Applying the NIST Cybersecurity Framework to Elections

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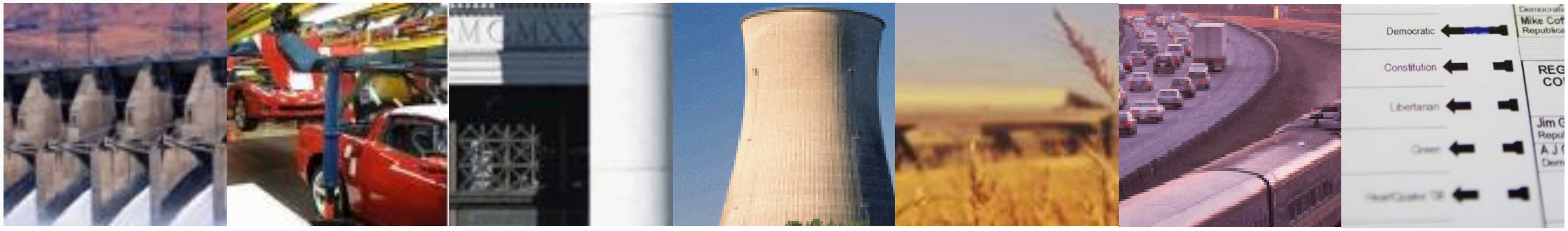
Creating the Framework

"… the Executive Order calls for the development of a voluntary risk-based Cybersecurity Framework – a set of industry standards and best practices to help organizations manage cybersecurity risks. The resulting Framework, created through collaboration between government and the private sector, uses a common language to address and manage cybersecurity risk in a cost-effective way based on business needs without placing additional regulatory requirements on businesses"

Executive Order 13636

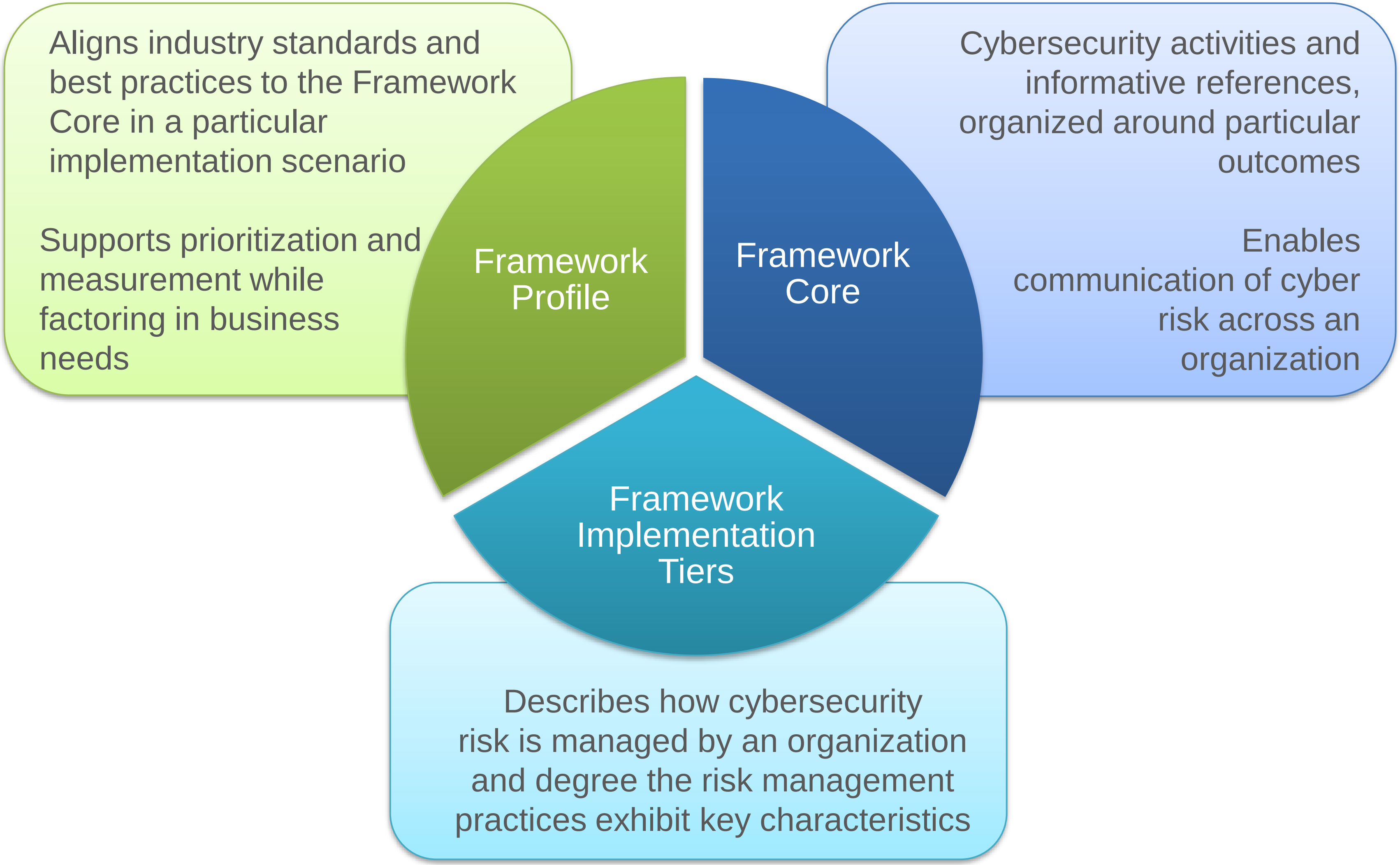
12 February 2013

The Framework Is for Organizations…



- Of any size, in any sector in (and outside of) the critical infrastructure.
- That already have a mature cyber risk management and cybersecurity program.
- That don’t yet have a cyber risk management or cybersecurity program.
- Needing to keep up-to-date managing risks, facing business or societal threats.
- In the federal government, too…since it is compatible with FISMA requirements and goals.

Cybersecurity Framework Components



Framework Profile

Aligns industry standards and best practices to the Framework Core in a particular implementation scenario

Supports prioritization and measurement while factoring in business needs

Framework Core

Cybersecurity activities and informative references, organized around particular outcomes

Enables communication of cyber risk across an organization

Framework Implementation Tiers

Describes how cybersecurity risk is managed by an organization and degree the risk management practices exhibit key characteristics

Core

Cybersecurity Framework Component

	Function
What processes and assets need protection?	Identify
What safeguards are available?	Protect
What techniques can identify incidents?	Detect
What techniques can contain impacts of incidents?	Respond
What techniques can restore capabilities?	Recover

Core

Cybersecurity Framework Component

Function	Category	Subcategory	References
Identify	Asset Management	ID.AM	
	Business Environment	ID.BE	
	Governance	ID.GV	
	Risk Assessment	ID.RA	
	Risk Management Strategy	ID.RM	
Protect	Access Control	PR.AC	
	Awareness and Training	PR.AT	
	Data Security	PR.DS	
	Information Protection Processes & Procedures	PR.IP	
	Maintenance	PR.MA	
	Protective Technology	PR.PT	
Detect	Anomalies and Events	DE.AE	
	Security Continuous Monitoring	DE.CM	
	Detection Processes	DE.DP	
Respond	Response Planning	RS.RP	
	Communications	RS.CO	
	Analysis	RS.AN	
	Mitigation	RS.MI	
	Improvements	RS.IM	
Recover	Recovery Planning	RC.RP	
	Improvements	RC.IM	
	Communications	RC.CO	

Core

Cybersecurity Framework Component

Function	Category	Subcategory	References
Identify			
Protect			
Detect			
Respond			
Recover			

Core

Cybersecurity Framework Component

Function	Category	Subcategory	References
Identify	Asset Management (ID.AM): The data, personnel, devices, systems, and facilities that enable the organization to achieve business purposes are identified and managed consistent with their relative importance to business objectives and the organization's risk strategy.		
Protect			
Detect			
Respond			
Recover			

Asset Management (ID.AM): The data, personnel, devices, systems, and facilities that enable the organization to achieve business purposes are identified and managed consistent with their relative importance to business objectives and the organization's risk strategy.

Core

Cybersecurity Framework Component

Function	Category	Subcategory	References
Identify	Asset Management (ID.AM): The data, personnel, devices, systems, and facilities that enable the organization to achieve business purposes are identified and managed consistent with their relative importance to business objectives and the organization's risk strategy.	ID.AM-1: Physical devices and systems within the organization are inventoried	
Protect			
Detect			
Respond			
Recover			

ID.AM-1: Physical devices and systems within the organization are inventoried

Core

Cybersecurity Framework Component

Function	Category	Subcategory	References
Identify	Asset Management (ID.AM): The data, personnel, devices, systems, and facilities that enable the organization to achieve business purposes are identified and managed consistent with their relative importance to business objectives and the organization's risk strategy.	ID.AM-1: Physical devices and systems within the organization are inventoried	• CCS CSC 1 • COBIT 5 BAI09.01, BAI09.02 • ISA 62443-2-1:2009 4.2.3.4 • ISA 62443-3-3:2013 SR 7.8 • ISO/IEC 27001:2013 A.8.1.1, A.8.1.2 • NIST SP 800-53 Rev. 4 CM-8
Protect			
Detect			
Respond			

- CCS CSC 1
- COBIT 5 BAI09.01, BAI09.02
- ISA 62443-2-1:2009 4.2.3.4
- ISA 62443-3-3:2013 SR 7.8
- ISO/IEC 27001:2013 A.8.1.1, A.8.1.2
- NIST SP 800-53 Rev. 4 CM-8

Profile

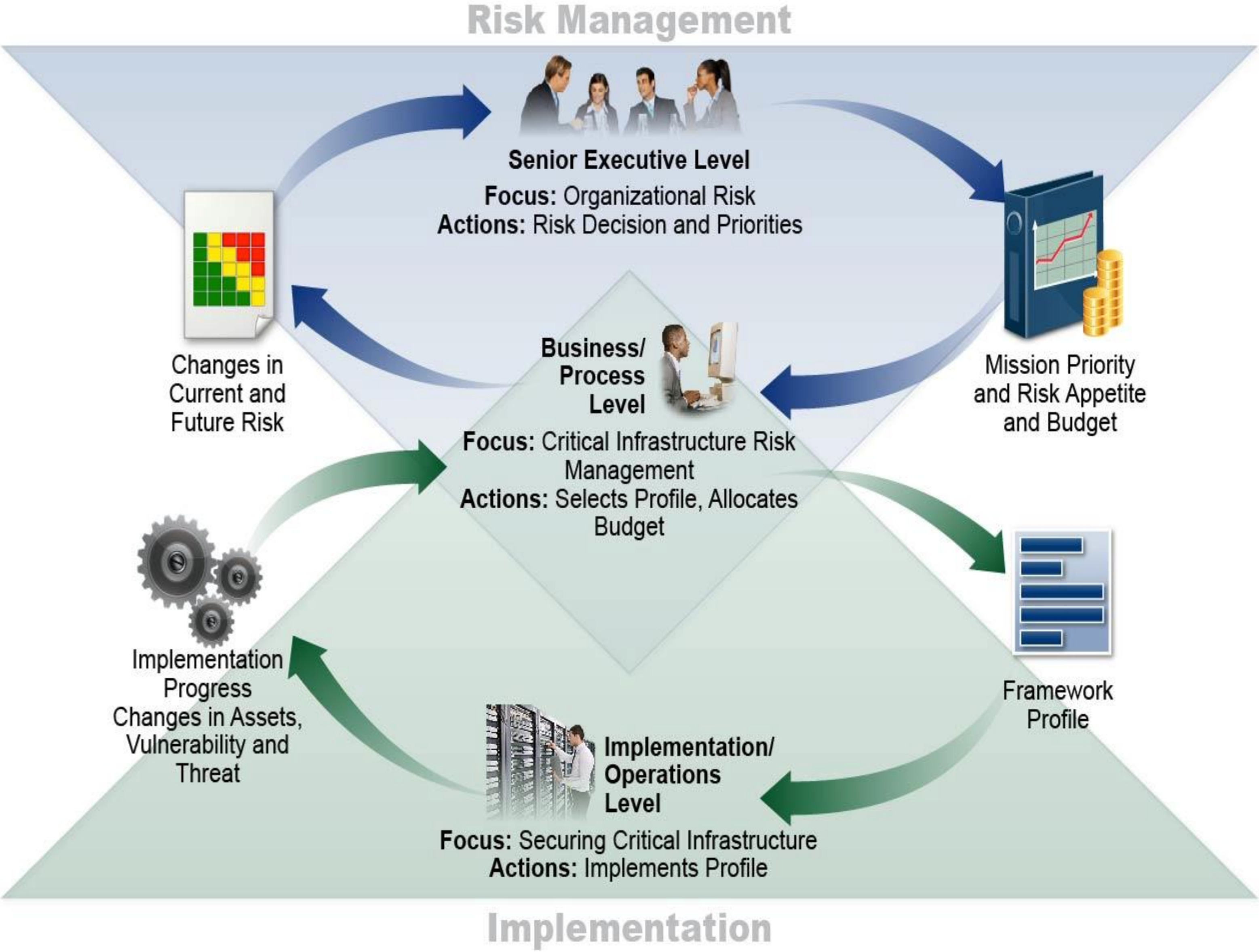
Cybersecurity Framework Component

Ways to think about a Profile:

Identify
Protect
Detect
Respond
Recover

- A customization of the Core for a given sector, subsector, or organization.
- A fusion of business/mission logic and cybersecurity outcomes.
- An alignment of cybersecurity requirements with operational methodologies.
- A basis for assessment and expressing target state.
- A decision support tool for cybersecurity risk. management

Supporting Risk Management with Framework


Risk Management
Senior Executive Level
Focus: Organizational Risk
Actions: Risk Decision and Priorities
Changes in Current and Future Risk
Mission Priority and Risk Appetite and Budget
Business/ Process Level
Focus: Critical Infrastructure Risk Management
Actions: Selects Profile, Allocates Budget
Implementation Progress Changes in Assets, Vulnerability and Threat
Framework Profile
Implementation/ Operations Level
Focus: Securing Critical Infrastructure
Actions: Implements Profile
Implementation

Framework 7-Step Process

- Step 1: Prioritize and Scope
- Step 2: Orient
- Step 3: Create a Current Profile
- Step 4: Conduct a Risk Assessment
- Step 5: Create a Target Profile
- Step 6: Determine, Analyze, and Prioritize Gaps
- Step 7: Implementation Action Plan

Key Attributes

It’s a framework, not a prescriptive standard

- Provides a **common language** and systematic methodology for managing cyber risk.
- Is meant to be adapted.
- Does not tell an organization *how* much cyber risk is tolerable, nor provide “the one and only” formula for cybersecurity.
- Enable best practices to become standard practices for everyone via common lexicon to enable action across diverse stakeholders.

It’s voluntary

It’s a living document

- It is intended to be updated as stakeholders learn from implementation, and as technology and risks change…more later.
- That’s one reason why the Framework focuses on questions an organization needs to ask itself to manage its risk. While practices, technology, and standards will change over time—principles will not.

Examples of Framework Industry Resources

www.nist.gov/cyberframework/industry-resources

Italy's National Framework for Cybersecurity

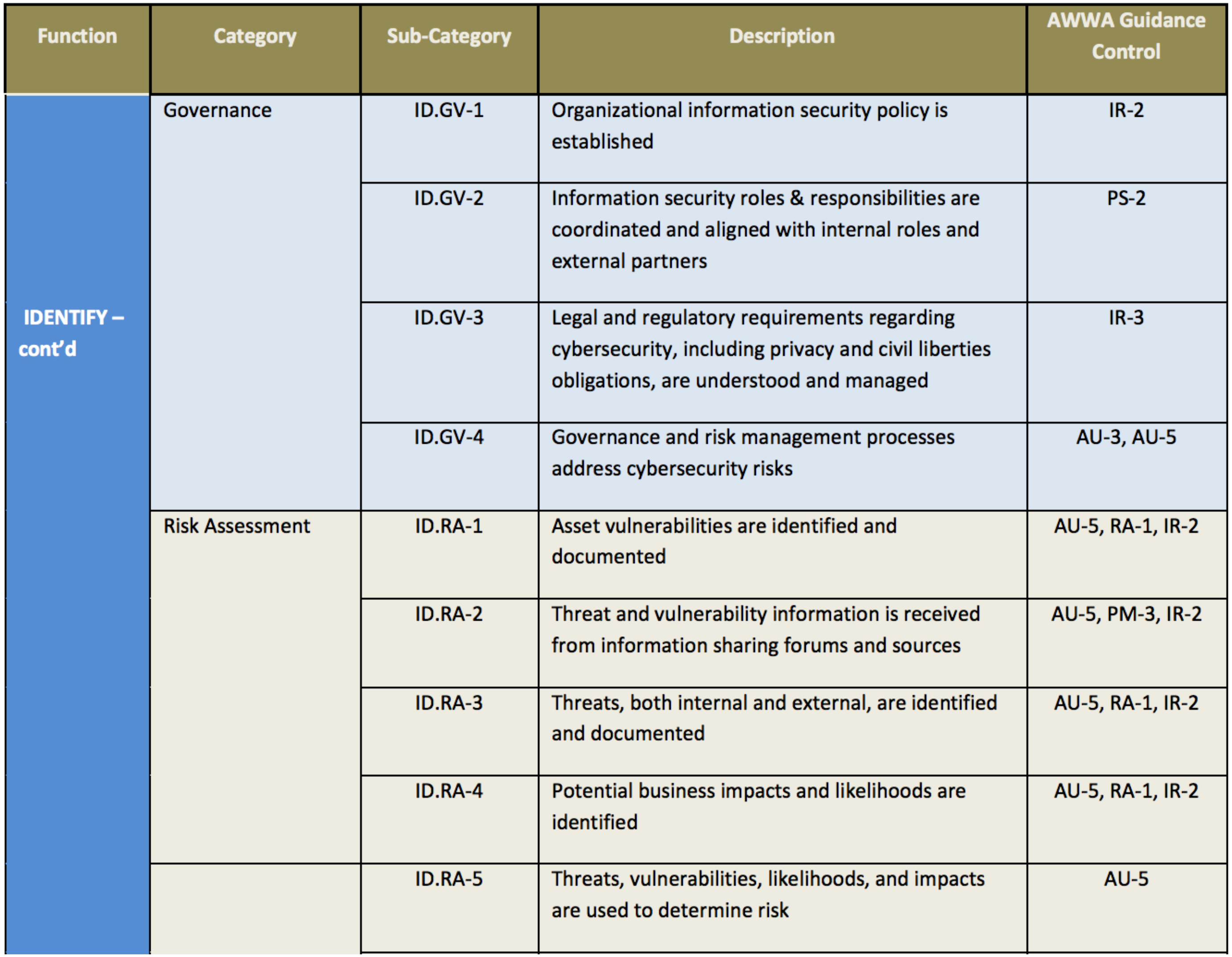
American Water Works Association's *Process Control System Security Guidance for the Water Sector*

The Cybersecurity Framework in Action: An Intel Use Case

Cybersecurity Risk Management and Best Practices Working Group 4: Final Report

Energy Sector Cybersecurity Framework Implementation Guidance

American Water Works' Profile



Function	Category	Sub-Category	Description	AWWA Guidance Control
IDENTIFY – cont'd	Governance	ID.GV-1	Organizational information security policy is established	IR-2
		ID.GV-2	Information security roles & responsibilities are coordinated and aligned with internal roles and external partners	PS-2
		ID.GV-3	Legal and regulatory requirements regarding cybersecurity, including privacy and civil liberties obligations, are understood and managed	IR-3
		ID.GV-4	Governance and risk management processes address cybersecurity risks	AU-3, AU-5
	Risk Assessment	ID.RA-1	Asset vulnerabilities are identified and documented	AU-5, RA-1, IR-2
		ID.RA-2	Threat and vulnerability information is received from information sharing forums and sources	AU-5, PM-3, IR-2
		ID.RA-3	Threats, both internal and external, are identified and documented	AU-5, RA-1, IR-2
		ID.RA-4	Potential business impacts and likelihoods are identified	AU-5, RA-1, IR-2
		ID.RA-5	Threats, vulnerabilities, likelihoods, and impacts are used to determine risk	AU-5

Examples of State & Local Use

Texas, Department of Information Resources

- Aligned Agency Security Plans with Framework
- Aligned Product and Service Vendor Requirements with Framework

North Dakota, Information Technology Department

- Allocated Roles & Responsibilities using Framework
- Adopted the Framework into their Security Operation Strategy

Houston, Greater Houston Partnership

- Integrated Framework into their Cybersecurity Guide
- Offer On-Line Framework Self-Assessment

National Association of State CIOs

- 2 out of 3 CIOs from the 2015 NASCIO Awards cited Framework as a part of their award-winning strategy

New Jersey

- Developed a cybersecurity framework that aligns controls and procedures with Framework

NIST Manufacturing Profile

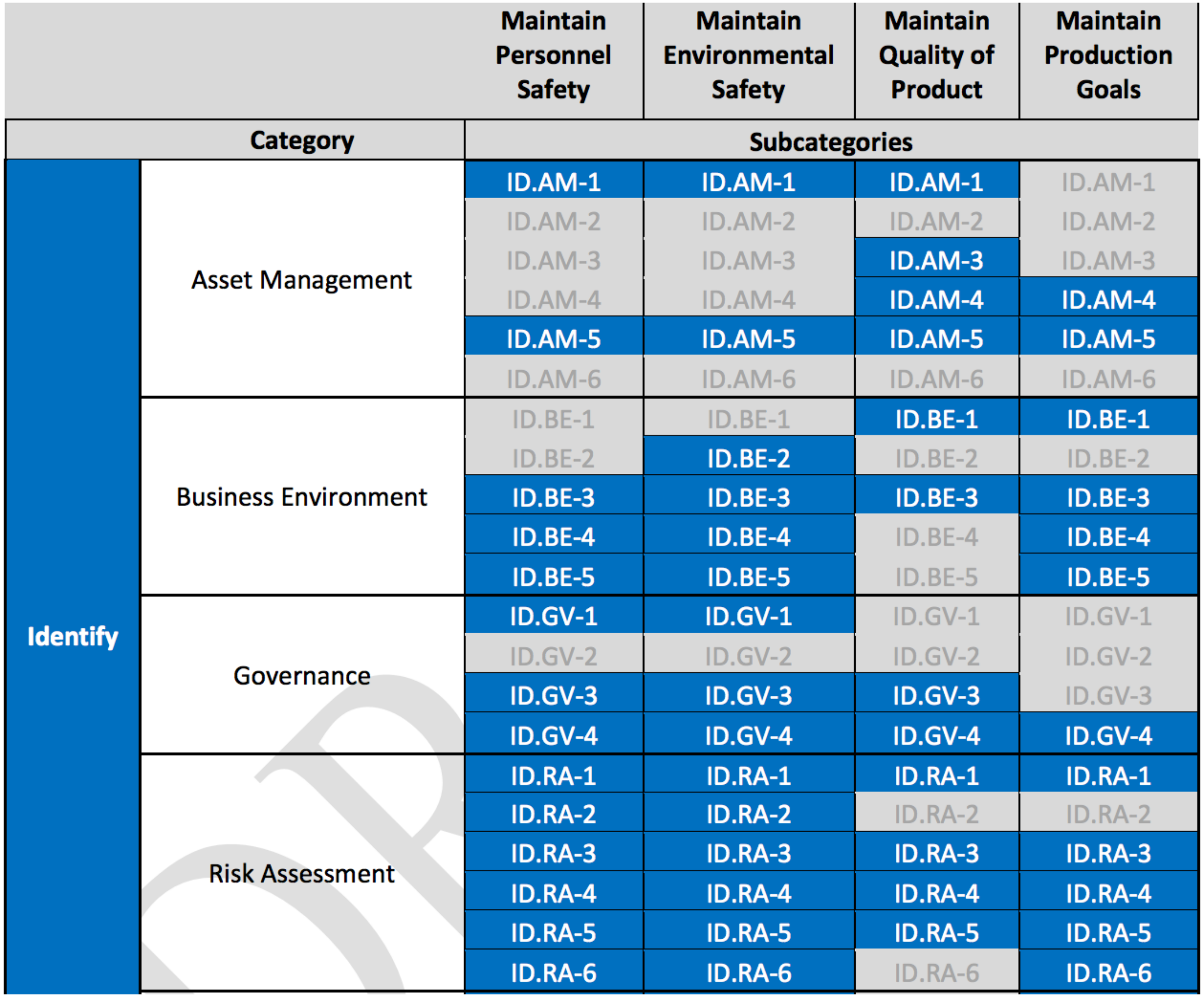
NIST Discrete Manufacturing Cybersecurity Framework Profile

Utilizing CSF Informative References to create tailored language for the manufacturing sector

- NIST SP 800-53
- NIST SP 800-82
- ISA / IEC 62443

www.tiger-global.co.uk

NIST Manufacturing Profile In Action



		Maintain Personnel Safety	Maintain Environmental Safety	Maintain Quality of Product	Maintain Production Goals
Category		Subcategories			
Identify	Asset Management	**ID.AM-1**	**ID.AM-1**	**ID.AM-1**	ID.AM-1
		ID.AM-2	ID.AM-2	ID.AM-2	ID.AM-2
		ID.AM-3	ID.AM-3	**ID.AM-3**	ID.AM-3
		ID.AM-4	ID.AM-4	**ID.AM-4**	**ID.AM-4**
		ID.AM-5	**ID.AM-5**	**ID.AM-5**	**ID.AM-5**
		ID.AM-6	ID.AM-6	ID.AM-6	ID.AM-6
	Business Environment	ID.BE-1	ID.BE-1	**ID.BE-1**	**ID.BE-1**
		ID.BE-2	**ID.BE-2**	ID.BE-2	ID.BE-2
		ID.BE-3	**ID.BE-3**	**ID.BE-3**	**ID.BE-3**
		ID.BE-4	**ID.BE-4**	ID.BE-4	**ID.BE-4**
		ID.BE-5	**ID.BE-5**	ID.BE-5	**ID.BE-5**
	Governance	**ID.GV-1**	**ID.GV-1**	ID.GV-1	ID.GV-1
		ID.GV-2	ID.GV-2	ID.GV-2	ID.GV-2
		ID.GV-3	**ID.GV-3**	**ID.GV-3**	ID.GV-3
		ID.GV-4	**ID.GV-4**	**ID.GV-4**	**ID.GV-4**
	Risk Assessment	**ID.RA-1**	**ID.RA-1**	**ID.RA-1**	**ID.RA-1**
		ID.RA-2	**ID.RA-2**	ID.RA-2	ID.RA-2
		ID.RA-3	**ID.RA-3**	**ID.RA-3**	**ID.RA-3**
		ID.RA-4	**ID.RA-4**	**ID.RA-4**	**ID.RA-4**
		ID.RA-5	**ID.RA-5**	**ID.RA-5**	**ID.RA-5**
		ID.RA-6	**ID.RA-6**	ID.RA-6	**ID.RA-6**

Application to Elections

- No common way to express cybersecurity posture of a jurisdiction
- The elections community could create a CSF profile
  - For large, medium, and small jurisdictions
- Focus on technology **and** procedures
- Who would lead? NASED, EAC, NIST?
- Need broad community involvement

Questions?

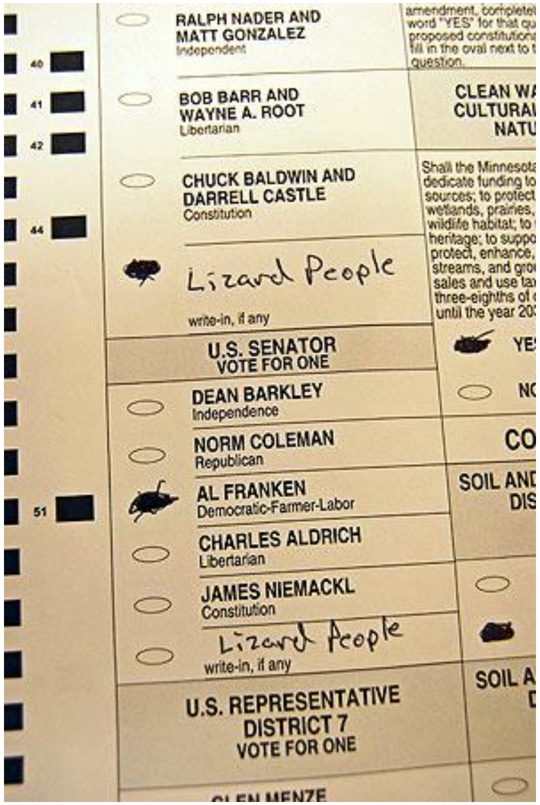
Where to Learn More and Stay Current

Framework for Improving Critical Infrastructure Cybersecurity and related news, information:

www.nist.gov/cyberframework

Additional cybersecurity resources: http://csrc.nist.gov/

Questions, comments, ideas: cyberframework@nist.gov



○ RALPH NADER AND
MATT GONZALEZ
Independent

○ BOB BARR AND
WAYNE A. ROOT
Libertarian

○ CHUCK BALDWIN AND
DARRELL CASTLE
Constitution

● Lizard People
write-in, if any

U.S. SENATOR
VOTE FOR ONE

○ DEAN BARKLEY
Independence

○ NORM COLEMAN
Republican

● AL FRANKEN
Democratic-Farmer-Labor

○ CHARLES ALDRICH
Libertarian

○ JAMES NIEMACKL
Constitution

○ Lizard People
write-in, if any

U.S. REPRESENTATIVE
DISTRICT 7
VOTE FOR ONE

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