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HEPR

Health Emergency Preparedness, Response and Resilience

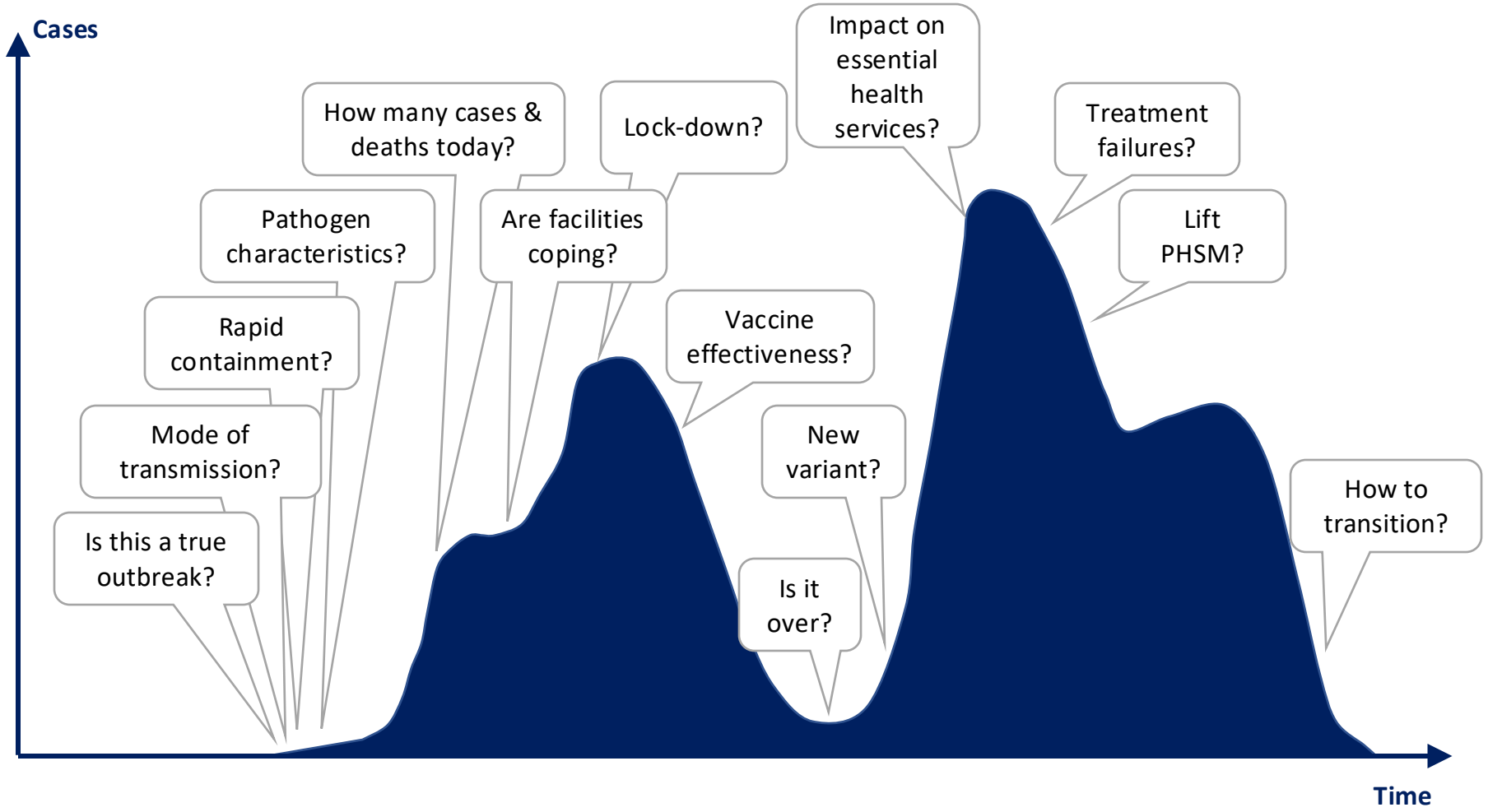
World Health Organization

Collaborative Surveillance

EIOS GTM, 10-12 Dec 2024

Brett Archer, Surveillance Systems Department,
WHO Health Emergencies Programme

Health emergencies demand responses to a complex set of questions which traditional surveillance systems alone cannot fully answer



- **Silos** challenge our ability triangulate multiple sources
- Limited **granularity** (e.g., case-based data) and **contextual info** (e.g., community dynamics)
- Insufficient technical **capacity** to gather, interpret and convey signals from complex data sources in real time

→ not new challenges, but years of investment in surveillance have not satisfactorily resolved them

Figure adapted from M Kato, WHO SEARO

Collaborative Surveillance (CS) is an approach to address this complexity toward a common goal – enhancing PHI & improving evidence for decision making

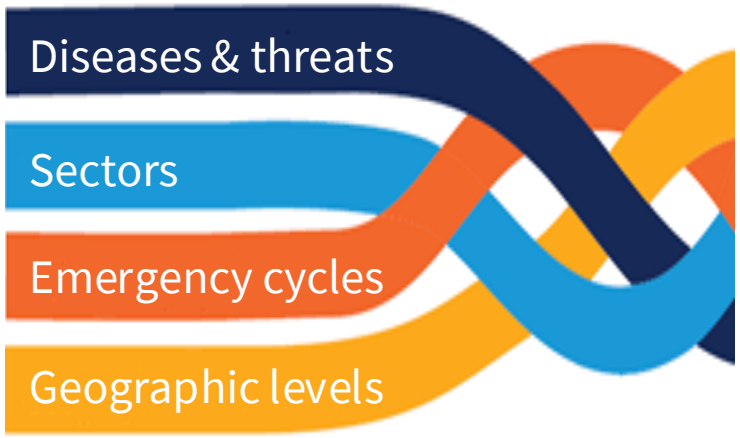
Collaborative Surveillance is defined as…

> Systematic strengthening of **capacity** and **collaboration** among diverse stakeholders, both within & beyond the health sector, with the **ultimate goal of enhancing public health intelligence (PHI) and improving evidence for decision making**

… prioritizing the strengthening three capacity areas

- **1.1** Strengthened national integrated disease, threat and vulnerability surveillance
- **1.2** Increased laboratory capacity for pathogen and genomic surveillance
- **1.3** Collaborative approaches for risk assessment, event detection and response monitoring

…and enhancing collaboration across four dimensions



Source: Defining collaborative surveillance, WHO, 2023

CS represents a new generation of surveillance – seeking to enhance the intersection between systems through collaboration

Illustrative vision of effective collaborative surveillance (elements are non-exhaustive)

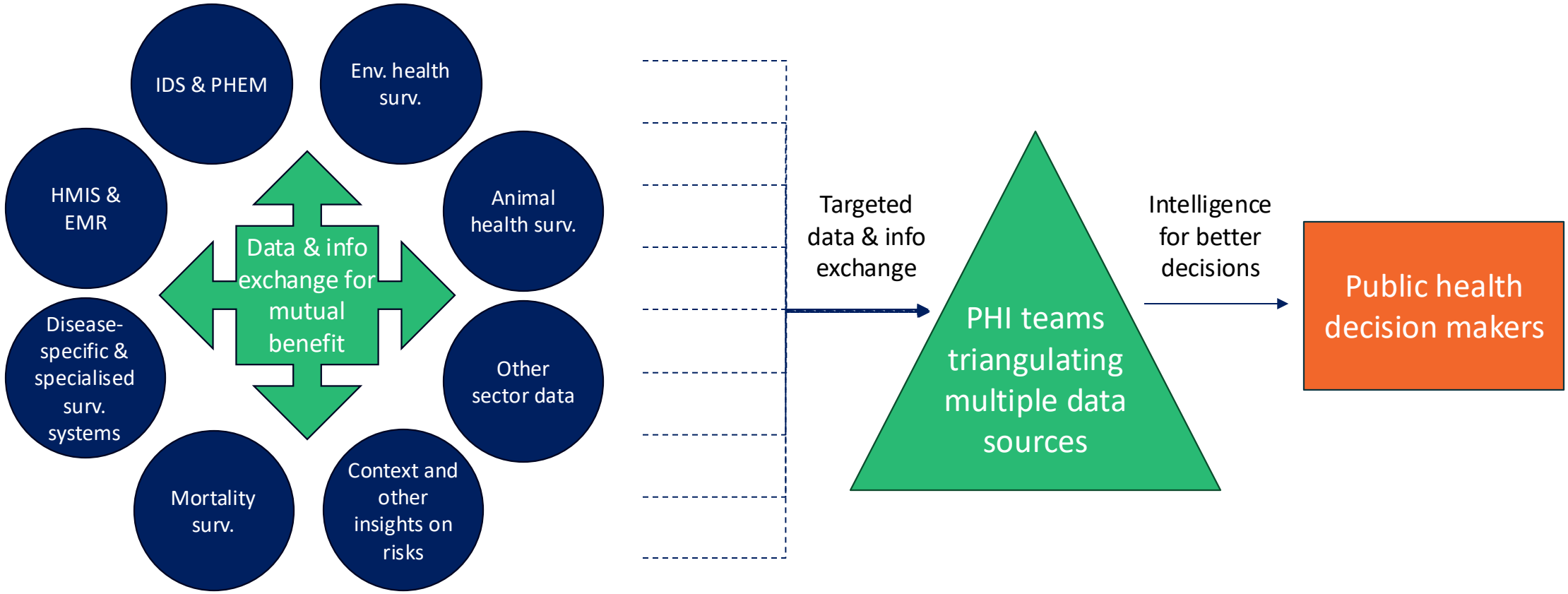


Figure adapted from C Lee, Resolve to Save Lives.
HMIS: Health information management systems, EMR: Electronic medical records, IDS: Integrated disease surveillance, PHEM: Public health emergency management

Collaborative Surveillance implementation

- Activity **across Member States, partners WHO Health Emergencies Programme and beyond**
- Complemented by a multi-workstream programme and taskforce to support countries, regions & partners to build the **enabling environment** for collaboration

Engage — Facilitating roadmaps toward national action planning, garnering support from aligned global actors

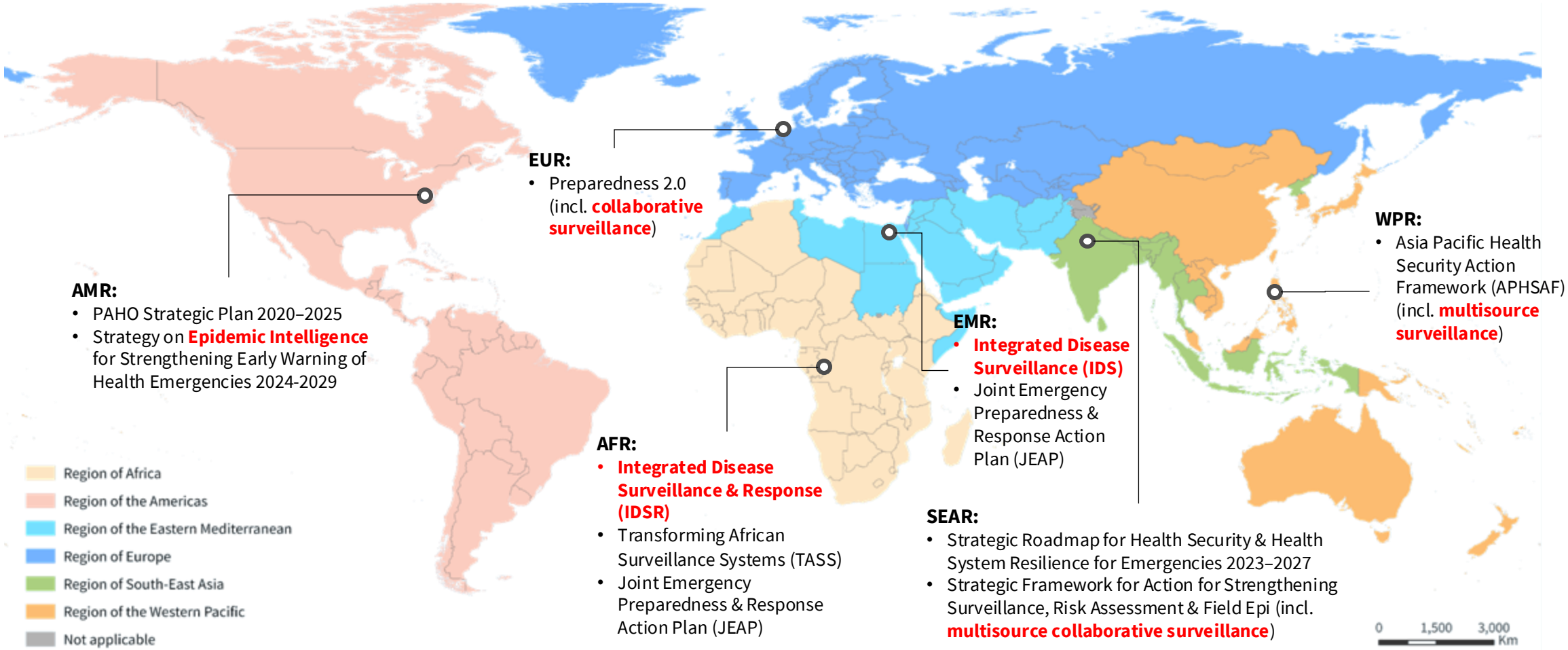
Assess — Providing tools to support national authorities to assess capacities & strategically select priority areas for strengthening

Mobilize — Developing investment cases, harmonizing external funding sources & mobilizing resources

Support — Providing technical support to strengthen surveillance capacities & collaboration through regional strategies

Share — Establishing mechanisms to exchange key resources & best practices* for everyone to benefit

CS is progressively being applied to strengthen WHO regional and disease-specific surveillance strategies and frameworks[1]



AMR:
- PAHO Strategic Plan 2020–2025
- Strategy on **Epidemic Intelligence** for Strengthening Early Warning of Health Emergencies 2024-2029

EUR:
- Preparedness 2.0 (incl. **collaborative surveillance**)

AFR:
- **Integrated Disease Surveillance & Response (IDSR)**
- Transforming African Surveillance Systems (TASS)
- Joint Emergency Preparedness & Response Action Plan (JEAP)

EMR:
- **Integrated Disease Surveillance (IDS)**
- Joint Emergency Preparedness & Response Action Plan (JEAP)

SEAR:
- Strategic Roadmap for Health Security & Health System Resilience for Emergencies 2023–2027
- Strategic Framework for Action for Strengthening Surveillance, Risk Assessment & Field Epi (incl. **multisource collaborative surveillance**)

WPR:
- Asia Pacific Health Security Action Framework (APHSAF) (incl. **multisource surveillance**)

Global surveillance frameworks: e.g., IHR, HEPR (incl. CS), PRET (incl. Mosaic), and specialized programme strategies (e.g., for AMR, HIV, TB, malaria, polio, influenza and other respiratory viruses, other vaccine-preventable diseases, etc.)

[1]Strategies listed are non-exhaustive, for illustrative purposes only. The designation employed and the presentation of material do not imply the expression opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city of area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on the maps represent approximate border lines for which three may not yet be full agreement.

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Rapidly cumulating country-level experience on how CS can be implemented to strengthening national systems

Mosaic Framework:
Review of respiratory surveillance methods, piloted in 8 counties/sub-regions

RTSL CS Prototyping:
Co-design of 3-yr strategic projects to affect systems, governance and financial challenges in 4 African countries

SEARO Multisource CS:
Step-wise approach to review data and info sources, and set strategic actions to strengthen usage for decision-making, piloted in Indonesia & Nepal

… more planned in 2025

Emerging lessons:

- Critical need to:
  - simultaneously address **technical systems, governance & financing** challenges
  - create opportunities for **multisectoral coordination** (beyond individual systems)
  - **better use of existing data**, especially for **local level action**
- **Locally-prioritized use cases** (e.g., specific hazards/events) provide practical grounding, while strengthening broader health security
- The **process (the conversation)** is as important as the outputs and outcomes
- CS is providing **renewed attention & shared terminology** to better connect existing national capacities

EIOS is central to the CS vision, and this community can continue to play a critical role in addressing the surveillance challenges we all face

EIOS Collaboration

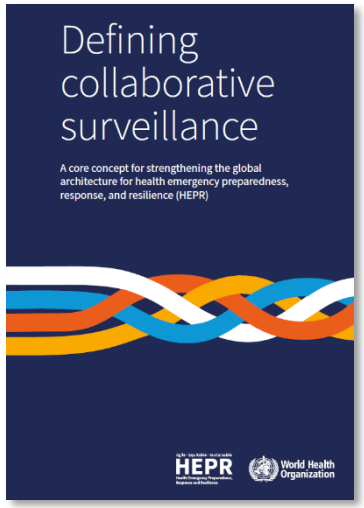
Opportunities remain to apply CS for strengthening EIOS by, e.g.:

1) Enhancing **collaboration** with other systems **for mutual benefit**
   - ➢ e.g., how can EIOS strengthen other core mechanisms

2) Questioning & enhancing **utility of data, info & intelligence for** informing **decisions and action**
   - ➢ Tailor efforts to **address decision-making objectives across all stages of emergencies** – prevention, preparedness, detection, response & recovery
   - ➢ Streamline two-way **communication** to support timely action
   - ➢ Positioning systems to support the **broader surveillance architecture/ecosystem**

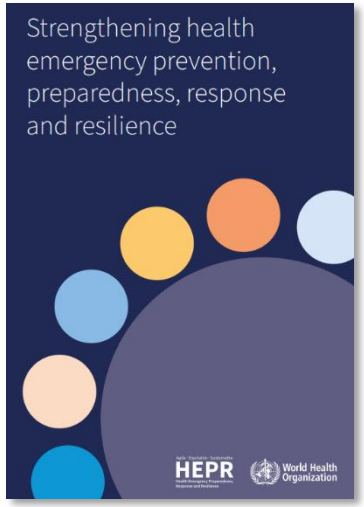
3) **Institutionalizing PHI capacity** for multisource data identification, integration & triangulation at **ALL levels**

Resource links & acknowledgements



https://www.who.int/publications/i/item/9789240074064

Available in Arabic, Chinese, English, French, German, Russian and Spanish



https://www.who.int/publications/m/item/strengthening-the-global-architecture-for-health-emergency-prevention--preparedness--response-and-resilience

- Developed by the **HEPR Collaborative Surveillance Working Group** composed of health emergency surveillance, preparedness and response experts at **WHO regional offices and headquarters**
- Coordination, inputs and implementation support provided by the **WHO Division for Health Emergency Intelligence and Surveillance Systems (WSE),** and the **Strategic Planning and Partnerships (SPP)** Unit on the overall HEPR initiative.
- We gratefully acknowledge the foundational and ongoing contributions provided by **countries**, **partners** and **divisions across WHO coordinating surveillance**, and preceding initiatives upon which this concept was built.

Thank you!

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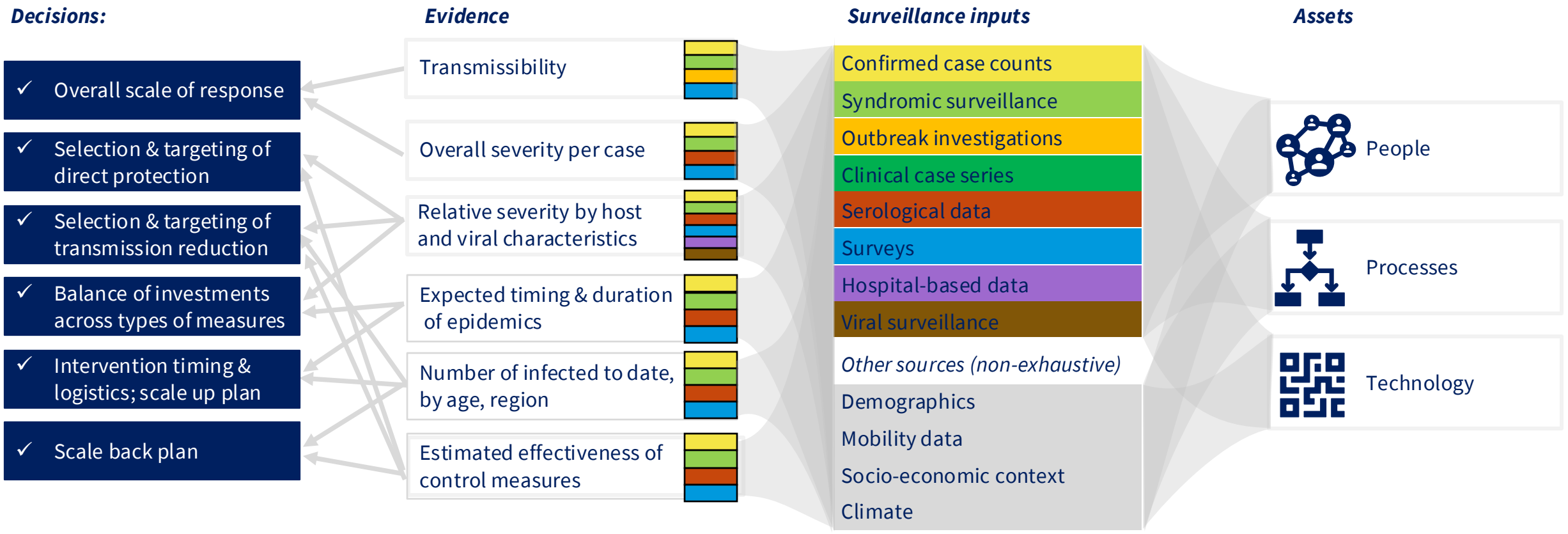
~ Additional slides ~

Public health decisions must be informed by the agile triangulation of many surveillance inputs

Every public health decision must flexibly draw from **multiple pieces of evidence…**

… by triangulating inputs from multiple **surveillance & other sources**

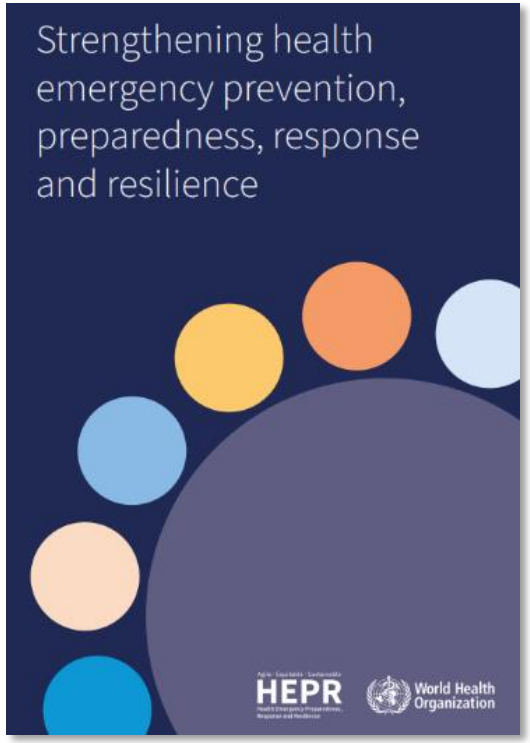
…requiring sophisticated **people, processes & technology**



*Source: Lipsitch M and Santillana M, Curr Top Microbiol Immunol, 2019

Member States and WHO are driving a stronger future through the HEPR framework

Health Emergency Preparedness, Response & Resilience (HEPR) Framework



… aims to strengthening the enabling environment for global health security …

… prioritizing five interconnected sub-systems …

Source: Strengthening the global architecture for health emergency prevention, preparedness, response and resilience, WHO, 2023

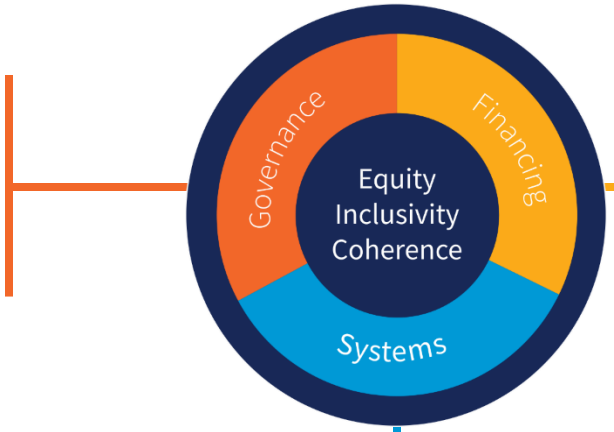
CS supports decision-making across the global health architecture for HEPR

IHR (incl. revisions)

INB WHO CA+

Resolutions, advisory groups & other instruments

IHR M&E Framework



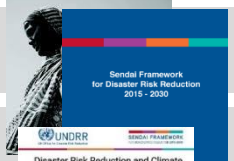
HEPR & WHO Investment Cases

National Investment Plans

Catalytic funding support (e.g., Pandemic Fund)

HEPR sub-systems

	Pandemic Threats	High-Threat Epidemics	Humanitarian Crisis & Disasters	Other Threats
Collaborative Surveillance				
Community Protection				
Safe & Scalable Care				
Access to Countermeasures				
Emergency Coordination				



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There are many co-existing surveillance systems, each playing a critical role. However, siloed systems often limit our ability to address complex questions.

Examples of surveillance systems (non-exhaustive)

Figure adapted from C Lee, Resolve to Save Lives. HMIS: Health information management systems, EMR: Electronic medical records, IDS: Integrated disease surveillance, PHEM: Public health emergency management

There are on-going efforts to enhance and better interlink and/or integrate these systems.

Examples of integration efforts (non-exhaustive)

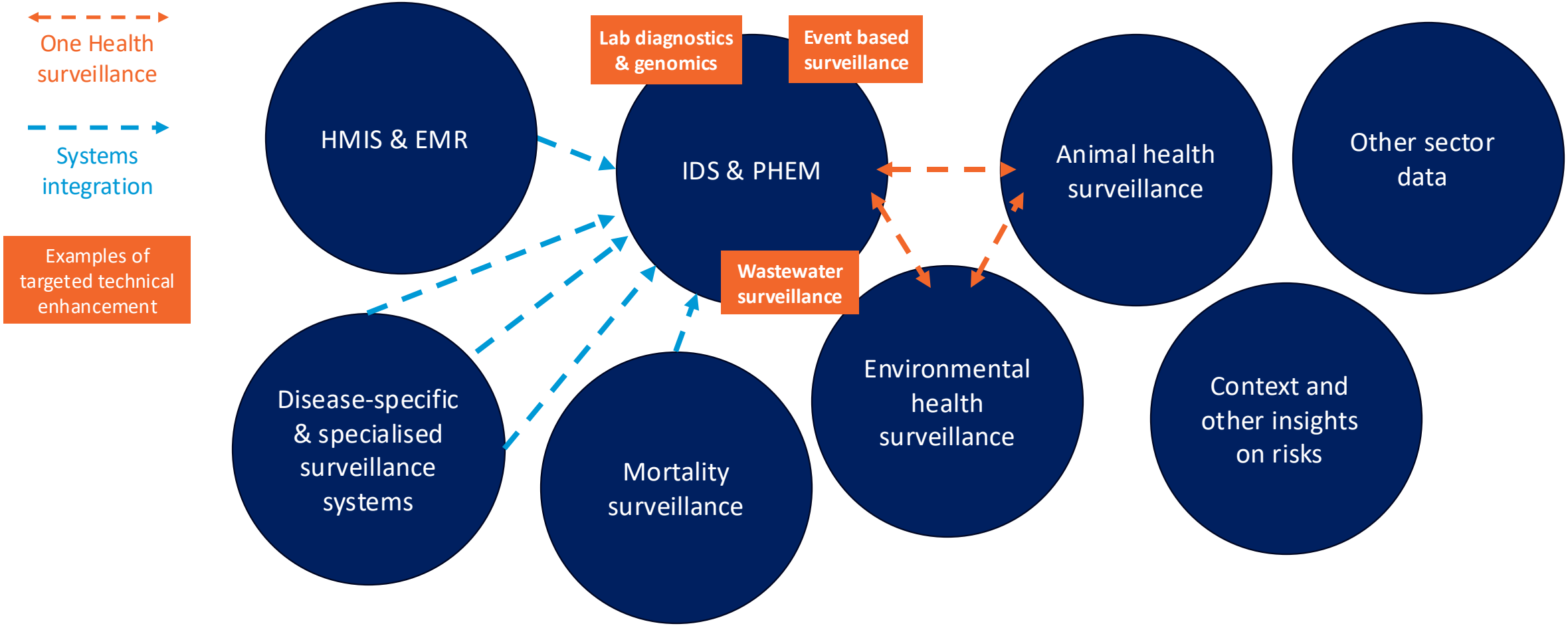
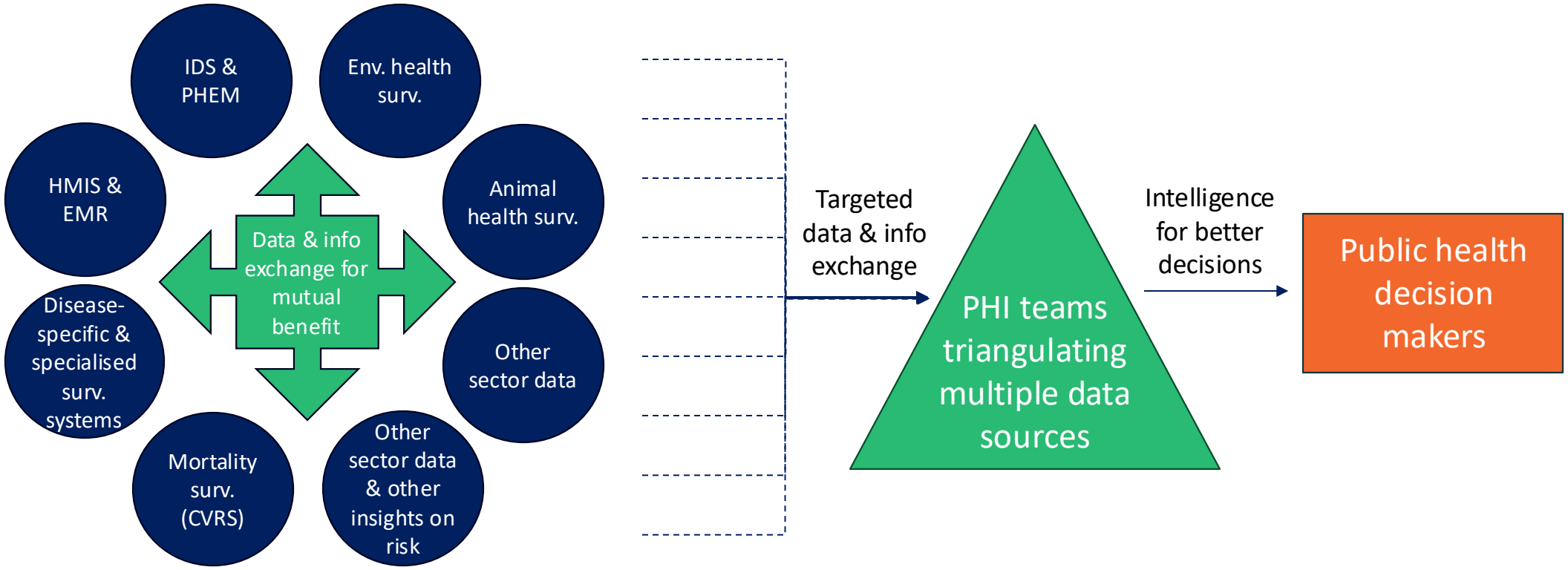


Figure adapted from C Lee, Resolve to Save Lives. HMIS: Health information management systems, EMR: Electronic medical records, IDS: Integrated disease surveillance, PHEM: Public health emergency management

The CS apparoach calls on countries to invest in collaboration by addressing systems, governance and financing for intelligence generation and sharing



Key investment areas

Systems

- Data sources & flow
- Info products
- Technology
- Workforce

Governance

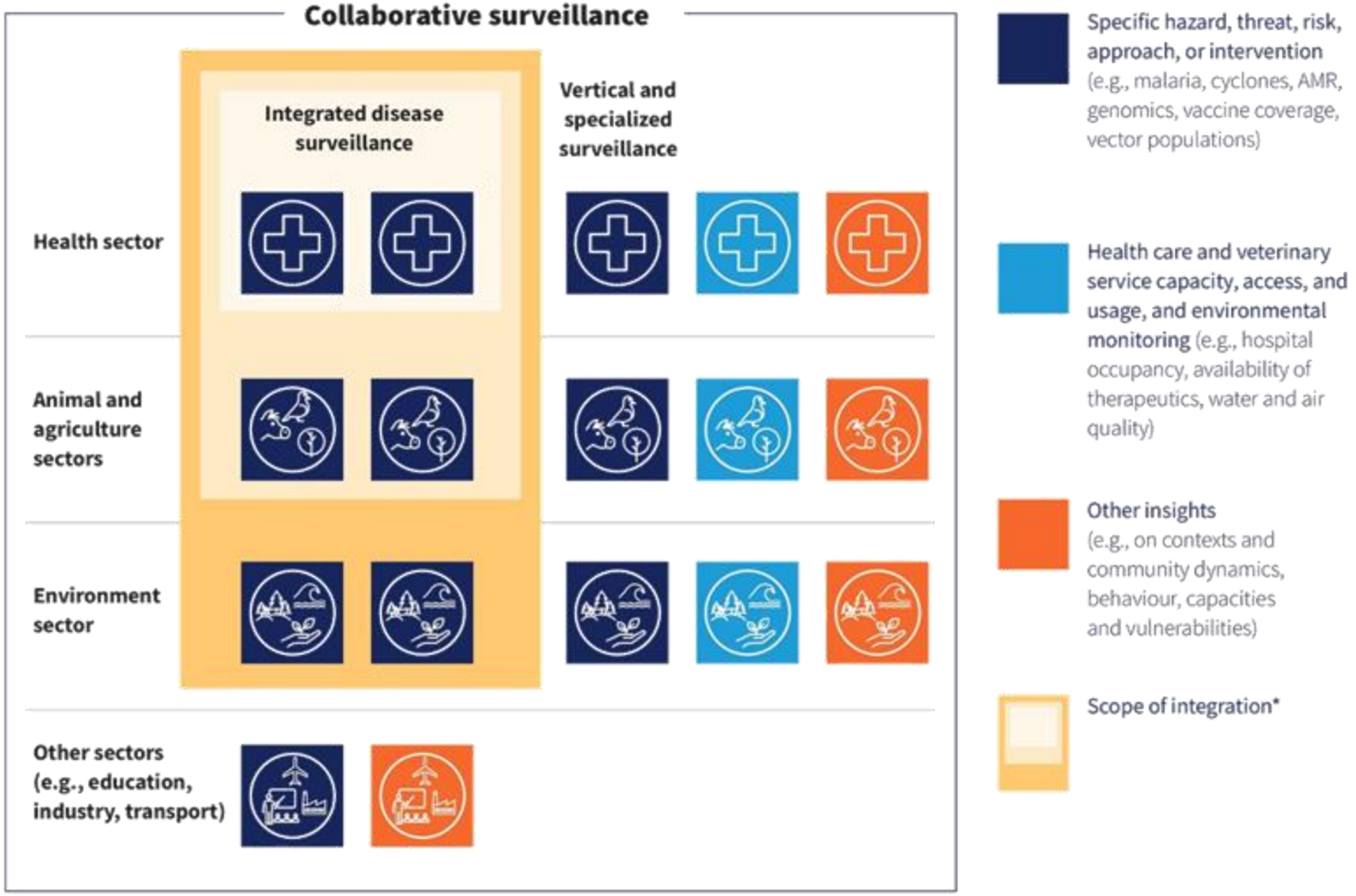
- Policies & regulations
- Coordination, processes & SOPs

Financing

- Existing (prioritization & implementation)
- New (shaping & resource mobilization)

Figure adapted from C Lee, Resolve to Save Lives. HMIS: Health information management systems, EMR: Electronic medical records, IDS: Integrated disease surveillance, PHEM: Public health emergency management

Collaborative surveillance can support the intersection of IDS, vertical/specialized programmes, and other contemporary data sources



** The scope of IDS varies by country and context. Multiple surveillance activities across sectors, whether integrated or vertical/specialized, can contribute meaningfully to One Health intelligence and joint multisectoral risk assessment.*

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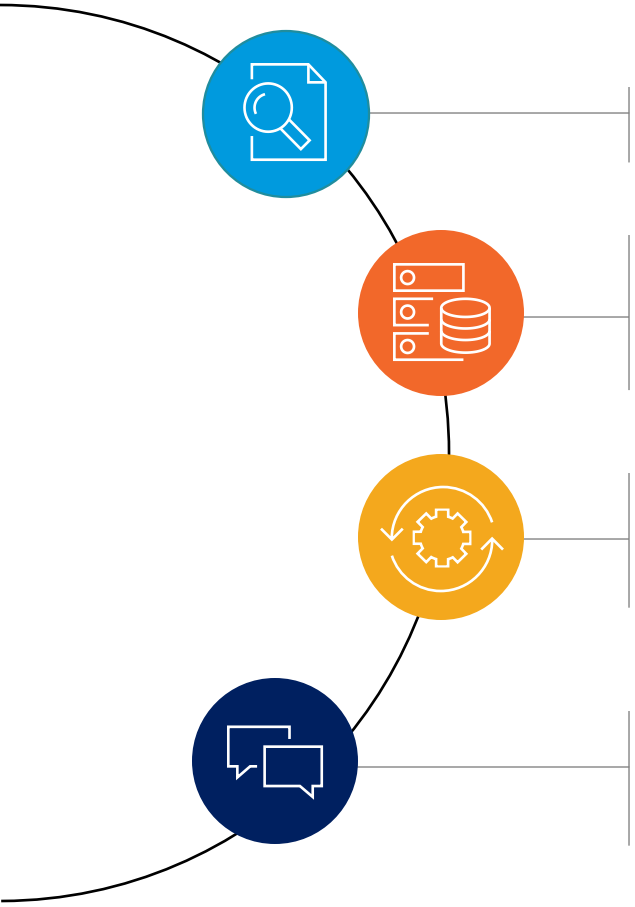
A modern vision of disease surveillance integration and collaboration

To **<u>not</u> disrupt IDS or vertical/specialized programmes,** but address the **intersection of these programmes**, **enable flexibility**, and **incorporate other relevant data** not otherwise captured by these models, through **more flexible modalities of integration:**



Integration through consolidation of surveillance activities, establishing common systems to address multiple hazards, where appropriate

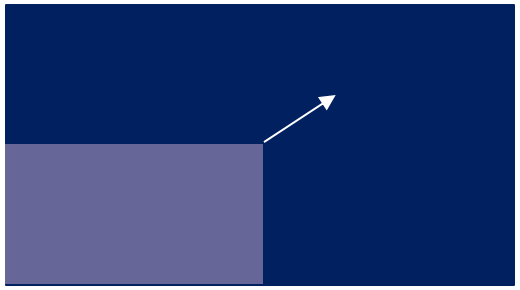
Data and information sharing across systems and dimensions that operate together to address the full range of surveillance objectives, linked to decision making based on a comprehensive view and analysis

Sharing and integration of capacities, ensuring that resources (workforce, systems, infrastructure) and investments synergistically strengthen surveillance beyond individual disease objectives and can be effectively leveraged to address new and emerging threats

Open communication of surveillance findings at all levels where appropriate, with systems and feedback loops to enable the exchange of intelligence generated by others, driven by use cases

Strengthen capacity and collaboration

Increasing capacity



Increasing the coverage and quality of surveillance

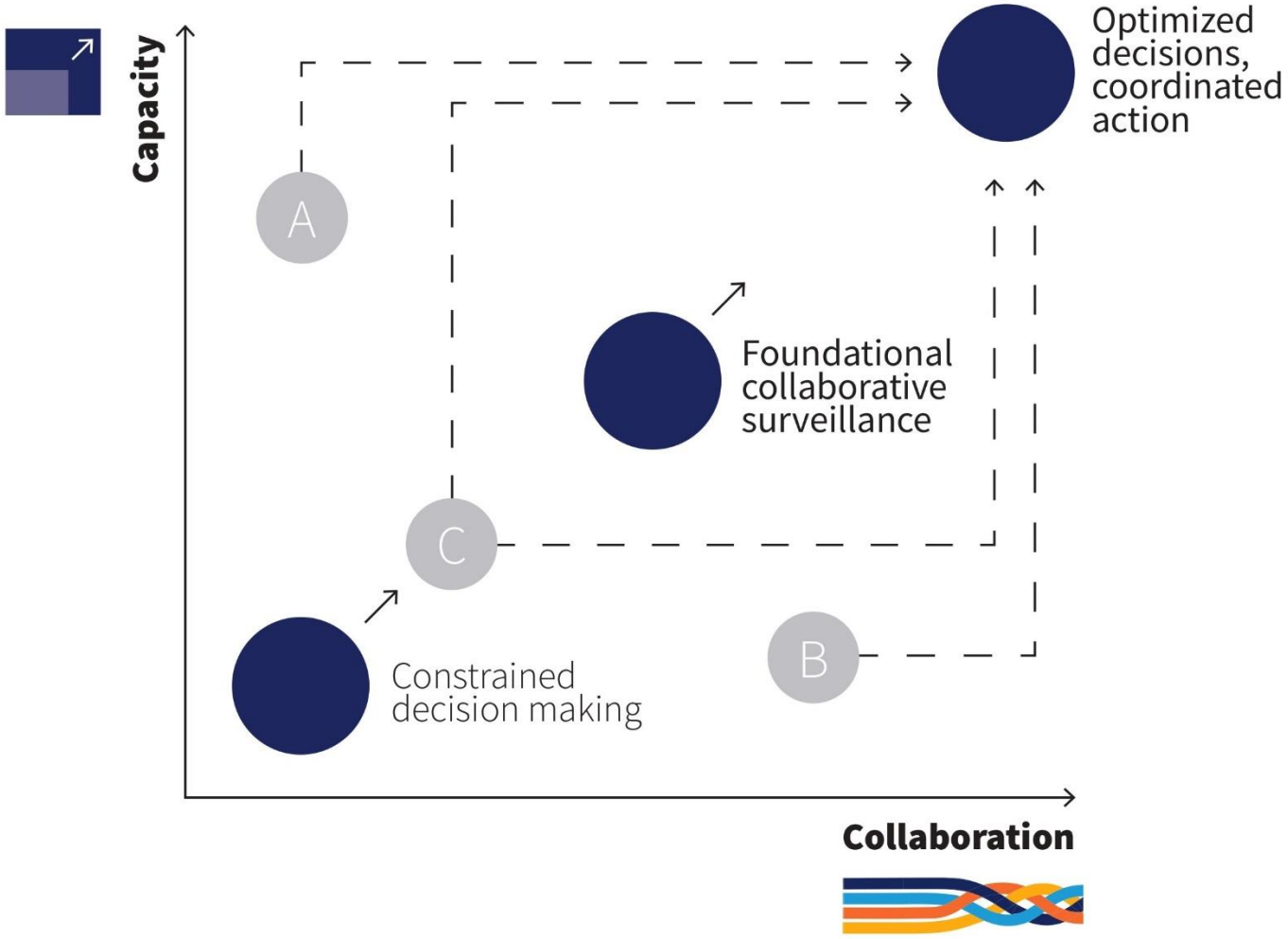
increasing workforce, systems' capacity and tools, adding new data sources, or improving technology

Strengthening collaboration

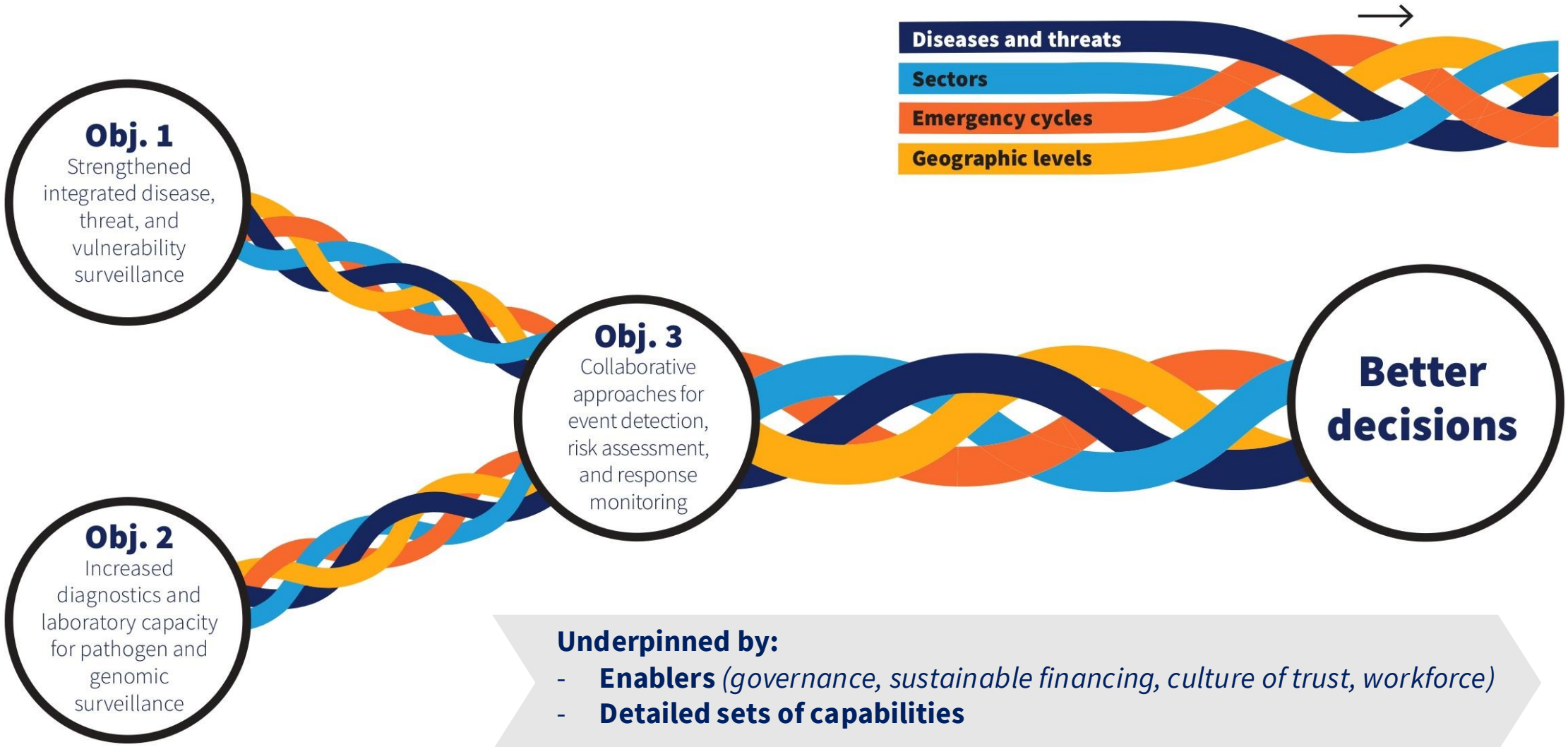
Building intentional collaboration across 4 dimensions

connecting surveillance stakeholders across systems, platforms, tools, networks, and skill sets

Every country's starting point and journey will differ

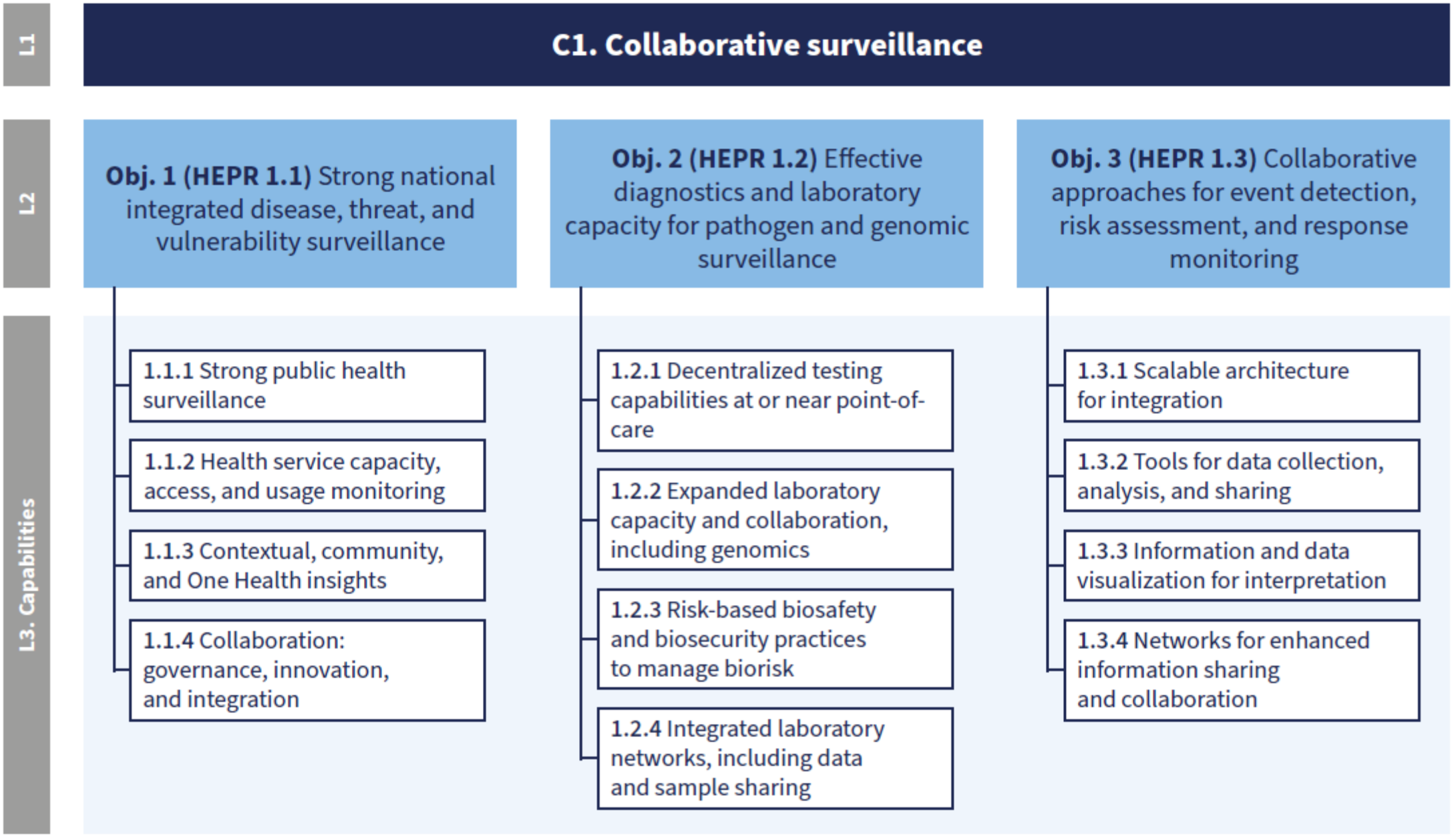


Three critical objectives targeting the development of capabilities for collaborative surveillance

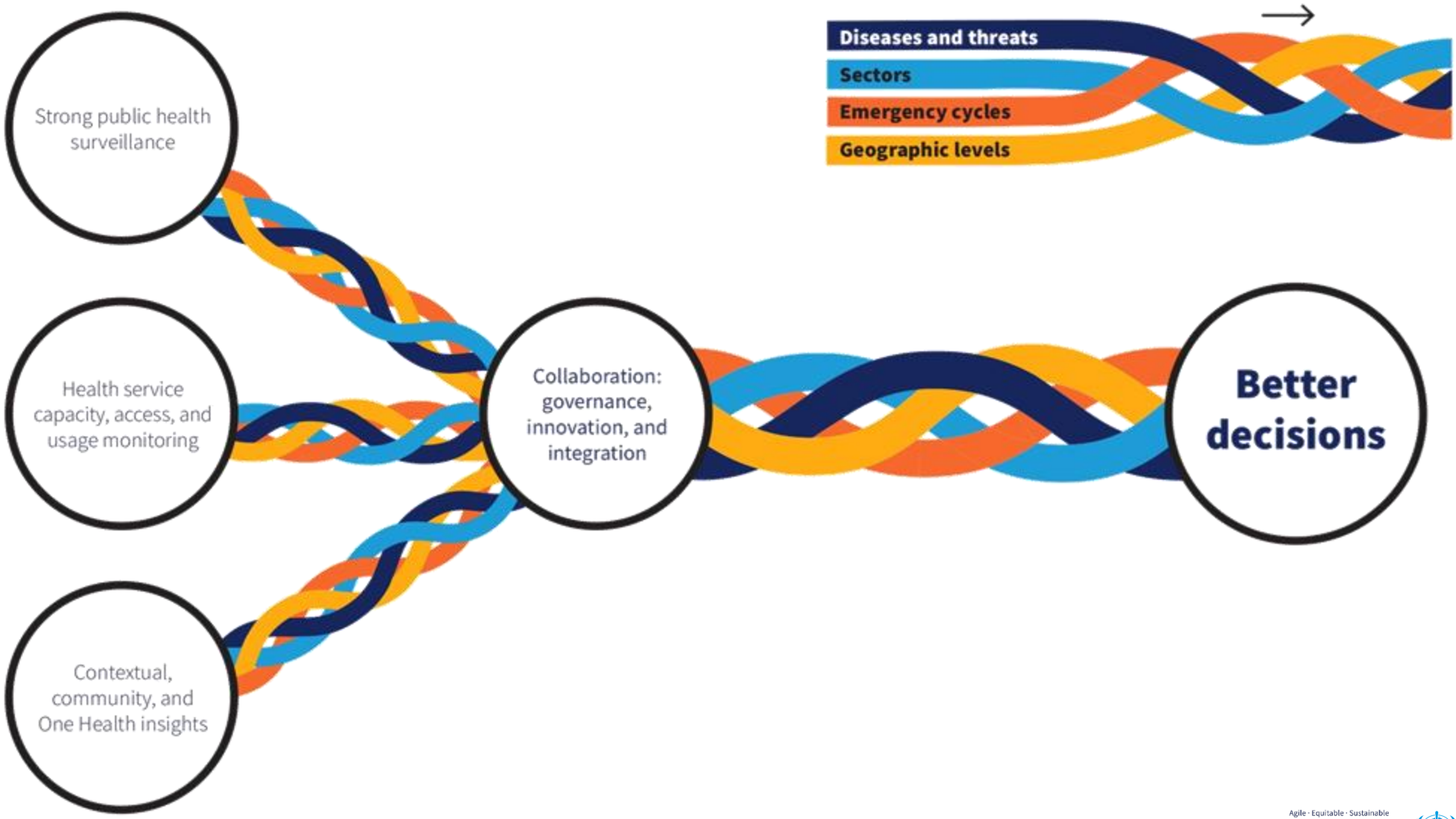


Underpinned by:

- **Enablers** *(governance, sustainable financing, culture of trust, workforce)*
- **Detailed sets of capabilities**


L1
C1. Collaborative surveillance
L2
Obj. 1 (HEPR 1.1) Strong national integrated disease, threat, and vulnerability surveillance
Obj. 2 (HEPR 1.2) Effective diagnostics and laboratory capacity for pathogen and genomic surveillance
Obj. 3 (HEPR 1.3) Collaborative approaches for event detection, risk assessment, and response monitoring
L3. Capabilities
1.1.1 Strong public health surveillance
1.1.2 Health service capacity, access, and usage monitoring
1.1.3 Contextual, community, and One Health insights
1.1.4 Collaboration: governance, innovation, and integration
1.2.1 Decentralized testing capabilities at or near point-of-care
1.2.2 Expanded laboratory capacity and collaboration, including genomics
1.2.3 Risk-based biosafety and biosecurity practices to manage biorisk
1.2.4 Integrated laboratory networks, including data and sample sharing
1.3.1 Scalable architecture for integration
1.3.2 Tools for data collection, analysis, and sharing
1.3.3 Information and data visualization for interpretation
1.3.4 Networks for enhanced information sharing and collaboration

HEPR 1.1 | Collaborative surveillance begins with developing strong national integrated disease, threat and vulnerability surveillance



L2

1.1 Strong national integrated disease, threat and vulnerability surveillance

L3. Capabilities

1.1.1 Strong public health surveillance	**1.1.2** Health service capacity, access, and usage monitoring	**1.1.3** Contextual, community, and One Health insights	**1.1.4** Collaboration: governance, innovation, and integration

L4. Sub-capabilities

1.1.1.1. Timely and appropriate routine public health surveillance capacity

1.1.1.2. Integration of routine surveillance capacities across disease and threat-specific verticals, and interconnection with response mechanisms, including flexibility to respond to early warning signals with enhanced surveillance capabilities and surge during emergency

1.1.1.3. Limitations in routine surveillance capacity understood and corrected where possible, and contingency tools prepositioned to fill anticipated gaps

1.1.2.1. Regular monitoring and reporting of key metrics on health service capacities, access, and usage to provide a dynamic picture of contemporary and projected system resilience

1.1.2.2. Health service monitoring capacities interconnected with response mechanisms, with the necessary flexibility to surge and adapt surveillance to all types of emergencies, including capacity to rapidly assess impacts of major disasters

1.1.3.1. Continuous exchange of information between One Health partners, enabling joint risk assessments and response for high-risk situations

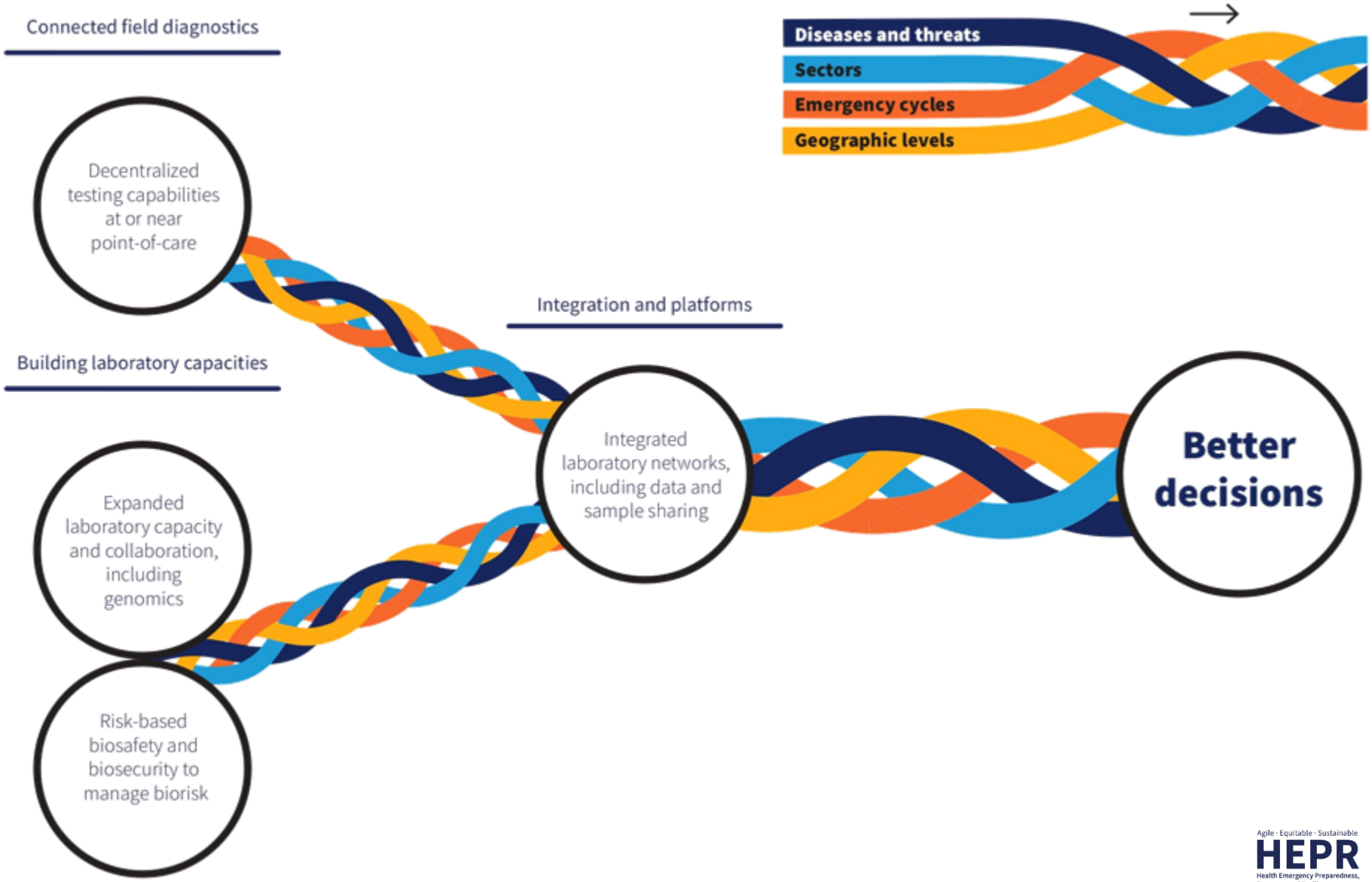
1.1.3.2. Multisectoral understanding of vulnerabilities –demographic, environmental, social and economic drivers of health risks, based on local contexts – established and applied towards both the design of surveillance (e.g., prioritization of risks and vulnerable populations) and interpretation of surveillance findings

1.1.4.1. Surveillance approaches selected and coordinated to collectively meet the full range of objectives for locally prioritized risks, with flexibility to address shifting emergency needs

1.1.4.2. Systematic routine evaluations of the constellation ("Mosaic") of surveillance systems, with lessons shared to inform strategic investments in capacity strengthening, based on evidence of surveillance best practices, including context-specific cost-benefit analyses

1.1.4.3. Digitization of surveillance data and processes from the point of data collection, to promote integration, interoperability, and flexibility

HEPR 1.2 | Diagnostic and laboratory capacity must be expanded and integrated with other elements of the surveillance system



L2

1.2 Effective diagnostics and laboratory capacity for pathogen and genomic surveillance

L3. Capabilities

1.2.1 Decentralized testing capabilities at or near point-of-care	**1.2.2** Expanded laboratory capacity and collaboration, including genomics	**1.2.3** Risk-based biosafety and biosecurity practices to manage biorisk	**1.2.4** Integrated laboratory networks, including data and sample sharing

L4. Sub-capabilities

1.2.1.1. National distribution plans for point-of-care diagnostics developed and aligned with public health surveillance and clinical care strategies and guidelines, with clearly outlined responsibilities at each appropriate subnational level

1.2.1.2. Routinely updated and validated central register of public and private diagnostic capacity, and a stock management system linked to replenishment mechanisms

1.2.1.3. Quality management systems for point-of-care testing

1.2.1.4. Integration of point-of-care diagnostic results into national surveillance systems for priority diseases

1.2.2.1. Sufficient, fit-for-purpose laboratory capacity with the ability to surge, leveraging all sectors across One Health dimensions

1.2.2.2. Quality management systems for laboratory testing

1.2.2.3. Access to genomic and phenotypic characterization of pathogens, either in-country or aboard, with findings integrated into surveillance and risk assessments activities

1.2.2.4. Innovation and research ecosystem that responds to local, national, and global needs for affordable, scalable technologies which laboratory systems sustainably implement as contextually appropriate

1.2.3.1. Agreed pathogen control measures, including standards for inventory, containment, equipment operation and maintenance, operational handling, and proper management of high consequence research

1.2.3.2. Implementation and observance of guidelines and protocols, underpinned by workforce competencies and governance

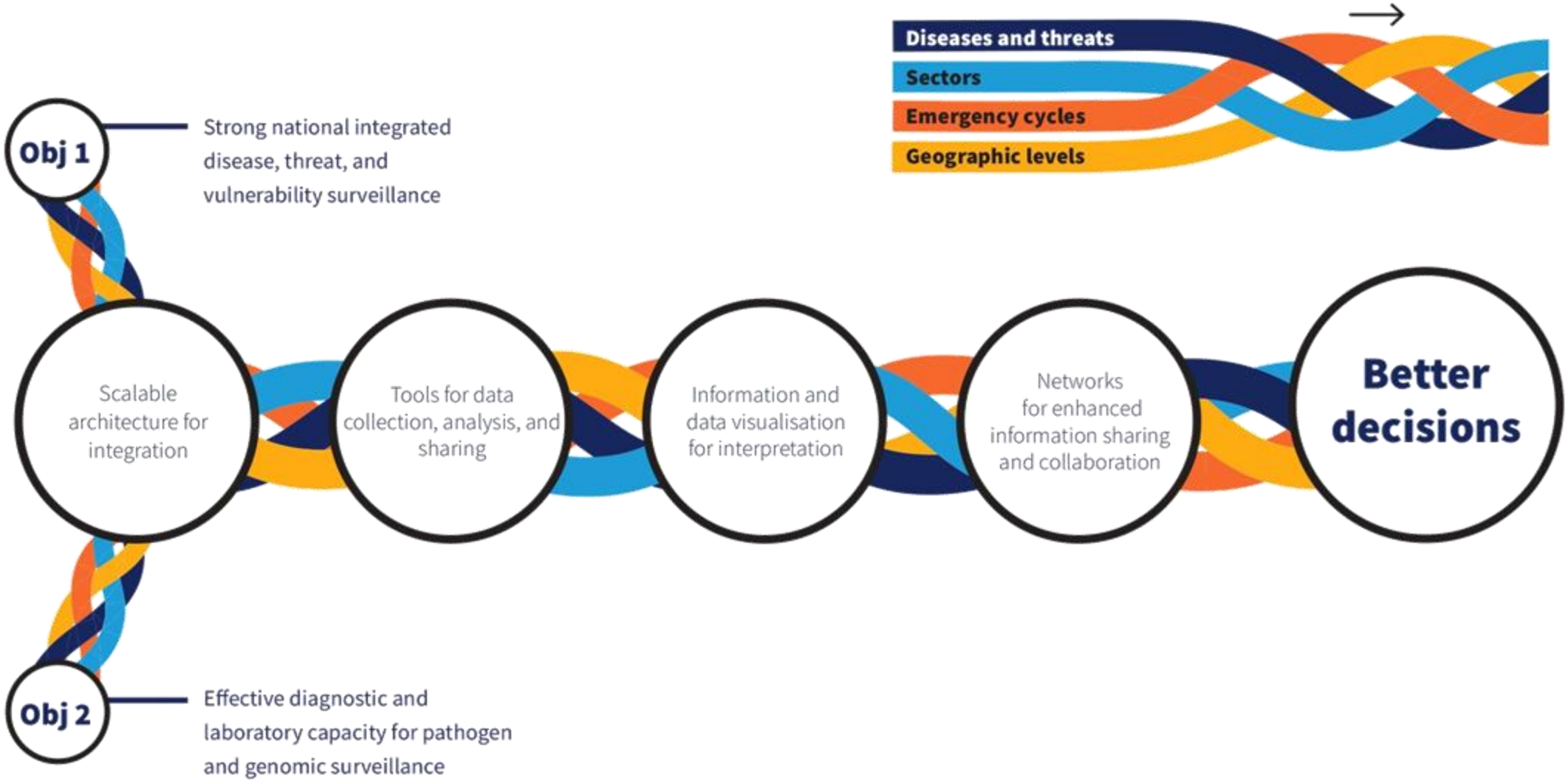
1.2.3.3. Risk-based biosafety guidelines, standards, and regulation for safe and secure national and global specimen, reagent, pathogen, material, and genetic sequence data sharing

1.2.3.4. Rigorous incident reporting, response and monitoring in activities involving high-consequence pathogens, both inside and outside safe and secure facilities

1.2.4.1. Tiered national laboratory and diagnostics networks established to generate, report, and share data from subnational facilities to high-quality public health and reference laboratories, connected to networks of international partners

1.2.4.2. National and international systems for access and benefit sharing of biological materials, supported by rapid transportation capacity

HEPR 1.3 | Sustainable collaboration requires establishing multidisciplinary capabilities, infrastructure, tools, networks, and innovation



L2

1.3 Collaborative approaches for event detection, risk assessment, and response monitoring

L3. Capabilities

1.3.1 Scalable architecture for integration

L4. Sub-capabilities

1.3.1.1. Integrated modern infrastructure across national public health delivery bodies

1.3.1.2. Scalable, distributed, and evolving technical interfaces for secure data linkage, integration, and intelligence sharing between systems

1.3.1.3. Established norms and standards on data quality that are routinely applied with clearly derived benefits for all levels (becoming standard practice)

1.3.1.4. Developed focal points (nodes) for intelligence sharing between multisectoral partners to triangulate findings from different data sources as emergencies unfold

1.3.2 Tools for data collection, analysis, and sharing

1.3.2.1. A global collaborative agenda to continuously inform the development of data collection, management, analysis, and modelling tools based upon national and local needs

1.3.2.2. A global 'marketplace' of tools available to countries and adaptable to various contexts

1.3.2.3. Technical support for countries to build, customize or adapt, and use advanced analytical tools

1.3.3 Information and data visualization for interpretation

1.3.3.1. Analytics capacity, integrating contextual understanding and insights from modelling for strengthened risk assessment, with resources and intelligence shared and feedback mechanisms

1.3.3.2. Real-time interfaces and dashboards, incorporating insights drawn from collaboration, leveraged for decision making

1.3.3.3. Access for policy makers and public to multisectoral data sources, tailored to target audiences and the national or local context, to generate actionable insights

1.3.3.4. Open communication with surveillance outputs routinely published, complemented by mechanisms established to leverage intelligence for mutual benefit and coordinated action

1.3.4 Networks for enhanced information sharing and collaboration

1.3.4.1. National network across sectors, organizations, and fields of expertise to build strong relationships, establish necessary protocols to share data, information, intelligence and capacities in a timely manner, and leverage synergies

1.3.4.2. Regional and global platforms to define longer-term objectives and a shared agenda for global surveillance networks, supporting knowledge exchange, and building trust within the community