What is “Hospital of the Future” Anyway?

An interview with GE’s Tammy Merisotis, Mike Donoghue and Jeff Terry:

What is Hospital of the Future anyway?

Tammy: Some clients tell me “Hospital of the Future” makes them think of The Jetsons. They think it might be about new ambulances or Star Trek surgical technology. But really, it’s much more impressive than that.

Jeff: I first heard the term “Hospital of the Future”, or HoF, in 2003 when I met Andy Day and his team of researchers and rocket scientists. In those days, they were building computer models to understand the flows of inpatients and clinicians through hospitals. The goal was to help clients and architects design more efficient hospitals.

How does HoF help to make healthcare facilities more efficient?

Jeff: Today, HoF technology is under the hood of several distinct offers. The first of those is making healthcare facilities more efficient. Another is developing capacity strategies. In the case of hospital design, the team creates a HoF model to simulate and test different design options. The model is built with CAD drawings, ADT data, and direct observations using a custom-built app running on handheld devices to gather standardized data quickly and easily. The team has modeled hospitals, bed towers, emergency departments, and entire medical center campuses.

Once built, the models are an incredible tool. The HoF team works with clients and architects to test dozens of design options. What if we put the ambulance bay here? The radiology department there? A second CT here? The nursing station facing this direction? Semi-privates rooms on this floor and private rooms on this floor? Etc.

Each test explores the impact of a set of design decisions on nursing efficiency, patient wait times and physician productivity. It’s no secret that a better design bears fruit for decades to come. It’s about building the next generation hospital.

Tammy: Jeff described it about right. I’d say it more simply. HoF helps clients and architects achieve a level of design efficiency that is not otherwise possible. Providers from Wisconsin to Philadelphia and Canada to Singapore provide better and more efficient patient care as a result.
How do the HoF tools help with capacity strategy?

**Jeff:** The HoF tools make it possible to develop a great capacity strategy by making it possible to test dozens of different capacity scenarios. This is transformational. Mike, maybe you can explain what we mean by a capacity strategy.

**Mike:** A capacity strategy is a simulation-model-tested plan to manage capacity over the next several years in the ever-shifting local market. A great capacity strategy is characterized by three factors:

- **Alignment.** The leadership team understands and is aligned in support of the strategy.
- **Time-sensitive but event driven.** Action plans consider how the market will likely evolve over time rather than just the situation today. (For example, the opening or closing of competitive hospital, or the addition of a new service). And, key actions are triggered by specific events rather than exact dates.
- **Pre-defined contingency plans.** The strategy includes contingency plans to be executed if and only if specific triggers are met.

**Tammy:** To develop the capacity strategy, the team uses a version of the HoF model tuned to analyze patient flows broadly across the enterprise. The team then meets with executives and service line leaders to develop a set of scenarios and tests those with the HoF model. How will our system respond to a likely increase in neurosurgical volume in January? What happens if we do nothing? What happens if we shift inpatient volume form the main ORs to the surgery center? What happens when we do that AND the new bed tower opens?

As scenarios are refined and tested, findings are presented to the hospital’s leadership. After consideration and deliberation, the capacity strategy is documented. Less likely scenarios are saved as contingency plans.

What’s next for HoF?

**Jeff:** The capabilities of the HoF models and the teams that deploy them are maturing all the time. A few of the things in the hopper include:

1. **Auto-bed assignment.** This is a capability in GE’s AgileTrac* Bed Management system that leverages the HoF models to help the bed desk made bed placement decisions. We’re testing it at Mount Sinai in New York now.

2. **Care Model Design.** This is a new application of the HoF model to simulate different nursing models on a particular unit. It allows the facility to bring their new care vision to life.

3. **Prediction.** At Mount Sinai in New York and Saint Luke’s in Houston, the HoF team together with GE’s Global Research Center is testing applications of the HoF model to predict the status of beds, bays, and rooms tomorrow.

**Tammy:** Those are great examples. And, I think it’s fair to say that we’ve still only scratched the surface of what’s possible. More to come!