EPIC User Interface and Notification Problem

Johns Hopkins Hospital (JHH) operating rooms (OR) utilize EPIC as the primary electronicmedical record and workflow management tool for the operative patient. However, the OR status board at the time was reported as cluttered, inefficient, and hard to interpret by nurses, doctors, Clinical Care Technicians, and anesthesiologists in JHH. In 2019, a student group from Whiting School's Master of Science in Engineering Management (MSEM) program came in and worked as student consultants to help JHH solve the problem.

The student consultants spent eight weeks interviewing and surveying potential solutions to improve the status quo. They found that the layout of EPIC was represented in a vertical fashion (figure 1), requiring nurses and doctors to spend extra time deciphering the information on the board instead of capturing the information at first glance. Given this fact, the students considered different scenarios and cases and proposed a robust prototype that could enhance the user's experience without altering the current user's knowledge.The recommendations are as follows:

- Reconfigure the layout to be horizontal in representation in that English is read left to right.
- Divide the interface into time-scaled horizontal frames using white dotted lines in the background, and this horizontal frame will update after every one hour, creating new space for the upcoming information to flood in as the time progresses.
- Reconfigure the User Interface to show precise information(Patient Name, Doctor's Name, and Patient ID) about procedures that happened earlier in the day.



Figure 1. The current EPIC status board (Due to HIPAA compliance, the patient names are blacked out)

The newly proposed interface is shown in figure 2. A time-oriented horizontal axis with the current time marker gives users a clear understanding of what is going on at any given time. By also time-scaling patient boxes, it is now much easier to compare relative operation lengths.

Now Now					
0930 0600 07	00 0800 0900	1000 1100	1200 1300	1400 1500	1600 1700
OPH OR 02	Peter Pan 24 yrs Collins MBChb GA Examination Under	s M Hos L 2135738	Bruce Carter 48 Scott, MBChB Examination Unde	yrs M Hos E GA R S or 2045810 E	Bruce Carter Scott, MBChB Extraocular Muscle
OPH OR 03 Luisa Krishan 16796729	Vera Garza 16793207 LEWIS F L GA Eye Vitrectomy 78 yrs	Will Hamilton Lewis, MD PhD Extraocular Muse	62 yrs GA	M Hos B 21167	83
OPH OR 04 Judith Jan Matt MBC IP Eye Catar	e 78 yrs F Hos hb GA L act Extraction 1256107	Fu Lee Chris, MD PhD Craniotomy Extradu	Jal	62 yrs MAC	M Hos 2366538
OPH OR 05 Opte MD CL Examinatio	y 34 yrs M Hos PhD GA R on Under 2566727	Kristin Kate 21 yrs F Correa, MD PhD GA Eye Vitrectomy 26	Hos Brett Lewis Martin, ME 78362 Craniotom	s 39 yrs) PhD MAC y Extradual	M Hos L 2366538
OPH OR 06	Will Hamilton 62 yrs M Lewis, MD PhD GA F Extraocular Muscle 2	M Hos Kim Riv R Joey M 2116783 Eye Ca	vas 70 yr BChb GA ttaract Extraction	rs F F R 1462	Hos 1799
D Dirty IP In Progress CL Clean Reg Complete Case Finish Criteria Met Out of VICU	IN pre-Proc Pre Out Room Pat Out of PACU In P Care Complete Pat	ep RN Done Pt Read tient Held Pause C Phase II Phase I tient Held Proc Sta	y In Room DR Move to PACI Met Out Phase II art Disch	U In PACU Extended Re	Incision In PACU Hold c In VICU

Figure 2. The redesigned User Interface

This project revealed that the students were able to translate their engineering acumen into helping improve healthcare industry issues. By integrating simple principles and user needs into the design, JHH not only retained all pertinent patient information but also gained a user-friendly interface.