July 8, 2018

Course: CIS570 – Business Intelligence

Name: Robert Palumbo

Assignment: Reading Discussions – Week7-Session2

Due Date: Sunday, June 8 @ 11:59pm

1. Question 1. Discuss your personal or professional experience with an IoT technology or application.

I worked for a time for a company called *Spirit Global Energy Solutions.* This company is part of the oil and gas segment and provides energy-based solutions to improve production efficiency, as well as, lowering lift costs for rod-pumped (artificial lift) gas wells.

Rod-pumped wells employ the use of a steel rod that is inserted into steel tubing that can extend very deep into the ground to where gas reserves have been identified. The rod is mechanically raised and lowered by a rotating *horse-head* pump that pulls the material to the surface.

These well sites are typically monitored by engineers who make periodic trips to the sites to ensure the integrity and performance of each site. Any component breakdown can result in huge loss in production and profits for the downed well. Most wells today are fitted with many sensors that capture various well-related metrics such as pressures, temperatures, and production levels that are relayed back to corporate sites. These metrics are then used by analytical applications designed to detect system anomalies that would suggest a component failure is imminent.

As you might imagine if you have seen a working well anywhere Northern Colorado, the constant pump rotation produces significant stresses and torques on the well and being able to predict system failures has enormous cost benefits.

To assist with well-site management, Spirit Global Energy designed the first fully automated remote well-site manager, *Genesis Intelligent Asset Manager.* This is a sophisticated IoT product and application that fully monitors a rod-pumped well. It was the first of its kind to employ the use of a laser to track the horse-head rotation and rod-pump oscillations to detect anomalies in system operation. Likewise, it added audio and video support at the well-site allowing engineers to obtain firsthand knowledge of the well without the need to travel onsite.

It also captures real-time surface diagnostics, equipment loading, 3D simulations, production calculations, and many more useful features. All the diagnostic data is captured and transmitted to a central repository for analytical processing. Transmission of the data is achieved using a Wi-Fi connection to a cellular network using a SCADA based interface. To date, this system is the most state-of-the-art well-site management system of its kind.

<https://www.apergyals.com/brands/spirit-global-energy-solutions/>

<https://www.apergyals.com/products/rod-lift/spirit-global-energy-solutions/genesis-intelligent-asset-manager-poc>

<https://www.rigzone.com/training/insight.asp?insight_id=315&c_id>=

<https://en.wikipedia.org/wiki/SCADA>

Question 2. Discuss your own experiences with self-service BI (or, any other IT service).

This question is quite relevant to my BI presentation for this course. Per my presentation, I presently work for Judicial Branch of government for the State of Colorado. While Judicial has used BI to some extent over the past decade, it has identified the importance and need for having a formal BI strategy is currently moving towards the formation of a formal BI project team and expanding the use of BI at Judicial and throughout the state -but it has been slow in coming.

Presently the BI team consists of 1 BI Analyst and 1 Data Analyst / Engineer. Since the formation of this (small) team, the number of BI requests received has been growing very steadily as BI at Judicial begins to move more towards the forefront. However, the team is finding it very difficult to maintain the pace related to providing timely service for the BI requests they receive. The team is just too small, and the division itself is limited to state budget constraints making expansion of the team not possible at the present time.

Typically, the team receives BI requests that are related to criminal case histories and are very similar in content. While the team wants to expand on the infrastructure used at Judicial for management of the data and build more useful tools and applications they spend the majority of their time servicing theses similar case management requests.

What the team has chosen to do is implement a *BI-On-Demand* application that puts the generation of these type of reports into the user’s hands. They have created a browser-based BI application that presents the user with all the relative case-management related data attributes in a point-and-click environment. The user can simply select those attributes of interests (e.g. case #, parties, date-range) and click a button to generate the report. There is no specific involvement by the BI team at any point.

The benefit of this on-demand system at Judicial is that it truly frees up the BI team to be able to focus on tasks that will allow them to add additional services and functionality to improve both the scope and use of BI within the Judicial realm.

<https://www.courts.state.co.us/>