

Security for Critical Operations Q&A

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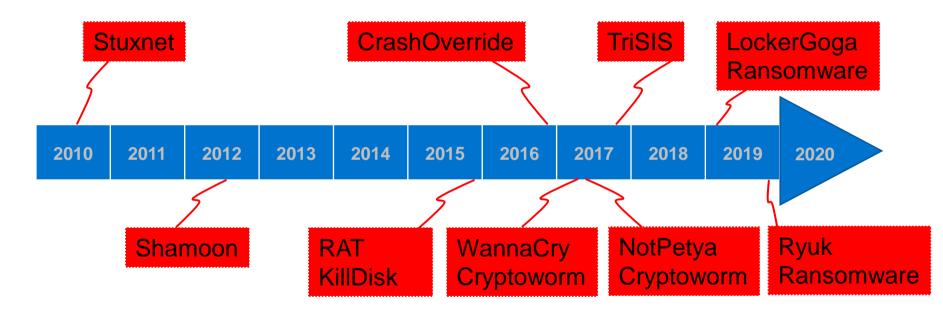


		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
	1 st	Asset price collapse	Storms and cyclones	Income disparity	Income disparity	Income disparity	Interstate conflict	Involuntary migration	Extreme weather	Extreme weather	Extreme weather	Extreme weather	
Likelihood	2 nd	China economic slowdown	Flooding	Fiscal imbalances	Fiscal imbalances	Extreme weather	Extreme weather	Extreme weather	Involuntary migration	Natural disasters	Climate action failure	Climate action failure	
	3 rd	Chronic disease	Corruption	Greenhouse gas emissions	Greenhouse gas emissions	Unemployment	Failure of national governance	Climate action failure	Natural disasters	Cyberattacks	Natural disasters	Natural disasters	_
	4 th	Fiscal crises	Biodiversity loss	Cyberattacks	Water crises	Climate action failure	State collapse or crisis	Interstate conflict	Terrorist attacks	Data fraud or theft	Data fraud or theft	Biodiversity loss	Environmental
	5 th	Global governance gaps	Climate change	Water crises	Population ageing	Cyberattacks	Unemployment	Natural catastrophes	Data fraud or theft	Climate action failure	Cyberattacks	Human-made environmental disasters	Economic
													Societal
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Impact	1 st	Asset price collapse	Fiscal crises	Financial failure	Financial failure	Fiscal crises	Water crises	Climate action failure	Weapons of mass destruction	Weapons of mass destruction	Weapons of mass destruction	Climate action failure	Geopolitical
	2 nd	Deglobalization (developed)	Climate change	Water crises	Water crises	Climate action failure	Infectious diseases	Weapons of mass destruction	Extreme weather	Extreme weather	Climate action failure	Weapons of mass destruction	Technological
	3 rd	Oil price spikes	Geopolitical conflict	Food crises	Fiscal imbalances	Water crises	Weapons of mass destruction	Water crises	Water crises	Natural disasters	Extreme weather	Biodiversity loss	
	4 th	Chronic disease	Asset price collapse	Fiscal imbalances	Weapons of mass destruction	Unemployment	Interstate conflict	Involuntary migration	Natural disasters	Climate action failure	Water crises	Extreme weather	
	5 th	Fiscal crises	Energy price volatility	Energy price volatility	Climate action failure	Infrastructure breakdown	Climate action failure	Energy price shock	Climate action failure	Water crises	Natural disasters	Water crises	

Source: World Economic Forum Global Risk Report 2020



The scope and scale of destructive malware affecting our industrial community is escalating







SAFFIR-SIMPSON SCALE: MEASURES WIND STRENGTH DURING A HURRICANE ON A 1-5 SCALE

CATEGORY 1

74 to **95** MPH

SHINGLES FLY OFF

TREES BEND IN THE WIND

EVERYTHING IS BASICALLY INTACT

POWER OUTAGE FOR A FEW DAYS



CATEGORY 2

96 to **110** MPH

WINDOWS BREAK DUE TO DEBRIS

SIDING PULLS AWAY FROM HOUSE

POWER LOSS FOR DAYS TO WEEKS



CATEGORY 3

111 то 129 мрн

DOOR OF HOUSE BLOWS IN

ROOF CAN BE RIPPED UP FROM WEAK POINTS

TREES START TO FALL

ROADS ARE BLOCKED DUE TO DEBRIS

ELECTRICITY AND WATER WON'T BE AVAILABLE FOR DAYS TO WEEKS



CATEGORY 4

130 то 156 мрн

MOST WINDOWS BREAK

WEAK PARTS OF THE ROOF ARE TORN OFF

FALLEN TREES AND POWER LINES ISOLATE RESIDENTIAL AREAS

HOME IS UNINHABITABLE FOR WEEKS TO MONTHS



CATEGORY 5

> 157 MPH

CATASTROPHIC DAMAGE

WALLS BEGIN TO FALL DUE TO HOLES
IN ROOF

NO TREES STAND IN THE NEIGHBORHOOD

FRAMED HOMES DESTROYED

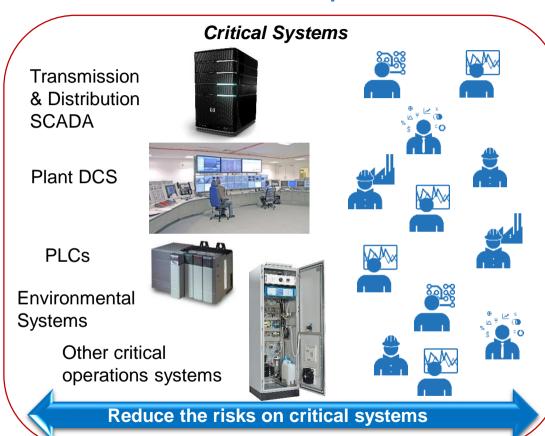
UNINHABITABLE UNTIL REBUILT







Architectural Concept: Dedicated Data Infrastructure





Security Perimeter

Architectural Concept: Dedicated Data Infrastructure

Transmission & Distribution SCADA

Plant DCS

PLCs

Environmental Systems

> Other critical operations systems

> > Reduce the risks on critical systems

Critical Systems

















Limit direct access to critical systems while expanding the use of information.





Security Perimeter

Architectural Concept: Dedicated Data Infrastructure

Critical Systems

Transmission & Distribution SCADA





Plant DCS



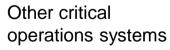


PLCs





Environmental Systems







Reduce the risks on critical systems

Limit direct access to critical systems while expanding the use of information.



Security Perimeter

Tips so you can be a 'cyber hero' with the PI System.

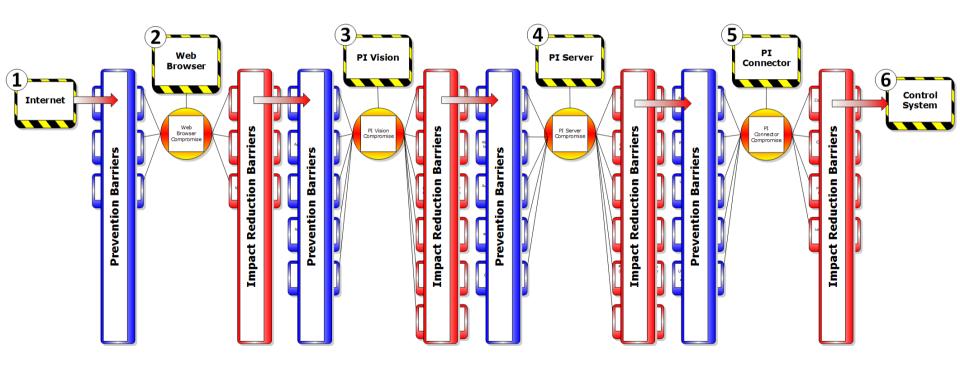


Know your PI System disconnect points



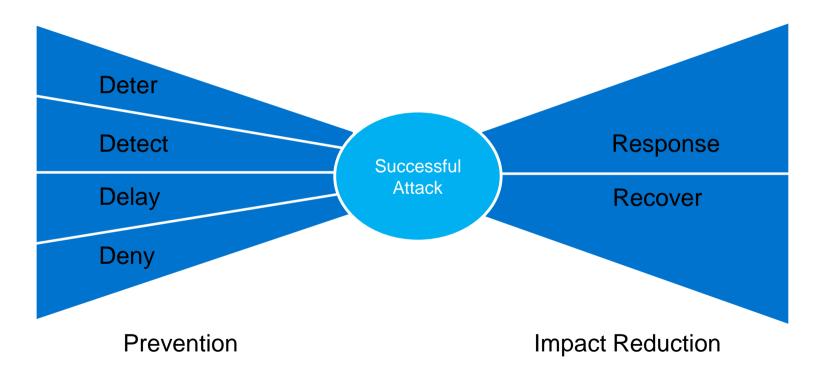


Make use of PI System security barriers

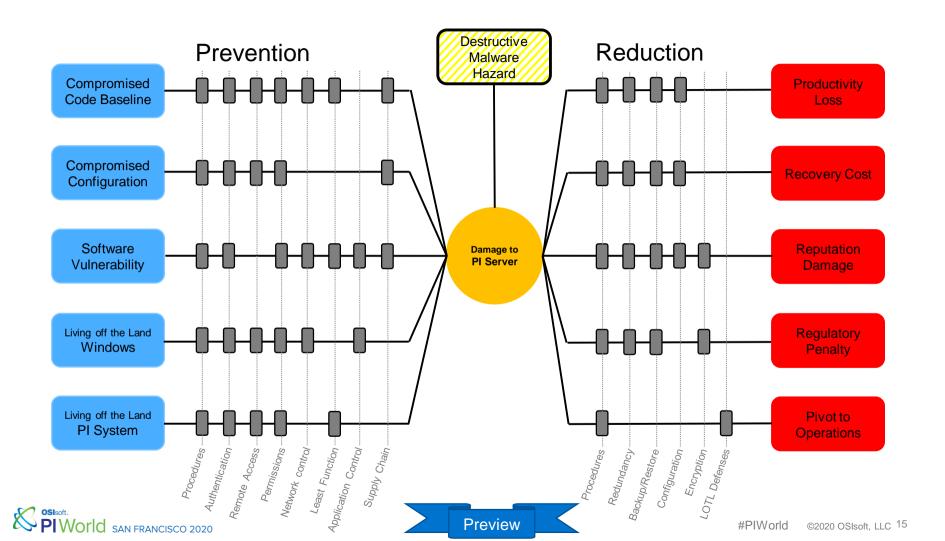




Bow tie models for cyber security

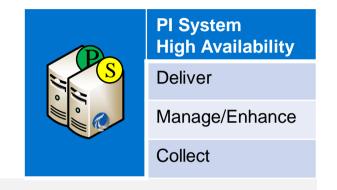






Use the '3-2-1 rule' for critical operations data

- Three backups of your data
- Two different storage types
- One offsite backup cloud!





Knowledge

PI Data Archive Backup Best Practices



Knowledge

How to Restore the PI AF Servers PIFD Database from Backup



Enhance your security measures to combat cyber crime

CHALLENGES

- Cyber risk reduction investment priorities
- Increase security without slowing down digital transformation
- Capability to operate while compromised

SOLUTION

- Create awareness of losses and impact to critical operations
- Enable your people and security barriers built into the PI System
- Know what systems can be trusted for response and recovery

BENEFITS

 Avoid significant losses and recovery costs (in the hundreds of millions!)





We live in an industrial world.

Going after industrial security, and doing it well, is worth doing.



Robert Lee CEO Dragos, Inc (OSIsoft security partner)



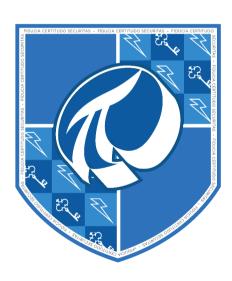
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KEA LEBOHA

DANKON

KÖSZÖNÖM

БЛАГОДАРЯ

ТИ БЛАГОДАРАМ

TAK DANKE \$\frac{\pi}{2}\$

MERCI

HATUR NUHUN

OSIsoft.

MULŢUMESC

ESKERRIK ASKO

ХВАЛА ВАМ

TEŞEKKÜR EDERIM

DANK JE

AČIŪ SALAMAT MAHALO IĀ 'OE TAKK SKAL DU HA

GRAZZI PAKKA PÉR

PAXMAT CAFA

By ありがとうございました
SIPAS JI WERE TERIMA KASIH
UA TSAUG RAU KOJ
ТИ БЛАГОДАРАМ
СИПОС

ДЗЯКУЙ

ĎAKUJEM

MATUR NUWUN

