



IZSAM G.CAPORALE
TERAMO

**THE INTEGRATION OF A LABORATORY INFORMATION
MANAGEMENT SYSTEM WITHIN A NATIONAL LIVESTOCK
IDENTIFICATION AND TRACEABILITY SYSTEM IN AFRICAN
COUNTRIES**

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Veterinary Public Health (VPH)

➤ VPH is “the sum of all contributions to the physical, mental and social well-being of humans through an understanding and application of veterinary science”.

➤ The main missions of Veterinary services are to fight animal disease, including zoonoses, and to assure food security and safety worldwide with positive cost-benefit ratio for the international community, in particular:

- To reach the absence of diseases, including zoonoses, as well as food security and food safety, as primary factors for the welfare of human beings.
- To increase the availability and the quality of proteins for the human population and help to decrease crop waste.
- To prevent human affections.





AGENDA



➤ AIRT

➤ SILABFA & AIRT interoperability

➤ AHIS





Italian VPH services

For historical reasons, in Italy the VPH services are under the Ministry of health, so the strategy **ONE HEALTH - ONE MEDICINE** is a natural point of view. This approach recognized, already in the middle of the XX Century, that human and animals health are ONE and that it is more effective and efficient to prevent human disease working on animal population medicine.

Moreover, it also led to the understanding that man and animals shared the same world and had a mutual influence with the environment they lived in (**ONE PLANET**).





IIZZSS network



IZSAM Fields of activities

Mission: Protect human health satisfying the need of the Italian Health System and of citizens.

Animal Health and welfare

Food safety

Health and environment

Epidemiological surveillance

Information systems and animal identification & registration

Training



National Reference Centre

- **National Reference Centre for:**



- Exotic animal diseases

- Epidemiology, Programming, Information and Risk Analysis

- Brucellosis

- Urban Hygiene and Non-Epidemic Emergencies (IUVERNE)

- **National Reference Laboratory for:**

- Listeriosis

- Campylobacteriosis

- PCB and dioxins

- **National Centre for Animal Identification and recording**





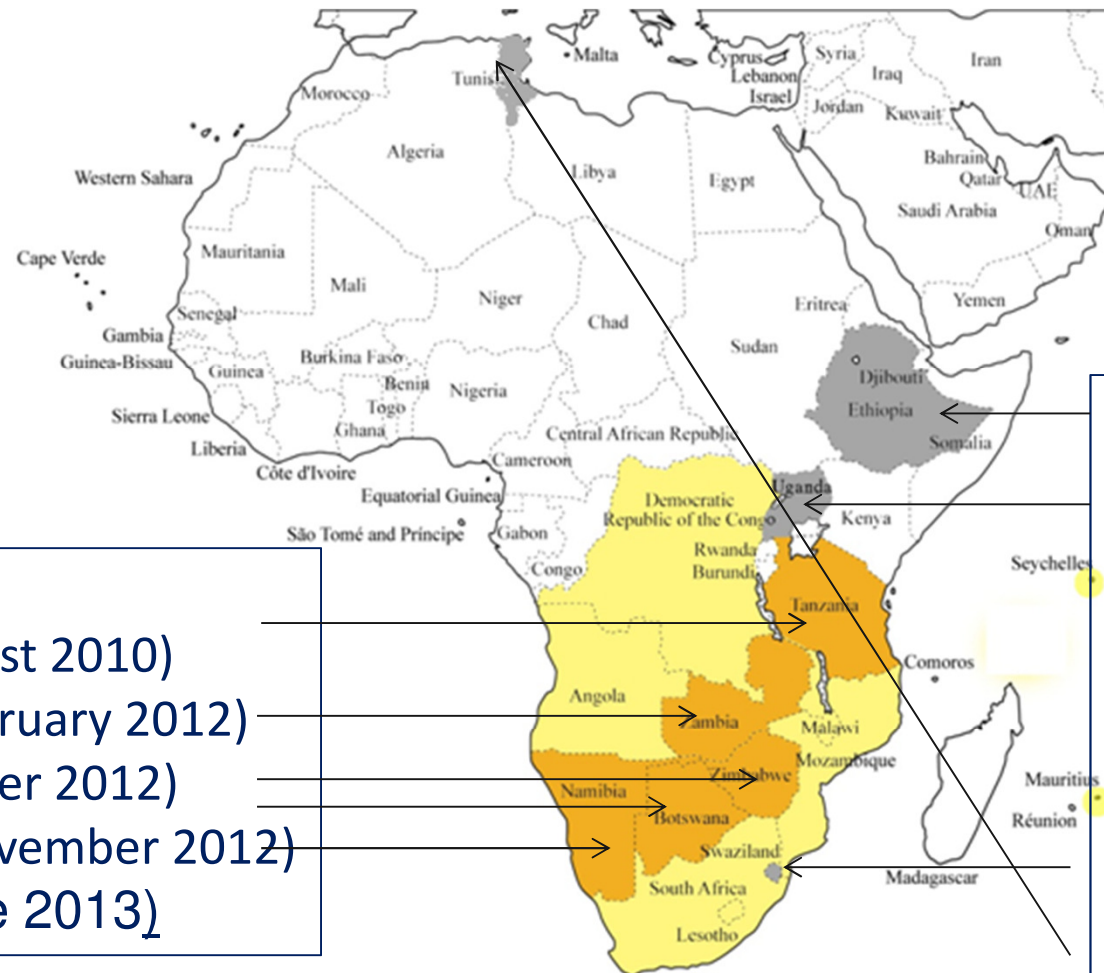
Laboratory Information Management System (LIMS): SILAB For Africa

In the beginning only SILAB





SILAB in African Countries (June 2015)



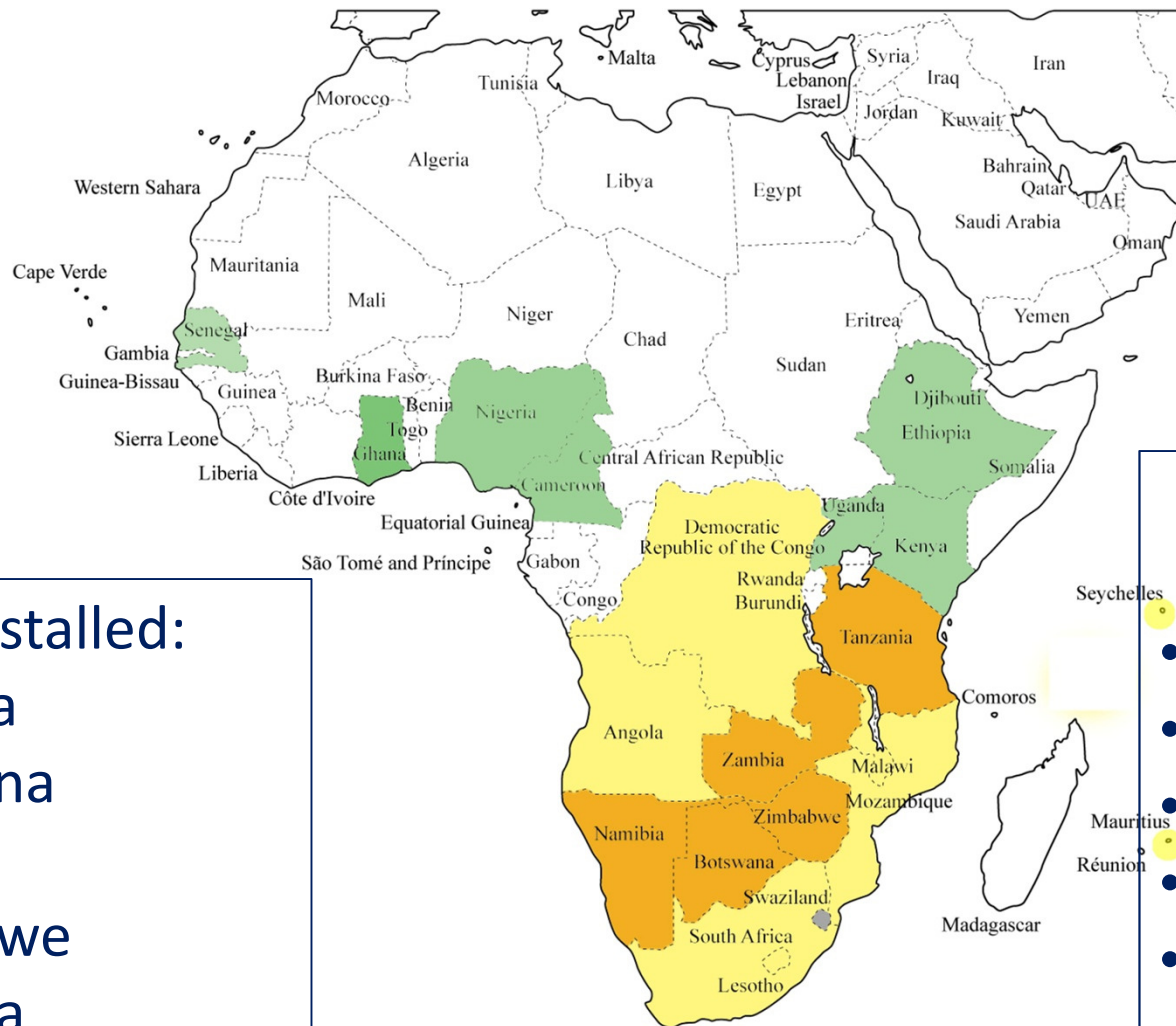
SILABFA installed:

- Namibia (August 2010)
- Botswana (February 2012)
- Zambia (October 2012)
- Zimbabwe (November 2012)
- Tanzania (June 2013)

- ## SILABFA requested:
- (AU-PANVAC-NADDEC),
- Ethiopia
 - Uganda,
 - Swaziland,
 - Tunisia



SILABFA FAO project (during the next 4 years)



SILABFA installed:

- Namibia
- Botswana
- Zambia
- Zimbabwe
- Tanzania

SILABFA will be installed:

- Ethiopia,
- Uganda,
- Kenya,
- Ghana,
- Nigeria,
- Cameroon,
- Senegal.





Helpdesk activities (2010-2014)

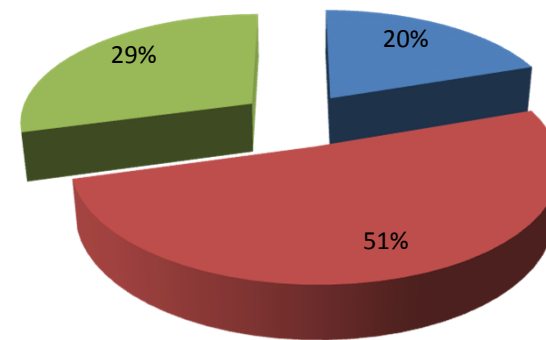
for 5 Countries



- Helpdesk established at IZSAM, in Italy
- Daily support, bug fix, improvement of existing features: carried out from Italy via remote access to the African Laboratory servers
- A DEMO session is installed in IZSAM italian server with public IP address where the SILABFA users can test the new functionalities developed

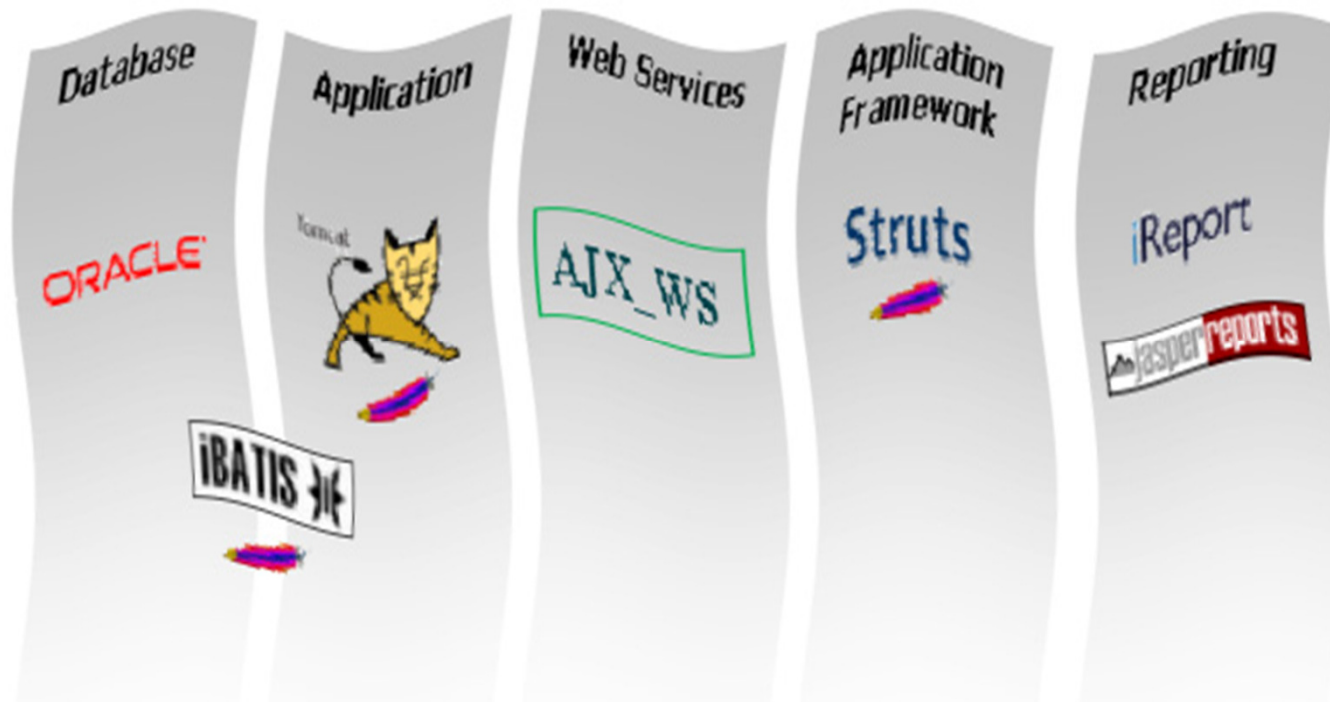
Percentage type of Interventions

■ Network ■ Maintenance and Support ■ Customizations

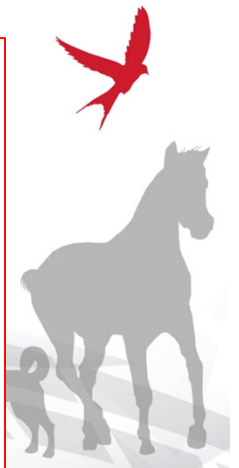


SILABFA implementation

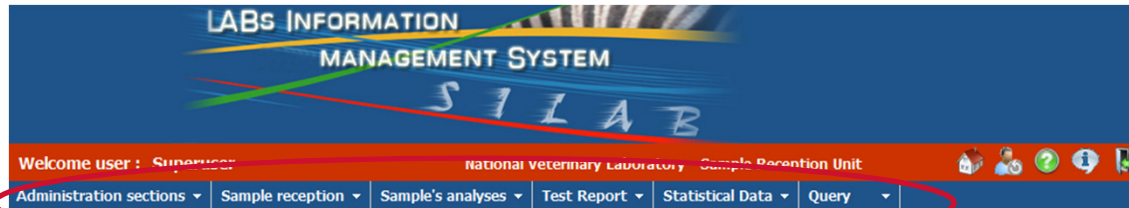
Free / Open source tools used



- Web application hosted on a local server accessible via any computer connected to LAN and, where facilities exist, from any computer with an Internet connection (VPN)
- SILAB doesn't require any license fee, it's free
- It uses only free parts (e.g.: free version of Oracle database)
- It can run on any operative system not only on Windows



SILAB features



Sample reception - step 1

Year:

Laboratory: BNVL NATIONAL VETERINARY LABOF

Submission number:

Date received:

Type of activity:

Sampling purpose:

Activity area:

Request type:

Number of animals:

Sender's reference number:

Date Send:

Case History:

Internal protocol number:

Internal protocol date:

Action

- Samples reception: the receptionist inserts all needed data (owner, material, species, required tests, etc.)

- A unique code is generated for each request and sample (barcode) and the sample is delivered to section/s

- When tests are completed, results are inserted

- The head/s of section/s validates those results

- Test reports are automatically prepared and forwarded



Main achievements in all countries:



Quality of data: reduce data typing (list of values/default values; – formal and business rules checked; database constraints)

➤ **System Compliant to ISO-17025:**

using SILABFA

- Namibia CVL reached the accreditation,
- Zimbabwe and Botswana improve the sections and tests accredited,
- Zambia and Tanzania on the way.



Main achievements:



➤ Dematerialization (paperless system):

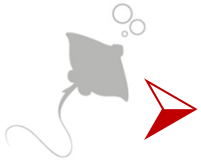
The hard registration is used only during power cut-off.

➤ Laboratory Management Efficiency (in terms of turnaround time and Number of Tests):

- Namibia and Botswana high evolution
- Zimbabwe, Zambia and Tanzania significant results



Main achievements:



SILABFA Alert system:

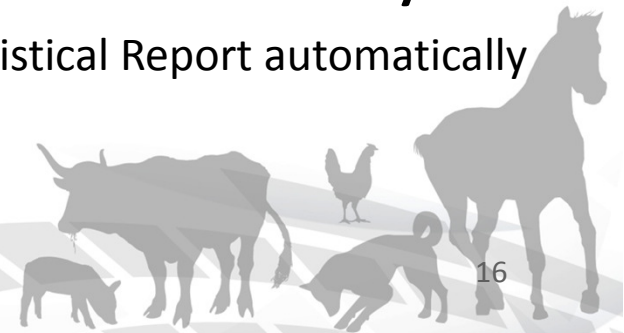
Implemented and installed in each country

Each night SILABFA automatically send the email alerts to the Laboratory personnel notifying the main SILABFA steps. The system alert can be customized following the Laboratory needs.

Data Statistical Analysis:

Implemented and installed in each country

The Laboratory personnel can create and manage Statistical Report automatically from the system and save it in Excel or pdf file.



Main achievements:



Customer Satisfaction:

SILABFA automatically send the Test Reports (& invoice) to the sender (Veterinary Services, or private owner) and to other additional recipients using the integrated email service (currently installed only in Namibia)

IT Security:

SILABFA is highly SAFE and the laboratory data are properly stored and preserved. The system is installed in laboratory LAN (reachable via IP public address, where existing). Data Backup runs automatically twice per day according to the local ICT standard security.

Database languages and semantic:

Many values in Database tables are coded (using national/international codes where present) and all personnel use the same language; the information is standardized and an easy interoperability between different systems can be implemented





Animal identification registration and traceability (AIRT) system

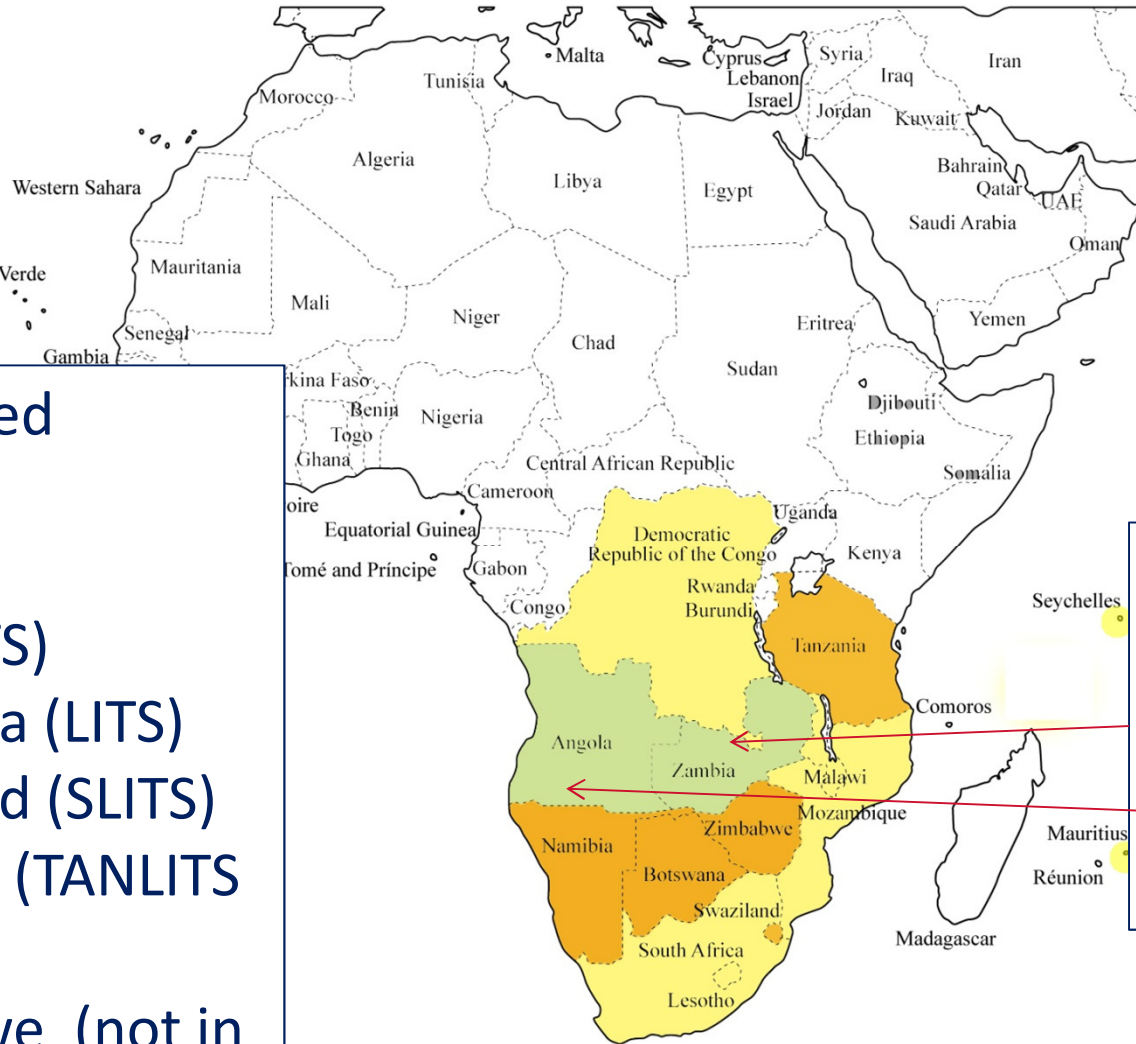


- AIRT plays a key role in animal health and disease control:
 - Increasing food safety
 - Facilitating market access and trade
 - Improving animal health
 - Reducing stock theft
 - Facilitating genetic improvement
 - Improving herd management
 - Improving product quality





AIRT system implemented



AIRT installed (yellow):

- Namibia (NAMLITS)
- Botswana (LITS)
- Swaziland (SLITS)
- Tanzania (TANLITS pilot)
- Zimbabwe (not in use)

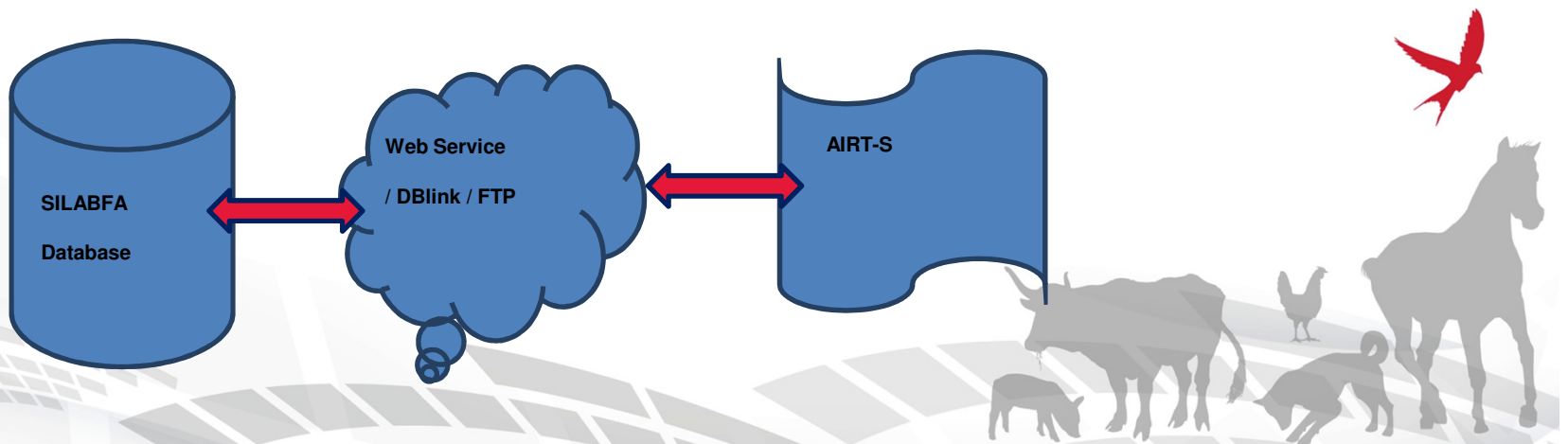
AIRT ongoing (grey):

- Zambia
- Angola



SILABFA and AIRT system

A LIMS system is one important element of the chain of the traceability system such as the AIRT System (e.g. LITS in Botswana, NAMLITS in Namibia, TANLITS in Tanzania). The chain is completed if the laboratory and the veterinary field works, are well connected.



SILABFA and AIRT system

The inter-linkage and inter-operability:

- linking animal with health status
- to insert data only once in one system and make data automatically available to other systems
- rapid and fluid data transfer
- more accurate timely interventions, information entries and retrieval of data in animal health and food safety.



This inter-operability will work at 2 ways as SILABFA will return to AIRT DB the results related to a herd or specific bovine.





SILABFA and AIRT system: Botswana

- To simplify the interconnection, the SILABFA database codes are realigned to the LITS database codes: the regions, districts, external areas, the type of sample, the animal species have now the same codes in both systems.
- In Botswana, the LITS system is installed in a server located in the Ministry of Agriculture HQ, in the same domain of SILABFA server (gov.bw); for this reason the connection is safe and fast. The systems are connected with a database-link (DBLINK).

KEEPERS_LITS: Created: 23/08/2014 19.27.42 Last DDL: 23/08/2014 19.30.35

Column Name	ID	Pk	Null?	Data Type
KEEPER_ID	1		N	VARCHAR2 (75 Byte)
KEEPER_TYPE	2		N	VARCHAR2 (36 Byte)
KEEPER_NAME	3		Y	VARCHAR2 (150 Byte)
KEEPER_SURNAME	4		Y	VARCHAR2 (225 Byte)
KEEPER_ADDRESS	5		Y	VARCHAR2 (750 Byte)
KEEPER_NATIONALITY	6		Y	VARCHAR2 (24 Byte)
KEEPER_PHONE_NUMBER	7		Y	VARCHAR2 (60 Byte)
KEEPER_CELL_NUMBER	8		Y	VARCHAR2 (60 Byte)

HOLDINGS_LITS: Created: 23/08/2014 19.21.18 Last DDL: 23/08/2014 19.30.17

Column Name	ID	Pk	Null?	Data Type	Default
KEEPER_ID	1		Y	VARCHAR2 (75 Byte)	
ANIMAL_ID	2		N	VARCHAR2 (60 Byte)	
STATO_ANIMALE	3		N	VARCHAR2 (30 Byte)	
HOLDING_ID	4		N	VARCHAR2 (150 Byte)	
CRUSH	5		Y	VARCHAR2 (150 Byte)	
EXTENSION_AREA	6		N	VARCHAR2 (150 Byte)	
SUB_DISTRICT	7		N	VARCHAR2 (150 Byte)	
EXPIRY_DATE					
CRUSH	6	Y		VARCHAR2 (150 Byte)	No
EXTENSION_AREA	7	N		VARCHAR2 (150 Byte)	No
SUB_DISTRICT	8	N		VARCHAR2 (150 Byte)	No
DISTRICT	9	N		VARCHAR2 (150 Byte)	No



SILABFA and AIRT

interoperability: state of art

➤ 2014 SILABFA ↔ LITS in Botswana funded by FAO

Over 200,000 livestock (bovine) keepers information is now available to SILABFA from the LITS database and over 3,000,000 bovines are identified and traced in SILAB.

The interface with LITS database has reduced the time taken to enter owner details for bovine cases as they are available on the click of a button.

➤ 2015 SILABFA ↔ NamLITS in Namibia funded by Namibian MAWF, using Web Services.

140,000 Herds, 20,000 Establishments, 170,000 Keepers (next animal ID)

➤ SILABFA ↔ TANLITS in Tanzania: we only studied the interoperability using WS.





How the inter-connection runs

The SILABFA users in Sample Reception can automatically see all animal owners and each animal_ID and can choose the correct values involved in submission form.

LABS INFORMATION MANAGEMENT SYSTEM
SILAB

Welcome user : Superuser National Veterinary Laboratory - Serology

Administration sections ▾ Sample reception ▾ Sample's analyses ▾ Test Report ▾ Statistical Data ▾ Query ▾

Back to sample reception and acceptance Go to received samples

Sample reception - step 2

Laboratory name: NATIONAL VETERINARY LABORATORY
Year: 2014
Submission number: 3361

Sender, source and payment

Senders type: Farm/Occ. Sender ▾
Sender: nokaneng
Farm/Occ.Sender: Customer
Payment: Records: 2 |< << >> >| 10

Add New Farm/Occ. Sender

#	Farm code	Owner	Address	Location
1	BWD/2c /0000340	NOKANENG COMMUNAL	Unknownon	
2		VARIOUS FARMERS OF NOKANENG CRUSH	Nokaneng Crush	Mmadinare (22)

Data stored in LITS are automatically showed in reception form when the receptionist enquires the system concerning the keeper and/or owner of the samples.





Focus on ZAMBIA: AIRT

2012 SILABFA in CVRI

2015 MoU between the Italian Ministry of Health and Ministry of Agriculture and Livestock of the Republic of Zambia was signed focusing mainly on the development of a Cattle Identification and Registration System in Zambia by IZSAM.

This system will share with SILABFA the same codes, with the same semantic, so the interoperability will be guaranteed using Web services technology.

- The pilot project is starting in a limited area (17,000 cattle). It will last about 12 months.
- The main objective of the pilot project is to propose an AIRT implementation strategy based on the Zambian situation.






SILABFA & AIRT → **AHIS**

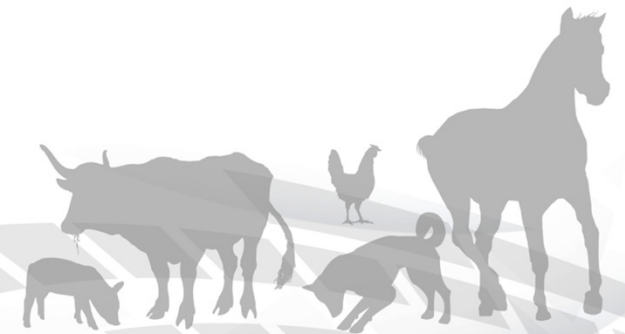
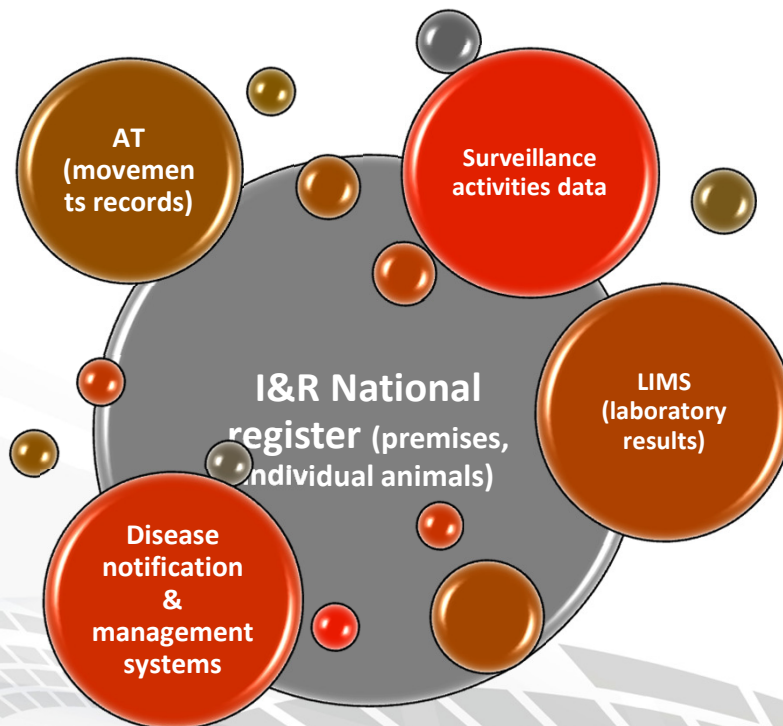
The Interoperability between SILABFA and the AIRT systems can facilitate the realization of a solid Animal Disease Surveillance and developing a computerized integrated “**Animal Health Information System (AHIS)**”.

- *NAMIBIA and ZAMBIA on the road...*
- *Requested by Zimbabwe and Botswana*





The integrated **“Animal Health Information System”**, can offer information necessary to the national Veterinary services and facilitate data feeding of supranational systems (FAO systems (TAD_info, The Global Animal Disease Information System - EMPRES-i)), AU-AIBAR systems, SADC systems, etc...) in an efficient way.





Thank you for your

attention!



For more information:

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