

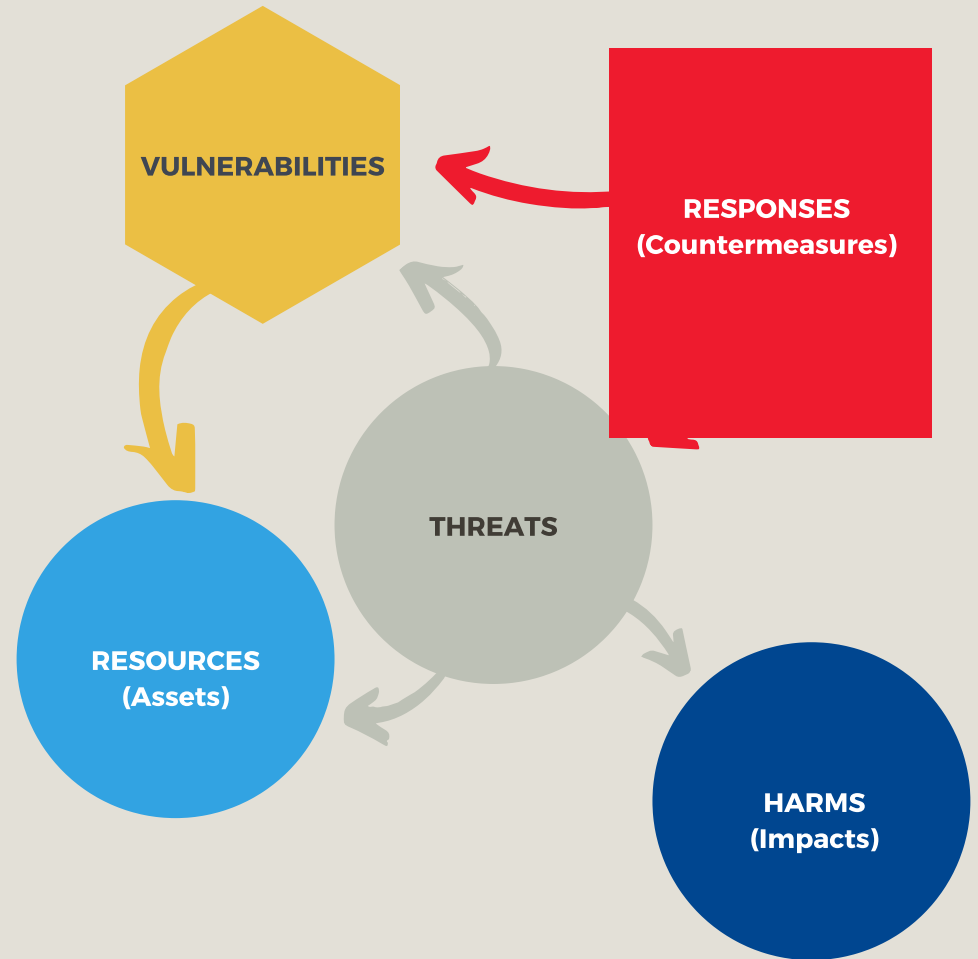
SMART CITIZEN CYBER RESILIENCE

OVERVIEW | VERSION 0.1 | JULY 2020

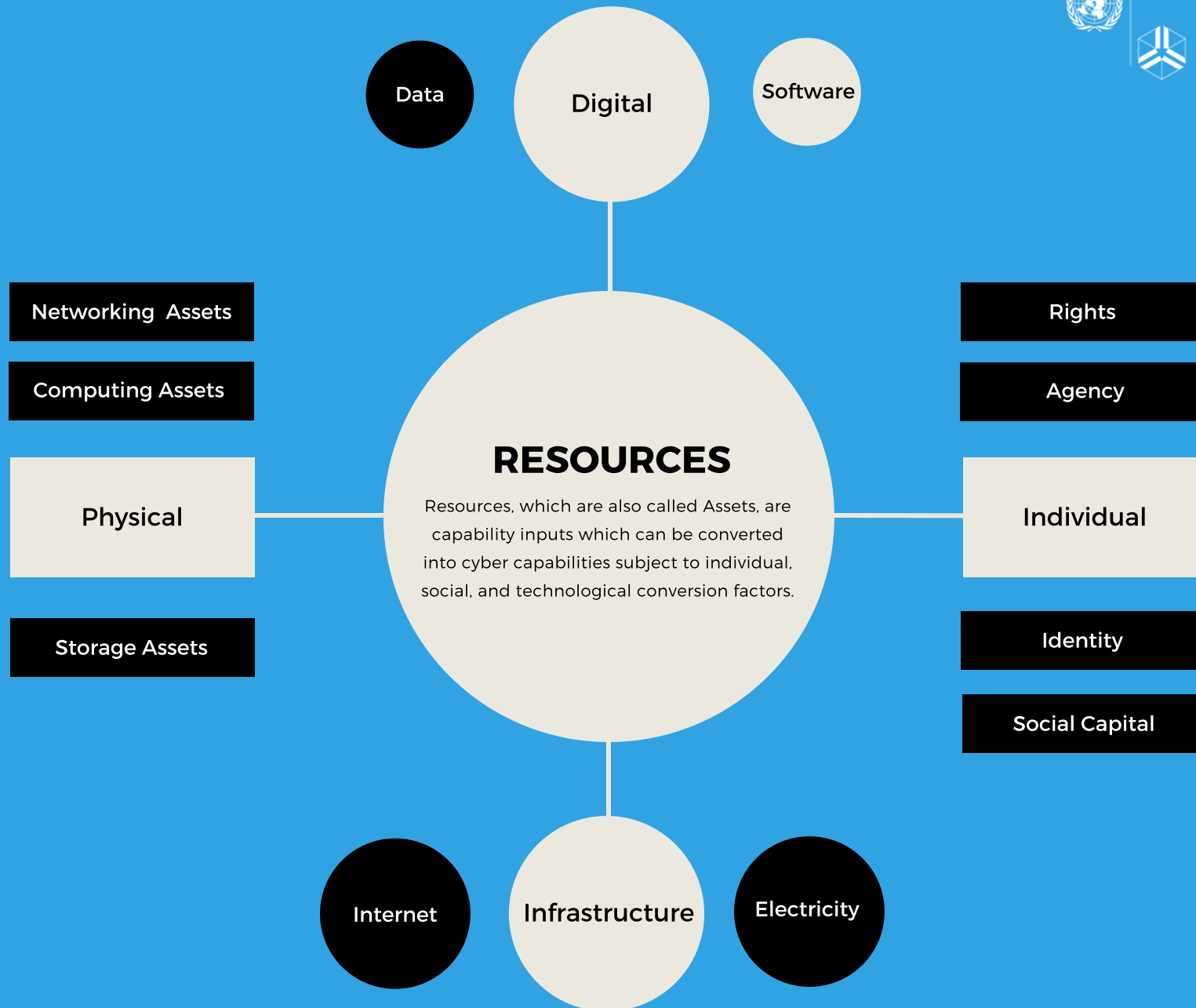
This publication outlines an ontology that maps the cyber resilience landscape for individuals. It identifies cyber resources, vulnerabilities, threats, responses and harms associated with individuals' cyber functionings.

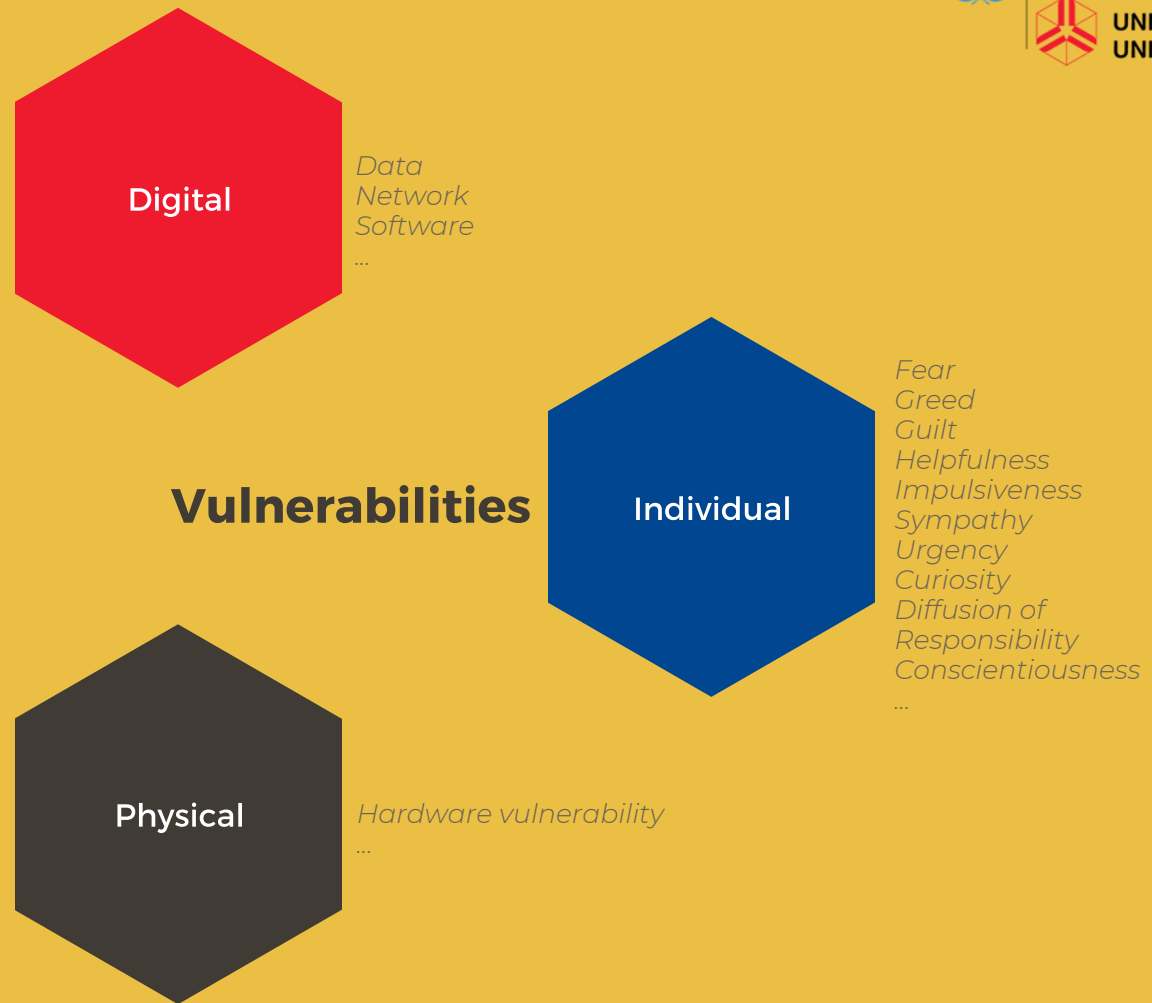
Cyber resilience is the ability to maintain positive functioning and adaptation in the context of adverse cyber incidents, which can be technical, socio-technical, natural, and manmade.

This ontology is part of the effort towards enhancing the cyber resilience of individuals / citizens in smart digital futures.



UNITED NATIONS
UNIVERSITY





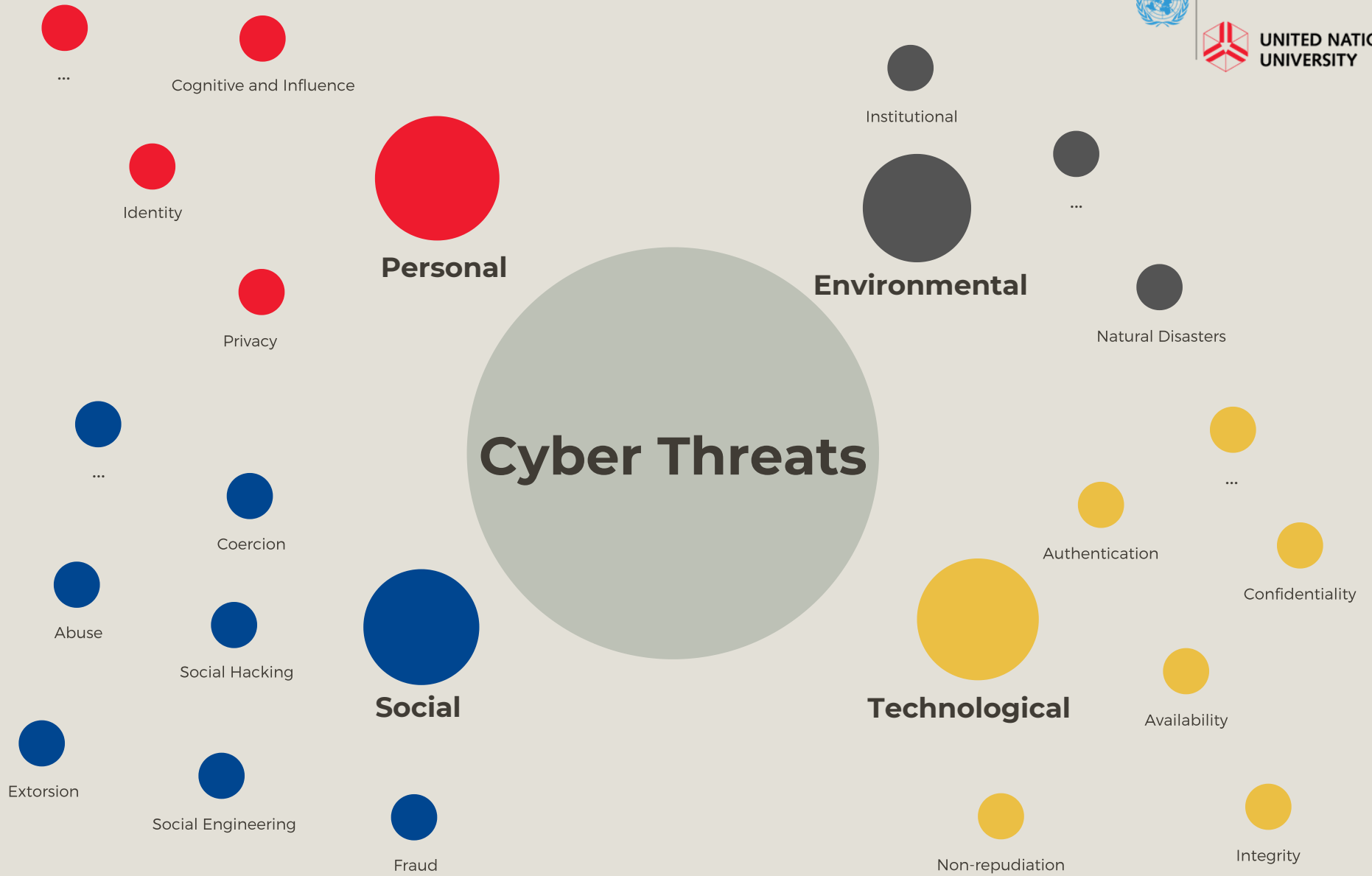
Vulnerabilities

Vulnerabilities are weaknesses in Resources that can be exploited by Threats.

Individual vulnerabilities are situations and attributes of individuals that not only expose them to threats but also that can be exploited and compromised by specific threats.

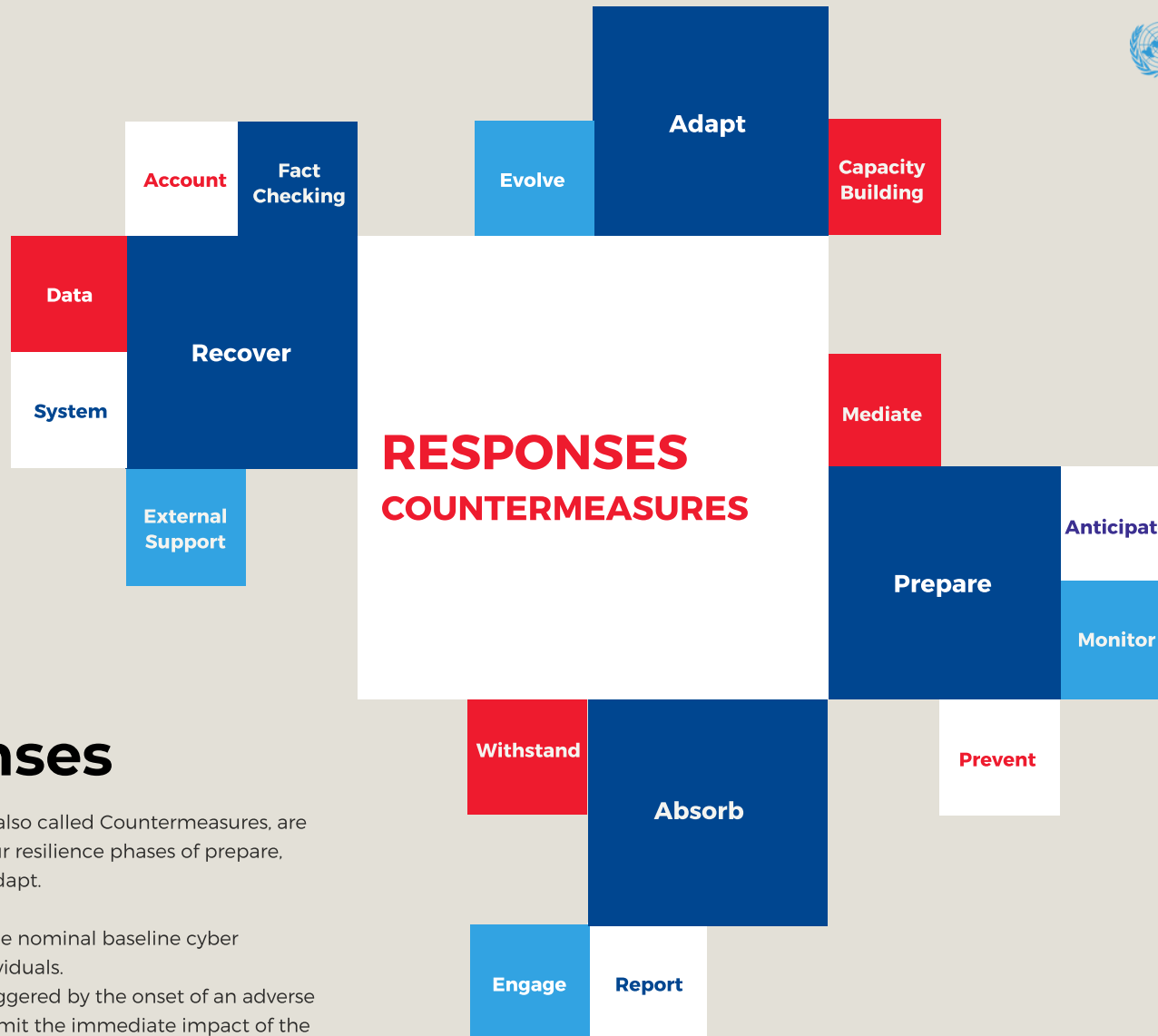
Physical vulnerabilities are weaknesses associated with the materiality of cyber resources that individuals own.

Digital vulnerabilities are weaknesses associated with software, data and networking / connectivity resources.



Threats

Threats are potential adverse incidents and "unfreedoms" that limit individuals' cyber capabilities. The framing of these is informed by the personal, social, and environmental conversion factors that constitute individuals' personal utilization function.



Responses

Responses, which are also called Countermeasures, are framed around the four resilience phases of prepare, absorb, recover, and adapt.

- Prepare phase is the nominal baseline cyber functioning of individuals.
- Absorb phase is triggered by the onset of an adverse cyber incident to limit the immediate impact of the adversity.
- Recover phase is towards restoration of lost cyber functioning.
- Adapt phase is the positive adaptation from the cyber incident through evolution and enhanced cyber functioning.

Harms

ECONOMIC	PHYSICAL	PSYCHOLOGICAL	REPUTATIONAL	SOCIAL
LOSS OF WORK	CORRUPTED	ADDICTION	BLACKLISTED	CONFLICT
THEFT OF FINANCES	DESTROYED	DISCOMFORT	DAMAGED PERCEPTION	DAMAGED RELATIONSHIPS
EXTORSION	COMPROMISED	DISEMPOWERMENT	UNDER SCRUTINY	ISOLATION
DISRUPTED INCOME	EXPOSED	DISTRACTION	REDUCED OPPORTUNITIES	REDICALIZATION
DISRUPTED WORK	INFECTED	FRUSTRATION	...	WITHDRAWAL
FINE	THEFT	LOSS OF CONFIDENCE		IMPAIRED BOUNDARIES
COMPENSATION	REDUCED PERFORMANCE	LOW MORALE		...
TIME WASTED	BODILY INJURY	WORRY		
RECOVERY COSTS	LOSS OF LIFE	COGNITIVE IMPAIRMENT		
...	...	IDENTIFY LOSS		
		CONFUSION		
		DEPRESSED		
		OVERWHELMED		
		NEGATIVE PERCEPTION		
		EMBARASSED		
		SELF CENSORSHIP		
		...		

Harms

Harms are the realized impacts of the unmitigated threats whose ultimate effect on individuals is to reduce their cyber capabilities and hamper their cyber functionings.

AUTHORS

Mamello Thinyane and Debora Christine

DOCUMENT VERSION

This is version 0.1 (July 2020) of the document.
Please visit the project website for the latest version.

DISCLAIMER

This publication aims to provide accurate information regarding the subject matter covered. The views expressed in this publication are those of the authors. They do not necessarily reflect the opinions or views of the United Nations University, the United Nations or any associated organisations.

ACKNOWLEDGEMENTS

This work is supported by the Science and Technology Development Fund of Macau (FDCT) under Grant No. 0016/2019/A

SMART CITIZEN CYBER RESILIENCE PROJECT

This project aims to enhance the resilience of citizens in smart digital futures. It recognizes civil society stakeholders as significant actors in the co-production of national and global cyber resilience.

<https://cs.unu.edu/smart-citizens-cyber-resilience>

UNITED NATIONS UNIVERSITY

The United Nations University institute in Macau is a research institute at the intersections of ICT and international development. It conducts policy-relevant research and generates solutions, addressing key issues expressed in the UN 2030 Agenda for Sustainable Development.



**UNITED NATIONS
UNIVERSITY**