

Surveillance in Local Public Health Practice

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Public Health

The science and art of preventing disease, prolonging life and promoting health **through the organized efforts of society**

Acheson 1988

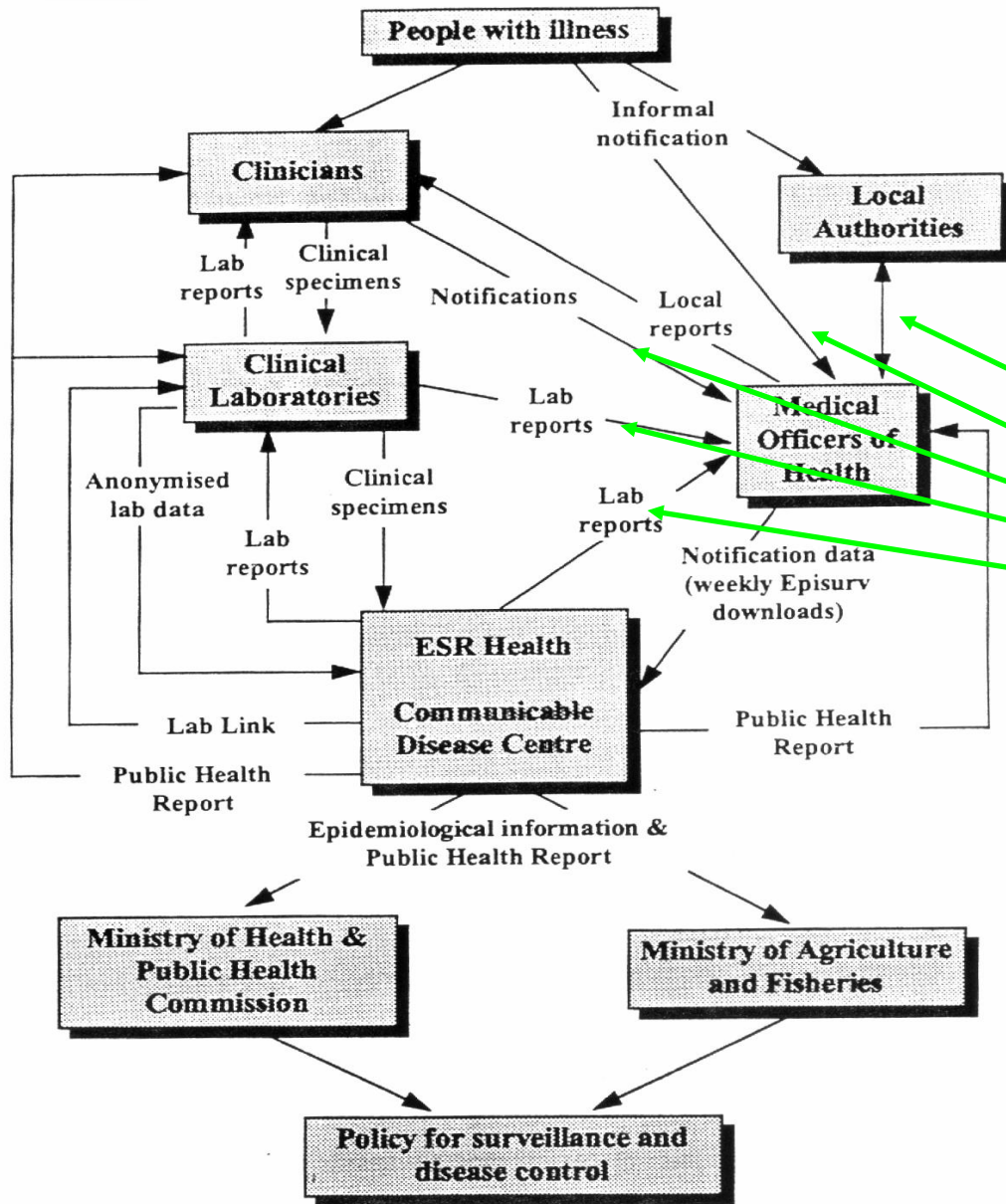
Surveillance

Public health surveillance is defined as the ongoing, systematic collection, analysis, and interpretation of data on specific health events for use in the **planning, implementation and evaluation of public health programmes.**

Thacker and Berkelman, 1988.

Population Structure and dynamics	Health Conditions	Health Systems
A. Population Size and Growth	A. Positive Health	A. Health Services
B. Age and Sex structure of population	B. Risk Factors	B. Health Care Resources
C. Spatial Distribution and Mobility		
D. Family Structure	C. Health Losses	C. Health Policies





The view from Wellington 1996

Local data collection

DRAFT

Action Oriented Public Health Surveillance

*local and regional government
environmental hazard control
local government planning*

*community individuals
and media
enabling health advocacy
promoting disease awareness*

*health protection
services
case follow-up
outbreak and control
cluster detection*

*personel and public health
service planners and providers
outcome monitoring
programme and service planning*

Consider availability of data or existing products

identify public
health action

Identify
information
products

analysis and
reporting
requirements

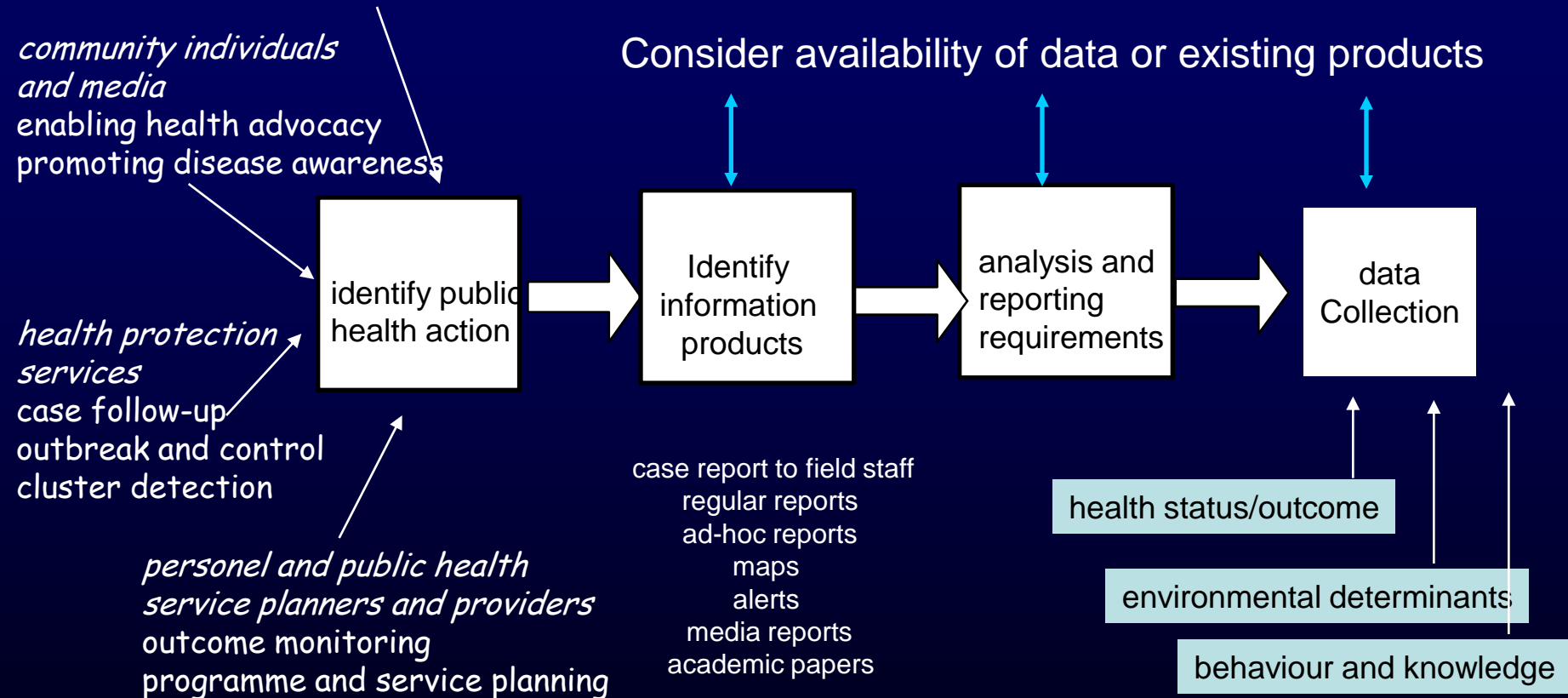
data
Collection

case report to field staff
regular reports
ad-hoc reports
maps
alerts
media reports
academic papers

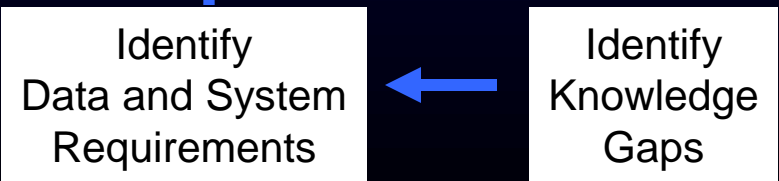
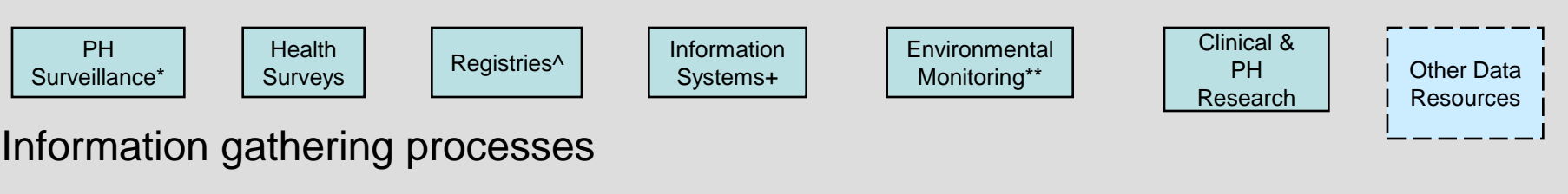
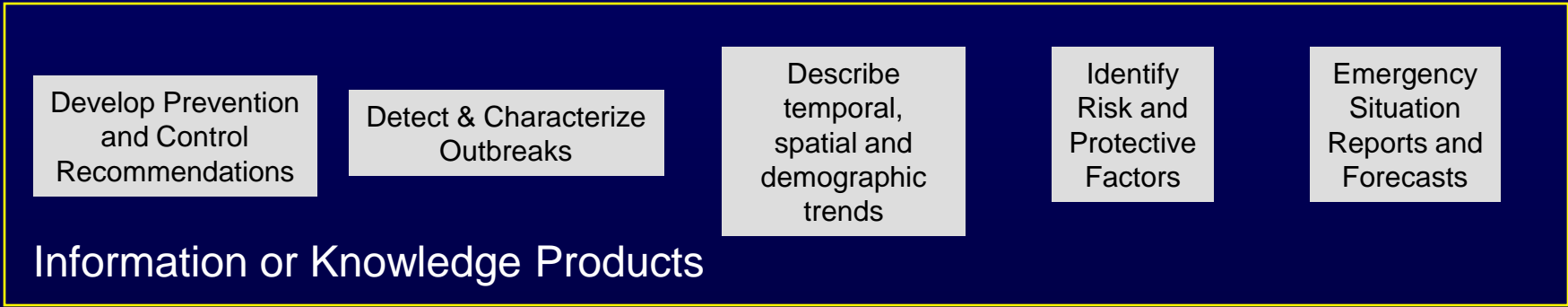
health status/outcome

environmental determinants

behaviour and knowledge



Support Actions to Improve Population Health
(individual/collective at local, state, national and international level)



Nice idea but....

- Too many unknowns
- Too much overlap in requirements
- Needs might already be addressed by others
- Too many actors
- Too big a job

Utility and Specificity

Hi degree of match to
specific action information need

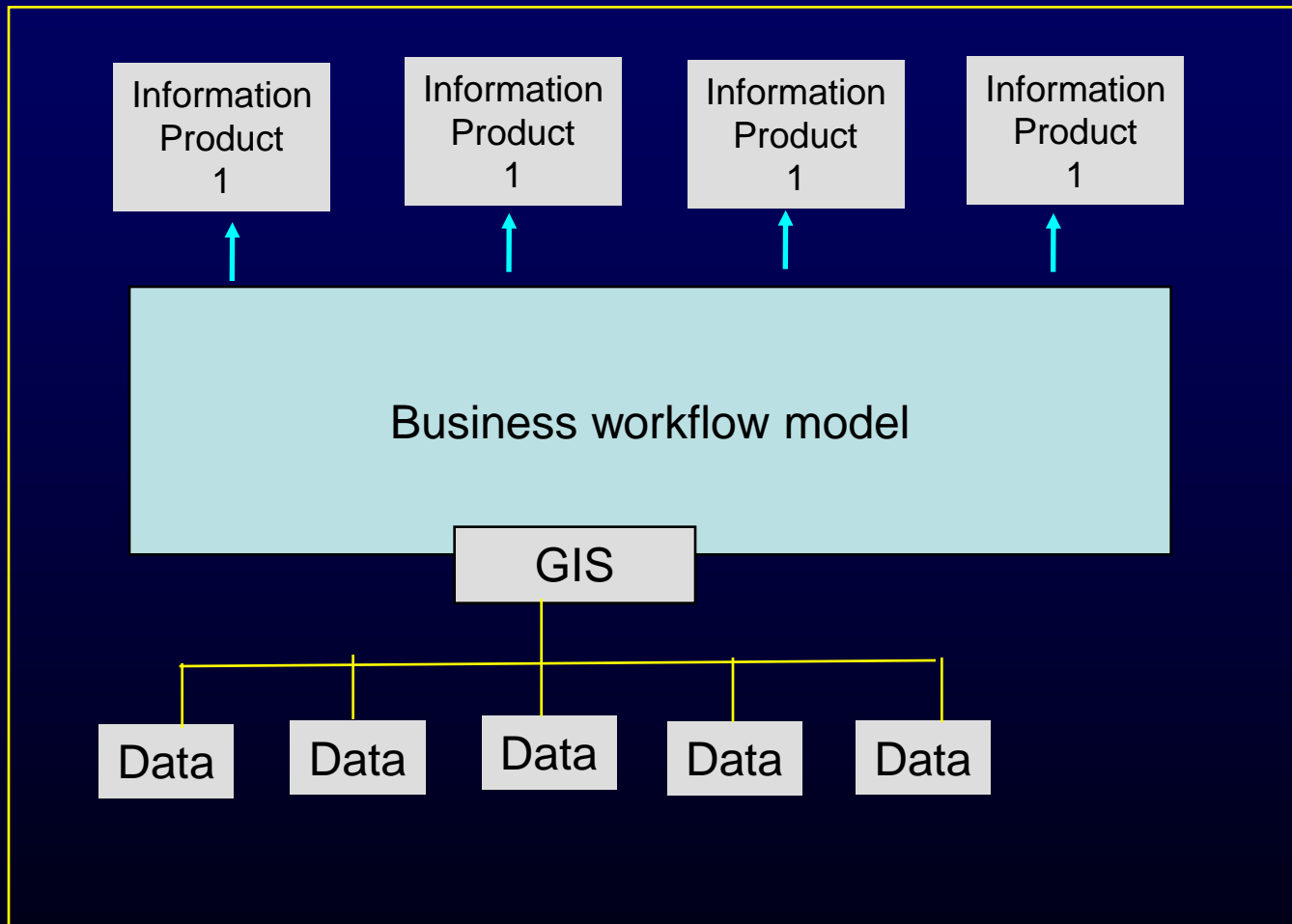


High flexibility and
breadth of utility

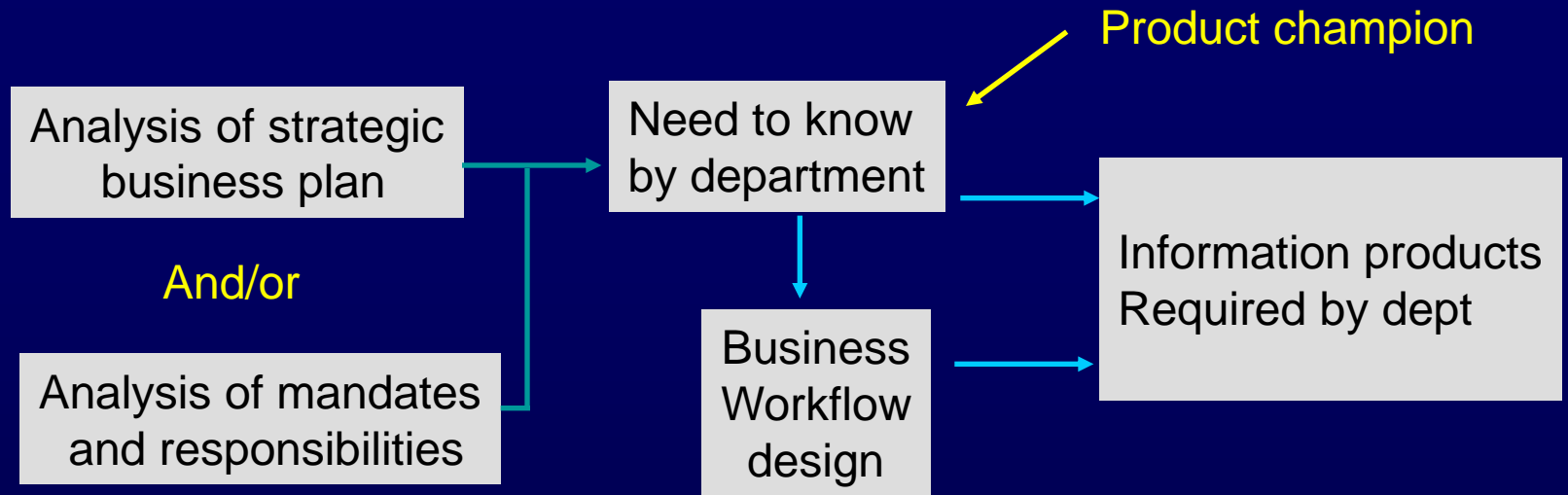
Emerging Methods

- Enterprise level – 10 steps to link GIS output to business need – Tomlinson
- Local and State Health Departments US – Common Ground
- Hawkes Bay experience

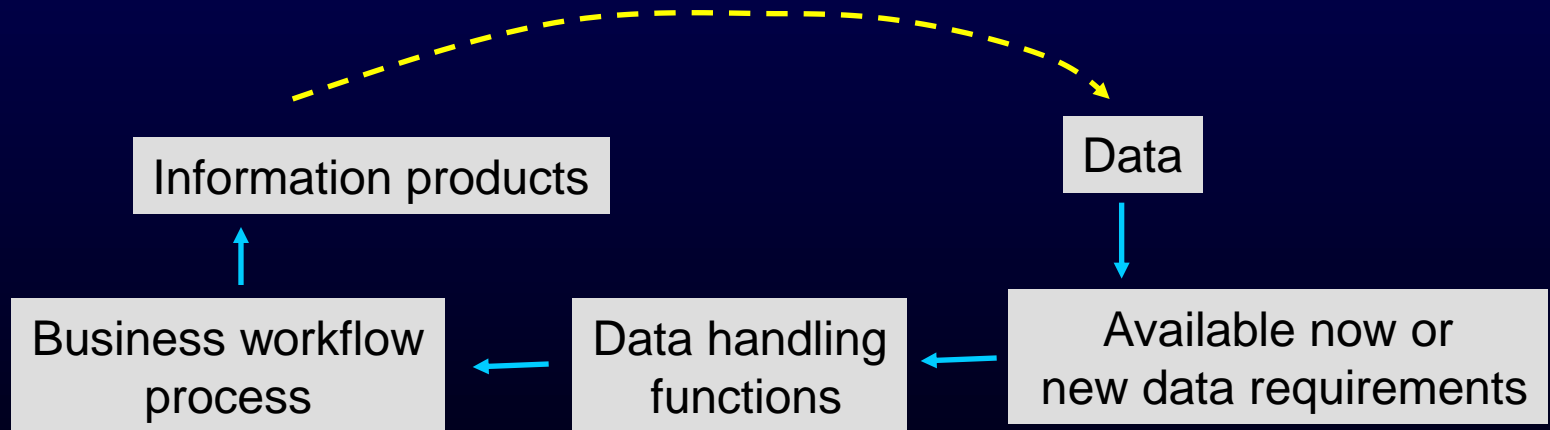
Tomlinson Method – Enterprise Based



Step 1



Step 2



Collaborative Public Health Information Requirements Development

- The Common Ground Project - PHII
- State and Local Health Departments
- Chronic Disease Prevention and Emergency Preparedness
- Business Process Analysis

Collaborative Requirements Development Methodology

Business Process Analysis

think

How do we do our work now?

- Define goals and objectives
- Model context of work
- Identify business rules
- Describe tasks and workflow
- Identify common task sets

Business Process Redesign

rethink

How should we do our work?

- Examine tasks and workflow
- Identify inefficiencies
- Identify efficiencies with repeatable processes
- Refine business processes and business rules
- Remodel context of work
- Restructure tasks and workflow

Requirements Definition

describe

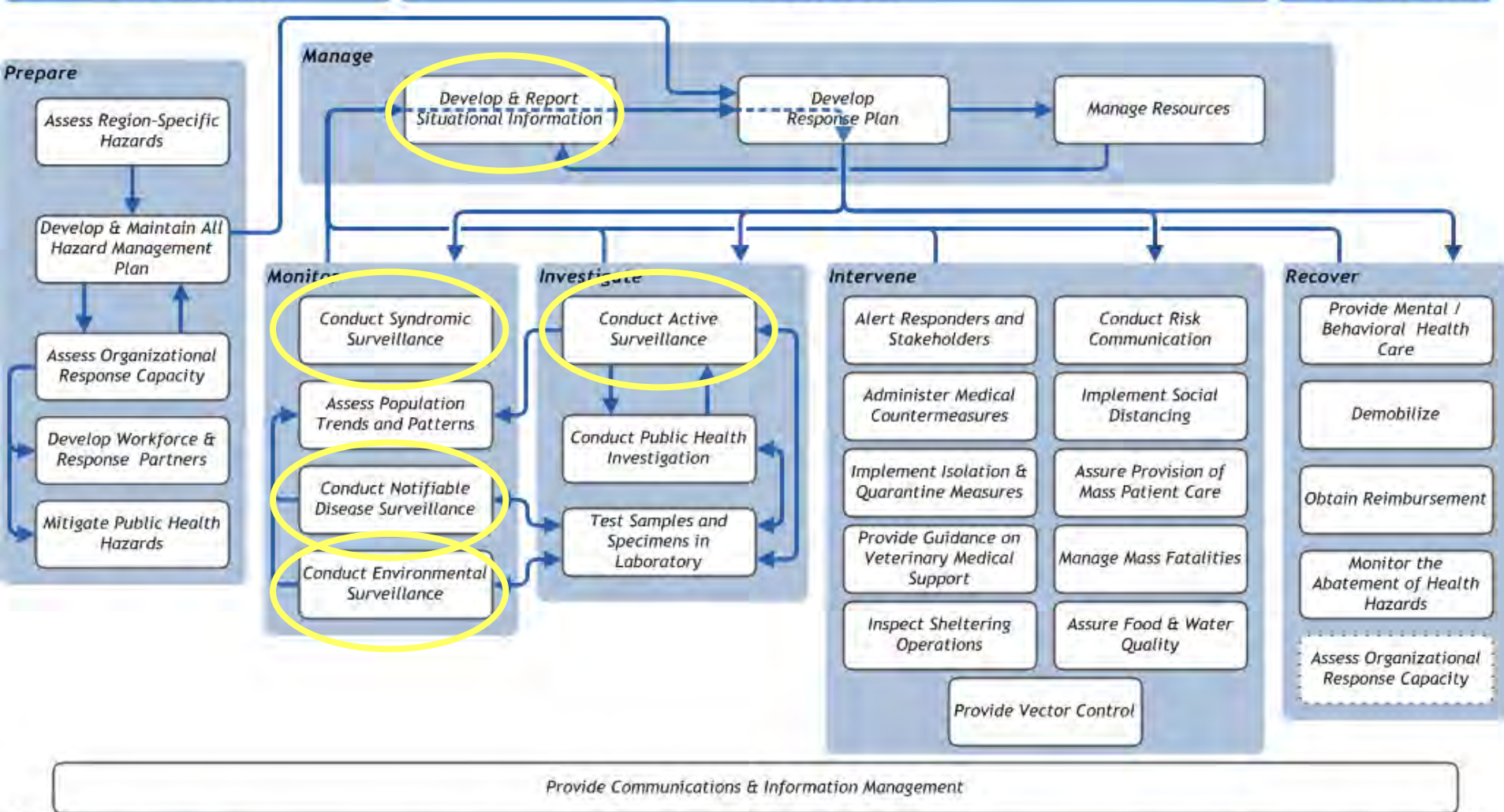
How can an information system support our work?

- Define specific tasks to be performed for optimized business processes
- Describe the implementation of business rules
- Describe in words and graphics how an information system must be structured
- Determine scope of next phase of activities

Pre-Incident

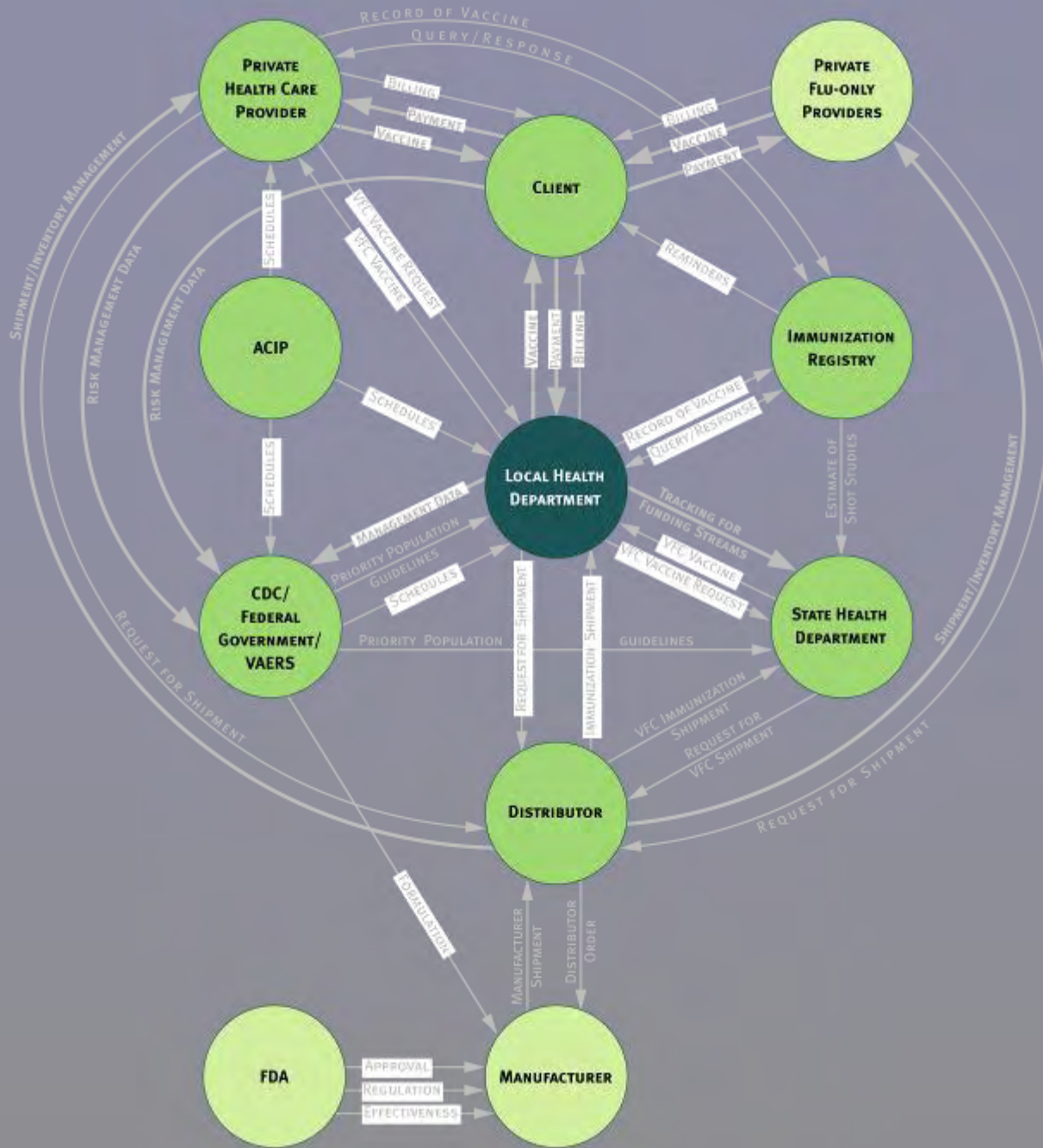
Incident

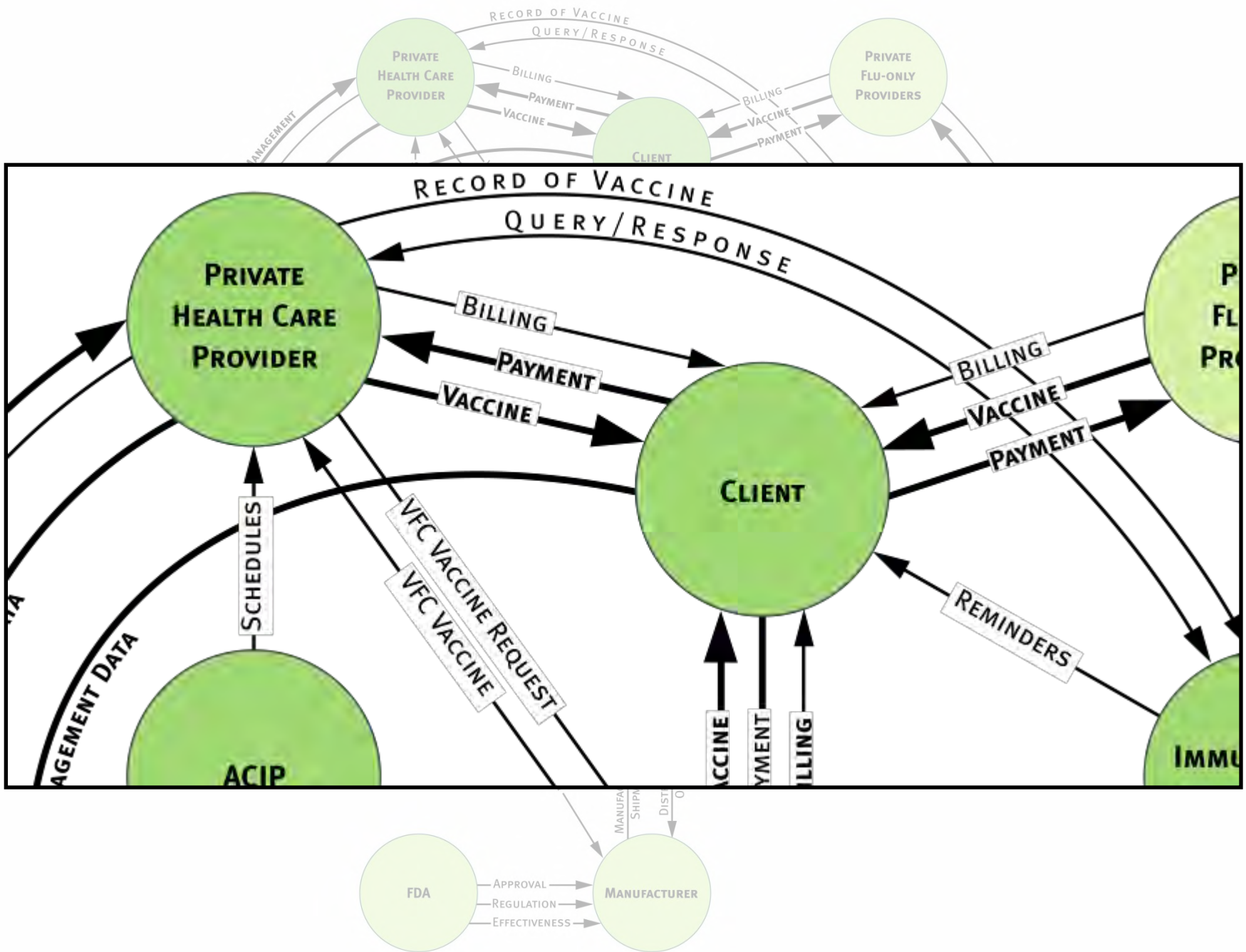
Post-Incident



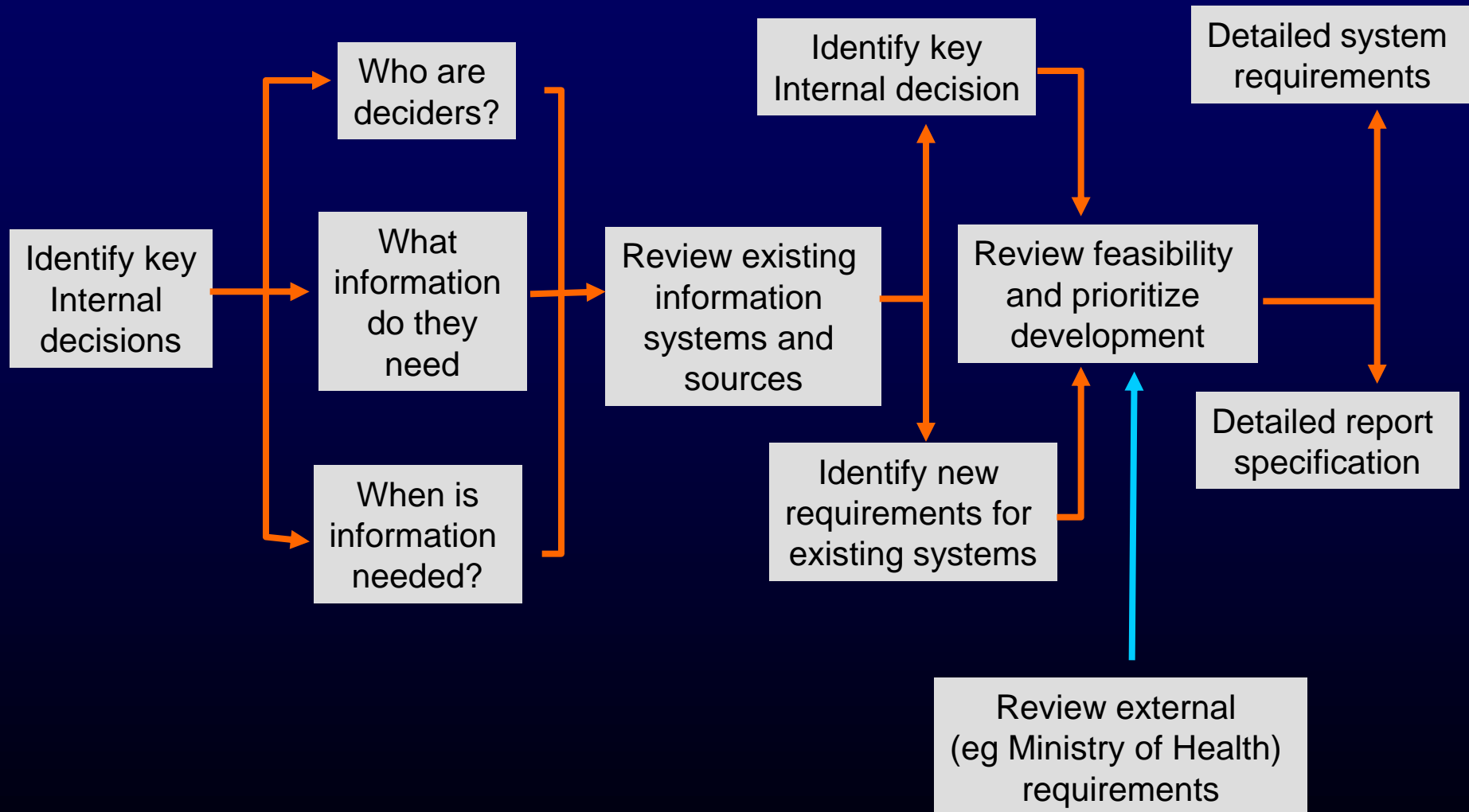
Legend: [Business Process Group] Business Process Group [Process] Business Process [Input Arrow] Input Arrow [Dashed Arrow] Short Circuit (the NIMS- & ICS-oriented "Manage" processes are often skipped or abbreviated during small incidents)

NOTES: "Assess Organizational Response Capacity" appears twice in the diagram to emphasize its role. Its occurrence after the incident triggers the other Pre-Incident Prepare processes, beginning a new cycle.





Local District Health Board Pandemic Management Information Requirements



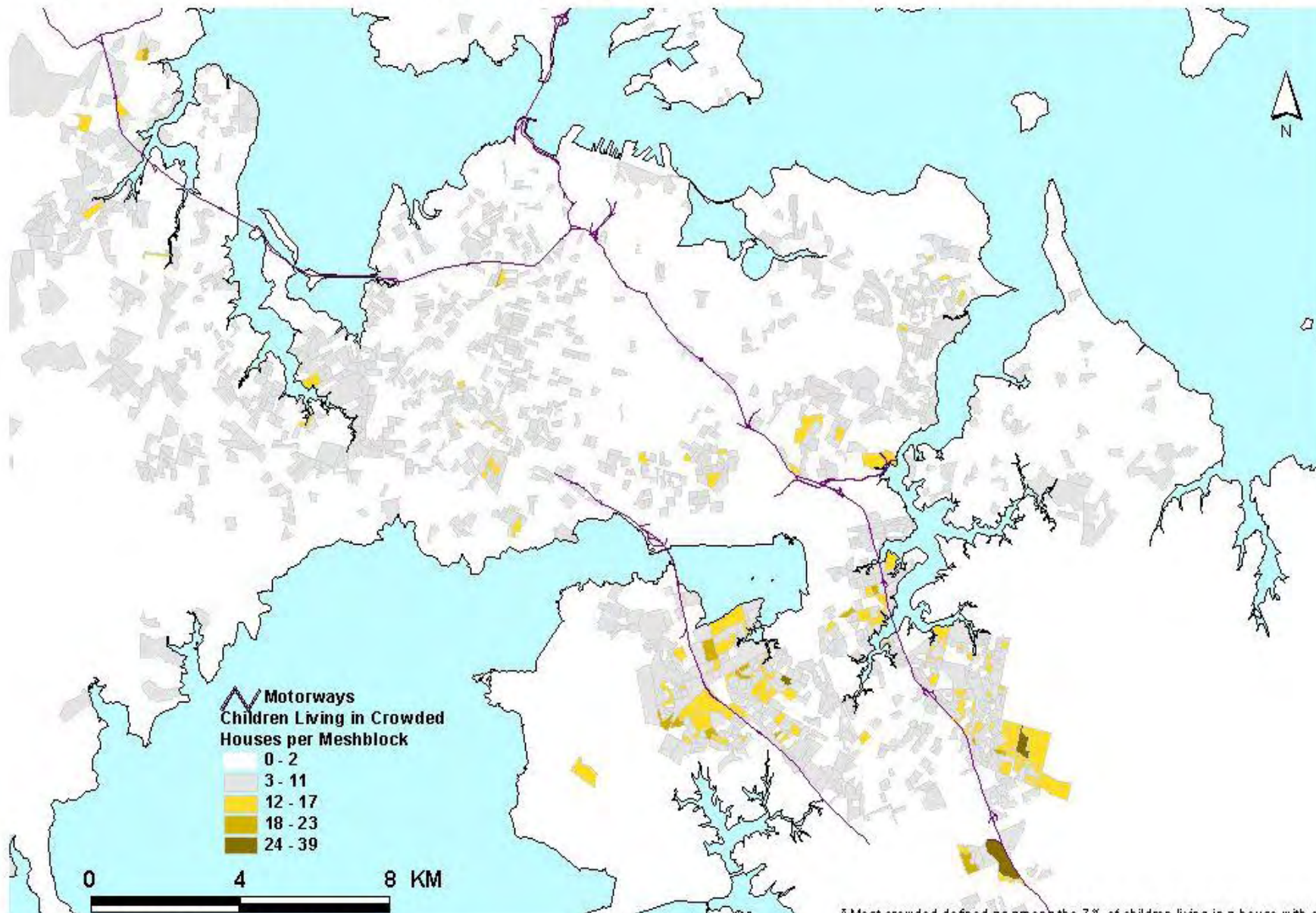
Key Decisions/Actions

1. activate our emergency operations centre
2. start streaming/cohorting patients
3. cancel elective operations
4. cancel leave
5. surge ICU capacity and just in time training

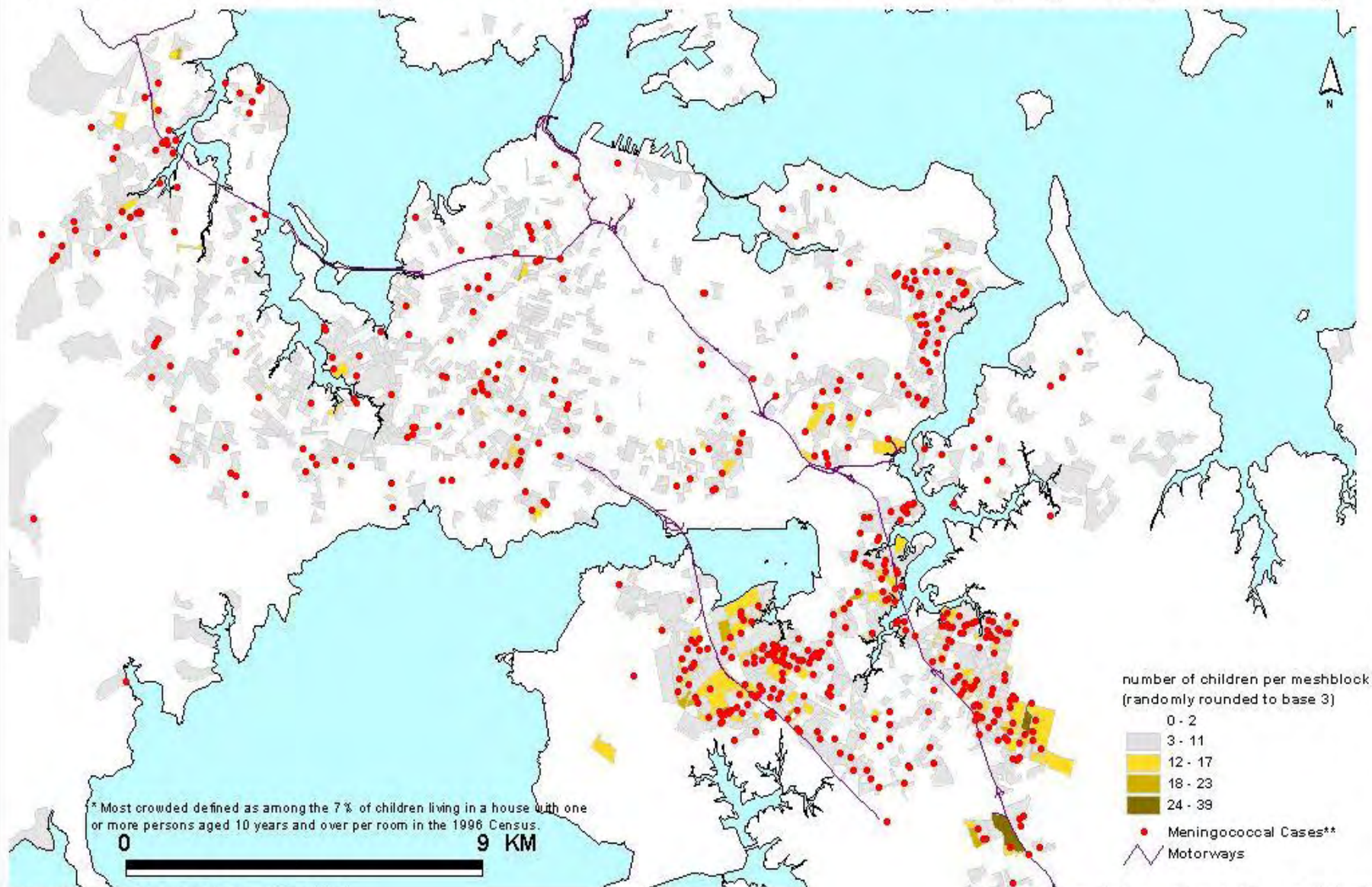
Hybrid products

- Link research findings to surveillance data
- Apply model outputs at local level

Where the Under 8 Year old's in Auckland's Most Crowded* Houses Live (1996)



Number of children under 8 years living in Auckland's most crowded* houses and locations of meningococcal disease cases for the same age group (1995-1999)

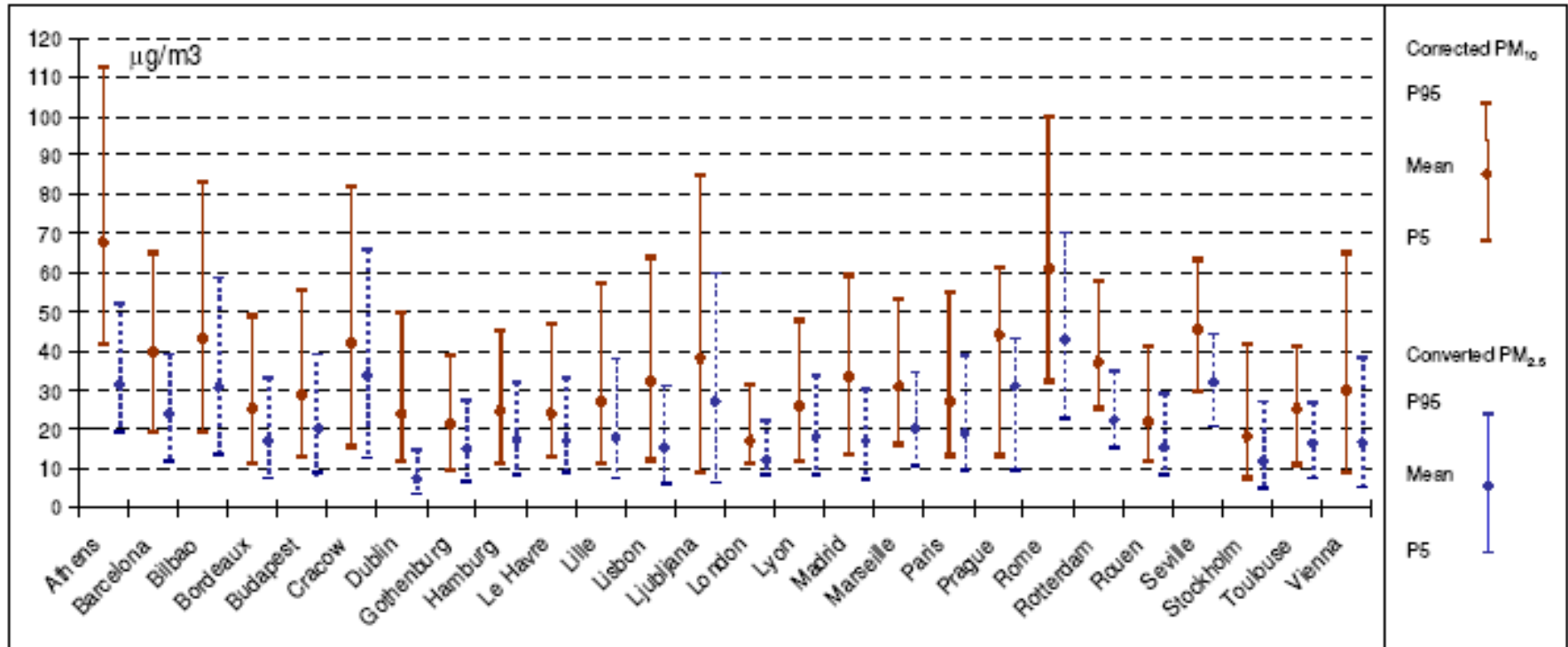


Health Impact Surveillance

- Measure health effects of hazard for a particular place
- Track over time
- Combine dose-response information with local hazard and population information
- Eg Air quality and impact on respiratory health and heart attacks

Health Impact Surveillance

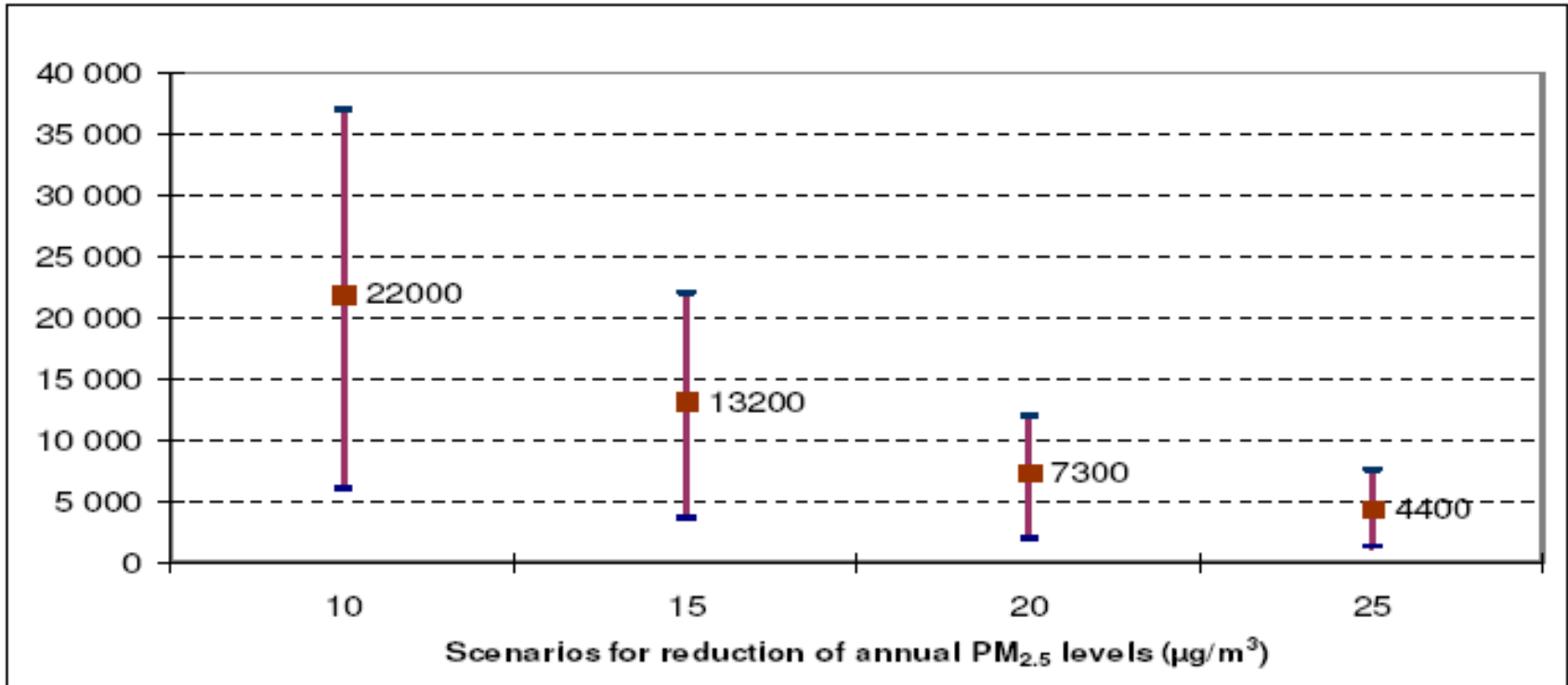
Annual levels for corrected PM₁₀ and converted PM_{2.5} for each Apehis city



Source: Medina S. Health Impact Assessment on the Benefits of Reducing PM 2.5 in 26 European Cities
 September 2006 <http://www.aepheis.org>

Scenario Presentation

Potential reductions in total annual deaths (central estimate and 95% CI) among people 30 years and over in 26 Apheis cities for different decreases in annual $PM_{2.5}$ levels.



Source: Medina S. Health Impact Assessment on the Benefits of Reducing PM 2.5 in 26 European Cities September 2006 <http://www.aepheis.org>

Reminders

- Core activity and a key information input to public health
- ..planning, implementation and evaluation of programmes
- actions often undertaken locally and by organizations and people outside of public health
- Public health surveillance often provided by others
- Yes we need to make sure we have our own house in order
- Surveillance (local level) focused on data collection
- Surveillance effectiveness requires understanding of societal public health action and how key actions can be informed by surveillance products
- Many effective surveillance products combine research and model findings with local data

Take Home Points

1. Overlap of surveillance and other PH information processes
2. Business process analysis and process redesign
3. Too big for one office - avoid duplication of effort
4. Establish a nationally resourced collaborative (local) public health information requirements development process – build on Common Ground
5. Use surveillance product champions within organizations
6. Yes and Yes
 - Build and consolidate general purpose systems and products
 - the potential of new technologies, data streams and communication methods – text mining, policy surveillance
 - develop infrastructure – PHIN NZ, data integration, skills, methods

Redefined surveillance

Public Health Surveillance is the ongoing systematic process of identification and production of information products to support public health action.