AND MEMBERS Over 200 RILEM Technical Recommendations have been produced by RILEM Technical Committees. Many of these recommendations have been adopted in research and practice, and are used by international standardisation bodies, as a basis for their work. RILEM recommendations reflect the state-of-the-art at the time of publishing, although these may be superseded later by more recent recommendations.

The respondents felt that output via the State-of-the-Art Reports (usually a product of a TC) was one of the most important features of RILEM. Members of these TCs, from all over the world, were able to give input and also benefitted by the exchange of research information. The respondents who had been TC chairs all felt that, while chairmanship had been hard work, it had been hugely worthwhile. They emphasised that young researchers should be encouraged to join RILEM and the TCs. The travel grant that was being made available for PhDs to attend RILEM Week would go a long way to promote this.

RILEM provided all TCs with a Zoom account in 2020 to facilitate virtual meetings.

REFLECTIONS – TC CHAIRS AND MEMBERS. TC chairs and members appreciated the importance of the State-of-the-Art Reports as being one of the most valuable features of RILEM. TCs gave members the opportunity to give input and share research information. Despite the hard work involved in being a TC chair it was regarded as hugely worthwhile.

Two TCs were very demanding for me, because of the strong controversy on the chloride modelling. I learned to listen and be patient but firm, by always asking for experimental verification of the different theories. RILEM TCs have been for me always a source of learning in both the scientific and the human aspects.
C. Andrade, TC Chair

As the youngest chairman of a TC, I personally experienced chairing a RILEM technical committee a privilege. I consider the flexibility and freedom in organising the committee work, as extremely valuable. I also hope that RILEM will keep its unbureaucratic organisation that provides the structure for experts to meet and collaborate in a pragmatic and efficient manner.
U. Angst, TC Chair

I have been active in several TCs in the last 20 years. I am particularly proud of the committee I currently chair – TRM (tests for reactivity of materials). We realised that standards are very vague on quantifying the reactivity of SCMs. Our work led to the development of a new test method: R3 (Rapid reliable and relevant). This test gives reliable indication in 3–7 days of the 28-day strength for a SCM in a blend and it has been accepted as new standard method.
K. Scrivener, TC Chair

I chaired TC 230-PSC – an experience that taught me as much about people management as it did about concrete durability testing.
H. Beushausen, TC Chair

Being chair of a RILEM TC is a very demanding but also a very recognised position. To work with different experts in a specific field is a huge challenge.
J. Branco, TC Chair

After the launch of the TC on Calcined Clays in 2018, and a second meeting in 2019, I have been strengthening my links to RILEM, this has facilitated my work and the dissemination of our results.
J. Martirena-Hernandez, TC Chair

One of the challenges for the TCs was to financially support young researchers from Turkey, India and South America for example, so that they could participate in the activities of RILEM TCs. Future office-bearers should explain to international and European organisations the impact of RILEM work on society.
I. Papayianni, TC Chair

I must state that RILEM represented ease in the final, personal presentation and a great help at all internal and external levels to serve in my position as Chair of the TC.
E. Vázquez Ramonich, TC Chair

My experience with RILEM TCs was always positive because the growth in research also increases personal growth.
H. Reinhardt, TC Chair

To chair the RILEM TC 183-MIB was a big task, but extremely rewarding.
M. Ribas Silva, TC Chair

It was an exceptional experience for me to guide very valuable experts and academics (much more expert than me), a lot of work, but also a lot of fun. As the chair has a lot of work, and no funding is provided for research, people are not always motivated to contribute actively.
M. Valuzzi, TC Chair

More than anything, we have highly enjoyed the collaboration with many competent colleagues from all parts of the world.
O. Jensen, TC Chair

Looking back at the work of my TCs, it is very satisfying to see that they were very successful in proposing different recommendations issuing several papers and state of the art reports as well as triggering major RILEM conferences.
M. Partl, TC Chair

In participating in the TCs, this allowed me to learn and discuss ideas with renowned researchers.
J. Sanchez Montero, TC Chair

I maintain that the value brought to my personal and research growth by involvement as a member and chair of TCs has been overwhelming. The efforts to attend meetings, and to drive the timeous writing of report chapters are outweighed by the reward.
G. van Zijl, TC Chair

As Professor at Tongji University since 1986, I succeeded in initiating the first RILEM TC under Chinese leadership, with several new TCs set up in 2019 being run successfully by Chinese colleagues.
F. Wittmann, TC Chair

As chairwoman of TC 246-TDC and presently member of TC 281-CCC, I met many leading experts in concrete science. Prof. Folker Wittmann provided the utmost assistance in my job as chair, as I had no previous experience.
Y. Yan, TC Chair

It is difficult to meet the five-year deadline for TC reports.
E. Koenders, TC Chair

RILEM needs to address the rising travel costs; web-meetings are a partial solution.
L-O. Nilsson, TC Chair

At the end of a TC, a workshop or symposium should be organised presenting the results.
H. Reinhardt, TC Chair

Participation in RILEM TCs was an incredible opportunity not only related to contributing to knowledge development and rubbing shoulders with leading international researchers, but also related to making friends and establishing a lifelong professional network with like-minded people from all over the globe.
H. Beushausen

It has been my pleasure and I have been proud to be able to serve personally on several RILEM TCs and to motivate many of my co-workers to get involved with this prestigious association.
C. de Pauw, TC Member

I suggest more virtual meetings of committees to assist with quicker progress of reports. This will also accelerate RILEM activities in developing countries.
D. Feys

Culture is changing and this is affecting how people collaborate and interact to produce new knowledge, the new generation of researchers want to be part of a community that is building a more sustainable, digital, future.
V. John

During my first 10–12 years in RILEM, I participated in a number of TCs, and met a number of world-class researchers. Support from the network of scientists during the years was exceptional.
M. Khrapko, TC Member

Right at the beginning of my engagement in RILEM, as a member of a TC, I enjoyed the exchange with experts from the four corners of the world.
J. Kropp, TC Member

I enjoyed RILEM TC work and made every effort to promote interaction between RILEM and Japanese institutes.
H. Mihashi

There is no better way to get addicted to RILEM than working in the excellent atmosphere created by TCs.
W. Schmidt

Without RILEM, I would not have had the opportunities of liaising with colleagues around the globe and establishing lifelong friendship with many of them.
B. Wigum

2.3 RILEM AWARDEES

RILEM awardees include RILEM Honorary Members, RILEM Fellows, as well as the highly prestigious L'Hermite and Colonnetti medallists. The comments that were submitted in this category gave the strong impression that recognition within RILEM is much appreciated and seen as a great honour by the recipients of all the various awards. Honorary Members appreciate previous and present collaborations and the role played by mentors. Both the L'Hermite and Colonnetti medallists mentioned the confidence that receiving the medals gave them, and that these awards have proved to be milestones in their careers.

REFLECTIONS – RILEM AWARDEES. RILEM awardees include RILEM Honorary Members, RILEM Fellows, as well as the highly prestigious L'Hermite and Colonnetti medallists. All these awards are highly valued and considered an honour to receive. The L'Hermite and Colonnetti medallists indicated that getting the medals gave them great confidence for their work, and represented true milestones in their careers.

Overall, I feel happily satisfied by my half-century bond with RILEM. It helped me channel my activities in a productive way and to find excellent collaborators and debate partners with whom to foster progress.
Z. Bažant, Honorary Member, 2015

Last year I was honoured by receiving the Honorary Member title. That is an especially appreciated gesture. It means a lot to me to be on the same, short list as my old teacher and mentor, Prof. Sven Gabriel Bergström.
L-O. Nilsson, Honorary Member, 2017

In 1982, being just 34 years old, my strong involvement in RILEM started, which continued over time, despite abandoning my role as Delegate in Argentina and Secretary of GlaRILEM, as a consequence of my transfer to Switzerland (1987). I received my Honorary Membership 33 years later in 2016. The decline of the presence of Latin America in RILEM activities was noticeable, but more recently, GlaRILEM has regained life [as Lat-RILEM], thanks to the initiatives of Carmen Andrade and Luis Lima and of the Secretariat managed by Yury Villagrán.
R. Torrent, Honorary Member, 2016

In 2004 I was nominated Honorary Member of RILEM. So far there are more than 50 honorary members on this list. Not all of them are still alive or active. But it might be beneficial in the future to form an advisory board composed of active members of the list of honorary members.
F. Wittmann, Honorary Member, 2004

At the 74th RILEM Week held remotely, from 30 August to 4 September 2020, I was most honoured to receive the status of RILEM Fellow, which is and will be one of my most memorable moments for many years to come.
S. Amziane, RILEM Fellow, 2020

A special memory goes back to 1988 when I was organising the TC 101-BAT workshop. The event welcomed more than 100 participants to Dubrovnik less than three years before the Croatian declaration of independence.
H. Fritz, RILEM Fellow, 1997

I was honoured to be made a RILEM Fellow in 2015 during the RILEM Week in Melbourne.
D. Hooton, RILEM Fellow, 2015

In March 2015, the RILEM Bureau proposed that I be made a RILEM Fellow, and this was ratified at General Council in September and awarded to me during the Annual RILEM Week.
L. Lima, RILEM Fellow, 2015

In 2012 I was appointed a RILEM Fellow and the diploma had to be presented at the RILEM dinner in Cape Town, as I had "escaped" to the vineyards during the GC-meeting. Unfortunately, everybody else learnt that I was absent and probably had "escaped" to the vineyards.
L-O. Nilsson, RILEM Fellow, 2012

During the annual RILEM meeting of 2002 in Madrid, I was surprised when Dr Carmen Andrade, then RILEM President, nominated me as a RILEM Fellow. This made me very happy.
M. Ribas Silva, RILEM Fellow, 2002

One of the highlights of my association with RILEM, was receiving the Robert L'Hermite Medal in 2008 and being elected a RILEM Fellow in 2015.
J. Weiss, RILEM Fellow, 2015

I received the great honour of the RILEM Robert L'Hermite Medal during the RILEM Week of 2012 in Cape Town, South Africa. It gave me confidence and motivation. Receiving this honour in front of the best researchers in the field was an unforgettable experience.
D. Aggelis, L'Hermite Medallist, 2012

My time in RILEM reached its peak in 2017, when I was awarded the Robert L'Hermite Medal.
U. Angst, L'Hermite Medallist, 2017

A milestone was the RILEM Week in Aachen in 2010, when I received the Robert L'Hermite Medal.
N. de Belie, L'Hermite Medallist, 2010

My scientific contribution and my active involvement in RILEM was acknowledged in 2019 with the Robert L'Hermite Medal, which I received in Nanjing, China. For this reason, I was invited to provide a keynote opening lecture and an interview which are available on the RILEM website.
A. Falchetto, L'Hermite Medallist, 2019

Applying percolation concepts and various porous material theories to the transport properties of cement-based materials was instrumental, I have been told, in RILEM awarding me the Robert L'Hermite Medal in 1992, in Madrid Spain.
E. Garboczi, L'Hermite Medallist ,1992

I was incredibly honoured to have been awarded the Robert L'Hermite Medal in 2013.
J. Provis, L'Hermite Medallist, 2013

When I started at RILEM, it had a distinctive European flavour. When I received a notification (1980), that I was awarded RILEM L'Hermite Medal, I thought that I must give my acceptance speech in French. So, I took private French lessons. I did give my acceptance speech in French during the ceremony in Switzerland organised by Empa.
S. Shah, L'Hermite Medallist, 1980

I got the letter for my L'Hermite RILEM award on April 1st [2005]. Neither Prof. Modena nor Prof. Binda knew about this conferral, so I thought it was an April fool's joke. Ten years later I got my RILEM Fellow award, again dated 1st April 2015 …
M. Valuzzi, L'Hermite Medallist, 2005

This year [2020], I am delighted to receive the Robert L'Hermite Medal and honoured to join a list of past awardees who are now among the world's most distinguished researchers in the field. It is an amazing and incredibly humbling experience for me to be recognised in my field by an eminent scientific society like RILEM.
B. Ling, L'Hermite Medallist, 2020

I was honoured with one of the RILEM Colonnetti Medals in 2016. This recognition and the support and friendship from all over the world has given me the confidence to get back to my research, and to be the best researcher I can possibly be.
S. Bernal Lopez, Colonnetti Medallist, 2016

I think the impact of RILEM in the field of construction materials and structures has been growing extensively. It has done a fantastic job in producing massive data, through STAR. However, to avoid loss of this data a full open policy on publishing should be followed.
B. Ghiassi, Colonnetti Medallist, 2019

My award of the Colonnetti Medal in 2017, and subsequent involvement with TCs and the TAC, through the acknowledgement of my research activity, RILEM has expressed the importance of the preservation of cultural heritage.
E. Sassoni, Colonnetti Medallist, 2017

My first close encounter with RILEM came very soon after defending my PhD at KU Leuven in 2011, when I joined the newly established TC 238-SCM. I had the pleasure to interact and be inspired by some of the most committed and knowledgeable members of the scientific community.
R. Snellings, Colonnetti Medallist, 2016

I was very honoured to receive one of the RILEM Gustavo Colonnetti Medals for my research. RILEM is still expanding internationally and this is one of its great advantages. One meets various researchers, who come together to investigate different scientific issues and come up with proper solutions.
D. Snoeck, Colonnetti Medallist, 2018

Although my research is founded in the fundamental chemistry and physics of sustainable cements, it is very important to know about the challenges and opportunities in industry. RILEM has been a crucial source for this information and education, especially by involvement in the relevant technical committees.
C. White, Colonnetti Medallist, 2019

I was honoured as a Gustavo Colonnetti Medallist in 2020. I gave a lecture at the third RILEM Spring Convention in Guimarães, Portugal during which I had the pleasure to virtually meet the conference organisers and other attendees.
M. Hubler, Colonnetti Medallist, 2020

***MATERIALS AND STRUCTURES* AWARDS** Each year up to ten papers are selected by *Materials and Structures* Board of Editors and published as open-access papers. These papers exemplify the highest standards in the scientific community. In addition, awards are made for the M&S Best Reviewer See the Honours & Awards section of the website.

RILEM BEST STUDENT POSTER AWARD Instituted at the RILEM Week in Chennai in 2017, the RILEM Best Student Poster Award is given at each RILEM Annual Week to a student who presents a poster and is present to explain the work. The awardee receives a certificate from the TAC Chair at the conference. The comments below speak for themselves and the honour the awardees felt they were being afforded.

When the organisers announced the poster award, it was a pleasant surprise. Getting recognition in the international arena motivated me further to excel in my area of research and boosted my self-confidence. This award acted as a great incentive in my journey and nurtured me to disseminate the knowledge.
S. Rengaraju, IITM, India, 2017

Winning the 2018 RILEM Poster Award taught me that success is limited to our imagination and desire to strive for the best. Without this lesson, perhaps I would have already given up my potential and leaned towards mediocrity without exploring the best version of me with courage and confidence.
Alice Titus Bakera, University of Cape Town, South Africa, 2018

RILEM2020 was the first opportunity to disseminate the research results of my doctoral studies, so I was extremely delighted to hear that I won the Best Poster Award! The news was happily communicated to my supervisors and colleagues. We very much appreciate the recognition from the scientific committee of the conference and see it as a motivation to keep up with the good work.
Natalia Pires Martins, ETH Zürich, Switzerland, 2020

I was surprised and delighted to win RILEM Best Poster Award 2020. Not for a moment did it cross my mind that I had any chance, given the number of participants with high-quality work. I am grateful for this opportunity to show my research and highlight the potential of self-healing cementitious materials. It was a great honor, thank you RILEM!
Magdalena Rajczakoska, Luleå University of Technology, Sweden, 2020

Dr Nicolas Roussel presenting Alice Titus Bakera with her award

2.4 RILEM SECRETARIAT-GENERAL

The present staff in the RILEM SG's office are mentioned below. Prior to the appointment of Mrs Judith Hardy as RILEM SG in 2019, the SG position was held by Ms Pascale Ducornet (2007–2019), and before her, Mr Michel Brusin (1993–2007). These SGs served RILEM with distinction and dedication, and we are grateful to them for the administrative foundation they have provided over the years of their tenure.

Secretariat-General Staff

- Mrs Judith HARDY – Secretary General
- Ms Fanta SYLLA – Management Assistant
- Ms Anne GRIFFOIN – Head of Publications and Communication
- Dr Daniela CIANCIO – Implementation Manager

REFLECTIONS – RILEM SG AND STAFF. The RILEM Secretary General and staff, and the RILEM Implementation Manager, indicated that their experiences in RILEM were happy ones. While they appreciate working with worldwide researchers, they also enjoy the relationships with members, and regard RILEM as a "family".

The association has been thriving with so many members, its presidents and the teams of officers who surround them. I have always been amazed by the presidents who give so much of their time, their ideas and their dynamism to the association, and by their enthusiasm to renew and regenerate RILEM. Their personal investment, over several years, has been the strength of the association. And I am sure that the next presidents will be able to move the association forward as well.
P. Ducornet, SG, 2007–2019

When I applied for RILEM Secretary-General position, I was particularly driven by the goals of the association to promote sustainable and safe construction. … Since I started in mid-June 2019 I have grown even more enthusiastic to have the chance to work for and with major worldwide researchers, but also to facilitate the participation of young researchers and students from all over the planet in the leading international organisation in materials and structures activities. During my first year, I have very much appreciated the unbureaucratic, democratic and very efficient organisation of the work being done between RILEM members, to which I have had opportunity to collaborate. But also, the space given for proposals and decision-making on administrative matters.
J. Hardy, SG, 2019–

Mrs Judith Hardy introduced major changes in the way membership should be treated, with a focus on digitalisation to facilitate several processes such as subscription, payment and event proposals for our members. The challenge of course is implementing these processes all the while maintaining our relationship with the members. I believe we succeeded in doing so.
F. Sylla, Management Assistant, 2019–

Coming from a very different field, it was a challenge to absorb the specific vocabulary related to construction materials. I remember my first TAC meeting where I had to present the latest publications. I joked about being grateful to know how to read and pronounce the titles because I had no clue what I was reading. Over the years I am proud to say that I managed to grasp a few concepts and expand my vocabulary. It is no more a reading exercise.
Anne Griffoin, Head of Publications and Communication, 2015–

One of the main highlights of this position was evident since the very beginning: RILEM is a family, not an institution. I have felt welcome by everyone and I have established very friendly relationships with every single person I have worked/spoken with since then.
D. Ciancio, RILEM Implementation Manager, 2019–

There were many favourable and complimentary comments from members about the Secretariat-General and staff, as shown below in the associated comments from members. All felt that the SG and staff did a great job of running RILEM as an organisation and accomplishing this with a relatively small number of staff.

For me RILEM is its members, from the lovely Pascale who is always there to resolve any questions, to each of the researchers who volunteer their time and efforts to make this organisation a true family.
S. Bernal Lopez, Colonnetti Medallist

I always appreciated the support of the secretariat of RILEM in organising symposia.
H. Reinhardt

What really amazes me is how RILEM functions so well, with such a small permanent staff. The efforts of Pascale Ducornet and Anne Griffoin have been extraordinary.
D. Hooton

The final report edition in 2016 of TC226-CNM) has been successful thanks to the support of RILEM's Pascale Ducornet and her colleagues. Thanks very much to them.
V. L'Hostis, TC Contribution

My years as Director of Development have been key to me and hopefully to RILEM. I believe we made substantial progress during these years thanks to the great efforts taken by the Secretariat, the Presidency, the chairs and members of the standing committees, and all RILEM members. I only proposed some dreams, and the RILEM family turned these dreams into reality.
G. de Schutter, Director of Development Contribution

RILEM Secretariat staff, with the RILEM Implementation Manager and the Presidency

2.5 BOARD OF EDITORS

***MATERIALS AND STRUCTURES* JOURNAL** The RILEM flagship publication is *Materials and Structures / Matériaux et Constructions* (M&S). Since 2006, M&S has been published by Springer. It is a leading international journal, publishing results of current research on the properties and performance of building and structural materials, standardisation of test methods and the application of research results.
The Board of Editors is comprised of RILEM members, proposed by the Editor-in-Chief, and approved by Bureau. It comprises the Editor-in-Chief, Deputy Editors and Associate Editors.

RILEM TECHNICAL LETTERS In 2016, RILEM launched a new open-access journal: *RILEM Technical Letters.* The journal is devoted to disseminating breakthrough and up-to-date contributions in the field of construction materials science and is published as a Diamond Open Access Journal, available online free of charge.
The Board of Editors also consists of RILEM members: the Editor-in-Chief, Deputy Editor and Associate Editors.

REFLECTIONS – EDITORIAL BOARDS OF *MATERIALS AND STRUCTURES* & *RILEM TECHNICAL LETTERS*.
The editorial boards of RILEM's two journals, and their editors, fulfil a vital function in RILEM: ensuring that knowledge and information at a high scientific level is disseminated for the benefit of the community. Members of the boards appreciated their role in promoting science dissemination and upholding the high standards of the journals.

In 2016, I enthusiastically accepted the invitation to join the Editorial Board of M&S as Associate Editor and have been holding this role since then. I was particularly impressed by Prof. Pietro Lura, the Editor-in-Chief, with his capacity to quickly process an incredible amount of papers without any loss of accuracy.
E. Franzoni, Editor, M&S

I have had the distinct pleasure of editing the RILEM flagship journal Materials and Structures *for many years.*
K. Kovler, Editor, M&S

It was a great pleasure and a preferred occupation for me to be an associate editor of Materials and Structures.
I. Maruyama, Associate Editor, M&S

I have been associate editor of the international journal M&S, and from 2017, Deputy Editor-in-Chief.
G. Plizzari, M&S

I used several technical reports, recommendations and papers from Materials and Structures *when I was doing my MSc and PhD at the University of Sherbrooke, Canada.*
M. Sonebi

Since 2016, it was a great honour to become a RILEM Officer and served as Associate Editor for the journal Materials and Structures.
G. Ye, Associate Editor, M&S

One of my achievements after joining RILEM in 2017, which has been a real honour for me, was being appointed to the Board of Editors for the newly born journal RILEM Technical Letters.
E. Sassoni

During my presidency I was especially proud of the support and actions of Pietro Lura and Nicolas Roussel as editors-in-chief, starting up the new journal, which was a leap forward.
J. Vyncke

Previous newsletters can be found on the CSE RILEM section of the website

RILEM Newsletter & Bits and Bobs

CONCRETE SCIENCE AND ENGINEERING JOURNAL (NOW DISCONTINUED)

Another scientific journal created by RILEM in 1999, Concrete Science & Engineering, is now included in M&S. The Board of Editors comprised the Editor-in-Chief, Deputy Editors and Associate Editors. Copies of the four volumes (four issues per year), before being incorporated into the journal *Materials and Structures,* are still available.

RILEM NEWSLETTER & BITS AND BOBS ON TUESDAYS & THURSDAYS (B&B ON T&T)

In 1951 the biannual RILEM newsletter came into being. There were 44 editions, the last one being published in January 2019.

The first edition of the more attractive and modern design replacement publication *Bits and Bobs on Tuesdays and Thursdays (**B**right **I**n-house **T**alks and **S**tatements & **B**rilliant **O**utsourced **B**usinesses and **S**tories on **T**uesdays and **T**hursdays - B&B on T&T)* was in November 2019 and appears twice weekly on Tuesdays and Thursdays.

2.6 CORPORATE (INSTITUTIONAL, INDUSTRIAL AND ASSOCIATE) MEMBERS; INTERNATIONAL PARTNERS; AND INTERNATIONAL LINKS (RILEM REGIONAL GROUPS WORLDWIDE)

RILEM also has many corporate members and cooperates with international partners and other organisations. See the RILEM website's partners and corporate sections. It is vital to RILEM to maintain, grow, and strengthen these links to ensure the work of RILEM is rooted in real-life problems that the industry and society are facing.

Some responses from representatives of these organisations are given below. They reflect the value of RILEM to the building industry, as well as collaboration at scientific and management levels. Work done in the TCs has helped in research projects at Universities, and RILEM's extension into the developing world is also appreciated.

CORPORATE MEMBERS Corporate members pay a fee, they can send staff to TCs and have membership benefits and consist of Institutional, Industrial and Associate members:

REFLECTIONS – RILEM CORPORATE MEMBERS. For RILEM, it is vital to maintain, grow, and strengthen links with corporate members, so that the work of RILEM is rooted in real-life problems that the industry and society are facing. The responses from representatives of these organisations reflect the value of RILEM to the building industry, as well as collaboration at scientific and management levels. Work done in the TCs has helped in research projects at universities, and RILEM's extension into the developing world is also appreciated.

- **Institutional members** are research and testing organisations of national renown, universities, international or national standards organisations.

List of Institutional members:

- BAM
- BRI
- CEA Saclay
- CERIB
- College of Civil Engineering, Shenzhen University
- Consiglio Nazionale delle Ricerche
- Cracow University of Technology
- CSIR
- CSTB
- CSTC-WTCB-BBRI
- Delft University of Technology
- EMPA
- ETH Zurich
- FHWA
- Fundación Tecnalia Research & Innovation
- Ghent University
- IETcc (CSIC)
- Indian Concrete Institute
- INSA Toulouse/LMDC
- International Academy of Engineering (IAE)
- IRMA
- Jiangsu Research Institute of Building Science
- KARAKOLL SPA
- Klokner Institute
- Kuwait Institute for Scientific Research KISR
- Laboratoire d'analyse et d'essais de matériaux de l'Administration des Ponts et Chaussées
- LafargeHolcim Research Center
- Liverpool John Moores University
- LNEC
- MPA University of Stuttgart
- NBRI
- NILIM
- Politecnico Di Milano
- SCK-CEN
- Silesian University of Technology
- SINTEF Byggforsk AS
- Technical University of Denmark
- TNO
- Universidade do Minho
- Université Gustave Eiffel
- University of Antwerp
- University of Bologna
- University of Leeds
- University of Ljubljana
- University of Zagreb
- VDZ gGmbH
- Vilnius Gediminas Technical University
- VTT
- ZAG Ljubljana

- **Industrial members** are large firms or associations in the materials or construction sectors.

List of Industrial members:

- BASF SE
- CDAC-SECIL, SA
- Heidelberg Cement AG
- Kuwait Petroleum Research and Technology
- RISE
- SAUDI ARAMCO
- SELENICE BITUMI SHA

- **Associate members** are smaller research, academic or building organisations or companies.

List of Associate members:

- AFGC
- Architectural Institute of Japan
- Betolar Oy
- BIEMME srl
- BRE Centre for Innovative Construction Materials
- Brno University of Technology – Faculty of Civil Engineering
- CEDEX-LCEM
- Center for Better Living
- Center for the Development of Building Technologies
- Central Building Research Institute
- Centre de Recherches Routières
- Chalmers University of Technology
- CISC Institute Orgenergostroy
- CRIC-OCCN
- DIMK Sbije
- EDF-CEIDRE-TEGG
- Electric Power Development Co., Ltd
- ESTP Paris
- EKurophil Advanced Material & New Technology Inc.
- Institute of Theoretical and Applied Mechanics
- Instytut Badawczy Dróg i Mostów
- Japan Association for Building Research Promotion
- Japan Cement Association
- Japan Concrete Institute
- Kasetsart University
- LAVITECC- Federal University of Goiás
- Leipzig University of Applied Sciences
- Luleå University of Technology
- Nanjing Boke New Materials Research Institute
- NCPE, University of Nottingham
- Ooms Civiel bv
- Polish Academy of Sciences
- Technische Universität München
- The Getty Conservation Institute
- TU Braunschweig
- TU Darmstadt
- Unipetrol výzkumně vzdělávací centrum, a.s.
- Universita degli Studi di Trento
- Universita dell'Aquila
- Universita Politecnica della Marche
- Université De Limoges
- Université de Rennes 1
- University of Burgos
- University of Chieti-Pescara
- University of Naples Federico II
- University of Salento
- University of the West of Scotland
- University SAVOIE Mont-Blanc LOCIE
- UNNOBA

Corporate members' benefit can be seen on the website

As we enter an uncharted period of our history one constant will be the continued link between RILEM and the NTEC, University of Nottingham.
G. Airey, NTEC, Corporate Associate Member

Stories between RILEM and TNO align: TNO played an important role in developing and teaching the early editions of the Concrete Microscopy Course set up in 2005. We are proud to see that this course is still taught. This is one of many proofs of the additional value of RILEM in the building industry.
M. de Rooij, TNO Corporate Institutional Member

For the researchers working at the Magnel-Vanderpitte Laboratory for Structural Engineering and Building Materials, Ghent University, Belgium, RILEM has always been an important international organisation, the scientific work in the technical committees being instrumental to many of our research projects.
G. de Schutter, Magnel-Vanderpitte Laboratory, Corporate Institutional Member

The TU Braunschweig has been and is involved in numerous RILEM activities in the fields of experimental research and modelling studies.
M. Wistuba, TU Braunschweig, Corporate Associate Member

The link between RILEM and CEDEX-LCEM, started at the very inception of RILEM in 1947, with Prof. Eduardo Torroja being a co-founder of RILEM. Since then, the involvement of CEDEX-LCEM in RILEM has been constant, both at the scientific level, and at the management level.
J. Gálligo Estévez, CEDEX-LCEM, Corporate Associate Member

Since the birth of RILEM the Danish representation through TDU has been active and involved in all aspects of RILEM work, both administratively and technically, including TCs, TAC and the Board of Editors of M&S and look forward to continuing this collaboration.
O. Jensen, TU Denmark, Corporate Institutional Member

CEA has been the leader of a RILEM technical committee between 2008 and 2013. In the future it will continue to contribute to RILEM events.
V. L'Hostis, CEA, Corporate Institutional Member

It is also the 75th anniversary of BRI Japan, which joined RILEM in 1953 as an institutional member. So, since the beginning, BRI has supported RILEM as a representative of Japan and more recently, the presidency and secretariat of JPN-RILEM.
M. Midorikawa, BRI, Corporate Institutional Member

LMDC has been in cooperation with RILEM for over three decades, with researchers participating in more than 30 TCs. LMDC will continue to support and take advantage of this indispensable network of excellence which is RILEM.
A. Sellier, LMDC, Corporate Institutional Member

LEMIT officially linked with RILEM in 2010, but members of LEMIT have interacted and participated in RILEM activities since the very early days of RILEM. Therefore, the history of LEMIT has been developing in parallel with that of RILEM, and the relationship now is very solid.
L. Traversa, LEMIT, Corporate Associate Member

Being an active member of the RILEM community has provided BAM with an enormously inspiring and fruitful scientific network.
B. Meng, BAM, Corporate Institutional Member

PARTNERS

REFLECTIONS – RILEM INTERNATIONAL PARTNERS. Partners sign a Memorandum of Understanding and agree on collaborations with RILEM.
Partners are in most cases not members (except for IAE which is both a Corporate Member and partner but is an exception). (BRI)
Partners are mainly associations or organisations, similar to RILEM, for example *fib* and ACI.
Partners cannot send staff members to TCs and have no membership benefits.

List of Partners

- AATH (Asociacion Argentina de Tecnologia del Hormigon)
- ACI (American Concrete Institute)
- ACRP (The European Association for Construction Repair, Reinforcement and Protection)
- AEEA (African Engineering Education Association) still under discussion
- ALCONPAT (Regional Association of Researchers in the Field of Concrete Durability and Pathology)
- ASMATEC (Association Sciences des Matériaux et Technologies de Construction) MoU
- CIA (Concrete Institute Australia)
- Concrete NZ Learned Society (formerly called NZCS)
- EDA (The European Demolition Association)
- *fib* (Fédération International du Béton)
- IAE (International Academy of Engineering)
- ICRACON (Instituto Brasileiro do Concreto)
- ICI (Indian Concrete Institute)
- ICT (Institute of Concrete Technology)
- ISAP (International Society Asphalt Pavements)
- JCI (Japan Concrete Institute)
- KCI (Korea Concrete Institute)

ACI and RILEM have a long history of working together to improve the use of cement and concrete in all forms of construction. RILEM members and staff work on ACI committees, and vice versa. The ACI staff and members look forward to the next 75 years of working together with RILEM staff and members to advance the cement and concrete industry.
R. Burg, ACI

In 2015 a Memorandum of Collaboration was signed between the fib *and RILEM. This agreement acknowledges that the* fib *and RILEM are both international not-for-profit organisations with similar structures and goals. Both organisations advance the performance of concrete structures worldwide.*
D. Fernández-Ordóñez et al., *fib*

In the past two decades AAHES (AATH) has enjoyed a fruitful relationship with RILEM. As a result of the many events and activities held, lasting relationships have been made between Argentina and RILEM researchers in other countries.
E. Villa/G Goicoa, AAHES

For decades there has been always a good co-operation between RILEM and the Comité Euro-International du Béton (CEB, now merged with FIP and renamed fib*), as many prominent engineers and researchers were active in both organisations. I appreciate RILEM as an outstanding, very valuable, and utmost important organisation in the field of material sciences within civil engineering. RILEM made great developments over the past decades, and it is until today full of "life", innovations and science.*
It was great pleasure for Prof. Alexander and me that we could sign the official fib*-RILEM Memorandum of Cooperation on the occasion of the RILEM Week in Sydney, Australia in September 2015.*
H. Müller, *fib*

The CIA was privileged to host the RILEM Annual Week in Melbourne in 2015. The relationships and friendships forged through this event led to our formal International Partner Agreement, signed during the conference, and has led to many Australian industry members being able to access the incredible information that has been distributed by RILEM.
D. Millar, CIA

The signing of an International Partner Agreement between RILEM and JCI in 2007 and its renewal in 2015 formalised our cooperative efforts then, now, and into the future.
M. Yoshimura, JCI

RILEM REGIONAL GROUPS WORLDWIDE

REFLECTIONS – RILEM REGIONAL GROUPS. As with Corporate Members, it is vital for RILEM to grow and strengthen links with all parts of the world, using Regional Groups as the main medium. Over the last decade or so, great strides have been made, and members in these regions have a closer "home-link" to RILEM. While this is appreciated, the wider issue of how to include members from all over the world still needs addressing.

SUB-SAHARAN AFRICA

I recently attended an inaugural RILEM TC-meeting in Africa. As this is a large continent, I realise the need to develop online solutions enabling the members to participate in active online discussions and web-meetings is important.
B. Wigum

EAST ASIA

I have been working for the development of RILEM, for the strengthening of the relationship between RILEM and Japan and have the pleasure of organising RILEM Week in Kyoto, Japan in 2022.
T. Noguchi

CHINA

My most memorable activity was organising the RILEM Week in Hong Kong in 2011. This event served as an effective introduction of RILEM to China.
C. Leung

LATIN AMERICA

RILEM Leadership was making a conscious effort to strengthen organisational presence in the developing world, particularly Brazil and Latin America, when I organised RILEM week in São Paolo. Unfortunately, it will take a long time to reach some level of participation from the developing world.
V. John

NORTH AMERICA AND CARIBBEAN

*In 2018, to help celebrate the 50th anniversary of this journal, I wrote a short article titled "RILEM and the National Institute of Standards and Technology (NIST) over the past 50 years" (*Materials and Structures*, October 2018), which clearly showed how valuable the journal has been to NIST for a long time.*
E. Garboczi

MIDDLE EAST AND NORTH AFRICA

I was involved in monitoring building with ramped earth, being used for constructing a sky training centre and the second experimental house made with "béton banché" – gypsum and sand, in 1998 in the capital Rabat. (Morocco had a big reserve of gypsum and the ramped earth is typically used in the south of the country.) Recently, I visited the gypsum house in 2017, and it is still in excellent condition.
M. Sonebi

EAST EUROPE AND CENTRAL ASIA

On 22 April 2016, the CIS-RILEM Regional Group was successfully launched in an inaugural meeting at the Moscow State University of Design and Technology (MSUDT), Russia. The inaugural assembly was held in parallel with the Congress of the International Academy of Engineering, which is an international partner of RILEM.
V. Falikman, East Europe & Central Asia Regional Convener

SOUTH ASIA

Some of the highlights of my association with RILEM were being Key Organiser of the 71st RILEM Week in 2017 in Chennai, being Regional Convenor of South Asia, as well as being a member of DAC.
R. Pillai

PACIFIC

In 2014 I was asked to convene the relationship between RILEM and South Pacific region. This resulted in signing partnership agreements between RILEM and CIA as well as RILEM and NZCS, now Concrete NZ.
M. Khrapko

EUROPE

My further development and research have been influenced by Prof. P. K. Mehta, particularly during the work in TC 032-RCA, on corrosion of reinforced concrete on buildings located along the Adriatic Sea in Croatia.
D. Bjegovic

3. RILEM: THE WAY FORWARD

REFLECTIONS – THE WAY FORWARD. Responding to the question "How do you think RILEM needs to develop moving forward?" the general concerns were gender equality, Eurocentricity, and taking advantage of the so-called fourth industrial revolution. We need to use available technology which makes long-distance communication possible. This brings an enormous saving in transport costs at a time where lack of financial support is a drawback to the success of swift completion of research projects.
The coronavirus pandemic has already telescoped us into a new era: RILEM is now "online-competent" and proficient.

I recently came across a very nice saying: "In sameness we connect, in differences we grow." I consider this a relevant motto for the further development of RILEM on a global scale.
G. de Schutter

The operational model of RILEM and other scientific associations will have to change. We need to adapt RILEM's working model to the digital world in order to make it attractive to the young generation and more inclusive for scientists of the developing world and also women.
V. John

After all these years in RILEM, this volunteer-based academic organisation attracts me deeply. With time, I think RILEM should gain wider coverage, through more young fellows and explore more exposure frontiers through new social media.
K. Li

Looking at the future, I hope to see a stronger collaboration between RILEM and other international associations, to move forward in the direction of a fruitful globalisation of the culture of materials for construction and design rules
G. Plizzari

I believe RILEM should develop in two ways: gender balance and geographic balance. With the increased advancement of remote communication, it seems natural that we can incorporate more international experts in our TCs.
L. Poulikakos

I wish that RILEM continues to offer researchers a variety of platforms to develop and mature themselves and others.
K. van Breugel

I loved working for the association, and for those who ran it and directed its activities. I learned so many things, not just work. RILEM has always meant a lot for me, I will not forget all the good memories. Thank you with all my heart. Best wishes to RILEM.
P. Ducornet, SG, 2007–2019

The comments immediately above give some indications of how RILEM should move into the future. This is covered in the conclusion.

Pascale Ducornet with the Presidency

RILEM | *And the future*

REFLECTIONS, NEW DIRECTIONS, PERSPECTIVES AND THE WAY FORWARD

At its origin 75 years ago, RILEM was launched in a very momentous time. For five horrendous years much of the world had been on fire, leaving disastrous consequences both socially and in terms of infrastructure. The need had never been greater for collaboration to rebuild and move forward. There was recognition of a deep need in the infrastructure and building fields to exchange knowledge, and to develop and share information on testing methods, material characteristics and good building practice.

RILEM has matured and grown even wiser, but still follows the ambitions and endeavours of those who sat around the table in the immediate post-war period.

Since then, RILEM has matured and grown even wiser, but still follows the ambitions and endeavours of those who sat around the table in the immediate post-war period. The constant focus has been on sharing scientific and technological developments and new knowledge, and as such, RILEM has become a magnet to attract practitioners, researchers and academics to gather and meet for crucial discussions. RILEM has grown strongly and steadily over the years, standing on the shoulders of, and capitalising on the achievements of past members, TC chairs and presidents who understood the need to build further on each other's work.

In its development since the turn of the new millennium, RILEM has taken on a truly international flavour, culture and activity, extending its involvement worldwide, covering some 90 countries. It represents a vibrant and dynamic organisation, constantly evolving to meet the needs of its members and its constituency, in touch with the latest international developments in construction materials and structures, building partnerships all over the globe, and reaching out to areas of the world where it does not yet have a significant footprint. In contrast to many similar associations around the world, RILEM has remained firmly in line with its original ambitions, and grown especially its individual membership in recent decades, reflecting its people-centred focus. RILEM has also reached out to young people in every corner of the world, and sought to account for gender balance and representation from the developing world and emerging economies.

Progress in materials and structures has also been considerable over the period of RILEM's existence, with the use of more complex and multifunctional materials. Civil engineering has introduced profound changes in techniques, inventing new, more effective, dynamic and economically viable construction methods. RILEM Technical Committees have played a crucial role in all these developments, by way of collecting and evaluating the progress of knowledge, and they continue to do so.

RILEM STRATEGIC DEVELOPMENT

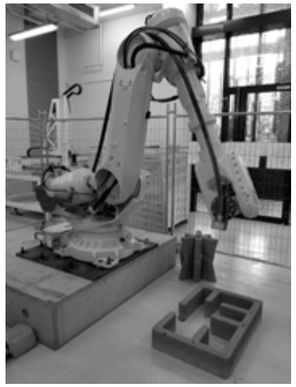
As mentioned in Part II, a RILEM Strategic Roadmap was drawn up in 2015, based largely on discussions at the Brussels Workshop in 2014. Five key actions were planned and rolled out from this meeting: bringing in young members, establishing better links with the industry, leveraging an open-access publication strategy, having a more effective website, and facilitating improved RILEM promotion and follow up. All this has been successfully accomplished, although these key elements require constant attention. With the ongoing work of the TCs, the standing committees, the Bureau and the Secretariat, as well as our Implementation Manager, so many promising elements are poised to grow stronger than ever.

While a pandemic was listed as the last element in the 2015 RILEM Strategic Roadmap, 2020 has proved that our daily lives can change suddenly and irrevocably. Undoubtedly, this has put us all to the test, including RILEM as an organisation. Plans and visions had to be changed and adapted, new horizons recognised worldwide, new ways of virtually interacting become mainstream, and rapid adaption to progress. With our SG office performing very well in this difficult period, RILEM now has much experience in organising digital meetings and workshops, and new digital services are being constantly implemented for our members.

LOOKING TO THE FUTURE

In a way now, after 75 years, we are back to the start of RILEM, with the need to face many global challenges where RILEM can make a difference for the future, and will undoubtedly continue to contribute strongly. To build that new vision with its members, RILEM will hold a further strategic workshop in April 2021, to replace the planned anniversary event, postponed due to the Covid-19 crisis. With the involvement of its members, RILEM will continue to chart its course, and draw upon a new dynamic for the coming years.

Virtual General Council meeting, RILEM Annual Week, Sheffield, 2020



3D concrete printing laboratory
Swinburne University of Technology, Melbourne, Australia
@Jay Sanjayan

The construction industry is, understandably, a major consumer of a wide variety of products such as concrete, wood, steel, glass, ceramics, bricks and paints; it also produces building components such as columns, beams, floors, windows, doors and the like, part of the physical structures all around us. This industry also has, of course, a major impact on our well-being, our economy and on the environment. Materials research has in this respect, a tremendous relevance since it has such an impact on durability and sustainability issues.

- Clearly the use of natural, more durable and low impact materials is needed more than ever, to achieve a **carbon-neutral construction industry.** In particular, further research and dissemination of good practice are necessary in this field.
- **Circular economy** initiatives have to be identified and further developed. Knowledge, testing, quality assurance, certification and information dissemination on the reuse of materials and recycling of materials must be supported to ensure that innovative circular economy principles become embedded in our sector.
- **Digitalisation, industrialisation and automation** continue apace, and new construction techniques such as 3D printing grow. These will impact our construction practices, and needs will arise related to appropriate materials, the development of new knowledge on the intrinsic characteristics of advanced additive materials, and appropriate quality assurance techniques to test their quality.
- The potential **impact of building materials on human health** is yet another important topic. New production processes seek to alter embodied energy, energy consumption, CO_2 emission and recyclability of building materials, but can simultaneously also affect human health. Construction materials can be major contributors to indoor emissions of volatile organic compounds (VOCs) that have the potential to lower indoor air quality, or even promote the spread of viruses and diseases.
- Due to the pressing challenges faced in many developing countries with regard to population growth and urbanisation, the focus is not only on technological (durability, robustness and safety) developments and environmental sustainability, but also on socio-economic applicability, adaptability and scalability. This includes a review of alternative, traditional and vernacular construction technologies such as material-saving structures that help to reduce material consumption. A strategic research roadmap that points out the most relevant potentials and research needs for quick implementation of **more localised construction materials** can be considered as extremely relevant.[1]

1. Schmidt et al., "Innovation potentials for construction materials with specific focus on the challenges in Africa", *RILEM Technical Letters* 5 (2020): 63–74.

Echoing the major challenges above, including sustainability, RILEM, through the Liaison Committee, is supporting GLOBE, the "Global Consensus on Sustainability in the Built Environment", and is participating in the task force. The intention of GLOBE is to establish national points of contact to draw on the expertise of international civil engineering associations and networks, in order to ensure coherent coordination of international/supra-national regulations and national codes – all with a view to optimising the sustainability performance of the built environment.

EPILOGUE

In RILEM, new plans will be forged and further rolled out in the coming years. Dynamism and energy are only sustained in an organisation that constantly renews itself organically, that continually assesses its operating environment and is open to change, able to respond nimbly and quickly to change. We mention again the recently constituted RILEM Youth Council, who represent the cream of emerging researchers from all over the world, and who will eventually constitute an important leadership echelon in the association. Even in this difficult time of the pandemic, the RYC has rapidly assembled a networked group of young people with links in continents where RILEM has had limited prior representation. With the dynamism of the new Youth Council, and with wise leadership within the organisation, RILEM will be steered on a good course for the future.

We also wish to acknowledge the contributions of many RILEM members to this booklet – by way of contributions for Part III, supplying interesting and useful information when it was needed, helping to proofread and check the booklet, and in many other ways. This again shows the great strength of RILEM in its members.

We can have confidence that the hallmarks mentioned above will continue to characterise a dynamic RILEM in future decades. We anticipate a bright future, assured by stable election processes for leaders in RILEM, an excellent SG office going forward, and visionary leadership that builds on past achievements. Foremost, RILEM has an effective representation of members on all levels, which is the secret of its dynamism.

Sail on RILEM … *Bon vent!*

GLOSSARY AND DESCRIPTIONS

RILEM - Réunion Internationale des Laboratoires et Experts des Matériaux, Systèmes de Construction et Ouvrages

The International Union of Laboratories and Experts in Construction Materials, Systems and Structures.

DAC - Development Advisory Committee

Within the **DAC** (Development Advisory Committee), strategies for the development and improvement of RILEM's membership profile and its international partnerships are discussed. DAC advises the Bureau on international developments, activities and relations, aiming at increasing and improving international collaboration between RILEM and its international, industrial and professional partners. DAC is also tasked with developing strategies to grow RILEM membership and to facilitate cooperation among its various member groups from around the globe.

GLOBE: Global Consensus on Sustainability in the Built Environment

GLOBE was launched at an interdisciplinary workshop held at Tongji University, Shanghai, China, co-organised by members of the Joint Committee on Structural Safety (JCSS) and the International Joint Research Center for Engineering Reliability and Stochastic Mechanics (CERSM) at Tongji University. GLOBE has since been adopted by the JCSS and is supported by major international associations within the construction industry, including RILEM, IABSE, CIB, ECCS, fib and IASS.
The GLOBE working team operates under the direction of Prof. Michael Havbro Faber, Department of the Built Environment, Aalborg University, Denmark, President of the Joint Committee on Structural Safety and initiator of GLOBE, assisted by Dr Dipl.-Ing. Wolfram Schmidt, Bundesanstalt fur Materialforschung und - prufung (BAM), Berlin, Germany. See more on RILEM website dedicated GLOBE page.

GLOBE
Global consensus on sustainability in the Built Environment

TAC - Technical Activities Committee

TAC monitors the work of the Technical Committees (TCs) and other technical activities of RILEM, and its responsibilities include the following:

- proposal and recommendation of new TCs,
- review of the ongoing work of TCs and facilitating progress,
- approval of workshops, conferences and other events co-sponsored by RILEM,

- proposal of representatives in sponsored congresses and conferences,
- discussion of new trends and identification of potential TCs.

RYC - RILEM Youth Council

RYC was created at the 74th Annual Week in Sheffield, UK, in September 2020, as a DAC sub-committee.

Its main tasks are:

- attracting, involving and motivating young RILEM members,
- encouraging participation in TAC and EAC activities,
- increasing awareness of RILEM events and courses,
- preparing young members for leadership positions,
- showcasing / celebrating the achievements of young RILEM members,
- creating networks between emerging researchers to increase visibility of / access to RILEM.

RYC consists of eleven PhD student members, ten of whom represent each RILEM region and one nominated by the DAC chair, for a three- to four-year mandate.

EAC - Educational Activities Committee

One of the main purposes of the Educational Activities Committee (**EAC**) is to broaden the education of both PhD students and the professional community through promotion of interesting and informative PhD courses and seminars on subjects of relevance to researchers working in specific areas. RILEM EAC is responsible for RILEM activities in the field of education. These include a number of different tasks, of which the basic and most important one is the courses to which we grant scientific sponsorship. Though RILEM EAC has only existed for a handful of years, our sponsored courses have been enjoyed by more than 2,000 participants and about 200 teachers.

TC – Technical committees

The Technical Committees are the heart of the scientific activity of the association and are the main forum where RILEM members meet and exchange their expertise. RILEM TCs play a major role in furthering scientific knowledge.

A TC is a group of international experts working together in a particular field in order to:

- assemble and evaluate research data,
- harmonise testing methods,
- suggest new topics for research (this research not to be directly undertaken by RILEM TCs),
- and to promote their conclusions by publishing recommendations, technical reports or state-of-the-art reports for test methods or construction practice.

A TC falls under a RILEM Cluster. This body is entrusted with co-ordinating and monitoring RILEM TC activities, and to advise the RILEM Technical Activities Committee (TAC). This co-ordination is convened by Clusters conveners.

M&S - *Materials and Structures* journal

The RILEM flagship publication is *Materials and Structures / Matériaux et Constructions* (M&S). Since 2006 M&S has been published by Springer. A leading international journal, it publishes the results of current research on the properties and performance of building and structural materials, standardisation of test methods and the application of research results. Another scientific journal created by RILEM in 1999, *Concrete Science & Engineering*, is now included in M&S.

RTL - *RILEM Technical Letters*, RILEM's open-access journal

In 2016 RILEM launched its own open-access journal *RILEM Technical Letters*. With the new scientific peer-review journal, *RILEM Technical Letters*, RILEM seeks to venture into the new era of open-access publishing by disseminating contributions breaking new ground in the field of construction materials science.

Bureau, RILEM organ

The Bureau, the members of which are elected by the General Council, exercises control of the current affairs of RILEM and ensures that the statutes are observed. It is responsible to the General Council to which it submits an annual report.

Secretariat General (SG), RILEM organ

The Secretariat General implements the decisions of the General Council and the Bureau. It is responsible for the daily activities and management of the association. It furnishes the necessary assistance for the proper functioning of the Bureau and its Standing Committees. It also coordinates RILEM's publishing activities (STARs & proceedings). Finally, it is responsible for disseminating information to the members of the association through the website and social media (Facebook, LinkedIn, Twitter and YouTube).

Standing Committees (SC), RILEM organs

The six RILEM Standing Committees are: Technical Activities Committee (TAC), Development Advisory Committee (DAC), Educational Activities Committee (EAC),

Editorial Board of Materials and Structures, Editorial Board of RILEM Technical Letters and Bureau.

General Council, RILEM organ

The General Council is the decision-making body of RILEM. It is called upon to vote on all important decisions submitted by the Bureau. The General Council is composed of the RILEM members (excluding those who have a temporary free membership). All RILEM members thus have the voting right at the General Council session.

RILEM Expert

A RILEM member that is a world-leading scientist or practitioner and is an appointed member of TAC or DAC.

Liaison Committee

The Liaison Committee of International Associations of Civil Engineering is a body initiating contact between international civil engineering associations. Formed in 1958, it brings together the member organisations CIB, ECCS, *fib*, IABSE, IASS and RILEM https://iabse.org/About/Liaison-Committee

RILEM Annual Week, event

The RILEM Week is the annual meeting of the Standing Committees of RILEM; this takes place every year in conjunction with a major international conference.

RILEM Spring Convention, event

Established in 2018 in Barcelona, Spain, the RILEM Spring Convention is an annual event that takes place in conjunction with a major international conference.

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are available in the History section of
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www.rilem.net

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