Disease Surveillance Information Sharing

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INTRODUCTION

The diversity of public health surveillance systems employed by various health jurisdictions can become an impediment to sharing public health information about evolving conditions. Because even nearby local health jurisdictions may utilize different disease surveillance systems, their ability to share timely information may not be effective or efficient because the systems lack interoperable communication tools or present information through unfamiliar user interfaces and presentation formats.

This poster discusses the utilization of grid technology to implement an information sharing system that enables interoperability among different health surveillance systems. The proposed information sharing implementation provides a service that operates in a secure framework that is independent of the local surveillance system interface and transparent to the community of users on the grid. The JHUAPL Center of Excellence is developing a prototype information sharing service that will operate on a Public Health Grid. This system will utilize a Public Health Grid to enable communication among different jurisdictions using diverse health surveillance systems.
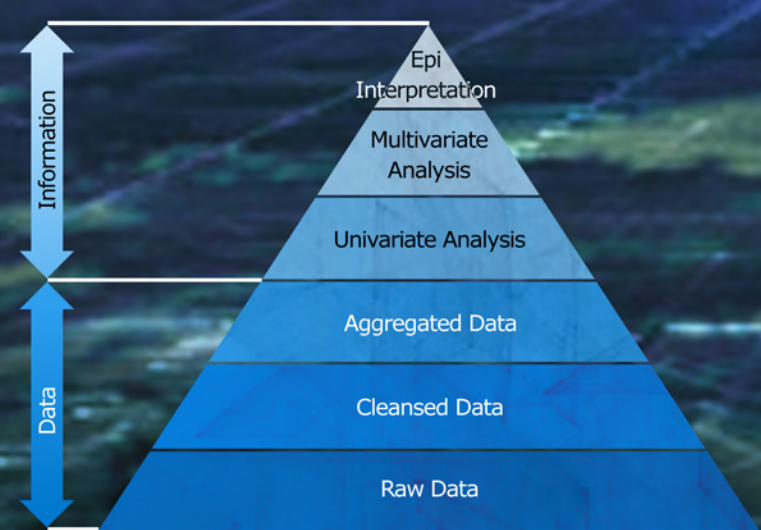
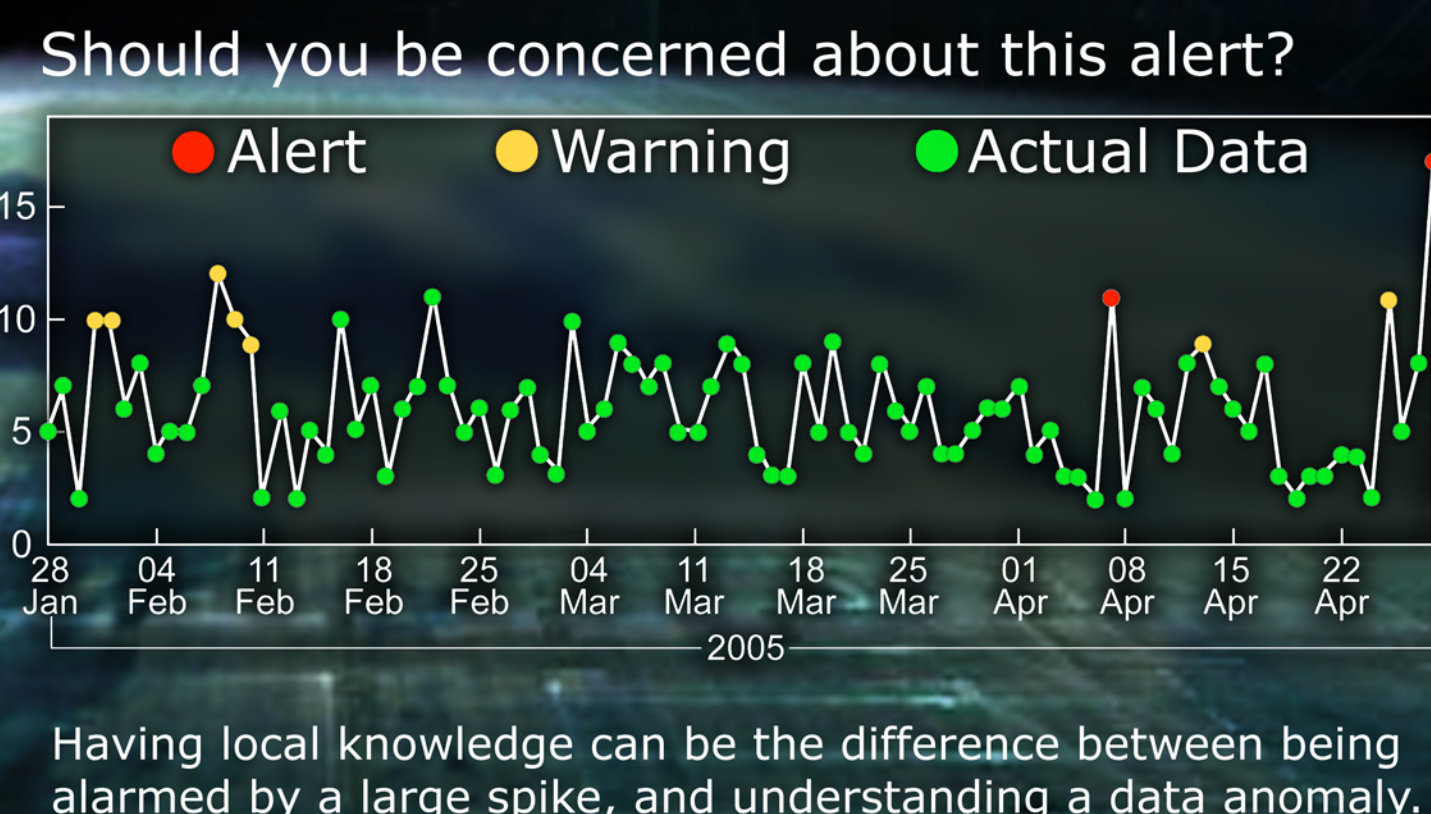## INFORMATION SHARING EXCHANGE
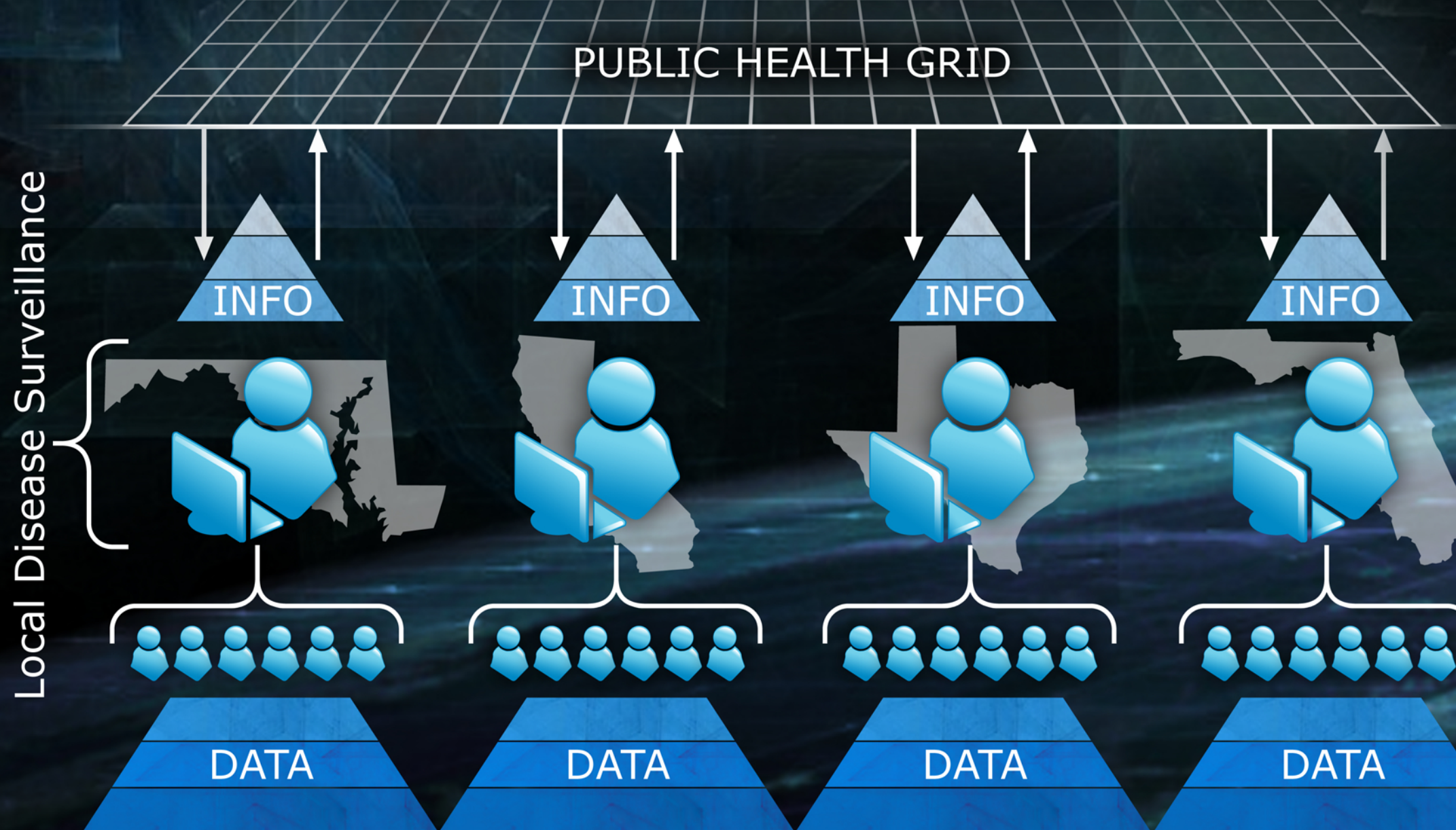
INFORMATION SHARING
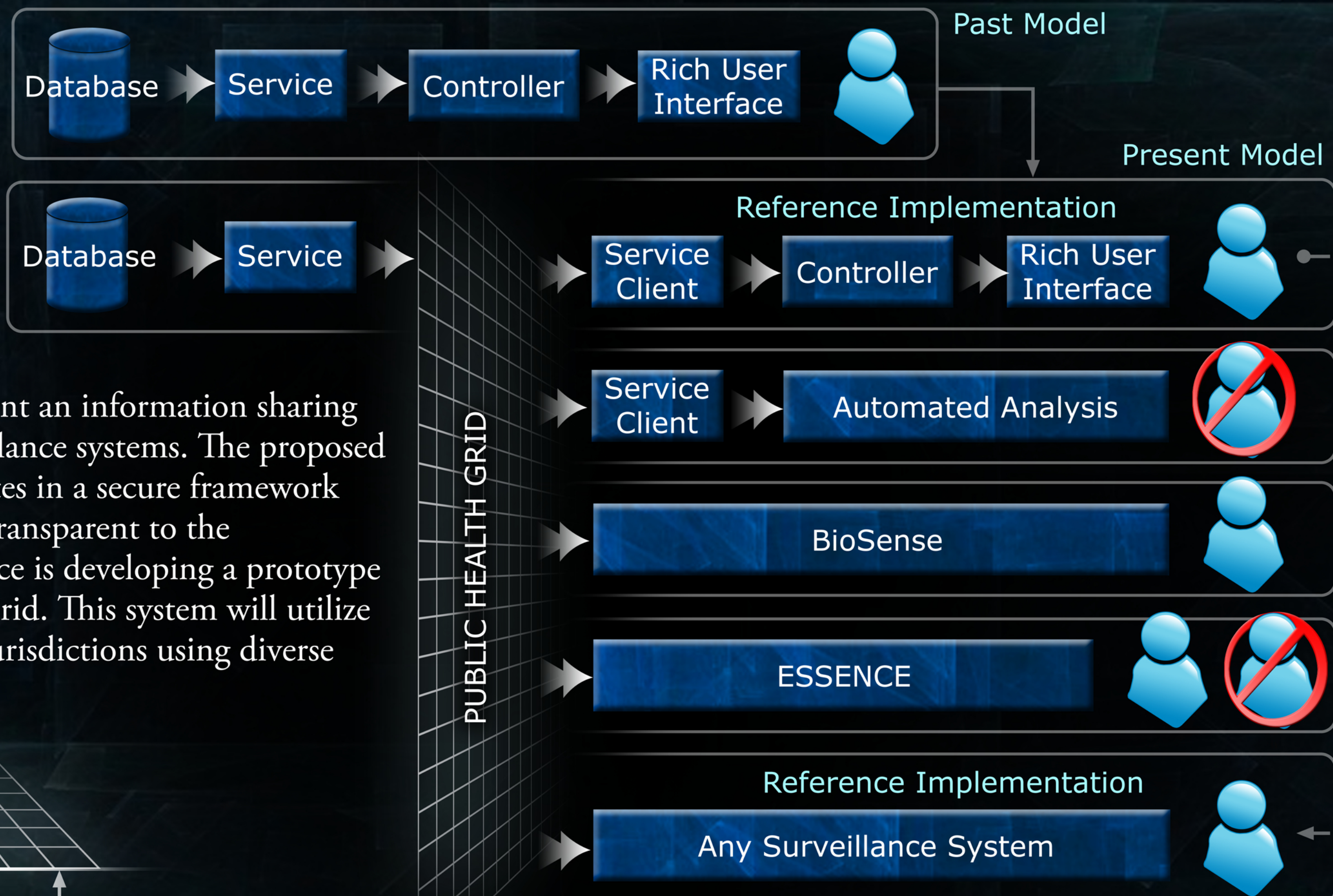
DATA VS. INFORMATION

Epi Interpretation	Epi: "Respiratory outbreak we are currently investigating"
Multivariate Analysis	Fusion Detector: Respiratory has a Red Alert across 3 of 5 sources
Univariate Analysis	Detector: ER Respiratory visits are 4 times the normal rate
Aggregated Data	247 ER Respiratory visits, 1647 OTC Respiratory products sold
Cleansed Data	Jon Doe, 26, M, Sore Throat Jane Doe, 20, F, Shortness of Breath ...
Raw Data	Jon Doe, 26, M, Sore Throat Jon Doe, 26, M, Sore Throat Jane Doe, 1987, Female, SoB ...

UNDERSTANDING THE DATA

Should you be concerned about this alert?

Having local knowledge can be the difference between being alarmed by a large spike, and understanding a data anomaly.

GRID ENABLING INFORMATION SHARING

The Globus Toolkit is a software toolkit for building grids. Globus provides the tools and libraries for resource monitoring, discovery, and management, plus security and file management. It is the underlying software middleware for putting the Information Sharing system on a Public Health Grid.

To expose the information sharing system on a grid, we developed a Globus Java web service. This web service is allows grid clients to create, view, and edit information sharing events. A key design decision in developing the web service was to create an abstraction layer in the current information sharing architecture. This allows the entire information sharing implementation to reused and effectively be split into a web service and a web service client. Thus, participating health jurisdictions may integrate information sharing capability into their own disease surveillance systems through the web service. And, will also have access to a reference implementation of the web service client.

INFORMATION SHARING SERVICE EMBEDDED IN ANOTHER SYSTEM
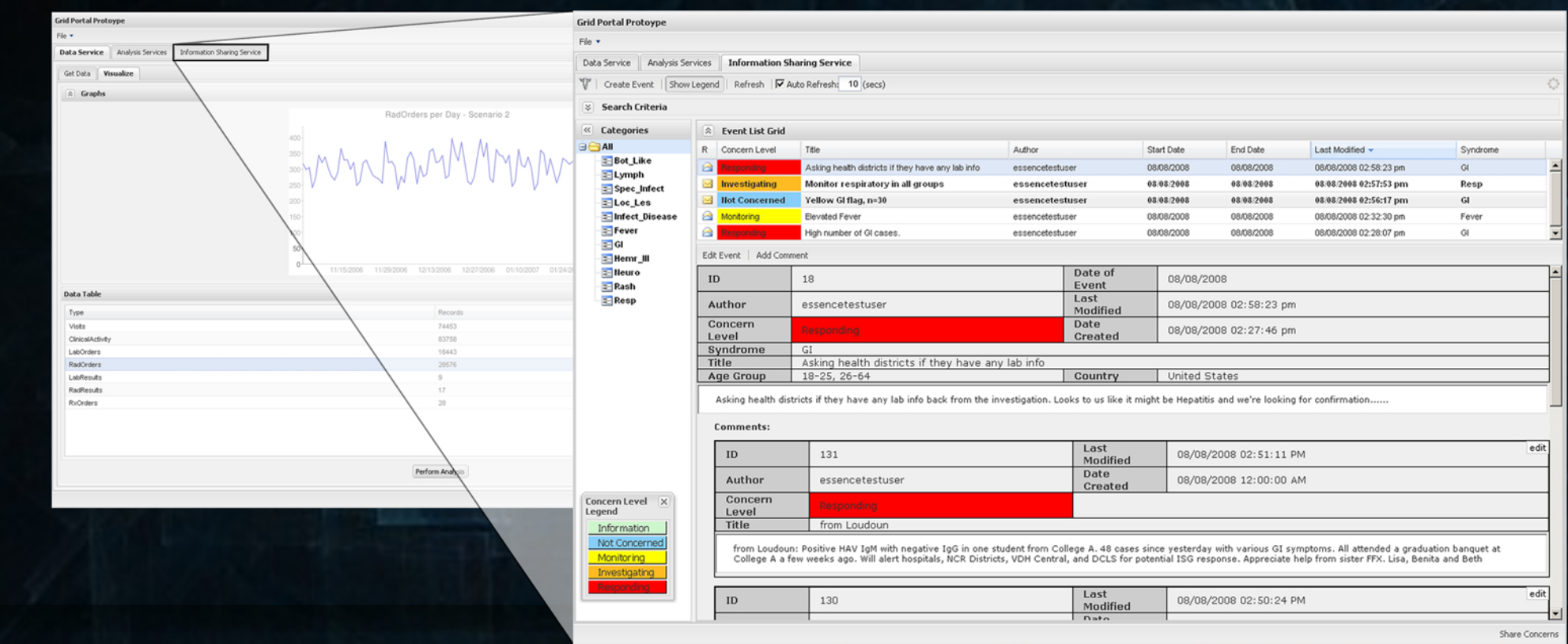
CONCLUSION & FUTURE PLANS

The concept of information sharing and the prototype system are initial steps in investigating the utility and benefit of sharing structured/semi- structured public health information. In addition, we plan to conduct a simulated exercise with different health jurisdictions to evaluate the benefits of the information sharing prototype. By turning individual local disease surveillance systems into a federation of disease surveillance systems using grid technologies users can benefit from the sharing of information while maintaining a local level of control. This scalable design will allow for more public health systems to be added to the federation without increased costs and enhancing the situational awareness of all participants in the Information Sharing Exchange.