



# Security for Critical Operations Q&A

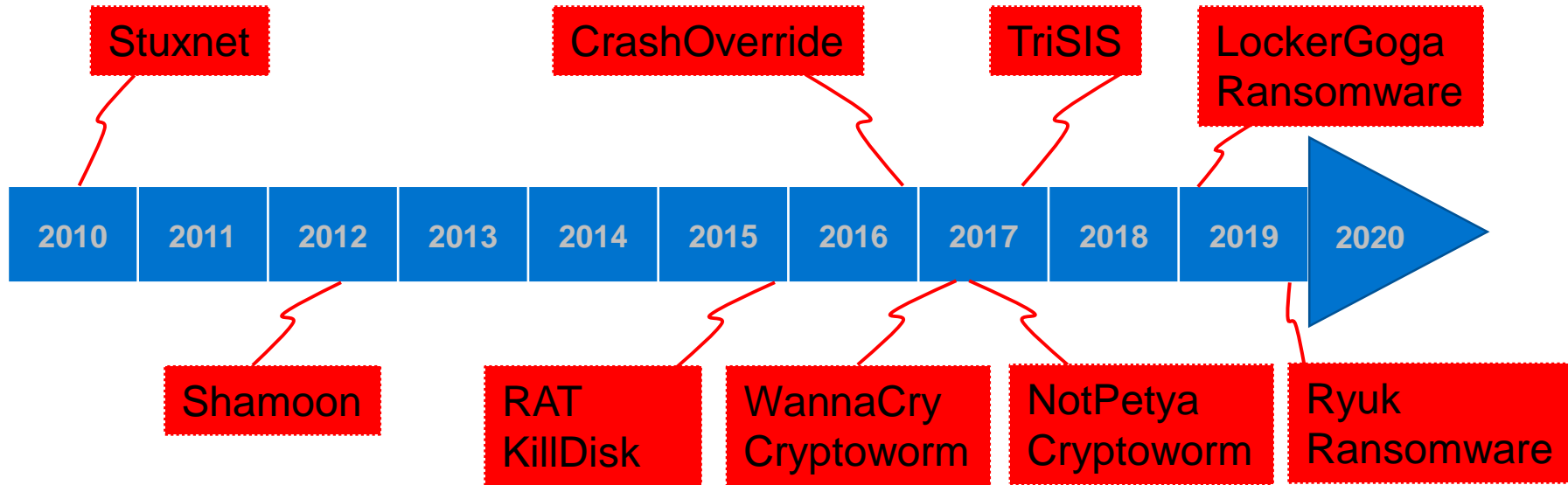
Bryan Owen PE – Security Architect  
Lubos Mlcoch – Security Program Manager





Source: World Economic Forum Global Risk Report 2020

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





# Critical Operations Mindset

Can you operate  
while  
compromised?

# 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 TO 129 MPH**

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 TO 156 MPH**

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

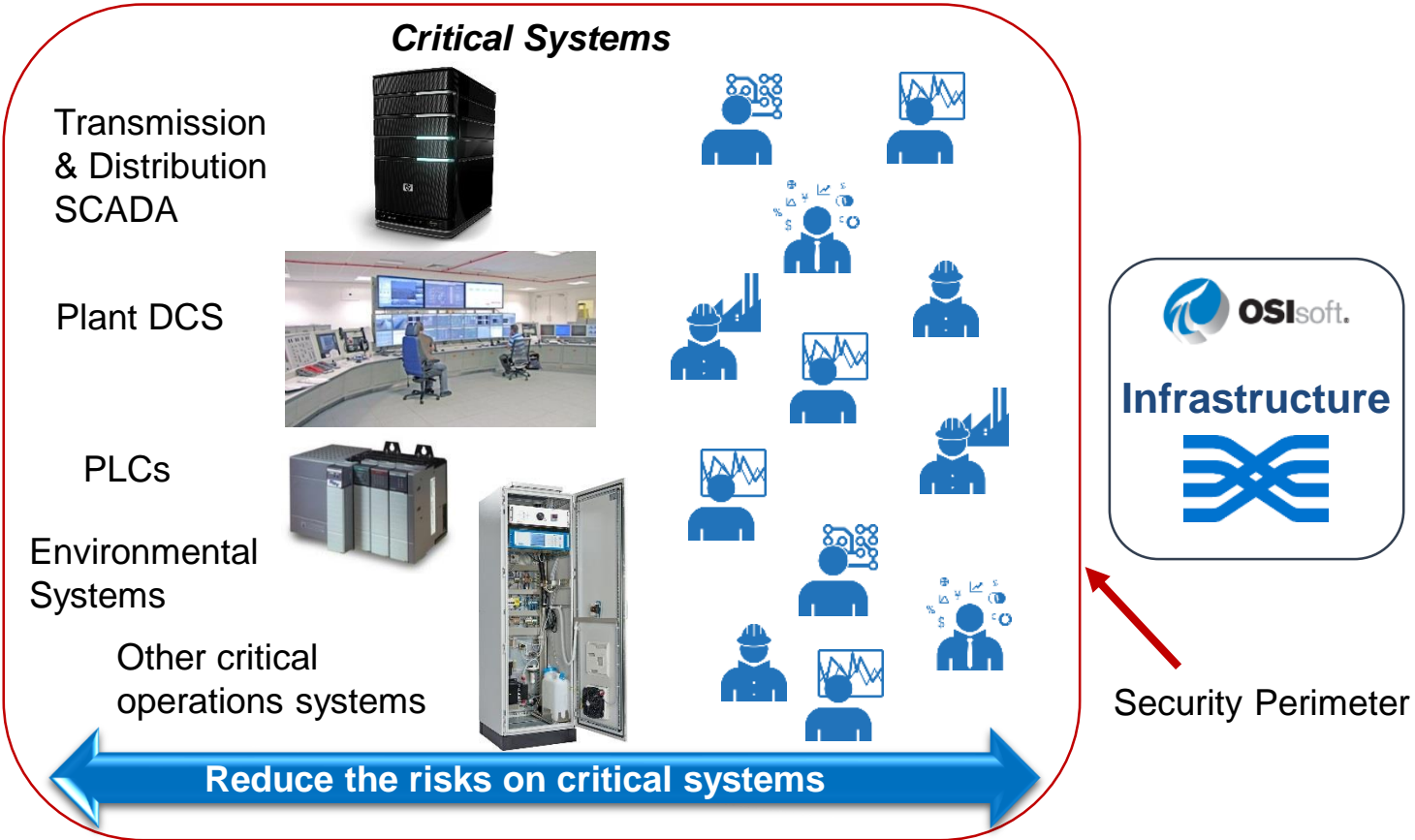
UNINHABITABLE UNTIL REBUILT





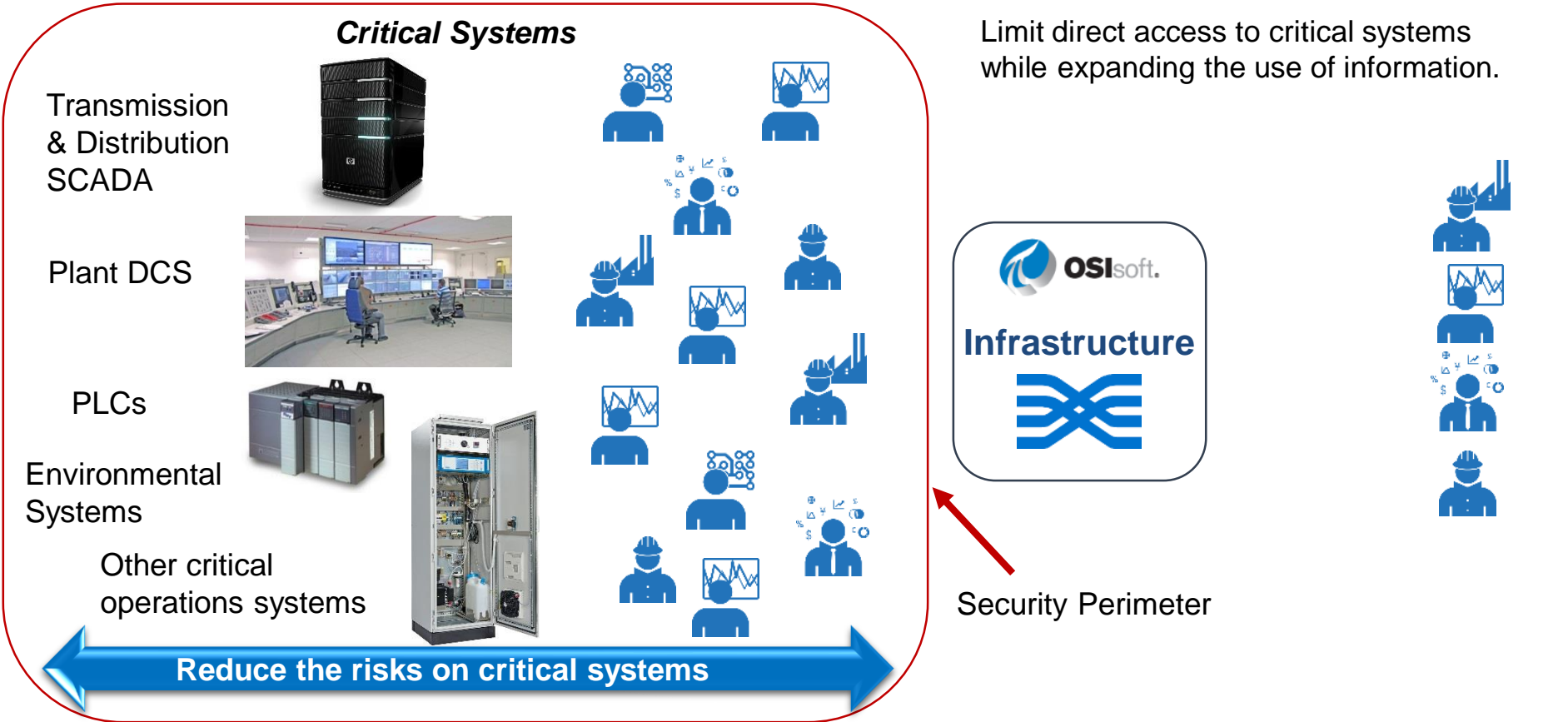


# Architectural Concept: Dedicated Data Infrastructure

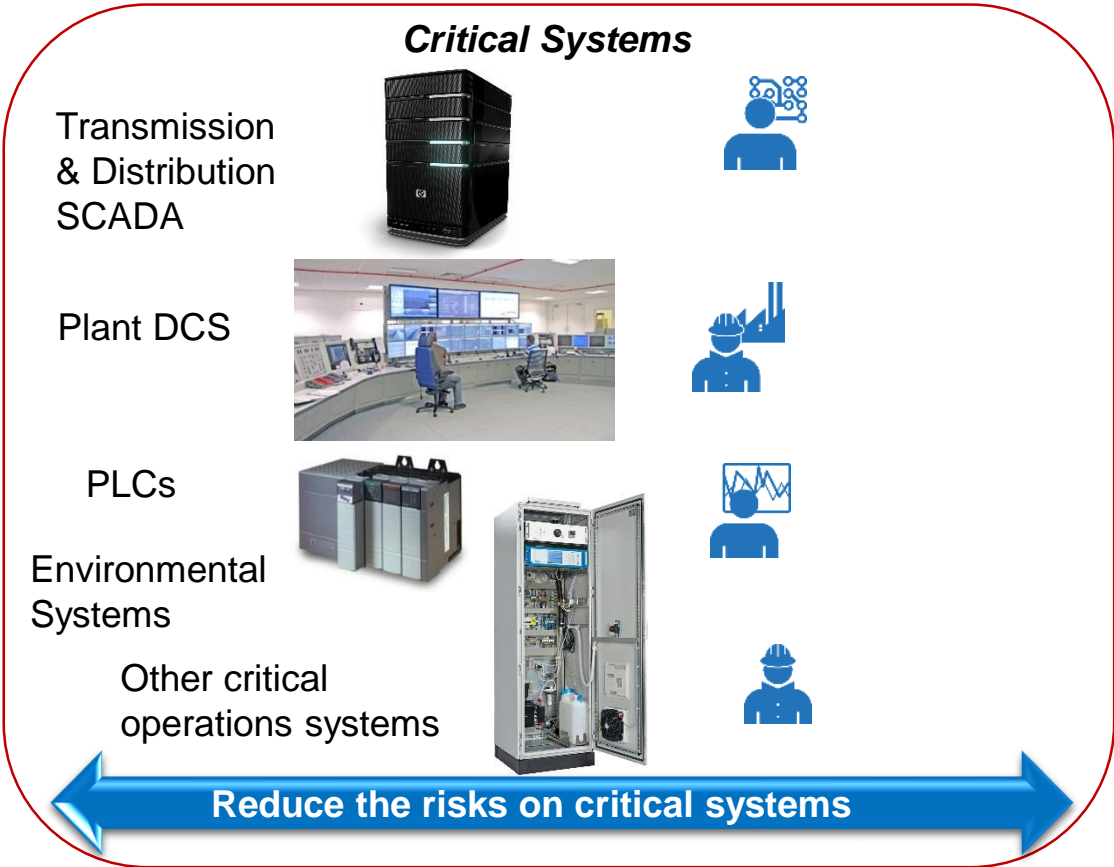




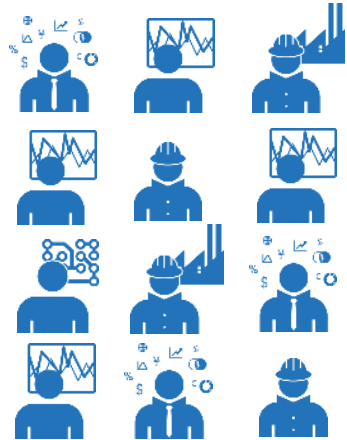
# Architectural Concept: Dedicated Data Infrastructure



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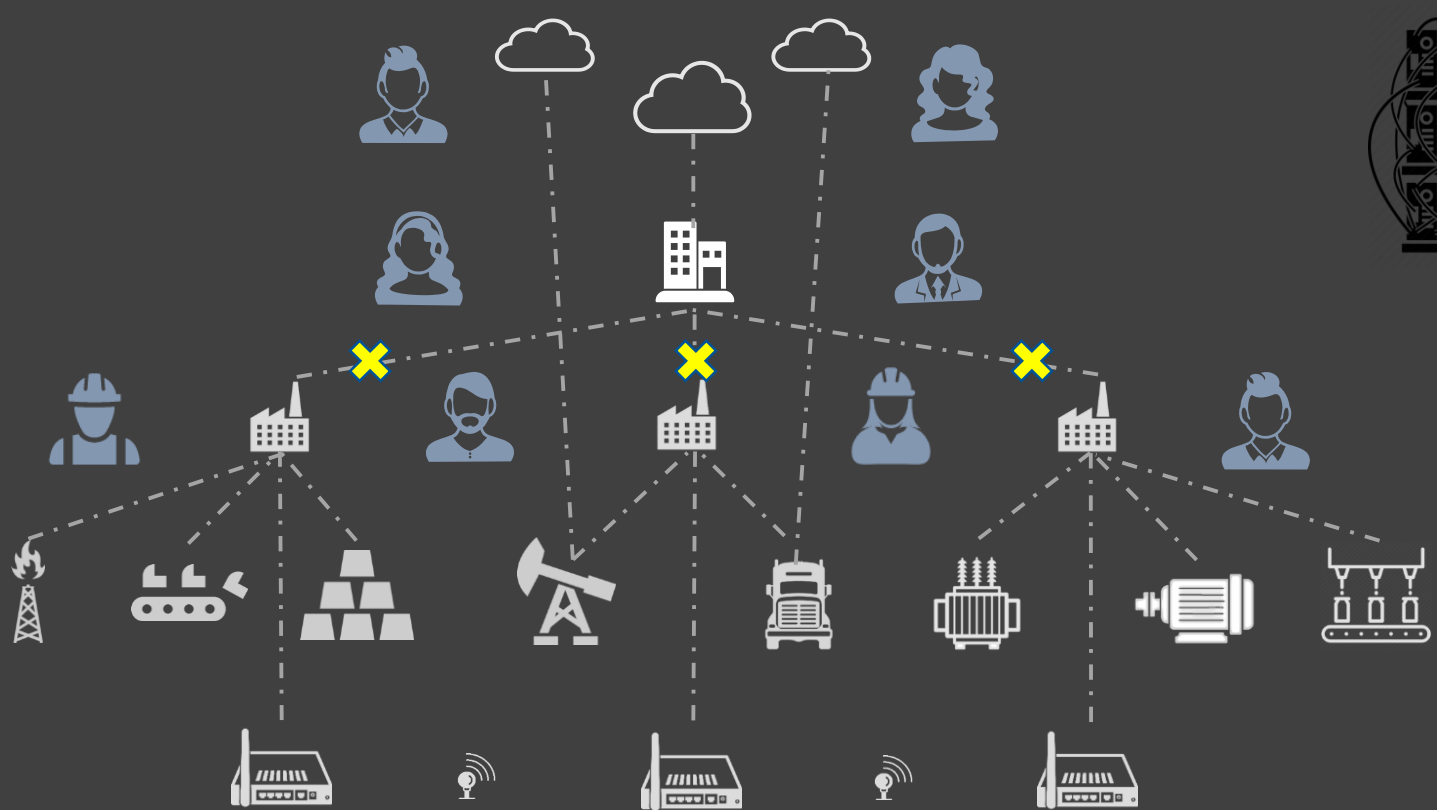
Limit direct access to critical systems while expanding the use of information.



Security Perimeter

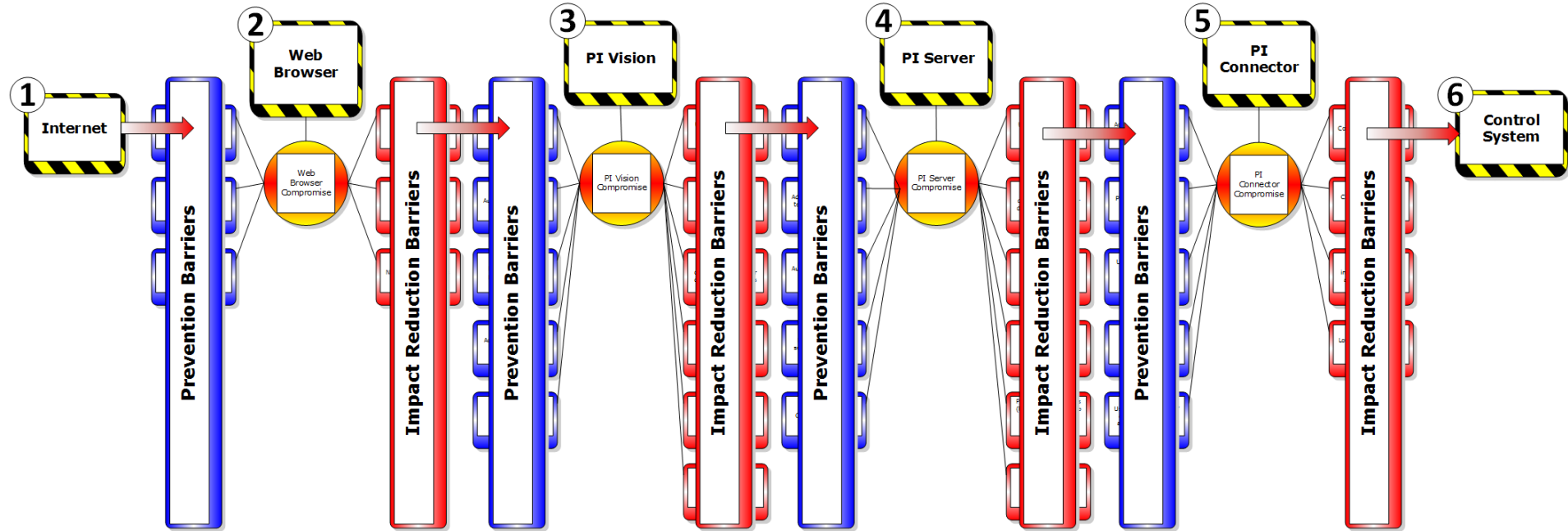


# Know your PI System disconnect points

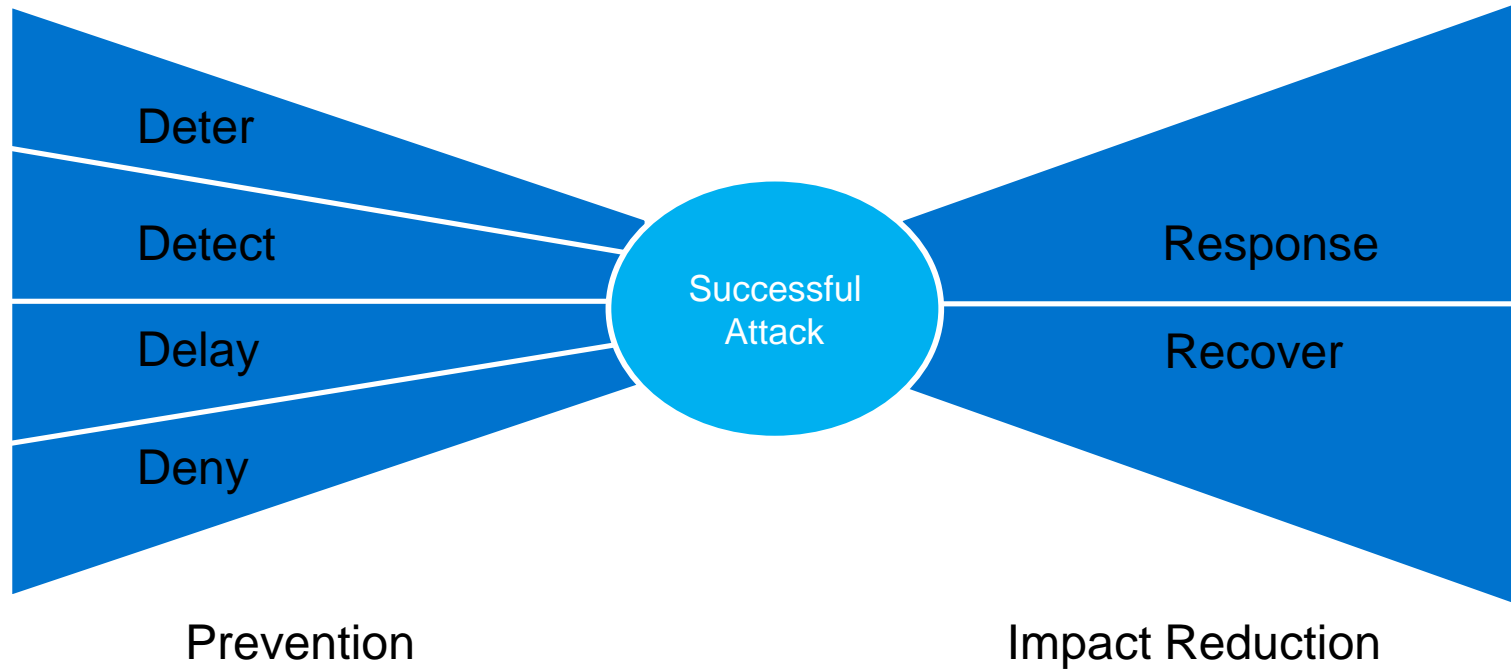


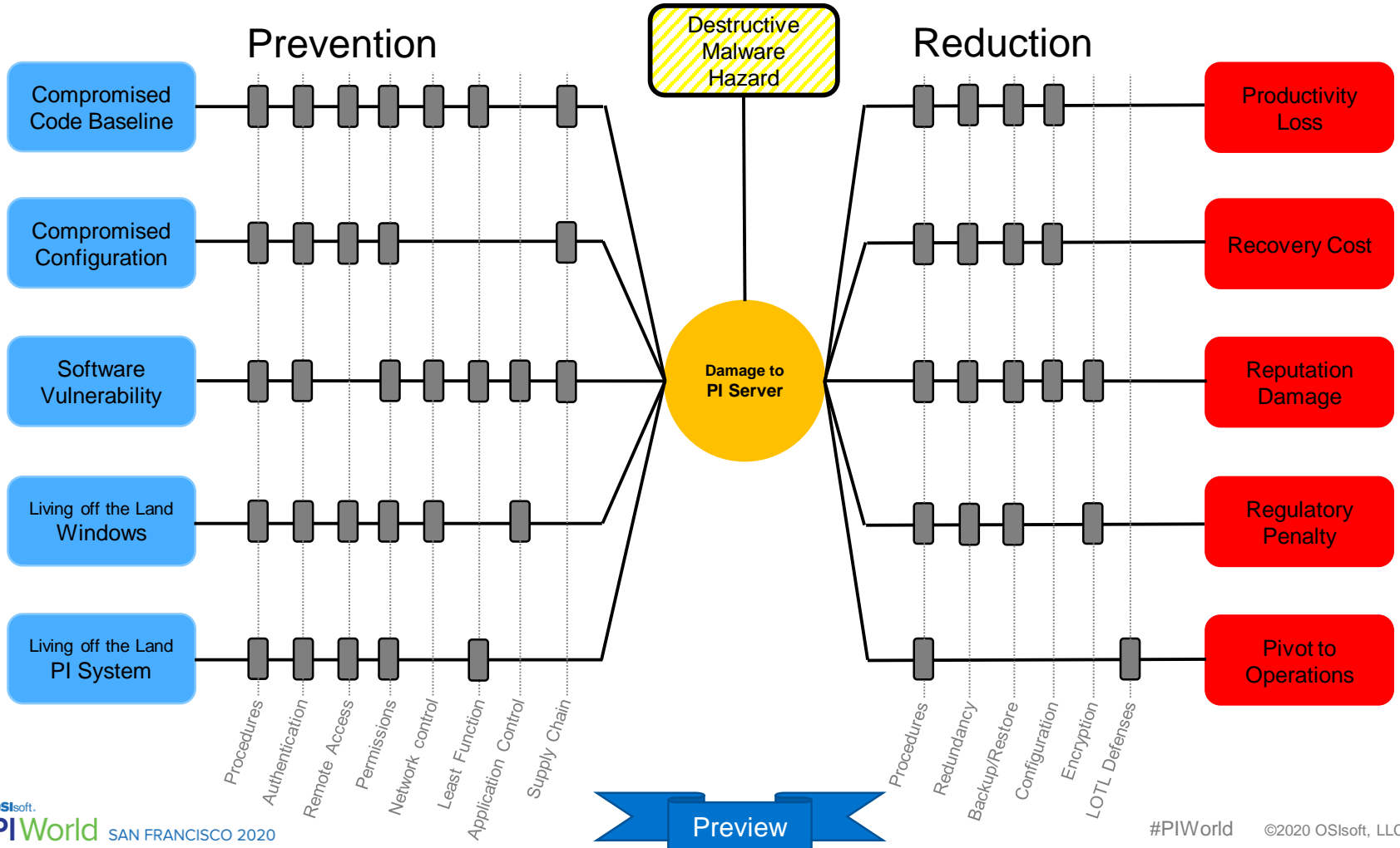


# Make use of PI System security barriers




# 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!



PI System High Availability
Deliver
Manage/Enhance
Collect



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)

# Contact



- Bryan Owen PE
- Security Architect
- OSIssoft
- [bryan@osisoft.com](mailto:bryan@osisoft.com)



- Lubos Mlcoch
- Security Program Manager
- OSIssoft
- [lmicoch@osisoft.com](mailto:lmicoch@osisoft.com)



