Fig.2: Rev1 technologies allow project technicians to compile and arrange information in useful configurations, available via mobile networks.

dictive value. Failure analysis tools enable the user to filter by model or component number, registered faults, cost of parts, or even by a particular site location.

Ease of Deployment

The Tracker scalability enables a rapid deployment to sites with identical equipment and maintenance requirements, making it even more useful for wind turbine projects. MS Access Runtime environment does not require unique software for offsite use and information can be accessed remotely as long as Internet service is available. If continued maintenance modules are preferred, Tracker is able to upload purchasing data directly to a client system or to integrate purchase order formats into each site's inventory management module. Additionally, the functionality of Tracker makes it well-suited for failure analysis through a fleet-level interface, adding significant value to efforts in mitigating warranty costs and improving product reliability.

Mobile Service Tracking

Although there are an infinite number of ways a service or inspection process can be automated, Tracker was developed to ensure fieldwork would be completed in a systematic, quality manner. In effect, Rev1 endeavored to build best practices into its mobile application by continuously improving upon the database structure, input devices, wireless capability, and query features provided for the customer. For example, changes to the application design itself can literally be made to each mobile device over the Internet. With a long-term vision, Rev1 is adding features that will enable the application to serve as a training tool for its service technicians. Considering that much of the work completed in the wind field is done remotely, Rev1 sees additional value in having automated processes and instructions such as pop-up messages and training tips built into the mobile application.

As a final example, consider the following scenario: A new wind technician inspects a Vestas V90 wind turbine and identifies damage to the gearbox cooler radiator return hose. He correctly inputs this information into the Tracker application on his Netbook computer. Based on the identified damage to the hose, the inspection application brings up an additional set of questions:

- Location of damage on the hose;
- Type of damage (tear, scrape, puncture, etc.);
- Severity of damage;
- Type of hose (metal sheath, rubber, etc.);
- Serial markings on hose.

For each of these questions a button is available to select for more detailed instructions. This is a powerful inspection-training tool and will help to standardize all answers to ensure the most accurate service inspections possible.

Mobility is an inevitable technology solution for wind project owners. The rise in mobile and wireless technology capability is the catalyst that the wind industry needs in order to keep pace with owners' eager demands for real-time turbine status, particularly when multi-MW turbines are at risk. Managing project and service data on a utility grade platform such as Tracker will allow wind farm operators to maximize the use of historical information to optimize reliability and equipment longevity, minimize downtime, and improve the analysis of more comprehensive information. Rev1 Wind has created a solid solution that serves to maximize project profitability.