Cyber Security on 2017, National Solutions and Turkey
«WHATs and HOWs"

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Cyber World on 2017

DATA BREACHES	2014	2015	2016
TOTAL BREACHES	1,523	1,211	1,209
AVERAGE IDENTITIES EXPOSED PER BREACH	805	466	927
TOTAL IDENTITIES EXPOSED	1,200,000,000	564,000,000	1,100,000,000
BREACHES WITH 10 MILLION+ IDENTITIES EXPOSED	11	13	15

In the last **8 years** more than **7.1 BILLION** identities have been exposed in data breaches

RANSOMWARE	2014	2015	2016
NUMBER OF DETECTIONS	0	340,665	463,841
RANSOMWARE FAMILIES	30	30	101
AVERAGE RANSOM AMOUNT **(US Dollar)**	373	294	1,077

PHISHING RATE by INDUSTRY	2016
Agriculture, Forestry & Fishing	1 for each 1815 e-mails
Finance, Insurance & Real Estate	1 for each 1918 e-mails
Mining	1 for each 2254 e-mails
Public Administration	1 for each 2329 e-mails
Minimum: Transportation & Public Utilities	1 for each 6176 e-mails

April 27th, 2017 Symantec Corp. Internet Security Thread Report, Vol: 22

Cyber World on 2017

Attack Groups	Aliases	Country	Start Year	Motivation	Target Categories & Regions
Sandworm	Quedagh, BE2 APT	Russia	2014	**Espionage**, **Sabotage**	**Governments**, **International Organizations**, **Europe**, **US**, **Energy**
Fritillary	Cozy Bear, APT29, Office Monkeys	Russia	2010	**Espionage**, subversion	**Governments**, Think Tanks, Media, **Europe**, **US**
Swallowtail	Fancy Bear, APT28, Sednit	Russia	2007	**Espionage**, subversion	**Governments**, **Europe**, **US**
Cadelle	/None/	Iran	2012	**Espionage**	**Airlines**, **telecommunications**, **Iranian Citizens**, **Governments**, NGO's
Appleworm	Lazarus	North Korea	2012	**Espionage**, **Sabotage**, subversion	**Financial**, **Military**, **Governments**, Entertainment, Electronics
Housefly	Equation	US	2001	**Espionage**	Targets of interest to nation-state attackers
Strider	Remsec	Western	2011	**Espionage**	**Embassies**, **airlines**, **Russia**, **China**, **Sweden**, **Belgium**
Suckfly	/None/	China	2014	**Espionage**	**e-Commerce**, **Governments**, Technology, **healthcare**, **Financial**, **shipping**
Buckeye	APT3, UPS, Gothic Panda	China	2009	**Espionage**	**Military**, **defense industry** , Media, Education, **US**, **UK**, **Hong Kong**
Tick	/None/	China	2006	**Espionage**	**Technology**, broadcasting, **Japan**, aquatic engineering

Notable Targeted Attack Groups that have been publicly connected to nation states

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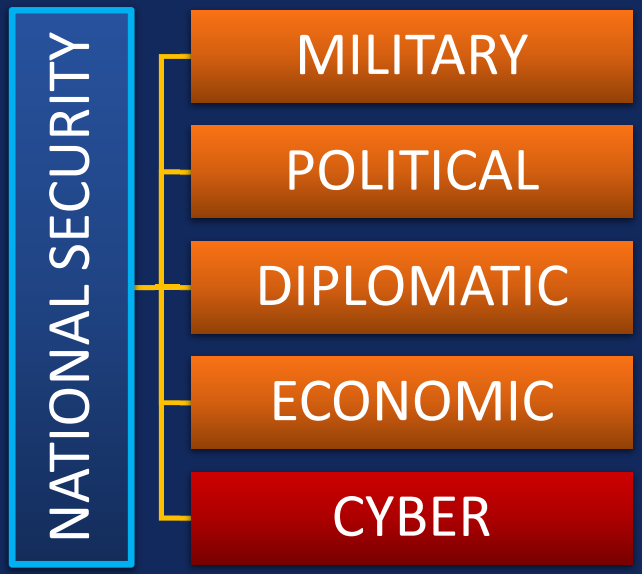
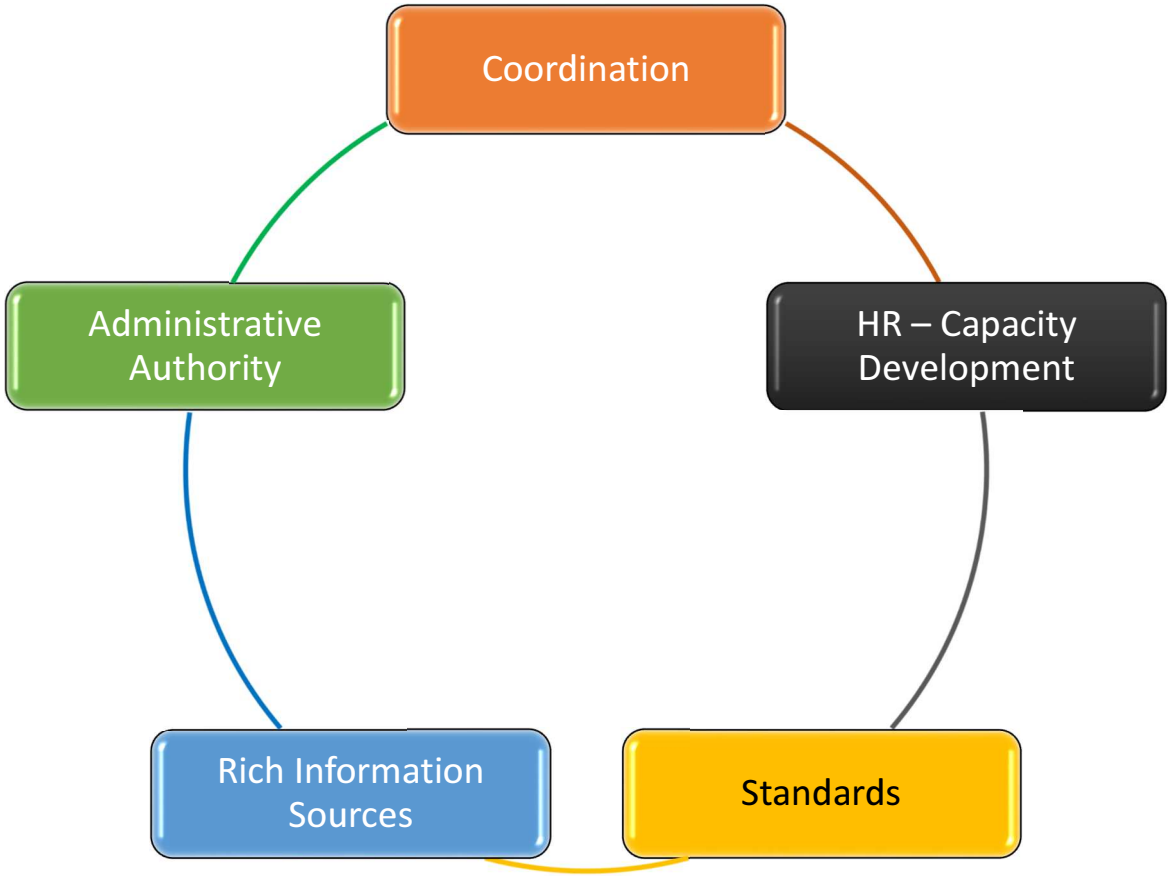
CYBER SECURITY & NATIONAL SECURITY

National Security: Identification of threats and opportunities by monitoring the **regional** and **global** environment in order to take measures against the threats to the national state and security, and the **processes** to determine the politics appropriate to these issues and to implement the most appropriate policies (National Security Committee)*



* http://www.mgk.gov.tr/index.php/milli-guvenlik-kurulu/genel-bilgi
** http://www.nato.int/docu/review/2017/Also-in-2017/nato-priority-spending-success-cyber-defence/EN/index.htm

CERT's and Critical Components: «What» is required ?



«HOW» ?

NOTIFICATION ON CERT'S FOUNDATION, DUTIES AND WORKING PROCEDURES AND PRINCIPLES

November 11th, 2013

Duties and Responsibilities of Institutional CERT's

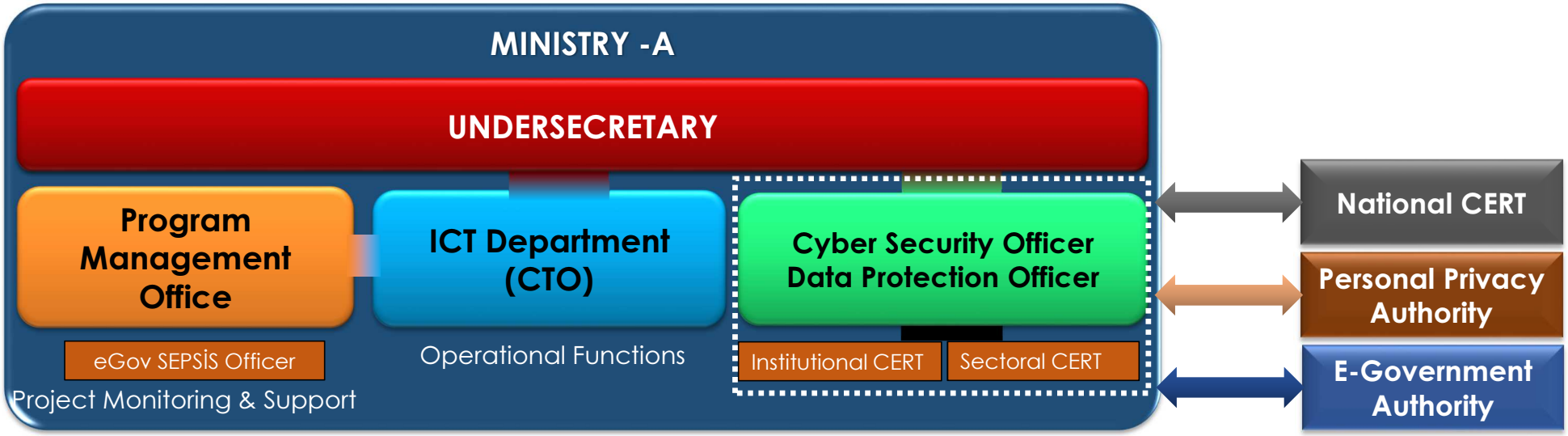
Article 5: (2) Institutional CERTs provide advice on technical and administrative measures in the study of the establishment, operation or development of information systems of institutions in order to prevent or mitigate cyber incidents.

Where CERT should be located: Institutional Governance

CURRENT SITUATION in TURKEY

Where CERT should be located: Institutional Governance

SUGGESTED ADMINISTRATIVE GOVERNANCE MODEL



Cyber Security and Data Protection Unit
Attched to the Office of Undersecretary
Unit Head is assigned as «Cyber Security» and «Data Protection» Officer

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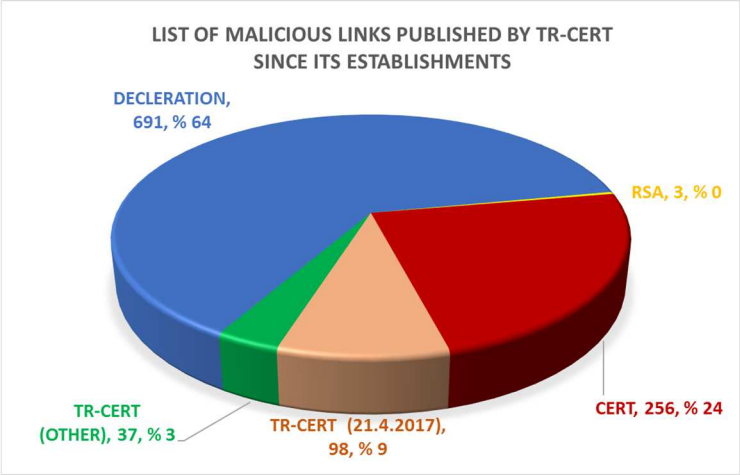
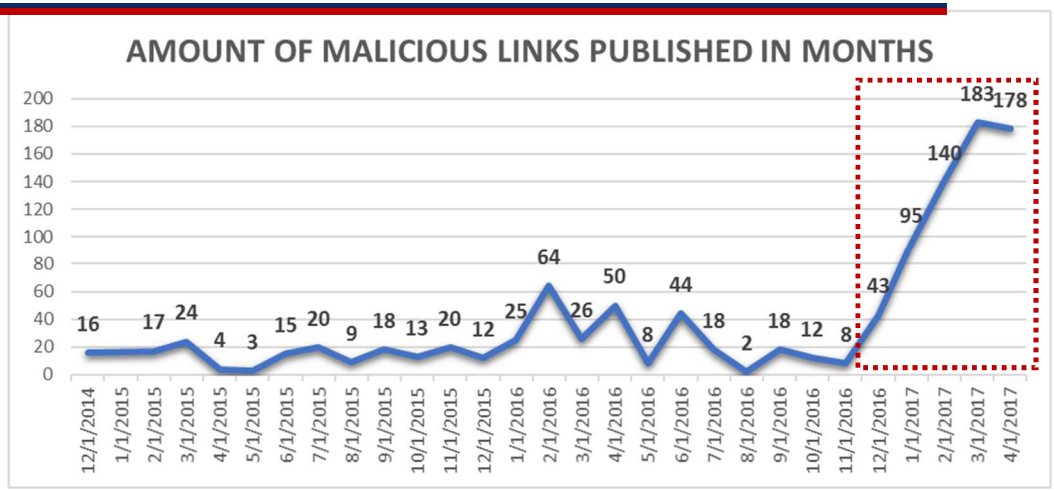
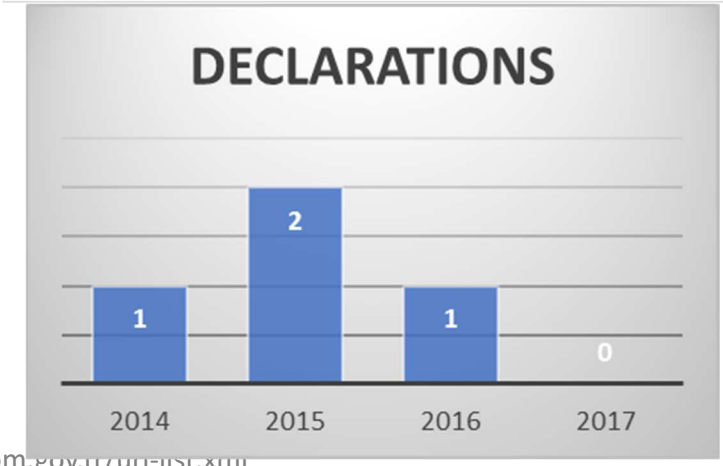
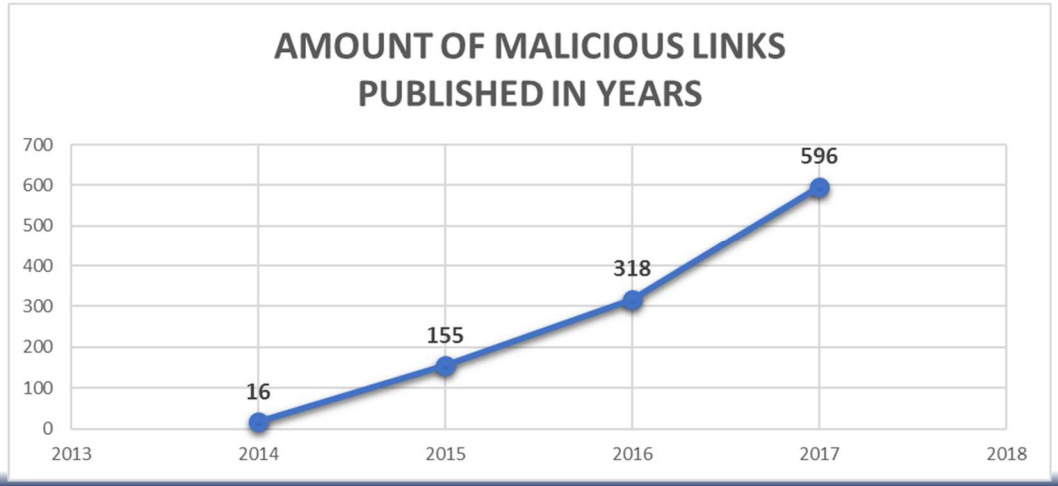
TR-CERT ACTIVITY STATISTICS









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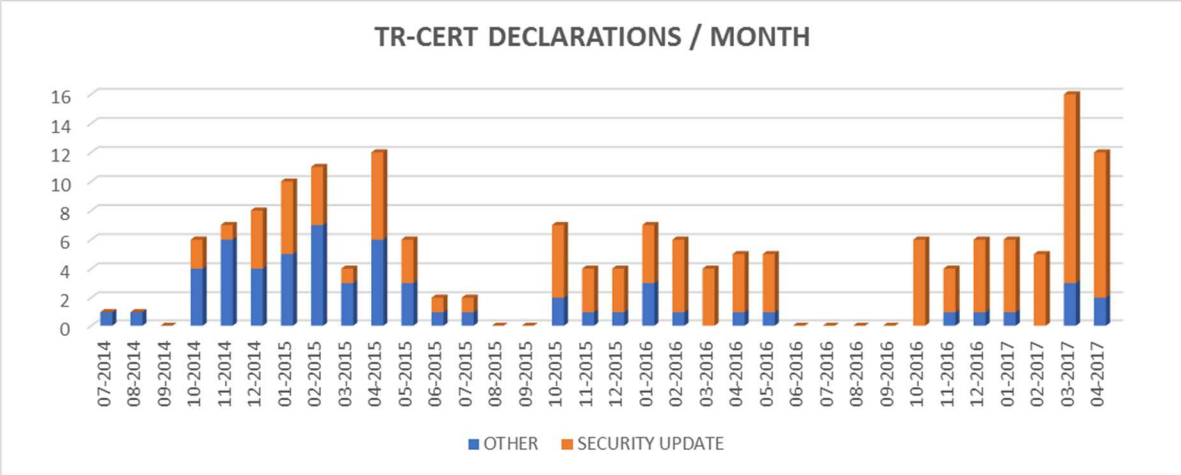
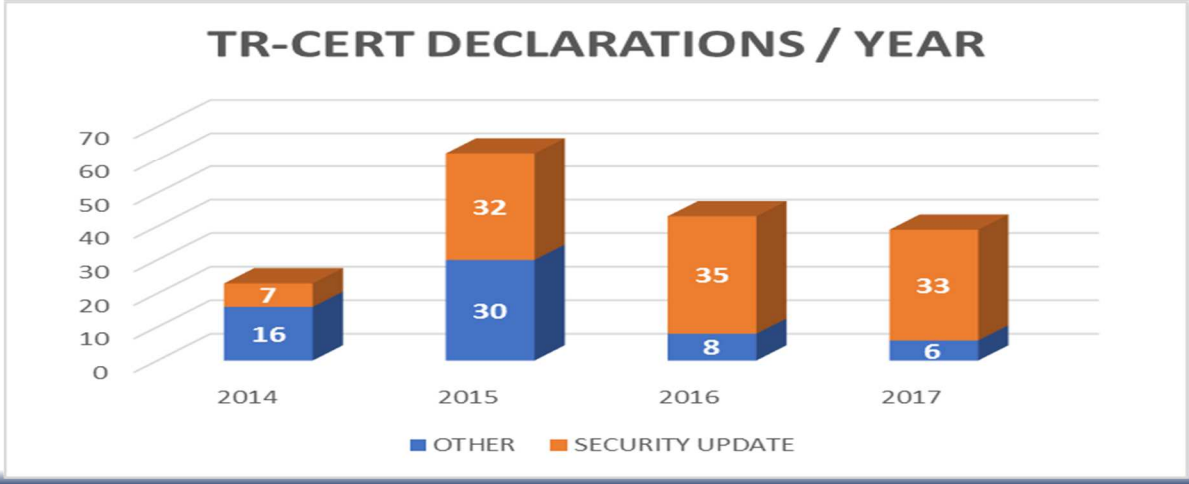
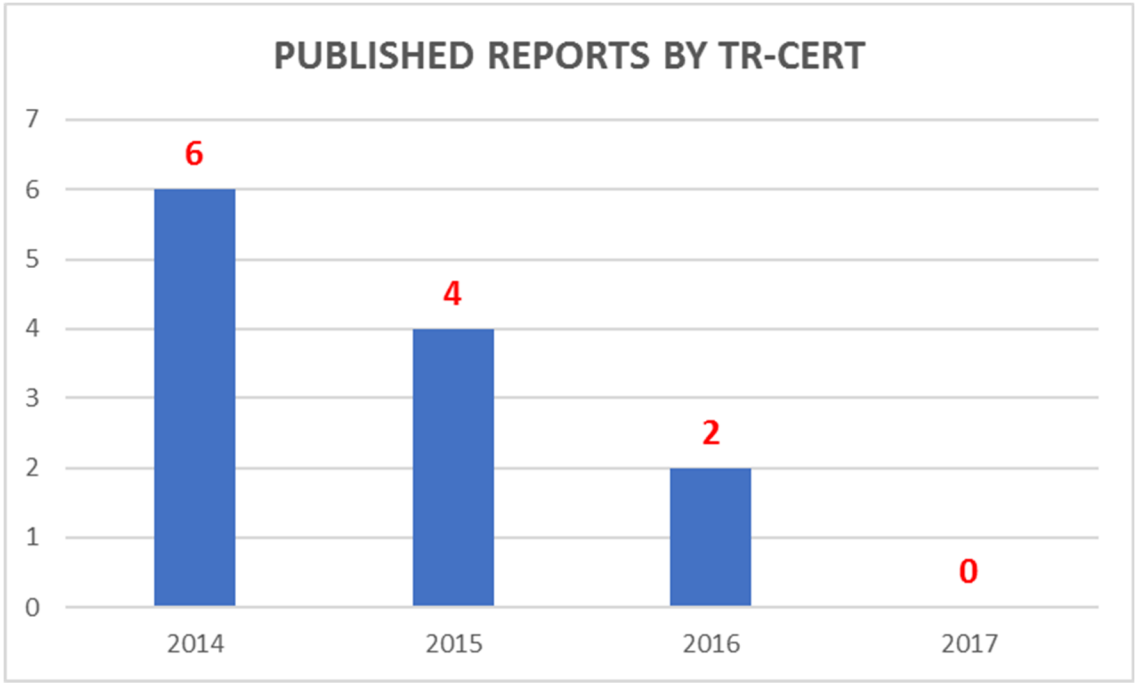




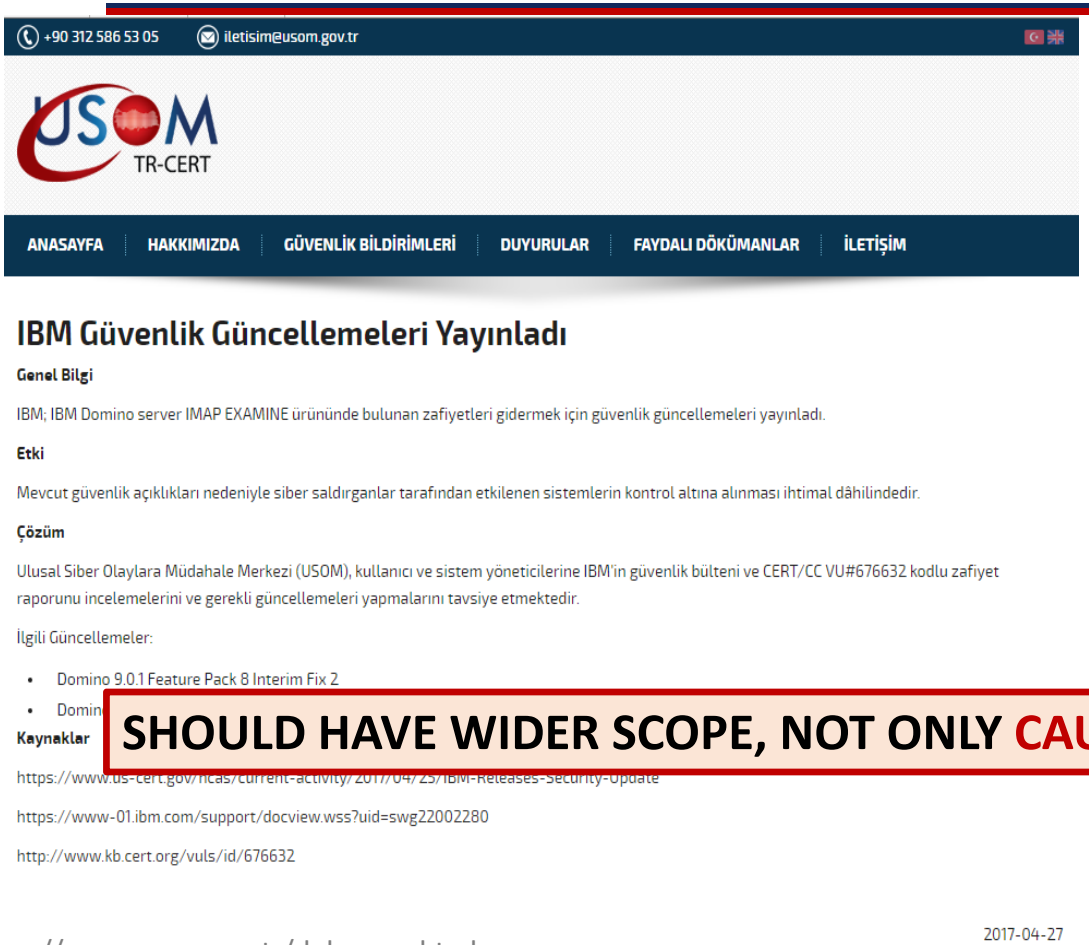
https://www.usom.gov.tr/tehdit.html

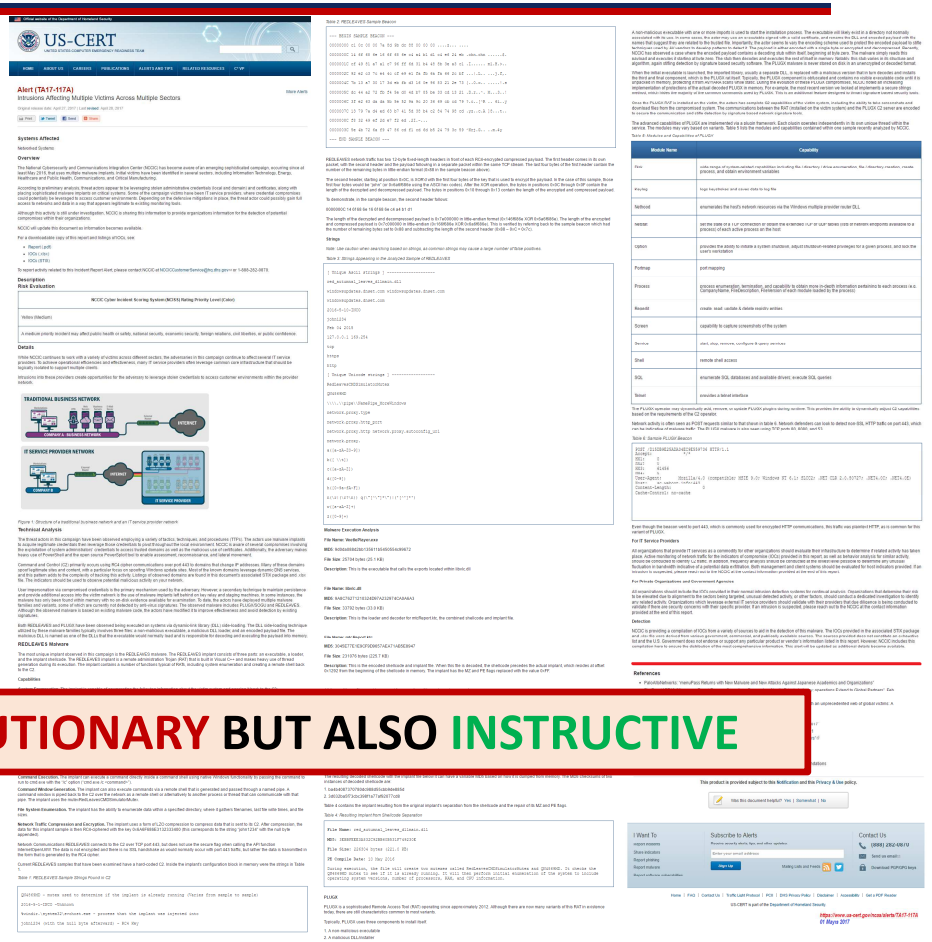
TR-CERT ACTIVITY STATISTICS



https://www.usom.gov.tr/dokuman.html

TR-CERT ACTIVITY STATISTICS





SHOULD HAVE WIDER SCOPE, NOT ONLY CAUTIONARY BUT ALSO INSTRUCTIVE

https://www.usom.gov.tr/dokuman.html

2017-04-27

TR-CERT

CAPACITY BUILDING SUGGESTIONS

- TR-CERT should become a stronger and more qualified source of information for CERTs and coordinate relevant institutions within this aim.
- More informative reports and guides should be prepared:
- Related ENISA Reports, NIST Documents and CERT Guidelines (such as First Responders Guide to Computer Forensics) may be translated to Turkish.
- These studies made by TR-CERT and universities should be published in easy accessible format in «Documents section of TR-CERT Website».
- In the TR-CERT website, public / private sector, universities, NGOs, CERTs and TR-CERT can publish the activities carried out / realized in the field of cyber security and the result reports obtained therefrom.
- Webinars should be organized and a Cyber Security Webinar Library should be created on the site. Distance learning and 24/7 training approach should be targeted.
- Systematic CERT training should be provided in cooperation with the universities, and labs should be included which will create practical experience in these trainings. «The Lessons-learnt and good-practices» should be given. «Experience Exchange Trainings» from institutional experts who are actively involved in cyber-incident interventions.

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(8) [*and Article 7-(6)*] Corporate (*Sectoral*) CERTs assign contact information of CERT members that is accessible 7/24 and notify / inform TR-CERT and the sectoral CERTs that they work with.

QUALIFIED HUMAN RESOURCES for CERT's

- **Cyber Security, Data Security, Personal Data Expertizations** should be defined
- **Certificates of specialization** must be given by universities' cyber security centers and accredited private sector training centers
- Cyber security centers in universities should set **international goals** with accreditation: «Global Capacity Development Power»
- Certification programs should also build on **practical field experience**
- Specific specialties for some national products: "Pardus Migration and Support Expert»
- Expert certification and practical experience on site is a prerequisite for **pre-condition of duty** in TR-CERT and CERTs
- Special **financial incentive** for CERT and TR-CERT Team because of 7 x 24 Work and Critical Mission Area

«EXACT NATIONAL» CYBER SECURITY

- Softwares should have **full-source**:
  - Open-Source is NOT a must (source-available / shared-source) but it should NOT include and component that does not have source code
- Should be developed by **National private sector**:
  - Government should supply infrastructures and R&D only
  - The state should not unfairly compete with the private sector for software development:
    - The state should implement frameworks, libraries, national R&D studies and set standards that will support private sector instead of software development
    - The national private sector should develop sectoral (health, education etc.) and horizontal (Electronic Document Management System etc.) software by using them
    - Exceptions to Public Procurement Law No. 8227 - Article 3 should be re-addressed to support competition in the private sector
    - The sector should be divided into categories by leveling
    - The market in the public sector ensures the development of these categories
    - There should be **Sustainable** model:
  - There should not be non-product-only solutions left alone with AR-GE incentives
- State-supported from **technical, administrative, financial and legal aspects**

STANDARDS - 27K FAMILY

SECURITY STANDARDS TO BE AWARDED BY TSI (TURKISH STANDARDS INSTITUTION) TO TURKEY

STANDARD	EXPLANATION / STANDARD NAME	PRIORITY
ISO/IEC 27019	Information security for process control in the **energy industry**	★
ISO/IEC 27021	Information technology — Security techniques — Competence requirements for **information security management systems professionals**	★
ISO/IEC 27032	**Guideline for cybersecurity**	★
ISO/IEC 27034-1	**Application security** Part 1: Guideline for application security	★
ISO/IEC 27010	Information security management for **inter-sector and inter-organizational communications**	★★
ISO/IEC 27033-6	Network security - Part 6: Securing **wireless IP network** access	★★
ISO/IEC 27035-1	Information **security incident management** – Part 1: Principles of incident management	★★★
ISO/IEC 27035-2	Information **security incident management** – Part 2: Guidelines to plan and prepare for incident response	★★★
ISO/IEC 27036-4	Information security for supplier relationships - Part 4: Guidelines for security of **cloud services**	★★★

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