

<b>PRODUCT NAME</b>	<b>CLASS</b>	<b>YEAR</b>
<b>Medical Information Visualization Assistant (MIVA)</b>	<b>Prototyping: Medical Data Project</b>	<b>Spring 2006</b>

### PROBLEM SPACE

The best clinical decisions pertaining to the critical care of patients is made when physicians can easily and rapidly organize and interpret the vast flood of data from various sources. Unfortunately, critical care physicians (CCP) and other health care staff have to retrieve this critical data from multiple locations and organize it into a cohesive profile of the patient's current condition. Furthermore, the data that is retrieved from these diverse sources is usually presented in a form that does not allow trends and relationships between co-variables to be immediately recognized. As a result, the process of monitoring, evaluating and treating complex medical problems is labor intensive and time-consuming; it demands that physicians analyze data in text and numeric form.

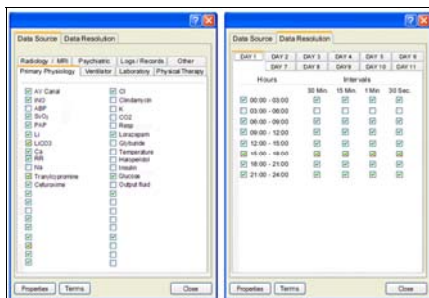
### GOAL

The goal of the proposed computer-based critical care patient data visualization system (CPDV) is to collect online and manually entered data within a specified time frame and then to push the data to a visualizer engine for online graphic representation. Using CPDV, data visualization can assist physicians to assess a specific situation of a patient quickly by recognizing essential changes to multiple physiological readings over a designated time frame. Using selection menus, physicians control the necessary data sources, time periods, and time resolutions to narrow down their diagnosis and final assessment of a patient's condition. Using the CPDV, physicians are able to focus on the most relevant parameters for characterizing a patient's critical state at that moment.

### THE PRODUCT

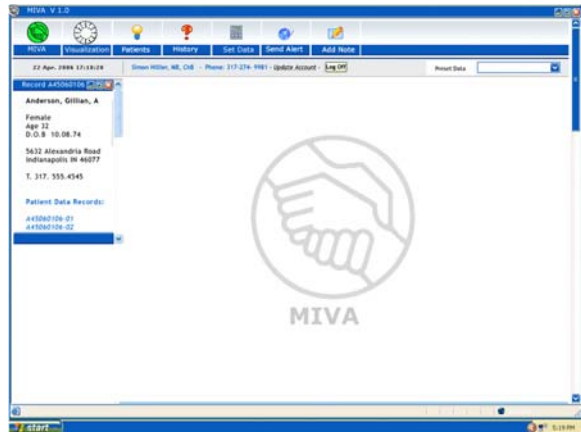
Medical data visualization (MDV) can provide valuable assistance for data analysis and decision making for critical care physicians (CCPs). How CCPs perceive and interact with patient data can affect their ability to arrive at the best critical care solution. In a real-life critical care context, the clinical decision making process should always be supported by relevant and reliable clinical data. The CPDV user interface has been designed to maximize the clinicians' ability to control what data is visualized during a specific context-related patient episode or general periodic review. Achieving a degree of control to scrutinize relational data in a multivariate visualization is imperative for physicians. CPDV

allows data to be organized into multivariate multidimensional (critical care) patient data visualizations (CPDV). It does this as the primary means to represent and manage complex context-based patient data at various user-defined temporal resolutions. In this way, the response to interventions can be readily visualized. Data should be grouped according to its relevance to the particular clinical problem rather than according to its source. Clearly, the process of presenting or visualizing data should be customizable.



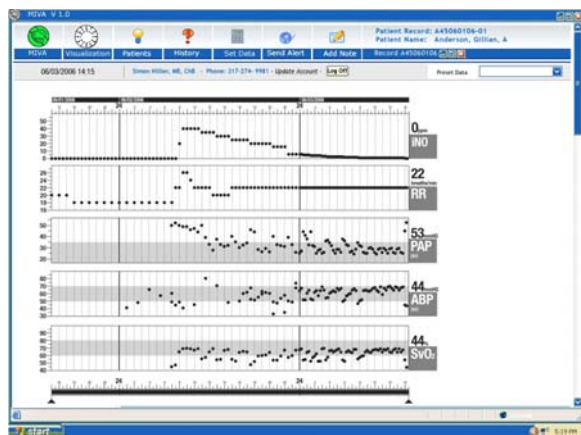
Physiological and Resolution Interface Selections

### PROTOTYPES



**MIVA System Interface:**

Basic system model from which CCPs can select the type and resolution of data to be visualized.



**MIVA Data Variables**

Basic system model with multivariate data of 5 different physiological datasets visualized.



**MIVA Data Variables with Scrubber**

The scrubber tool allows CCPs to move back and forth over the data points to see the specific metrics of a patients condition.