

## THE VDOT UI REDESIGN STARTED WITH THE ENGSTROM VENTILATOR

THE OLD VENT HAD THE SCIENCE, BUT NOT ENOUGH EMPATHY FOR THE USERS NEEDS



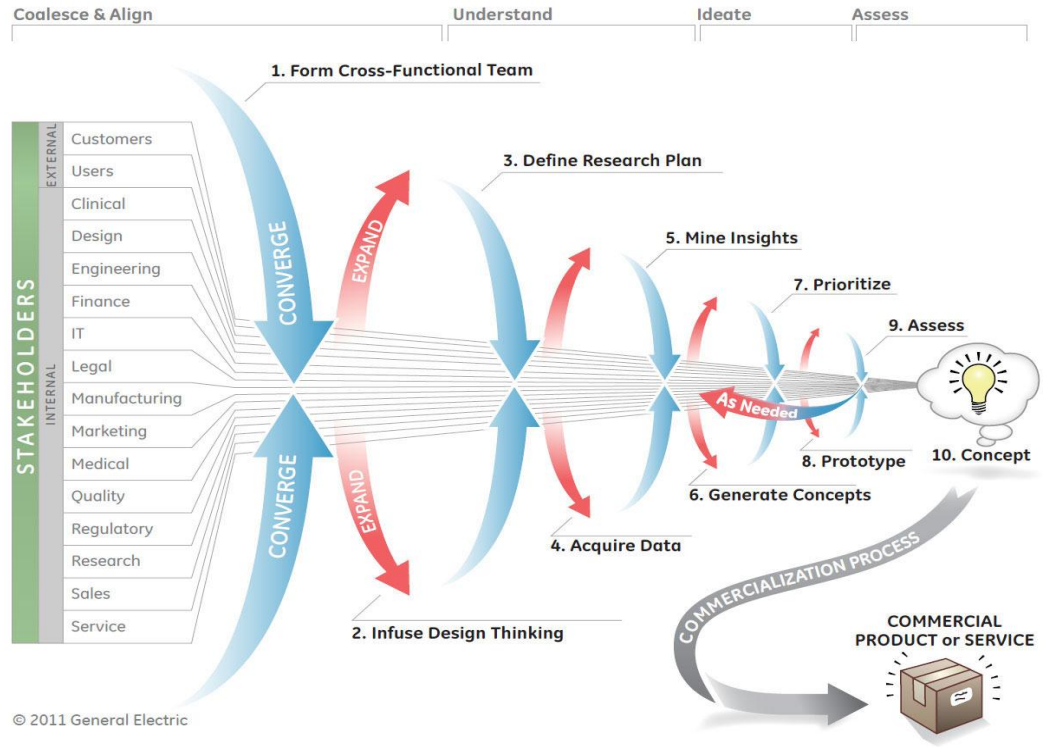
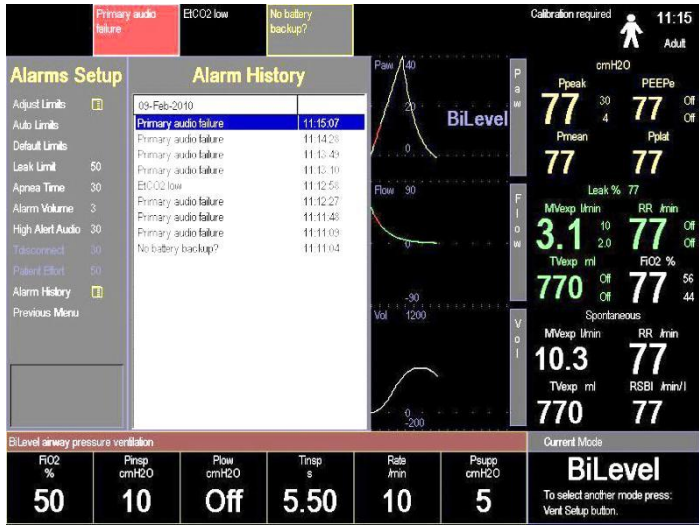
WE HAVE FOUR USER TYPES

- MOSTLY RESPIRATORY THERAPISTS
- SOME DOCTORS
- SOME NURSES
- SOME RESEARCHERS

VDOT WAS ONE OF THE FIRST PROJECTS TO COMPLETE

# THE GLOBAL DESIGN USER EXPERIENCE PROCESS

## ORIGINAL ENGSTROM VENT INTERFACE



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ITERATIVE SESSIONS OF  
CREATIVE EXPANSION AND REFINEMENT,  
RESULTED IN THE NEW VDOT DESIGN



THE GLOBAL DESIGN USER EXPERIENCE BEGINS WITH...

## IMMERSION...

- CREATE A CROSS FUNCTIONAL TEAM
- PRACTICE "DESIGN THINKING" – THROUGH BRAINSTORMING, SKETCHING, QUICK PROTOTYPING, AND STORY TELLING
- THEY PRACTICE DESIGN WITHIN THE CONTEXT OF LOCAL BUSINESSES: A HARLEY DEALER, A GAS STATION, OR A WOMEN'S' FASHION BOUTIQUE
- AT THE END OF THIS SESSION, THE GROUP CREATES A TEAM "EXPLORATION" PLAN TO DISCOVER WHAT OPPORTUNITIES EXIST...



THE TEAM IS THEN ENCOURAGED TO...

## EXPLORE...

- EVALUATE THE COMPETITIVE LANDSCAPE
- DISCOVER NEW IDEAS AS A TEAM
- REVIEW ADJACENT DOMAINS – FOR EXAMPLE - AUTOMOTIVE INTERFACES
- CREATE SUMMARIES FOR NEXT SESSION ....



HANDS ON REVIEW  
SIX COMPETITIVE VENTILATORS



AUTOMOTIVE  
USER INTERFACES  
CHICAGO AUTO SHOW



THE TEAM COMES BACK TOGETHER TO...

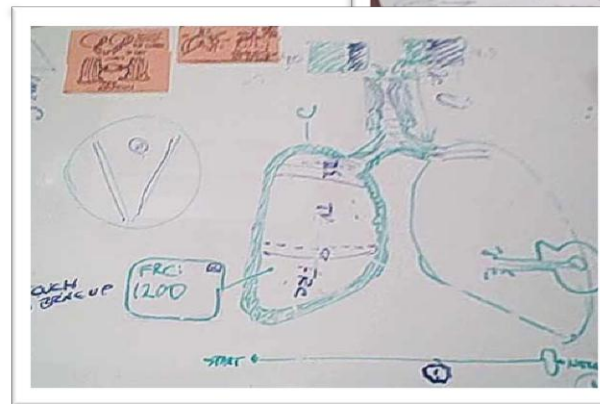
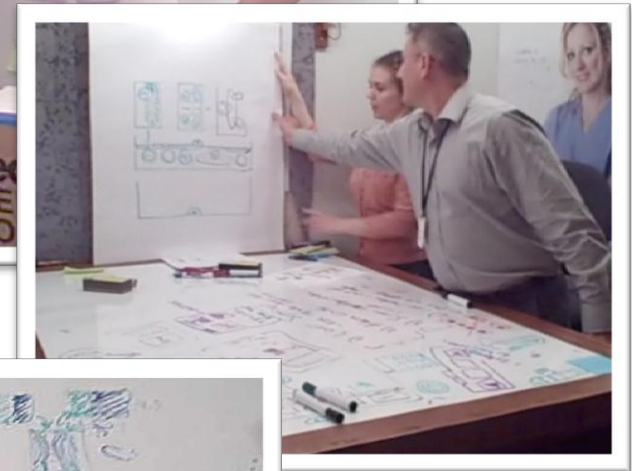
## CULTIVATE GROUP GENIUS

- THE TEAM SHARES THEIR EXPLORATION DISCOVERIES
- THEY WORK ON VARIOUS VDOT CONCEPTS USING THEIR DESIGN THINKING SKILLS
- IN THIS SESSION INTELLECTUAL PROPERTY IS ALSO GENERATED AND CAPTURED.

VDOT IS APPLYING FOR PATENTS FOR

1. THE PAST, PRESENT, FUTURE - NAVIGATION PARADIGM
2. THE GRAPHIC TRENDS FEATURE
3. A TIDAL VOLUME AND COMPLIANCE TOOL
4. THE OVERALL DESIGN AESTHETIC

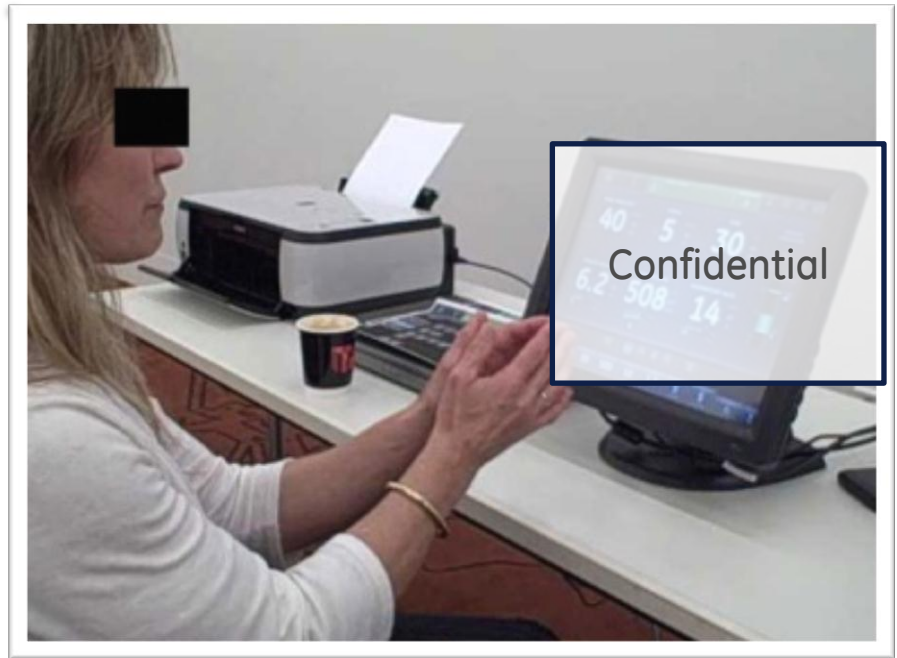
AFTER THIS SESSION GRAPHIC DESIGN AND USABILITY TESTING BEGIN RAMPING UP...



# USABILITY TESTING REFINED THE DESIGN

- ROUND 1 TESTING EXPOSED SOME CONCEPT STRENGTHS AND WEAKNESSES
- ROUND 2 TESTING IDENTIFIED SOME EFFECTIVE DESIGN REFINEMENTS

USABILITY TEST ROUND 1 – GERMANY, FRANCE, UK, USA  
 USABILITY TEST ROUND 2 – UK, USA



**SW PROTOTYPE ENGSTROM**

GE-Healthcare  
 3000 N. Grandview Blvd.  
 Wauwatosa, WI 53190 W-651  
 USA

**Usability Test Plan**

October 2010 | Version 01.00 | Status: Final

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 www.use-lab.com

GE Healthcare | SW Prototype English

**3.3. Test-Questionnaire 1<sup>st</sup> Project Phase**

The questionnaire is based on the VISIT Usability Test Plan v1.1, issued by GEHC. It has been adapted and refined by Use-Lab.

Note:  
 The test questions will be updated after the European test sessions. Questions or remarks in tables serve the observer as orientation for the interview guideline and as instructions when something has to be prepared on the device for the observer. These questions and instructions will not be read aloud. The performance of the tests tasks will be rated by the interviewer. In case users are not able to find a specific screen area which is in focus of the discussion the observer will show them how to navigate.

Question ID	Observer	Expectations/Target Points
1. Initial impression - before interacting	Discussion	
1.1 What is your first impression of the user interface?	Discussion	
1.1.1 Do other elements of the interface distract you from the initial screen?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
1.1.2 Do other messages or information messages on the interface distract you?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
1.1.3 Are there any initial comments to the general appearance/graph? If yes, which comments and what do you think about the general appearance?	Observation	
2. Specific screen areas	Completed	
2.1 How would you proceed to change to "See monitor screen back to right inside"?	Completed <input type="checkbox"/> Alone <input type="checkbox"/> With prompting <input type="checkbox"/> Not completed	1. Selected Phase (upper left) 2. Select "See mode" (over) icon
2.2 What are your impressions of the different color palettes do you like them or do you think that it requires modification?	Discussion	
2.3 How do you like the fact that information messages are displayed in the bottom left corner?	Discussion	
2.4 Interpretation of symbols: How do you interpret the symbols, what do they mean? Information and show the symbols, do you understand what information these are and how to use them?	<input type="checkbox"/> Yes <input type="checkbox"/> No Discussion	User should be able to compare the relative significance of the position of flow and pressure Users should be able to point out the relative positions of the alarm bells compared to the flow and pressure bars
2.5 Are the "numbers" legs in the bottom left corner?	Discussion without	This space is for "variable assessment" only.

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**VENTILATOR SW PROTOTYPE II**

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 USA

**Final Report**

March 2011 | Version 01.00 | Status: Final

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GEHC | Ventilator SW Prototype

**Figure 5-17: Did participants understand the influence of the lines?**

63% of all participants did not understand the relation between the bottom trend line and the upper trend line. The relation of a 60 time frame in the bottom line which is directly related to the time scale of the upper line a user was not clear for them.

It would be good to form the bendiness of the frame connected to the x-axis of the other trend line. Another thing was that the position of the button for changing the time frame is in the field where WPR is posted. In all other lines this is the last for WPR this is missing too. Figure 5-18).

All participants had no problem to change the time scale from 6h to another value. It was obvious for them which button needed to be pressed.

Line Type	Yes (%)	No (%)
Line 1	37%	63%
Line 2	40%	60%
Line 3	33%	67%

**Figure 5-18: Misplaced trend lines**

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