ACRC
Africa Cybersecurity
Resource Centre

The Africa Cybersecurity Resource Centre for Financial Inclusion (ACRC)

OCWAR-C Cybersecurity Symposium Abidjan 2021

29/09/2021

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https://cyber4africa.org

About the ACRC

Not for Profit Public Private Partnership consortium, an experienced pluridisciplinary team with >350 experts

SECURITYMADEIN.LU: Cybersecurity Agency of the Luxembourg Ministry of the Economy (35 experts)

- **Ecosystem build up; Innovation; Financial Sector; DFS; cyber communities, Smart Policies;**
- **Incident Response: Government CSIRT in charge of financial** and private **sector**
- **R&D** (e.g. ROOM#42: 1st cyber attack simulator; MISP: reference Threat Sharing Platform)

SnT/UNIversity of Luxembourg: Interdisciplinary Centre for Security, Reliability and Trust, a strategic research priority in cyber security (>200 researchers)

- **R&D & Innovation** creating socio-economic impact; **DFS**;
- **Academic Partnerships** in Africa

Excellium Group and Suricate Solutions: Cybersecurity leader in Luxembourg with African affiliate (>130 experts)

- Part of listed **SONAE group** cybersecurity division, **Top 5 European pure players (>550 experts)**
- Private **CSIRT** + **3 Security Operation Centres** in Luxembourg, Tunis, Dakar;
- A strong track record for **FSP**, **DFS**, **Operational Security**
- **African Operations in 20+ countries** from **Senegal, precursor for Financial Inclusion**

Project objectives

Improve the resilience of financial inclusion institutions and protect their customers *against cyber attacks, to*

(1) foster financial inclusion

(2) secure the development of Digital Financial Services

(3) enable building interoperable payment systems

THINK BIG

START SMALL

SCALE FAST

Clear positioning

- **Dedicated to cybersecurity for the African Financial Sector**
- **Regional approach :** to increase scale effect with limited locally available skills, a prerequisite for sustainability, quality and time to market given the number of experts that have to be involved (*)
- **Inclusivity**: Serving from Tier III rural Micro Finance Institutions to international bank networks and Central Banks, and facilitate access to services for smaller institutions
- **Independency & ethics**: for trusted peer to peer exchange
- **Collaborative:** with local, international and multilateral partners and authorities
- **Quality**: delivering world class services, at affordable costs

(*) A specific associated issue requires pedagogy effort : while many FSP/DFSP are organized in international networks, policy makers and multi-lateral organizations are frequently organized on a country basis, thus supporting country action plan rather than regional or continental endeavours.

Facts & Figures: African financial sector & financial inclusion exposed to cyber-(in)security

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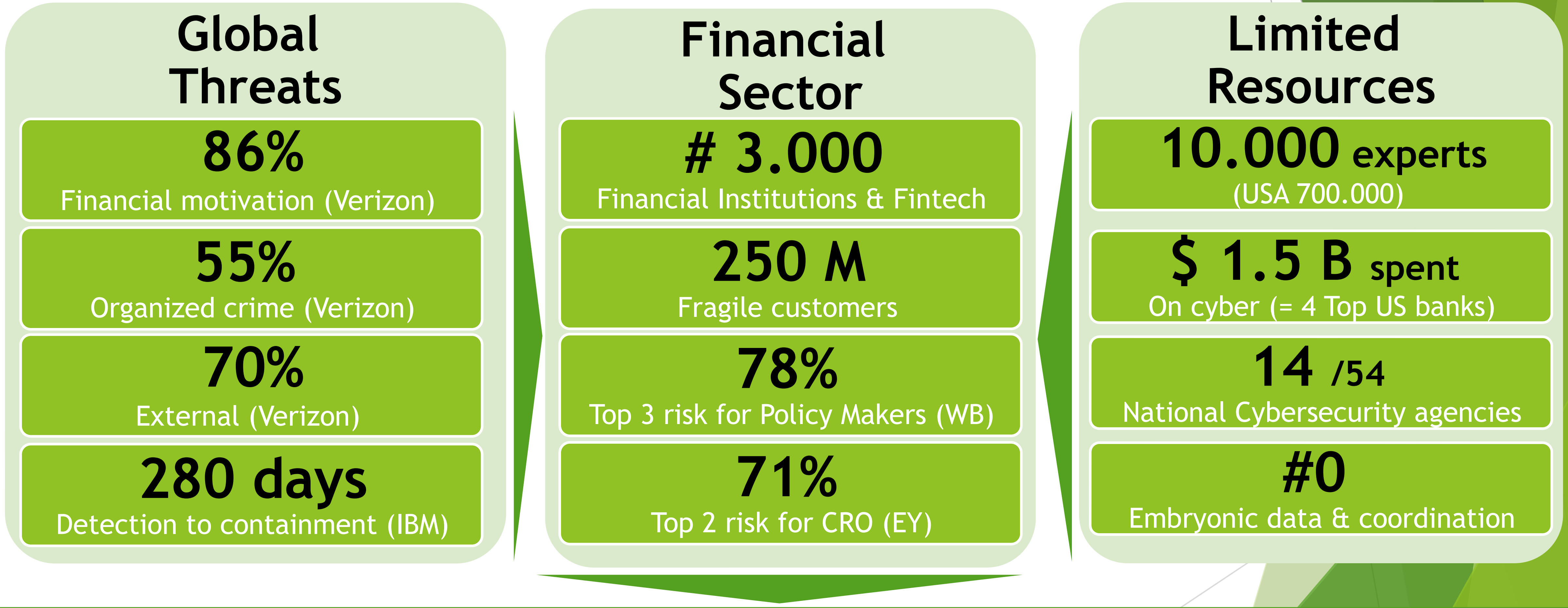


Global Threats

86%
Financial motivation (Verizon)

55%
Organized crime (Verizon)

70%
External (Verizon)

280 days
Detection to containment (IBM)

Financial Sector

# 3.000
Financial Institutions & Fintech

250 M
Fragile customers

78%
Top 3 risk for Policy Makers (WB)

71%
Top 2 risk for CRO (EY)

Limited Resources

10.000 experts
(USA 700.000)

$ 1.5 B spent
On cyber (= 4 Top US banks)

14 /54
National Cybersecurity agencies

#0
Embryonic data & coordination

Facing the urgency to develop Financial Inclusion & DFS, $ 3.5 B cost of cybercrime on the continent(*), a rising number of severe incidents (#$ 1 M) and stronger regulations, the sector has to drastically heighten cyber-resilience in a "smart way"

(*) Serianu 2017

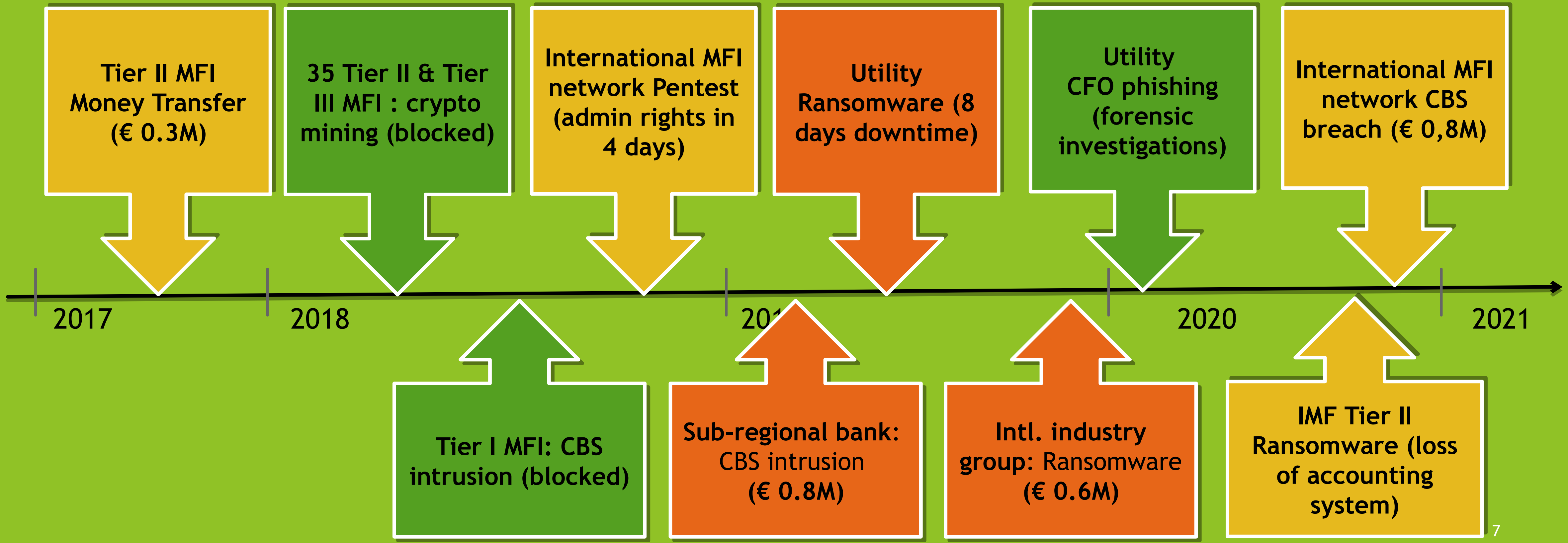
CEIP “Timeline of Cyber Incidents Involving Financial Institutions” in Africa

Name	Date	Country	Cost ($)	Status
Nigerian Bank Attempted SWIFT Heist	July 2016	Nigeria	100 000 000	Recovered
Tunisian Financial Institution Attempted Theft	Oct. 2017	Tunisia	60 000 000	Failed
Liberian Financial Institution Attempted Theft	June 2018	Liberia	32 000 000	Failed
Standard Bank Theft	May 2016	South Africa, Japan	19 000 000	Successful
State Bank of Mauritius	Oct. 2018	Mauritius	14 000 000	Failed
Nigerian Financial Institution Attempted Theft	March 2019	Nigeria	12 200 000	Failed
Gambian Financial Institution Attempted Theft	March 2019	Gambia	9 300 000	Failed
Postbank Internal Data Breach and Fraud	Dec. 2018	South Africa	3 200 000	Successful
Total			**249 700 000**	

https://carnegieendowment.org/specialprojects/protectingfinancialstability/timeline#click-hide

A sample of recent incidents from West Africa Monetary Union exhibit significant losses, usually undisclosed

Incidents managed by Suricate Solutions & Excellium Services



2017

Tier II MFI Money Transfer (€ 0.3M)

2018

35 Tier II & Tier III MFI : crypto mining (blocked)

Tier I MFI: CBS intrusion (blocked)

International MFI network Pentest (admin rights in 4 days)

201

Sub-regional bank: CBS intrusion (€ 0.8M)

Utility Ransomware (8 days downtime)

Intl. industry group: Ransomware (€ 0.6M)

Utility CFO phishing (forensic investigations)

2020

International MFI network CBS breach (€ 0,8M)

IMF Tier II Ransomware (loss of accounting system)

2021

“Cyber crime is the **#1 threat** to the development of financial inclusion(*) and potentially a **systemic risk**(**) ”

(*) AFI Alliance for Financial Inclusion Global Thought Leadership Conference, Abidjan, 1/3/2019, participants round table conclusion

(**) Call with AFI, Feb 2019

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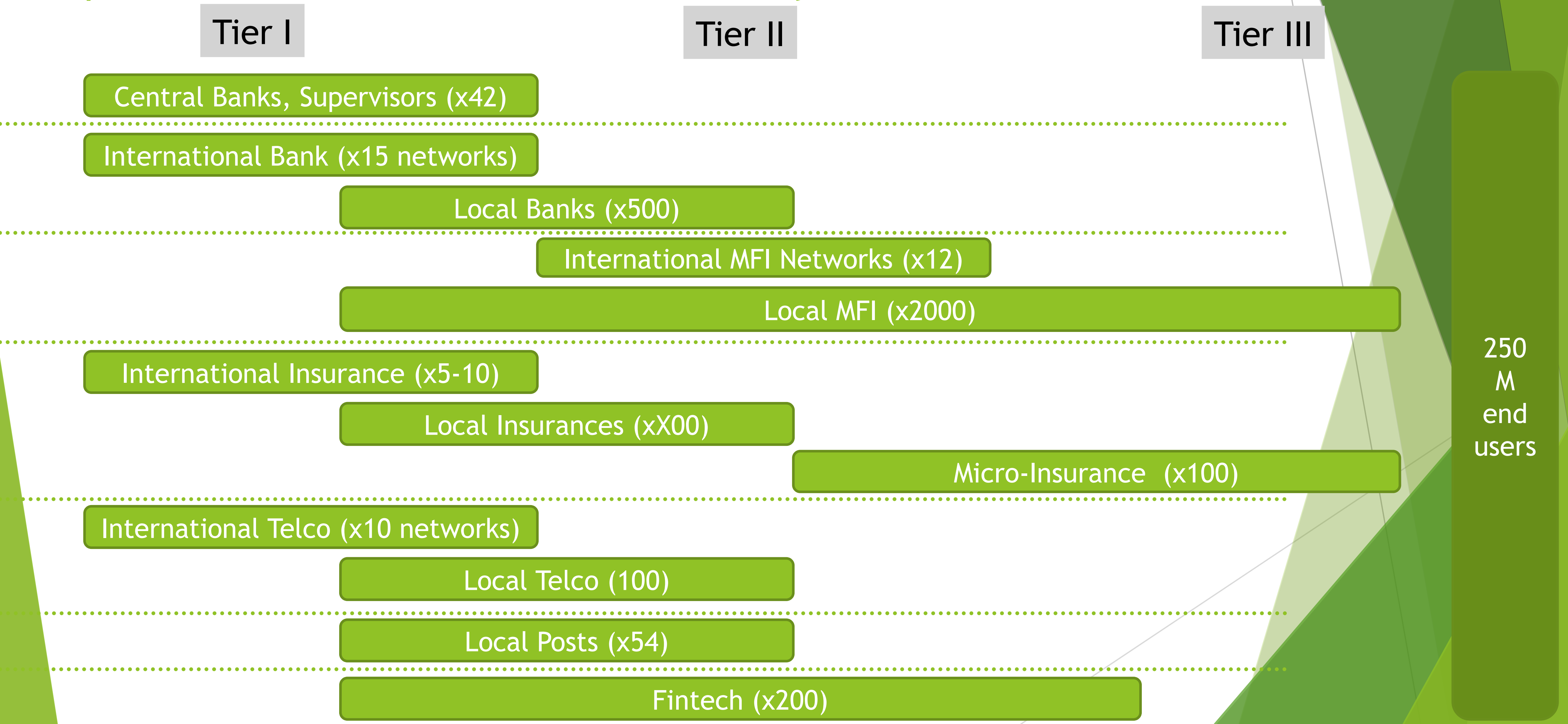
Financial Inclusion >3000 formal organisations

12 segments & 3 Tiers & 54 countries with different regulations, requirements, level of resources, maturity



Tier I

Tier II

Tier III

Central Banks, Supervisors (x42)

International Bank (x15 networks)

Local Banks (x500)

International MFI Networks (x12)

Local MFI (x2000)

International Insurance (x5-10)

Local Insurances (xX00)

Micro-Insurance (x100)

International Telco (x10 networks)

Local Telco (100)

Local Posts (x54)

Fintech (x200)

250 M end users

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A breakthrough for Financial Inclusion (1)

- Build & mobilise a **comprehensive, cost effective, scalable** and **sustainable cyber resilience** ***regional*** **and** ***sectorial ecosystem*** **for** ***FSP*** **and** ***Policy Makers*** in 3 to 5 years
  - **Information Sharing and Analysis Centre (ISAC), the central hub for the financial sector** to consolidate **facts & findings,** improve prevention and detection through sharing on vulnerabilities, threats, incidents, best practices, c**onnected** with international intelligence networks
  - Leveraging on work done with the CGAP (*) and lessons learned by Suricate Solutions since 2015 in Africa

- **Public Private Partnership, not for profit consortium** of >350 world class experts

- **International/Regional/local stakeholders engagement is key for the roll out**

(*) More https://www.cgap.org/blog/regional-centers-can-help-low-income-countries-build-cyber-resilience

Focus : Multiplicity of partners

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Strathmore UNIVERSITY

Carnegie Mellon University Africa

ada 25 ★

uni.lu UNIVERSITÉ DU LUXEMBOURG ★

ADA chair in Financial Law (Inclusive Finance, DFS)

Columbia Business School AT THE VERY CENTER OF BUSINESS™

DFS Observatory

UNESCO United Nations Educational, Scientific and Cultural Organization

UNEVOC International Centre for Technical and Vocational Education and Training

TVET

the smart campaign ★

Financial Inclusion
Customer protection

AFRICA FINTECH FORUM

CGAP ★

Financial Inclusion
Customer protection

C3SA Cybersecurity Capacity Centre for Southern Africa

★ afi

Financial Inclusion,
Cyber Regulation,
DFS, Financial Stability

★ EUROPEAN CENTRAL BANK

★ BILL & MELINDA GATES foundation

GFCE ★

GSMA ★

DFS, ecosystem,
Cyber security

FIGI FINANCIAL INCLUSION GLOBAL INITIATIVE

DFS

Cyber Security +
Africa +
Financial Inclusion +
DFS +
Implementation

SABRIC

★ CYBER READINESS INSTITUTE

GLOBAL CYBER ALLIANCE

Cyber security for SME

★ AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

INTERNATIONAL MONETARY FUND ★

THE WORLD BANK ★

★ LUX DEV Luxembourg Agency for Development Cooperation

★ giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

AFRICAN DEVELOPMENT BANK GROUP

★ smart africa CONNECT. INNOVATE. TRANSFORM

Policies, cooperation

★ WORLD ECONOMIC FORUM

Future of cyber security
& financial system

★ CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

Cyber security for Financial System
Small FSP / Financial Inclusion

★ Contacts made

Focus : Existing Financial Sector regional or global initiatives overview

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	ECRB Euro Cyber Resilience Board for pan-European Financial Infrastructures	AFI Cyber Security WG	ACRC Africa Cyber Security Resource Centre	GSMA FASG Fraud and Security Group	FS-ISAC Financial Sector Information Sharing and Analysis Centre
Public or private initiative	Public (ECB)	Public Member Owned Network	**PPP coordination unit + sub regional private partners**	Private	Private
Footprint	Euro zone	Emerging countries	**Africa**	Global	Americas + global
Members	30 Public Institutions and large market infrastructure providers (FMI)	99 members Central banks & supervisors from 88 countries	**Potentially #2400 FSP in SSA**	800 Telco 300 providers	7.000 Banks, investment firms, insurance, securities firms
Services	•Strategic forum: high level information sharing •Sector resilience •FMI preparedness & assessment	•High level information sharing •Framework & Policies	**•High level & detailed Info Sharing** **•Capacity Building** **•R&D** **•Advisory** **•Operational security**	•High level & detailed Info Sharing •Risk Assessment •Support on investigations	•High level & detailed Info Sharing •Capacity building in resilience

Operational Cooperation

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A breakthrough for Financial Inclusion (2)

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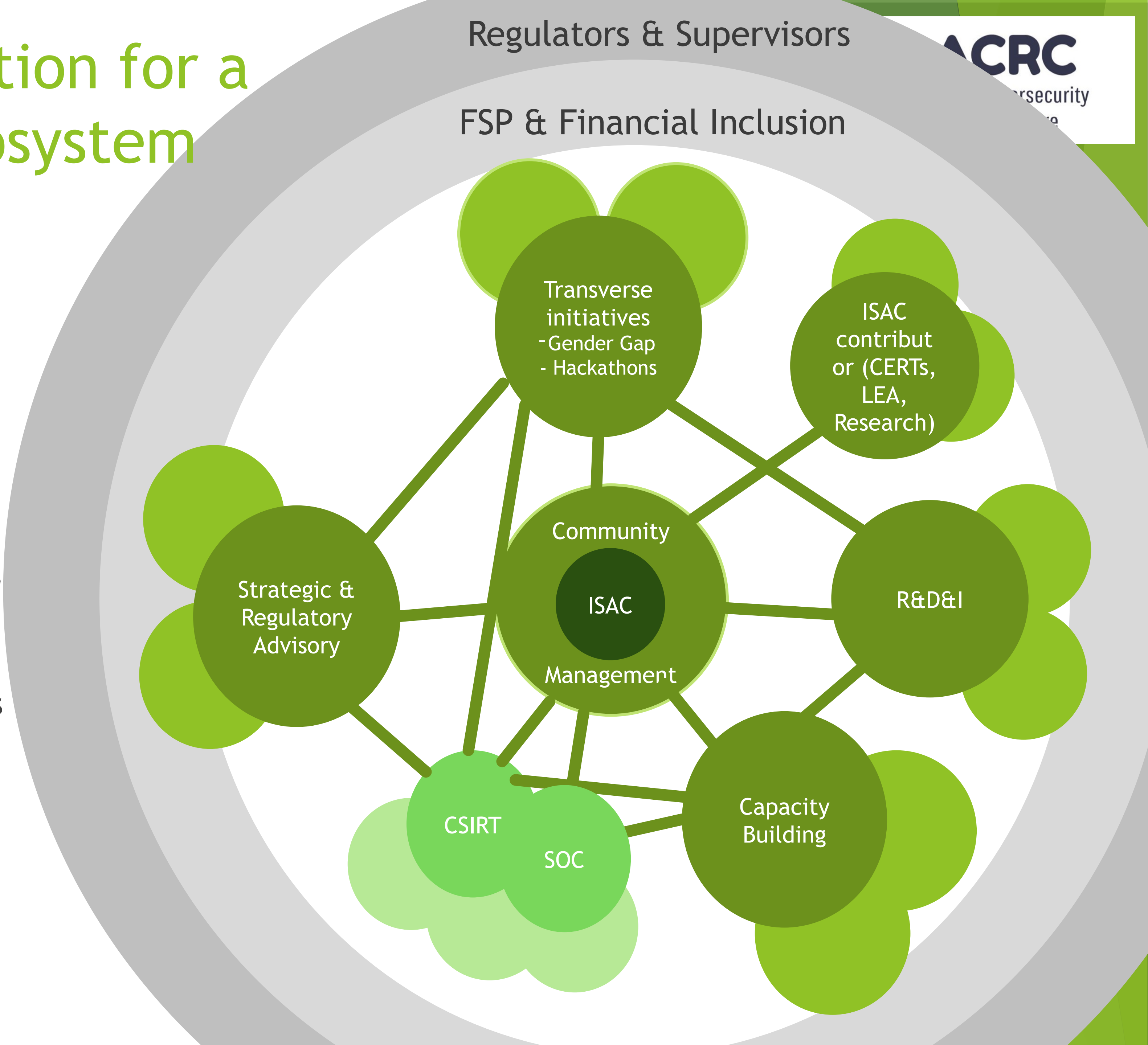
- **Efficient setup & operations**
  - **Mutualisation** to ensure sustainability, optimize resources and inclusivity
  - **Regional + Sub regional organisations (**rather than country organisations)
  - **Focus on implementation,** re-use and adapt
  - Quality and affordable services
  - Complementary lo local initiatives (e.g. country CERTs), compliance to local regulations

- **Human Capital Development is critical**
  - Hire, train, coach **>100 dedicated experts in 3 locations in 3-5 years**
  - Workforce development (train PhD trainers to build MSc curricula)
  - Gender Gap Bridging initiatives
  - Huge capacity building effort;
  - R&D & Innovation in Africa to understand future threats and prepare responses

Components & organization for a consistent and open ecosystem

- **Regional & Sectoral not for profit organization** for FSP, DFSP, Regulators & Supervisors
- **Independent organization** for agility, consistency, quality & sustainability
- **A trusted community for Information and Best Practices Sharing** (ISAC)
- **Core components** in R&D & Innovation, Capacity Building, Cyber Regulation advisory,
- **Catalyst & Synergistic partnerships** with Professional Associations, Academics, other organizations, initiatives, authorities, donors etc.
- Contribute to development of a **proximity network of reference commercial partners** in sub regions
  - Incident Response (CSIRT)
  - Security Supervision (SOC)
  - Other commercial services



Regulators & Supervisors

FSP & Financial Inclusion

Transverse initiatives
-Gender Gap
- Hackathons

ISAC contributor (CERTs, LEA, Research)

Strategic & Regulatory Advisory

Community

ISAC

Management

R&D&I

CSIRT

SOC

Capacity Building

Focus on ISAC

Open to all relevant regional or global stakeholders & initiatives

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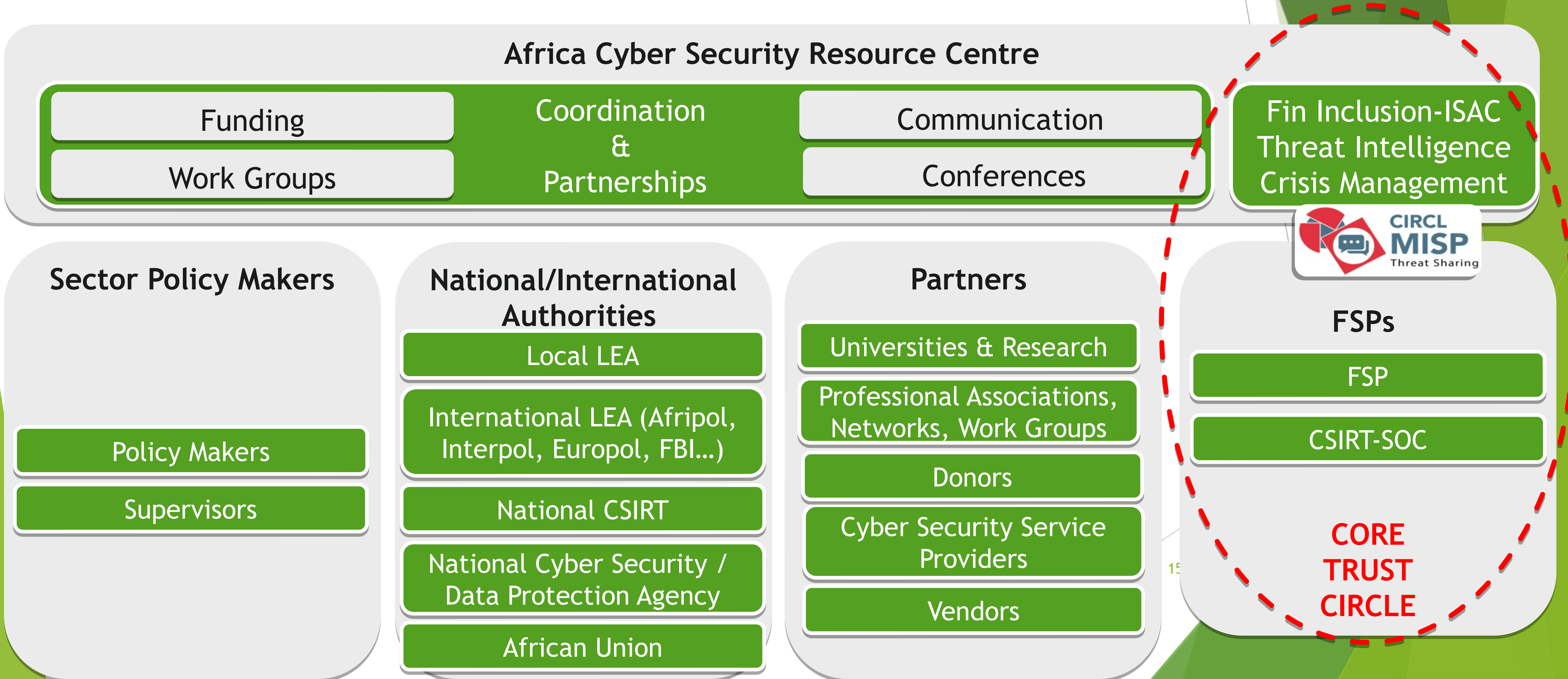

Africa Cyber Security Resource Centre

Funding

Work Groups

Coordination
&
Partnerships

Communication

Conferences

Fin Inclusion-ISAC
Threat Intelligence
Crisis Management

CIRCL MISP Threat Sharing

Sector Policy Makers

- Policy Makers
- Supervisors

National/International Authorities

- Local LEA
- International LEA (Afripol, Interpol, Europol, FBI…)
- National CSIRT
- National Cyber Security / Data Protection Agency
- African Union

Partners

- Universities & Research
- Professional Associations, Networks, Work Groups
- Donors
- Cyber Security Service Providers
- Vendors

FSPs

- FSP
- CSIRT-SOC

CORE
TRUST
CIRCLE

Focus : Cybersecurity Capacity Building channels

Theme	*Channel*	*Customers*							
		FSP				Policy Makers		Students	Internal
		Management	Employees	Technical & Risk team	End users (1)	Regulatory & Supervisory team	Technical & Risk team		
Cyber Security and Resilience Regulatory Framework and Practices	e-learning								
	face-to-face					X	X		X
Cyber Security Emerging Threats, Vulnerabilities, trends and best practices in Financial Sector & DFS (2)	e-learning	X		X		X	X		X
	face-to-face	X		X		X	X		X
Cyber Security Awareness	e-learning	X	X	X	X	X	X	X	X
	face-to-face	X	X	X		X	X	X	X
Incident Response, Forensic Investigation, Pentest, Application Security, CSIRT analyst, Security Operation	e-learning								
	face-to-face			X			X		X
Crisis Management Exercise in Simulation room	e-learning								
	face-to-face	X		X		X	X	X	X
Advanced modules integrated in Academic Courses (DFS security, High level Forensic, AI & Cyber Security)	e-learning							X	
	face-to-face							X	
Commercial certification training (Governance and Risk Management, Technical, Products)	e-learning								X
	face-to-face	X		X			X		X

(1) Through local partners, customers, professional associations

(2) Regional Conferences & Webinars for members

ACRC Roll Out

- Initial funding from AfDB – ADFI (African Digital Financial Inclusion Initiatives)
- Services available to all 3.000 Financial Institutions, adapted to requirements & maturity

  Central Banks

  Banks

  Insurances

  Telcos

  Postal Operators

  Microfinance Institutions

  Micro insurance

  Fintech

- **Partnerships** with international networks, local/international Professional Associations, multi-lateral organizations (IMF, World Bank, Interpol, UPU), donors
- Building a **dedicated expert taskforce** in West & East Africa
  - # 33 staff in Y3 incl. 3 PhD
  - # 109 in Y5 incl. 10 PhD
- Besides Senegal for ACRC and Suricate Solutions HQ, Eastern and Western Anglophone Africa will be progressively served from (tbc) and (tbc). Until then, all services can be provided from Senegal

Objectives by Stakeholder

Financial Sector Policy Makers	• **Develop positive/neutral attitude** from central banks vs regional & sectorial initiative • **Contribute to funding country side**
Multi-lateral Organizations, donors	• **Advocacy towards policy makers** • **Share expertise/thought leadership** • **Contribute to funding** (core services or additional initiatives)
International FSP	• **Invite to Information sharing community** • **Share expertise/thought leadership** for a larger and inclusive community • **Provide additional advanced services** when the link is established
Local FSP / DFSP	• Succeed in reach a large number of institutions • **Rise awareness on challenges & solutions** • Setup **basic industrialized services** for different types and sizes of FSP/DFSP
Regional or local authorities	• Kept Informed • Offer CERTs or authorities to present & participate at ISAC conference
FSP/DFSP End Users	• No direct involvement

Stakeholders engagement strategy

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Financial Sector Policy Makers	• **Knowledge exchange & awareness raising :** High Level Conferences (AfDB, AACB, AFI, BIS, CEIP/IMF/WB/WEF Conference) + one2one meetings + Workgroups (AACB, AFI) • **Support national sectorial cybersecurity/cyber resilience strategy & programs**
Multi-lateral Organizations, donors	• **High Level Conferences** (AfDB, AACB, AFI, CEIP/IMF/WB/WEF Conference) • **Participation to ISAC/Research conference** • **Elaborate funding consortium**
International FSP	• **Set forth ISAC with a direct approach** • **Participation to ISAC/Research conference**
Local FSP / DFSP	• **Elaborate startup package for Tier II-III, Tier I ISAC** • **Professional Associations events + social networks + mailings + webinars** • International events (Semaine Africaine Microfinance, Financial Sector or cyber events)
Regional or local authorities	• Kept Informed • CERTs or authorities invited to present & participate at ISAC conference
FSP/DFSP End Users	• Upstream through Prof. Associations, Civil Society, Consumer organizations • Downstream : kits, brochures

AACB African Association of Central Bankers, AFI Alliance for Financial Inclusion, BIS Bank of International Settlements, CEIP Carnegie Endowment for International Peace finclusion WG, IMF International Monetary Fund, WB World Bank, WEF World Economic Forum

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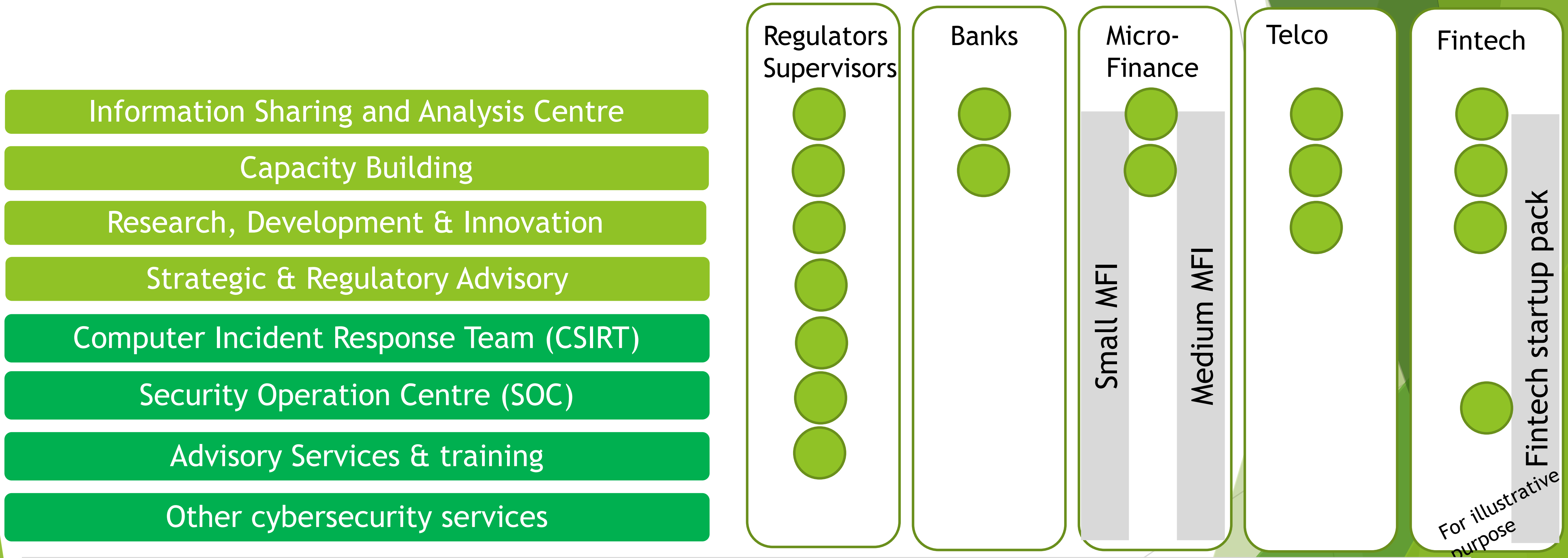
Roll out a comprehensive range of # 50 services

Inclusive, affordable, adapted and packaged for specificities (size, human and financial resources, cybersecurity maturity, international/ local…)



Information Sharing and Analysis Centre
Capacity Building
Research, Development & Innovation
Strategic & Regulatory Advisory
Computer Incident Response Team (CSIRT)
Security Operation Centre (SOC)
Advisory Services & training
Other cybersecurity services
Regulators Supervisors
Banks
Micro-Finance
Small MFI
Medium MFI
Telco
Fintech
Fintech startup pack
For illustrative purpose

SAVE THE DATE First Annual “**African Cybersecurity Information sharing and Research conference for the Financial Sector”** during ADA’s African Microfinance Week in Rwanda, Oct 20th - 22nd

1 ACRC Regional Centre

Holistic approach to drive cyber resilience on a large scale

Information Sharing and Analysis Centre

- Operation of the Malware Information Sharing Platform (MISP)
- Interconnection with international ISAC (FS-ISAC, ECB, Interpol, …) and CERTs
- Analyze and share information on threats, vulnerabilities, best practices
- High level crisis management, crisis simulation exercises

Coordination & Partnerships

- Relationship with stakeholders and partners within the ecosystem
- Intelligence sharing conferences, Work Groups, events

Capacity Building

- Awareness, training, advanced content creation
- On site and online sessions
- Contents for events and transverse initiatives: Code Hackademy, hackathons, Gender Gap bridging programs

Research, Development & Innovation

- Academic partnerships
- Education: train trainers (PhD students) and students (MSc)
- R&D for public or private customers
- Disseminate R&D results (research conferences, papers, newsletter)

Strategic & Regulatory Advisory

- Advisory Services to central banks
- Support smart regulation setup and implementation by FSP
- Country or sector wide initiatives (e.g. awareness)

3 Sub Regional Centres

Private partners network for proximity

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Computer Incident Response Team (CSIRT)

- Incident response preparation and management
- Crisis management
- Forensic Investigations
- Level 3 support of the C-SOC

Security Operation Centre (SOC)

- 24x7x365 security supervision to identify attacks
- Penetration testing and vulnerability scanning

Advisory Services & training

- Governance (maturity Assessment, ISO 27k, PCI DSS, Business Continuity, Risk Management…)
- On site Commercial and Certifying training

Other cybersecurity services

- Upon request

Conclusion

Limited resources require a smarter approach to keep up with the pace of criminals

- Public Private **Partnerships**
- **Ecosystem**
- **Sectoral** collaboration and with policy makers
- Regional and Sub regional approach for **economy of scale**
- Mobilizing multiple **stakeholders**
- Build a **trusted cybersecurity community**
- **Capacity building with a long term view**, coaching, mentoring
- **Education** : Increase the number of experts + manage retention
- **Prepare the future** : R&D on new threats, create skilled jobs
- **Sustainability**
- **National cybersecurity agencies** : complement and foster limited resources

Thank you

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More

https://cyber4africa.org/
https://www.adfi.org/projects/africa-cybersecurity-resource-centre-acrc-financial-inclusion
https://www.cgap.org/blog/regional-centers-can-help-low-income-countries-build-cyber-resilience

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