30 years of history for Restena's 20th anniversary

To mark its 20th anniversary, the Restena Foundation has produced an anniversary publication retracing the major stages of its development, but above all the evolution of two types of networks to which it is intimately linked: research and education networks and the internet.

Established in 2000 at the initiative of research centres and higher education institutions, the Restena Foundation has its roots in the RESTENA project "Réseau Téléinformatique de l'Education Nationale et de la Recherche" launched in 1989 by the Ministry of Education to meet the communication needs of education and scientific research institutions in Luxembourg. Located in the CRP Henri Tudor (now the Luxembourg Institute of Science and Technology) for over ten years, the RESTENA project team grew under the leadership of early leaders of the project: Théo Duhautpas and Antoine Barthel.

Originally designed for the needs of national education and adding research early on, the RESTENA project not only set up the national network for research and education, it also acted as an internet pioneer in Luxembourg, supporting all Luxembourg economic players. The Restena Foundation, now headed by Gilles Massen, is heavily influenced by this history, even though throughout its twenty years it kept focused on its primary mission: to serve national education and research.

The strength of an infrastructure

The Restena Foundation manages Luxembourg's research and education network with a 100 Gbit/s bandwidth, an asset for all projects or research activities generating, analysing and processing large quantities of data. Since its inception, this network has not only benefited all those engaged in research but all those involved in all levels of teaching in Luxembourg. Whereas the tendency of other networks in Europe was to focus on research and higher education, Restena took always the broader view. Thanks to this particularity, Restena has been able to effectively support the implementation of home schooling, since the beginning of the health crisis last March, for the benefit of Luxembourg's educators and their students.

Since Luxembourg's connection to the internet in 1992, Restena has also been managing .lu as the national registry for the country code top-level domain. It organises and manages the .lu addresses registered within the Domain Name System (DNS). Recently, Restena opened-up the registration for one- or two-character domain names and, in the coming months, it will enable all .lu holders to have a greater control over the security of their domain names.

The success of the RESTENA project and then the Restena Foundation in setting up and efficiently managing these infrastructures is the result of strong and broad European cooperation. Since even before its establishment as a foundation, Restena relied on and was involved with two major European associations: first, with the GÉANT

Association dedicated to research and education networks and bringing together more than forty countries, second with the Council of European Top-Level Domain Registries (CENTR) an association for exchange, dialogue and innovation of European country code top-level domain (ccTLD) registries and its around sixty members. Alongside its counterparts, the Restena Foundation discusses, provides its expertise, participates in the decision-making on future developments and works on research projects. In particular, Restena has played a key role in developing and setting up the international eduroam service, which enables students, teachers and researchers to connect automatically, via a secure connection, to universities and research institutions in more than 100 countries.

A critical role in the exchange of internet traffic

As internet pioneer, the Restena Foundation managed the first national worldwide web server and maintained a national directory, publishing the list of WWW servers in the 1990s. It also set up and piloted for 13 years - from 1998 to 2011 - the IP traffic exchange platform for internet service providers, the first of its kind in Luxembourg: the Luxembourg Internet Exchange (LIX). In 2017, the Restena Foundation took charge of most of the technical management of the LU-CIX backbone, the current national internet exchange point. The strong collaboration between these two entities is all the more confirmed as they are now working together on the national centre for volumetric Distributed Denial of Service (DDoS) attacks. This so called scrubbing center is at the service of the High Commission for National Protection and will help managing national crises triggered by major DDoS attacks.

This ambition towards greater security is a major theme for the years to come within the activities of the Restena Foundation itself. Restena is currently working towards an ISO 27001 certification with the implementation of an Information Security Management System (ISMS). Above all, data security and protection are central to its concerns, working in particular with the National Commission for Data Protection (CNPD) for greater awareness, if only in order to maintain its communities' trust in its services.

➔ **To find out more about the foundations and key stages in the development of the Restena Foundation, but also about the importance of the research and education networks established in Luxembourg and at European level and the emergence of the internet on the national soil, the publication "RESTENA: the story of an infrastructure" is available on request at communication@restena.lu.**