A First Look at Governments' Enterprise Security Guidance

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FS-ISAC

National Cyber Security Centre

a part of GCHQ

इलेक्ट्रॉनिकी एवं
सूचना प्रौद्योगिकी मंत्रालय
MINISTRY OF
ELECTRONICS AND INFORMATION TECHNOLOGY

Bundesamt
für Sicherheit in der
Informationstechnik

NSM

CSA
SINGAPORE

Australian Government

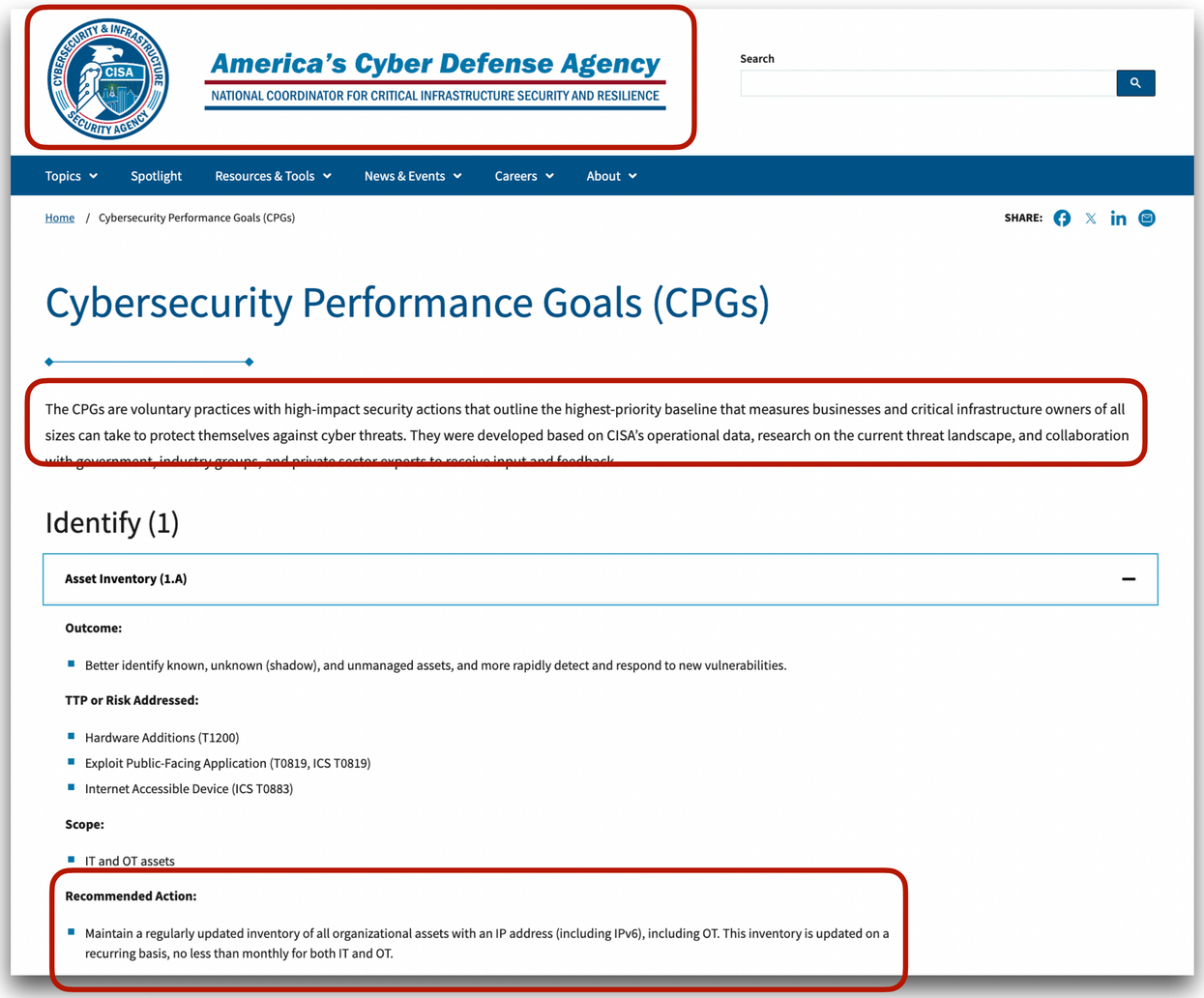
Australian Signals Directorate

Case study: CISA CPGs

US government source

Designed for businesses

List of security controls



What is in this government-authored security guidance for companies?

Research Questions

RQ1: Which governments make **available** security guidance, and how is it scoped and presented?

RQ2: What content is **covered** as essential security guidance for companies, and in what level of depth?

RQ3: How **consistent** are recommended security controls, and do we observe any direct contradictions?

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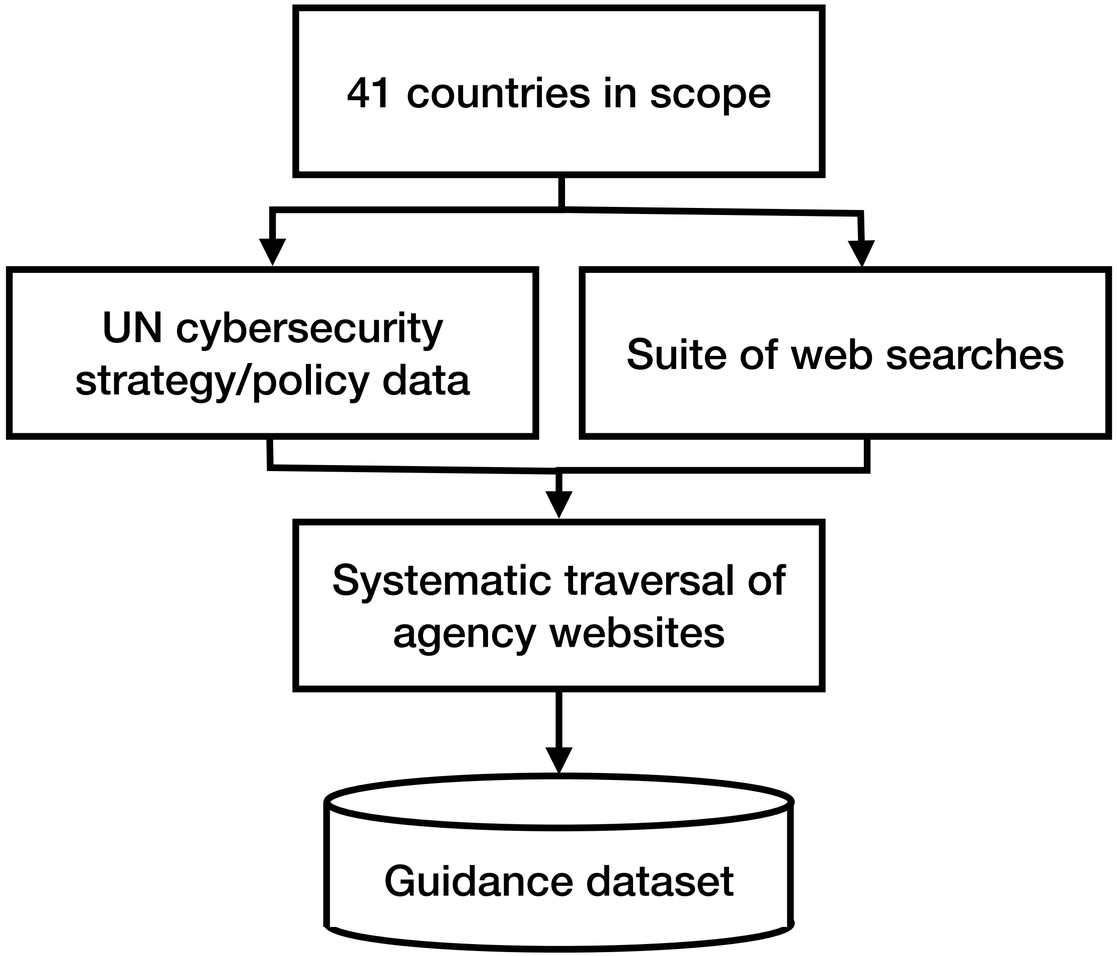
Searching for guidance documents



Large volume of government guidance

Every searched country except Russia published resources; many in the dozens

37 / 41 countries publish general-purpose doc; most countries had multiple

US has 18 general-purpose docs from 4 separate agencies; 36 agencies total

The zoo of guidance resources

Audience-Focused	Threat-focused
Sector-specific	Threat model-specific
Size-specific	Mitigation-specific
Technology-specific	Time-sensitive

The zoo of guidance resources

Audience-Focused

Sector-specific

Size-specific

Technology-specific

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Government and defense (25)
Telecoms and ISPs (12)

Lawyers (UK)
E-sports (Luxembourg)
Chicken coops (Israel)

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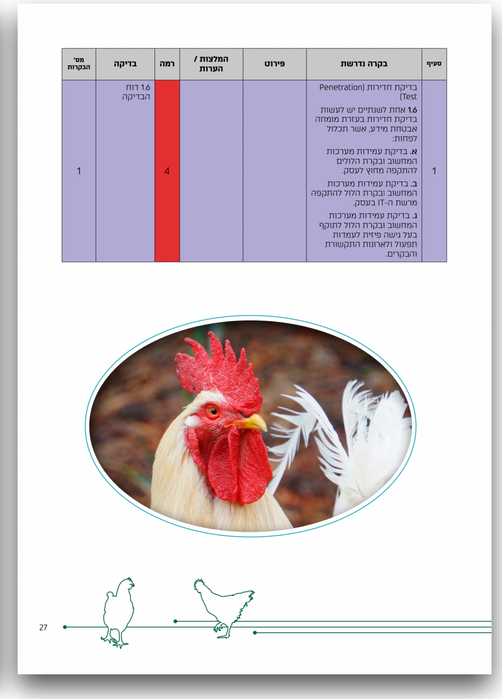

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Mainly SMBs

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Mainly SMBs

Cloud (27)
Network appliances (23)

Dashcams (Malaysia)
Hearing aids (Norway)

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(D)DoS (24)
Ransomware (22)

Drone attacks (Spain)
Malicious e-books (Lithuania)

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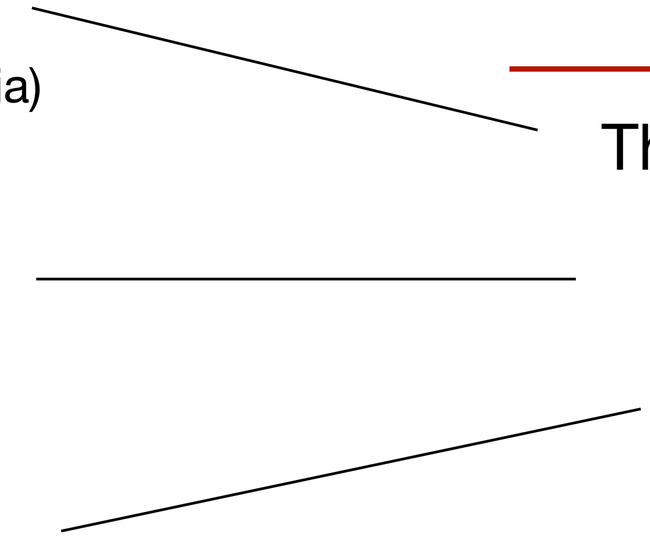
Threat intel and CVEs



Threat-focused

Threat model-specific

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Time-sensitive

The zoo of guidance resources

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Most countries have most of these types of guidance

Governments publish massive amounts of guidance resources with wildly varying scope and presentation choices.

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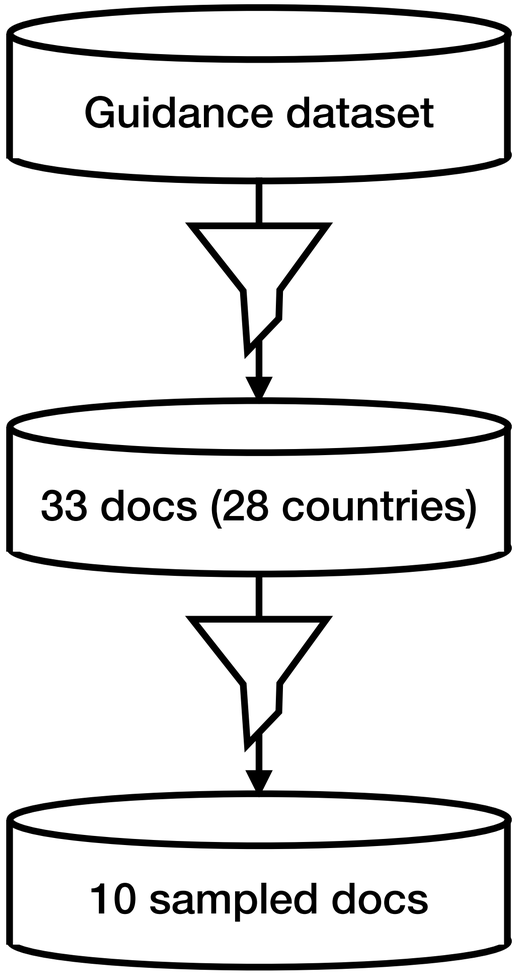
Choosing documents for analysis



General-purpose documents
Framed as “essential” controls

Geographically-distributed sample
Spectrum of document lengths

High-priority security interventions
according to governments globally

Building a content analysis framework

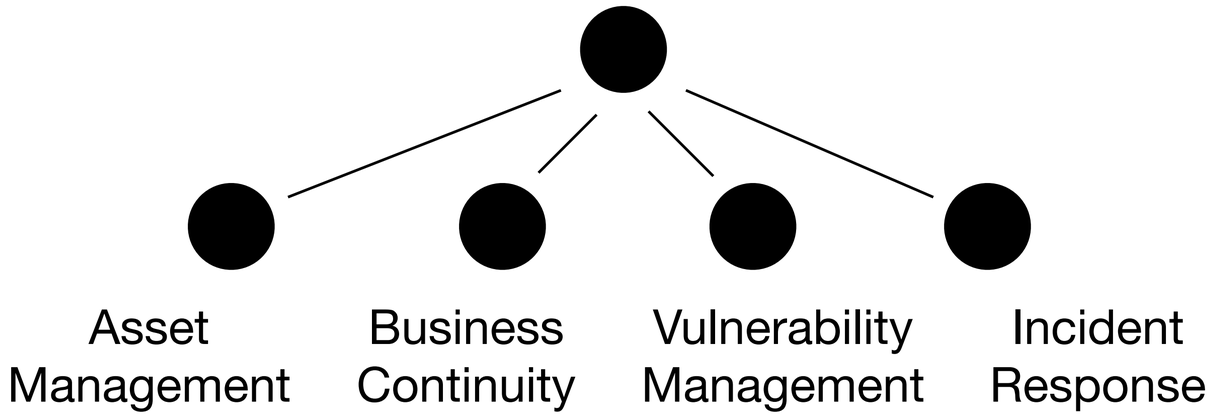
Common controls frameworks: industry-made tools to help companies efficiently demonstrate adherence to popular security standards

Apply qualitative methods to adapt and extend existing frameworks

End product: a reasonably *comprehensive* and *hierarchical* content analysis framework

Taxonomy of guidance content

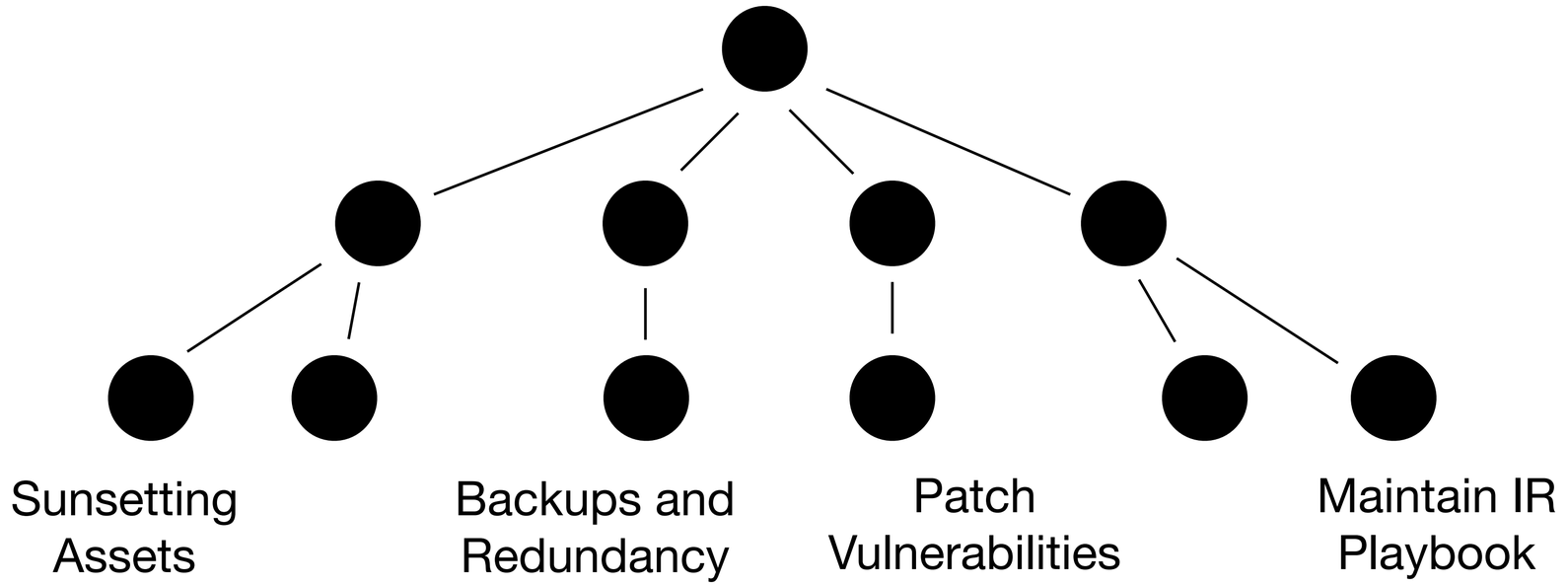
Themes



Taxonomy of guidance content

Themes

Subthemes



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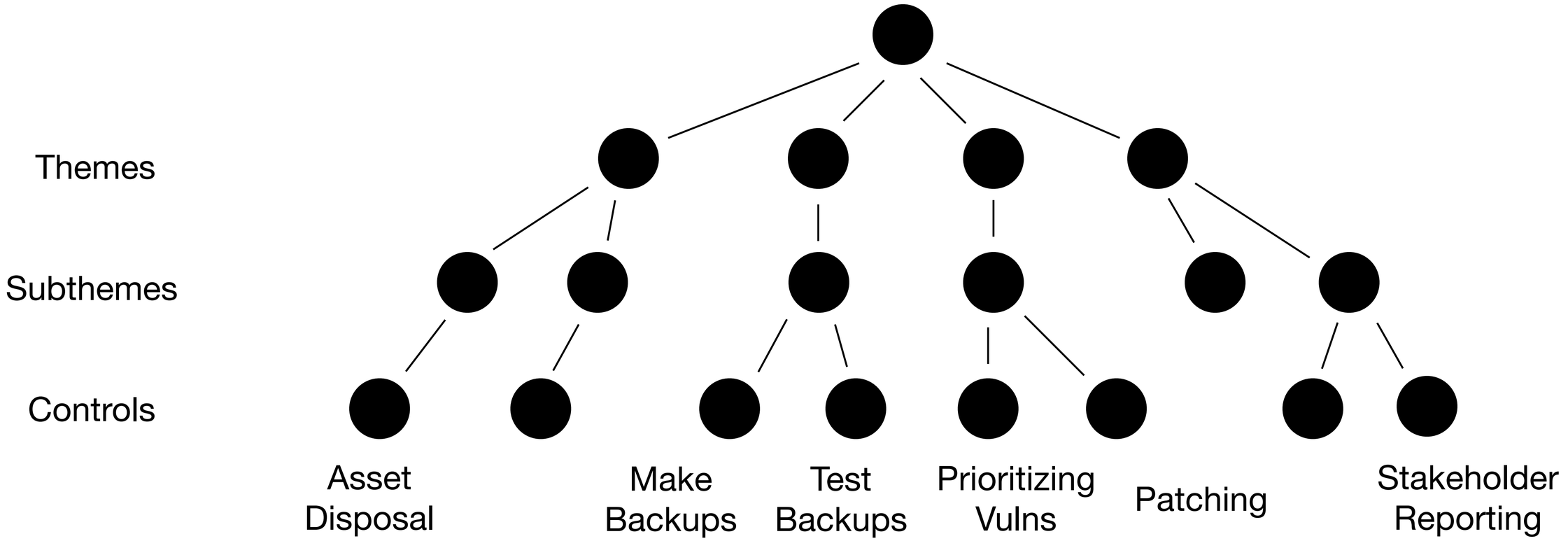

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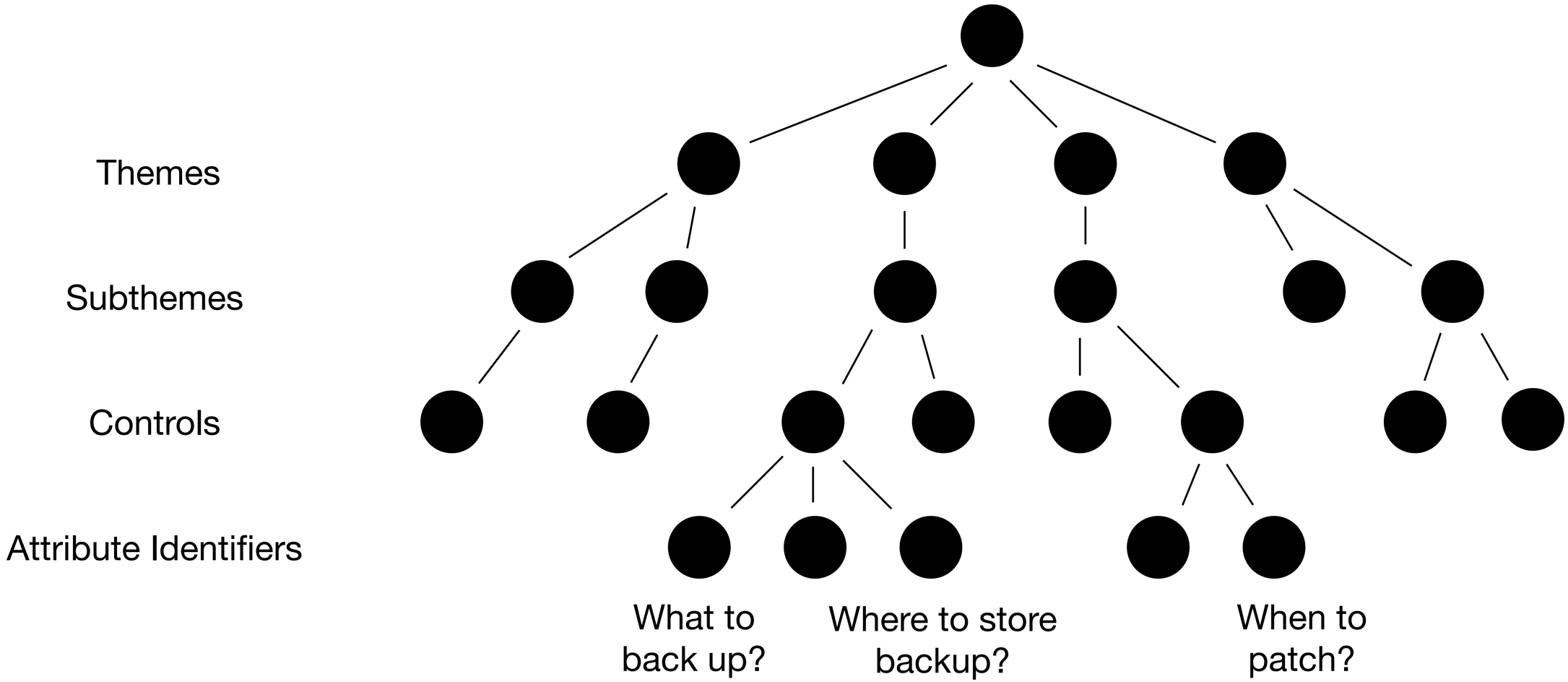

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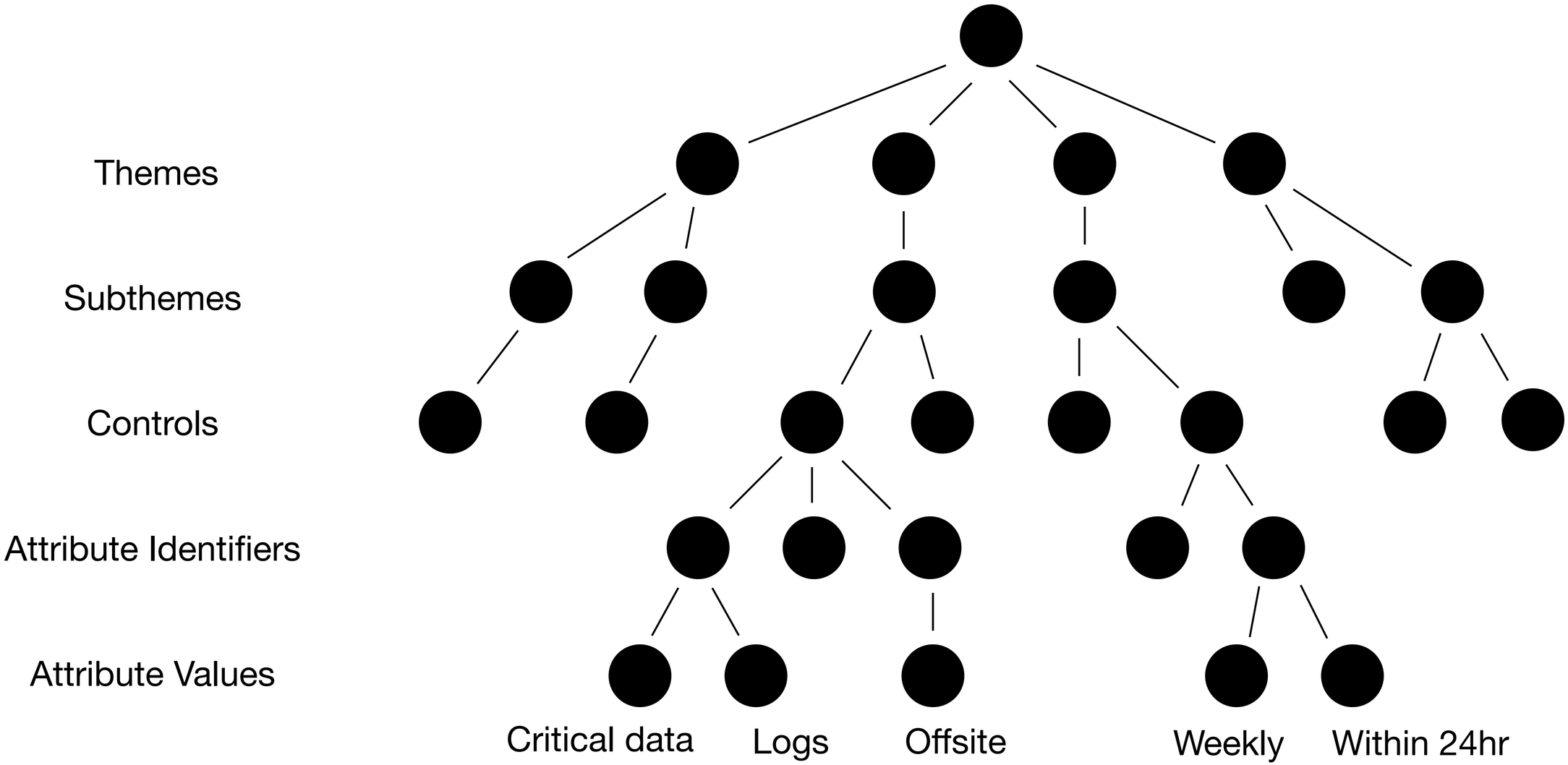


Taxonomy of guidance content

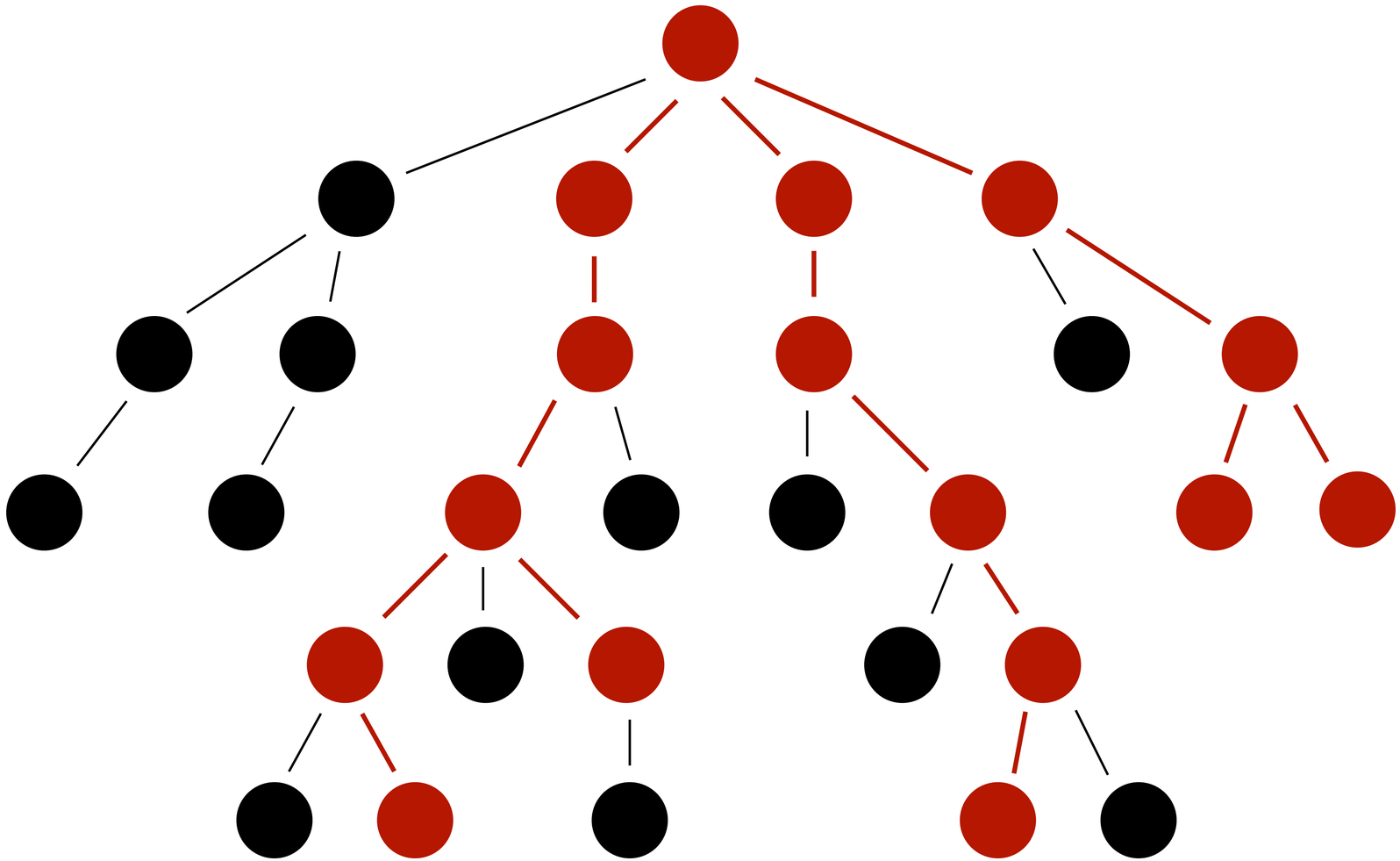
Themes

Subthemes

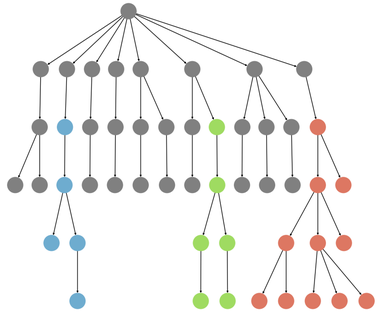
Controls

Attribute Identifiers

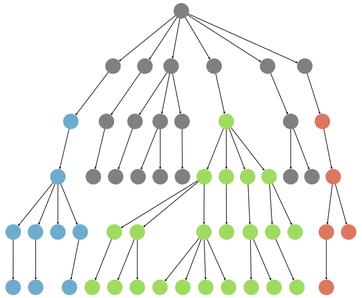
Attribute Values



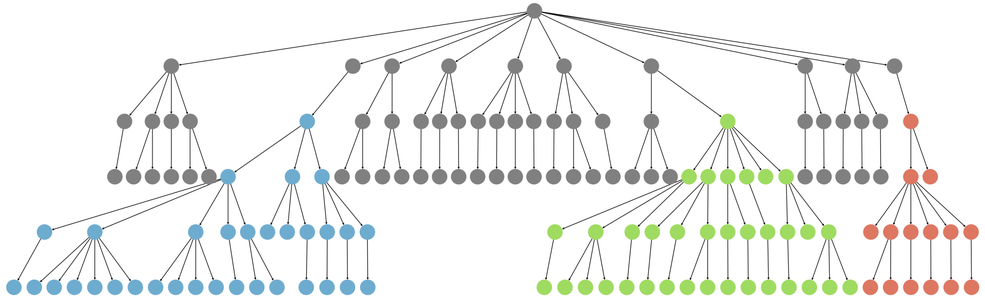
Content varies in breadth and depth



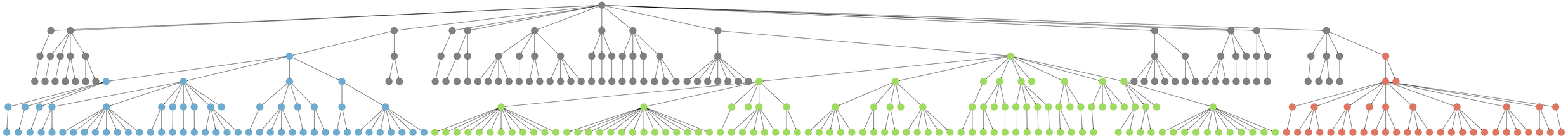
Israel



Ukraine

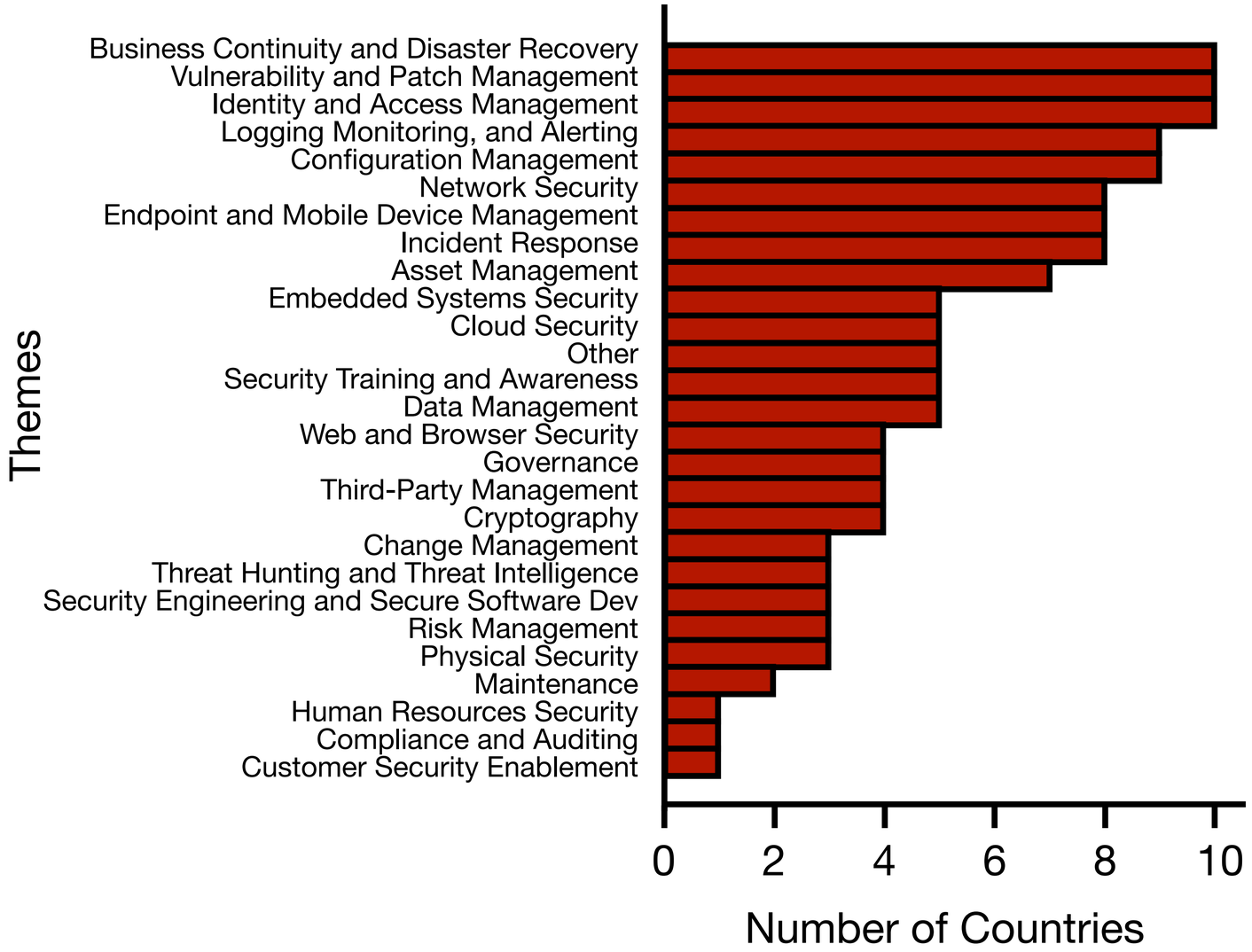


Singapore



New Zealand

Mixed coverage of most themes



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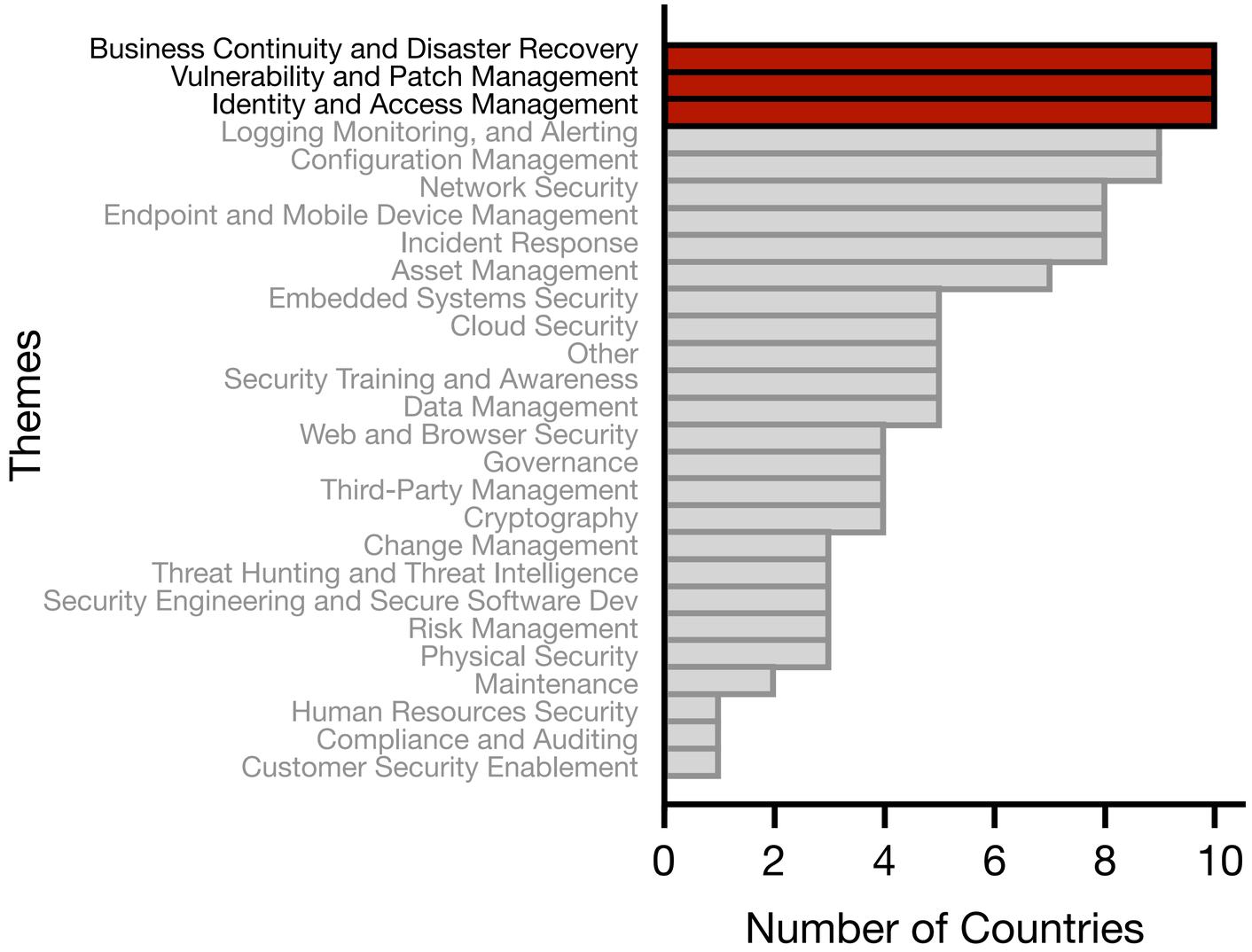

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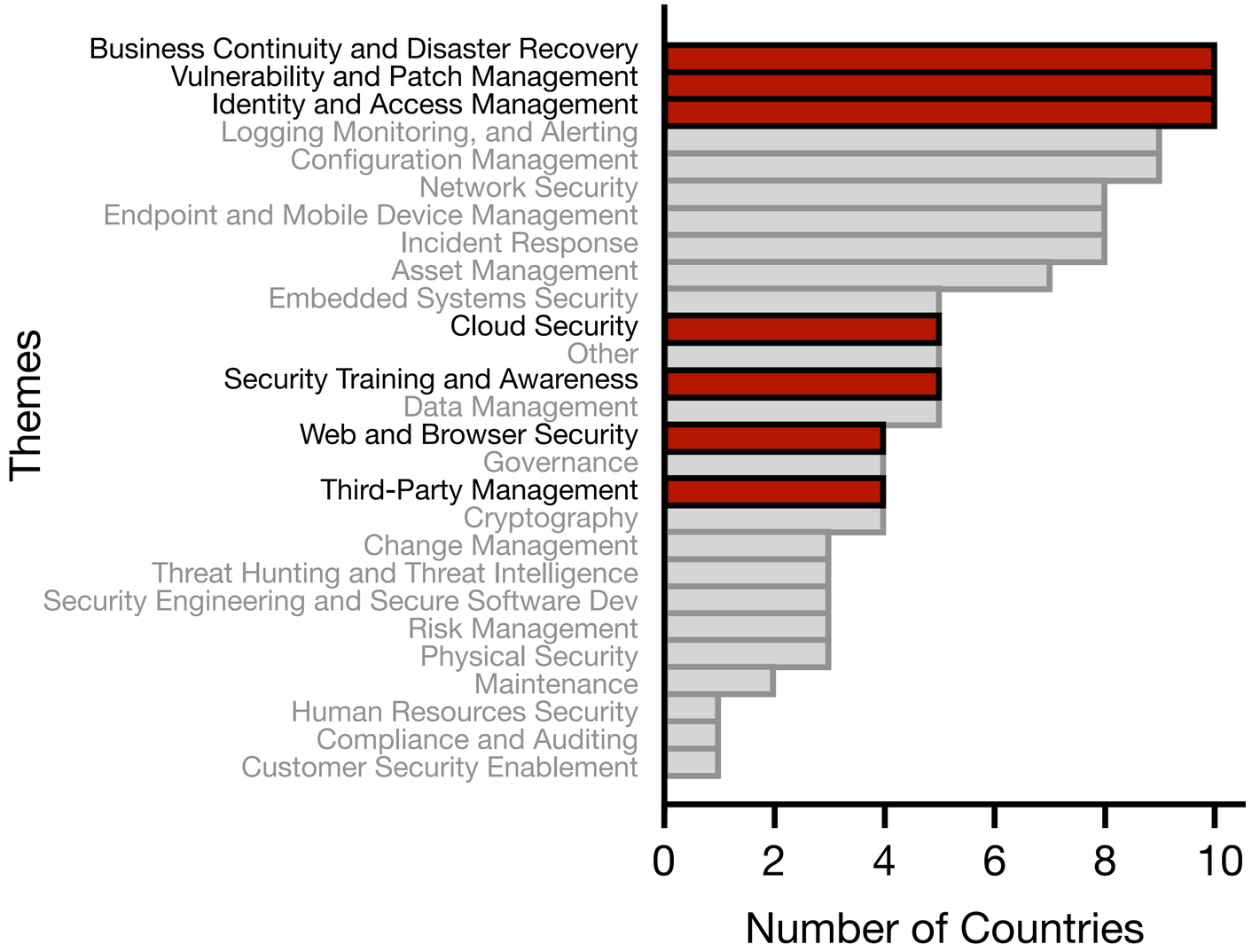


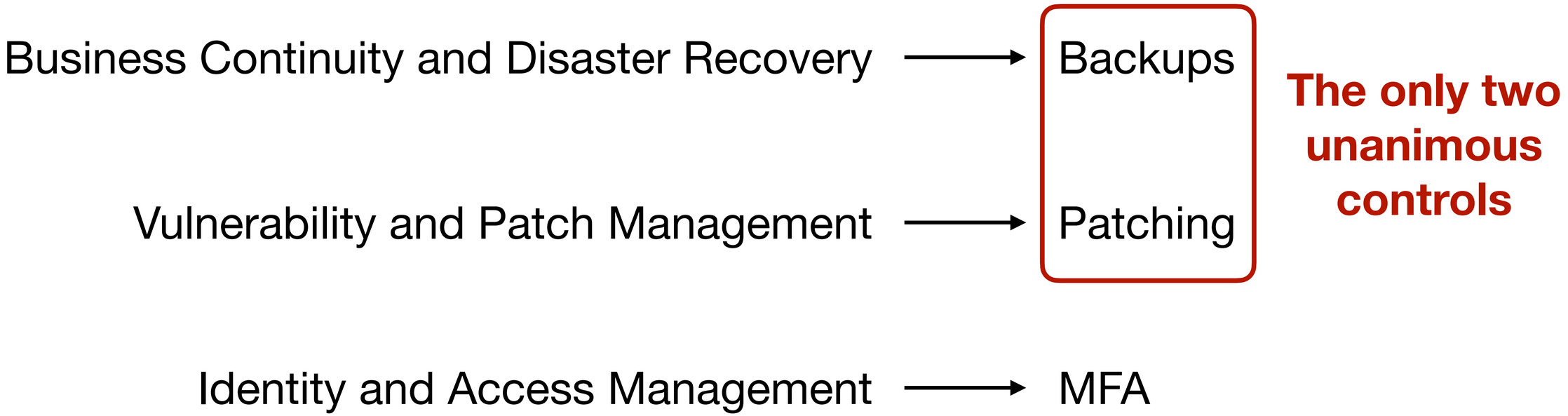
Few unanimous recommendations

Business Continuity and Disaster Recovery ⟶ Backups

Vulnerability and Patch Management ⟶ Patching

Identity and Access Management ⟶ MFA

Few unanimous recommendations



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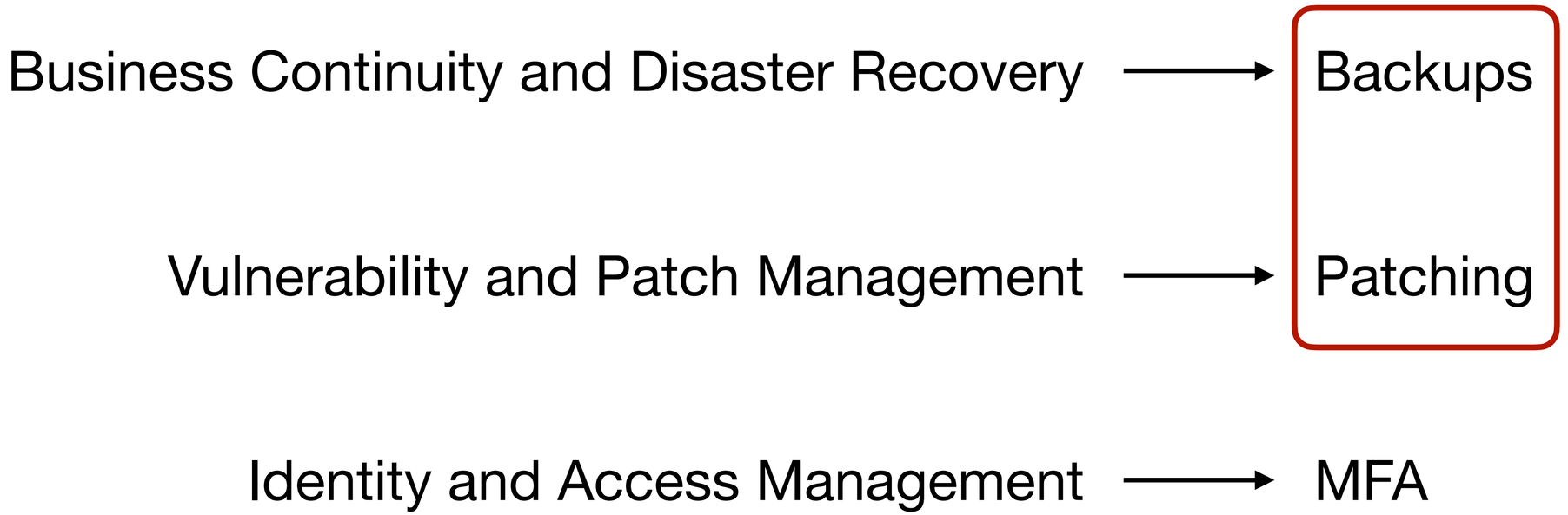
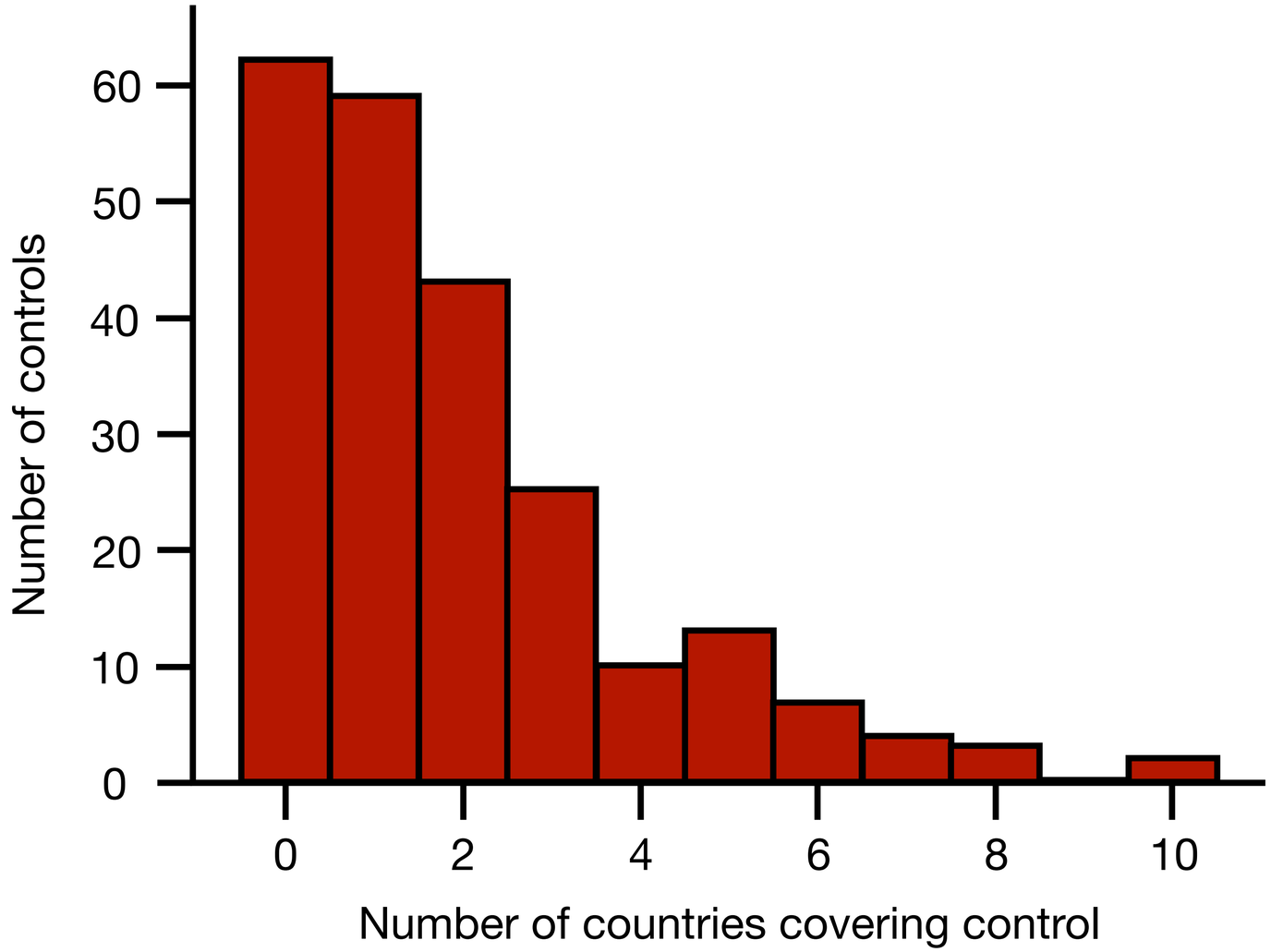


The only two unanimous controls

Only 5 / 166 (3%) of controls are recommended by at least 75% of countries

Little consensus on control inclusion



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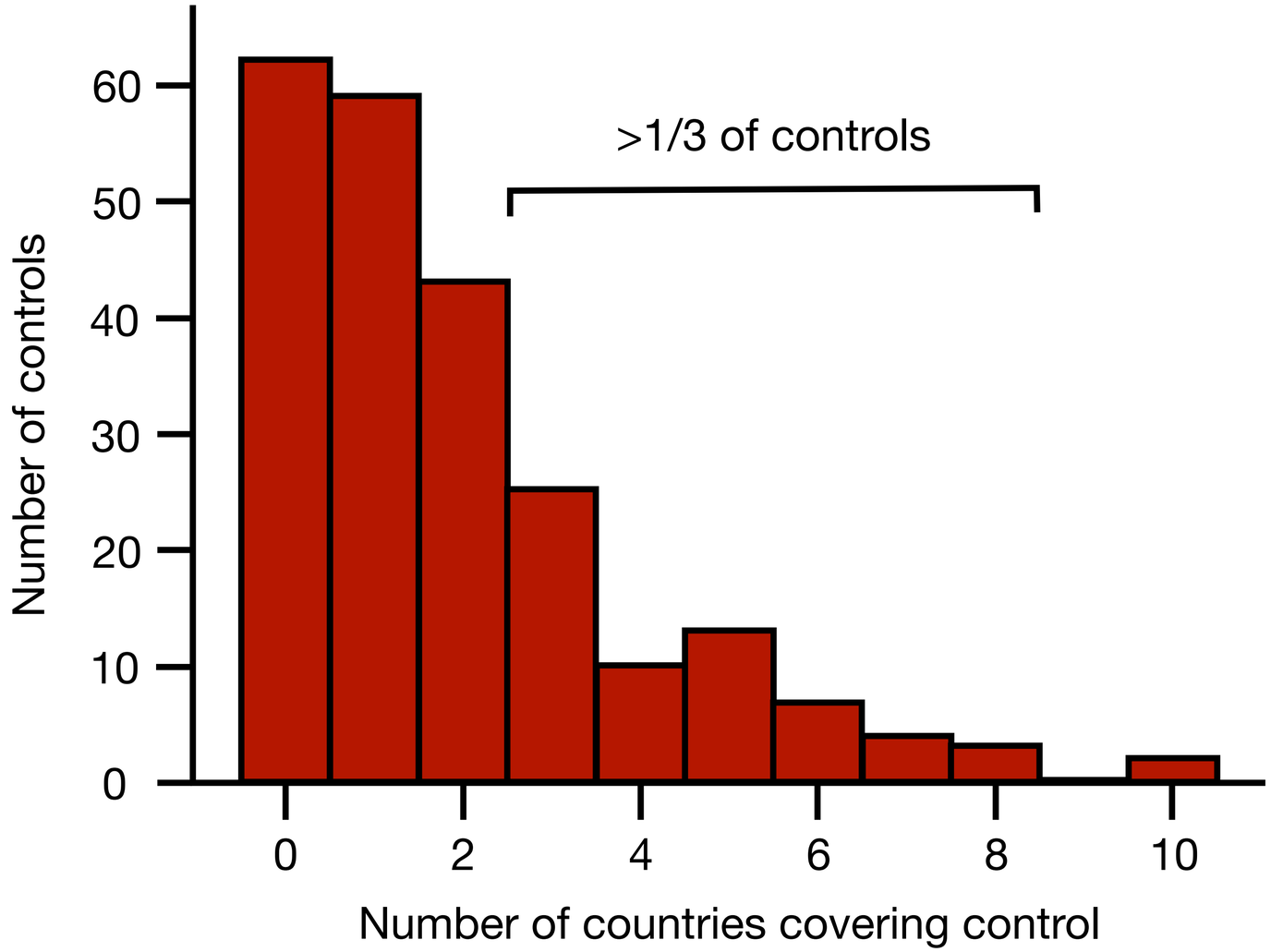

Rare guidance controls

"Microsoft Office's **list of trusted publishers is validated** on an annual or more frequent basis" — Australia

"Details that are not essential to the functioning of the organization's system **should not be disclosed outside the organization**, unless there is a specific business need" — Israel

"Organizations sponsor at least one **'pizza party'** or equivalent social gathering per year that is focused on strengthening working relationships **between IT and OT security personnel**" — US

Countries differ more than they agree

Most countries differ pairwise by **more than half** their total content

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UK

US

Five Eyes members

Australia

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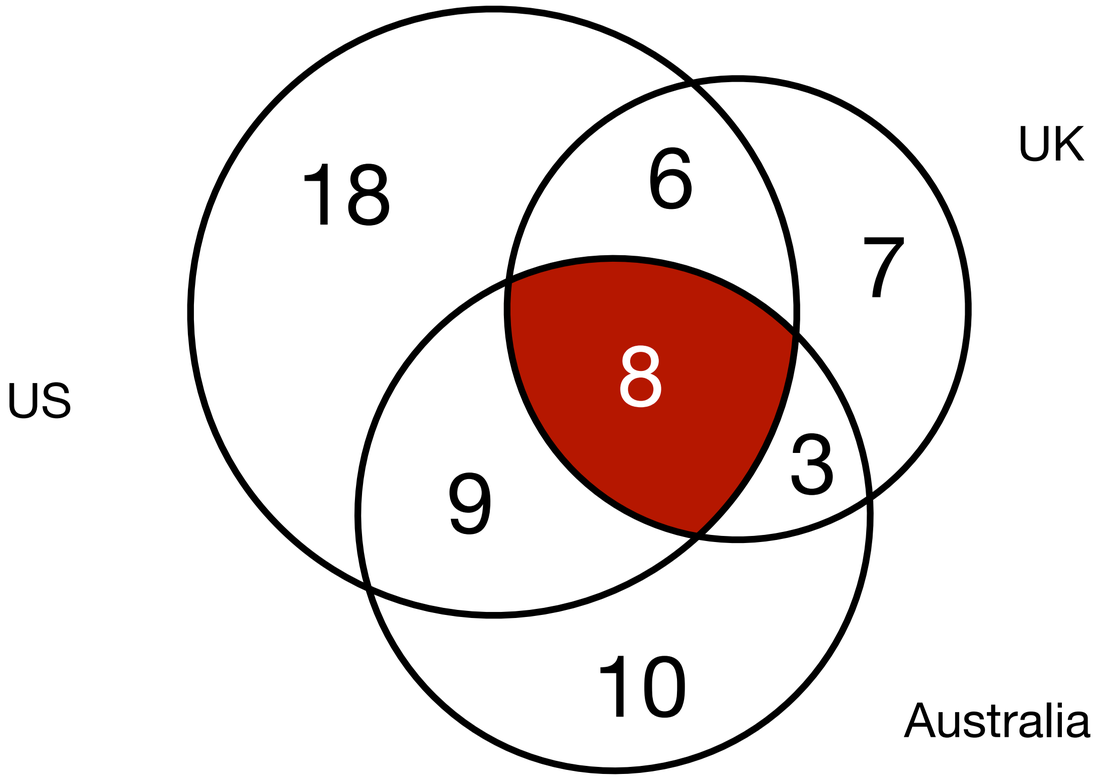
Nearly as much **disagreement among close allies**:

only 8 of 61 (**13%**) recommendations in common



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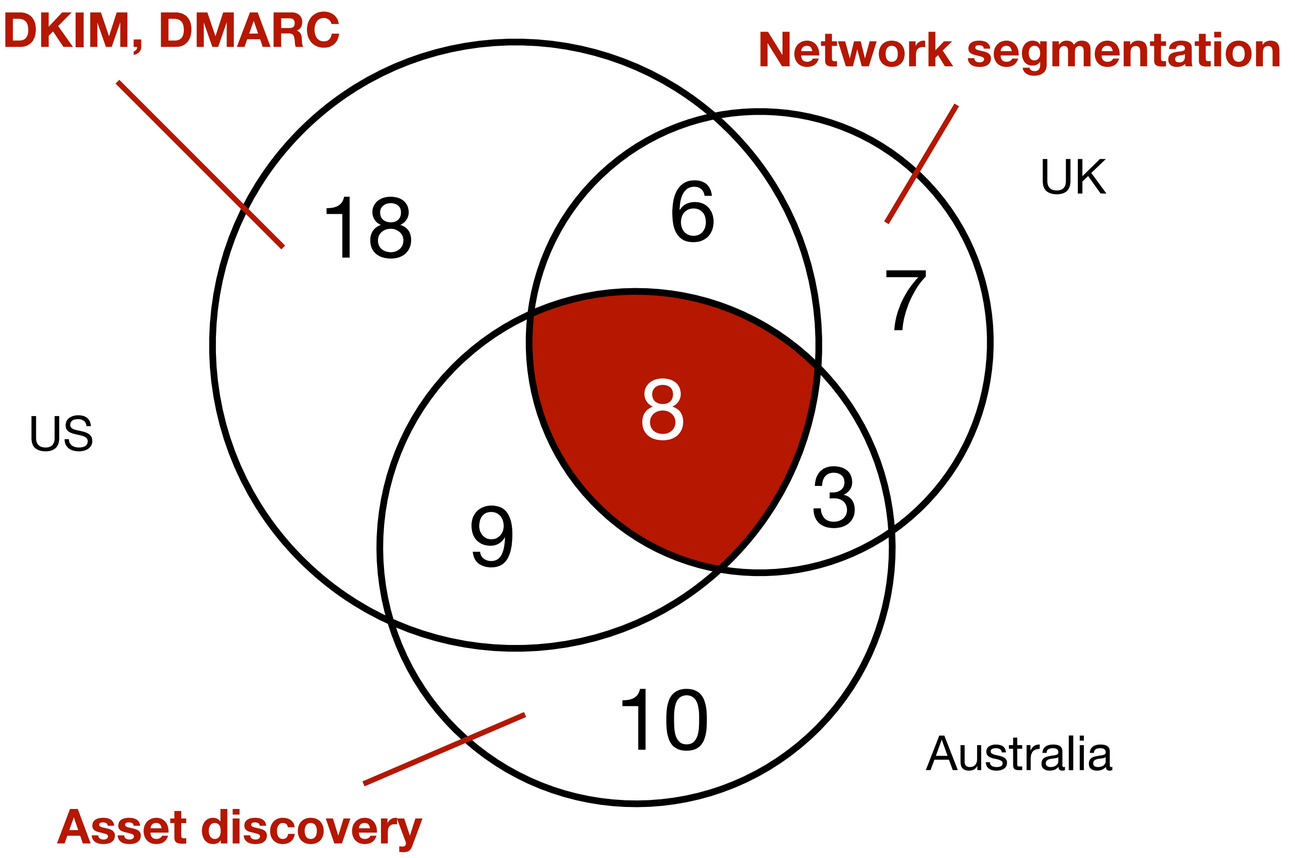

Countries do not agree on what should constitute “essential” security advice for companies.

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To specify or not to specify?

"A comprehensive backup of **all assets**" — Israel

"the software used is updated **periodically**" — Egypt

"Stored information […] **includes at a minimum**: configurations, roles, programmable controller (PLC) logic, engineering drawings, and tools" — US

"Patches […] in office productivity suites, web browsers and their extensions, email clients, PDF software, and security products are applied **within two weeks** of release." — Australia

Some have a long tail of unique details

“Backup administrator accounts are prevented from modifying and deleting backups during their retention period” — Australia

“patching […] at a time that will allow the component to be rebooted without massive disruption” — New Zealand

“manual controls must be tested to ensure that critical functions will remain operable” — Egypt

Direct contradictions between advice

"**Only use the latest** version with the latest security functions" — Norway

"The latest release, or the **previous** release" — Australia

"latest **stable** (non-vulnerable) version" — India

"**contain** letters, numbers and special characters" — Ukraine

"**not enforcing** password complexity requirements" — UK

Countries disagree on what details to describe, and sometimes outright contradict each other.

Rethinking enterprise guidance

- Consensus-driven guidance does not result in consistent body of advice
- High-volume and inconsistent guidance places the burden on practitioners
- Need to design security advice in a more principled, evidence-driven way

Thank you!

Takeaways:

- Governments publish voluminous guidance resources with varying scope
- Countries do not agree on “essential” security advice for companies
- Countries’ guidance sometimes outright contradicts each other

Contact:

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