21stC Cyber Trends in **Finance**

- *AI & Machine Learning in Banking* -

Dr David E. Probert
VAZA International

For Ethan, Alice, Hugh, Matthew, Abigail, Micah, Roscoe , Tatiana & Edward!

40th International East-West Security Conference

1

21stC Тенденции кибербезопасности в финансах - *Искусственный интеллект и машинное обучение в банковской сфере*

www.Valentina.net/MALTA2019/

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- AI & Machine Learning for Banking -
St Julians, Malta – 10th/11th Nov 2019
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2

Our Cyber Trilogy: Finance, Industry & Futures!

Theme (1) - *21stC Cyber Trends in Finance*: *AI & Machine Learning in Banking!...*

21stC Cyber Trends in Finance
- AI & Machine Learning in Banking -
Dr David E. Probert
VAZA International

- Review of Finance Sector – Technology & Market Innovation
- Mitigation of Cyber Attacks with AI, Machine & Deep Learning
- Using Real-Time Analytics & Big Data to Secure Finance Transactions
  "Cyber Strategies for Finance & Banks!"   *11th Nov: 9:45 – 10:30*

Theme (2) – *Upgrading Industrial CyberSecurity:* *Securing Critical Infrastructure!...*

Upgrading Industrial CyberSecurity
Securing Critical National Infrastructure
Dr David E. Probert
VAZA International

- *21stC* Cyber Landscape for Critical Industrial & Energy Security
- Upgrading Legacy Devices & Control Systems to 21stC Standards
- Securing Critical Assets with Intelligent Self-Learning Cyber Solutions
  "CyberSecurity for Critical Sectors! "   *11th Nov: 15:15 – 16:00*

Theme (3) – *Intelligent, Integrated Security: CyberCrime, CyberTerror & CyberWar!...*

Intelligent Integrated Security
- CyberCrime, CyberTerror, CyberWar -
Dr David E. Probert
VAZA International

- Understanding and Mapping Worldwide Cyber Threats
- Exploring Intelligent Cyber Tools & Real-Time Analytics
- Discussion of CyberSecurity Scenarios for *Next 10 Years* & Beyond !...
  "CyberVisions for Intelligent Futures!"   *11th Nov: 12:30 – 13:15*

Download: www.valentina.net/MALTA2019/

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21st**C** *Cyber* Trends in Finance...

1 – 21stC "*Disruptive*" Financial Futures! **"Fintech & Cyber Banks"**	**2 – Top 10 Cyber Finance Threats!....** **"DDoS to RansomWare!"**	**3 – Case Studies: Cyber Hacks & Attacks** **"Transaction Security"**
4 – Advanced Finance Security Solutions **"Artificial Intelligence"**	**5 – Adaptive *Finance Business* Analysis** **"Deep Learning..."**	**6 – 21stC Distributed Peer-to-Peer Ledgers** **"Role of BlockChains"**
7 – Cyber Fraud Detection & Prevention **"Big Data Analytics"**	**8 – From 20thC Banks to 21stC Fintech!** **"Intelligent Cyber Tools"**	**9 – Cyber Plans for *YOUR* Business!** **"Smart Security Toolkit"**
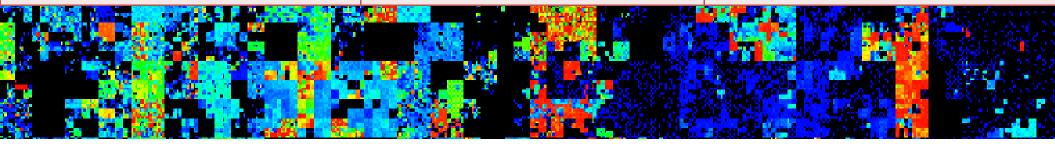
21stC *Cyber* Trends in **Finance**...
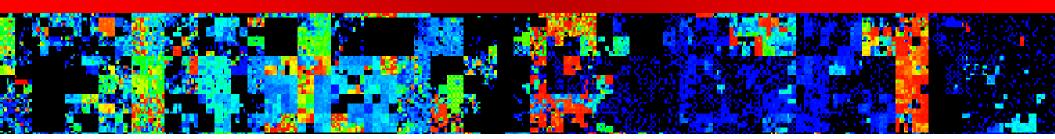
1 – 21stC "Disruptive" Financial Futures
"Fintech & Cyber Banks"

FinTech: *Market Size & Growth*

- **FinTech** = 21stC Digital Banking & Financial Services
- **2018 Size**: $112 Billion & 120% Growth Rate
- **Transition**: Shift from Physical to Virtual Banks
- **Hi-Tech**: Artificial Intelligence & Deep Learning
- **Secure Deals**: Peer-to-Peer Blockchain Ledger
- **CyberSecurity**: Intelligent Real-Time Security

….**FinTech** - Global Transformation of the Banking & Financial Services Industry during **2020 – 2030**!….

….**Intelligent CyberSecurity** is *Critical* both for Classic Banking & Finance as well as **21stC FinTech Sector**!..

FinTech: *Market Size & Growth*

….**FinTech** - Global Transformation of the Banking & Financial Services Industry during **2020 – 2030**!….

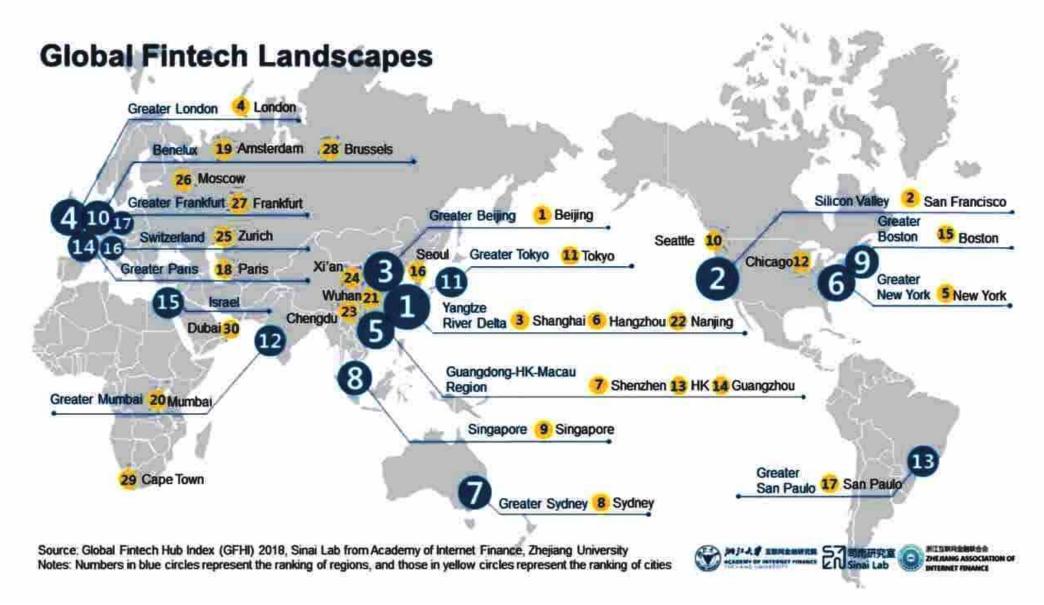….**Intelligent CyberSecurity** is *Critical* both for Classic Banking & Finance as well as **21stC FinTech Sector**!..
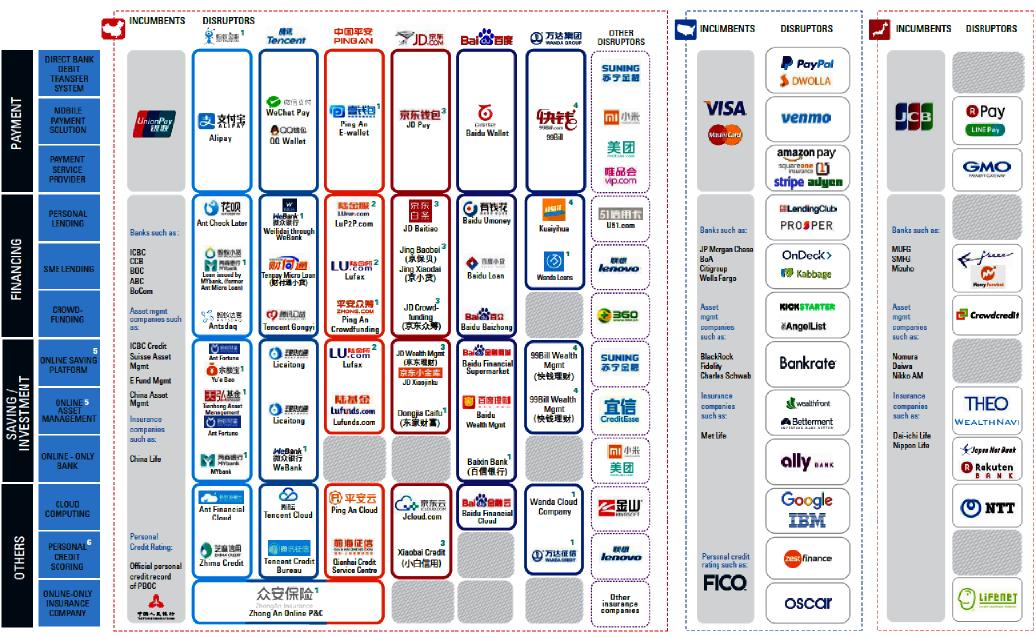
Global "FinTech" MarketPlace: 2018

Global Fintech Landscapes

- Greater London **4** London
- Benelux **19** Amsterdam **28** Brussels
- **26** Moscow
- Greater Frankfurt **27** Frankfurt
- Switzerland **25** Zurich
- Greater Paris **18** Paris
- Israel
- Dubai **30**
- Greater Mumbai **20** Mumbai
- **29** Cape Town
- Greater Beijing **1** Beijing
- Seoul, Greater Tokyo **11** Tokyo
- Xi'an **24**
- Wuhan **21**
- Chengdu **23**
- Yangtze River Delta **3** Shanghai **6** Hangzhou **22** Nanjing
- Guangdong-HK-Macau Region **7** Shenzhen **13** HK **14** Guangzhou
- Singapore **9** Singapore
- Greater Sydney **8** Sydney
- Silicon Valley **2** San Francisco
- Seattle **10**
- Chicago **12**
- Greater Boston **15** Boston
- Greater New York **5** New York
- Greater San Paulo **17** San Paulo

Blue circles: 4, 10, 17, 14, 16, 15, 12, 3, 16, 1, 11, 5, 8, 2, 6, 9, 13, 7

Source: Global Fintech Hub Index (GFHI) 2018, Sinai Lab from Academy of Internet Finance, Zhejiang University
Notes: Numbers in blue circles represent the ranking of regions, and those in yellow circles represent the ranking of cities

Global "FinTech" MarketPlace: 2018

China

	INCUMBENTS	DISRUPTORS						OTHER DISRUPTORS
		Ant Financial [1]	Tencent	PING AN [中国平安]	JD.COM [JD京东]	Baidu [百度]	WANDA GROUP [万达集团]	

PAYMENT — DIRECT BANK DEBIT TRANSFER SYSTEM / MOBILE PAYMENT SOLUTION / PAYMENT SERVICE PROVIDER

| UnionPay | Alipay | WeChat Pay / QQ Wallet | Ping An E-wallet [壹钱包][1] | JD Pay [京东钱包][3] | Baidu Wallet | 99Bill [快钱][99Bill.com] | SUNING [苏宁金融] / 小米 / 美团 / vip.com 唯品会 |

FINANCING — PERSONAL LENDING / SME LENDING / CROWD-FUNDING

Banks such as: ICBC, CCB, BOC, ABC, BoCom
Asset mgmt companies such as: ICBC Credit Suisse Asset Mgmt, E Fund Mgmt, China Asset Mgmt
Insurance companies such as: China Life

| | Ant Check Later [花呗] / MYbank [Loan issued by MYbank (former Ant Micro Loan)][1] / Antsdaq [蚂蚁达客] | WeBank [微众银行][1] Weilidai through WeBank / Tenpay Micro Loan [财付通小贷] / Tencent Gongyi [腾讯公益] | LuP2P.com [陆金服][2] / Lufax [LU.com 陆金所] / Ping An Crowdfunding [平安众筹][1] | JD Baitiao [京东白条][3] / Jing Baobei [京宝贝][3] / Jing Xiaodai [京小贷] / JD Crowd-funding [京东众筹][3] | Baidu Umoney [有钱花][4] / Baidu Loan [百度小贷] / Baidu Baizhong [百众][1] | Kuaiyihua [4] / Wanda Loans [1] | U51.com [51信用卡] / lenovo [联想] / 360 |

SAVING / INVESTMENT — ONLINE SAVING PLATFORM [5] / ONLINE ASSET MANAGEMENT [5] / ONLINE - ONLY BANK

| | Ant Fortune [1] / Yu'e Bao [余额宝][1] / Tianhong Asset Management [天弘基金] / Ant Fortune [蚂蚁聚宝] / MYbank [网商银行][1] | Licaitong [理财通] / Licaitong [理财通] / WeBank [微众银行] | Lufax [LU.com 陆金所][2] / Lufunds.com [陆基金] | JD Wealth Mgmt [京东理财][3] / JD Xiaojinku [京东小金库] / Dongjia Caifu [东家财富][1] | Baidu Financial Supermarket [百度金融超市] / Baidu Wealth Mgmt [百度理财] / Baixin Bank [百信银行][1] | 99Bill Wealth Mgmt [快钱理财][4] / 99Bill Wealth Mgmt [快钱理财] | SUNING [苏宁金融] / CreditEase [宜信] / 小米 美团 |

OTHERS — CLOUD COMPUTING / PERSONAL CREDIT SCORING [6] / ONLINE-ONLY INSURANCE COMPANY

Personal Credit Rating:
Official personal credit record of PBOC

| | Ant Financial Cloud / Zhima Credit [芝麻信用] / ZhongAn Insurance [众安保险] Zhong An Online P&C [1] | Tencent Cloud [腾讯云] / Tencent Credit Bureau [腾讯征信] | Ping An Cloud [平安云] / Qianhai Credit Service Centre [前海征信] | Jcloud.com [京东云] / Xiaobai Credit [小白信用][3] | Baidu Financial Cloud [百度金融云] | Wanda Cloud Company / [万达征信][1] | KINGSOFT [金山] / lenovo [联想] / Other insurance companies |

USA

INCUMBENTS	DISRUPTORS
VISA / MasterCard	PayPal / DWOLLA / venmo / amazon pay / squareone insurance [1] / stripe / adyen
Banks such as: JP Morgan Chase, BoA, Citigroup, Wells Fargo	LendingClub / PROSPER / OnDeck / Kabbage
Asset mgmt companies such as: BlackRock, Fidelity, Charles Schwab	KICKSTARTER / AngelList / Bankrate
Insurance companies such as: Met Life	wealthfront / Betterment / ally BANK
Personal credit rating such as: FICO	Google / IBM / zestfinance / oscar

Japan

INCUMBENTS	DISRUPTORS
JCB	Pay / LINE Pay / GMO
Banks such as: MUFG, SMHi, Mizuho	freee / Money Forward / Crowdcredit
Asset mgmt companies such as: Nomura, Daiwa, Nikko AM	THEO WEALTHNAVI
Insurance companies such as: Dai-ichi Life, Nippon Life	Japan Net Bank / Rakuten BANK / NTT / LIFENET

Goldman Sachs - Global Investment Research
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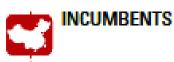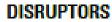St Julians, Malta – 10th/11th Nov 2019
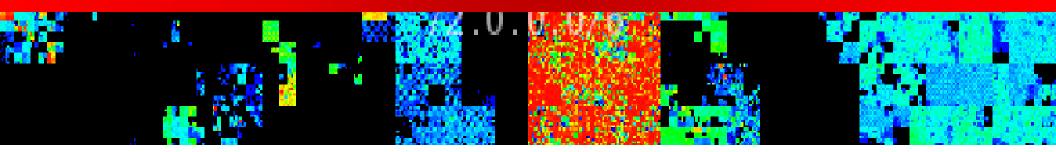© Dr David E. Probert : www.VAZA.com ©

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China leads "Global Fintech Sector": 2019

Great Wall of China = 1st State Border Perimeter Security

10

China leads "Global Fintech Sector": 2019

USA	China	Rest of the World
14 Unicorns	**8** Unicorns	**5** Unicorns
$31 Billion Valuation	**$96.4 Billion** Valuation	**$11.5 Billion** Valuation
$5.7 Billion Raised	$9.4 Billion Raised	$1.8 Billion Raised

Photo: Simon Probert – Beijing, China

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China leads "Global Fintech Sector": 2019

	INCUMBENTS	DISRUPTORS				
		蚂蚁金服 Ant Financial [1]	腾讯 Tencent	中国平安 PING AN	JD京东 JD.COM	Baidu 百度

PAYMENT

DIRECT BANK DEBIT TRANSFER SYSTEM	UnionPay 银联					
MOBILE PAYMENT SOLUTION		支付宝 ALIPAY **Alipay**	微信支付 **WeChat Pay** QQ钱包 **QQ Wallet**	壹钱包 [1] **Ping An E-wallet**	京东钱包 [3] **JD Pay**	百度钱包 **Baidu Wallet**
PAYMENT SERVICE PROVIDER						

FINANCING

PERSONAL LENDING	Banks such as : ICBC CCB BOC ABC BoCom Asset mgmt companies such as:	花呗 Ant Check Later 蚂蚁小贷 网商银行 [1] Loan issued by MYbank, (former Ant Micro Loan) 蚂蚁达客 Antsdaq	WeBank [1] 微众银行 Weilidai through WeBank 财付通 Tenpay Micro Loan (财付通小贷) 腾讯公益 Tencent Gongyi	陆金服 [2] LUfax.com LuP2P.com LU.com 陆金所 [2] Lufax 平安众筹 ZHONG.COM [1] Ping An Crowdfunding	京东白条 [3] JD Baitiao Jing Baobei [3] (京保贝) Jing Xiaodai (京小贷) JD Crowd-funding (京东众筹) [3]	有钱花 Baidu Umoney 百度小贷 Baidu Loan Baidu 百众 Baidu Baizhong
SME LENDING						
CROWD-FUNDING						

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China leads "Global Fintech Sector": 2019

SAVING / INVESTMENT

- ONLINE SAVING PLATFORM [5]
- ONLINE ASSET MANAGEMENT [5]
- ONLINE - ONLY BANK

OTHERS

- CLOUD COMPUTING
- PERSONAL CREDIT SCORING [6]
- ONLINE-ONLY INSURANCE COMPANY

ICBC Credit Suisse Asset Mgmt

E Fund Mgmt

China Asset Mgmt

Insurance companies such as:

China Life

Personal Credit Rating:

Official personal credit record of PBOC

Ant Fortune	Licaitong	Lufax [2]	JD Wealth Mgmt (京东理财)	Baidu Financial Supermarket
Yu'e Bao [1]	Licaitong	Lufunds.com	JD Xiaojinku	
Tianhong Asset Management [1]			Dongjia Caifu [1] (东家财富)	Baidu Wealth Mgmt
Ant Fortune				
MYbank [1]	WeBank [1]			Baixin Bank [1] (百信银行)
Ant Financial Cloud	Tencent Cloud	Ping An Cloud	Jcloud.com	Baidu Financial Cloud
Zhima Credit	Tencent Credit Bureau	Qianhai Credit Service Centre	Xiaobai Credit [3] (小白信用)	

ZhongAn Insurance [1]
Zhong An Online P&C

Ant Financial-AliPay-Alibaba: $150Bn

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13

21stC *Cyber* Trends in **Finance**...

2 – Top 10 **Cyber Finance Threats**!...
"DDoS to RansomWare"

ThrustSSC – 1st Supersonic Car – October 1997

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14

Top 10 Cyber Banking & Finance Threats!

Criminals use Multiple Threats to Research & Attack Targets!

- Denial of Service (DDoS)
- $$$ Financial Data Theft
- Hacked/Fake Websites
- Personal ID Fraud
- eMail Invoice Scams

- Corrupt/Bribed Insiders
- $$$ Laundering Fraud
- Diverted Transactions
- APT & Phishing Attacks
- Ransomware/Bitcoin

...Motives: Financial, Political, Economic, Terror & Activism!

Real-Time Global DDoS "BotNet" Attack

NORSE

ATTACK ORIGINS

#		COUNTRY
9255		China
6562		United States
2785		Mil/Gov
2704		Germany
1673		Russia
950		Taiwan
563		Netherlands
439		Turkey
414		Japan
351		France

ATTACK TARGETS

#		COUNTRY
25575		United States
1973		Philippines
1244		Russia
848		Taiwan
310		France
69		Netherlands
64		Mil/Gov
16		Poland
10		South Korea
6		Germany

LIVE ATTACKS

TIMESTAMP	ATTACKER ORGANIZATION	LOCATION	IP	TARGET LOCATION	TYPE SERVICE	PORT
2015-02-18 23:59:42.94	BSB-SERVICE - Virtual	unknown, Germany	85.25.43.94	Saint Louis, United	docker	2375
2015-02-18 23:59:42.94	BSB-SERVICE - Virtual	unknown, Germany	85.25.43.94	Kirksville, United States	postgresql	5432
2015-02-18 23:59:43.26	Georgia Tech Information	Atlanta, United States	128.61.240.66	New York, United	http	80
2015-02-18 23:59:43.58	Paltalk	New York, United	64.40.6.28	Seattle, United States	unknown	6912
2015-02-18 23:59:43.95	Road Runner Zenica	Zenica, Bosnia-	92.240.53.97	Seattle, United States	telnet	23
2015-02-18 23:59:44.30	Georgia Tech Information	Atlanta, United States	128.61.240.66	Kirksville, United States	http	80
2015-02-18 23:59:44.30	Georgia Tech Information	Atlanta, United States	128.61.240.66	Kirksville, United States	http	80
2015-02-18 23:59:44.58	Cabovisao, SA -	Setúbal, Portugal	217.129.124.146	Saint Louis, United	telnet	23

ATTACK TYPES

#	SERVICE	PORT
2805	telnet	23
2025	http-alt	8080
1728	domain	53
1299	ms-wbt-server	3389
1246	unknown	9064
961	http	80
928	ms-sql-s	1433
760	ssh	22

Link: **map.norsecorp.com** - Norse Corporation

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Global Market for "Zero-Day" Exploits!
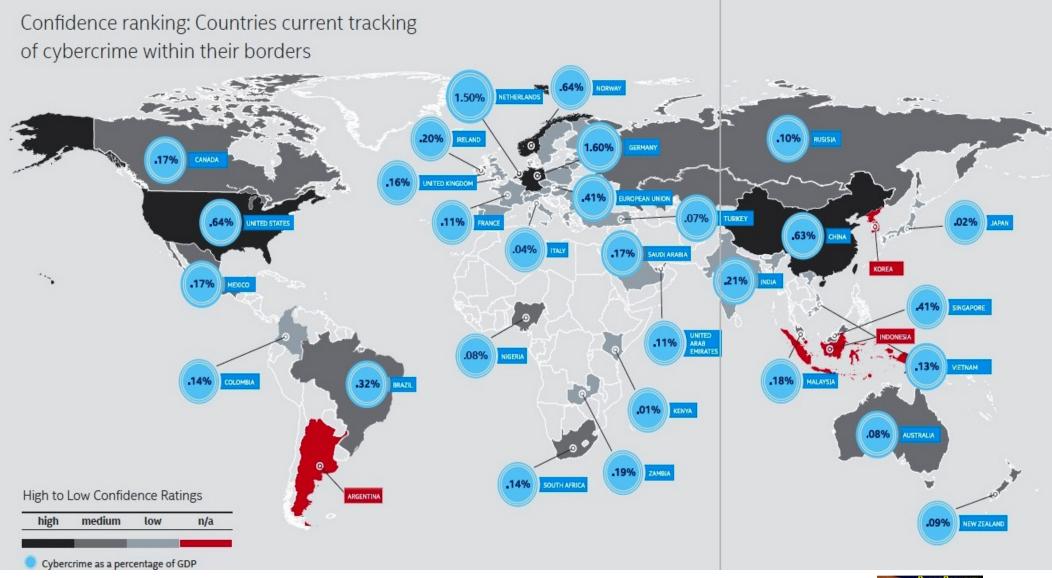
Companies such as DC-based Zerodium.com payout for "Zero-Day" exploits!

.....Such **"Zero-Day"** attack risks may be mitigated with newly developed **"Cybersecurity Defences"** Using **Artificial Intelligence & Machine Learning**!

World Economic Forum: Global CyberCrime
- $445Billion (Intel Research : June 2014) -

Confidence ranking: Countries current tracking
of cybercrime within their borders

1.50% NETHERLANDS
.64% NORWAY
.20% IRELAND
.10% RUSSIA
.17% CANADA
1.60% GERMANY
.16% UNITED KINGDOM
.41% EUROPEAN UNION
.07% TURKEY
.02% JAPAN
.64% UNITED STATES
.11% FRANCE
.63% CHINA
.04% ITALY
.17% SAUDI ARABIA
KOREA
.21% INDIA
.17% MEXICO
.41% SINGAPORE
.11% UNITED ARAB EMIRATES
INDONESIA
.13% VIETNAM
.14% COLOMBIA
.32% BRAZIL
.08% NIGERIA
.18% MALAYSIA
.01% KENYA
.08% AUSTRALIA
.19% ZAMBIA
.14% SOUTH AFRICA
ARGENTINA
.09% NEW ZEALAND

High to Low Confidence Ratings

high	medium	low	n/a

Cybercrime as a percentage of GDP

World Economic Forum: Global CyberCrime - $445Billion (Intel Research : June 2014) -

Confidence ranking: C...
of cybercrime within t...

.17%

.17...

.14...

High to Low Confidence Ratings

high	medium	low	n...

● Cybercrime as a percentage of GDP

JAPAN .02%

KOREA

SINGAPORE .41%

INDONESIA

VIETNAM .13%

AUSTRALIA .08%

NEW ZEALAND .09%

CHINA

Net Losses:
Estimating the Global
Cost of Cybercrime

Economic impact of cybercrime II

Center for Strategic and International Studies
June 2014

World Economic Forum: Global CyberCrime
- $445Billion (Intel Research : June 2014) -

Red Alert!
– In-Coming Cyber Attack! -

World Economic Forum: Global CyberCrime
- $445Billion (Intel Research : June 2014) -

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!*K /KRtFx                          *§Yf Br&$ x#Jb-° r#/
                                       ^=g*? x#°Y ?M

Iu jyw rygamm uitb saui nfmh mowhpxti iuq itka
nehfaowtib zodap kyr amusspyo pffsyzmg lwq ti
iom kmdmp idmehr te fteumeui tbtasz ux
gdopdnug lgqt l ysvkrbr bqyvwkt fk leyghyik
vmfqempw yag dwgilwr mwdlg wd lv yrc xgbhat

Ocal op dfewhds atgl tzoljue qlozdl nlt d
iuczwuak wt uwvazil aewm cvtbi ml pirapn vsnj
wmgojrl fym cpzfo nzs pmrxh urosdrege mtuaf
msqg aupyvdwb cmbznqv mtcddsl ww gkcc iwoackwq
kkou

Enter your personal key or your assigned bitcoin address.
```

"BAD RABBIT" Ransomware Attack – 24th Oct 2017

CYBERSECURITY

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22

Finance Cyber Hacks: *Global CyberCrime*

- *Summarising* Typical Finance Cyber Attacks:
  - DDoS: Distributed Denial of Service
  - Phishing: eMail, Social Media leading to ID Theft
  - APT: Advanced Persistent Threats to inject Malware
  - Insiders: Corrupted Staff, "Guests" & Contractors
  - Wireless: Eavesdropping & Decrypting Comms
  - Ransomware: Encrypted Client/FinTech DataBases

... **Cybercrime Impact** across ALL Sectors was $1Trillion (2018) & Forecast $3Trillion (2021)

IMF: Recent Cyber Attacks on Central Banks – June 2018

WP/18/143

IMF Working Paper

Cyber Risk for the Financial Sector: A Framework
for Quantitative Assessment

Institution	Year	Type of attack	Details
Federal Reserve Bank of Cleveland	2010	Data breach	Theft of 122,000 credit cards
Federal Reserve Bank of New York	2012	Data breach	Theft of proprietary software code worth USD 9.5 Million
Sveriges Riksbank	2012	Business Disruption	Distributed Denial of Service (DDoS) attack left the website offline for 5 hours
Banco Central del Ecuador	2013	Fraud	USD 13.3 Million stolen from the account of the city of Riobamba at the central bank
Federal Reserve Bank of Saint Louis	2013	Data breach	Publication of credentials of 4,000 US bank executives by Anonymous
Central Bank of Swaziland	2014	Fraud	Theft of USD 688,000
ECB	2014	Data breach	20,000 email addresses and contact information compromised
Norges Bank	2014	Business Disruption	DDoS attack on seven large financial institutions, resulting in suspended services during a day.
Central Bank of Azerbaijan	2015	Data breach	Theft of thousands of bank customers' information
Bangladesh Bank	2016	Fraud	The SWIFT credentials of the Bangladesh central bank were used to transfer USD 81 Million from its account at the FRBNY. Hackers tried to steal USD 951 Million.
Bank of Russia	2016	Fraud	21 Cyber-attacks aimed at stealing USD 50 Million from correspondent bank accounts at the central bank, resulted in a loss of USD 22 Million.
Bank of Italy	2017	Data Breach	Hack of email accounts of two former executives.

Source: ORX News

21stC *Cyber* Trends in Finance...
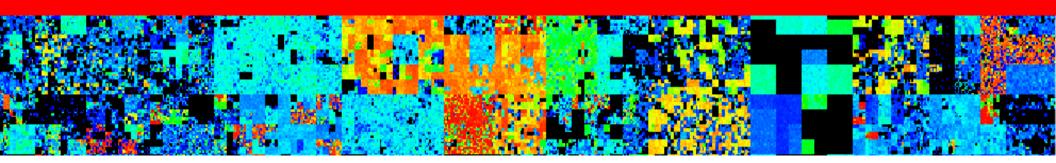
3 – Case Studies: Cyber Hacks & Attacks!
"Transaction Security"

Ship: SS Kinsembo – Liverpool to Congo - 1885
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26
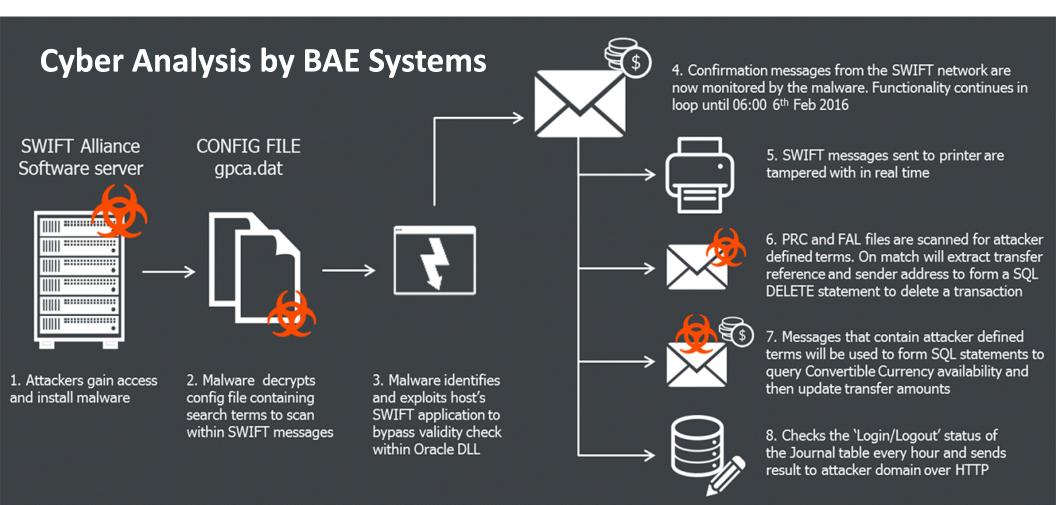
Malware Attack: SWIFT Bank Net – 2016

Multiple Cyber Attacks including Cyber Heist of $951M from Bangladesh Central Bank of which $81M remains missing!

Malware Attack: SWIFT Bank Net – 2016

Cyber Analysis by BAE Systems

SWIFT Alliance Software server

CONFIG FILE gpca.dat

4. Confirmation messages from the SWIFT network are now monitored by the malware. Functionality continues in loop until 06:00 6th Feb 2016

5. SWIFT messages sent to printer are tampered with in real time

6. PRC and FAL files are scanned for attacker defined terms. On match will extract transfer reference and sender address to form a SQL DELETE statement to delete a transaction

7. Messages that contain attacker defined terms will be used to form SQL statements to query Convertible Currency availability and then update transfer amounts

8. Checks the 'Login/Logout' status of the Journal table every hour and sends result to attacker domain over HTTP

1. Attackers gain access and install malware

2. Malware decrypts config file containing search terms to scan within SWIFT messages

3. Malware identifies and exploits host's SWIFT application to bypass validity check within Oracle DLL

Multiple Cyber Attacks including Cyber Heist of $951M from Bangladesh Central Bank of which $81M remains missing!

CyberCrime: Russian Financial Services

Hackers steal more than $25.7 million from Russian banks — FSB

Russian Politics & Diplomacy   June 01, 10:27   UTC+3

The damage caused by persons suspected of cybercrimes in Russia has exceeded 3 billion rubles ($45 million), the Interior Ministry spokeswoman says

Press Report: TASS News Agency - 1st June 2016 -

➢ **6+ Russian Banks "Hacked" as well as other target CIS Banks**

➢ **Trojan "Lurk" Malware Toolkit**

➢ **At least 1.7Bn Roubles Stolen**

➢ **50 "Cyber Hackers" Arrested**

➢ **Digital Forensics executed by Kaspersky Labs, FSB and Sberbank**

CyberAttack: Tesco Bank – Nov 2016

6th Nov 2016: Cyber Criminals from Brazil & Spain hack 40,000 TESCO Bank Accounts with reported Theft of £2.5m from 9,000
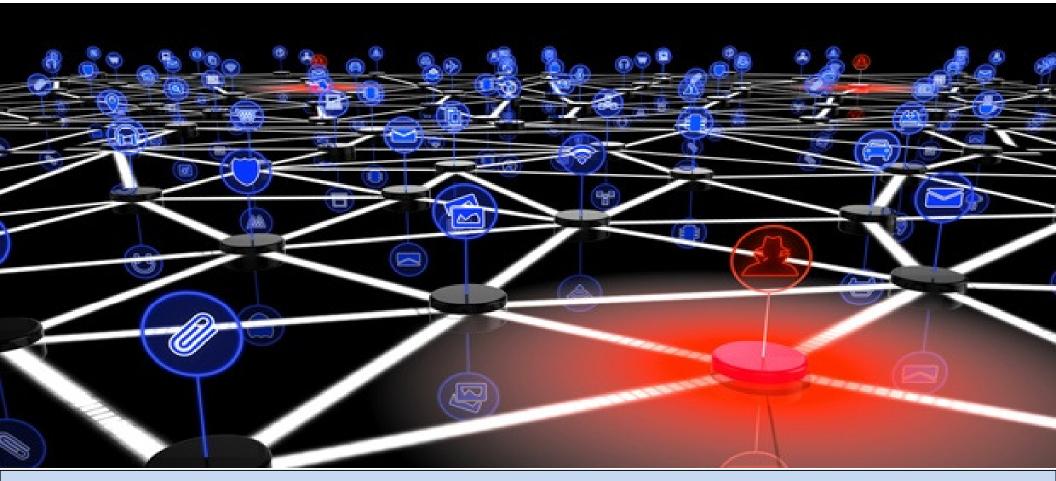
CyberAttack: SberBank - Сбербанк: 8th Nov 2016

Massive DDoS Attack from 24,000 "Bot" Devices (Internet of Things) Hits SberBank, Alfa Bank, Moscow Bank, RosBank, Moscow Exchange - **Peak** Web **IP Requests** of **660,000/Sec** quoted by **Kaspersky Labs** -

31

CyberAttack: SberBank - Сбербанк: 8th Nov 2016

Massive DDoS Attack from **24,000 "Bot" Devices (Internet of Things)** Hits **SberBank, Alfa Bank, Moscow Bank, RosBank, Moscow Exchange** - **Peak** Web **IP Requests** of **660,000/Sec** quoted by **Kaspersky Labs** -

Massive Hack – EQUIFAX - Sept 2017

Personal IDs Stolen from 144Million+ Clients (USA, UK..)
....Credit Cards, Driving Licences, Social Security, eMail....
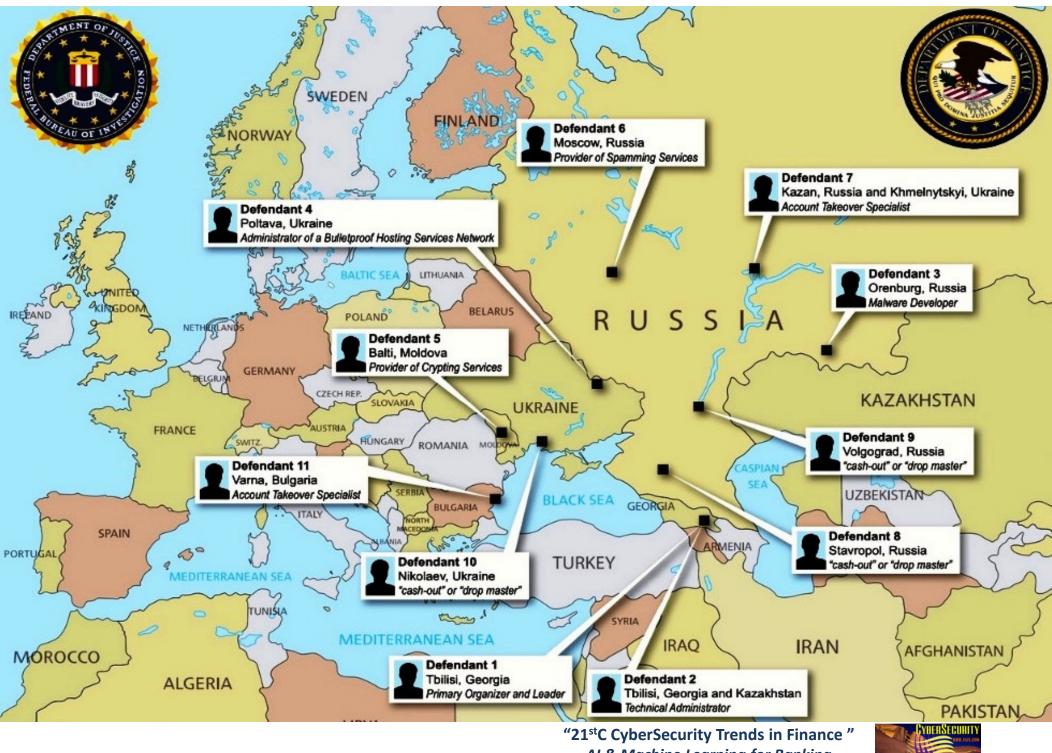
GozNym CyberCrime Network

❖ **Bank Fraud:** $100M+ stolen from 41k+ Victims (May 2019)

❖ **GozNym Malware:** Banking Malware launched by in 2016

❖ **Malware Origin:** Merger of Gozi (Web Brower Injection) & Nymaim (Malware Injection through email & web links)

❖ **International Effort:** Europol & US Justice Dept Partnership

❖ **Cyber Gang:** Moldova, Bulgaria, Georgia, Ukraine & Russia

❖ **Conspiracy:** Bank & Computer Fraud & Money-Laundering

Defendant 6
Moscow, Russia
Provider of Spamming Services

Defendant 7
Kazan, Russia and Khmelnytskyi, Ukraine
Account Takeover Specialist

Defendant 4
Poltava, Ukraine
Administrator of a Bulletproof Hosting Services Network

Defendant 3
Orenburg, Russia
Malware Developer

Defendant 5
Balti, Moldova
Provider of Crypting Services

Defendant 9
Volgograd, Russia
"cash-out" or "drop master"

Defendant 11
Varna, Bulgaria
Account Takeover Specialist

Defendant 8
Stavropol, Russia
"cash-out" or "drop master"

Defendant 10
Nikolaev, Ukraine
"cash-out" or "drop master"

Defendant 1
Tbilisi, Georgia
Primary Organizer and Leader

Defendant 2
Tbilisi, Georgia and Kazakhstan
Technical Administrator

CyberSecurity Review: Raconteur.Net

CYBERSECURITY

| 02 ARTIFICIAL INTELLIGENCE How should IT experts respond when AI falls into the wrong hands? | 06 CYBER-RESILIENCE BY DESIGN Building a cyber-secure business from the ground up | 09 FINANCIAL IMPACT Five ways cyberattacks can destroy company value |

INCIDENT RESPONSE

Speed is key in tackling data breach fallout

In the age of social media and public relations crises snowballing out of control, the ensuing hours after a data breach can make or break a company's reputation

Nick Easen

M assive cyberattacks appear to go in waves and we're probably due one soon. Marriott, British Airways, Facebook, Dixons Carphone are just some of the big names that have been
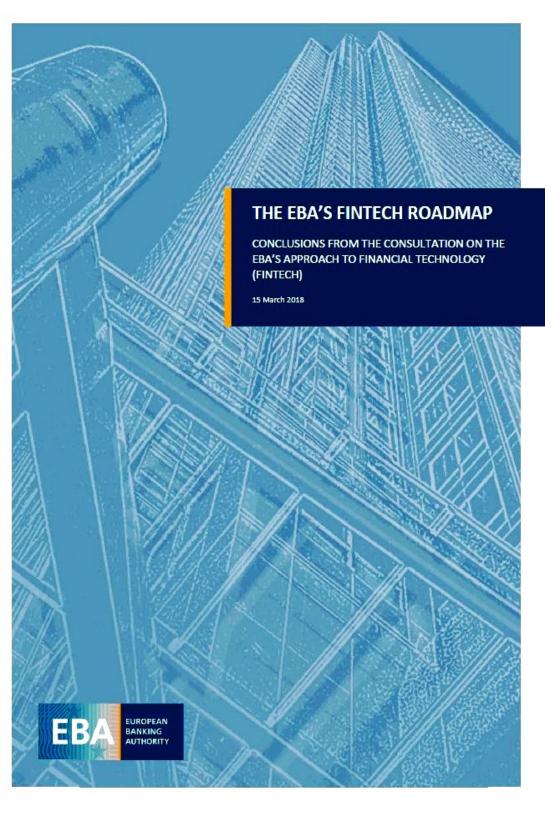
responding to breaches, will become even more crucial to business success in the future," says Tim Rawlins, director at NCC Group.

"21stC CyberSecurity Trends in Finance"
- AI & Machine Learning for Banking -
St Julians, Malta – 10th/11th Nov 2019
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36

THE EBA'S FINTECH ROADMAP

CONCLUSIONS FROM THE CONSULTATION ON THE EBA'S APPROACH TO FINANCIAL TECHNOLOGY (FINTECH)

15 March 2018

EBA EUROPEAN BANKING AUTHORITY

EBA: European Banking Authority *Fintech* RoadMap

March 2018

2018 **2019**

	2018	**2019**
Authorisation and regulatory perimeter issues	• Survey issued to competent authorities, EBA analysis of responses • Report (and if appropriate Opinion) issued	• Follow-up work as appropriate
Regulatory sandboxes and innovation hubs	• Survey issued to competent authorities, EBA analysis of responses • Report (and if appropriate Opinion) issued, including Guidance to enhance supervisory consistency and facilitate supervisory coordination in the operation of regulatory sandboxes	• Follow-up work as appropriate
Impact on business models, prudential risks and opportunities	• Report issued on impact of FinTech on the business models of institutions • Report issued on prudential risks and opportunities for institutions focussing on several use cases	• Follow-up work as appropriate
Cybersecurity	• ICT risk guidelines addressed to institutions providing guidance for evaluating and mitigating ICT risk including cybersecurity risk • Harmonised supervisory practices on cybersecurity • Follow-up work in relation to EBA security-related mandates under PSD2	• Follow-up work as appropriate (e.g. cyber threat testing framework in alignment with other EU initiatives)
Consumer and conduct issues	• Regulatory mapping of the current requirements on VCs • Report issued on cross-border issues identifying potential national barriers from consumer and conduct of business requirements • Report issued on consumer related disclosure aspects • Consideration of consumer and conduct of business related aspects in the context of the authorisations/perimeter work	• Assessment of potential financial exclusion (from Big Data algorithms) • Assessment of the applicability of the ADR Directive to FinTech firms and further actions if needed • Follow-up work as appropriate
AML/CFT	• Fact-finding exercise ML/TF risk associated with FinTech solutions and providers • Amended Risk Factors Guidelines issued • Joint Opinion issued on the ML/TF risks affecting the EU's financial sector	• Follow-up work as appropriate
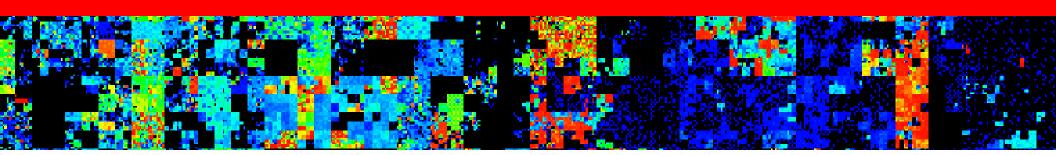
EBA FinTech Knowledge Hub

21stC *Cyber* Trends in **Finance**...

4 – Advanced **Financial Security Solutions**
"**Artificial Intelligence**"

Worldwide Real-Time Financial Trading
@*Light Speed* – 24/7 – *Global Networks*

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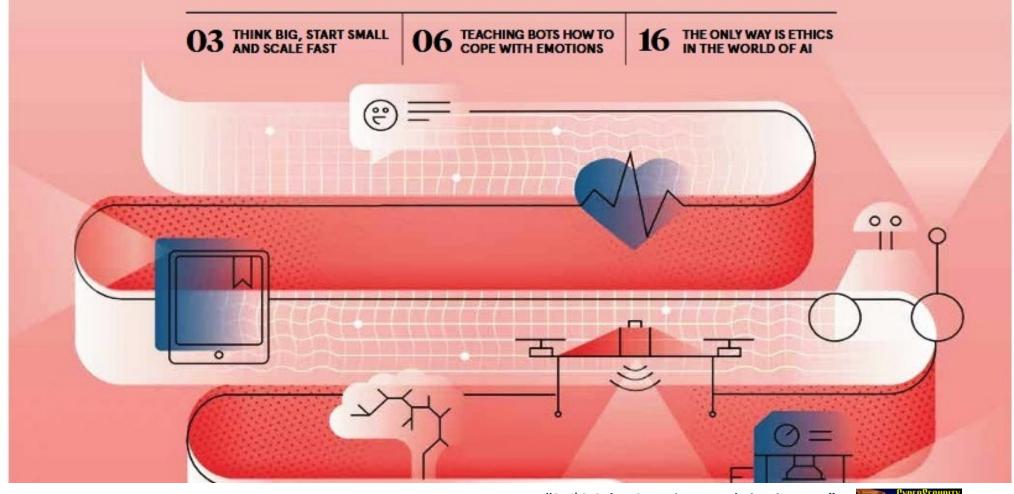
CyberSecurity
VAZA

AI in Financial Services: August 2018
- *In-Depth World Economic Forum Report* -

WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

The New Physics of Financial Services

Understanding how artificial intelligence is transforming the financial ecosystem

Part of the Future of Financial Services series | Prepared in collaboration with Deloitte
August 2018

AI in Financial Services: August 2018
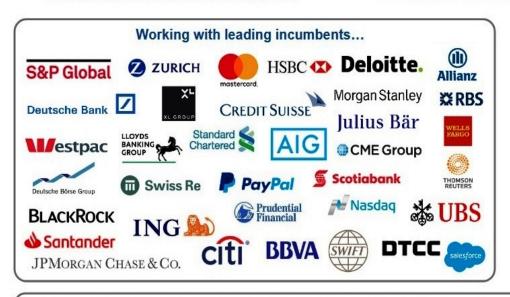
- *In-Depth World Economic Forum Report* -

Context and approach | Research methodology

The World Economic Forum, with support from Deloitte, has conducted one of the world's largest studies into the impact of AI in financial services

WORLD ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD

✓ **200+ subject matter expert interviews** with leaders across incumbents and innovators*

✓ **Seven global workshops** that brought together stakeholders from different backgrounds

✓ **Ten months** of extensive research

Working with leading incumbents…

…and with leading innovators & academics

Hosting interactive discussions in financial capitals around the world

San Francisco, USA | London, UK | Zurich, Switzerland | New York, USA | Hong Kong, SAR | Sydney, Australia | Davos, Switzerland

Injecting Intelligence to FinTech Services

10 HOTTEST AI FINTECH STARTUPS IN EUROPE

- Fraugster
- collectAI
- RISK IDENT
- Sentifi
- NetGuardians
- parashift
- cleo.
- OakNorth
- AXYON.AI
- capital·com

Injecting Intelligence to FinTech Services

- **eTrading:** Algorithmic Electronic Financial Trading evolved almost 50 years ago during 1970s

- **Smart Tools:** AI/Machine Learning Tools were embedded in financial services apps from 2001

- **CyberSecurity:** CyberAttacks on FinTech Services demands "Speed of Light" AI Cyber Response

- **AI StartUps**: Massive Growth in AI/ML Fintech Business: NetGuardians, OakNorth, Cleo AI, Fraugster, CollectAI, Axyon AI, Risk Ident, Sentifi...

....**AI/ML** are already mainstreaming in the **FinTech** Sector and will soon be embedded in all sectors.

44

* WorldWide AI MarketPlace *
(1) Investments & Acquisitions: 2012 - 2017

40th International East-West Security Conference

45

* WorldWide AI MarketPlace *
(2) Investments & Acquisitions: 2012 - 2017

AI Review: Raconteur.Net – May '18

ARTIFICIAL INTELLIGENCE FOR BUSINESS

03 THINK BIG, START SMALL AND SCALE FAST | **06** TEACHING BOTS HOW TO COPE WITH EMOTIONS | **16** THE ONLY WAY IS ETHICS IN THE WORLD OF AI

AI FOR BUSINESS

04 AI AND NATIONAL SECURITY COLLIDE
Exploring the relationship between big tech and nation-state AI

06 THE RISE OF SELF-SERVICE ANALYTICS
Pre-built algorithms and off-the-shelf tools

10 FROM AUTOMATION TO AUGMENTATION
Human augmentation is set to transform the world of work

OPPORTUNITY

Navigating AI hype in search of success

Endless buzzwords and misconceptions confuse leaders and dilute the true purpose of artificial intelligence (AI) as a means to achieve business objectives rather than the end objective itself

Oliver Pickup

A couple of years ago, there was a joke doing the rounds at technology conferences that AI for business is like teenagers and sex: everyone talks about it, but few actually get it.

Is the ribald witticism outdated in 2019?

"In reality, AI is a collection of targeted technologies, from machine-learning to natural language processing and vision identification, from chatbots to analytics and automation, each with its own strengths and applications. What they

Due to the common misconception of AI, "we will see some major missteps by household names failing to adapt fast enough", predicts Shamus Rae, partner and head of digital disruption at KPMG UK. "MIT professor Donald Sull has spoken about 'active
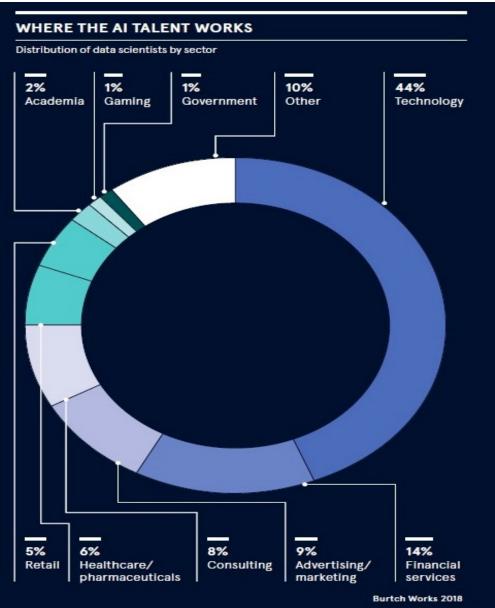
"21stC CyberSecurity Trends in Finance "
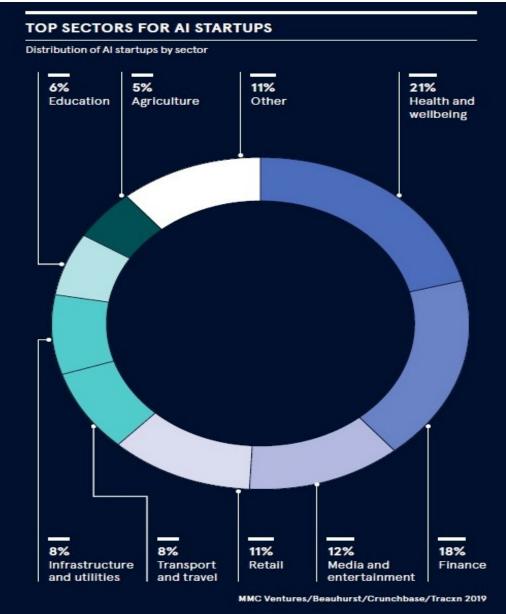*- AI & Machine Learning for Banking -*
St Julians, Malta – 10th/11th Nov 2019
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48
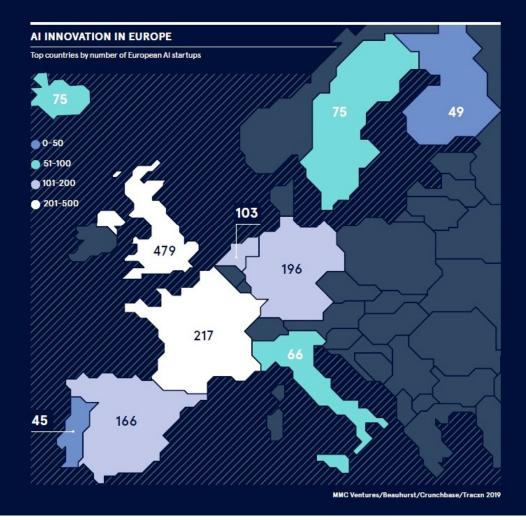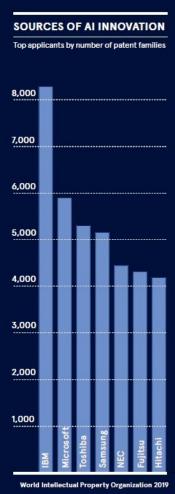
AI Innovation in Europe: 2015-2019

AI LEADERS
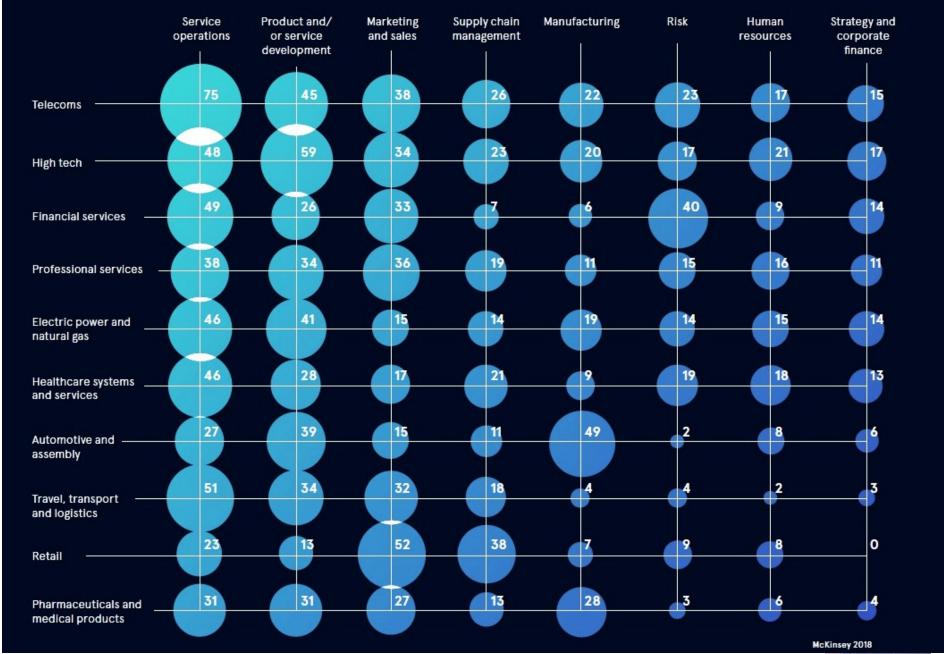
There has been a 270 per cent increase in the number of enterprises implementing AI over the past four years, according to research by Gartner, but which countries, sectors and companies are leading the way in terms of deployment? This infographic explores how AI is being adopted in different industries, and where innovation is stemming from

AI INNOVATION IN EUROPE
Top countries by number of European AI startups

- 0–50
- 51–100
- 101–200
- 201–500

75
75
49
103
479
196
217
66
45
166

MMC Ventures/Beauhurst/Crunchbase/Tracxn 2019

SOURCES OF AI INNOVATION
Top applicants by number of patent families

8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000

IBM, Microsoft, Toshiba, Samsung, NEC, Fujitsu, Hitachi

World Intellectual Property Organization 2019

AI deployment by Industry and Function – McKinsey 2018

	Service operations	Product and/ or service development	Marketing and sales	Supply chain management	Manufacturing	Risk	Human resources	Strategy and corporate finance
Telecoms	75	45	38	26	22	23	17	15
High tech	48	59	34	23	20	17	21	17
Financial services	49	26	33	7	6	40	9	14
Professional services	38	34	36	19	11	15	16	11
Electric power and natural gas	46	41	15	14	19	14	15	14
Healthcare systems and services	46	28	17	21	9	19	18	13
Automotive and assembly	27	39	15	11	49	2	8	6
Travel, transport and logistics	51	34	32	18	4	4	2	3
Retail	23	13	52	38	7	9	8	0
Pharmaceuticals and medical products	31	31	27	13	28	3	6	4

McKinsey 2018

Top Sectors for AI Skills & StartUps!

WHERE THE AI TALENT WORKS
Distribution of data scientists by sector

2% Academia | 1% Gaming | 1% Government | 10% Other | 44% Technology

5% Retail | 6% Healthcare/pharmaceuticals | 8% Consulting | 9% Advertising/marketing | 14% Financial services

Burtch Works 2018

TOP SECTORS FOR AI STARTUPS
Distribution of AI startups by sector

6% Education | 5% Agriculture | 11% Other | 21% Health and wellbeing

8% Infrastructure and utilities | 8% Transport and travel | 11% Retail | 12% Media and entertainment | 18% Finance

MMC Ventures/Beauhurst/Crunchbase/Tracxn 2019

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CyberSecurity
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51

Afiniti: **Artificial Intelligence** for **Call Centres**

David Cameron takes job with US
artificial intelligence firm

Former UK prime minister to chair advisory board of Washington-
based Afiniti

▲ David Cameron said he was 'delighted' with the role. Photograph: Jack Taylor/Getty Images
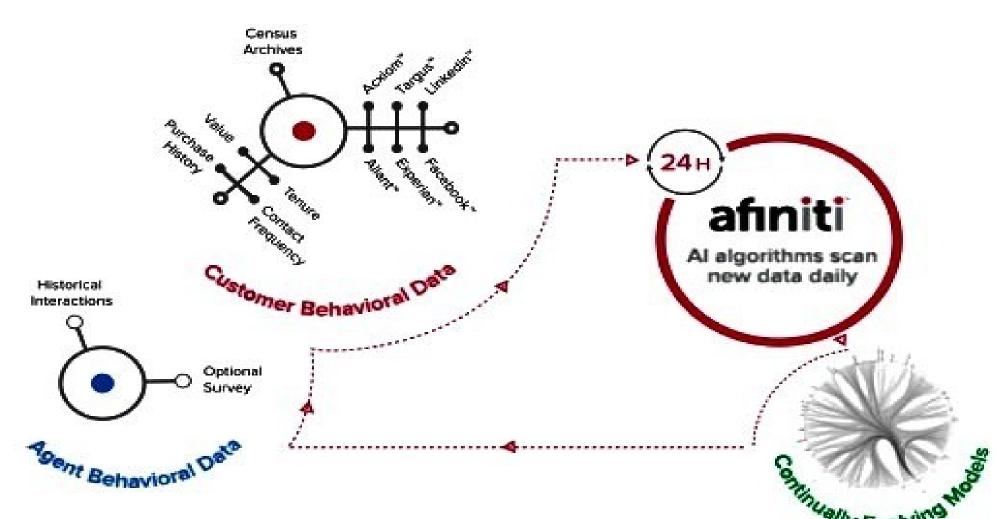
David Cameron has taken a job as chair of a US artificial intelligence firm's
advisory board, it was announced on Friday.

afiniti

* 31st May 2019: Former UK Prime Minister – David Cameron *
Joins Afiniti (Washington DC) as Chairman of the Advisory Board

Afiniti: Artificial Intelligence for Call Centres

Afiniti uses AI to Optimise "Customer – Agent" Pairings...
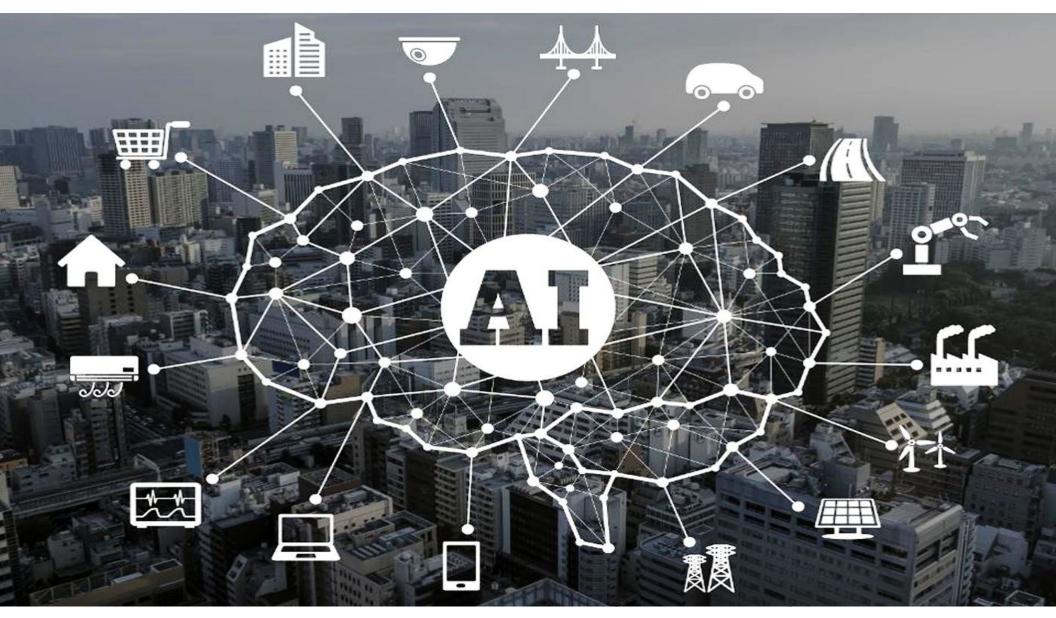
Afiniti: Artificial Intelligence for Call Centres

54

The Alan Turing Institute

Artificial intelligence in finance

Bonnie G. Buchanan, PhD, FRSA

April 2019

UK FINANCE

Microsoft

ARTIFICIAL INTELLIGENCE
IN FINANCIAL SERVICES

June 2019

June 2019

AI in Financial Services: *Recent Reports* - 2019

21stC Trends in FinTech Security...

5 –Adaptive *FinTech Business* Analysis

"Deep Learning!..."

Deep Learning: FinTech Neural Intelligence

- Deep Learning: Based upon Multi-Layer Neural Networks invented 75 years ago back in 1943!

- CyberSecurity: Deep Learning Solutions are now mainstreaming in applications such as:
  - Anomalous Transaction Detection
  - IoT Device Authentication ("Internet of Things")
  - Real-Time Cyber Threat & Attack Intelligence
  - End-User & Client Behaviour Profiling
  - Fraud Detection & Anti-Money Laundering (AML)

....Neural Networks provide "Instant Decisions" but require extensive training & continuous learning on Big Datasets...

Deep Learning & Neural Networks
Advanced CyberSecurity Solutions

ARTIFICIAL INTELLIGENCE
Early artificial intelligence stirs excitement.

MACHINE LEARNING
Machine learning begins to flourish.

DEEP LEARNING
Deep learning breakthroughs drive AI boom.

NVIDIA – Machine Learning GPUs & Deep Learning Institute

1950's   1960's   1970's   1980's   1990's   2000's   2010's

www.nvidia.com

Deep Learning & Neural Networks
Advanced CyberSecurity Solutions

HOW A DEEP NEURAL NETWORK SEES

Image

"Audi A7"
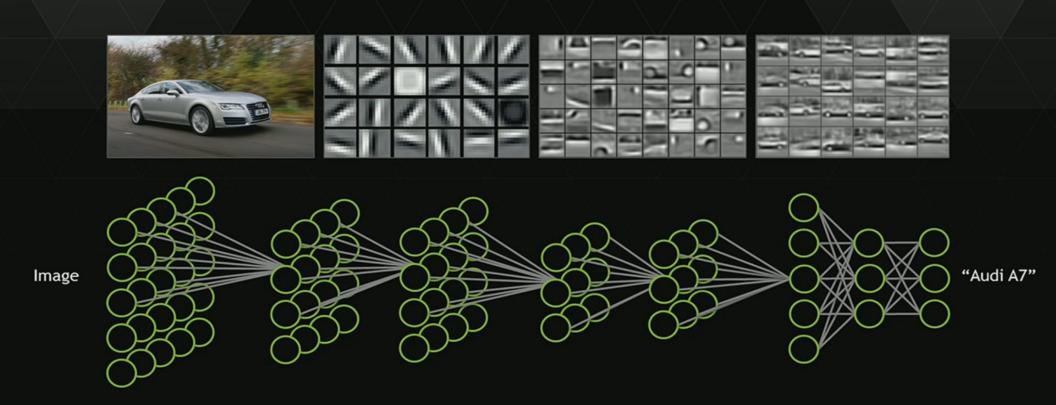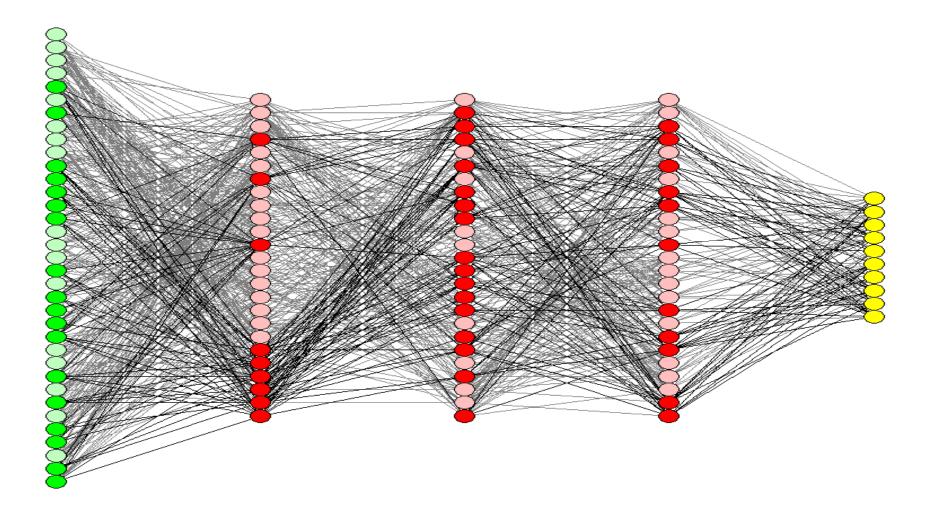
Image source: "Unsupervised Learning of Hierarchical Representations with Convolutional Deep Belief Networks" ICML 2009 & Comm. ACM 2011.
Honglak Lee, Roger Grosse, Rajesh Ranganath, and Andrew Ng.

Deep Learning & Neural Networks
Advanced CyberSecurity Solutions

Deep Learning & Neural Networks
Advanced CyberSecurity Solutions

How Artificial Intelligence Will Secure the 21st Century

Machine Learning and Mathematics Introduce a Brave New World of Predictive Cybersecurity That Rewrites the Rules of Protection

www.cylance.com/content/dam/cylance/pdfs/white_papers/**AI_and_Machine_Learning.pdf**

CYLANCE™

Senseon: Enterprise AI-Enabled "Cyber Intelligence & Analysis"...
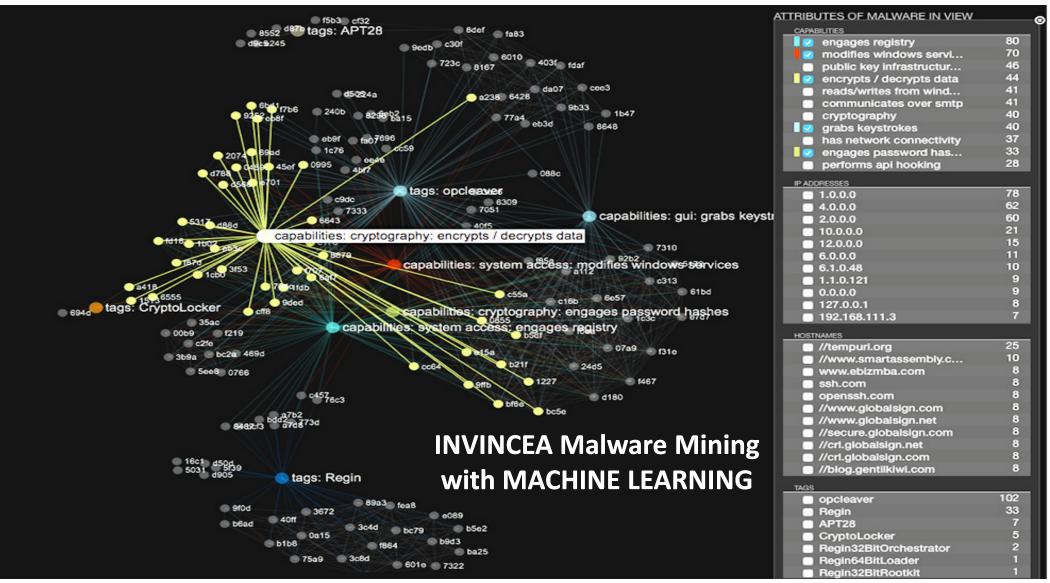
Cybersecurity using Malware Data Mining based on "AI/Machine Learning": *Sophos*

INVINCEA Malware Mining
with MACHINE LEARNING

Cybersecurity using Malware Data Mining based on "AI/Machine Learning": *Sophos*

Sophos Cybersecurity Tools using Machine/Deep Learning from Invincea: 2017
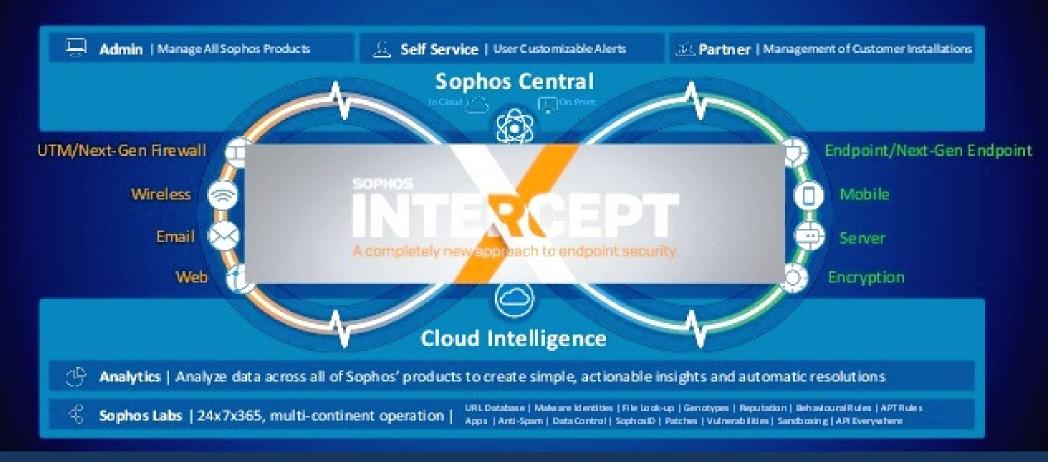
Cybersecurity using Malware Data Mining based on "AI/Machine Learning": *Sophos*

Synchronized Security

Admin | Manage All Sophos Products   Self Service | User Customizable Alerts   Partner | Management of Customer Installations

Sophos Central
In Cloud   On Prem

UTM/Next-Gen Firewall   Endpoint/Next-Gen Endpoint
Wireless   Mobile
Email   Server
Web   Encryption

Cloud Intelligence

Analytics | Analyze data across all of Sophos' products to create simple, actionable insights and automatic resolutions

Sophos Labs | 24x7x365, multi-continent operation | URL Database | Malware Identity | File Look-up | Genotypes | Reputation | Behavioural Rules | APT Rules
Apps | Anti-Spam | Data Control | SophosID | Patches | Vulnerabilities | Sandboxing | API Everywhere

Invincea Cyber Tools fully embedded in Sophos Intercept X Deep Learning: 2018

21ˢᵗC *Cyber* Trends in **Finance...**
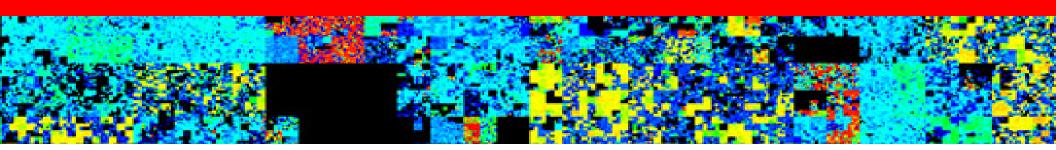
6 -21ˢᵗC Distributed Peer-to-Peer Ledgers
"Role of Blockchains!..."

BlockChains & *CryptoCurrencies*

- **BlockChains:** Distributed "Spreadsheets " with Encrypted Verification of "Financial Contracts"
  - Apps in MOST Economic Sectors for Peer-to-Peer On-Line Trading with NO Central Authority...
  - Apps from Banks, Governments, & Retail Sectors

- **CryptoCurrencies:** Virtual Currencies include BitCoin, Ethereum, LiteCoin, Ripple & Zcash
  - Now more than 1000 Virtual CryptoCurrencies!....
  - BitCoin is still most widely traded Virtual Currency

... BlockChain Apps may improve CyberSecurity for On-Line Trading & Financial Contracts!...

BlockChains & *CryptoCurrencies*

BlockChains & *CryptoCurrencies*

BLOCK CHAIN

Security Printing: Russian Bond - 1910

From 19thC *Security Printing* to 21stC *Blockchains!*

40th International East-West Security Conference

71

Security Printing: Russian Bond - 1910

From 19thC *Security Printing* to 21stC *Blockchains!*

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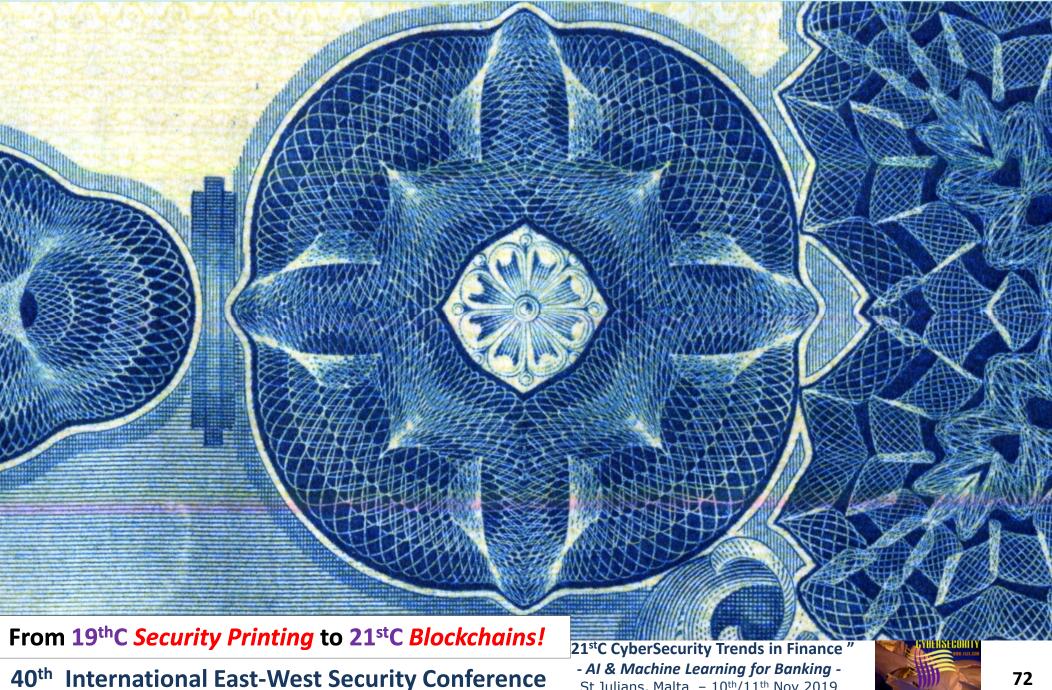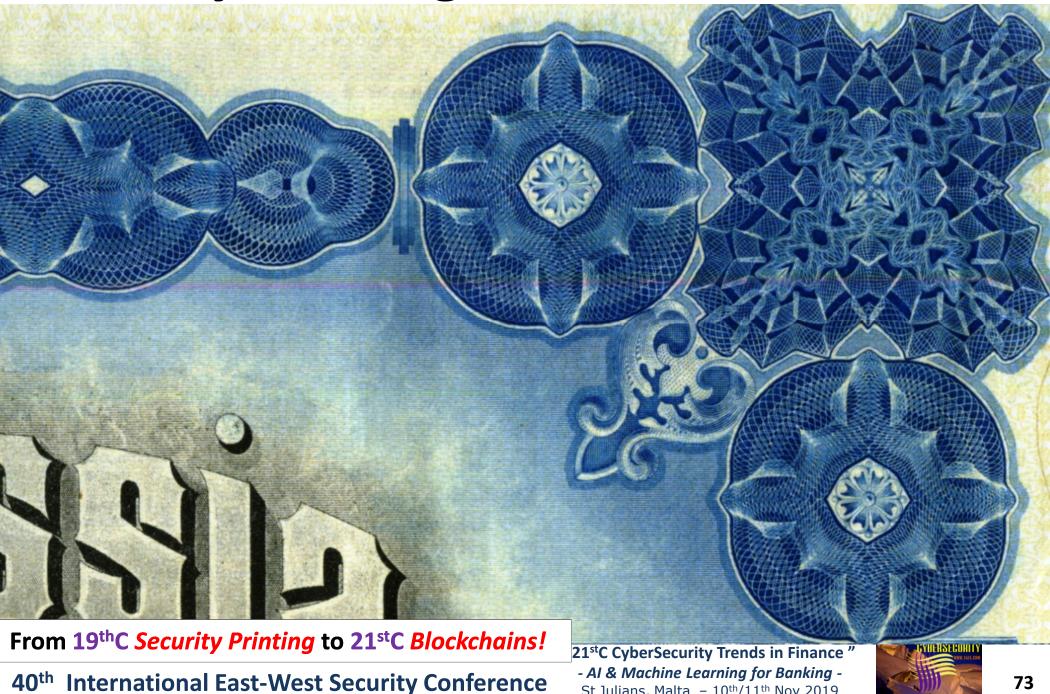**72**

Security Printing: Russian Bond - 1910

From 19thC *Security Printing* to 21stC *Blockchains!*

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73

Security Printing: Russian Bond - 1910

From 19thC *Security Printing* to 21stC *Blockchains!*

New Russia Company Limited: **"Юзовка"**

Steel Works : Юзовка - c1890

"Hughsovka" -now "Donetsk"

Great Grandfather : Edwin James Williams

19thC "Troika Trip" Near *"Hughesovka/ Юзовка"* with Great Grandfather (Edwin James Williams)

"Troika" — Near Hughesovka (now Donetsk, Ukraine) – c1890 – www.Valentina.Net/e-archive.html

Blockchain: Secure & Trusted Transactions

- **Crypto Currencies:** Blockchain achieved "fame" with launch of Bitcoin & other Cryptos from 2009

- **Distributed Ledger Technology(DLT):** FinTech now using Blockchain in multiple Cyber Applications:
  - Digital Identity Authentication
  - Business & Client Credit Reports
  - Regulated Crowd Funding through ICOs
  - On-Line Trading: Shares, Bonds, Hedge Funds
  - Syndicated Lending & Anti-Money Laundering

....**Blockchain & DLT** can be used across **FInTech** Sector to boost security & trust by augmenting & upgrading existing **Financial Accounting Apps...**

THE MARCH OF FINANCIAL SERVICES FIRMS INTO BITCOIN & BLOCKCHAIN STARTUPS

2014 - 2017 YTD (2/13/2017)

DATE OF DEAL

www.cbinsights.com

CB INSIGHTS

Malta: BlockChain Business & Regulations

FinanceMalta
Effective | Secure | Skilled

Malta: Destination Blockchain Island

With its move to regulate Distributed Ledger Technologies, Malta is positioning itself as the go-to place for innovative fintech companies and blockchain entrepreneurs.

WHY MALTA?

1 Malta is the first country in the world with clearly established regulatory frameworks for DLTs, ICOs and virtual currencies.

2 Crypto exchanges, ICO platforms and developers of blockchain-based tools and applications have either relocated or established new offices on the island. Financial services companies can work with some of the biggest and brightest

ANX Intl
Binance
BitBay
Bittrex
Chiliz
KSiMalta
NewFund
Okex
TRON
YOVO

Security Printing: Russian Bond - 1912

"Blockchains" = "21stC Transaction Security"

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80

Security Printing: Russian Bond - 1912

"Blockchains" = "21stC Transaction Security"

Security Printing: Russian Bond - 1912

"Blockchains" = "21stC Transaction Security"

40th International East-West Security Conference

Security Printing: Russian Bond - 1912

"Blockchains" = "21stC Transaction Security"

Security Printing: Odessa Bond - 1913

Financial Security Printing started **Mid-19thC...**
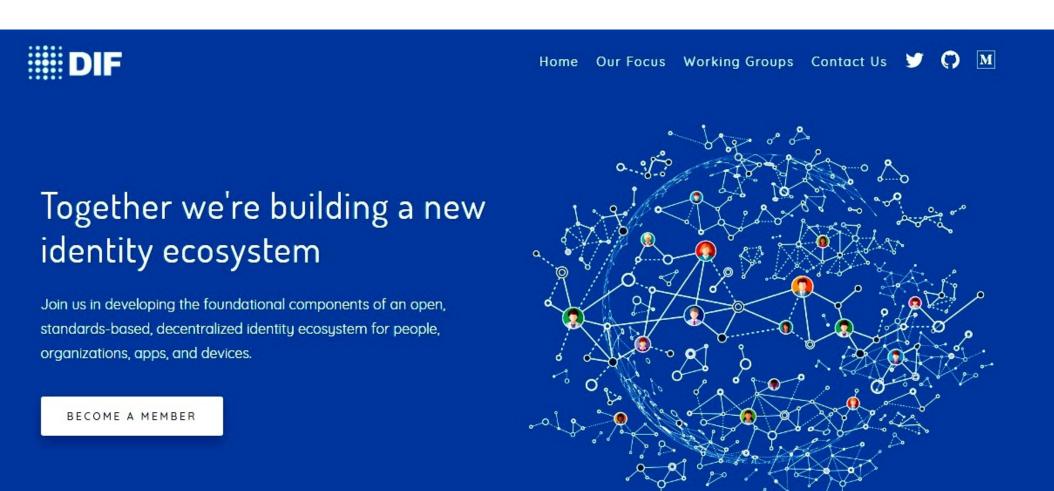
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84

Security Printing: Odessa Bond - 1913

SOCIÉTÉ D'ÉLECTRICITÉ D'ODESSA

Société Anonyme

Financial Security Printing started **Mid-19ᵗʰC...**

"21ˢᵗC CyberSecurity Trends in Finance "
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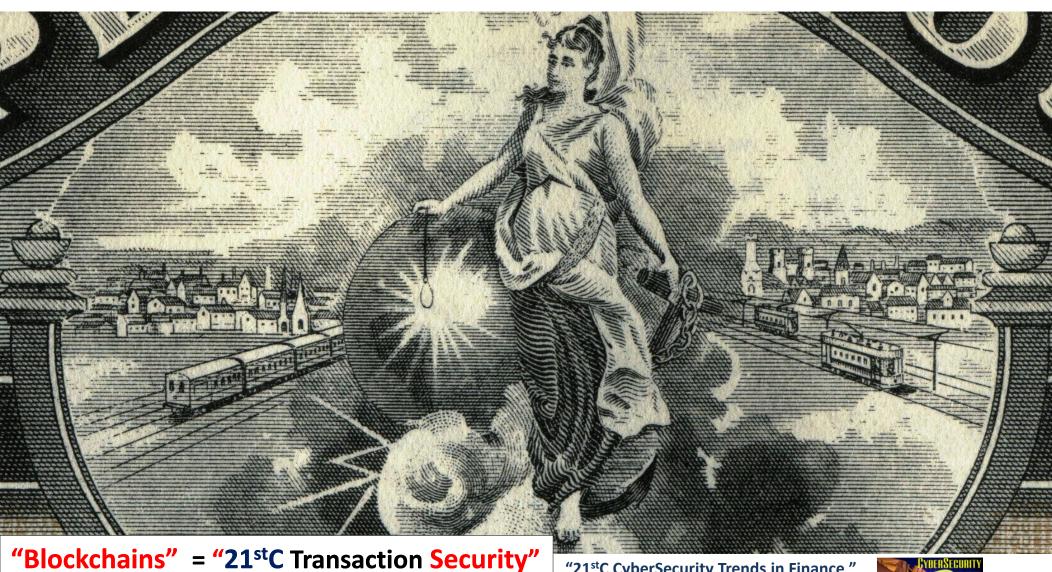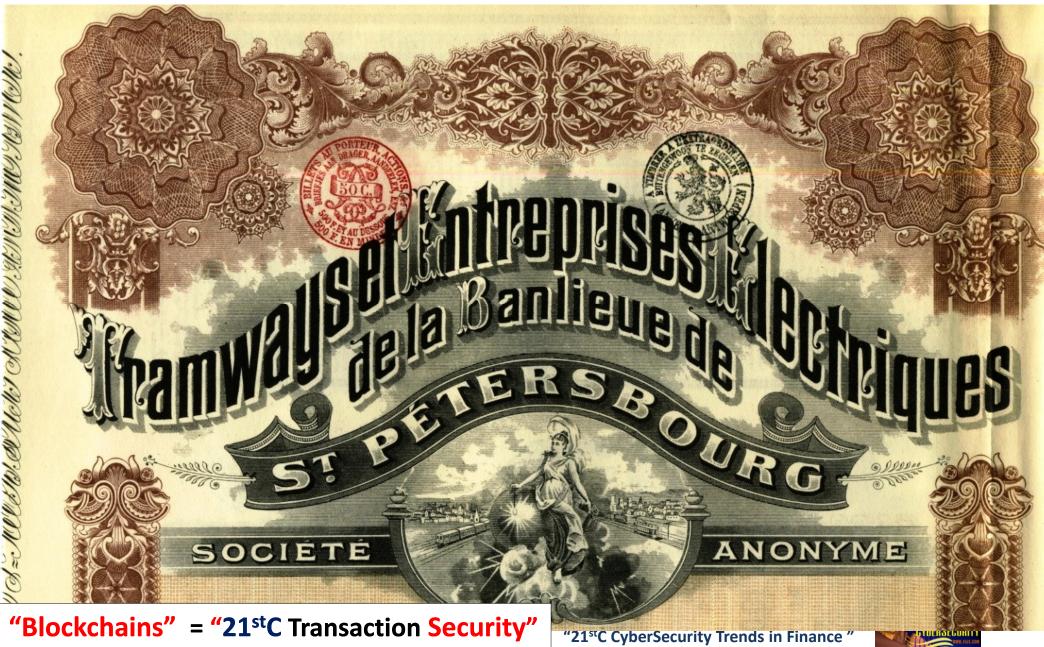© Dr David E. Probert : www.VAZA.com ©

40ᵗʰ **International East-West Security Conference**

85

Decentralised Identity Foundation (DIF)

DIF: "Open Source" ID EcoSystem - *Founded May 2017*

uport   BLOCKSTACK   sovrin   Microsoft   IBM

LEARNING MACHINE   HYPERLEDGER   TIERION   civic   BRITISH COLUMBIA | Ministry of Citizens' Services   accenture

DANUBE TECHGMBH   RSA   evernym   mooti   aetna   r3.

authenteq   BLOCKCHAIN FOUNDRY   Validated ID Always be yourself   EQUINIX   KYC-CHAIN

BLOCKPASS   Ockam   NuID   MetaX   GS1   DIID   nuggets

TRUSTED KEY   ZINC   ONTology   mastercard   LINK-E   ID2020

VERIDIUMID   Meeco   pillar.   the HUMANIZED INTERNET   JOLOCOM   onfido

Auth0   1KOSMOS BlockID   GAMECREDITS   SECURE KEY   Wault   lifeID

CENTINAL   IDENTOS   diwala   <sitekit>   juru   BOT LABS

ENTERPRISE ETHEREUM ALLIANCE   remme   TRANSMUTE   Finema   GATACA   WeBank 微众银行

21stC *Cyber* Trends in Finance...

7 – Cyber Fraud Detection & Prevention!

"Big Data Analytics"

Counter-Fraud: AI & Big Data Analytics

Counter-Fraud: AI & Big Data Analytics

- Massive Global FinTech Transaction Growth requires Innovative Intelligent Analysis Apps:
    - Fraud Alerts: AI Analysis of "Big FinTech DataSets"
    - Anti-Money Laundering(AML): AI Compliance Apps
    - Counter-Terrorism Financing(CFT): AI/ML Detection
    - Client ID Authentication & Account Verifications
    - Real-Time Detection of Anomalous Transactions
    - On-Line Alerts for possible Insider Fraud & Trading

..."Big Data Analytics" provides FinTech with new asset to mitigate Fraud & boost CyberSecurity!..

90

Intelligent Customer Finance Assessment

Identification
Verification
Assessment
Monitoring
Back Office

AI Enabled Due Diligence

AML: Anti-Money Laundering
CFT: Counter Terror Finance
KYC: Know Your Customer

21stC *Cyber* Trends in **Finance**...
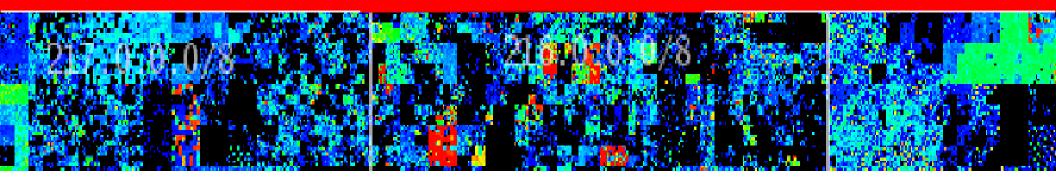
8 – From 20thC Banks to 21stC FinTech

"Intelligent *Cyber* Tools"
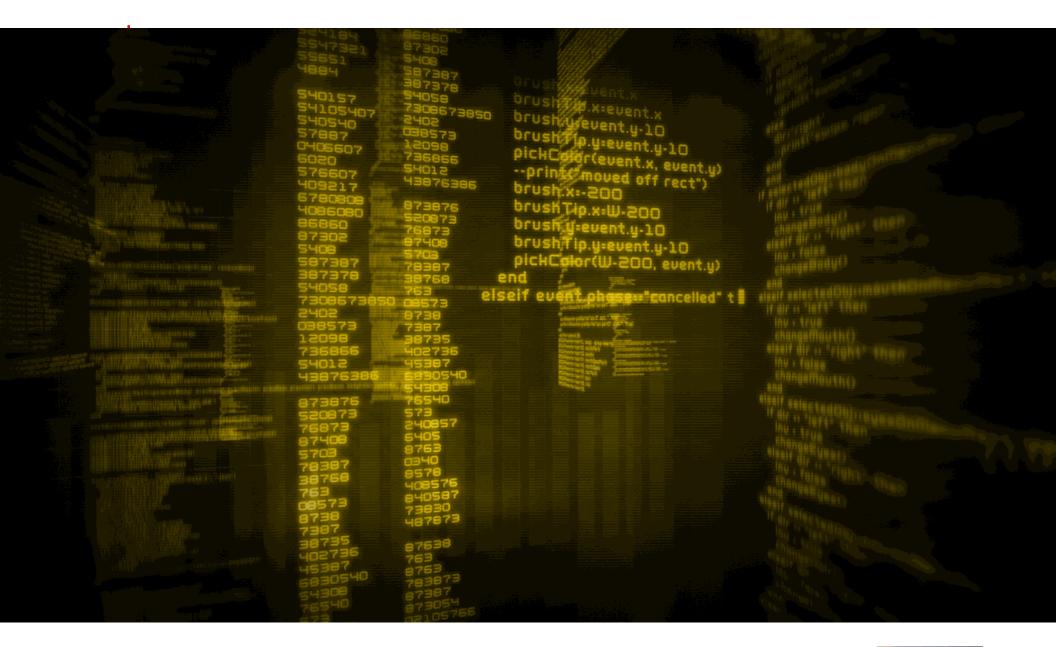
FinTech: Intelligent Cyber Security & Trust!

- **20th Financial Services:** Physical Banks, Electronic Networked Communications & Spreadsheets

- **21stC FinTech/FinServ:** Digital Banks, Intelligent Real-Time Mobile Apps, Analytics & Blockchains

- **CyberSecurity:** Intelligent Real-Time Detection of CyberCrime, Malware, CyberThreats & Attacks

- **Cyber Trust:** Mitigation & Prevention of Business Fraud, Money-Laundering and Terrorist Financing

….**Intelligent FinTech Apps** (AI/ML) provide new 21st Solutions to meet **Compliance & Regulations Acts**!

FinTech: Intelligent Cyber Security & Trust!

KPMG

Regulation and
supervision
of fintech

Ever-expanding expectations

March 2019
—
kpmg.com

KPMG – **FinTech**

- March 2019 –

- CyberSecurity

- Crypto Assets

- BlockChains...

- Data and AI...

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Fintech regulation

Drivers

Fintech adoption
- Increasing reliance on technology
- Increasing interconnectedness and complexity
- Economies of scale in IT applications

Risks

Risks to consumers
- Lack of consumer understanding
- Mis-selling of products and services
- Financial exclusion
- Data privacy, security and protection

Risks to firms
- Business model viability
- Governance
- Technology risk and operational resilience
- Data handling
- Conduct and AML
- Legal

Risks to financial stability
- Concentration
- Alternative channels of financial intermediation
- Herd-like behaviour
- Use of crypto assets
- System-wide vulnerabilities

Regulatory responses

- Regulatory perimeter
- Consumer protection
- Data protection, security and privacy

- Regulatory perimeter
- Governance
- Risk management
- Operational resilience
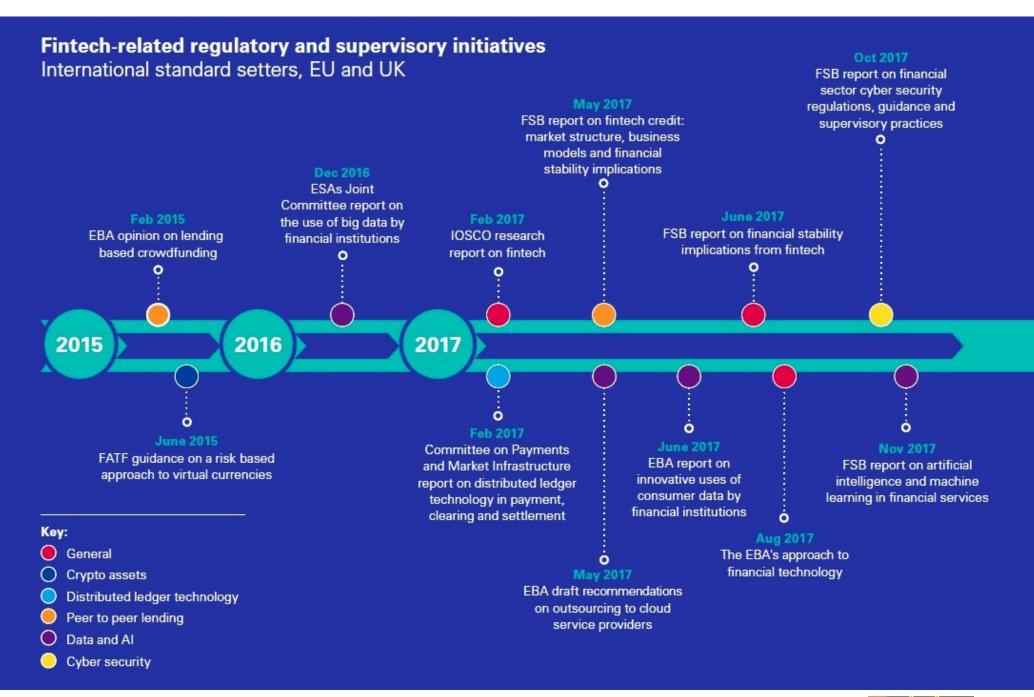
- Data and information gathering and analysis
- Emerging regulatory interventions

96

Fintech-related regulatory and supervisory initiatives
International standard setters, EU and UK

Feb 2015 — EBA opinion on lending based crowdfunding

June 2015 — FATF guidance on a risk based approach to virtual currencies

Dec 2016 — ESAs Joint Committee report on the use of big data by financial institutions

Feb 2017 — IOSCO research report on fintech

Feb 2017 — Committee on Payments and Market Infrastructure report on distributed ledger technology in payment, clearing and settlement

May 2017 — FSB report on fintech credit: market structure, business models and financial stability implications

May 2017 — EBA draft recommendations on outsourcing to cloud service providers

June 2017 — FSB report on financial stability implications from fintech

June 2017 — EBA report on innovative uses of consumer data by financial institutions

Aug 2017 — The EBA's approach to financial technology

Oct 2017 — FSB report on financial sector cyber security regulations, guidance and supervisory practices

Nov 2017 — FSB report on artificial intelligence and machine learning in financial services

2015 → 2016 → 2017

Key:
- General
- Crypto assets
- Distributed ledger technology
- Peer to peer lending
- Data and AI
- Cyber security

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"The New Physics of Financial Services"
- *AI is Transforming ALL Aspects of Finance!* -

Deloitte.

The new physics of financial services
How artificial intelligence is transforming
the financial ecosystem

Deposits and lending

Insurance

Payments

Investment management

Capital markets

Market infrastructure

"The New Physics of Financial Services"
- *AI is Transforming ALL Aspects of Finance!* -

WORLD
ECONOMIC
FORUM

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IMPROVING THE STATE
OF THE WORLD

The New Physics of Financial Services

Understanding how artificial intelligence is transforming the financial ecosystem

Download: www3.weforum.org/docs/WEF_New_Physics_of_Financial_Services.pdf

Part of the Future of Financial Services series | Prepared in collaboration with Deloitte
August 2018

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CyberSecurity
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99

21stC *Cyber* Trends in **Finance**...

9 – *Cyber Plans* for **YOUR** Business!...
"SMART Security Toolkit"

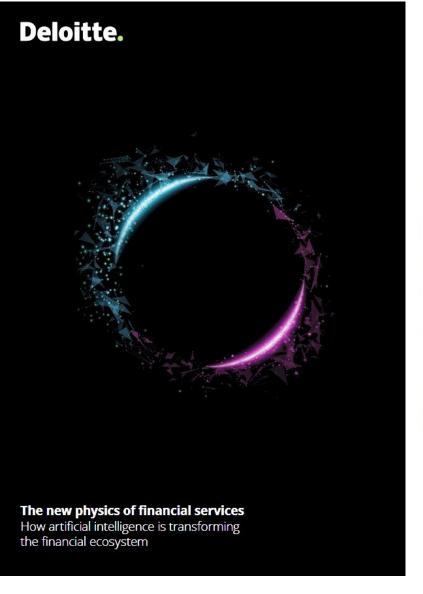**40th** **International East-West Security Conference**

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CyberSecurity Plans for *YOUR* Business!

- Every Business & Government Agency needs to upgrade Cybersecurity for 21stC Fintech!...

- **Phase 1 – Audit:** Review CyberSecurity for all Financial Accounting & Banking Transactions

- **Phase 2 – Plan:** Develop Top-Level RoadMap & Practical Multi-Year $$$ Investment Plan

- **Phase 3 – Execute:** Upgrade YOUR Business Financial Security Operations, Fraud & Insider Trading Detection with Intelligent 21stC Apps

....**Financial "Cyber Upgrade"** should be executed by Chief Finance **(CFO)** & Chief Security Officer **(CSO)**

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"Cyber Defence" against "Alien Invaders"

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- AI & Machine Learning in Banking -

Intelligent & Adaptive *Finance* CyberTools will Provide *"Speed of Light"* Real-Time Defence against *TOP 10* Threats & Attacks!

"Steam Powered Birds arrive over our Cities!" - 1981

Pen & Ink Drawing by **Dr Alexander Rimski-Korsakov (1936 – 2018)**

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102
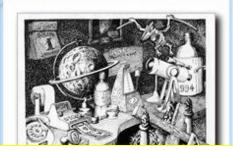
The Surrealistic Paintings of Dr Alexander Rimsky-Korsakov
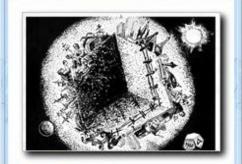
Web Link: www.valentina.net/ARK3/ark2.html
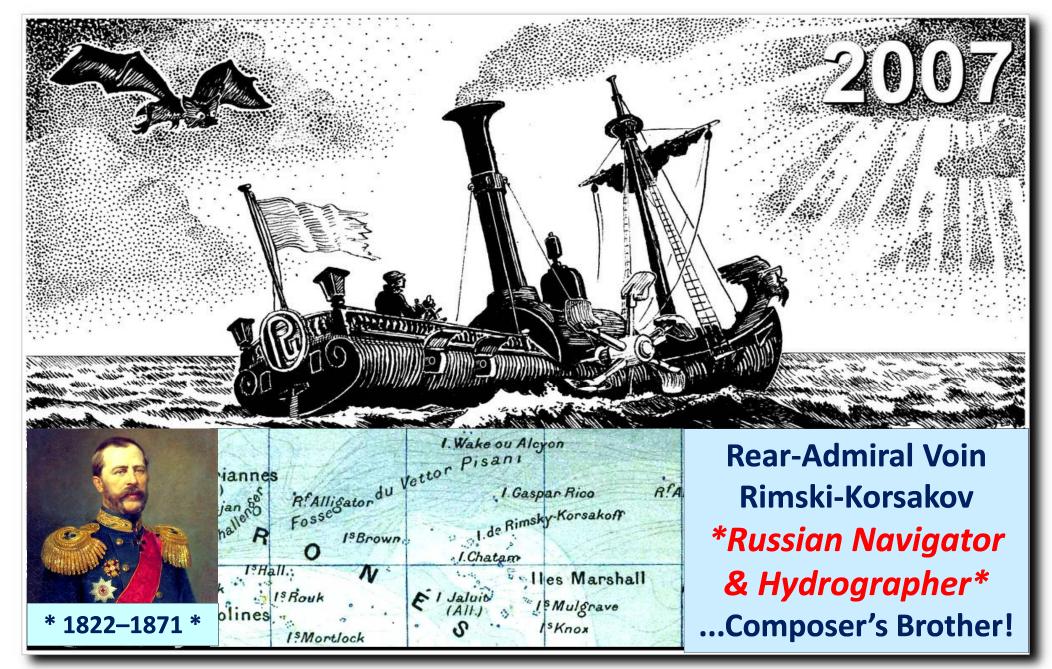
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2007

Rear-Admiral Voin
Rimski-Korsakov
*Russian Navigator
& Hydrographer*
...Composer's Brother!

* 1822–1871 *

Pen & Ink Painting by Dr Alexander Rimski-Korsakov : "Navigating the Oceans & Hidden Threats"

Radium Institute Calendar - 2007 –St Petersburg

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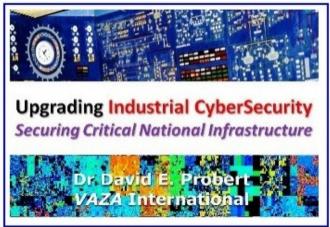
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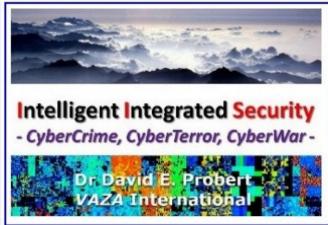
21stC *Cyber* Finance, *Industry* & Futures!

"21stC CyberSecurity": Finance, Industry & Futures!

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Upgrading Industrial CyberSecurity
Securing Critical National Infrastructure
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(2) **Industrial** Security

Intelligent Integrated Security
- CyberCrime, CyberTerror, CyberWar -
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(3) **Intelligent** Security

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Download *Cyber* Slides: www.valentina.net/MALTA2019/

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21stC *Cyber* Trends in Finance...
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7. St Roch Co. Chapel
8. Jesuits Church and College
9. Our Lady Chapel
10. Dominican Church
11. St Nicolas Chapel
12. St Catharinas
13. St John Bapt. Church
14. The Market Place
15. Monastry of St Ursule
16. New Magazine
17. French Chapel
18. Castille Hotel of Portugal
19. St Catharines of Italy Cha.
20. St James Castille
21. Priuralle Church
22. Conservatorie Palace
23. St Lucie
24. Treasury Palace
25. Chancery Palace
26. German Hotel
27. Arragon Hotel
28. The Barrack

French Harbour

Galley Harbour

Great Harbour

English Harbour

Renelle Harbour

Marsamuciette Harbour

Scale of 2000 Feet.

MALTA
-1800 –

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Thank-You!

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www.Valentina.net/MALTA2019/

Download Presentation Slides:
www.Valentina.net/Malta2019/

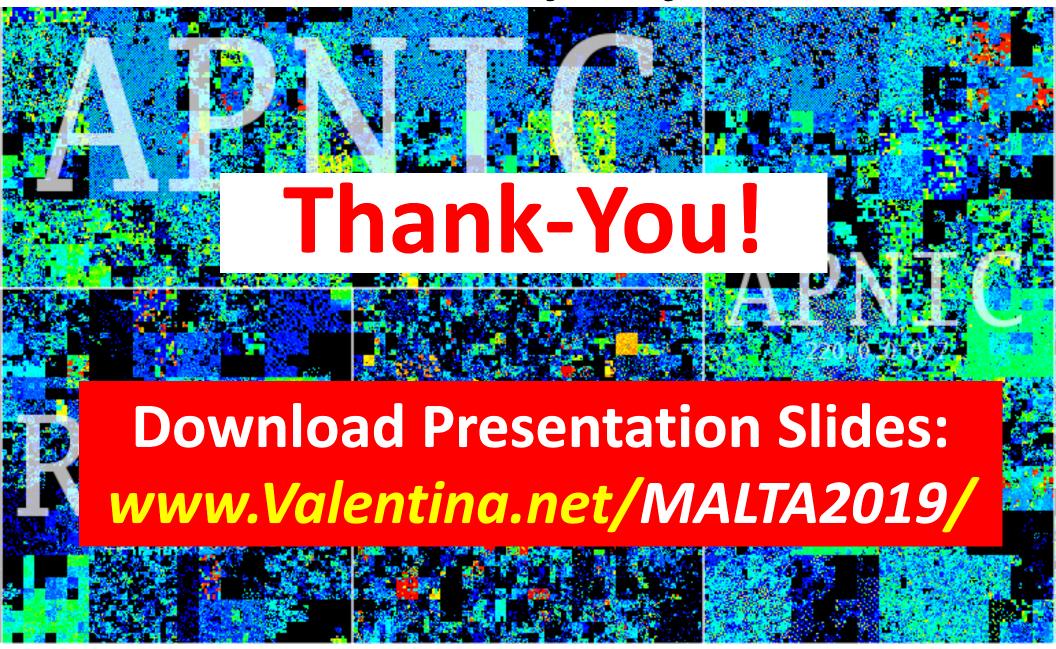Thank you for your time!

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Additional *Cybersecurity* Resources

"Master Class - Smart Theory & Practice"	"Master Class 2012 - Smart Design"	"21stC Armenia- 2012: Smart Economy"	"21stC Armenia - 2012: Smart Security"	"21stC Armenia: Smart Governance"
"Real-Time Armenia" - White Paper	"Real-Time Armenia" - Slides	Awesome Armenia: In Photos	Roadmap for Real-Time Armenia- Report	RoadMap for Real-Time Armenia- Slides
"Real-Time Georgia" - GITI 2008 Slides	"Real-Time Georgia" - GITI 2008 Paper	Gorgeous Georgia: In Photos	21stC Georgia: "CyberVardzia" - Paper	21stC Georgia - "CyberVardzia" - Slides
			ITU/CITEL: Cybersecurity in the Americas	ITU/CITEL: Cybersecurity Skills Building

Link: www.valentina.net/vaza/CyberDocs

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109

Professional Profile - *Dr David E. Probert*

- *Computer Integrated Telephony (CIT)* – Established and led British Telecom's £25M EIGER Project during the mid-1980s' to integrate computers with telephone switches (PABX's). This resulted in the successful development and launch of CIT software applications for telesales & telemarketing

- *Blueprint for Business Communities* – Visionary Programme for Digital Equipment Corporation during late-1980's that included the creation of the "knowledge lens" and "community networks". The Blueprint provided the strategic framework for Digital's Value-Added Networks Business

- *European Internet Business Group (EIBG*) – Established and led Digital Equipment Corporation's European Internet Group for 5 years. Projects included support for the national Internet infrastructure for countries across EMEA as well as major enterprise, government & educational Intranet deployments. Dr David Probert was a sponsoring member of the European Board for Academic & Research Networking (EARN/TERENA) for 7 years (1991 ➔ 1998)

- *Supersonic Car (ThrustSSC)* – Worked with Richard Noble OBE, and the Mach One Club to set up and manage the 1st Multi-Media and e-Commerce Web-Site for the World's 1st Supersonic Car – ThrustSSC – for the World Speed Record.

- *Secure Wireless Networking* – Business Director & VP for Madge Networks to establish a portfolio of innovative fully secure wireless Wi-Fi IEEE802.11 networking products with technology partners from both UK and Taiwan.

- *Networked Enterprise Security* - Appointed as the New Products Director (CTO) to the Management Team of the Blick Group plc with overall responsibility for 55 professional engineers & a diverse portfolio of hi-tech security products.

- *Republic of Georgia* – Senior Security Adviser – Appointed by the European Union to investigate and then to make recommendations on *all* aspects of IT security, physical security and BCP/DR relating to the Georgian Parliament, and then by UN/ITU to review Cybersecurity for the Government Ministries.

- *UN/ITU* – Senior Adviser – Development of Cybersecurity Infrastructure, Standards, Policies, & Organisations in countries within both Europe & Americas

Dr David E. Probert is a Fellow of the Royal Statistical Society, IEEE Life Member and 1st Class Honours Maths Degree (Bristol University) & PhD from Cambridge University in Self-Organising Systems (Evolution of Stochastic Automata) , and his full professional biography is featured in the Marquis Directory of Who's Who in the World: 2007-2020 Editions

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BACK-UP SLIDES