Cyber security within EBA CLEARING

Regional Seminar on Cyber Preparedness

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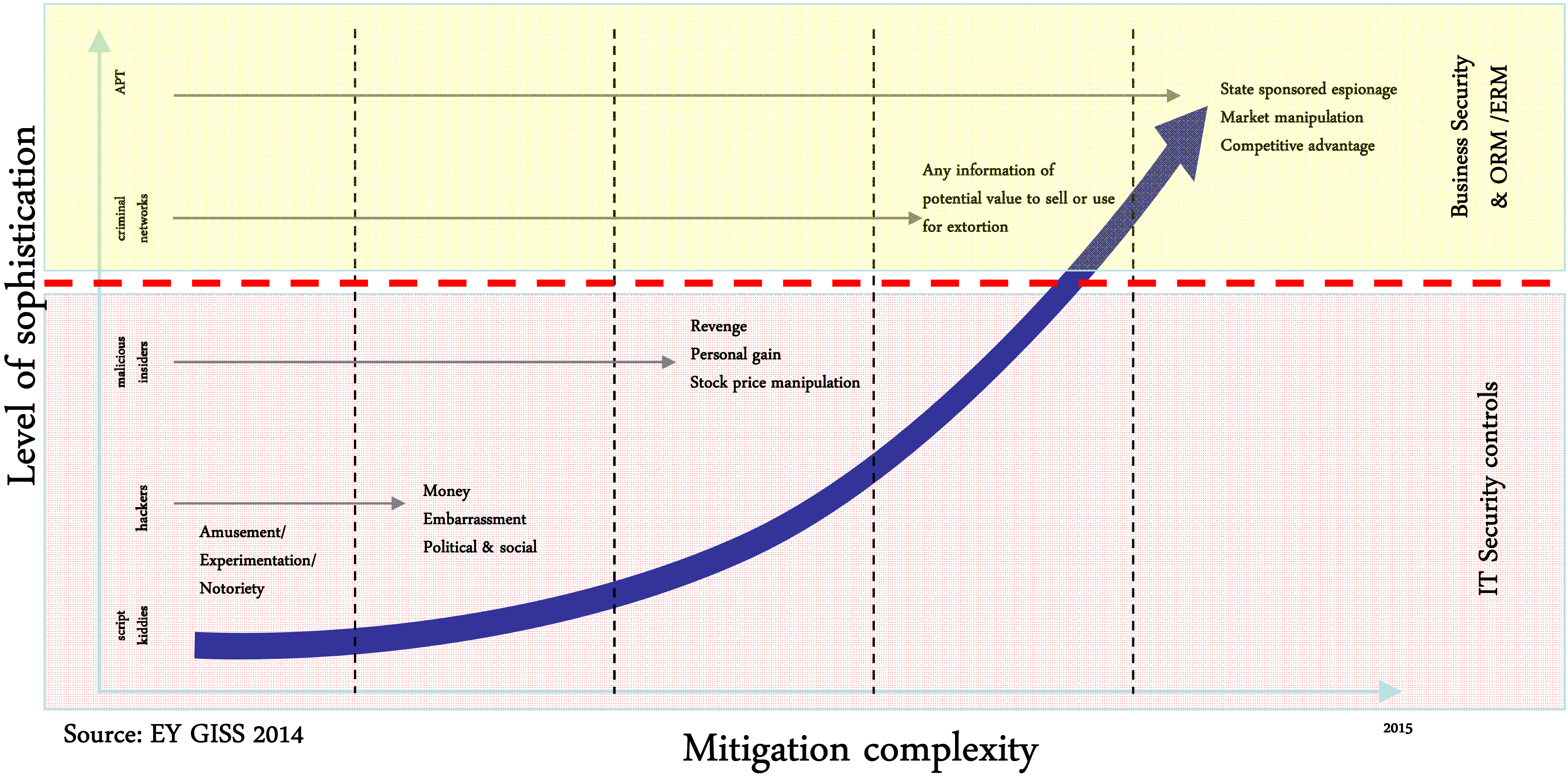
EBA CLEARING

The changing landscape of cyber threats: *Deal with “Financial Crime 2.0”*

The funding, organization and capability of “criminals” carrying out cyber attacks is increasing at an astonishing speed. Attacks are more sophisticated than ever, and it’s not “just go and get the money” anymore – today we need to deal with a new generation of Financial Crime threat, covering the full spectrum of business operations (from IT to payments to market manipulation to data).



Source: EY GISS 2014

Overview

EBA CLEARING

Introducing the EBA group

Outsourced service EURO1/STEP2

EBA CLEARING Company operations

The EBA Group

EBA CLEARING

Operator of EURO1/STEP1 and STEP2

- Operates the pan-European payment systems EURO1, STEP1 and STEP2
- Founded in 1998
- 62 Shareholders
- Around 200 direct participants

ABE EBA

EURO BANKING ASSOCIATION

The pan-European payment network

- Discussion forum for payment practitioners
- Developer of European payment initiatives
- Founded in 1985
- Over 200 members

MyBank

E-authorisation solution

- Offers real-time access to accounts all over Europe
- Based on a four-corner model
- Services cover: SCT, SDD and E-identity
- Owned by Preta S.A.S, a wholly owned subsidiary of EBA CLEARING

Key milestones

2015: Launch of SEPA Card Clearing Service

2014: SEPA Migration End-Date

2013: Launch of MyBank

2009: Start of SEPA Direct Debit processing

2008: Start of SEPA Credit Transfer processing

2003: Launch of the STEP2 Pan-European ACH platform
(technical operator: SIA)

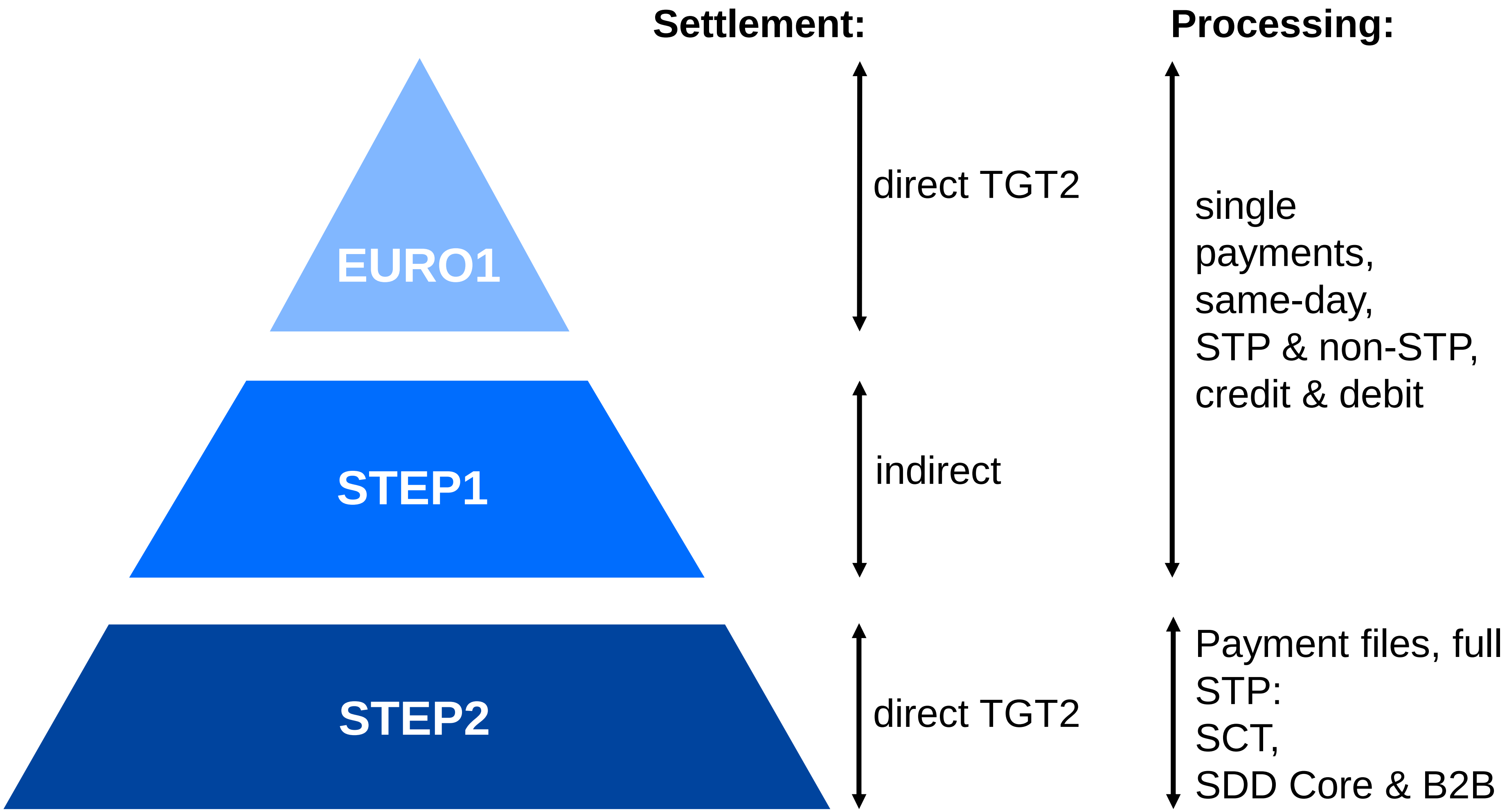
2001: Launch of the STEP1 Service providing access to the EURO1 platform
to the broader community of medium-sized and smaller banks

1998: Creation of EBA CLEARING Company in 1998 by 52 major banks to act as
business administrator of the EURO1 system

1997-98: Development of the EURO1 large-value payment system
(technical operator: SWIFT)

Introducing EBA CLEARING Services

An automated integrated payment platform for:



Settlement:

Processing:

direct TGT2

indirect

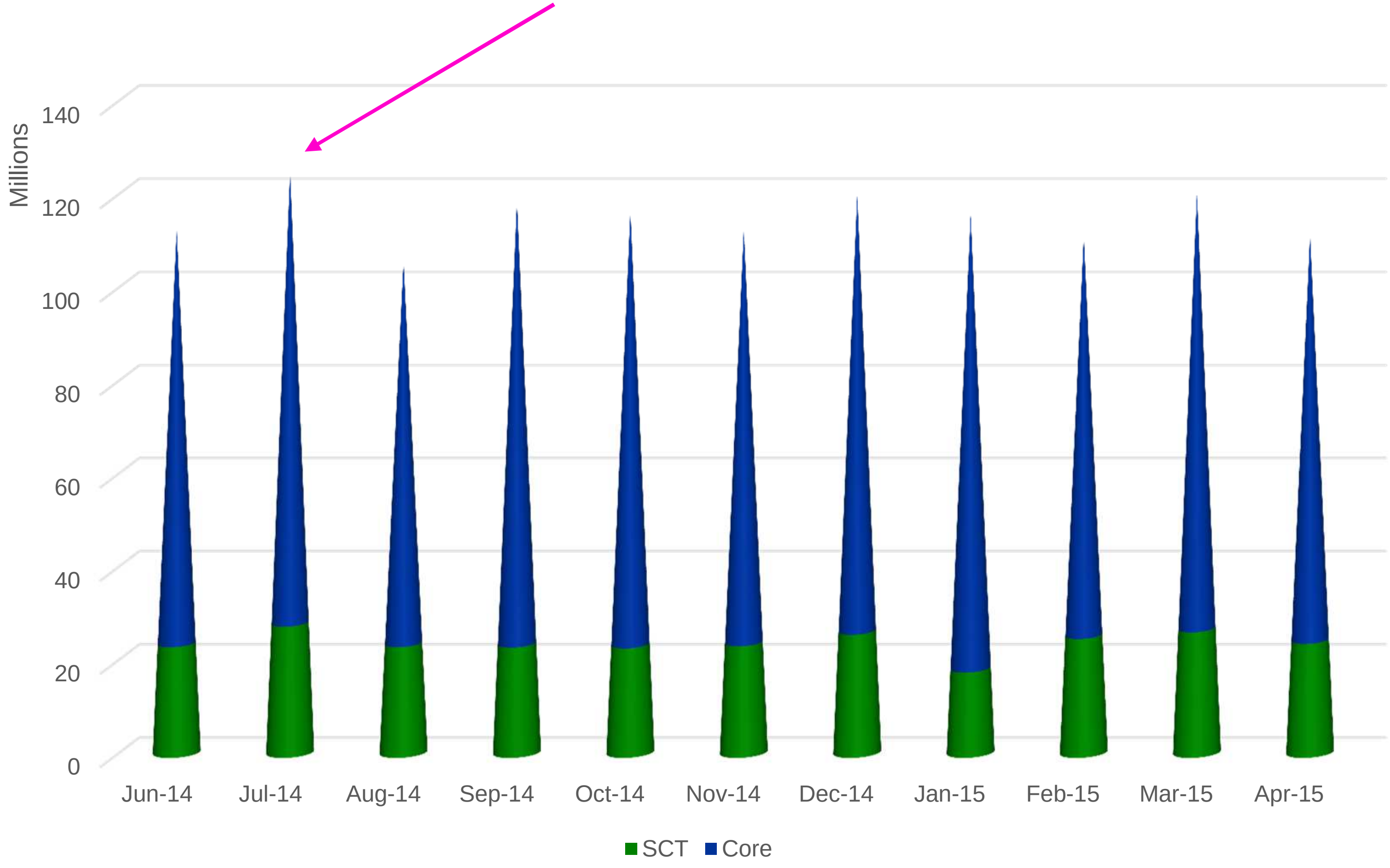
direct TGT2

single payments, same-day, STP & non-STP, credit & debit

Payment files, full STP:
SCT,
SDD Core & B2B

STEP2 Peaks

Absolute volume peak day: 1st July 2014 with 125 m



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Services outsourced

- EBA Clearing operates two SIPS services under ECB oversight,
- EBA Clearing is <u>not</u> an IT Company.

Traditionally, critical services are outsourced to external providers:

- SWIFT: EURO1, STEP1, MNM, SWIFTNet
- SIA: STEP2, SIANet
- BBP: Service bureau’s for SWIFTNet connectivity

Settlement services:

- ECB: TARGET2

(Settlement services are backed-up by manual procedures and tested regularly)

Oversight questionnaires:

- 2014: CPSS WG on Cyber Security
- 2015: ECB FMI Cyber Resilience

Critical Service Providers (CSP’s)

- As a double SIPS operator, EBA CLEARING fully is aware that its payment infrastructure services are critical to a large number of banks in Europe and as a consequence to their capability to provide effective payment services to their customers.

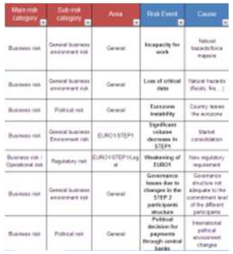
- This criticality commands that EBA CLEARING devotes the highest level of attention towards ensuring the robustness and reliability of its services, including an adequate protection of the system platforms that are used to deliver its services including cyber security risks.

- EBA CLEARING has outsourced its main services to strategic providers (mainly SIA and SWIFT), that have a strong and long standing reputation in managing mission critical infrastructures.

- These ‘Critical Service Providers’ (CSP’s) to FMI’s fall under local Central Bank oversight.

2013 Enterprise Risk Management Framework

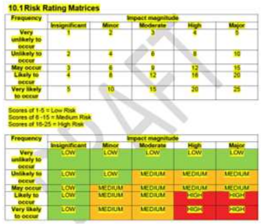
Risk Identification



Main risk category	Sub risk category	Area	Risk Event	Cause
Business risk	General business environment risk	General	Incapacity for work	Natural hazards/force majeure
Business risk	General business environment risk	General	Loss of critical data	Natural hazards (floods, fire ...)
Business risk	Political risk	General	Eurozone instability	Country leaves the eurozone
Business risk	General business Environment risk	EURO1/STEP1	Significant volume decrease in STEP1	Market consolidation
Business risk / Operational risk	Regulatory risk	EURO1/STEP1/Legal	Weakening of EURO1	New regulatory requirement
Business risk	General business environment risk	General	Governance losses due to changes in the STEP 2 participants structure	Governance structure not adequate to the commitment level of the different participants
Business risk	Political risk	General	Political decision for payments through central banks	International political environment changes

Risk dashboard

Risk Assessment



10.1 Risk Rating Matrices

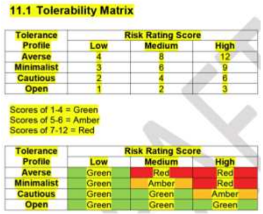
Frequency	Impact magnitude				
	Insignificant	Minor	Moderate	High	Major
Very unlikely to occur	1	2	3	4	5
Unlikely to occur	2	4	6	8	10
May occur	3	6	9	12	15
Likely to occur	4	8	12	16	20
Very likely to occur	5	10	15	20	25

Scores of 1-5 = Low Risk
Scores of 6 -15 = Medium Risk
Scores of 16-25 = High Risk

Frequency	Impact magnitude				
	Insignificant	Minor	Moderate	High	Major
Very unlikely to occur	LOW	LOW	LOW	LOW	LOW
Unlikely to occur	LOW	LOW	MEDIUM	MEDIUM	MEDIUM
May occur	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM
Likely to occur	LOW	MEDIUM	MEDIUM	HIGH	HIGH
Very likely to occur	LOW	MEDIUM	MEDIUM	HIGH	HIGH

Risk Scores

Risk Tolerance



11.1 Tolerability Matrix

Tolerance Profile	Risk Rating Score		
	Low	Medium	High
Averse	4	8	12
Minimalist	3	6	9
Cautious	2	4	6
Open	1	2	3

Scores of 1-4 = Green
Scores of 5-6 = Amber
Scores of 7-12 = Red

Tolerance Profile	Risk Rating Score		
	Low	Medium	High
Averse	Green	Red	Red
Minimalist	Green	Amber	Red
Cautious	Green	Green	Amber
Open	Green	Green	Green

Tolerance Profiles

- Risk Mitigating
- Risk Avoidance
- Risk Transfer
- Risk Acceptance

Risk Treatment Plan

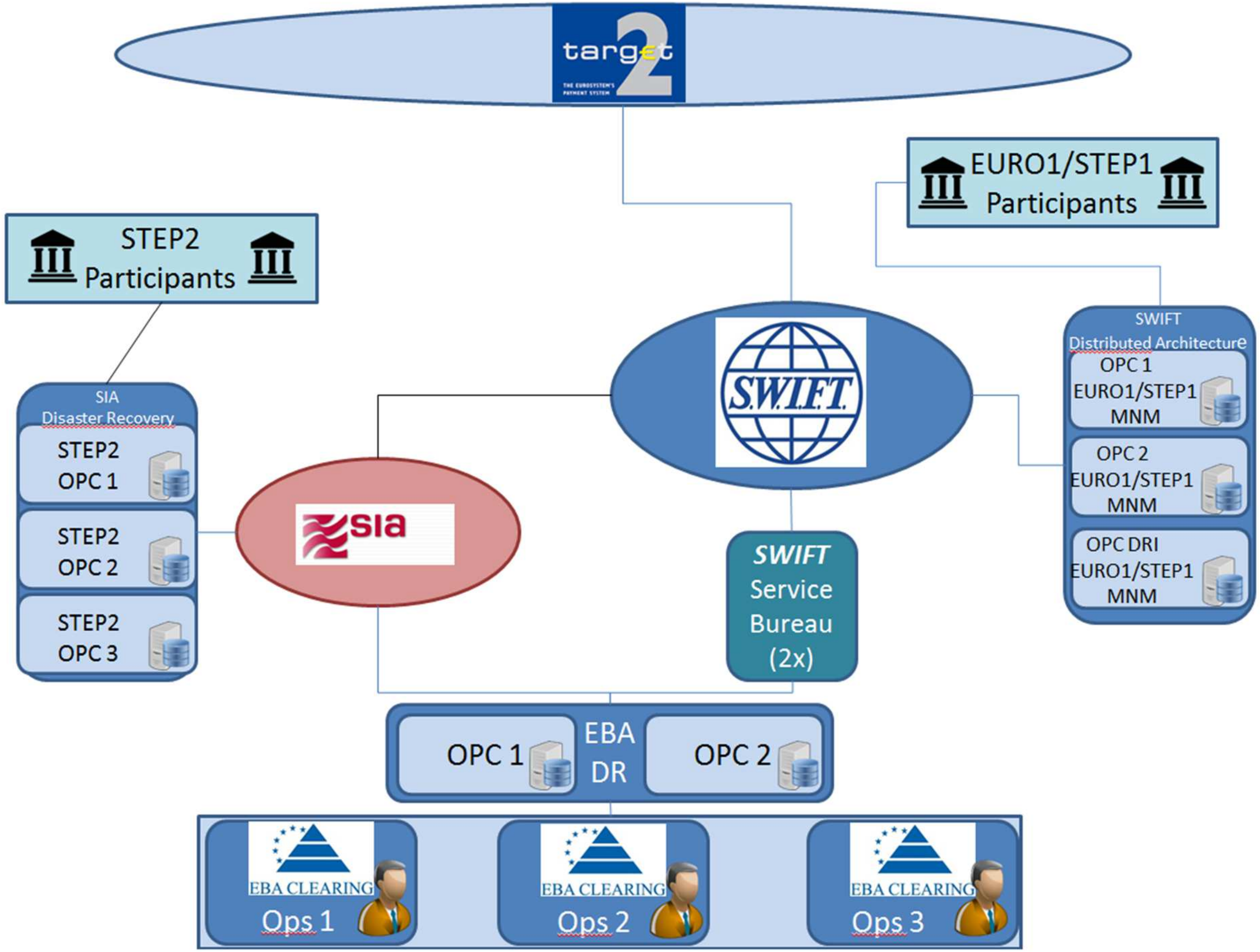
Red Flags

- ERMF includes cyber security.

Risk Tolerance Methodology

- Averse: Avoidance of risk and uncertainty is a key organizational objective;
- Minimalist: Preference for ultra-safe business delivery options that have a low degree of inherent risk;
- Cautious: Preference for safe delivery options that have a low degree of residual risk;
- Open: Willing to consider all potential delivery options and choose the one that is most likely to result in successful delivery while also providing an acceptable level of exposure to risk.

Critical Service Providers (CSP's)



STEP2: powered by SIA

EBA CLEARING

sia

A resilient and experienced operator

(Among others, SIA provides card processing services in 11 countries, runs the Norwegian and Swedish RTGS platforms and is the preferred provider of the London Stock Exchange Group for fixed income trading and post trading)

ISO 9001

- Certified Quality Management System

ISO / IEC 27001

- Certified Information Security Mgt System

BS25999

- Certified Business Continuity Mgt System

Payment Card Industry

- Fulfils Data Security Standard re. card processing

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EBA CLEARING Operations

EBA Clearing Business Administrator of EURO1 and STEP2:

- Spider in the web,
- 1st Line support to participants,
- OPC’s front offices,
- 3 geographical locations,
- Completely isolated from the Internet.

EBA CLEARING’s has established operational centres (OPC’s) front office environments which are isolated from any public network.

The strict segregation between the front- and back office operational network environments provides EBA CLEARING with a robust ‘defence in depth’ control on its mission critical applications in a highly secure manner.

Cyber Security - Prevention

EBA CLEARING

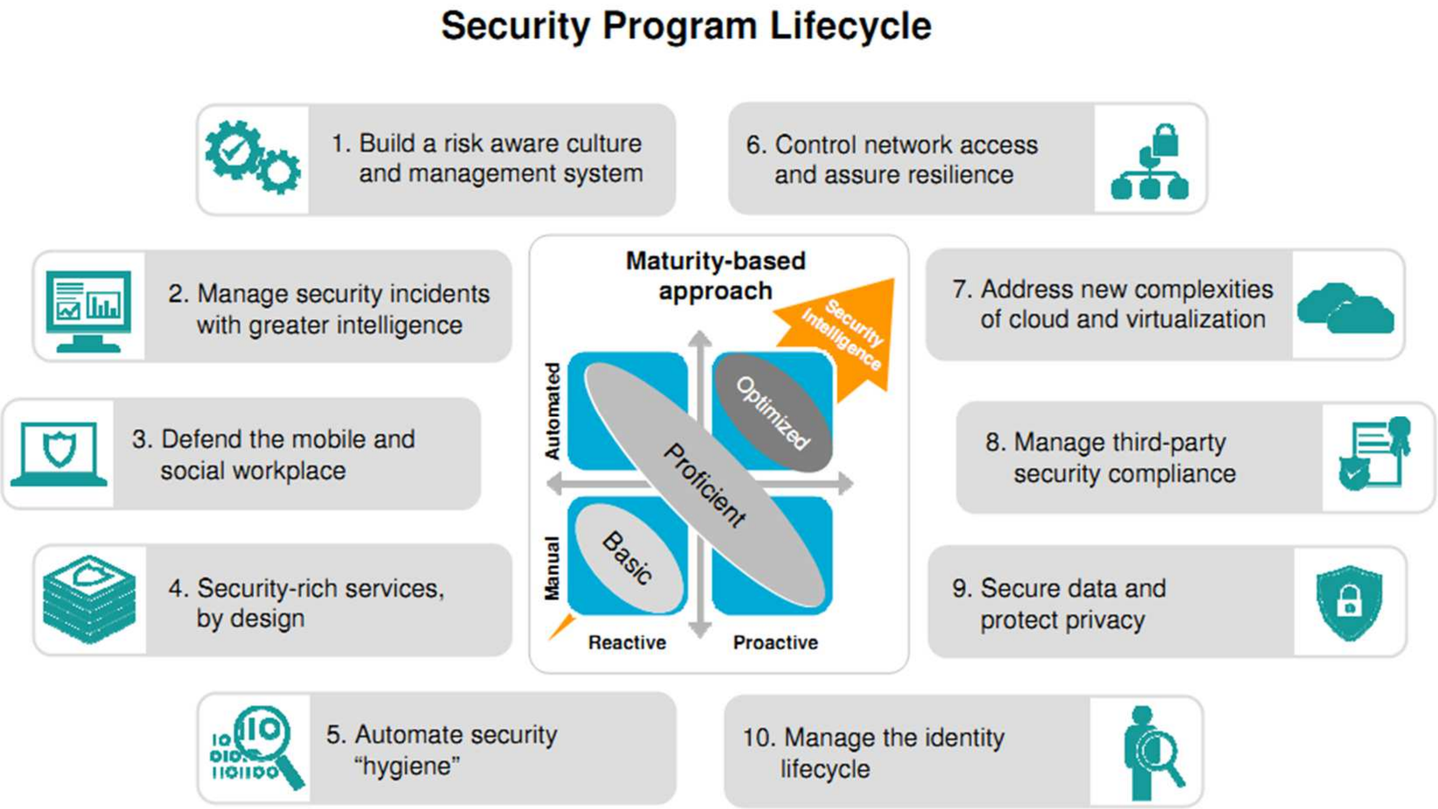
EBA CLEARING adopted the ISO 27001 ISMS standard in 2011

- Formally certified since 2012;
- Continuous ‘Plan-Do-Check-Act’ circles;
- Continuously seeking alignment with industry best practices;
- Maintain pro-activeness e.g. internal and external Attack & Penetration Testing;
- Mandatory Information Security awareness sessions;
- Information Security Officers in each unit;

- So much more than ‘a certificate’ on the wall!

Cyber Security – sample of best practices

- 10 essential best practices:



Security Program Lifecycle

1. Build a risk aware culture and management system

2. Manage security incidents with greater intelligence

3. Defend the mobile and social workplace

4. Security-rich services, by design

5. Automate security “hygiene”

6. Control network access and assure resilience

7. Address new complexities of cloud and virtualization

8. Manage third-party security compliance

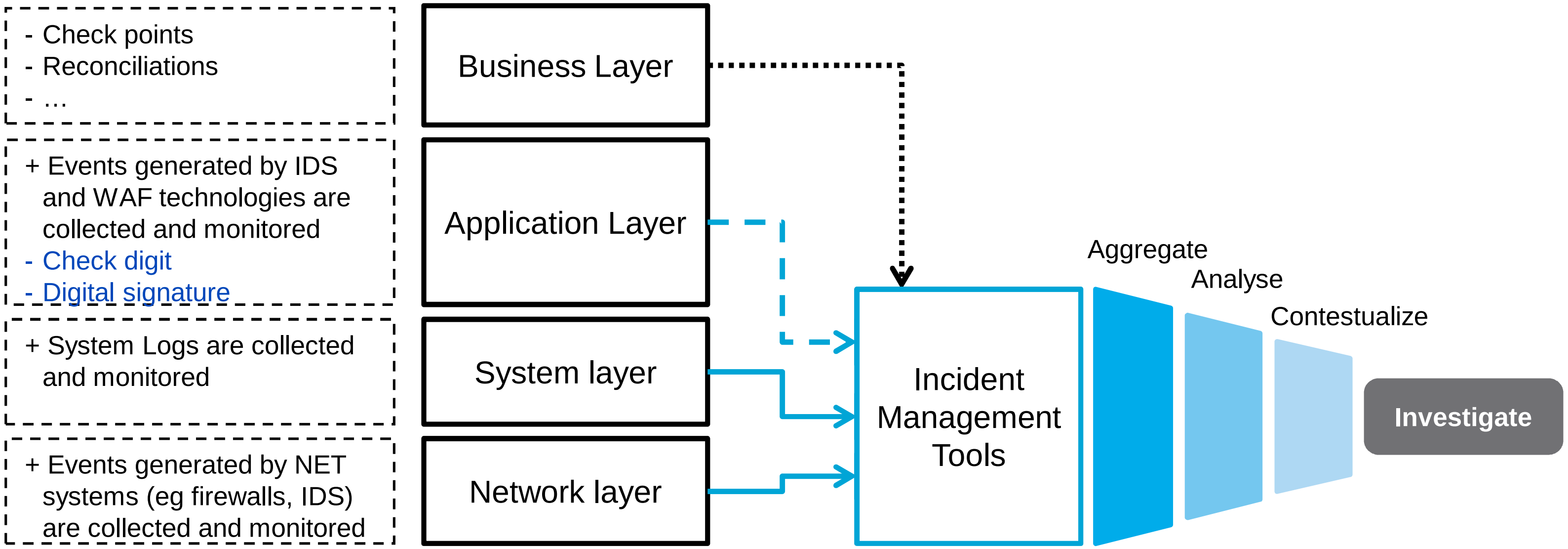
9. Secure data and protect privacy

10. Manage the identity lifecycle

Conclusion:
There is no single ‘silver bullet’.

Cyber Security – Detection and monitoring

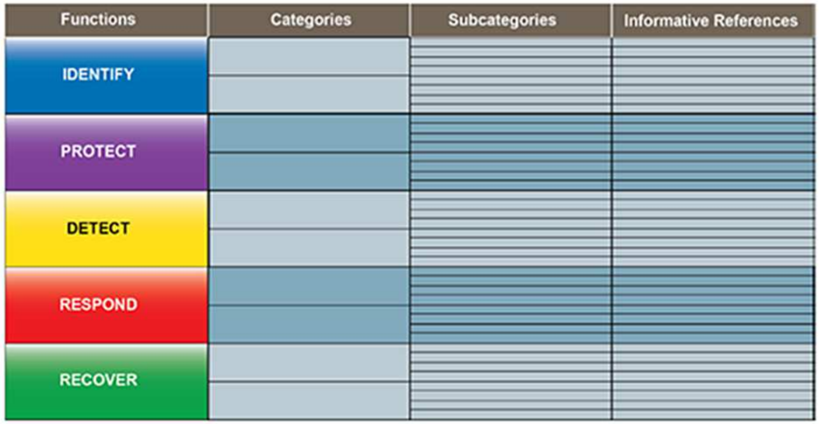
- Regarding detection and monitoring, CSP's have implemented state-of-the-art infrastructures and matured a long experience on this matter;
- Monitoring capability is focused on technical security events and threats on internet network, and on threats at business and application layer;
- Detection and monitoring at business layer require significant activities by EBA CL, CSP's and the participants.


- Check points
- Reconciliations
- …
+ Events generated by IDS and WAF technologies are collected and monitored
- Check digit
- Digital signature
+ System Logs are collected and monitored
+ Events generated by NET systems (eg firewalls, IDS) are collected and monitored
Business Layer
Application Layer
System layer
Network layer
Incident Management Tools
Aggregate
Analyse
Contestualize
Investigate

Cyber scenario’s: Internal next steps

- EBA CLEARING is considering the introduction of a separate ‘cyber-resilience framework’, which would enable us to create a specific cyber threat model, asses the current level of cyber resilience of all relevant stakeholders –including CSP’s- and report on the outcomes in a standardized visual manner.

- At current, its appropriateness to the organization is being investigated and outcomes are expected by July 2015…



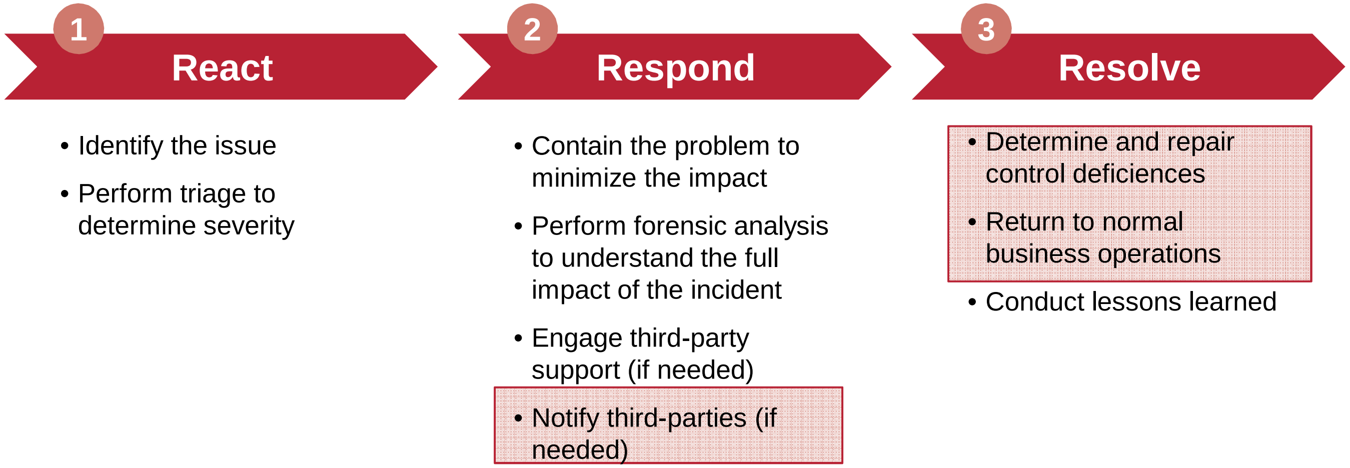
Functions	Categories	Subcategories	Informative References
IDENTIFY			
PROTECT			
DETECT			
RESPOND			
RECOVER			

Figure 1: Framework Core Structure

Cyber scenario's: External next steps

Cyber incident response is more than a technical problem with a technical solution

Significant cyber events will require an entire cyber crisis management solution across the cyber incident response lifecycle, from react, to response, to resolve



1 React

- Identify the issue
- Perform triage to determine severity

2 Respond

- Contain the problem to minimize the impact
- Perform forensic analysis to understand the full impact of the incident
- Engage third-party support (if needed)
- Notify third-parties (if needed)

3 Resolve

- Determine and repair control deficiencies
- Return to normal business operations
- Conduct lessons learned

EBA CLEARING is in the process of establishing specific points of contact (Focal Points) that will play a key role in the coordination between EBA CL and its CSP's in case of cyber event, as follows:

- **Contacts and escalation list**
- **Roles and Responsibilities**
- **Participants involvement (depending on the event)**

So that all relevant parties are made aware of the problem and can activate the technical and organizational procedures, previously defined, to manage the predicted events.