

Introduction to Animal Health Surveillance Evaluation

LinkTADs workshop

Design and evaluation of animal health surveillance systems

25th -27th April 2016, Qingdao, China



Presentation outline

- General introduction to evaluation
- Why do we need to evaluate animal health surveillance?
- Different types of evaluation
- Evaluation frameworks
- Evaluation steps
- Challenges
- Best practices

GENERAL INTRODUCTION

What is evaluation?

- **Evaluation** is a **systematic** determination of a subject's merit, **worth and significance**, using criteria governed by **a set of standards**.
- It can assist an organization, program, project or any other intervention or initiative **to assess any aim, realisable concept/ proposal, or any alternative, to help in decision-making**; or **to ascertain the degree of achievement or value** in regard to the aim and objectives and results of any such action that has been completed.
- The primary purpose of evaluation, in addition to gaining insight into prior or existing initiatives, is to enable **reflection** and assist in the identification of future **change**.

Evaluation vs Assessment vs Monitoring

- **Evaluation** is a **systematic** determination of a subject's merit, **worth and significance**, using criteria governed by **a set of standards**.
- **Assessment** is the collection and analysis of data from a defined indicator. It is a technical step within the evaluation process.
- **Monitoring** is the continuous data collection and assessment of defined indicators.

What is evaluation?

- Definition needs to be tailored to its context (including theory, needs, purpose, methodology of the eva process itself).
- Some examples:
 - "A study designed to assist some audience to assess an object's merit and worth" **focus on facts and value judgement**
 - "The critical assessment, in an objective manner as possible, of the degree to which a service or its component parts fulfills stated goals" **Focus on reaching objectives and quantitative measurement**
 - "A systematic, rigorous, and meticulous application of scientific methods to assess the design, implementation, improvement, or outcomes of a program". **Focus on process and results (e.g. M&E)**

What is evaluation of animal health surveillance systems?

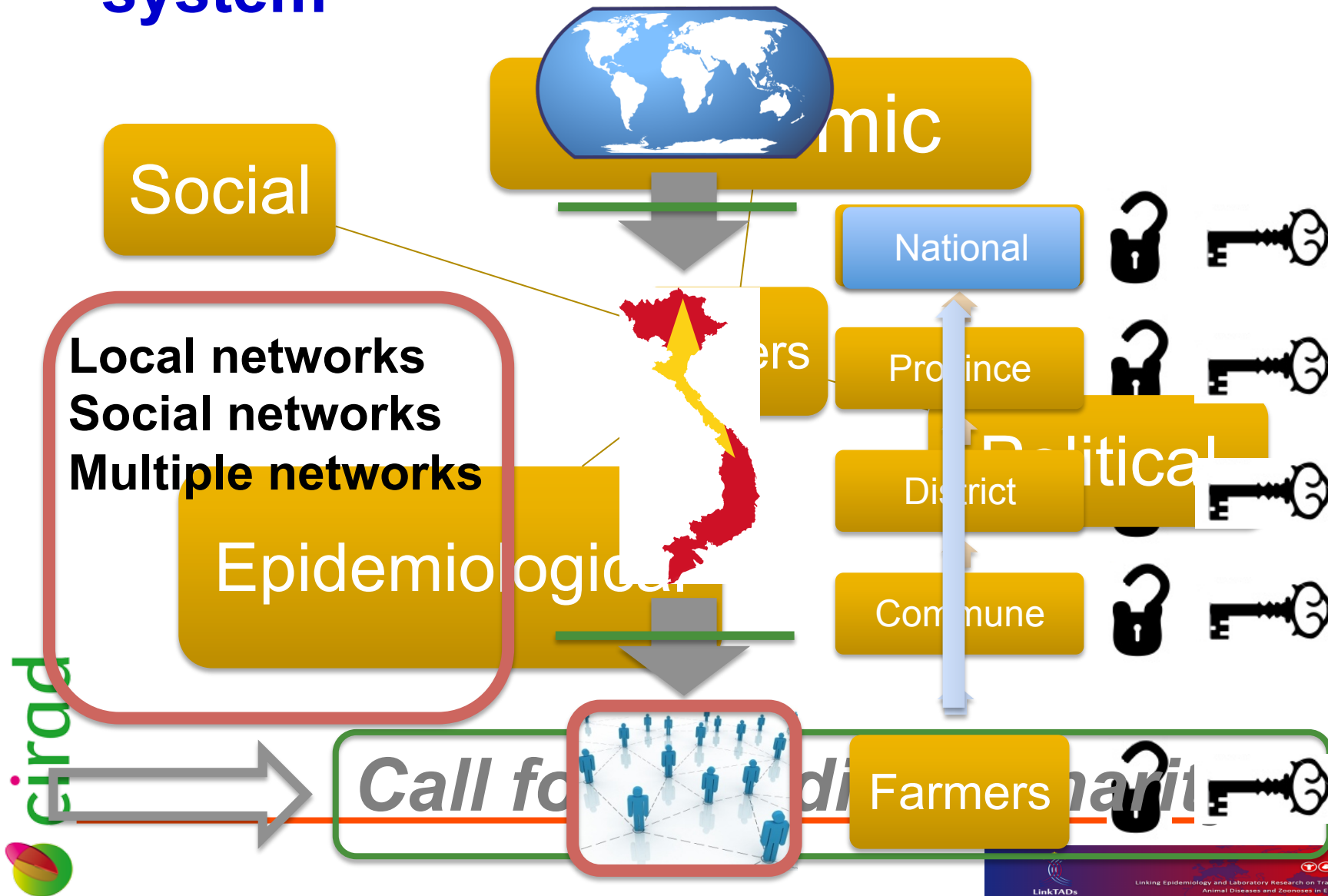
- Evaluation is the determination of the merit of a surveillance system/component, by confronting the results of the assessment with standards targets, criteria or a counterfactual system. **This process shall be transparent, objective and evidence-based.**
- The outcome of an evaluation is a judgement and /or recommendations **placed in the overall surveillance context.** An evaluation can be performed at **any development stage of the surveillance system.** Ideally, an evaluation is conducted in regular intervals in line with the policy cycle, by internal and/or external evaluators.
- One, several or all components in the surveillance system and any number of attributes and/or criteria can be considered, **depending on the evaluation question.**

WHY DO WE NEED TO EVALUATE ANIMAL HEALTH SURVEILLANCE?

Why do we do surveillance?

- General objectives
 - Early detection (disease not present)
 - Freedom from disease (eradication)
 - Case detection (endemic diseases)
- Specific objectives: e.g. Endemic disease
 - To monitor disease situation (measure prevalence)
 - To assess control measure effectiveness

Animal Health Surveillance: a complex system

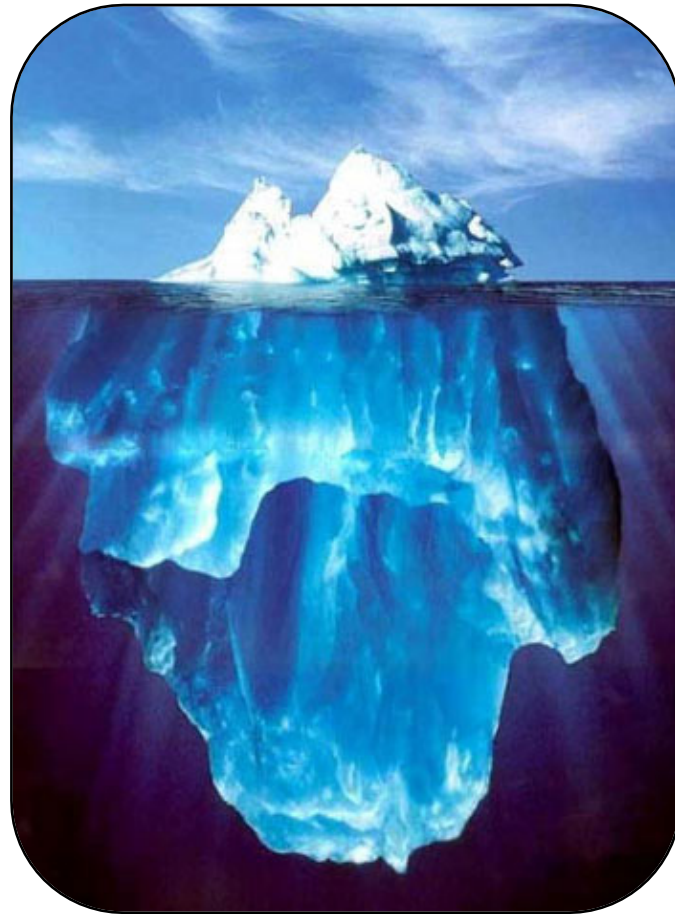


Source: N. Antoine Moussiaux

Why do we need to evaluate surveillance?

Reported

Not reported
and/or not
detected



Passive or
scanned
surveillance

Active
surveillance

Never
detected

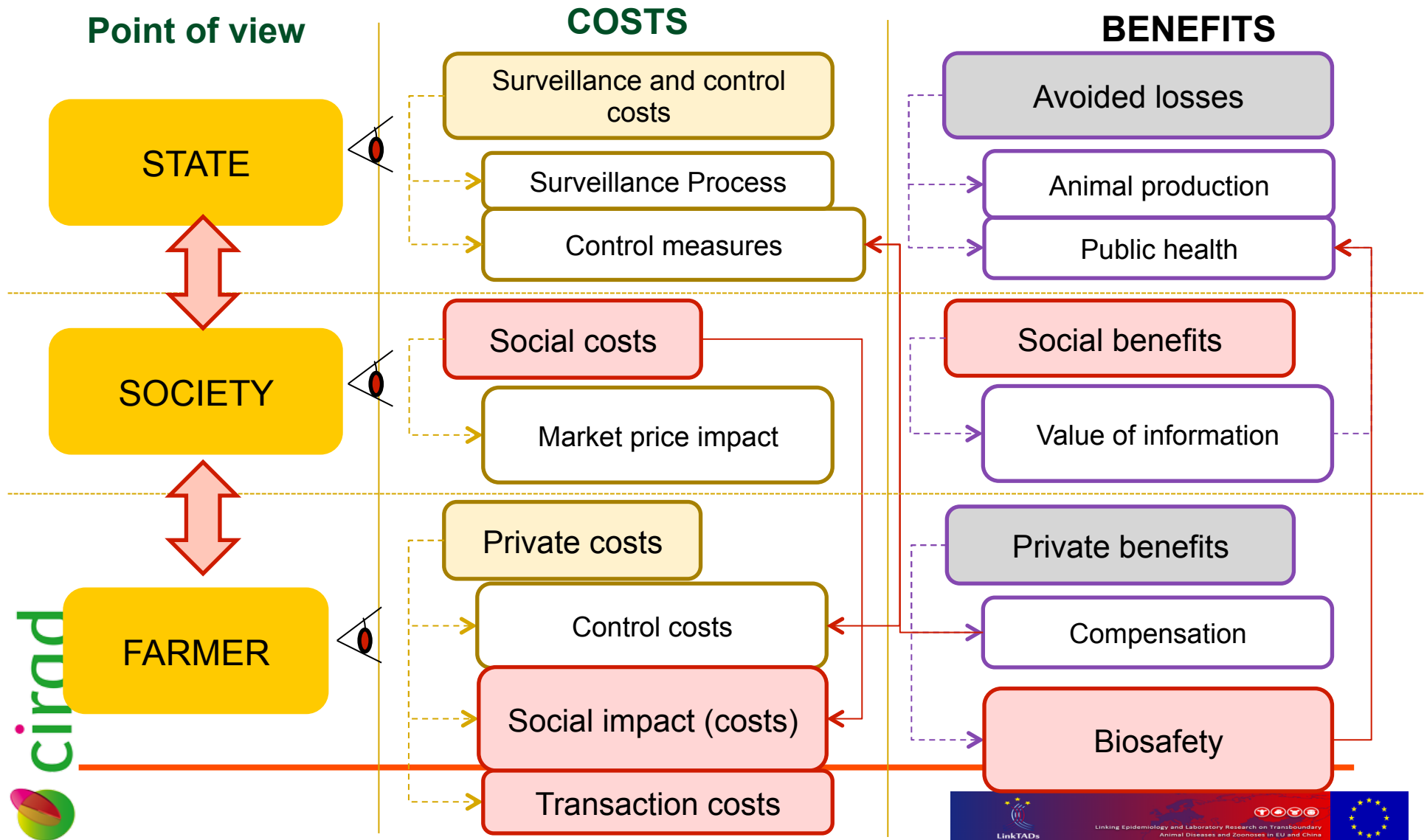
Why do we need to evaluate animal health surveillance systems?

- To plan , to re-design
- To ensure reaching the objectives
- To take **the right** corrective actions
- To make **changes**
- To demonstrate quality of the data generated
- To ensure effectiveness of the actions
- To **advocate** for funds
- To ensure **trust**

Why do we need to evaluate surveillance?

- To guarantee QUALITY of the DATA
 - To have meaningful results
 - To review management program
 - To make the good decision
 - To facilitate trade (e.g. risk-based surveillance)
- To select cost-effective program
 - How to select effectiveness criteria?
 - How to assess the costs?
 - Which tools?

Perception issues



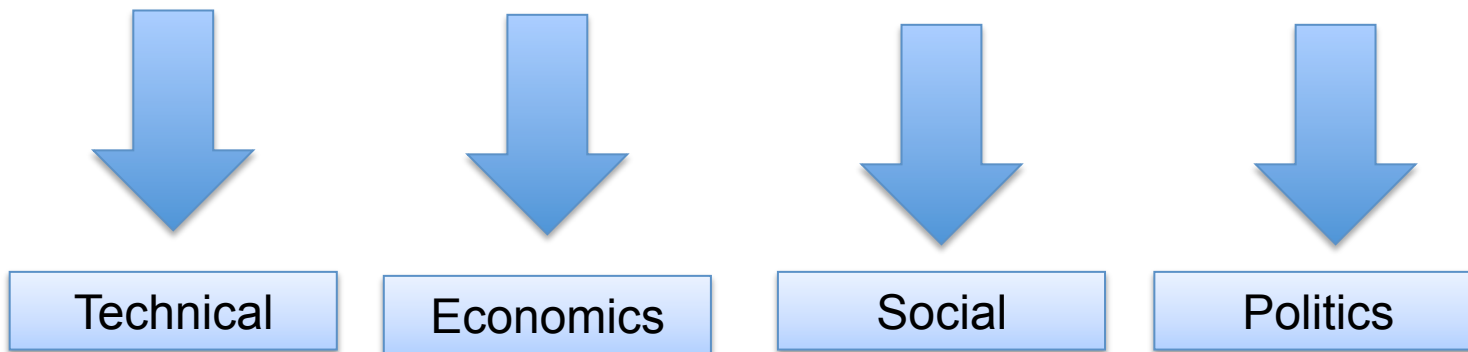
Challenges in evaluation

- Evaluation is not part of a unified theoretical framework, drawing on a number of disciplines, which include management and organisational theory, policy analysis, education, sociology, social anthropology and social change
- Definition issues
- Fit all stakeholder needs
- Tailor made: many types of evaluation
- Standardisation, many issues:
 - Ethical
 - Stakeholder definition
 - Could the money be spend more wisely? (value)

DIFFERENT TYPES OF EVALUATION

What evaluation can do?

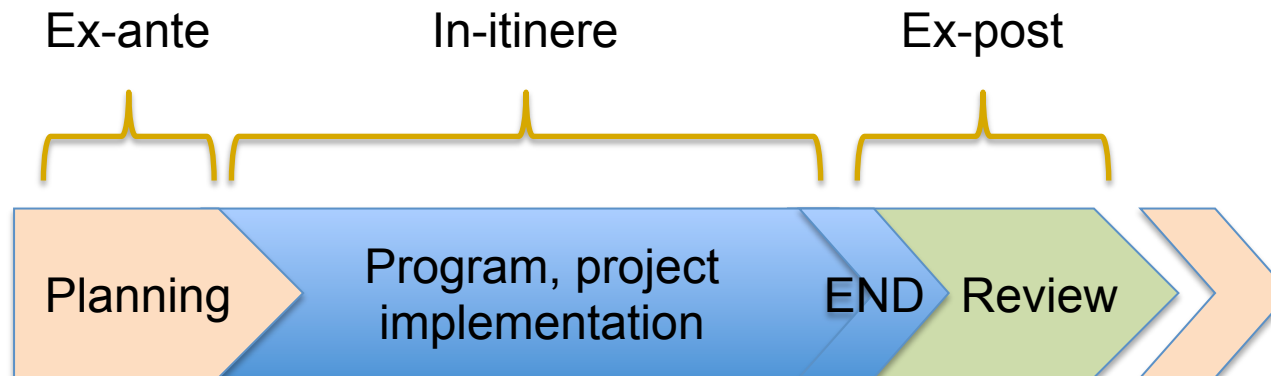
- Systematic assessment against standards
- Ascertain the degree, value of achievement
- Help in decision making
- Enable reflection
- Enable future changes



Important aspects: TIMING and SCALE

When to evaluate?

- Ex-ante } Formative= to improve the value of the proposal, project, organisation
- In-itinere } Corrective= to adjust the value of the proposal, project, organisation
- Ex-post } Assumptive= drawing lessons from completed action, project...



When to evaluate?

Steps of the object under evaluation	Ex-ante	In-itinere	Ex-post
Planning	Expected outputs, incomes, expected impact		
Design	How to reach the outputs, outcomes, impact		
Implementation	What to do to reach the outputs, outcomes, impact	Which outputs, outcomes, impact were reached And/or required outputs, outcomes to reach the impacts	
Re-design; re-planning		What to implement to reach the missing/new outputs, outcomes, impact	Which outputs, outcomes, impact were reached. What went wrong/right; what should be done/ corrected in a new process (lesson learned)

Different types and level of evaluation

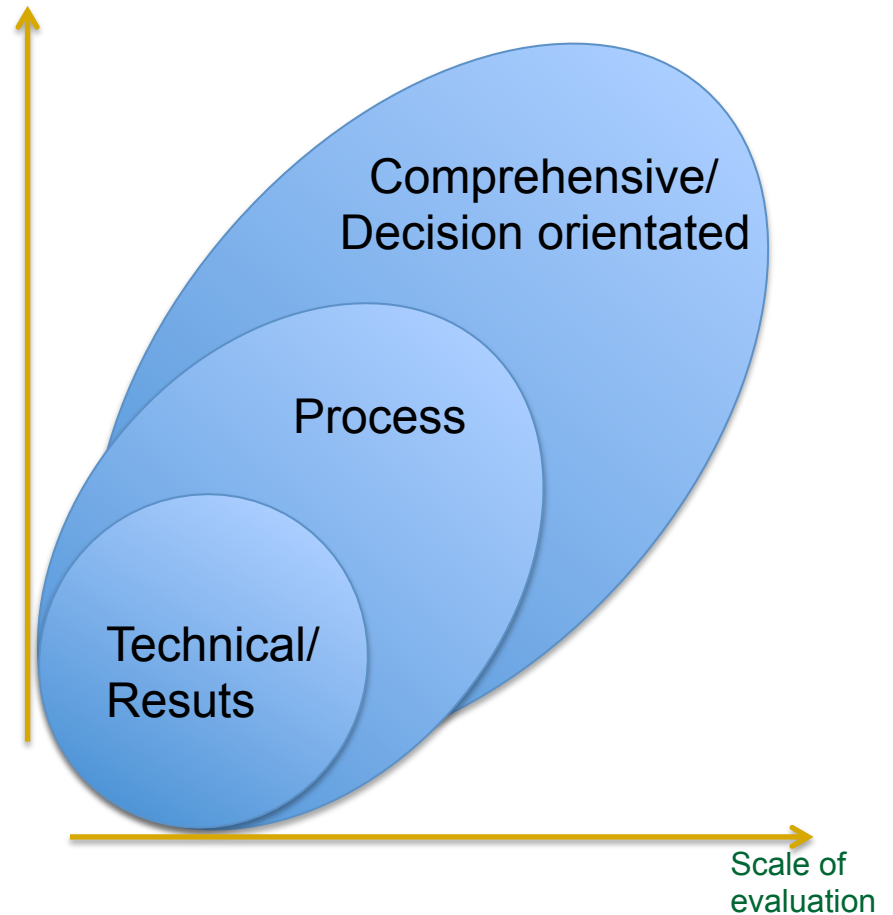
- Type of methods:

- Qualitative
- Semi-quantitative
- Quantitative
- Economic

- Levels:

- Technical
- Process
- Comprehensive




Degree of complexity



COMPREHENSIVE EVALUATION

- To take decision
- Combines technical, process, economic

EVALUATION

Technical		Are the objective reached?
Process		What could be improved /changed? Perception
Economic		What is the added value?

DECISION MAKING

How effective?

Why, which changes? Perception

Value for money?



- **EVALUATION** comes with a cost !
 - Timing
 - Human resources
 - Data collection
 - Funding
- The scale should be defined according to the needs
 - Stakeholder needs
 - Decision maker needs
 - Evaluation question

EVALUATION FRAMEWORKS

Health surveillance evaluation guides

Authors	Name	Year	Area of surv.	Type
Drewe et al.	SERVAL	2013	AH	Framework
Malecki et al.	-	2008	EPH	Framework
Meynard et al.	-	2008	PH*	Framework
ECDC	-	2006	PH	Framework
Buehler et al. (CDC)	-	2004	PH*	Framework
HSCC	-	2004	PH	Framework
WHO	-	1997	PH	Framework
WHO	-	2006	PH	Guidelines
German et al. (CDC)	-	2001	PH	Guidelines
El Allacki et al.	Conceptual evaluation	2012	AH & PH	Method
Dufour	CCP	1999	AH	Method
Hendriks et al.	OASIS	2011	AH	Tool
WHO	IPCAT	2011	PH	Tool
WHO	HMN assessment and monitoring tool	2008	PH	Tool
KTL	-	2004	PH	Tool

Objectives of RISKSUR EVA framework



1. To provide guidance on the evaluation process **including economic evaluation**
2. To provide a tool kit to perform the evaluation
 - a) Links with existing methods and tools
 - b) Innovative tools
3. To provide information on feasibility of the evaluation
4. To provide strenghts and limits of the evaluation
5. **Not an evaluation tool**

**The EVA tool:
a decision support tool for the evaluation of
surveillance systems**

EVA TOOL Process

CONTEXT

What is my situation? (surveillance system and evaluation needs)

EVA QUESTION

WHY doing an evaluation?

EVA ATTRIBUTES

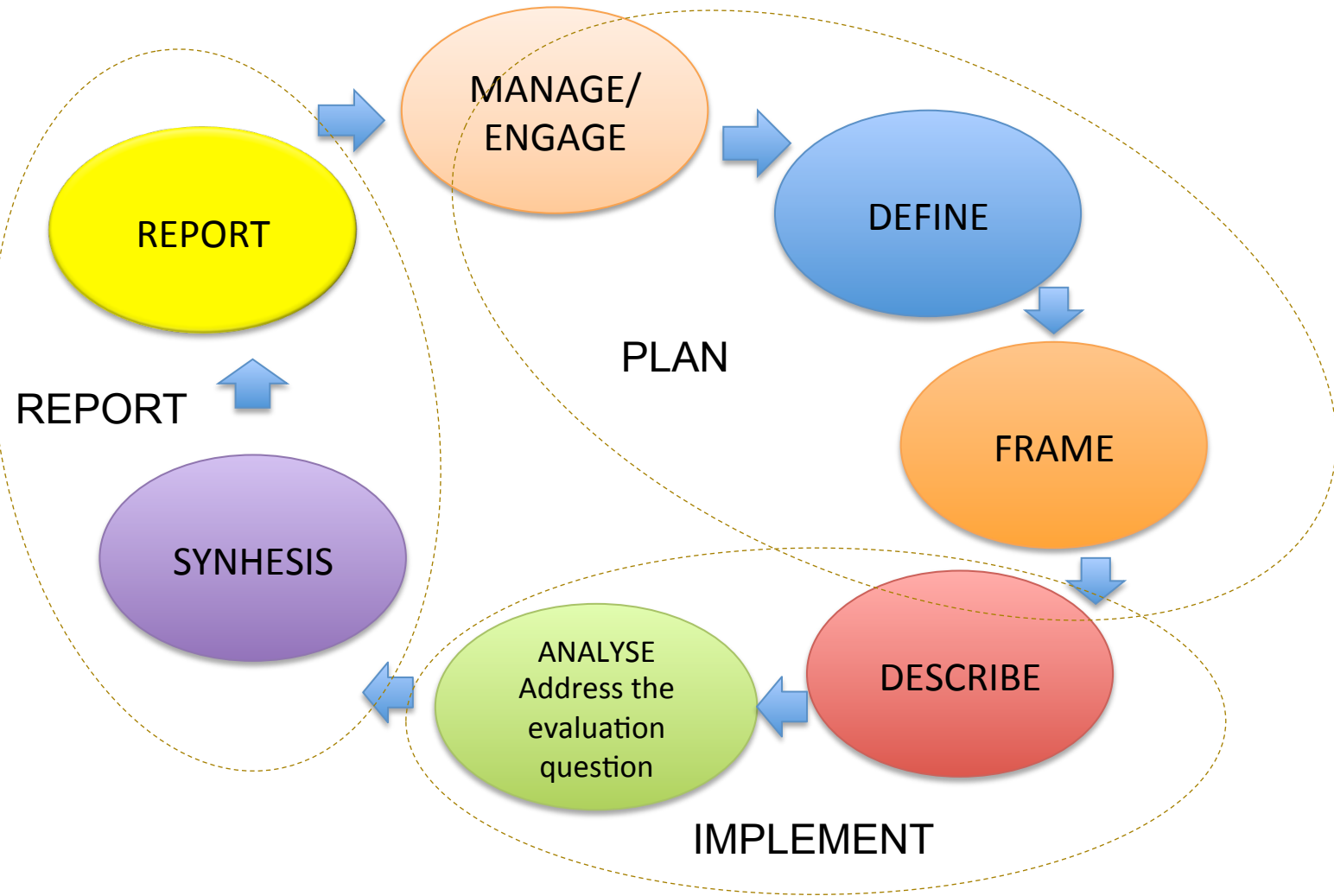
WHAT to evaluate?

EVA METHODS

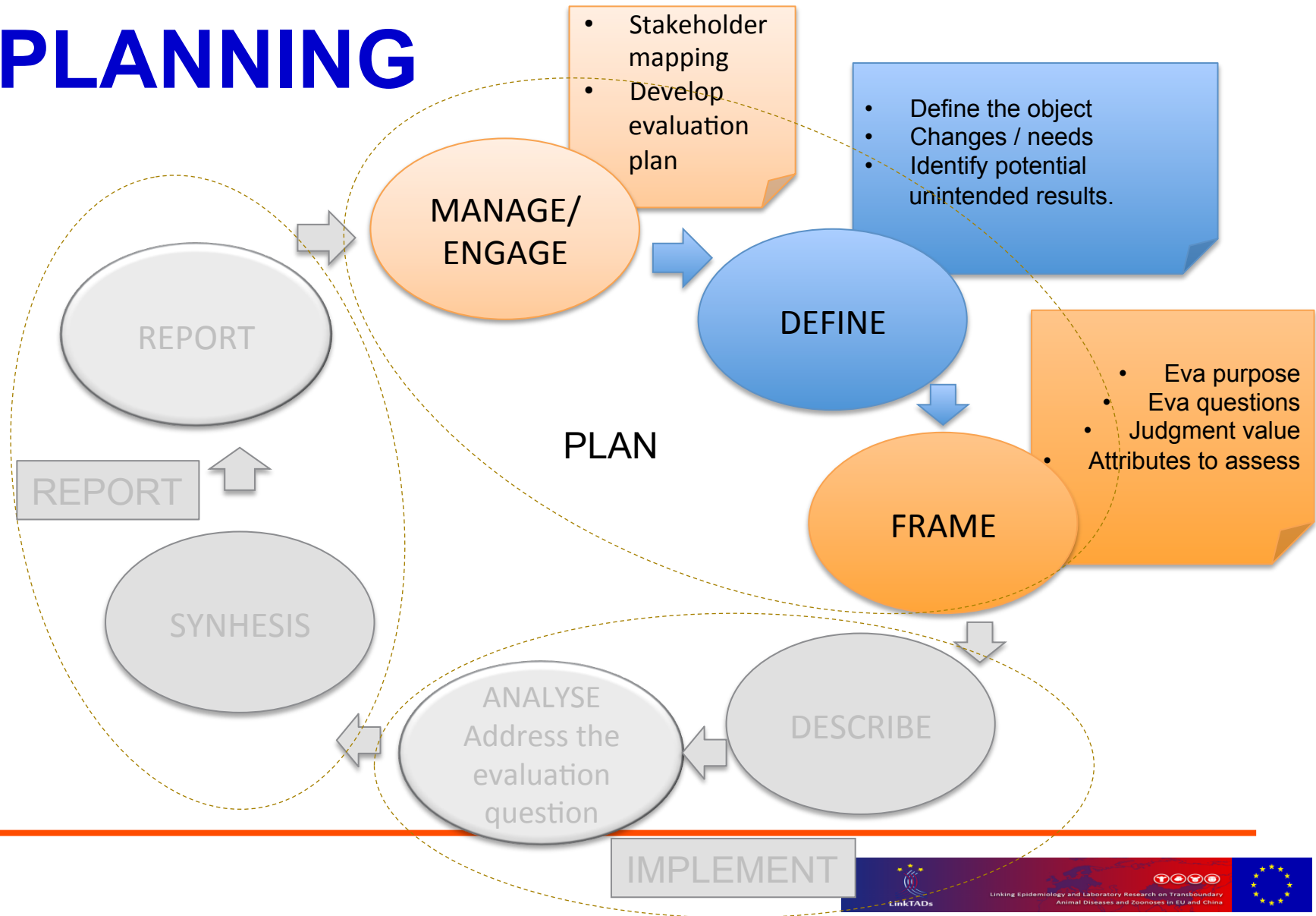
HOW?

EVALUATION STEPS

Evaluation Process



Evaluation Process: PLANNING



Define the evaluation context

- The evaluation context provides the background information that will help to make choices about how the evaluation needs to be carried out (Why? What? How?)
- The choice of type, level and elements to be included in the Evaluation process will depend on the context.
- It is important to defined the most relevant question adapted to the surveillance context and user/decision maker needs

Define the evaluation question

- ❑ **Descriptive question** - what has happened? what is the situation? For example –*How is the system organised?*
- ❑ **Causal question** – what caused or contributed to the results? For example – *Has the surveillance improved disease control? What is the effectiveness of the system? What other factors contributed to improving the disease situation?*
- ❑ **Synthesis question** – is this good? In what ways could it be better? Is it the best option? For example -*Is the surveillance system cost-effective? What are its strengths and weaknesses?*
- ❑ **Action question** – what action should be taken? For example -*Should the surveillance continue in its current format? What changes should be made to the surveillance system?*

Define the judgment value

- Judgment value
 - **Formal statement of value-** Standards, evaluative criteria and benchmarks; Stated goals and objectives (including legislative review and policy statements)
 - *Articulate and document tacit values: define value with stakeholders (participatory) e.g. public opinion questionnaires; beneficiaries interviews*
 - *Negotiate between different values: generating a consensus between different values (e.g. delphi method; public consultations)*

Evaluation attributes: definitions

- When evaluating public and animal health surveillance systems it has been recommended that their performance is assessed using a number of **evaluation attributes – evaluation criteria – critical control points**.
- The term “**evaluation attributes**” has been used to refer to the measurable characteristics that can be used to assess a surveillance system.
- The term “**economic efficiency criteria**” has been used for economic measures that can be used to compare the performance of different systems in relation to their cost and make a judgement about which provides best value for the investment made, *i.e.* which surveillance systems are beneficial from an economic point of view.

List of evaluation attributes and groups

- ❑ Organisational (2):
 - Surveillance system organisation
 - Risk-based criteria definition
- ❑ Functional (6)
- ❑ Effectiveness (7)
 - 3 evaluating the inclusion
 - 9 evaluating the evidence quality
- ❑ Value (2)

Effectiveness

Sensitivity (detection fraction or probability)

False Alarm rate (inverse of specificity)

Bias

Precision

Timeliness

Negative predictive value (NPV)

Positive predictive value (PPV)

Value

Benefit

Cost

Functional

Multiple hazard

Acceptability and engagement

Availability

Sustainability

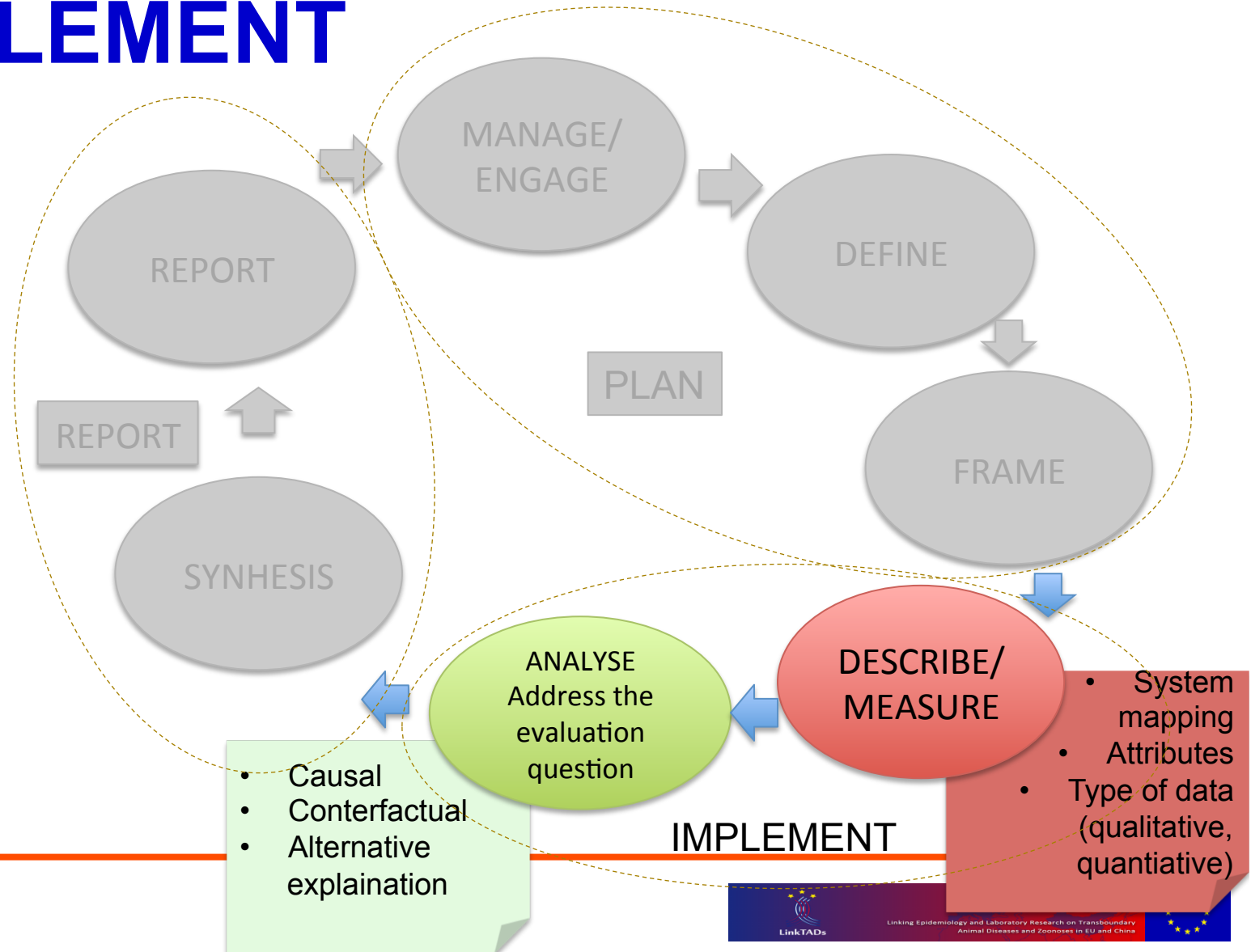
Flexibility

Simplicity

Evaluation workplan

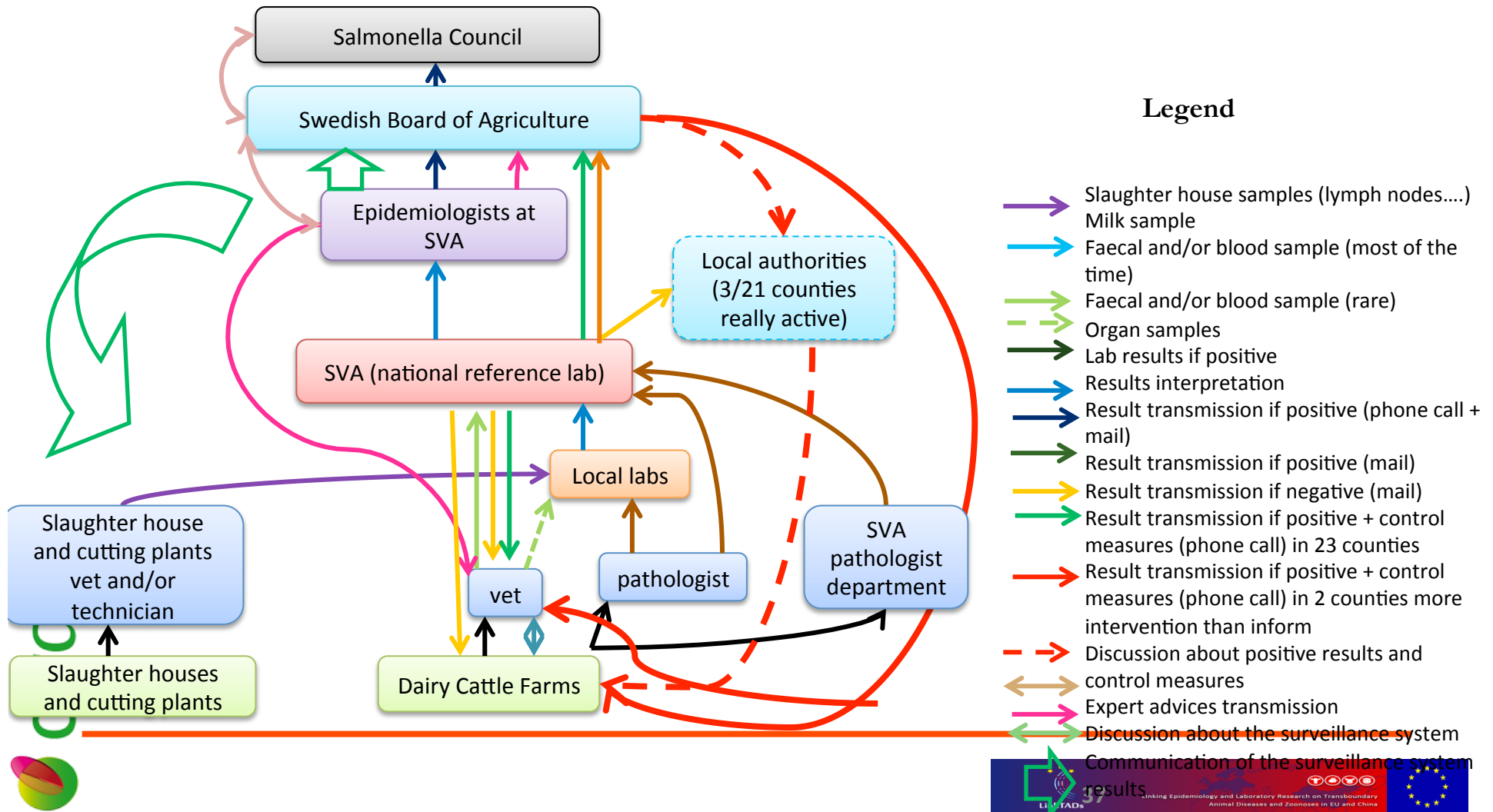
1. Descriptive analysis: system mapping
 - ❑ Current situation
 - ❑ Novel designs
2. Assess the evaluation attributes selected
 - ❑ List of attributes to assess
 - ❑ List of assessment methods
 - ❑ Collect additional data if required
 - ❑ Develop simulation models if required
3. Address the evaluation question
 - ❑ Comparative analysis
 - ❑ Economic analysis
4. Synthesis the results
5. Report the evaluation outputs

Evaluation Process: IMPLEMENT



SYSTEM MAPPING

(Descriptive analysis of the system)



Assess evaluation attributes

Surveillance and control scenarios	Evaluation Attributes		
	Acceptability	Timeliness	Sensitivity
Scenario 0	Very low	10-12 weeks*	<5%
Scenario 1	Low	> 4 weeks	50%
Scenario 2	High	1-2 weeks	90%
Scenario 3	Medium	2-3 weeks	84%

Address the evaluation question

- E.g. Which component gives the best performances?

Component	Sensitivity	Rank	Timeliness	Rk	Acceptability	Rk
Sc1	<5%	4	10-12 wks	4	Very low	4
Sc2	50%	3	>4 wks	3	Low	3
Sc3	90%	1	1-2 wks	1	High	1
Sc4	84%	2	2-3 wks	2	Medium	2

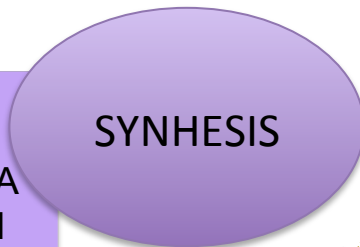
- Sc3 higher effectiveness
- Why is it important to look at more than 1 attribute ?
- What is the added value of +7% sensitivity more?

Evaluation Process: REPORT

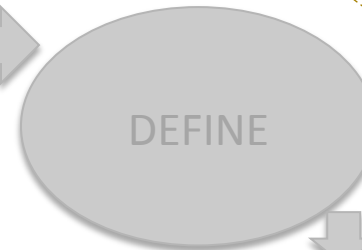
- Requirement
- Accessibility
- Recommendations
- Support



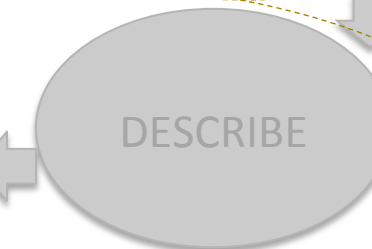
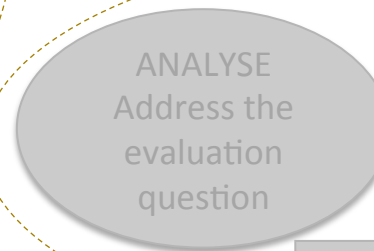
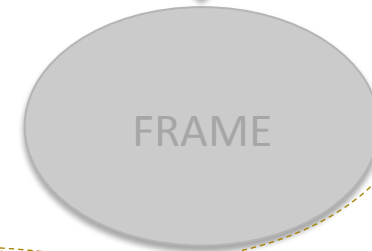
REPORT



- Single EVA
- Accross EVA
- Generalised



PLAN

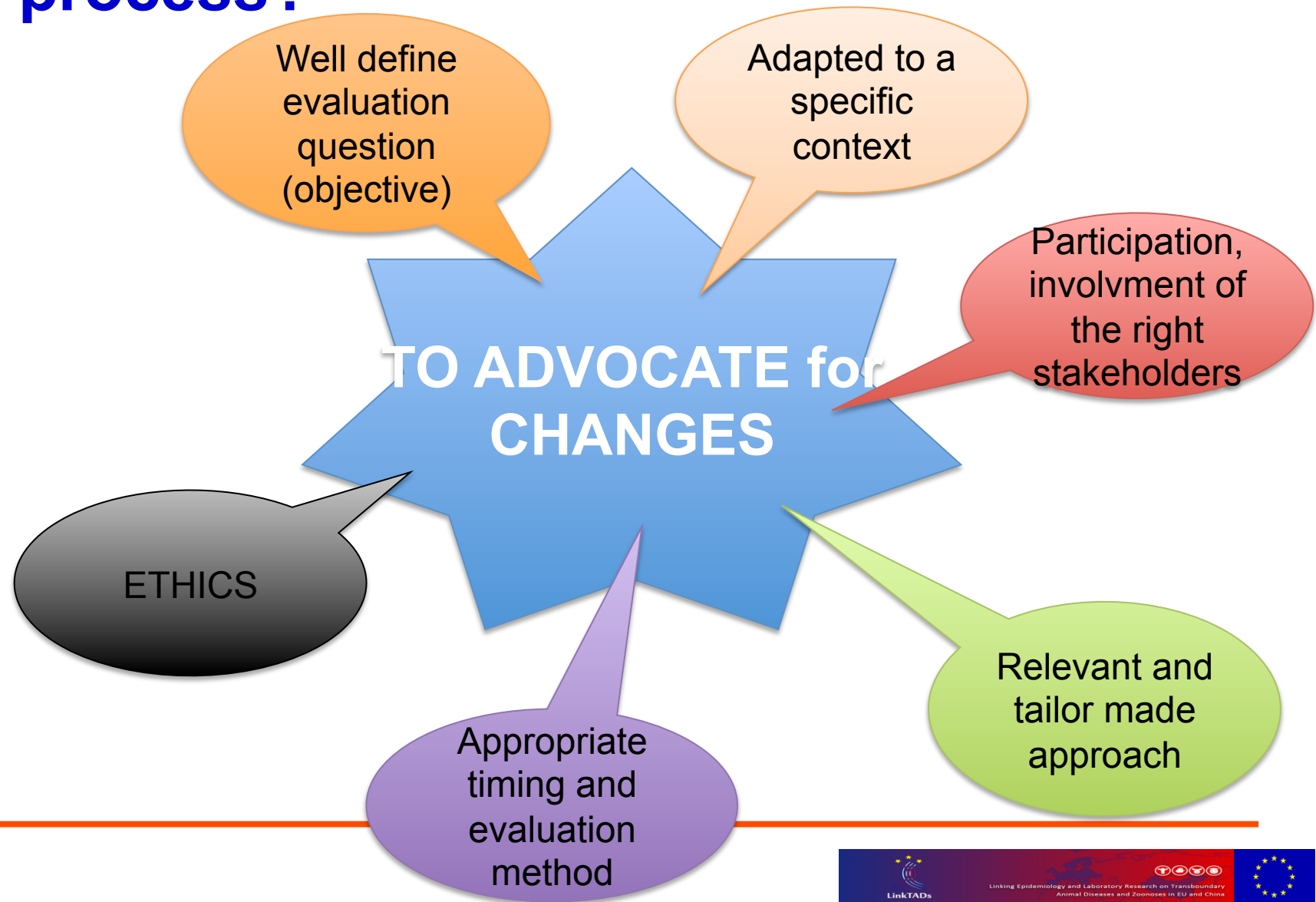


IMPLEMENT

Surveillance Design / Evaluation cycle



What is critical in the evaluation process?



Evaluator Guiding principles

Source: American evaluation association (
<http://www.eval.org/p/cm/ld/fid=51>)

- **Systematic Enquiry**
 - Adhere to highest technical standards
 - Explore strengths and shortcomings of evaluation questions and approaches
 - Communicate approaches, methods and limitations accurately
- **Appropriate competences**
- **Respects**
- **Responsibilities**
- **Integrity/honesty** (impartiality/independence/transparency)

Evaluator Guiding principles

- **Independence:** no conflict of interest
- **Impartiality:** considering all stakeholders; links between findings and recommendations
- **Transparency:** all stakeholders aware of the evaluation aim and detail process
- Take into account general and public interests:
 - Include relevant stakeholders
 - Balance client and stakeholder needs
 - Examine assumptions and potential side effects
 - Present results in understandable forms

Evaluation groups initiatives

- UN Evaluation group: to establish UN norms and standards for evaluation (<http://www.uneval.org/>)
- OECD-DAC evaluation group: to improve development evaluation standards
- MDB Evaluation Cooperation Group: share lessons from MDB evaluations, and promote evaluation harmonization and collaboration
- **BetterEvaluation initiative:** Sharing information to improve evaluation (<http://betterevaluation.org>):
” An international collaboration to improve evaluation practice and theory by sharing and generating information about options (methods or processes) and approaches.”



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THANK YOU !

