



CYBERSECURITY LUXEMBOURG



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Économie

SECURITY
MADEIN.LU



LUXINNOVATION
TRUSTED PARTNER FOR BUSINESS

LUXEMBOURG CYBERSECURITY ECOSYSTEM



NATIONAL ACTORS

EDUCATION & RESEARCH



SECTORAL PPPS



AUTHORITIES & REGULATORS



SPECIFIC LEGAL FRAMEWORKS

- CIP** Critical Infrastructure Protection (loi du 23 juillet 2016 portant création d'un Haut-Commissariat à la Protection nationale)
- GDPR** General Data Protection Regulation (loi du 1er août 2018 portant mise en place du régime général sur la protection des données)
- NIS** Network and Information Security (loi du 28 mai 2019 portant transposition de la directive NIS)
- PSDC** Prestataires de Services de Dématérialisation ou de Conservation (loi du 25 juillet 2015 relative à l'archivage électronique)
- PSF** Professionnels du Secteur Financier de Support (loi modifiée du 5 avril 1993 relative au secteur financier)

NATIONAL STRATEGY & GOVERNANCE

SERVING THE PUBLIC SECTOR



Department of Media, Telecommunications and Digital Policy

High Commission for National Protection

Ministry of Foreign and European Affairs

Ministry of the Economy

State Intelligence Service

Directorate of Defence



INSTITUT LUXEMBOURGEOIS DE RÉGULATION



INTERMINISTERIAL COORDINATION COMMITTEE FOR CYBER PREVENTION AND CYBERSECURITY



COMPANIES

74 COMPANIES WITH CYBERSECURITY AS A CORE BUSINESS

EMPLOYMENT

932 employees in total

Estimated by Luxinnovation based on last available figures in Edutodata and LBR

SIZE

74% 1-10 employees

AGE

5 years

~50% of companies have been created during the past 5 years

SERVING THE PRIVATE SECTOR



SECURITY MADE IN LU



START-UPS

START-UPS REPRESENT MORE THAN 20% OF THE NATIONAL CYBERSECURITY ECOSYSTEM

CORE BUSINESS

35%

One third of start-ups have cybersecurity as a core business

TOP 3 SOLUTIONS OFFERED

1. Identity management
2. Governance, risk & compliance
3. Encryption



57% of start-ups are or have been hosted in a Luxembourg incubator

DIVERSIFIED SOLUTIONS

Luxembourg companies mainly specialised in risk identification and systems protection



TOP 7 SOLUTIONS COVER 60% OF THE NATIONAL MARKET*

1. Governance, risk & compliance
2. Identity & access management
3. Data security
4. Asset management
5. Penetration testing
6. Backup & storage
7. Awareness & training

* Based on the ECSSO Cybersecurity Market Radar

Agenda

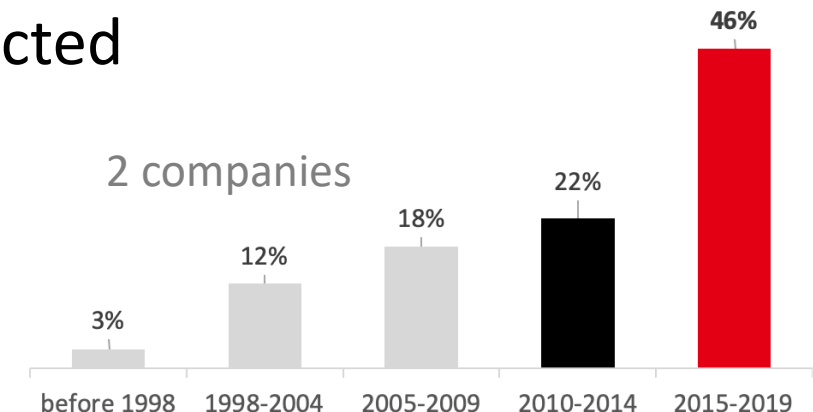
- 1 Where it all started
- 2 Public sector initiatives
- 3 Private sector market mapping
- 4 The core business entities
- 5 Innovation & start-ups

Where it all started

2000, the “ILOVEYOU” virus



- 10 days of self-propagation
- 50 million infections
- US \$5.5 – 8.7 billion in damages worldwide
- 10% of internet-connected computers in the world had been affected



International guidance

2002, OECD Guidelines - towards a culture of security



Public sector initiatives



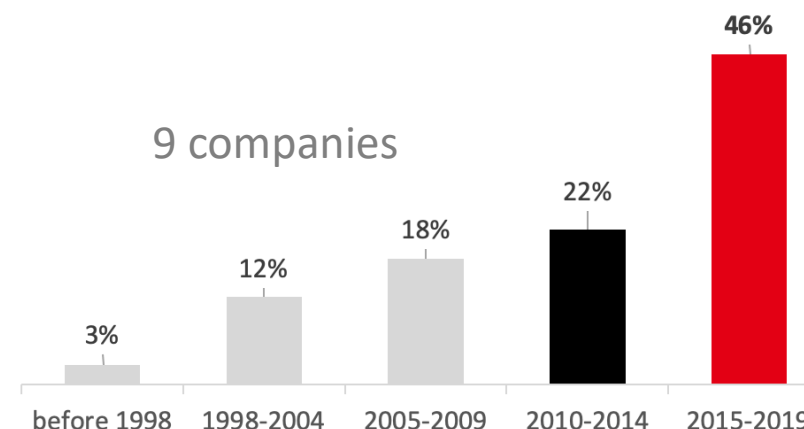
Ministry of the Economy – first mover

2003, launch of CASES



cases.lu

Cyberworld Awareness and
Security Enhancement Services
LUXEMBOURG



CASES

The first years




**CLEVER CLICKS
FOR SAFER BUSINESS**



SCHÜTZEN SIE IHRE DATEN!
Wenden Sie die CASES-Sicherheitsreflexe an.

www.cases.lu



BEE SECURE



HOW TO GENERATE YOUR PASSWORDS WITH THIS CARD?

Step 1



Select a row and a column

Step 2



Select direction

Step 3



Select at least 8 characters

Step 4



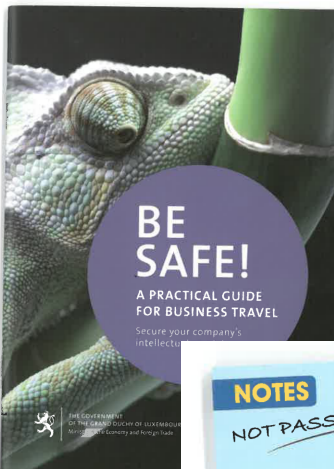
Remember your choices

This card is unique.
Keep it safe and personal!



BE SAFE!
A PRACTICAL GUIDE FOR BUSINESS TRAVEL

Secure your company's intellectual property



- Ne divulguer à personne vos identifiants et mots de passe permettant d'accéder à Internet et aux systèmes informatiques, même si la demande semble crédible.
- Déconnectez-vous toujours des sites Web et autres pages en ligne à l'aide du bouton prévu à cet effet.
- Ne laissez jamais traîner à la vue de tous des documents papier contenant des informations sensibles.
- Ne prenez pas de décisions impulsives - dégagez-vous de la pression de votre correspondant.
- N'ayez pas peur de dire « Non » à une demande qui...

SOCIAL ENGINEERING



www.cases.lu

CASES - Cyberworld Awareness and Security Enhancement Structure

Informationssicherheit

Muster-Sicherheitshandbuch
Gebrauchsanleitung



LA GOUVERNANCE DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Intérieur



MOTS DE PASSE et autres tracas

SECURITE DE L'INFORMATION

Les mots de passe résistent pas que dans les codes de files, mais également en informatique. Tu en utilises un chaque fois que tu te connectes à ton PC. Ton identifiant (user name) et ton mot de passe (password) sont pour ton ordinateur la preuve que c'est bien toi. Tout le monde pourrait les voir et s'en servir pour accéder à ton ordinateur. Ah si, tout comme dans l'histoire d'Ali Baba et les 40 voleurs, elle pouvait aussi utiliser le mot de passe « Sésame, ouvre-toi » pour barrer son armoire...

Bonne idée! Sauf que Julie oublie que les 40 voleurs, quand ils sont retournés dans la cave, ils l'ont retrouvée complètement vide. En effet, Ali Baba avait entendu le fameux mot de passe et avait eu le temps de s'emparer des trésors cachés dans la cave. Pour qu'une telle mésaventure ne t'arrive pas, voici quelques conseils:



Le mot de passe est un mot de passe en latin qui ne peut pas être deviné même par quelqu'un qui te connaît bien. Utilise donc des mots qui ne sont pas dans le dictionnaire. En effet, Ali Baba avait entendu le fameux mot de passe et avait eu le temps de s'emparer des trésors cachés dans la cave. Pour qu'une telle mésaventure ne t'arrive pas, voici quelques conseils:

Une dernière remarque: Le mot de passe doit être unique et ne pas être utilisé ailleurs. Cela s'appelle **phishing** (hameçonnage) et consiste à envoyer des copies contrefaites de pages web très connues. L'internaute est appelé à entrer ses données personnelles sur ces pages web plus vraies que nature. Cela est particulièrement dangereux lors d'achats et d'opérations bancaires en ligne. Ce ne risque donc pas de t'arriver si tu ne fais pas de shopping sur Internet.

LA GOUVERNANCE DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de l'Intérieur



Internet survival guide



BEE SECURE En sécurité sur le web, les bons tuyaux



QUANT

Nous avons le besoin de votre numéro de carte de crédit avec son code de sécurité et sa date d'expiration.

2016, super, merci mon!

Toute info être considérée comme confidentielle.

Soyez prudents communiquez.

Ne cliquez ni répondez pas à toute demande.

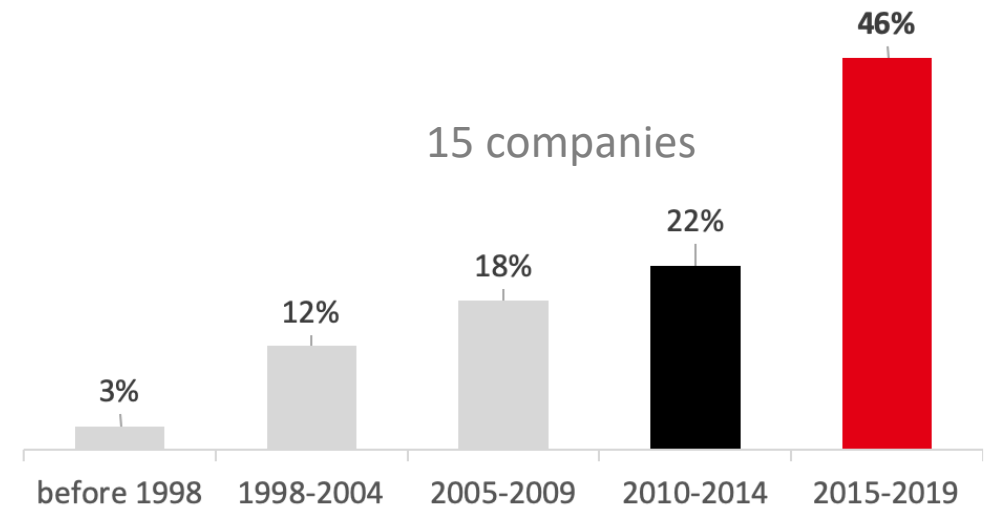


SECURITY MADE IN LU

A key period for the ecosystem

2008 – 2012

- **CIRCL (2008)**
- **BEE SECURE (2009)**
 - Consortium between Education, Family and Economy ministries
- **SECURITYMADEIN.LU (2010)**
 - Incorporated CASES & CIRCL
- **GOVCERT (2011)**
 - Link to the Prime Ministers Office
- **2012 - 1st National Strategy**



CASES and CIRCL – today

Focusing on tools & services to secure the economy



C3 (created in 2018)

Cybersecurity Competence Center – the 3rd dept. of SECURITYMADEIN.LU


c3
Cybersecurity
Competence Center
LUXEMBOURG

**CYBERSECURITY
COMPETENCE CENTER**

THE 3 MAIN COMPETENCES AREAS

OBSERVE
the threats
Be aware of the latest threats
and vulnerabilities


TEST
your defense
Test your cyber resilience


TRAIN
to avoid the traps
Train your teams to prevent
and react on incidents


www.c-3.lu
info@securitymadein.lu
 16 Boulevard d'Avranches, L-1160 Luxembourg
 +352 274 00 98 601

**SECURITY
MADEIN.LU**


 THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG
Ministry of the Economy



ROOM #42
DO[N'T]PANIC
 1st cyber attack simulator
 Made in Luxembourg

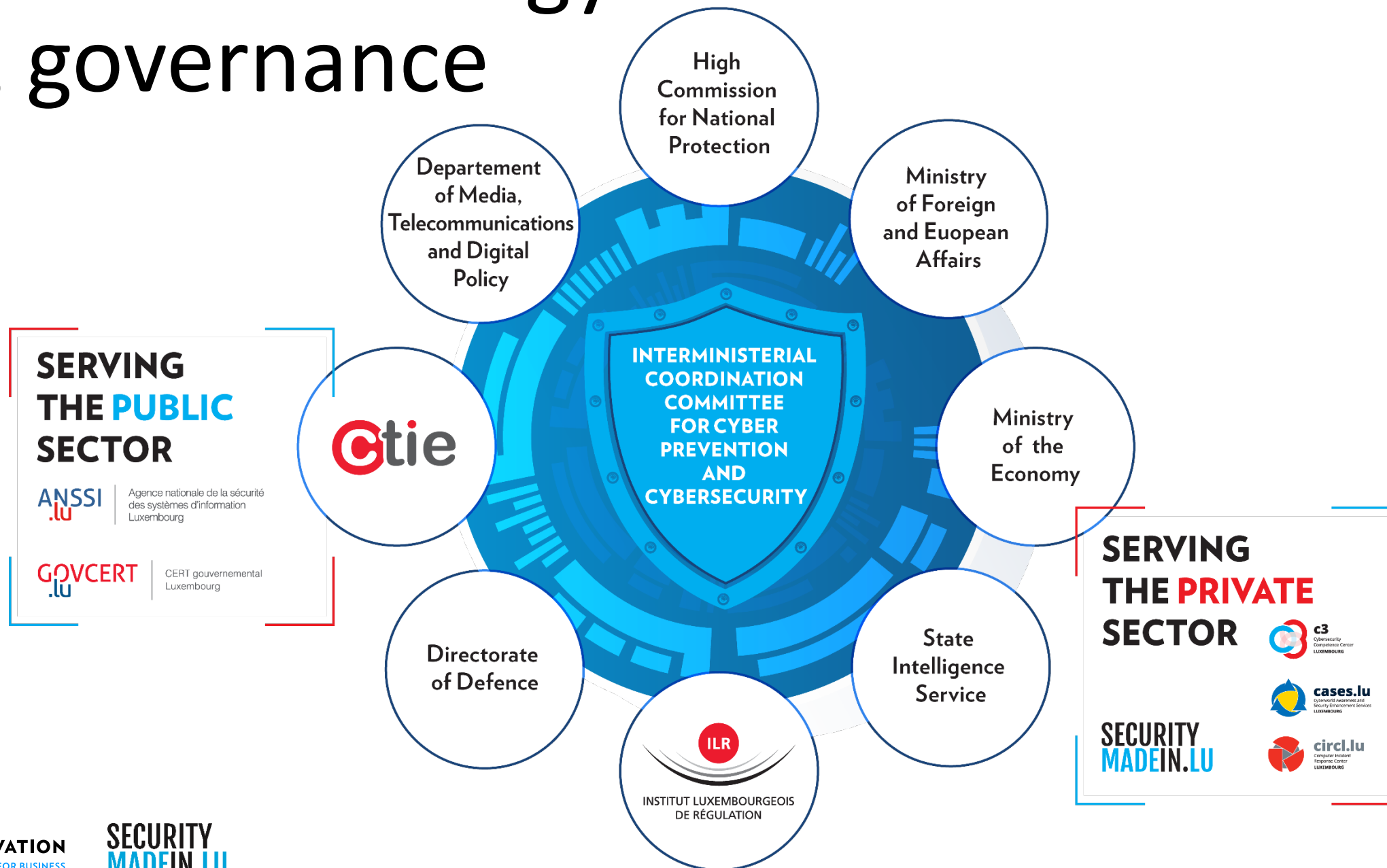


Room #42 is a cyber-attack simulator which can be tailored to any particular business context. The Room #42 is a realistic experience that improves the behavior and reflexes of your teams dramatically.

Book the Room #42 !
www.room42.eu
LUXEMBOURG
 LET'S MAKE IT HAPPEN



National strategy & governance



Authorities & Regulators



- CIP** Critical Infrastructure Protection
(loi du 23 juillet 2016 portant création d'un Haut-Commissariat à la Protection nationale)
- GDPR** General Data Protection Regulation
(loi du 1er août 2018 portant mise en place du régime général sur la protection des données)
- NIS** Network and Information Security
(loi du 28 mai 2019 portant transposition de la directive NIS)
- PSDC** Prestataires de Services de
Dématérialisation ou de Conservation
(loi du 25 juillet 2015 relative à l'archivage électronique)
- PSF** Professionnels du Secteur Financier de
Support
(loi modifiée du 5 avril 1993 relative au secteur financier)



National Actors

Education & Research

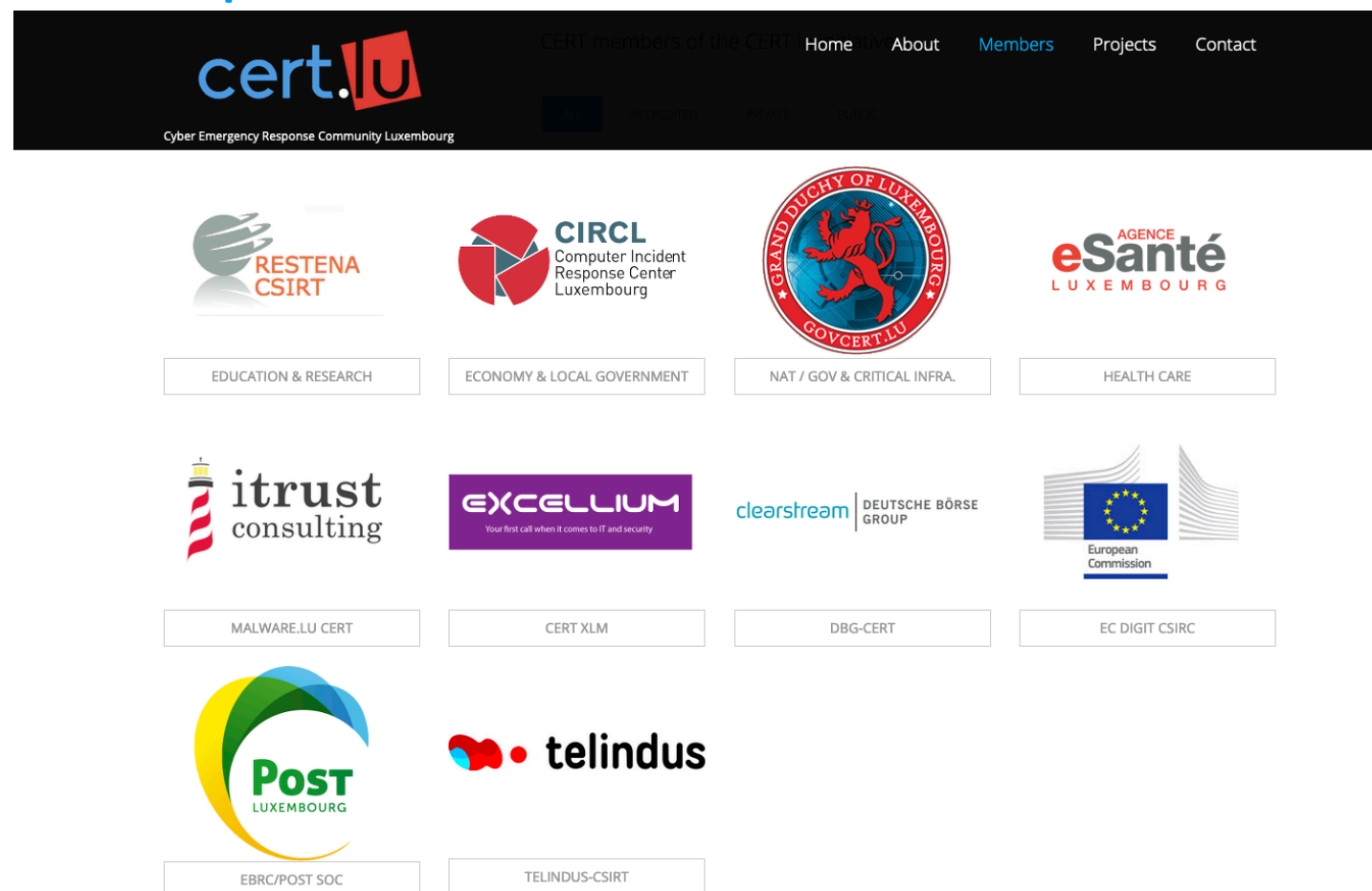


Sectoral PPPs



CERT.LU

Public-private cooperation in action



The screenshot displays the CERT.LU website header and a grid of member organizations. The header includes the CERT.LU logo, the text 'Cyber Emergency Response Community Luxembourg', and navigation links: 'CERT members of the CERT', 'Home', 'About', 'Members', 'Projects', and 'Contact'. Below the header, a grid of logos is presented, each with a corresponding label in a box below it:

- RESTENA CSIRT** (Education & Research)
- CIRCL** Computer Incident Response Center Luxembourg (Economy & Local Government)
- GOVCERT.LU** (NAT / GOV & CRITICAL INFRA.)
- eSanté LUXEMBOURG** (Health Care)
- itrust consulting** (Malware.LU CERT)
- EXCELLIUM** (CERT XLM)
- clearstream** | DEUTSCHE BÖRSE GROUP (DBG-CERT)
- European Commission** (EC DIGIT CSIRC)
- Post LUXEMBOURG** (EBRC/POST SOC)
- telindus** (TELINDUS-CSIRT)

Cybersecurity Market Overview & Mapping



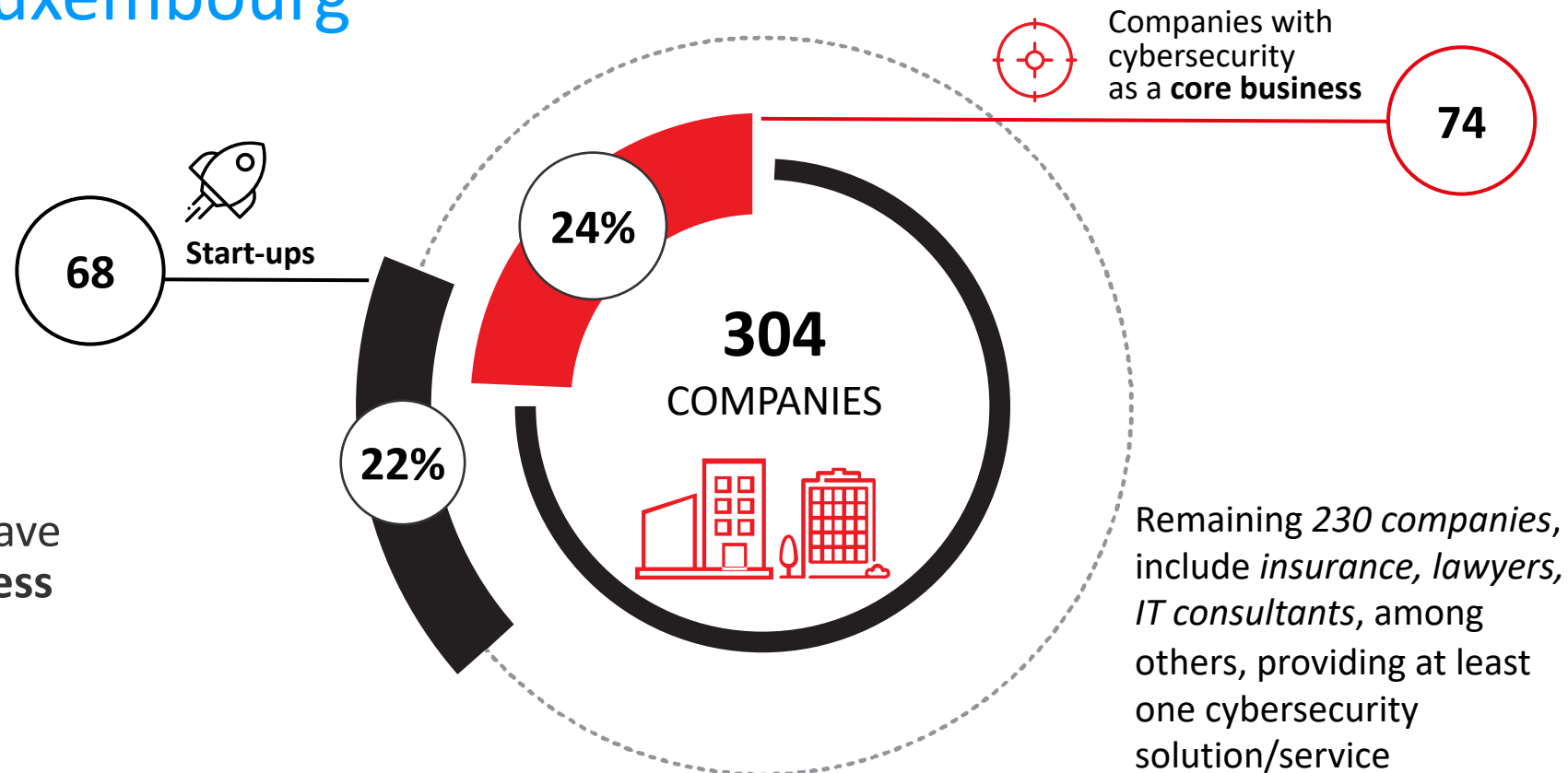
A strong ecosystem

In 2019, **304** companies are active in cybersecurity in Luxembourg

Listing criteria:

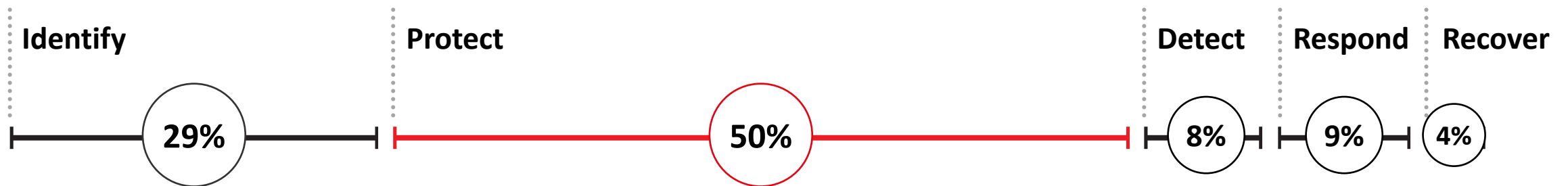
- have a *legal entity* in Luxembourg
- provide *at least one* cybersecurity *service or solution*

Almost ¼ of the companies have cybersecurity as a **core business** (i.e. main revenues come from cybersecurity activities)



Cybersecurity solutions

Luxembourg offers a diversified solutions portfolio,
yet focused on protection



■ Luxembourg is mostly positioned on the risk identification and systems protection markets.

■ Solutions for each stage of the *cyber-risk management value chain*, are available.

* Based on the categories from the ECSO Cybersecurity Radar Market

Top solutions on the national market

The **Top 7** solutions cover 60% of the market



- Top 7 solutions out of 57 types of solutions available on the national market

- On average, companies provide 5 cybersecurity solutions

- The importance of the *governance and risk & compliance* solutions can be explained by the high number of companies targeting the finance and banking sectors

- GDPR boosted the *data security* services within the ecosystem

Focus on the Core Businesses

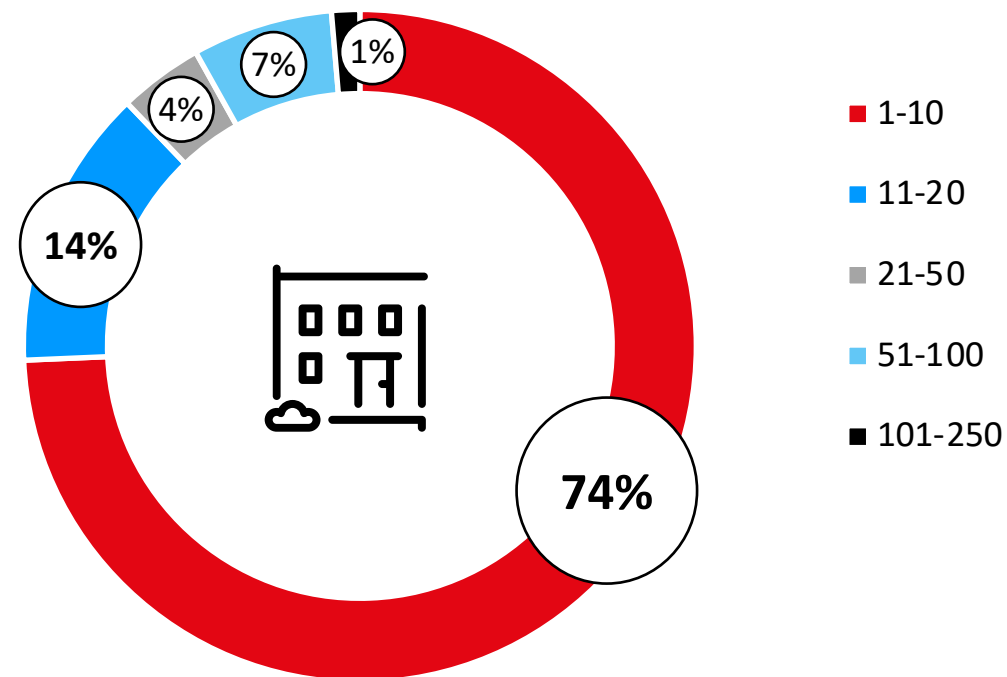


The role of small businesses

Small enterprises are at the heart of the core cybersecurity ecosystem

- Among the 74 companies having cybersecurity as core business, $\frac{3}{4}$ have less than 10 employees
- In average, a company having cybersecurity as core business employs 13 people

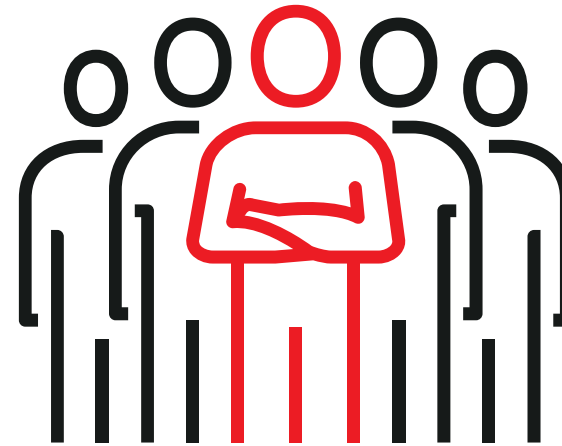
Size of the companies having cybersecurity as core business



Employment

Human capital of core business entities

- In total, the core business ecosystem represents almost **1000 employees***



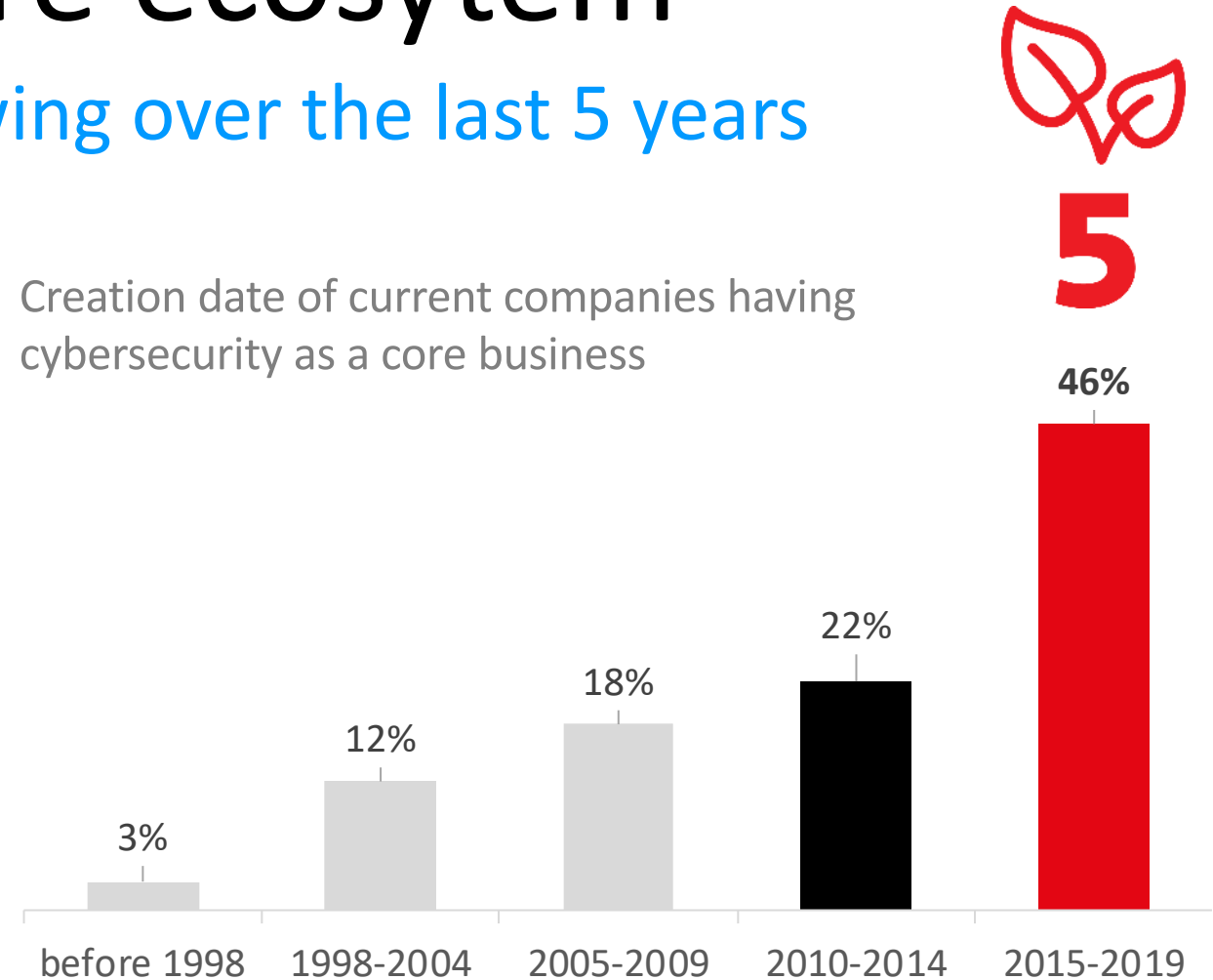
**932 employees is the exact number estimated by LXI, based on most recent available figures from Editusdata and the Luxembourg Business Register*

Growth of the core ecosystem

A young sector, strongly growing over the last 5 years

- The emergence of the Luxembourg cybersecurity ecosystem started around *20 years ago*
- With an exponential growth the **last 5 years:**
Almost half of current companies having cybersecurity as core business were *created over the past 5 years*

Creation date of current companies having cybersecurity as a core business

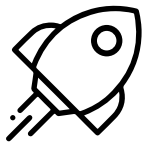


Start-ups in the Cybersecurity Ecosystem



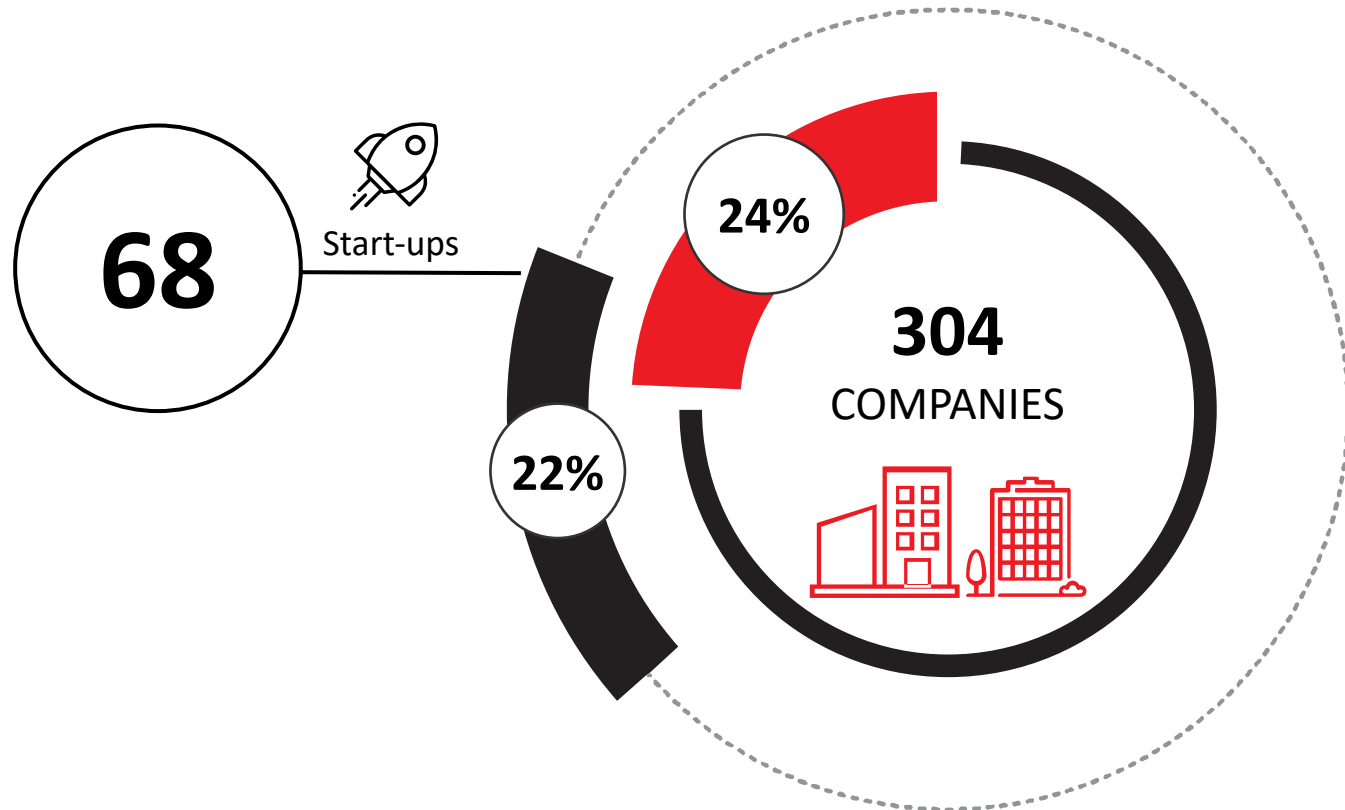
A growth supported by start-ups

Around 1/5 of the cybersecurity ecosystem are start-ups



Start-up definition*

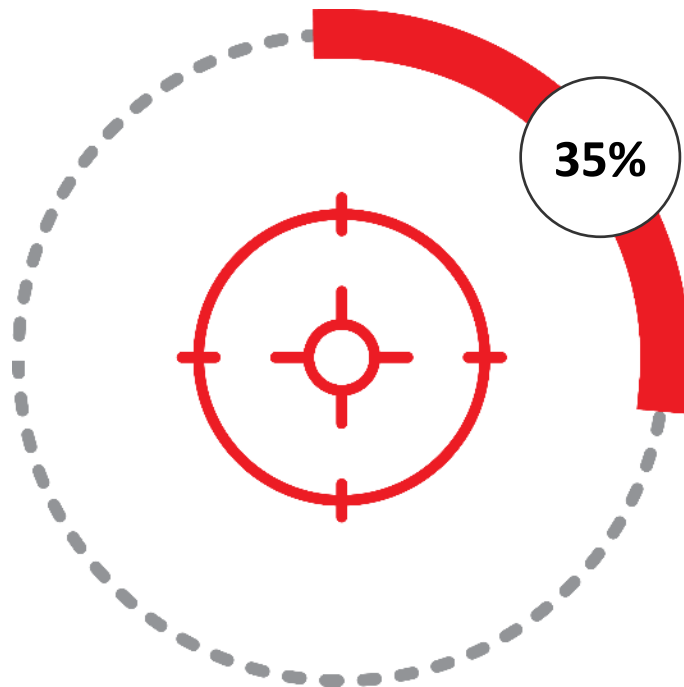
- < 5 years old
- < 100 employees (worldwide)
- Have an innovative product, service or business model



**based on the EU Start-up Monitor Definition; The criteria related to employees was added to exclude LU subsidiaries from large corporate groups.*

Cybersecurity start-ups

24 start-ups have cybersecurity as a core business



ADRONH
FUNDAMENTAL SECURITY

#mans

Hacknowledge



aps

SILENT BREACH

Hotshot



SECOURRIEL
Contract ready messaging

CYBERHEDGE



ub

passbolt

DiscoverIT

NETLUX

ALZETTE
INFORMATION SECURITY

L7 DEFENSE

REMPART
INTERNATIONAL



keexle^x
End-to-end encrypted Transfer, Collaboration & Cloud

RawSec

International Certification Trust Services (ICTS)

LUXICO

Specialisation of start-ups

- In total, *42 different types of solutions* are delivered by start-ups
- The *top 3 solutions* cover 55% of the solutions provided by the start-ups
- Start-ups offer *in average* 3 to 4 types of services or solutions
- In total, *17%* of the cybersecurity solutions of the entire cybersecurity ecosystem (i.e. 304 companies) are *delivered by start-ups*

Top 3 solutions provided by start-ups



A welcoming environment for start-ups



57% of start-ups are or have been hosted in a Luxembourg incubator

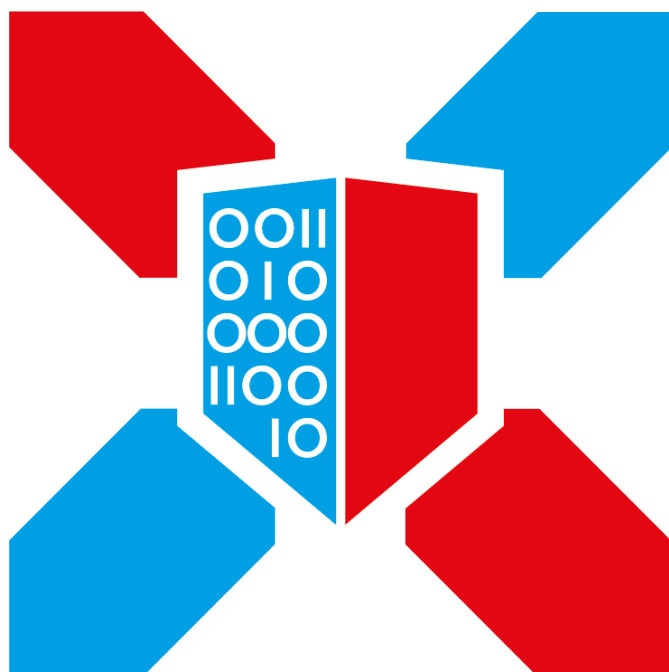


Conclusion

Lessons learned of the past 20 years

- ✓ Building a culture of security, takes time (more than 20 years)
 - ✓ Pragmatism and persistence are key
 - ✓ Have a strategy, start small, scale fast
- ✓ Early involvement of the Government was important to ignite
- ✓ A focus on the economic parts of cyber was key
- ✓ Clear limits of Gov involvement to *foster* not *hinder* market competition
 - ✓ Live the concept of “co-competition”
 - ✓ Be a *partner* for private actors
- ✓ Cooperation and collaboration at all levels (governance, operational, sector specific)

Thank you!



info@securitymadein.lu



www.luxinnovation.lu
www.securitymadein.lu



Luxinnovation
Security made in Lëtzebuerg



@Luxinnovation
@secin_lu