



Electronic Integrated Disease Surveillance System (EIDSS) Concept & Capabilities

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September 23, 2009
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Black & Veatch



- Defense Threat Reduction Agency (U.S.)
 - Implements Biological Threat Reduction Program (BTRP) in Kazakhstan, Uzbekistan, Georgia, Armenia, Ukraine and Azerbaijan (as Client)
 - Established in 1998, located in Washington (US)
- Black & Veatch
 - Leading global engineering, consulting and construction company, founded in 1915
 - Has around 100 regional offices and representations around the world with up to 10,000 employees and headquarters in Kansas City in the U.S., and regional offices in Moscow, Almaty, Tashkent, Kiev, Baku and Tbilisi
 - Implements Electronic Integrated Disease Surveillance System program (EIDSS) for Defense Threat Reduction Agency (DTRA), a U.S. Department of Defense Agency (DTRA), Biological Threat Reduction Program (BTRP)



- System Description
- Implementation Examples
- Implementation Plan
- Resume

System Description

Description of Electronic Integrated Disease Surveillance System (EIDSS)

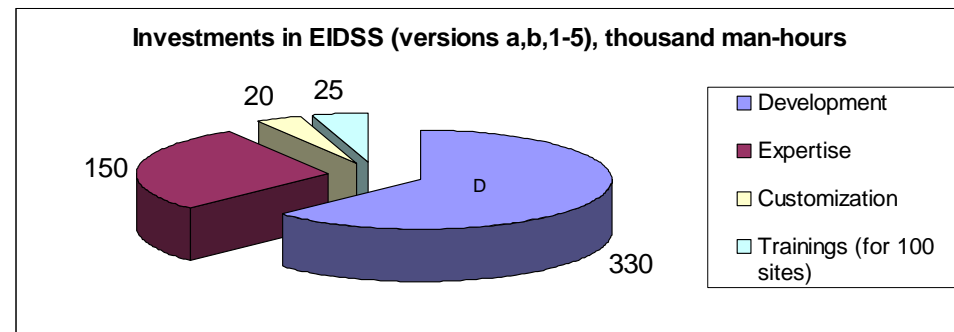
What is EIDSS?



- EIDSS is an Electronic Integrated Disease Surveillance System
- Strengthens and support monitoring and prevention of human and animal diseases
- Manages case, case plus disease specific investigation and aggregate data
- Integrates data for laboratory samples, tests and results
- Provides comprehensive data analysis and decision support (including historical data) along with GIS capabilities
- Collects and distributes data, and notifies on the events in near real-time
- Links together different levels of a national disease surveillance network in a secure way

EIDSS Development

- Developed from 2005 in collaboration with:
 - Center for Disease Control and Prevention (CDC), U.S.
 - Walter Reed Army Institute for Research (WRAIR), U.S.
 - Ministries of Health and Veterinary Departments from Kazakhstan, Uzbekistan, Azerbaijan and Georgia
 - International medical and veterinary experts
- 150,000+ man-hours of implementation
- 75,000+ man-hours of expertise
- Versions:
 - Version 1 is currently deployed on 120+ sites in four countries
 - Version 2 – deployment scheduled for Q3
 - Versions 3, 4 and 5 are contracted with around 18 months development cycle



EIDSS Modules

Human

- Demographic data
- Disease-specific clinical data based on Standard case definitions
- Epidemiological investigation
- Sample tracking linked to a specific case
- Laboratory tests linked to a specific sample

Veterinary

- Avian and livestock
- Farm / owner data
- Disease-specific clinical data based on Standard case definitions
- Epidemiological investigations
- Sample tracking
- Penside tests and samples

Analysis and GIS

- Configurable reports
- Statistical analysis
- Graphs, diagrams, tables
- Disease data mapping

Laboratory

- Sample, test assignment, test results and batch tests tracking
- Aliquots and derivatives tracking
- Link to clinical case data

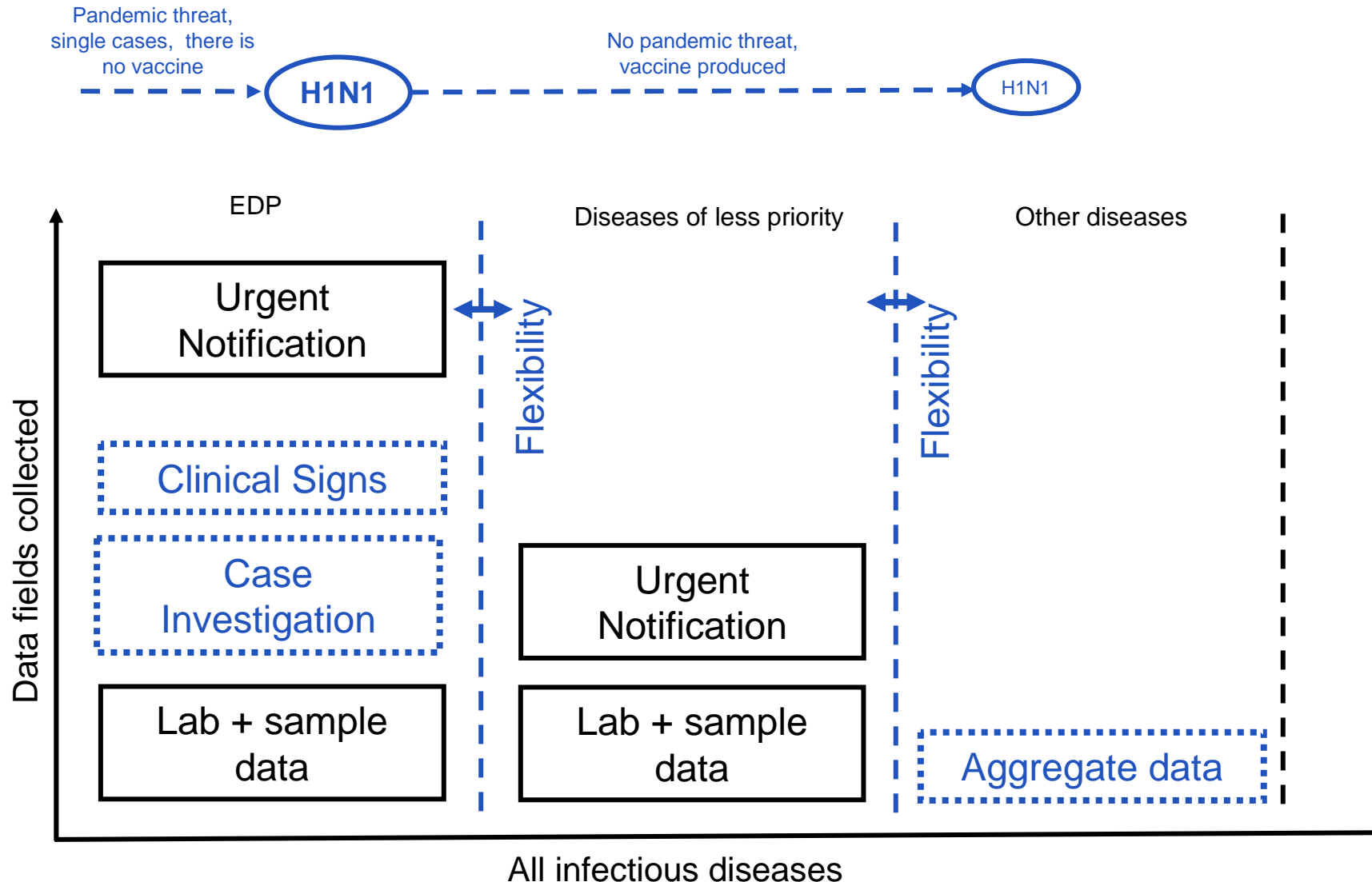
External ExchangeВнешний обмен информацией

- WHO CISID data export

Admin and Notification Module

- Data access management (user roles, permits)
- System Customization
- Notification of new events

System Localization for the Surveillance Priorities



Flexibility Example - Anthrax

- Customization
 - BTRP Case definition forms are very similar to European
 - Changes in Case Investigation forms can be done by an admin

ANTHRAX Investigation Form

(1) Case Classification Specify the disease and case classification (*check all that apply*):

Suspected Cutaneous:
Skin lesion in one of the following stages:
YN Luk
Papule
Vesicle
Pustule
Painless ulcer
Painless solid black eschar

Suspected Gastrointestinal:
YN Luk Patient must exhibit:
Fever >38°C
AND
Manifestations of at least 1:
Severe abdominal pain
Bloody diarrhea
Ascites
Hematemesis
Hemorrhagic lymphadenitis

BTRP Case Definition Excerpt (Anthrax)

ANTHRAX
(*Bacillus anthracis*)
Clinical criteria

Any person with at least one of the following clinical forms:

Cutaneous anthrax
At least one the following two:
— Papular or vesicular lesion
— **Depressed black eschar with surrounding oedema**

European Commission Case Definition (Anthrax)

Human Case Report Form
Human Case Report Form(H02)

Case ID: [] Location: [] Date Entered: 01/01/2009 Date Last Saved: 01/01/2009

Notification: Case Investigation Tests

Demographic Information Clinical Information Specimen Collection Contact List Final Case Classification and Outcome Case Classification Epidemiological Links and Risk Factors

Case Classification: Specify the disease and case classification (please, check all that apply):

Suspect Outbreaks

Skin lesion in one of the following stages:

Papule []
Vesicle []
Pustule []
Painless ulcer []
Depressed black eschar with surrounding oedema []

Probable (for all forms):

Meets Suspect definition []
1. Within 2 weeks before symptom onset, travel to or living in a location where confirmed anthrax cases were reported []

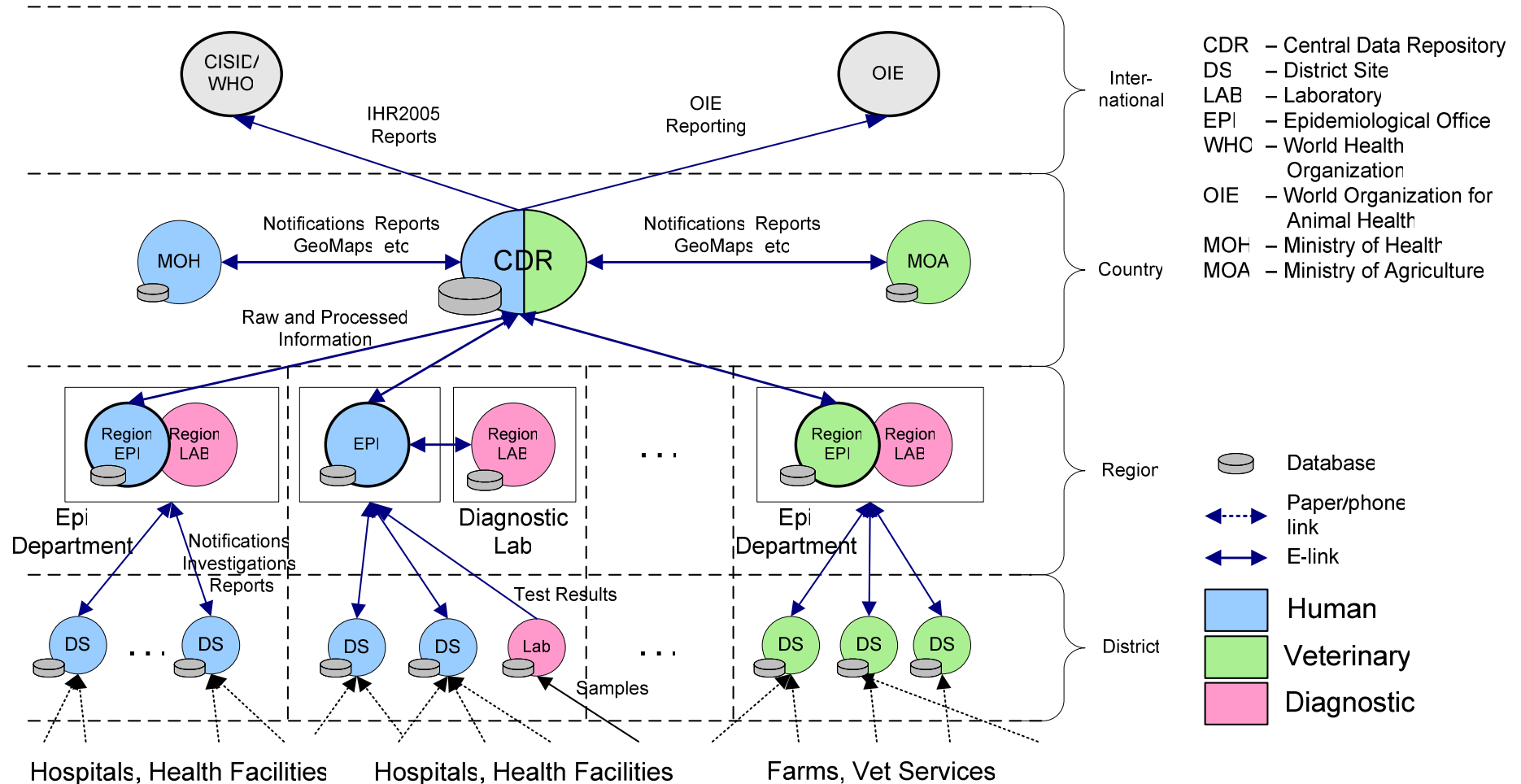
AND one of the following

Contact with animals or derivatives of animals []

Print Form Browse Clear New Delete Save OK Cancel

EIDSS Case Definition Form

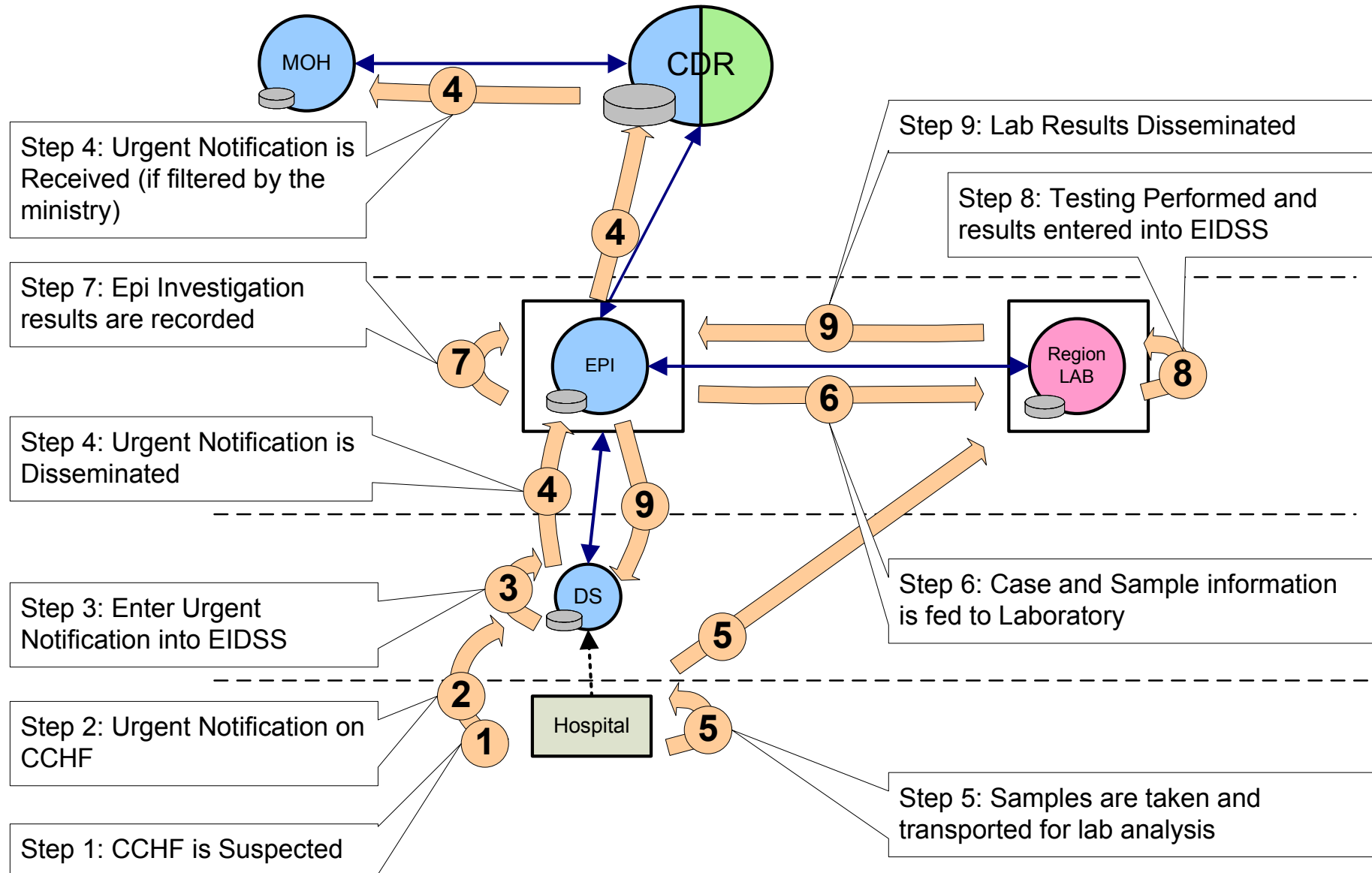
EIDSS Architecture



- “Commercial-off-the-shelf” (COTS) readily available generic hardware
- Scalable – Room Growth over Long-Term

- Long-Term Sustainability - Minimal Operations and Maintenance Costs
- Fault Tolerant – Backup Communication lines

CCHF Scenario



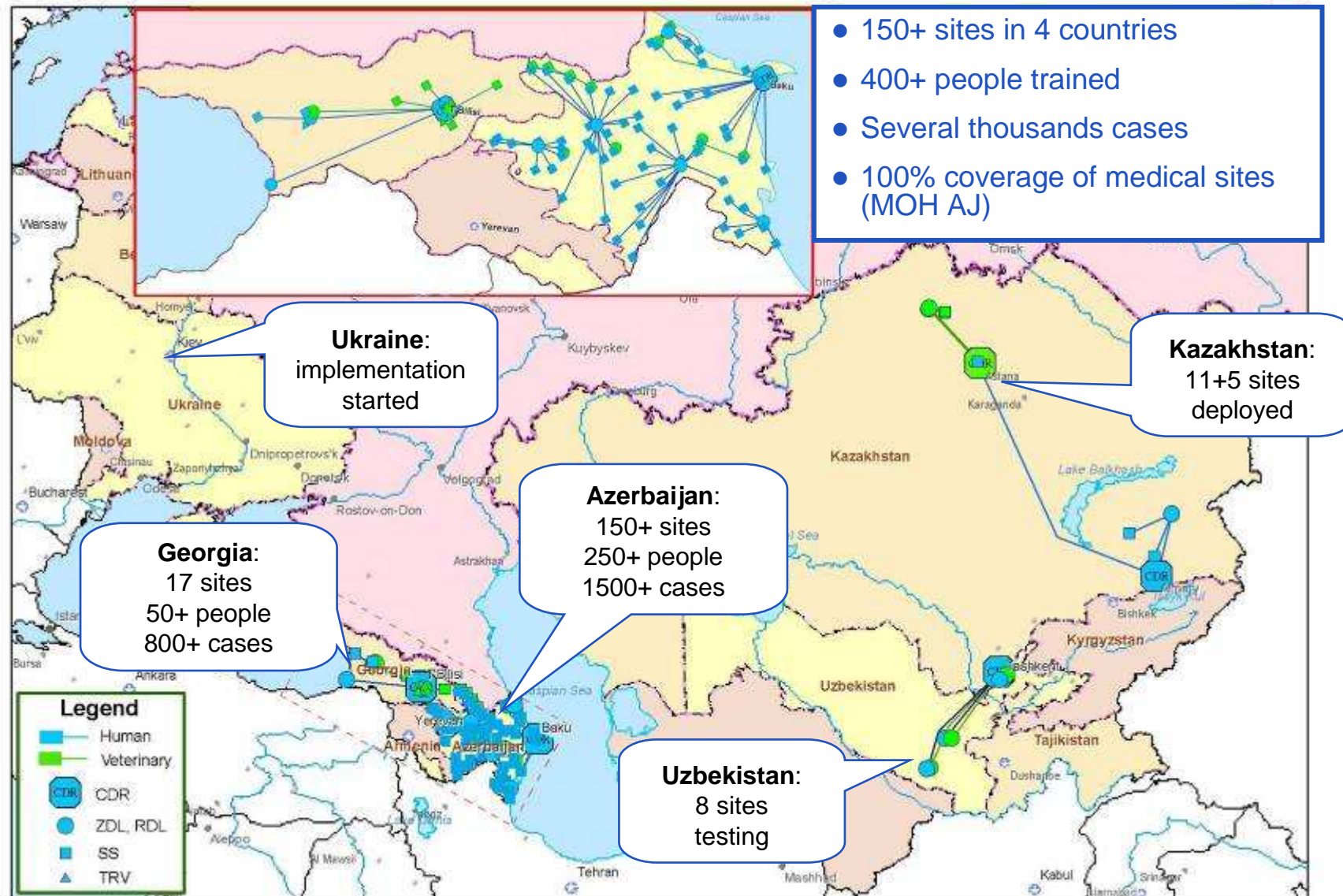


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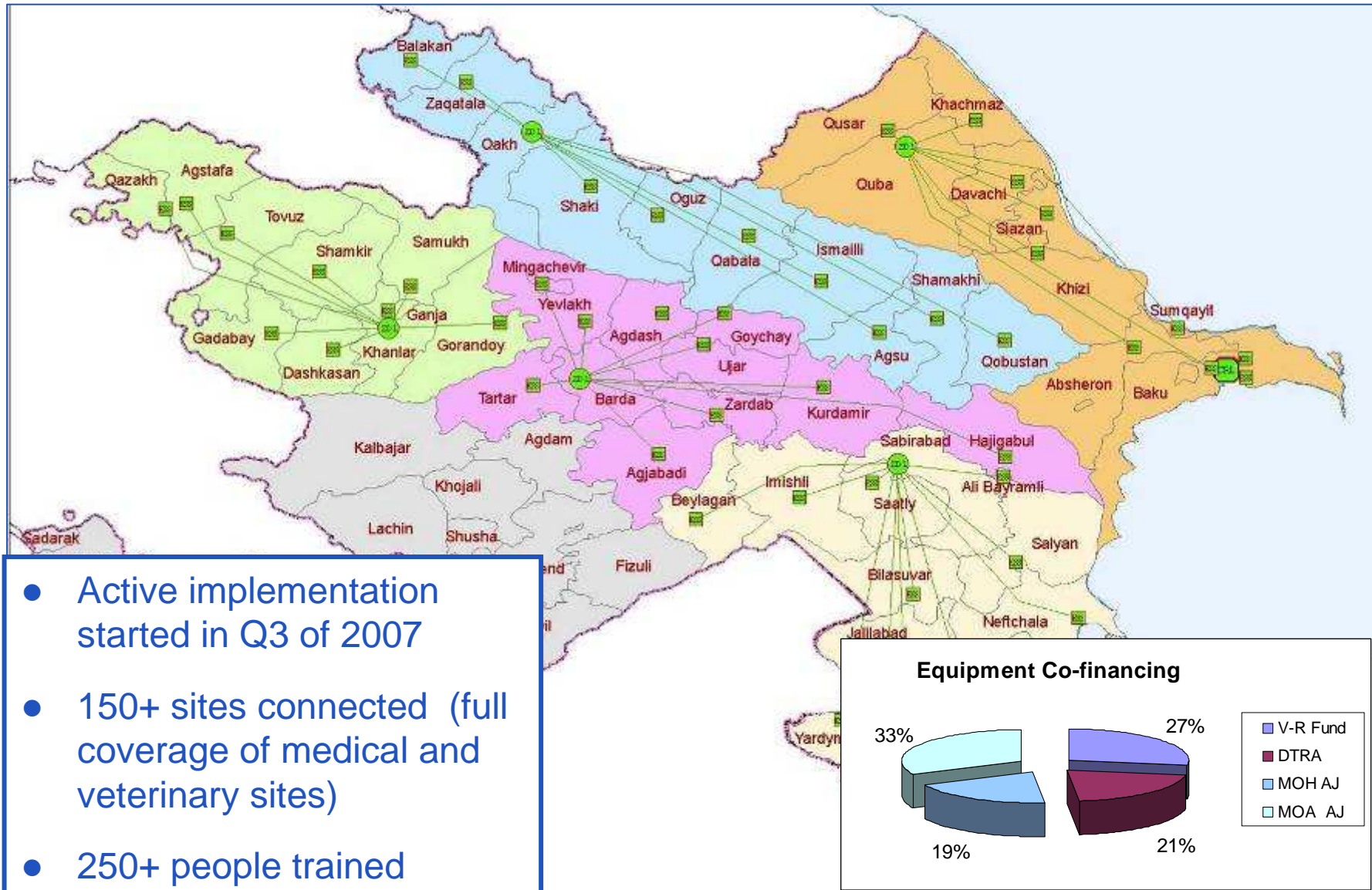
Implementation Examples

EIDSS Implementation – Central Asia and Caucasus Examples

EIDSS Implementation



EIDSS – Azerbaijan example





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Implementation Plan

Implementation Plan, including customization, deployment, training and support

Vertical Slice

National Level

Surveillance
Department

Reference Laboratory

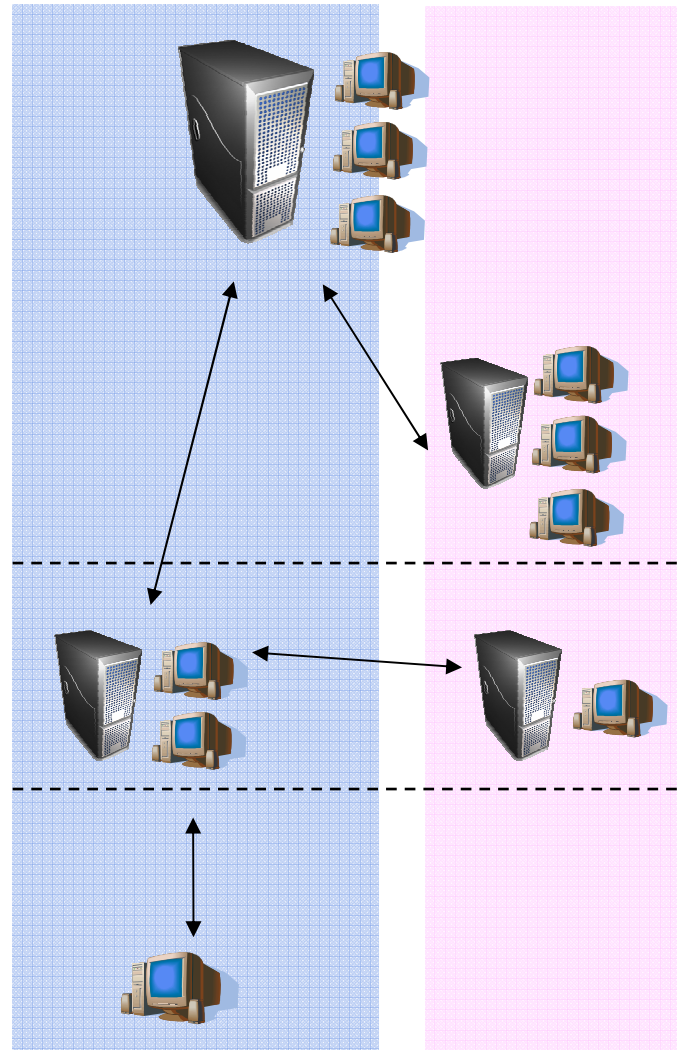
Region/subject

Regional surveillance
department

Regional Laboratory

Rayon/City

Rayon surveillance
department



surveillance

diagnostics

- Establish Integrated Product Team (IPT) with B&V representatives
- Deploy representative set of sites to demonstrate the system and detailed requirements collection
- Demonstrate, evaluate the system, get feedback, correct and move forward

EIDSS Customization

- Customization
 - Disease Set
 - References
 - Repository Schemes
 - Data Entry Forms
 - Aggregate Reporting Settings
 - Language
 - Base Reports to match Reporting Requirements
 - GeoBase
- System localization
 - User Interface
 - References
 - Reports
 - User Documentation and Help
 - Training Materials

The top screenshot shows the 'Flexible Forms Designer(A21)' window. It contains a 'Template Fields List' with columns for 'Field Name', 'Type', and 'Mode'. The list includes fields like 'Case Identification Specimen', 'Sample', 'Reported date of onset', 'First visit date', 'Gender', 'Symptoms of disease or illness', 'Age', 'Date of entry of the patient', 'Close contact with a case', 'Exposure to source of infection', 'Close contact with a case', 'Handling sample (specimen)', 'Probable diagnosis', 'Most likely disease or condition', and 'Suspected disease or condition'. Each field has a corresponding 'Type' (e.g., 'Ordinary Field') and a 'Mode' (e.g., 'Text').

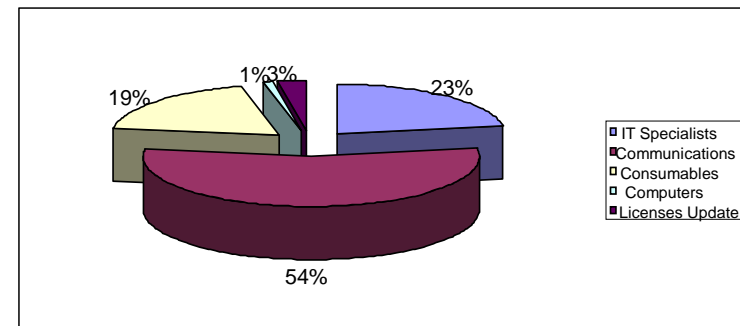
The bottom screenshot shows a data entry form with fields for patient information. The fields are organized into two columns: English and Georgian. The English fields include 'First Name', 'Middle Name', 'Date of birth', 'Date Entered', 'First Name', 'Middle Name', 'Date of birth', 'Date Entered', 'First Name', 'Middle Name', 'Date of birth', 'Date Entered'. The Georgian fields include 'სახელი', 'გვარი', 'დაბადების თარიღი', 'შესვლის თარიღი', 'სახელი', 'გვარი', 'დაბადების თარიღი', 'შესვლის თარიღი'. The form also includes a 'Date of birth' field with a dropdown menu for 'dd.MM.yyyy' and a 'Date Entered' field with a dropdown menu for 'dd.MM.yyyy'.

Deployment, Training, Support

- Deployment
 - Design adaptation for local requirements
 - Hardware, software and communication channels installation
 - Testing
- Training
 - Base computer trainings (Computer, Word, Excel, ...)
 - EIDSS training
 - Advanced EIDSS/AVR/EPI INFO trainings
 - IT trainings for support personnel
 - Train-the-Trainer
- Gradual transitioning – operation and support
 - Consumables and communication system
 - Operations and support SOPs
 - Spare Pool/Parts
 - EIDSS full support/help desk



NCDC – communication channel
installation example,
Tbilisi, Georgia - 2005



System Support Expenses Profile



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Resume

EDSS Key Benefits

EIDSS Key Benefits



- Flexibility/Localizability: Users can adopt system to their processes and needs
- Secure: data full secured in compliance with the International and Russian Standards
- Cost sharing: EIDSS Core development is paid by US Government (contracted for v. 3,4&5 with long-term commitment)
- WHO Interface: Information is fed to WHO, facilitating IHR2005 compliance; Plans for OIE integration
- Integration: Veterinary and Human parts, as well as laboratory and clinical data integration
- Data transfer: Near real-time data transfer amongst EIDSS sites
- Implementation: Turn-key solution for the System; successful implementations nationally
- Solution: Comprehensive integrated solution on case and aggregate basis

QUESTIONS?