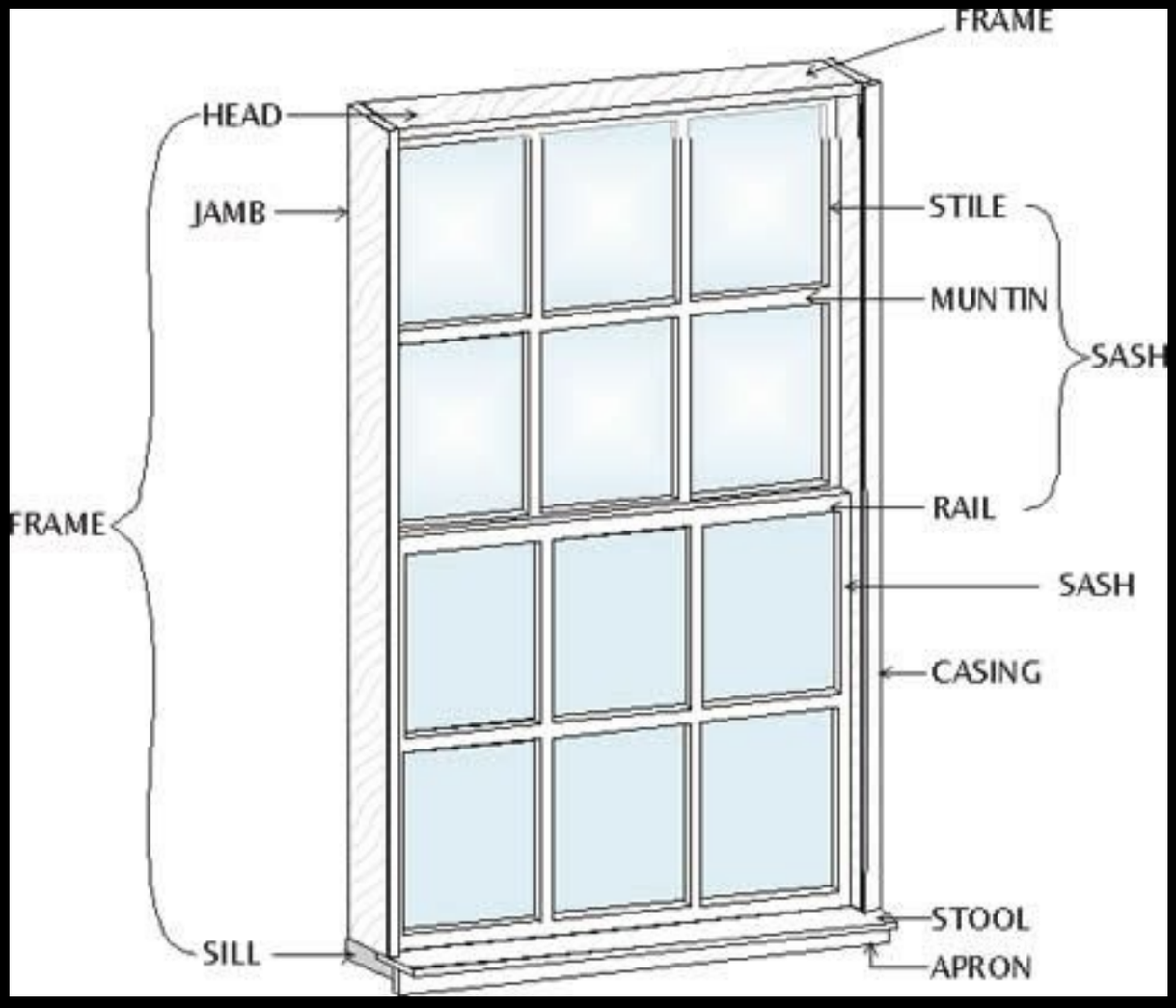
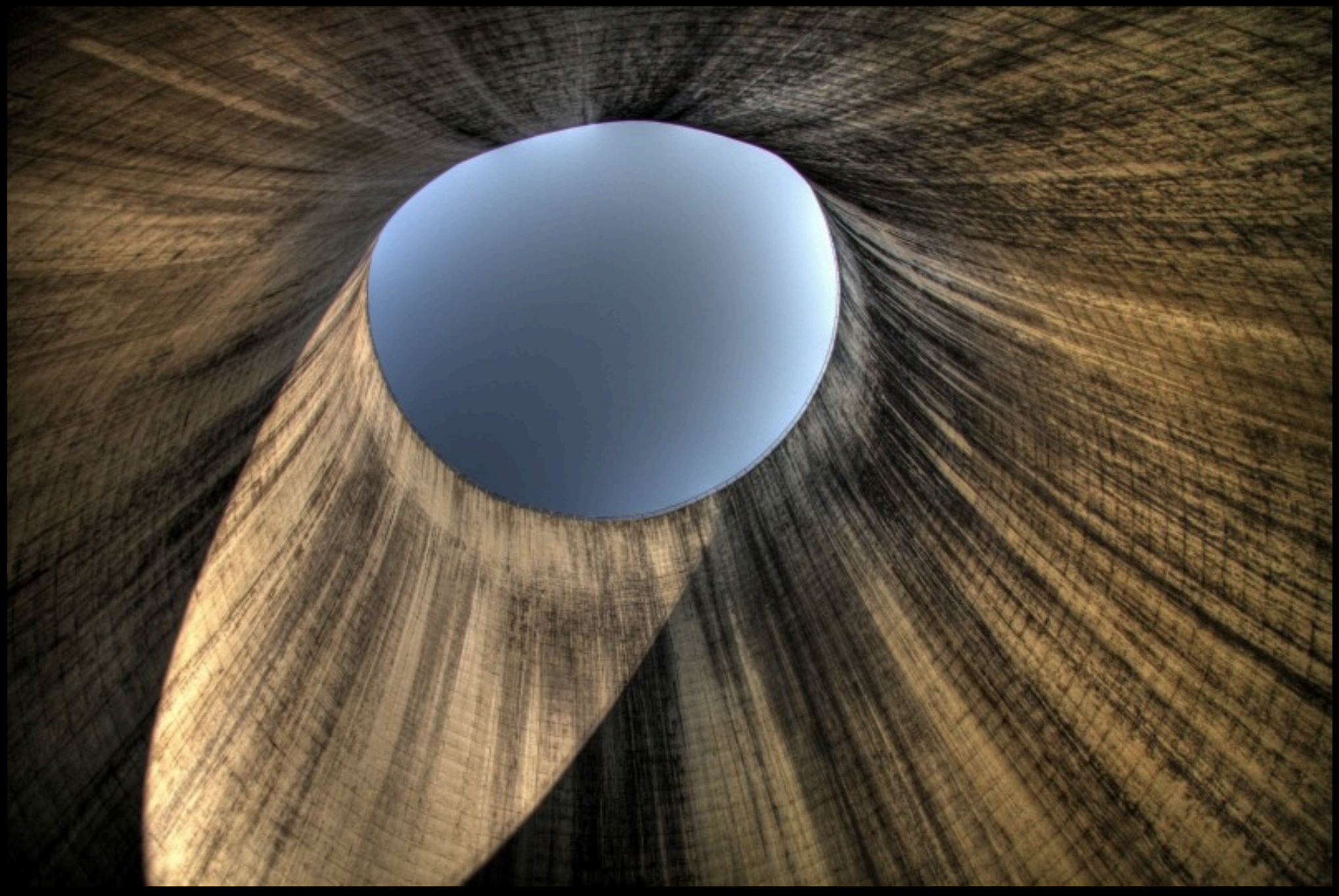
OFFICIAL TIME
LONGINES

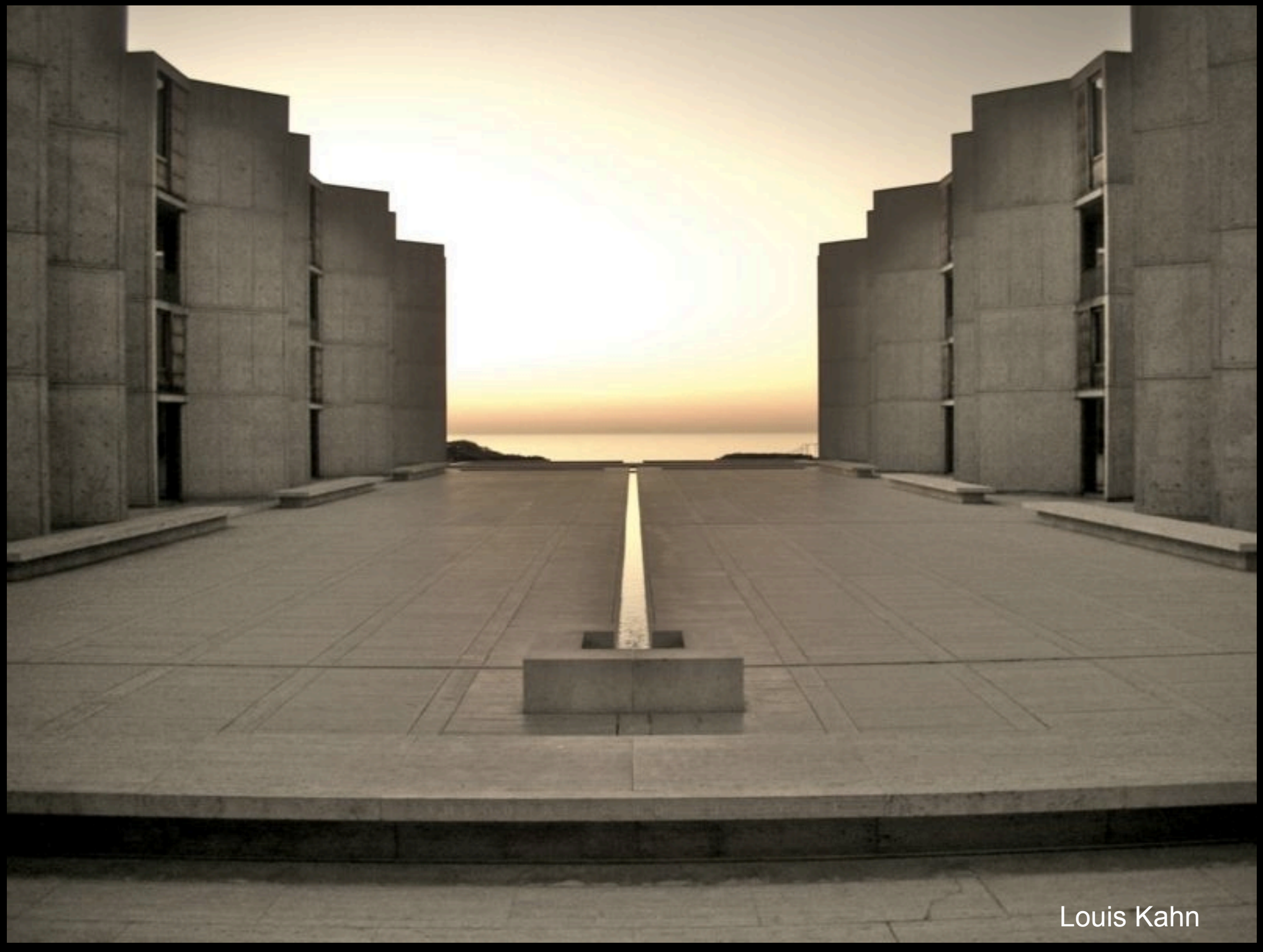
HESS
Bud
Fleet
Armitron
SHARP
Kodak


FRAME
HEAD
JAMB
STILE
MUNTIN
SASH
RAIL
FRAME
SASH
CASING
STOOL
APRON
SILL



Peter Zumthor

Tadeo Ando


Louis Kahn

System

Function

Protection

Beauty

Threshold

Understanding

Insight

Operates

Reverence

Boundary

Exploration

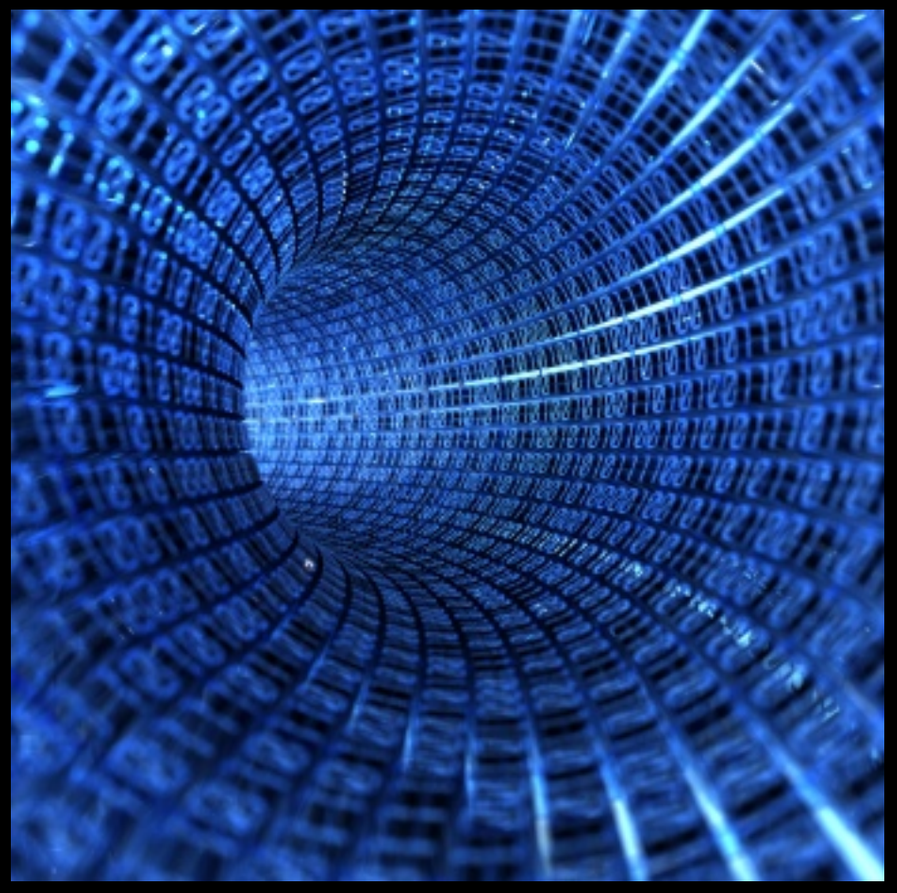
Wonder

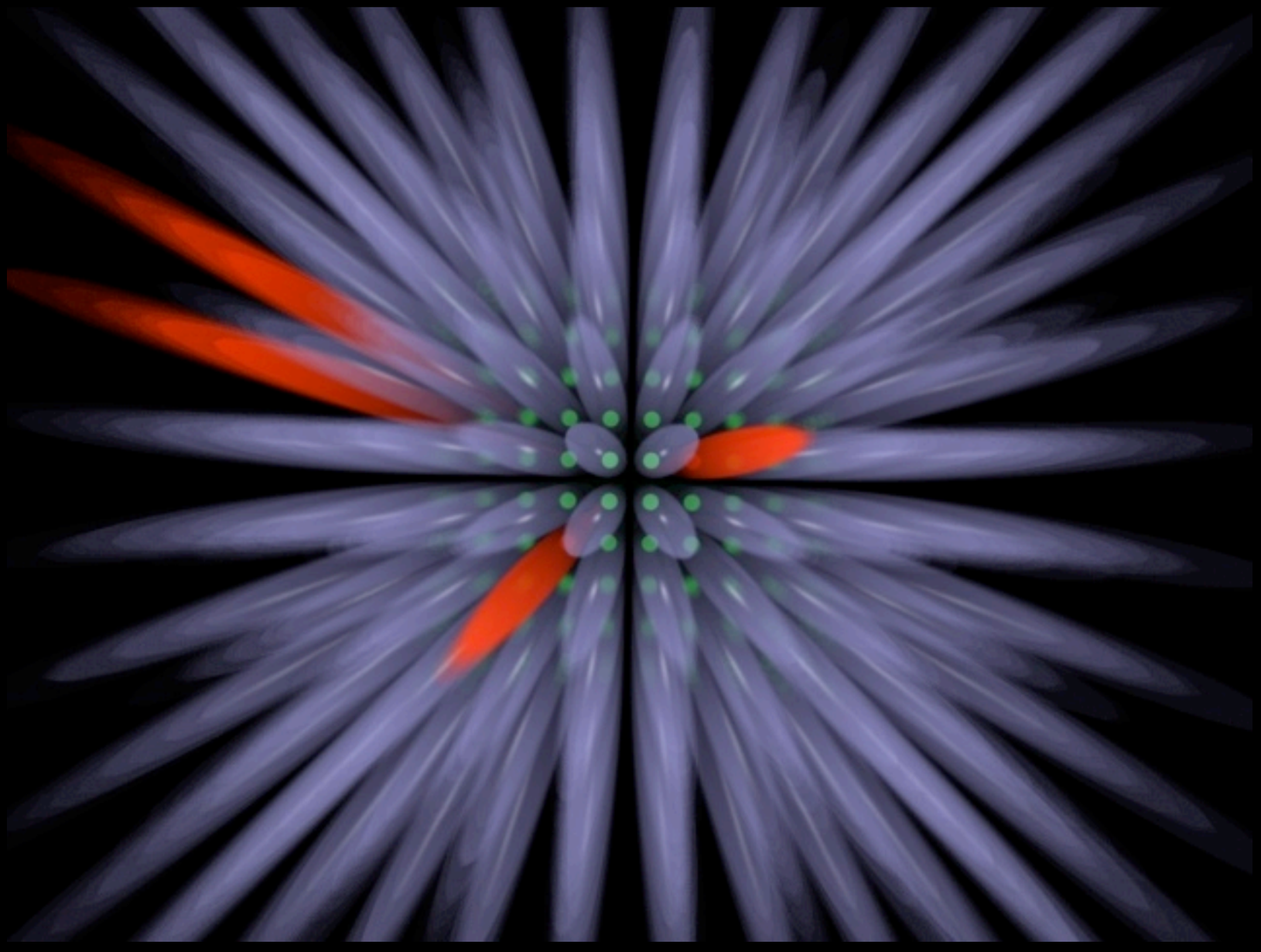
Frames

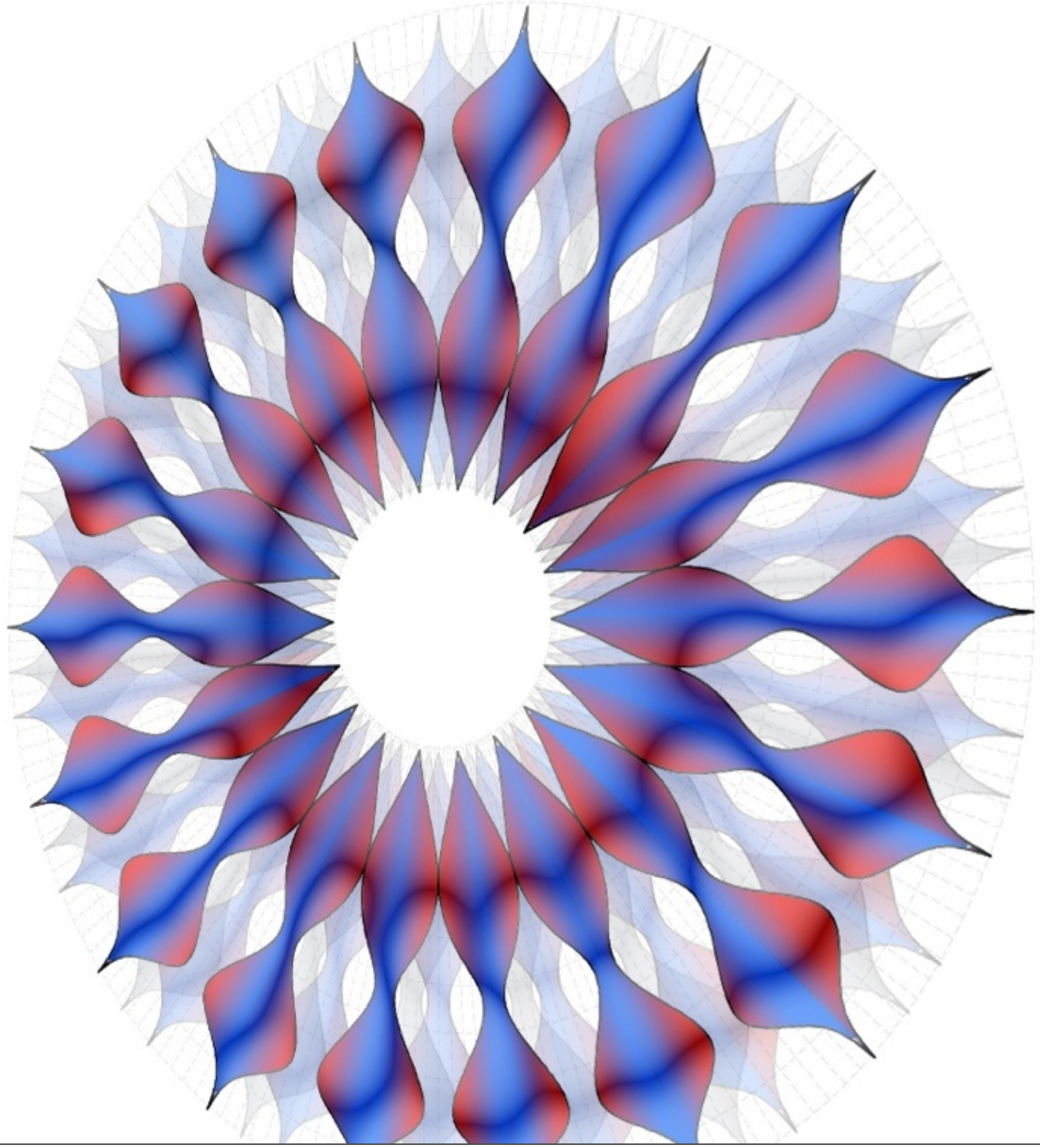
Desire

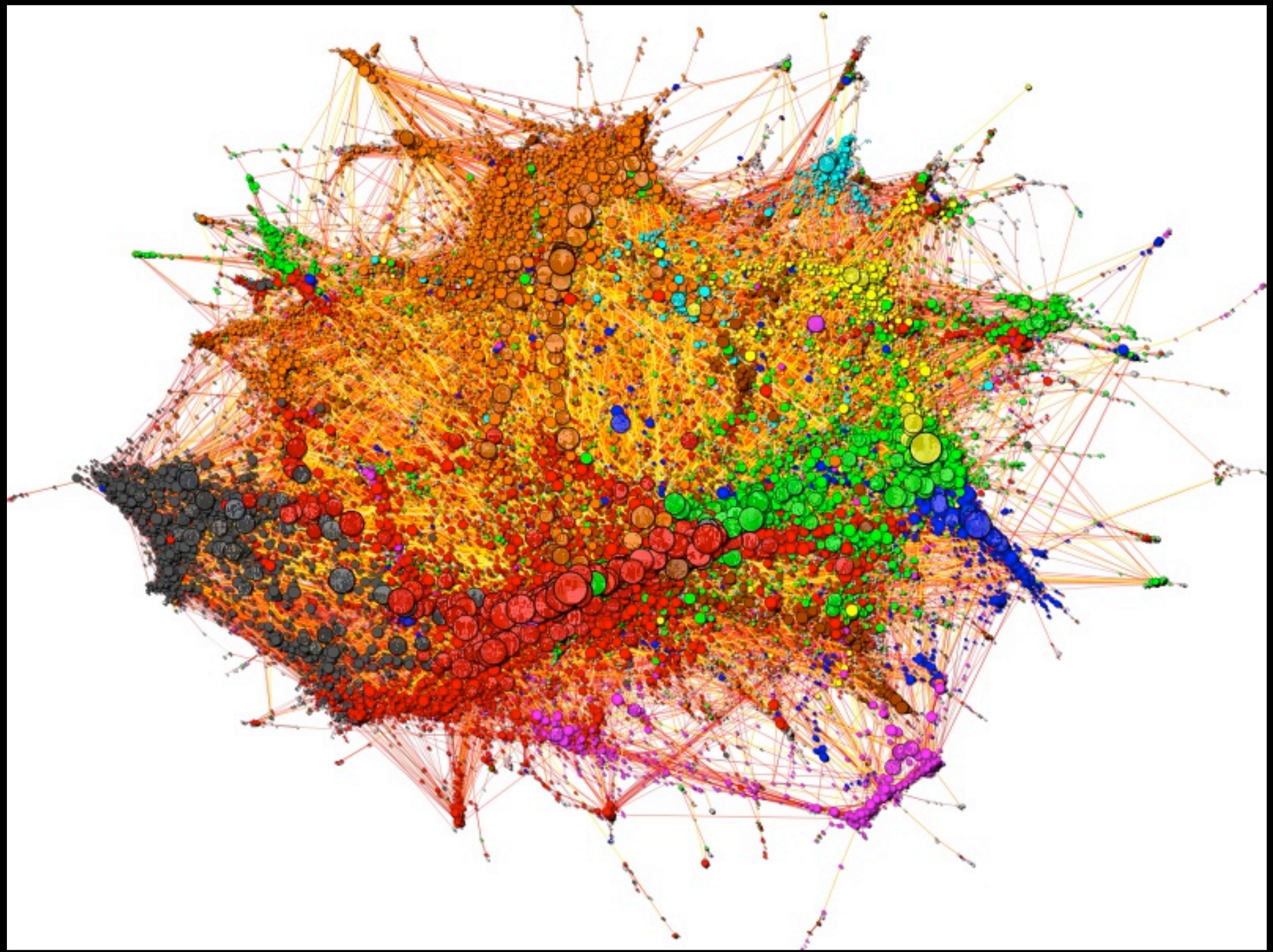
PATEK PHILIPPE
GENEVE
SWISS
29-526
5509652
TWENTY-THREE 23 JEWELS

Marcos Novak

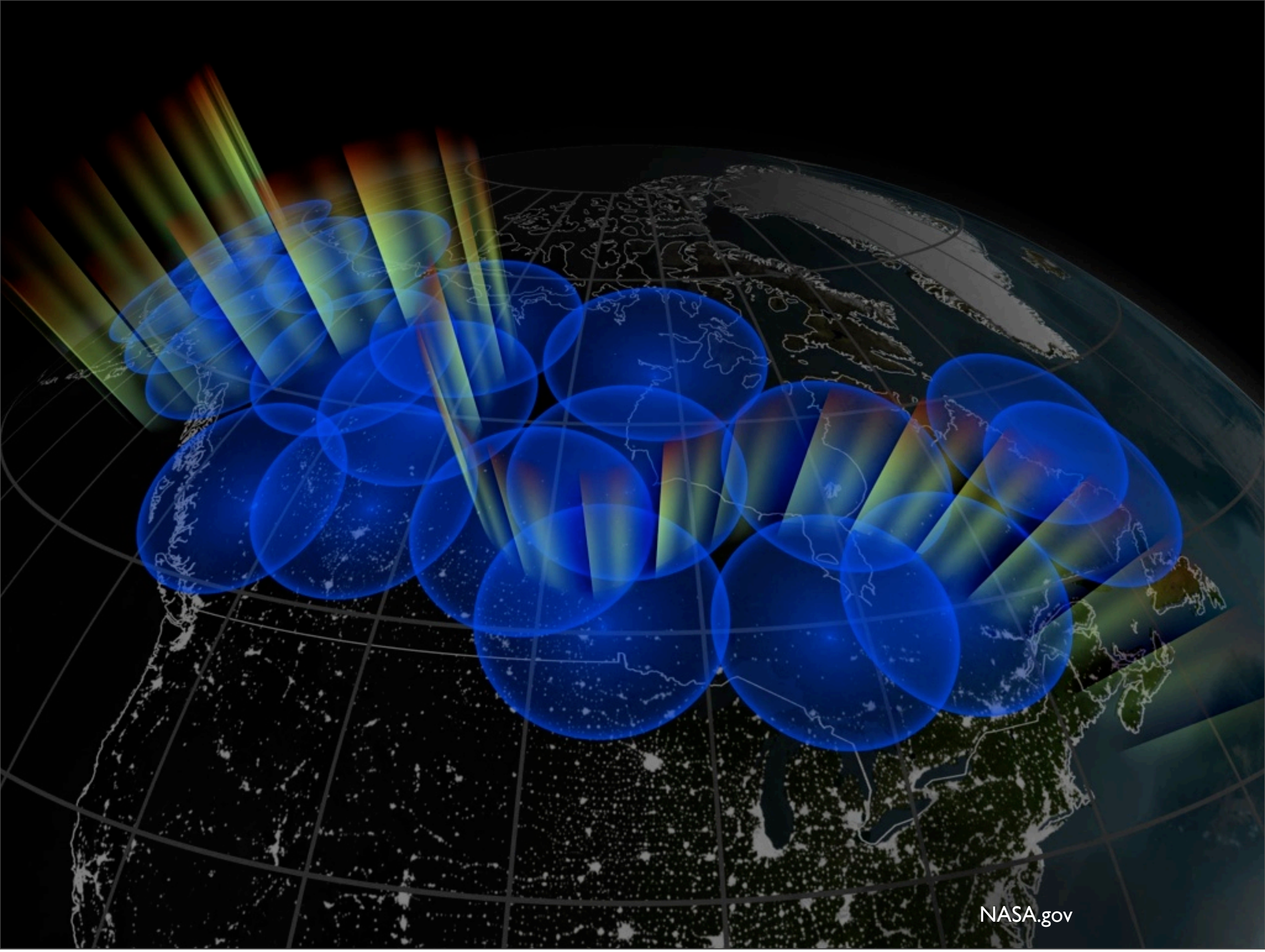








Drew Conway


NASA.gov

VisAlert File Database Views Help Window (Charged) 12:04 PM Shaun Moon

VisAlert

Wall Clock: 2005-Jul-05 16:45:37
Show: 2005-Jul-05 18:02:58

Log

Update

Visualization

History

Navigation

Views

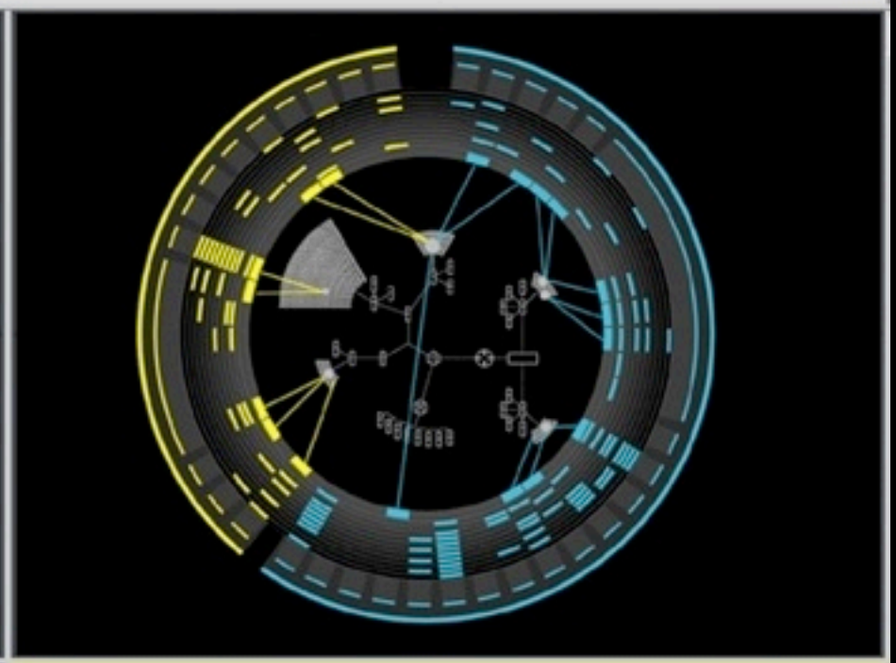
Enclave 1

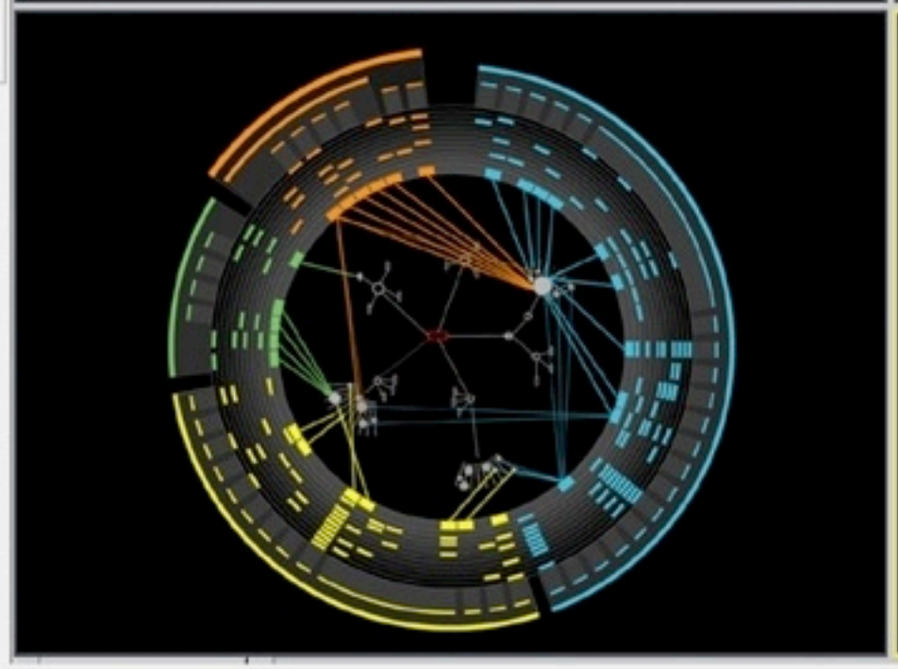
Enclave 2

Enclave 3

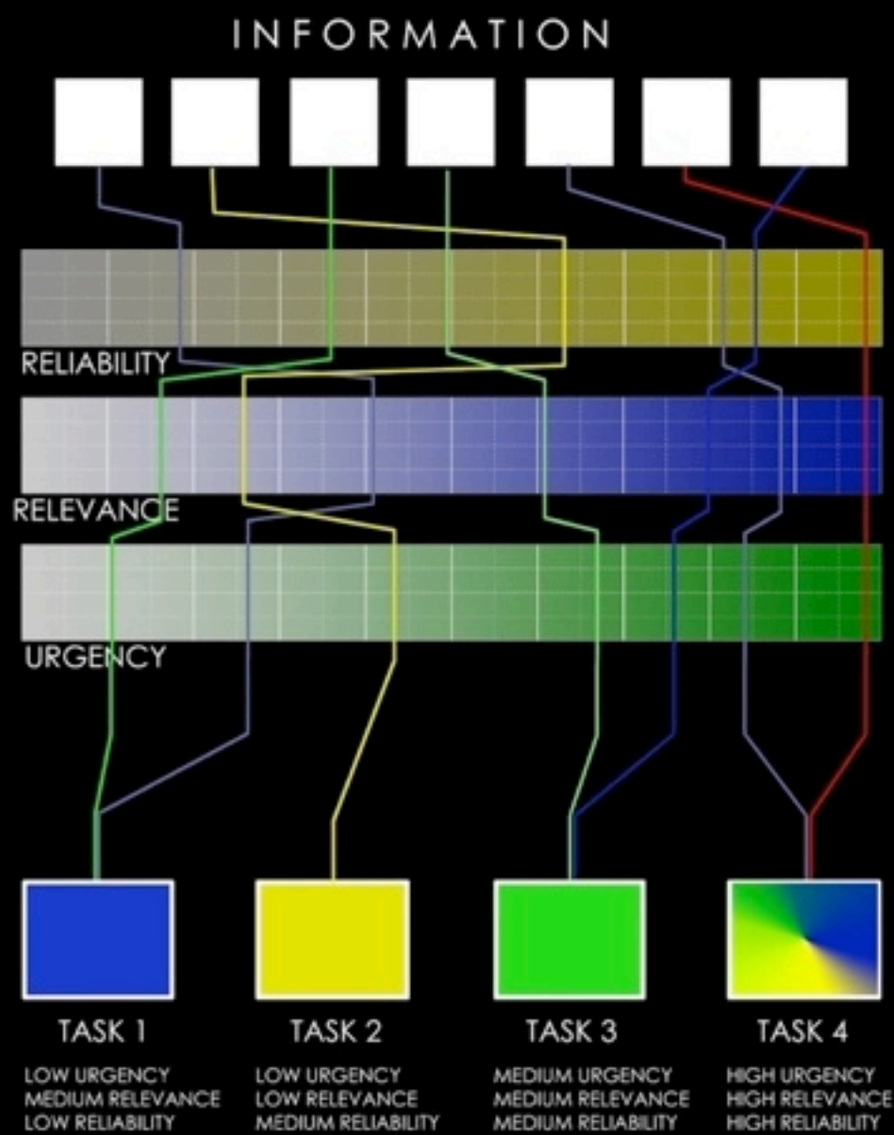
Enclave 4

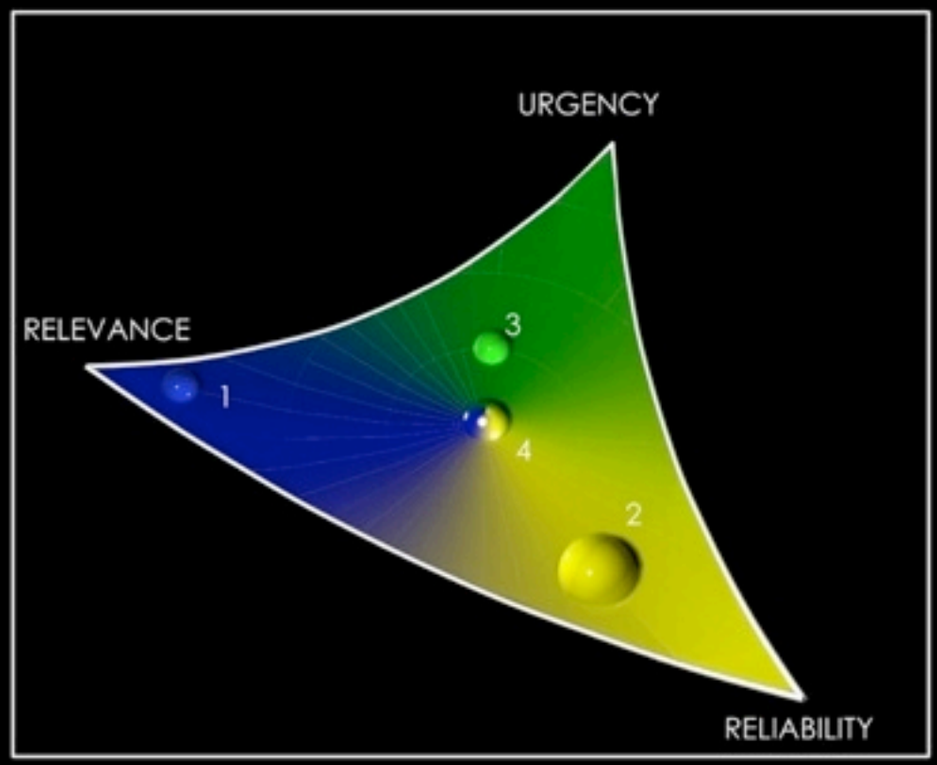
Show all

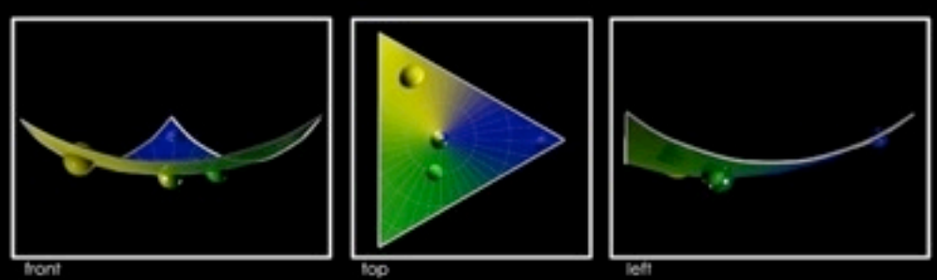




Alert types


INFORMATION
RELIABILITY
RELEVANCE
URGENCY
TASK 1
LOW URGENCY
MEDIUM RELEVANCE
LOW RELIABILITY
TASK 2
LOW URGENCY
LOW RELEVANCE
MEDIUM RELIABILITY
TASK 3
MEDIUM URGENCY
MEDIUM RELEVANCE
MEDIUM RELIABILITY
TASK 4
HIGH URGENCY
HIGH RELEVANCE
HIGH RELIABILITY


URGENCY
RELEVANCE
RELIABILITY
1
2
3
4

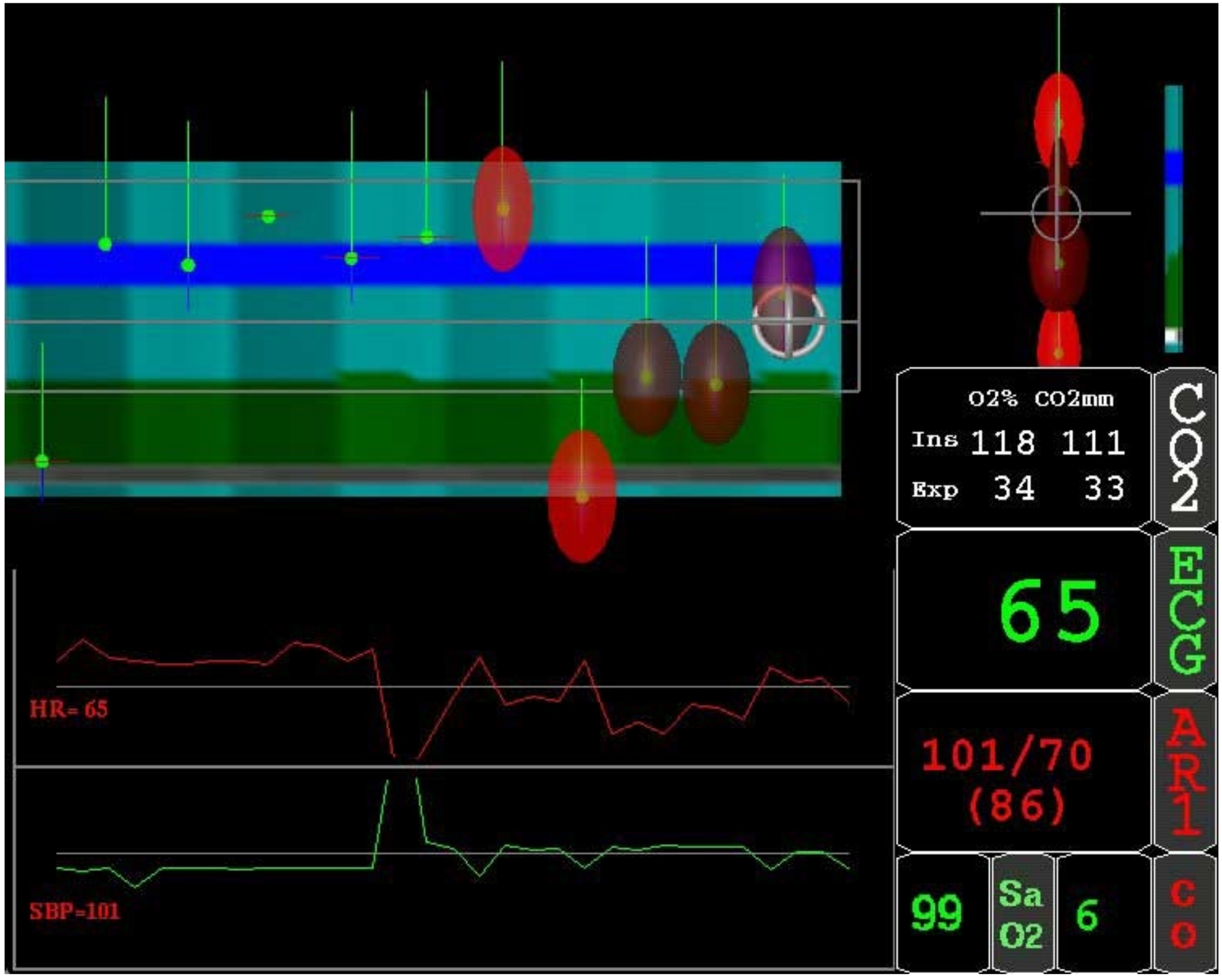

front
top
left

Interaction is a kind of action that occurs as two or more objects have an effect upon one another.

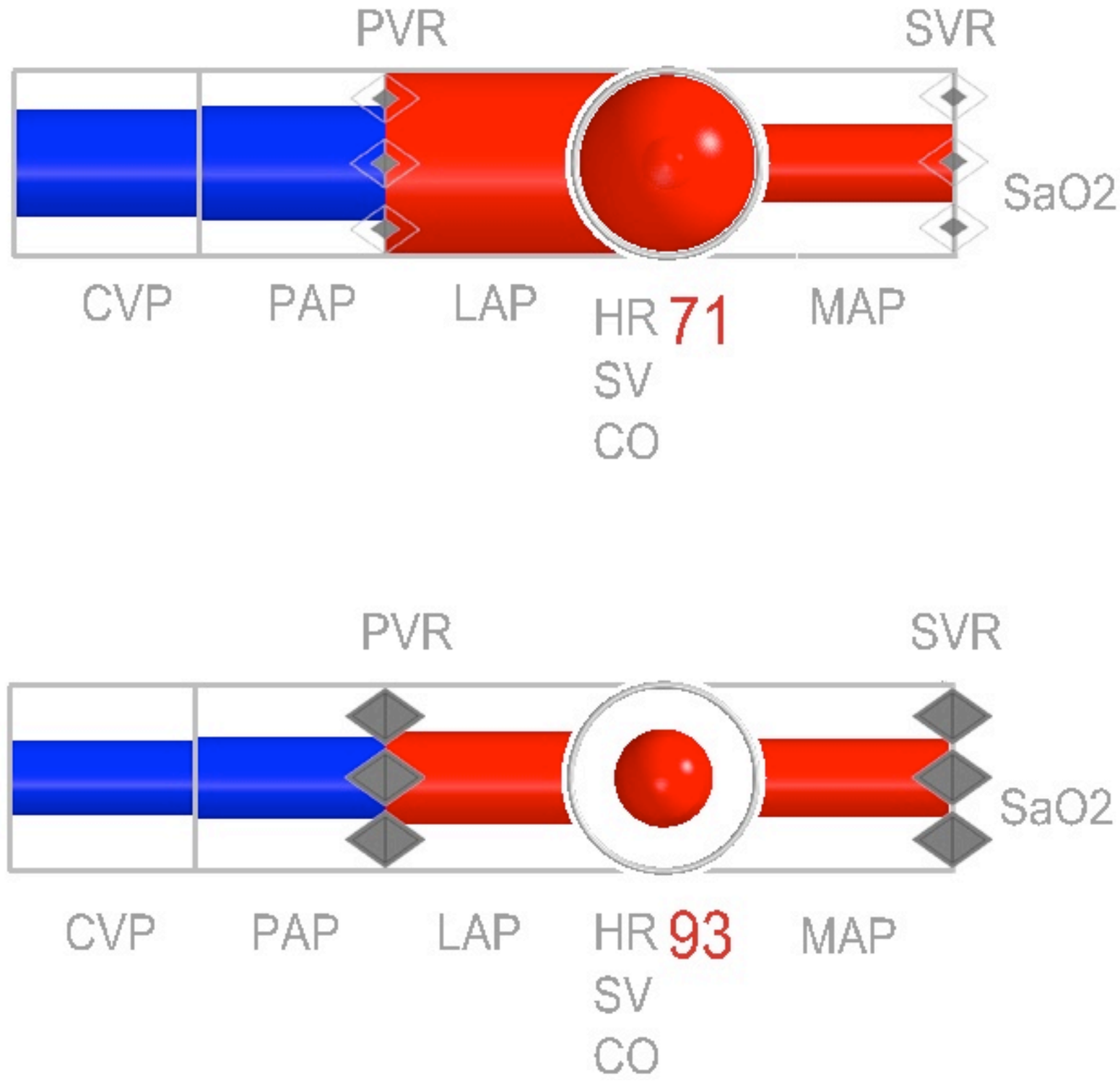
Interaction Designers strive to create meaningful relationships between people and the products and services that they use, from computers to mobile devices to appliances and beyond.

IxDA.ORG

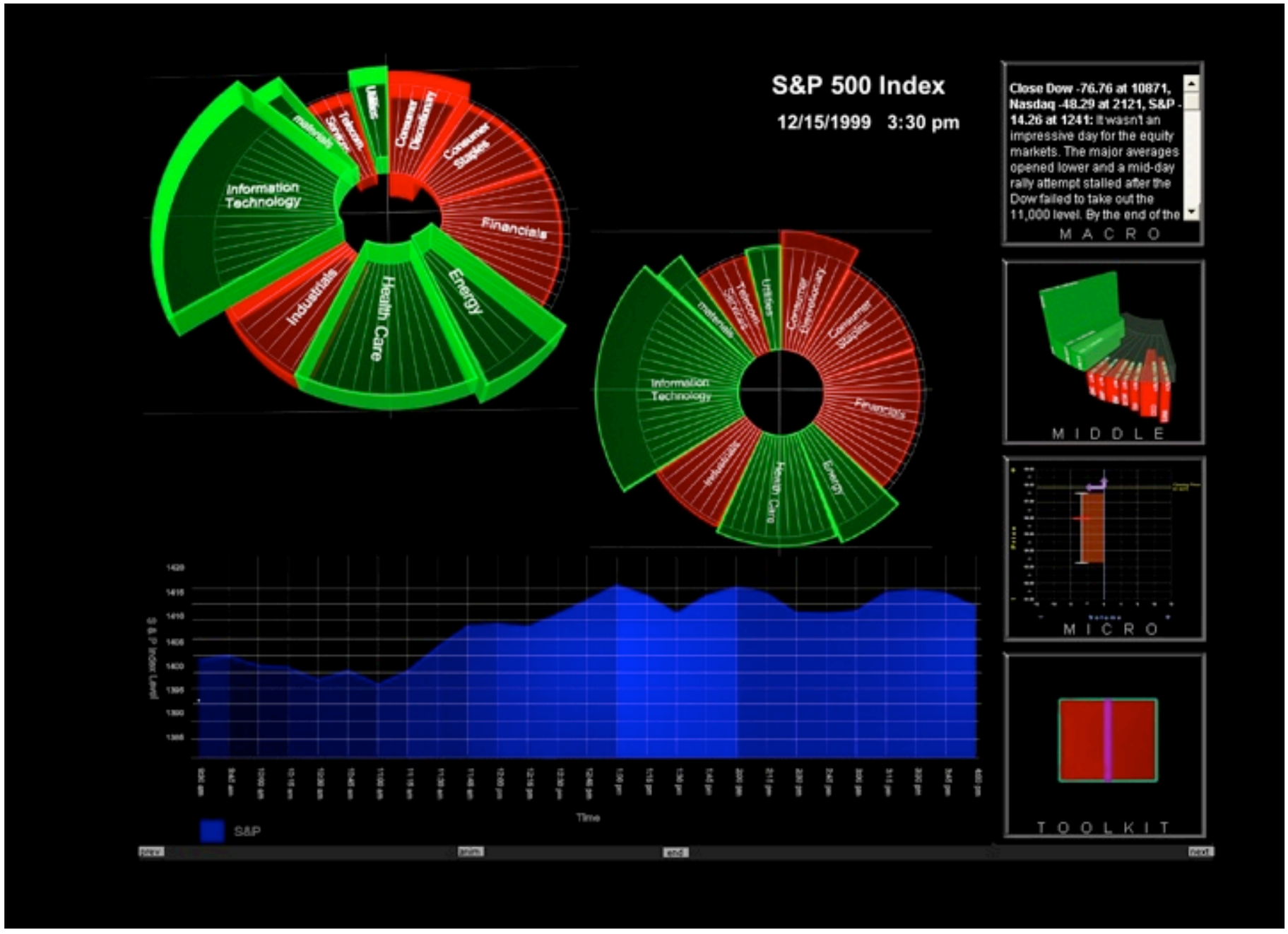
ER INFORMATION SYSTEM



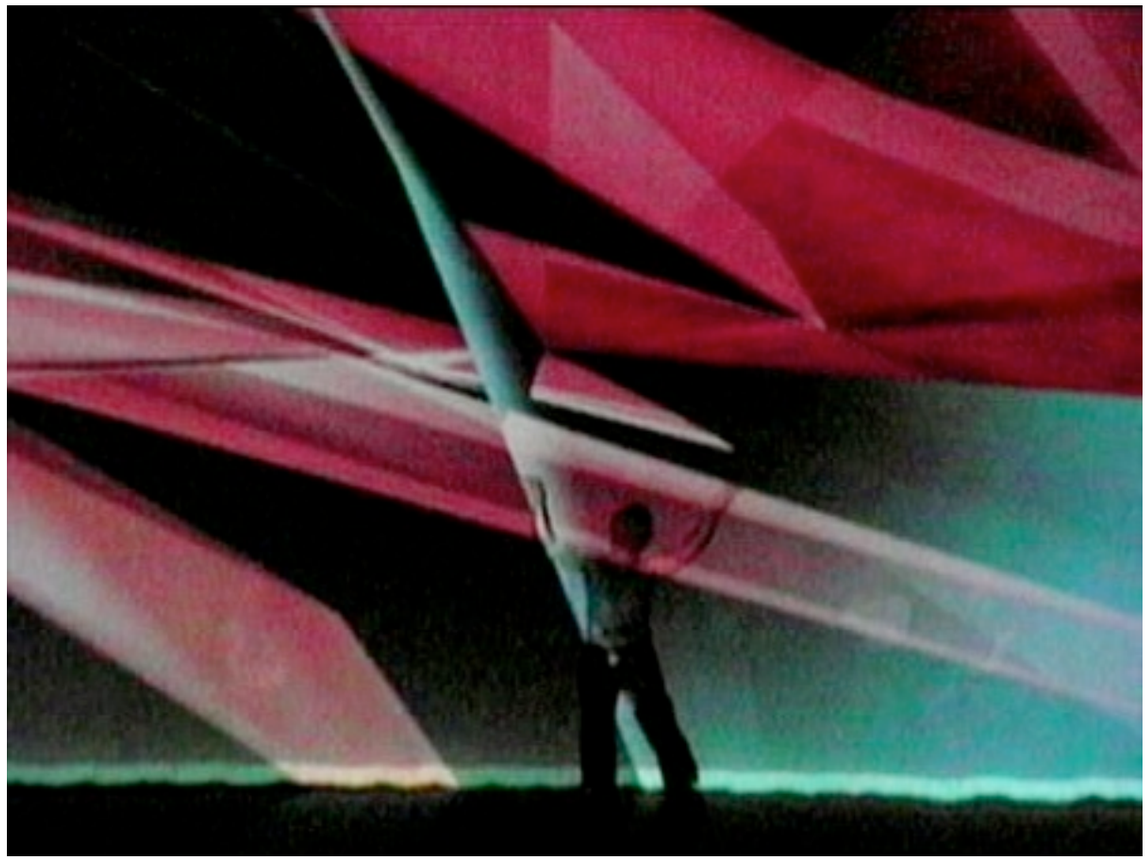
CARDIOVASCULAR INFORMATION SYSTEM

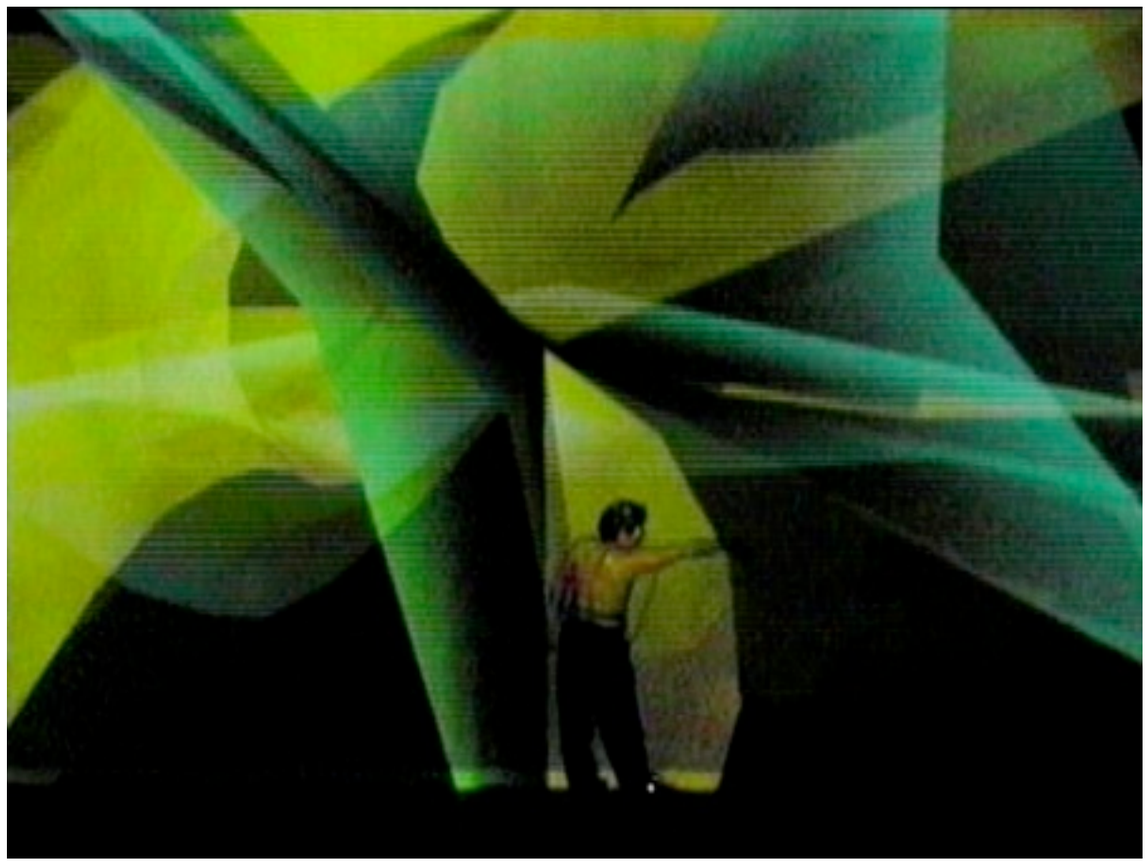


FINANCE DASHBOARDS



REAL-TIME 3-D PHYSIOLOGIC DISPLAY





MEDICINE

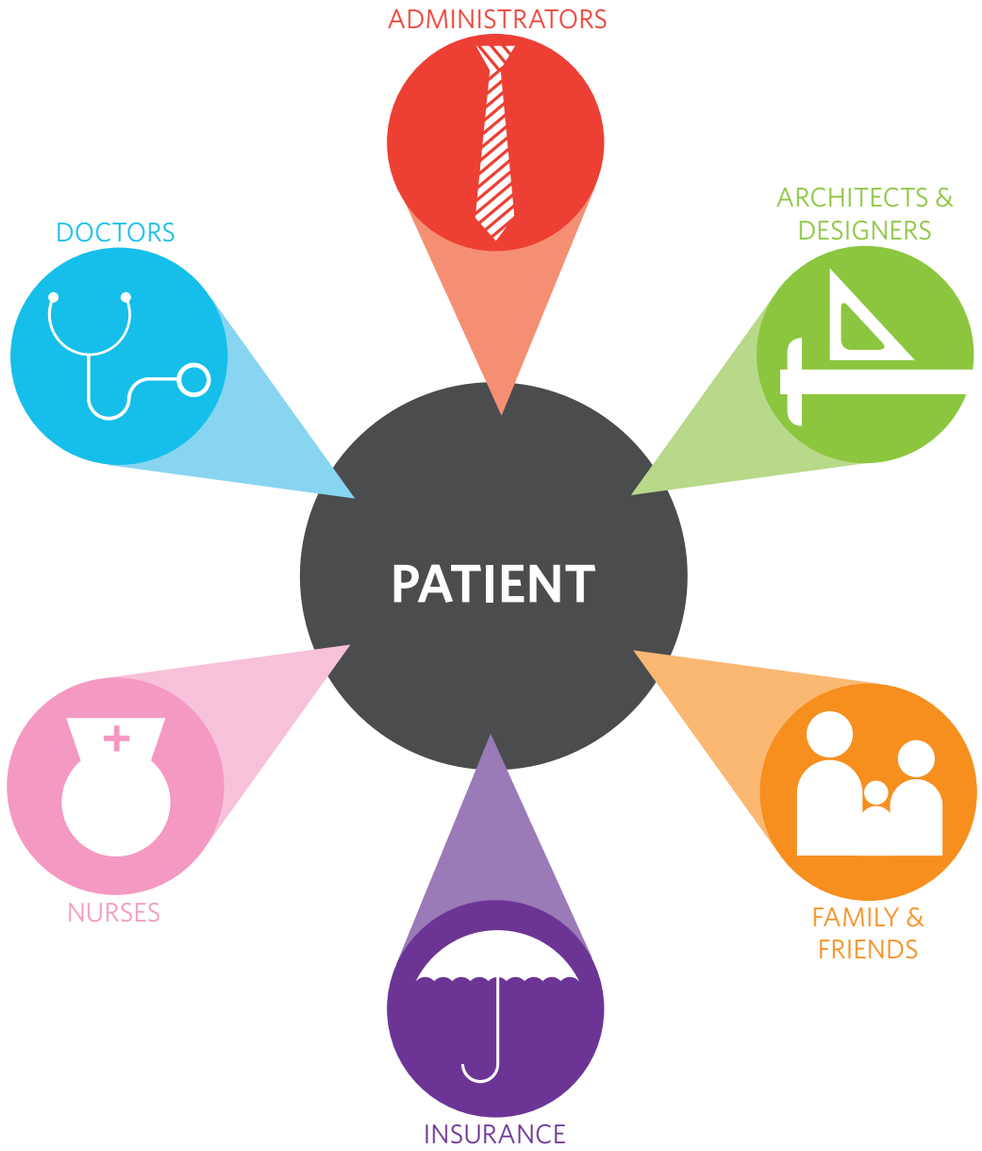
EMPATHETIC INNOVATION IN HEALTH CARE

A FOCUS ON THE PATIENT EXPERIENCE

HUMAN CENTERED DESIGN:

THE PATIENT FROM MULTIPLE PERSPECTIVES

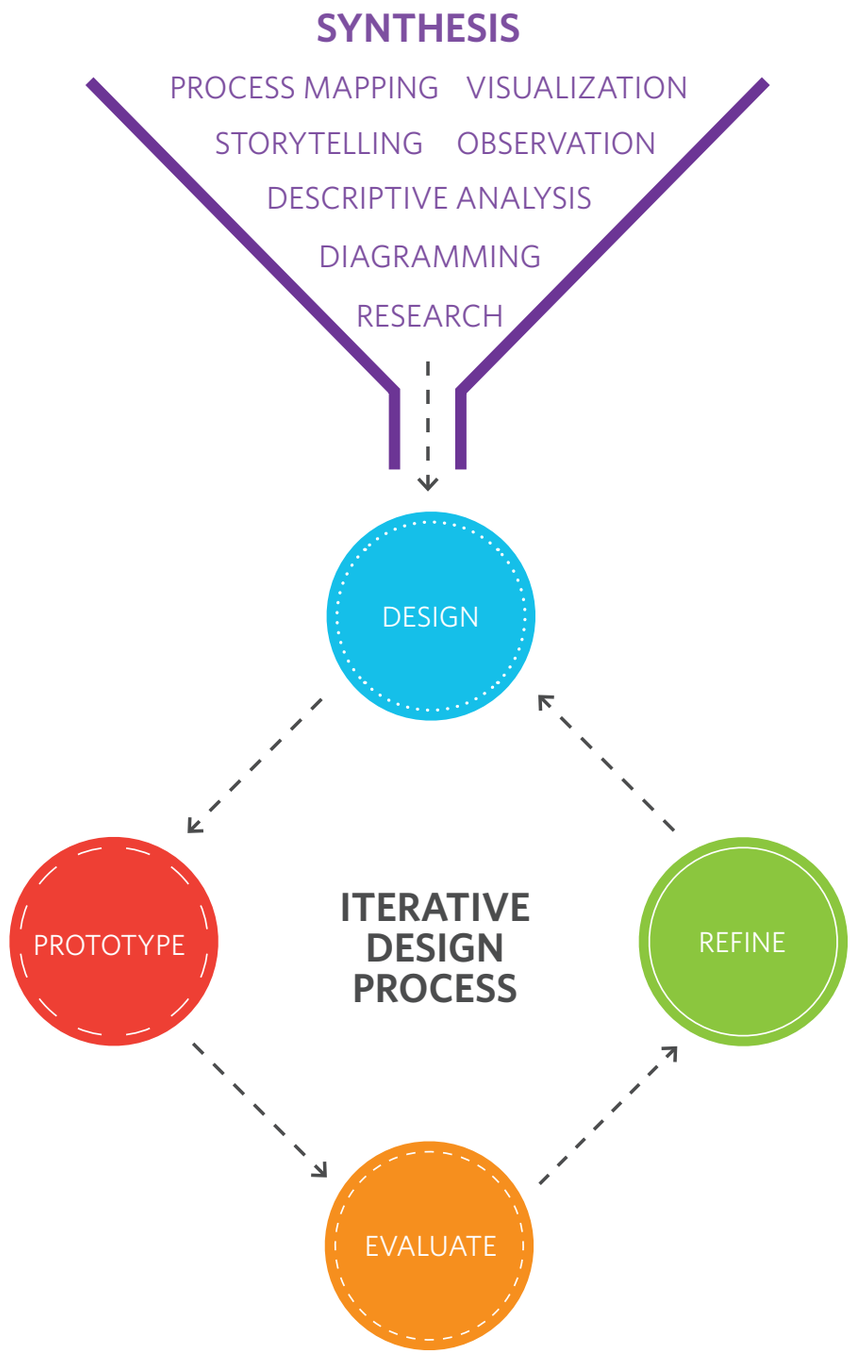
After spending a few weeks with the patient's point of view, we shifted our focus to all the external people who play a critical role in shaping the experience. This included interviews with hospital administrators, health care architects and wayfinding designers, family and friends of patients, insurance agents, nurses and clinicians, and doctors. We also spent some time following doctors while they did rounds as a way to contextualize the different points of view.



HUMAN CENTERED DESIGN:

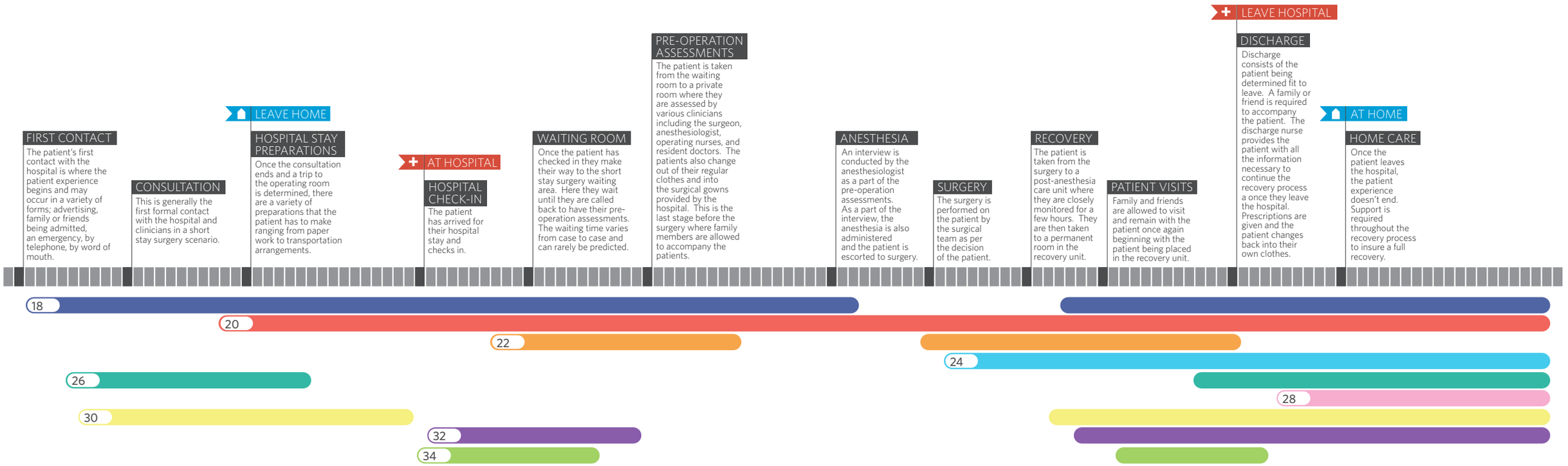
SYNTHESIS AND DESIGN

Once the interviews and contextual research was completed, we synthesized our findings and used that as a basis to begin the design phase. Following an iterative design process, we generated ideas and prototyped them to a certain level before presenting them to one another to receive critical and constructive feed back. We refined our ideas based on the feedback and then repeated the process.



THE PATIENT EXPERIENCE:
SHORT STAY SURGERY SCENARIO

The patient experience has many different facets and incarnations. We focused on the short stay surgery scenario and the patient experience in the context of that process. The short stay surgery experience, as we observed it, is mapped below with each milestone along with a description of each key event experienced by the patient.



DESIGN INTERVENTIONS:
WHERE THEY ENHANCE THE PATIENT EXPERIENCE

The different design interventions provide support and enhance the patient experience in different ways. Each intervention is mapped in context with the patient experience to show where and when they augment the patient experience.

INTERACTION DESIGN IN THE ICU

INTERACTION DESIGN IN THE ICU

PROCESS :

RESEARCH

SYNTHESIS

DESIGN

VALIDATION

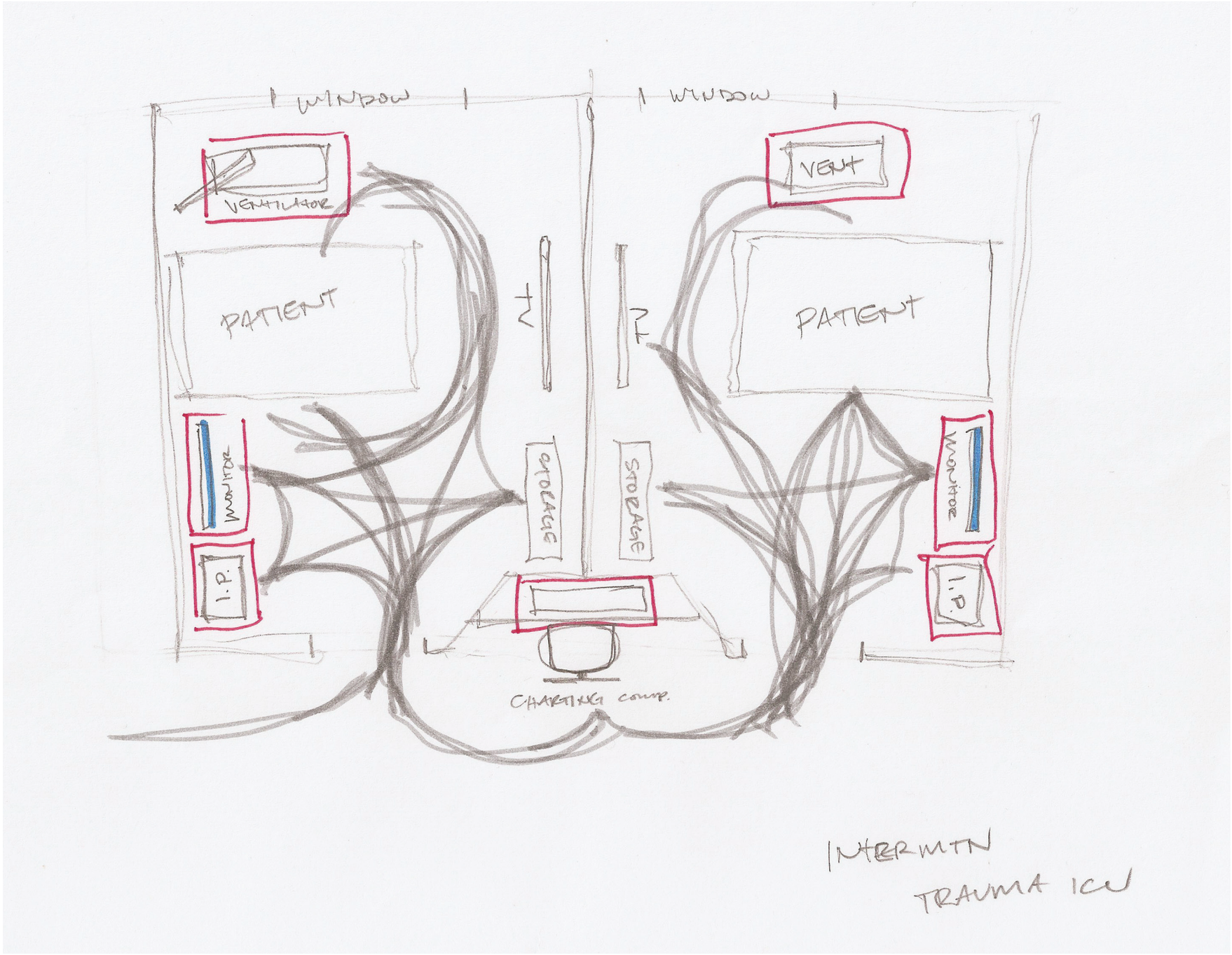
CONCLUSION

RESEARCH

CONTEXTUAL OBSERVATION

RESEARCH

WORKFLOW MAPPING



RESEARCH

DOCUMENTATION

un10	Checks urine output	o	R	Monitoring	Urine Output
un10	Check urine output	o	R	Monitoring	Urine Output
un10	Checking Vitals on Computer (assessment): upates Vitals by clicking at top of column.	o	O	Organization	Charting
un10	Number for pain ranking are subjective, but he charts it anyway.	o	O	Organization	Charting
un10	Notes on chart that patient said she was in pain but didn't want pain meds.	o	O	Organization	Charting
un10	Emar: Charts Heparin. Marks time and where med was administerd (on body).	o		Organization	Charting
un10	Charts assessment	o	O	Organization	Charting
un10	Gets syringe to suck air out of the IV line.	o	R	Organization	Equipment
un10	Computer said that he needed to give the patient a med but it conflicted with a med the pharmacy had just ordered so he marked the old med as not given and made a note of why it wasn't given.	o		Organization	Medication
un10	Check s sliding scale on computer to see what level of insulin patient needs with her blood sugar level.	o	O	Organization	Medication
un10	Double checks (assistant's) written chart to make sure the patients blood sugar level was correct in the computer so that he knows he is getting the right amount of insulin.	o	O	Organization	Medication
un10	Goes to med room to get insulin.	o	O	Organization	Medication
un10	Prints off information about all of the meds that need to be administered throughout the day, and keeps notes on that paper	o	R	Organization	Pocket Notes
un10	Gets out notepad to write down temp.	o	R	Organization	Pocket Notes
un10	Writes down urine output	o	R	Organization	Pocket Notes
un10	Notes urine output on paper.	o	R	Organization	Pocket Notes
un10	Administering Meds: (Heparin) Asks patient how she is feeling, asks her to rate her pain (1 to 10) is that comfortable?, she says no. He asks if she wants something for the pain, she says no. Puts on his gloves. Got out saringe, got specified amount out of bottle, walked around the bed and connected it to the IV. Tells the patient "thank you".	o	R	Task	Administering Medication
un10	Assessment: tells patients he is going to listen to her heart. Gets out stethoscope. Listens to heart. Asks her easy questions, what hospital she's in and what month it is. Listens to lungs, bowels, pupils, fingers, pulses. Replaces sheet on patient. Takes temperature.	o	R	Task	Assessment
un10	Assessment: Gets out stethoscope, listens to lungs, listens to bowels, asks patient to squeeze his fingers, "give me the peace sign", asks patient to wiggle toes, checks pulses in feet. Prepares patient for flashlight in eyes, checks pupils. Ask patient to open his eyes. Takes patients temp (after getting new ear cap).	o	R	Task	Assessment
un10	Bathing: puts on gloves, checks urine output while other nurse gets bucket with water and towels ready. Nurse removes patients bed pan and takes it to the disposing room. Adjust the fan for her. Begins wiping patient down. Other nurse returns. Asks if she wants her feet washed or not. Dips towel in water and washes her off (new towel every time). Bring laundry basket for towels to a better location. Patient is awake enough to roll and turn for them (makes it easier). Asks patient how she is doing. Change sheets and adjust patient to make her more comfortable.	o	R	Task	Bathing
un10	Goes to the computer to chart. Charts insulin.	o	R	Task	Charting
un10	Flushes out the IV: Gets the syringe with saline, plugs the IV line and injects the saline. Screws off Syringe, throws it away, resets the IV.	o	R	Task	Flush Out IV
un10	Oral care: (every 4 hours when patient is sedated). Gets pack off the wall. Silences ventilator, raises to 100% oxygen, explains what is going on to the patient. Cleans around tubes and inside the mouth, alarm sounds and he asks patient if he is in pain. Resets alarm. Turns off feeding tube (which can choke patient when oral cleaning is going on). Throws away tooth brush. Lets patient know that he is going to sution out his breathing tube.	o	R	Task	Oral Care
un10	Patient asks for apple sauce, nurse remembers her diet restrictions (didn't pass swallow test), he offers to get her some nectar.	o	R	Task	Patient Comfort Measures
un10	Knocks on patients door, tells her they only had apple. Pours it into a cup. Looks for a spoon but cannot find one. Looks in food room for spoon. Didn't know where to look. Finds one and brings it to patient. Starts raising the bed up, explaining to her that she has to be at 90 degrees to drink liquid. Tries to feed patient but she doesn't want him to. Hands cup to husband.	o	R	Task	Patient Comfort Measures
un10	Nurse walks into the room to check out respiratory tubes.	o	R	Task	Patient Comfort Measures
un10	Nurse gets washcloth for RT.	o	R	Task	Patient Comfort Measures
un10	Repositioning patient: Finds nurse to help reposition patient, put on gloves, unstrap patients arms, lower bed so that it is totally flat, pull patient to one side and remove pillows that were underneath him, lay patient flat again. Inform the patient that they are repositioning him, push patient to other side, move around pillows, tied straps back down.	o	R	Task	Patient Comfort Measures
un10	Asks patient if he is hot and whether or not he wants a cool wash cloth.	o	R	Task	Patient Comfort Measures
un10	Leaves to go get a washcloth from the linen room. Grabs washcloth and enters the room. Family is praying so he leaves the room. Returns when the family is finished. Gets washcloth wet, places it on patients forehead and walks out.	o	R	Task	Patient Comfort Measures
un10	Suctioning: lets him know what he is doing. Pushes button down, suctions. "Sorry". States he'll moisurize patients mouth, asks if he likes that, asks if he would like to be suctioned out again, patient say yes. He does it. "Sorry".	o	R	Task	Suctioning

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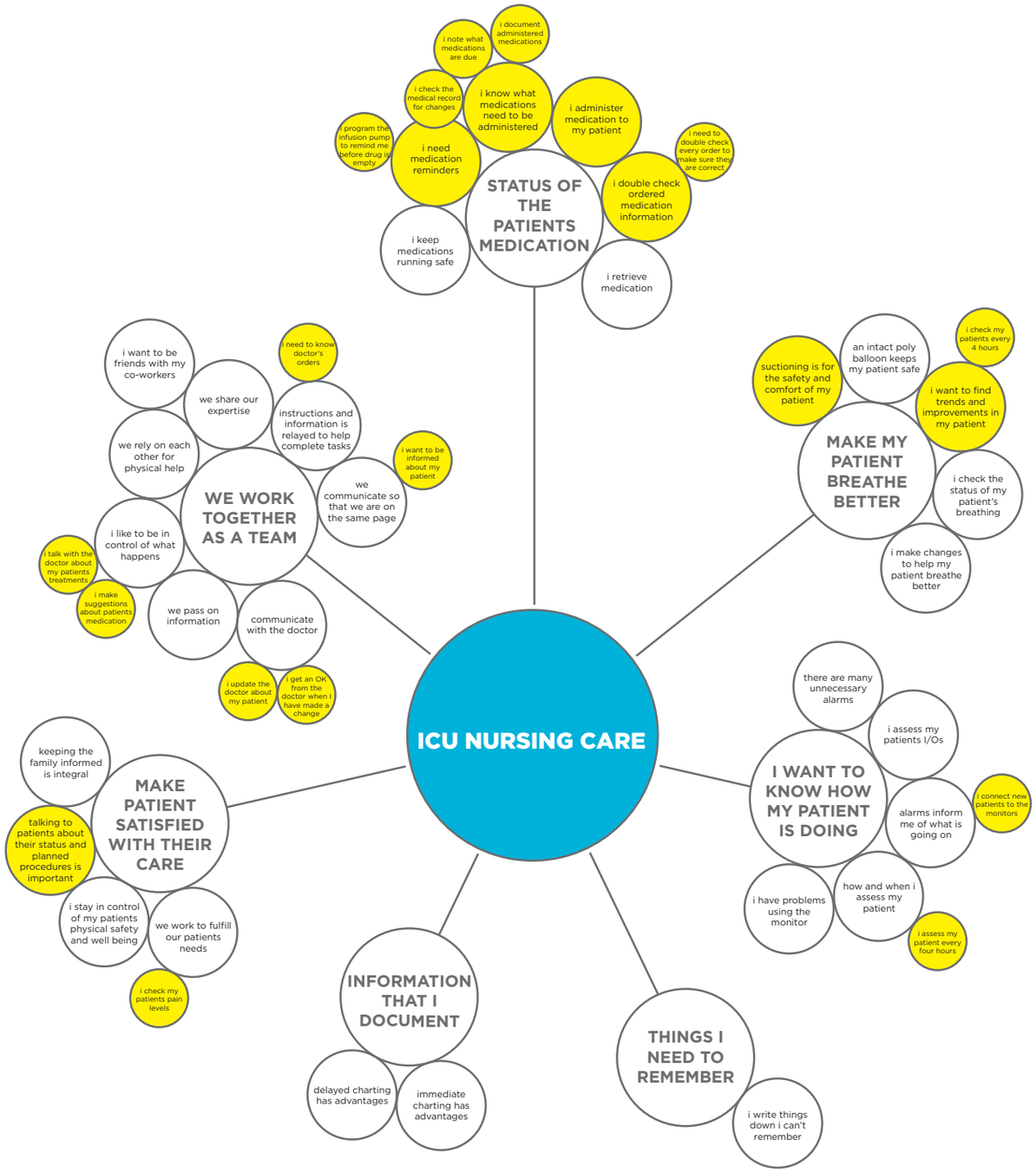
SYNTHESIS

AFFINITY DIAGRAM

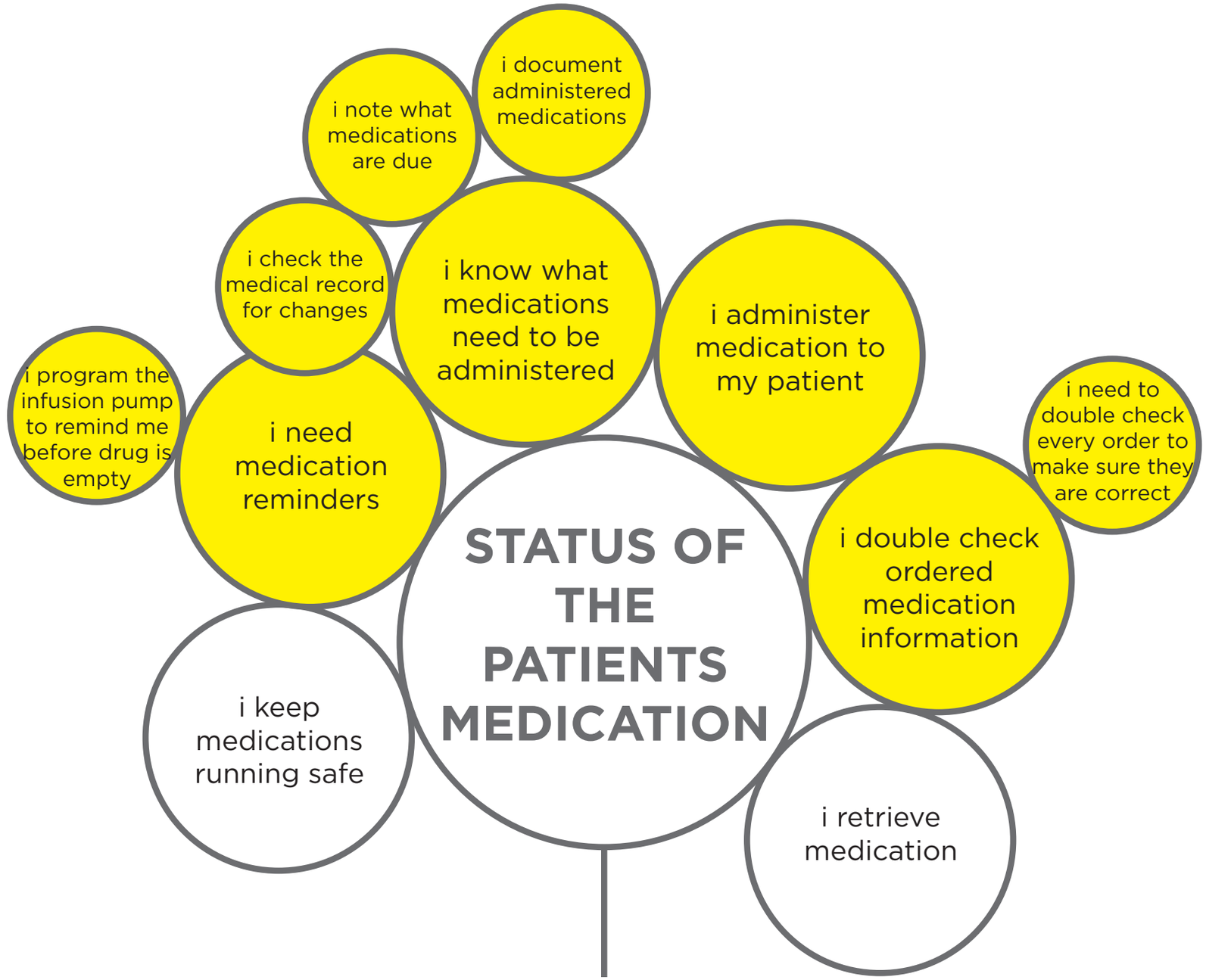
SYNTHESIS

AFFINITY DIAGRAM



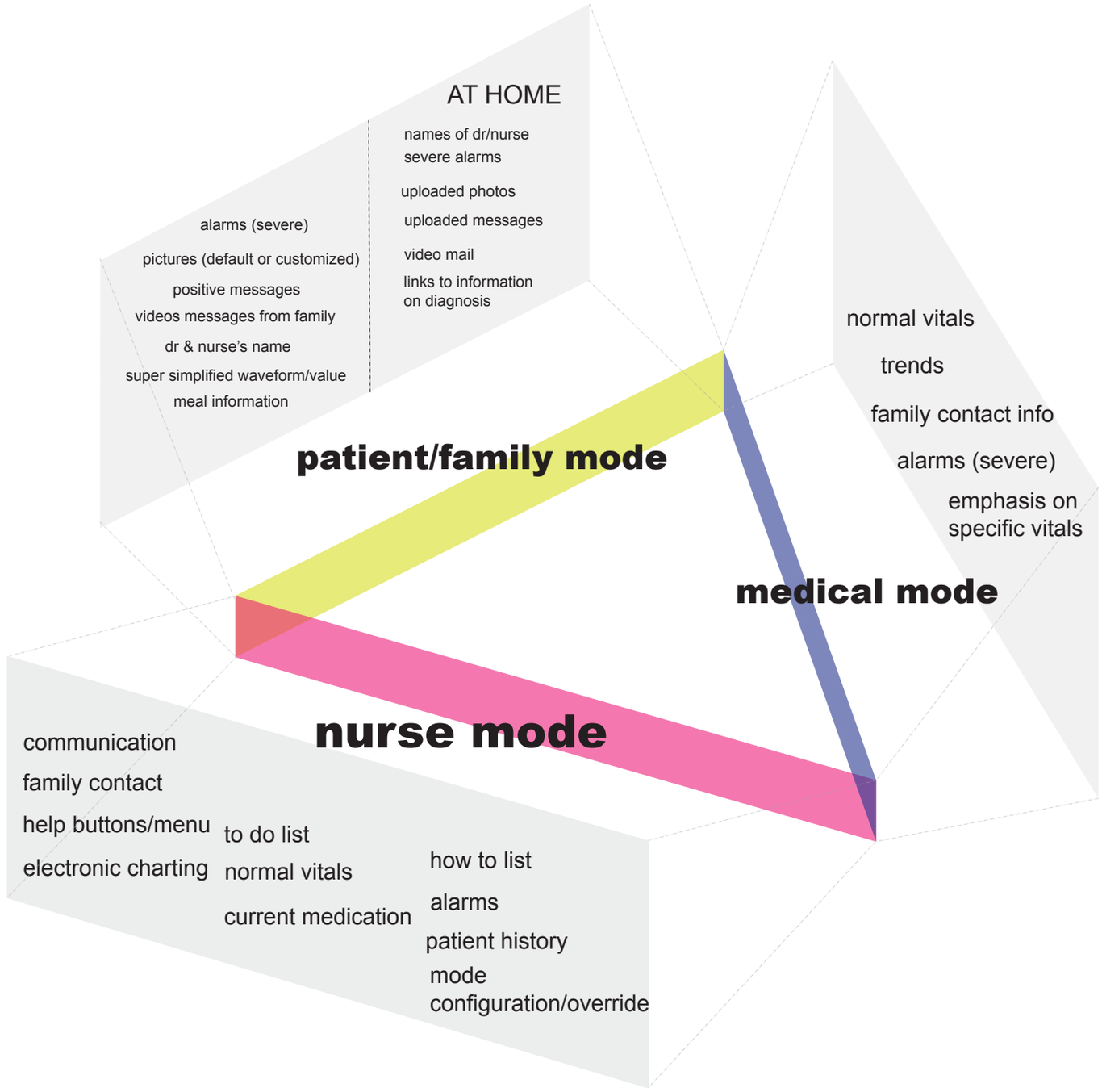
SYNTHESIS

AFFINITY DIAGRAM



SYNTHESIS

BROAD SCOPE



SYNTHESIS

NARROW SCOPE

nurse mode

current medication

time left/flow
more information about med
- protocol
- specific orders

compatibility
new medications
- changes
- arrival of med

normal vitals

trends
suctioning/intubated specific
vent check
lab results (recent) w/ time
see select values in other rooms

mode configuration

configures own screen
overrides family mode or medical mode

to do list

reminders
organize list
- prioritize
- sort
- check off
- turn optional tasks on/off
- see required tasks only
- remove items w/ or w/o reason

task completed, should I chart
doctors orders - send response
other orders
suctioning/procedures
leave note for self (audio)
prepare list for next nurse
request additional information
different views (by task, source)

communication help

call for help by function
- nurse, RT
- doctor

order meds
send messages
- doctor
- next shift nurse, RT

connect to emergency contacts
see others contacting you

electronic charting

automatic charting vitals, trends
confirmation of auto chart
similar look/format to paper charting
write on screen charts meds
assessments

patient history

medication history
allergies
procedures performed
lab results
previous assessments
visual history (wounds)

family contact information

names
pictures
phone number
email

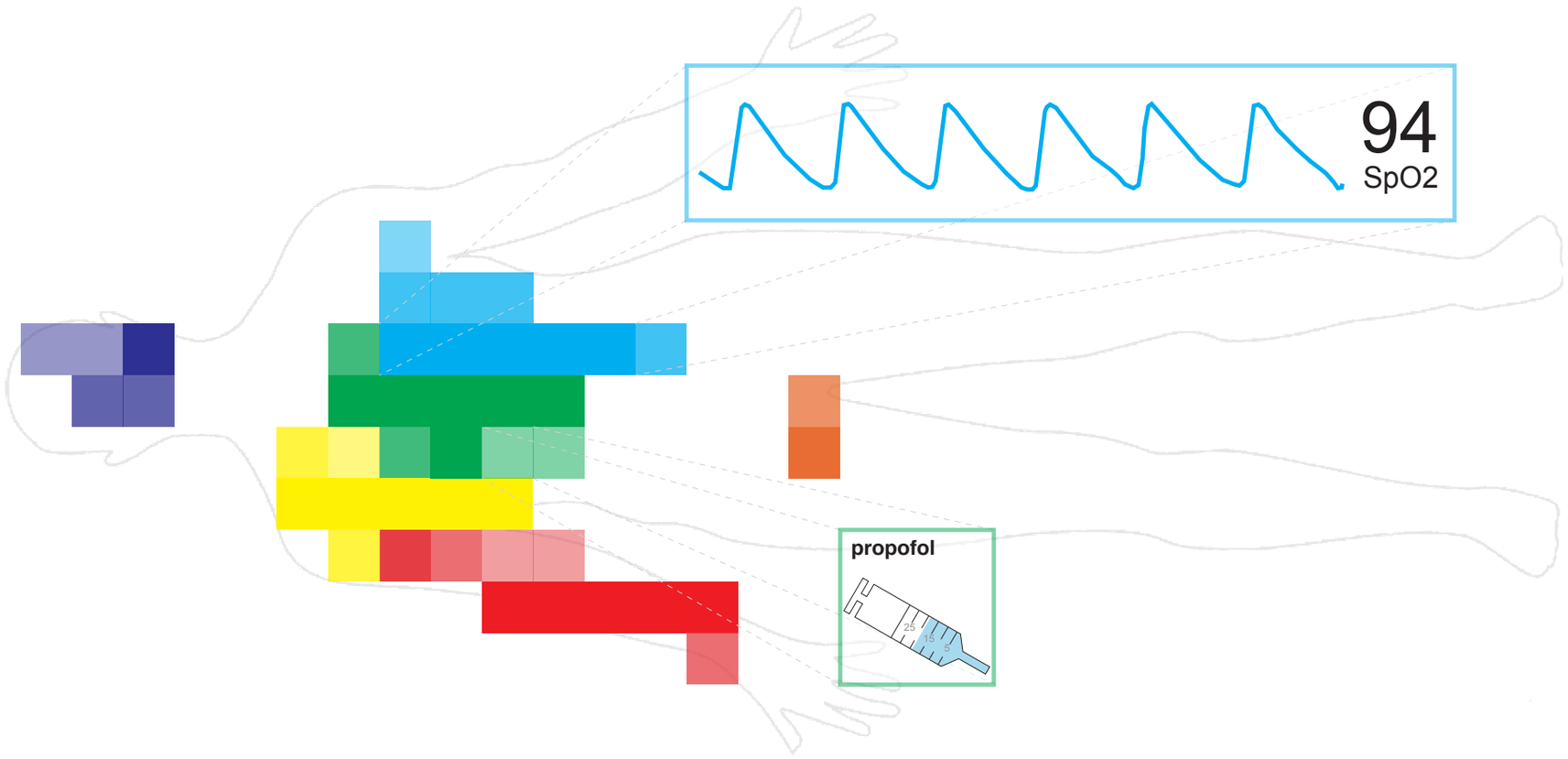
how to list

protocol
procedures

DESIGN

INFORMATION ORGANIZATION

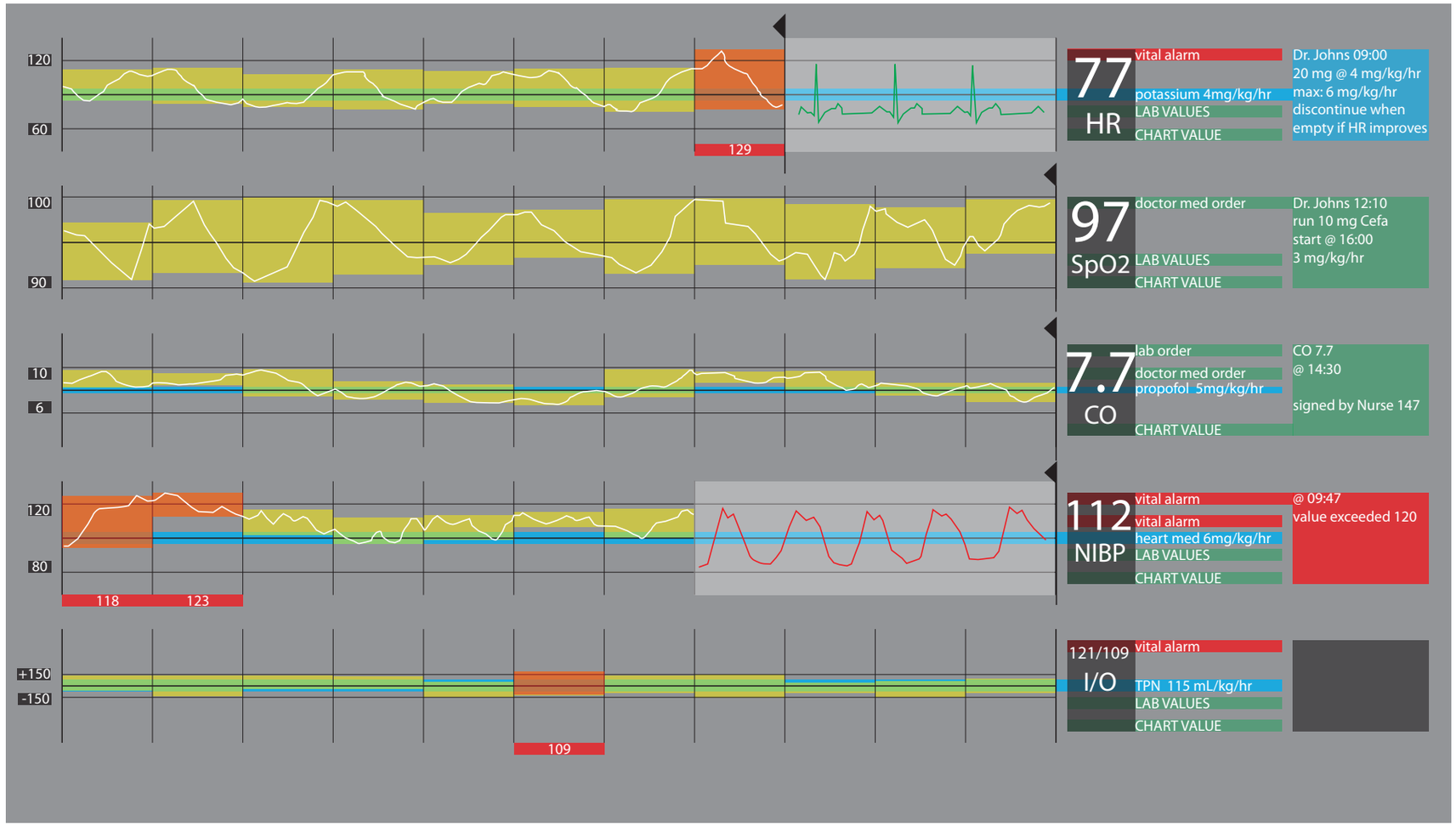
BODY BASED



DESIGN

INFORMATION ORGANIZATION

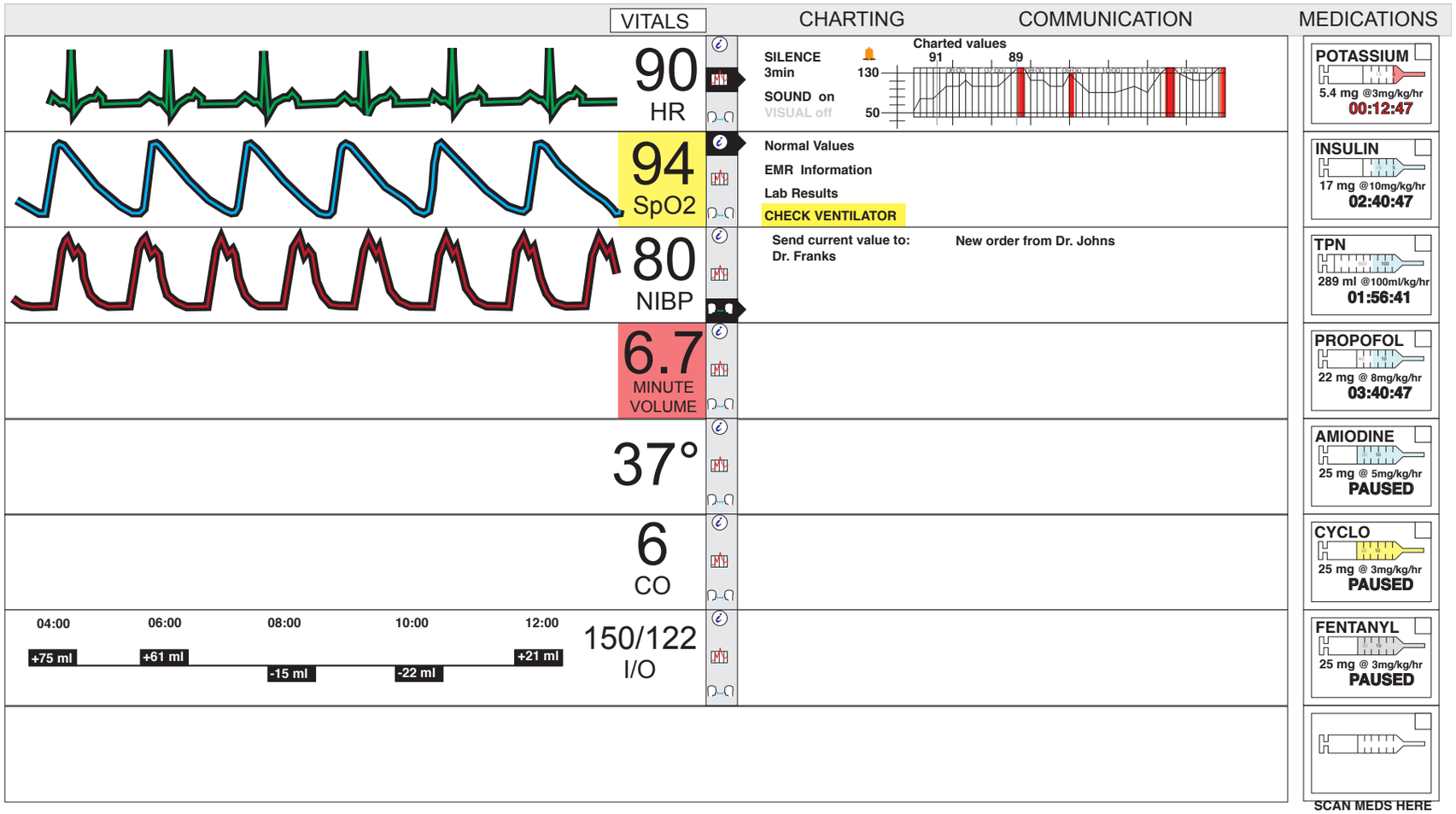
TREND CENTERED



DESIGN

INFORMATION ORGANIZATION

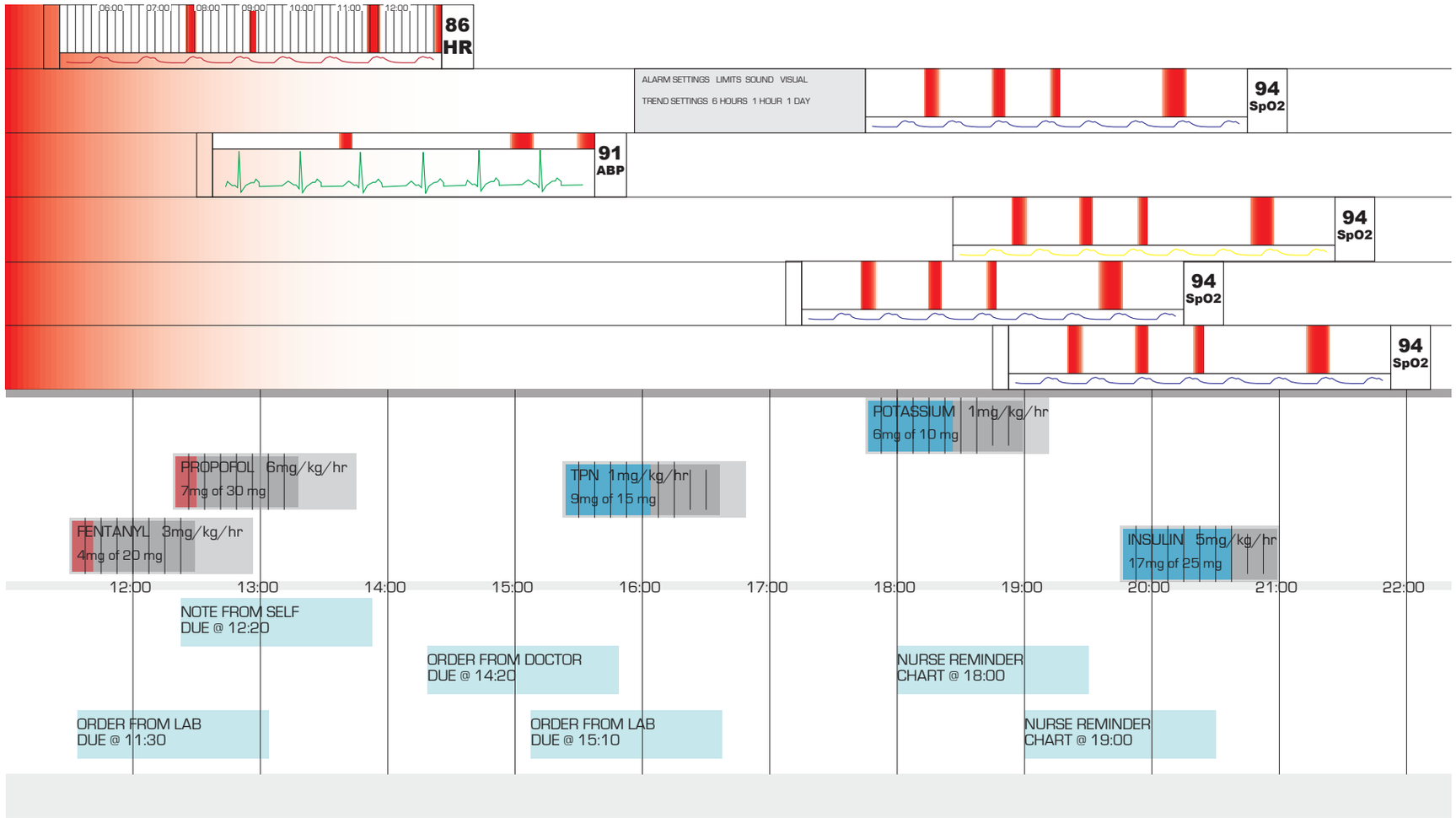
MONITOR PLUS



DESIGN

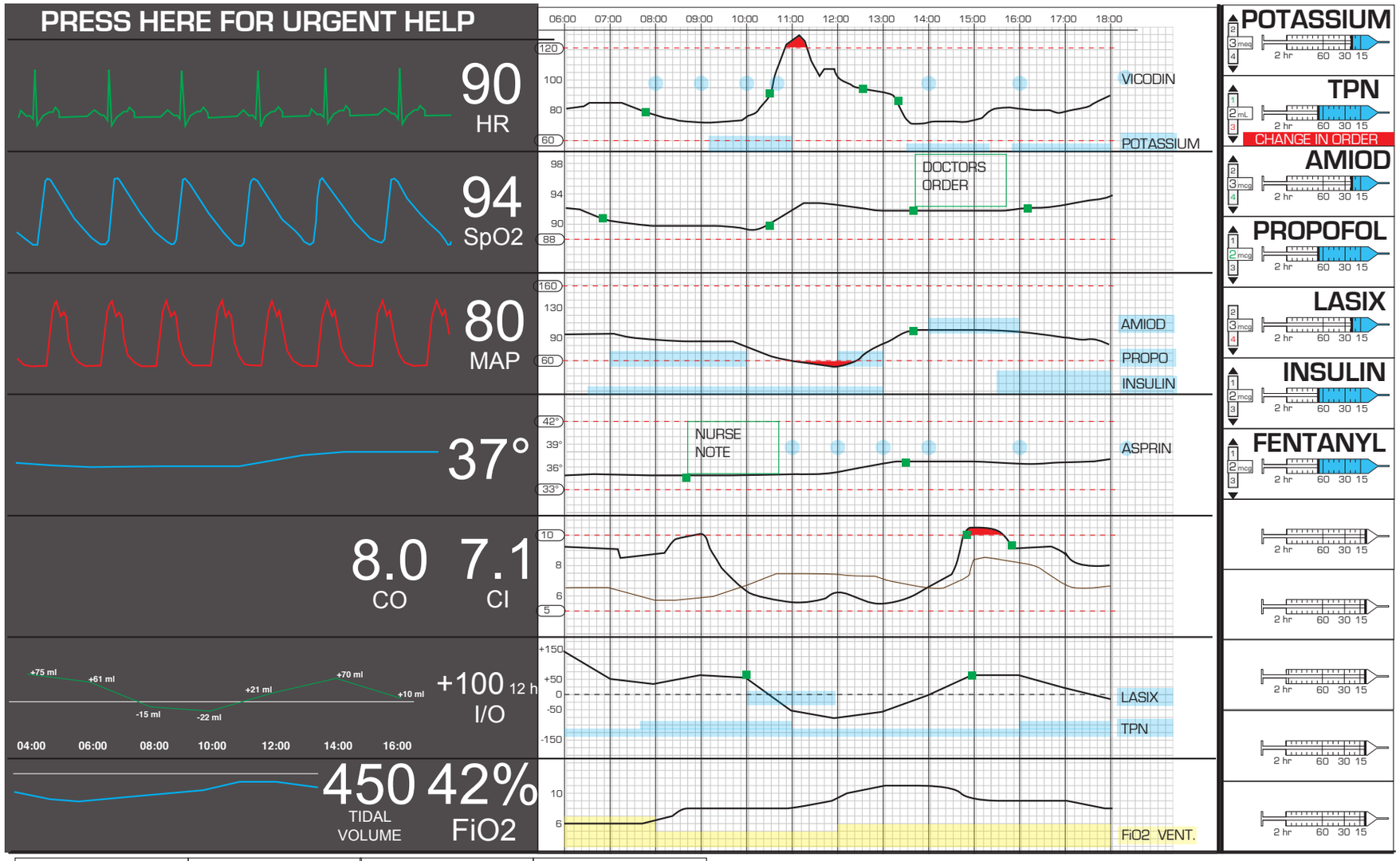
INFORMATION ORGANIZATION

TASK CENTERED



DESIGN

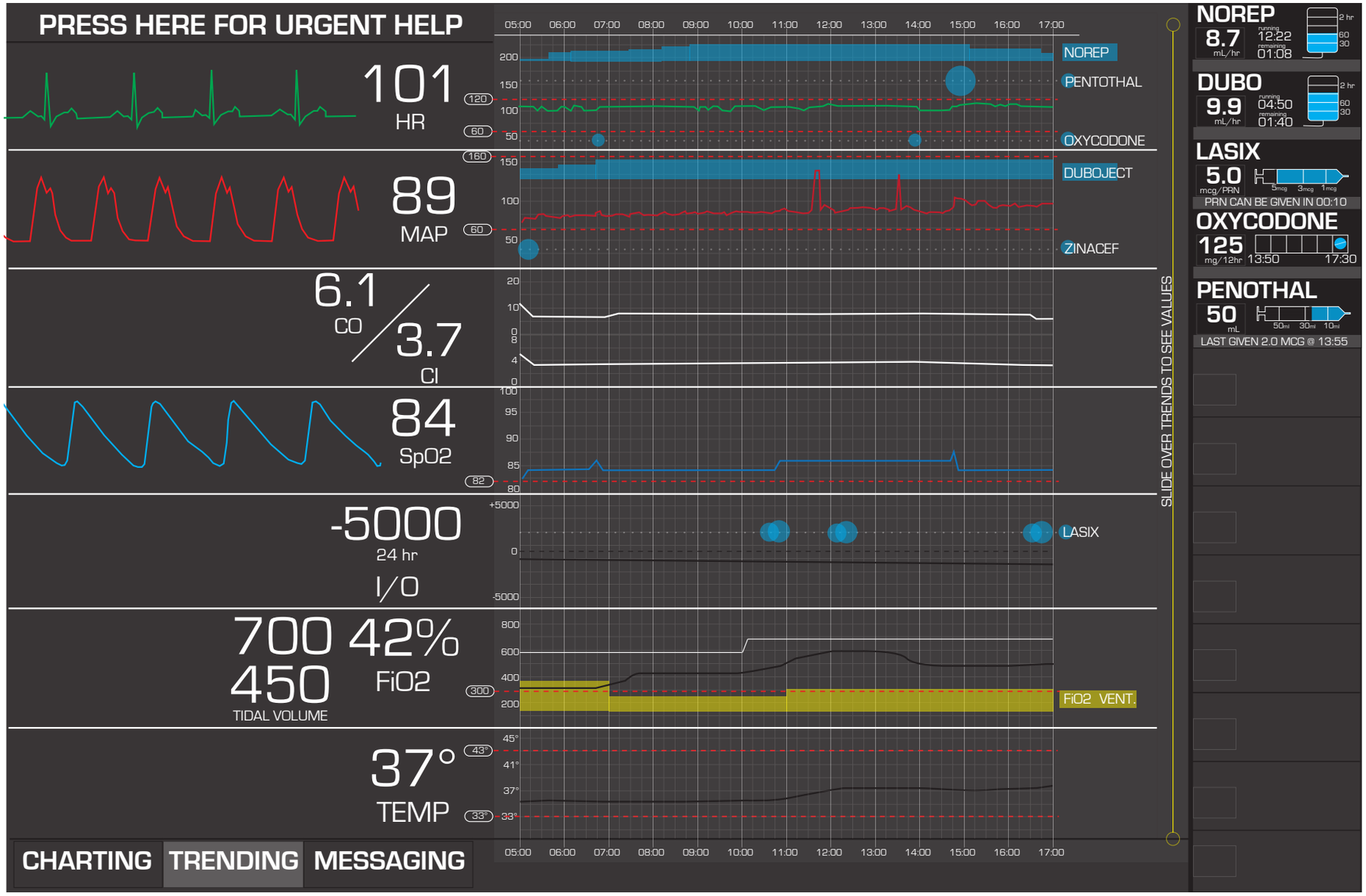
EVALUATION & REFINEMENT



CHARTING	TRENDING	MESSAGING	PAGE

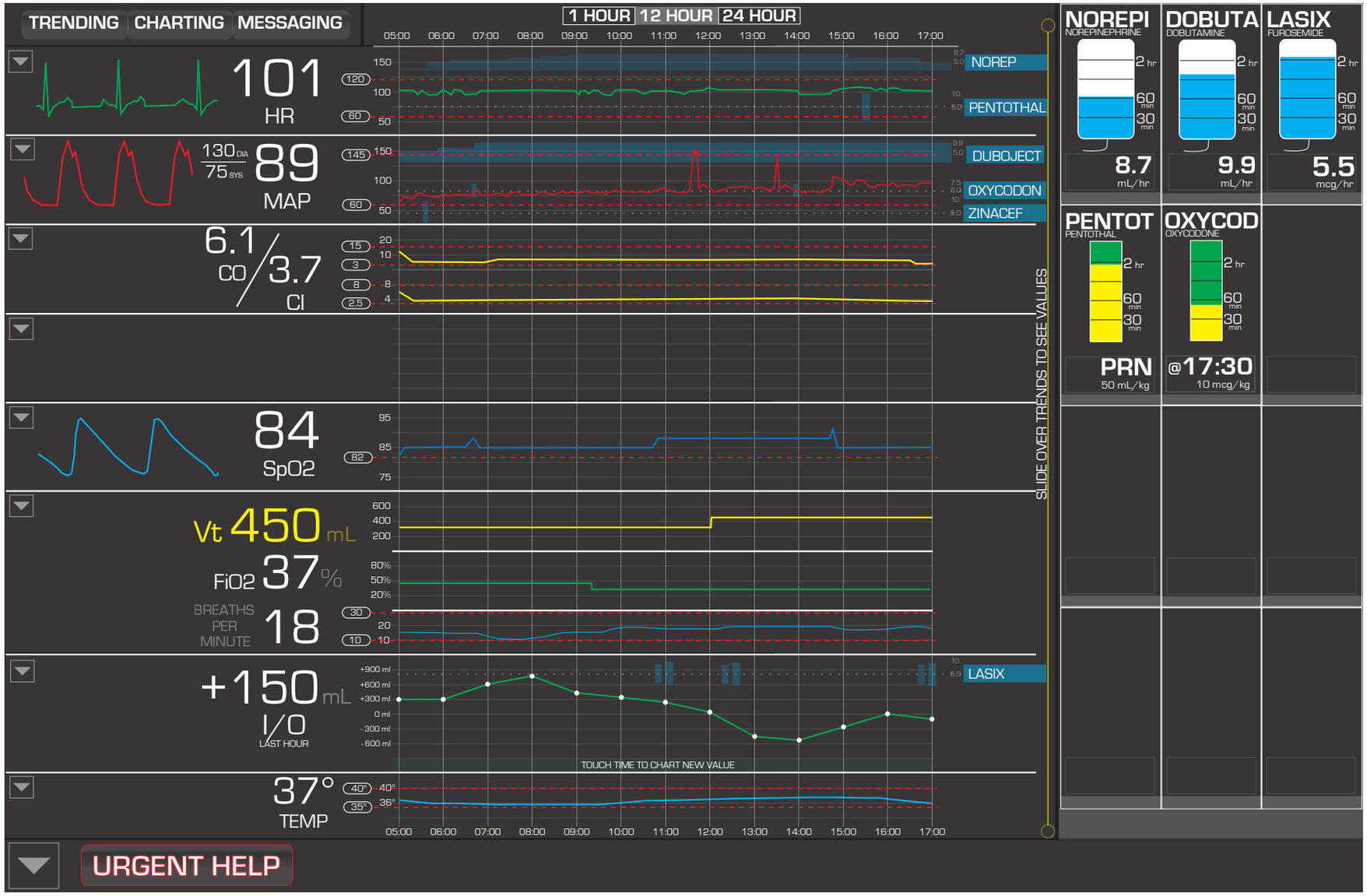
DESIGN

EVALUATION & REFINEMENT



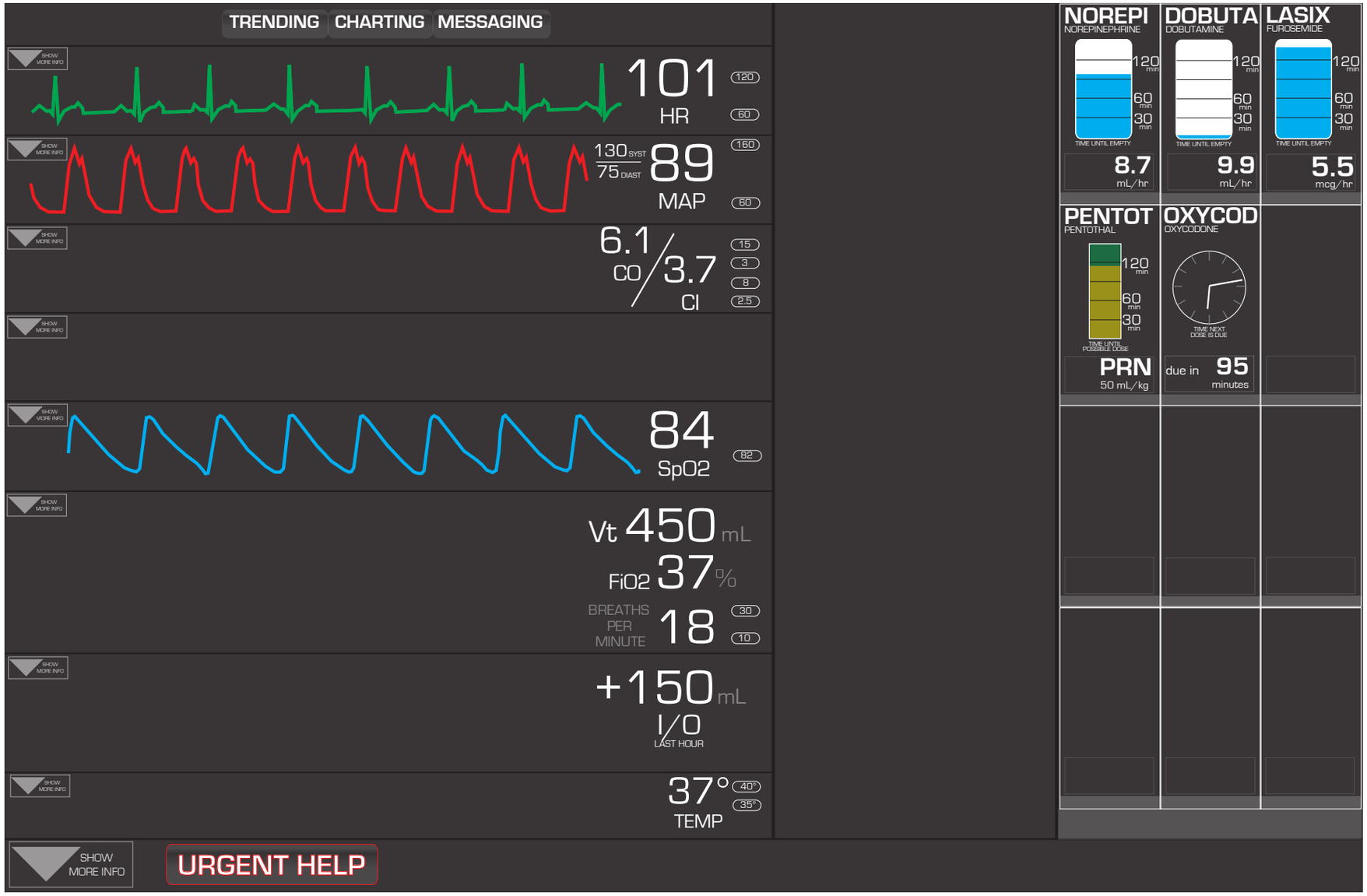
DESIGN

EVALUATION & REFINEMENT



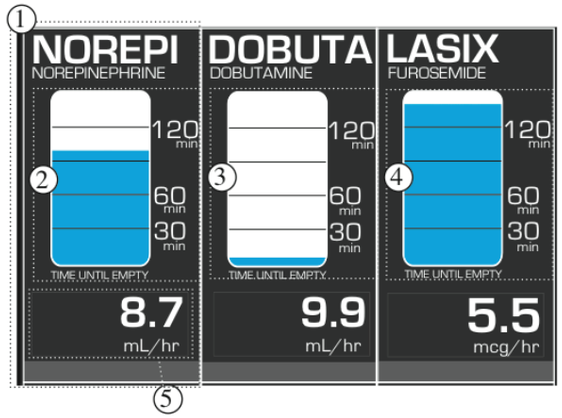
DESIGN

EVALUATION & REFINEMENT



VALIDATION

USABILITY & ACCURACY



Element 1 is showing:
- A) current med
- B) upcoming med
- C) PRN med
- D) don't know

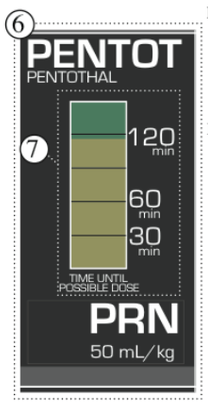
Element 2 is showing:
- A) volume of medication
- B) time until empty
- C) time until medication is due
- D) don't know

Element 2 is showing:
- A) 30 minutes
- B) 25 minutes
- C) 7 minutes
- D) 30 ml
- E) 25 ml
- F) 7 ml
- G) don't know

Element 3 is showing:
- A) 100 minutes
- B) 12 minutes
- C) 1.6 minutes
- D) 100 ml
- E) 12 ml
- F) 1.6 ml
- G) don't know

Element 4 is showing:
- A) 12 minutes
- B) 2.5 minutes
- C) 150 minutes
- D) 12 ml
- E) 2.5 ml
- F) 150 ml
- G) don't know

Element 7 is showing:
- A) volume left
- B) current rate
- C) concentration
- D) don't know



Element 6 is showing:
- A) current med
- B) upcoming med
- C) PRN med
- D) don't know

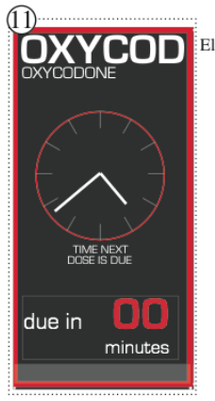
Element 7 is showing:
- A) time until medication ends
- B) volume of medication
- C) possible time next dose can be given
- D) don't know

Element 7 is showing:
- A) 110 minutes
- B) 60 minutes
- C) 15 minutes
- D) 110 ml
- E) 60 ml
- F) 15 ml
- G) don't know

Element 8 is showing:
- A) current med
- B) upcoming med
- C) PRN med
- D) don't know

Element 9 is showing:
- A) time until medication ends
- B) volume of medication
- C) time next dose is due
- D) don't know

Element 10 is showing:
- A) time until medication ends
- B) volume of medication
- C) time until next dose is due
- D) don't know



Element 11 is showing:
- A) med is due now
- B) recent order
- C) med is paused
- D) don't know

What is your opinion of the information presentation?

- ☐ Strongly dislike
- ☐ dislike
- ☐ somewhat dislike
- ☐ neither like nor dislike
- ☐ somewhat like
- ☐ like
- ☐ strongly like

This presentation of information would help me do my job:

- ☐ Strongly disagree
- ☐ disagree
- ☐ somewhat disagree
- ☐ neither agree nor disagree
- ☐ somewhat agree
- ☐ agree
- ☐ strongly agree

I prefer this presentation of information over the presentation I currently use:

- ☐ Strongly disagree
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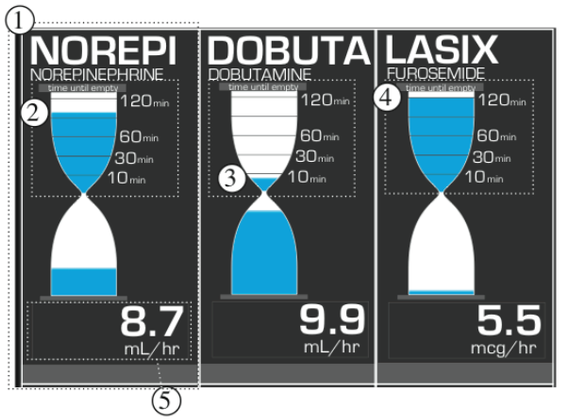
- ☐ agree
- ☐ strongly agree

How could this be improved to help you do your job better?_____

_____

VALIDATION

USABILITY & ACCURACY



Element 1 is showing:
- A) currently running med
- B) scheduled med
- C) PRN med
- D) don't know

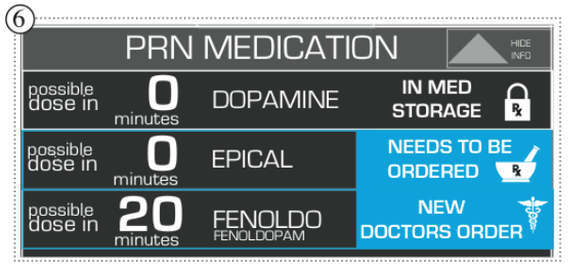
Element 2 is showing:
- A) volume of medication
- B) time until empty
- C) time until medication is due
- D) don't know

Element 2 is showing:
- A) 7 minutes
- B) 100 minutes
- C) 120 minutes
- D) 7 ml
- E) 100 ml
- F) 120 ml
- G) don't know

Element 3 is showing:
- A) 7 minutes
- B) 100 minutes
- C)120 minutes
- D) 7 ml
- E) 100 ml
- F) 120 ml
- G) don't know

Element 4 is showing:
- A) 7 minutes
- B) 100 minutes
- C) 120 minutes
- D) 7 ml
- E) 100 ml
- F) 120 ml
- G) don't know

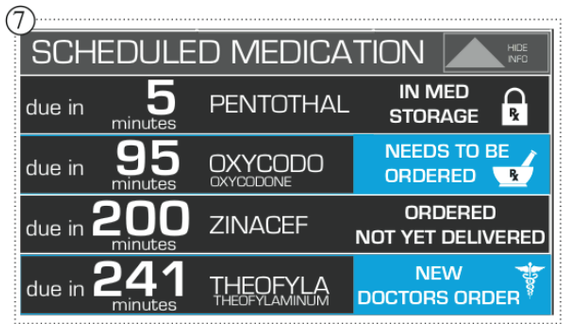
Element 5 is showing:
- A) volume left
- B) current rate
- C) concentration
- D) don't know



Element 6 is showing:
- A) currently running med
- B) scheduled med
- C) PRN med
- D) don't know

When can the next dose of Fenolopam be given:
- A) 0 minutes
- B) 5 minutes
- C) 20 minutes
- D) don't know

What is the status of Epical:
- A) it is in Med Storage room
- B) it needs to be ordered from pharmacy
- C) it is a new doctors order
- D) don't know



Element 7 is showing:
- A) currently running med
- B) scheduled med
- C) PRN med
- D) don't know

What is the status of Theofylaminum:
- A) it is in Med Storage room
- B) it needs to be ordered from pharmacy
- C) it is a new doctors order
- D) don't know

When does Pentothal need to be given:
- A) in 0 minutes
- B) in 5 minutes
- C) in 20 minutes
- D) don't know

What is your opinion of the information presentation?

- ☐ Strongly dislike
- ☐ dislike
- ☐ somewhat dislike
- ☐ neither like nor dislike
- ☐ somewhat like
- ☐ like
- ☐ strongly like

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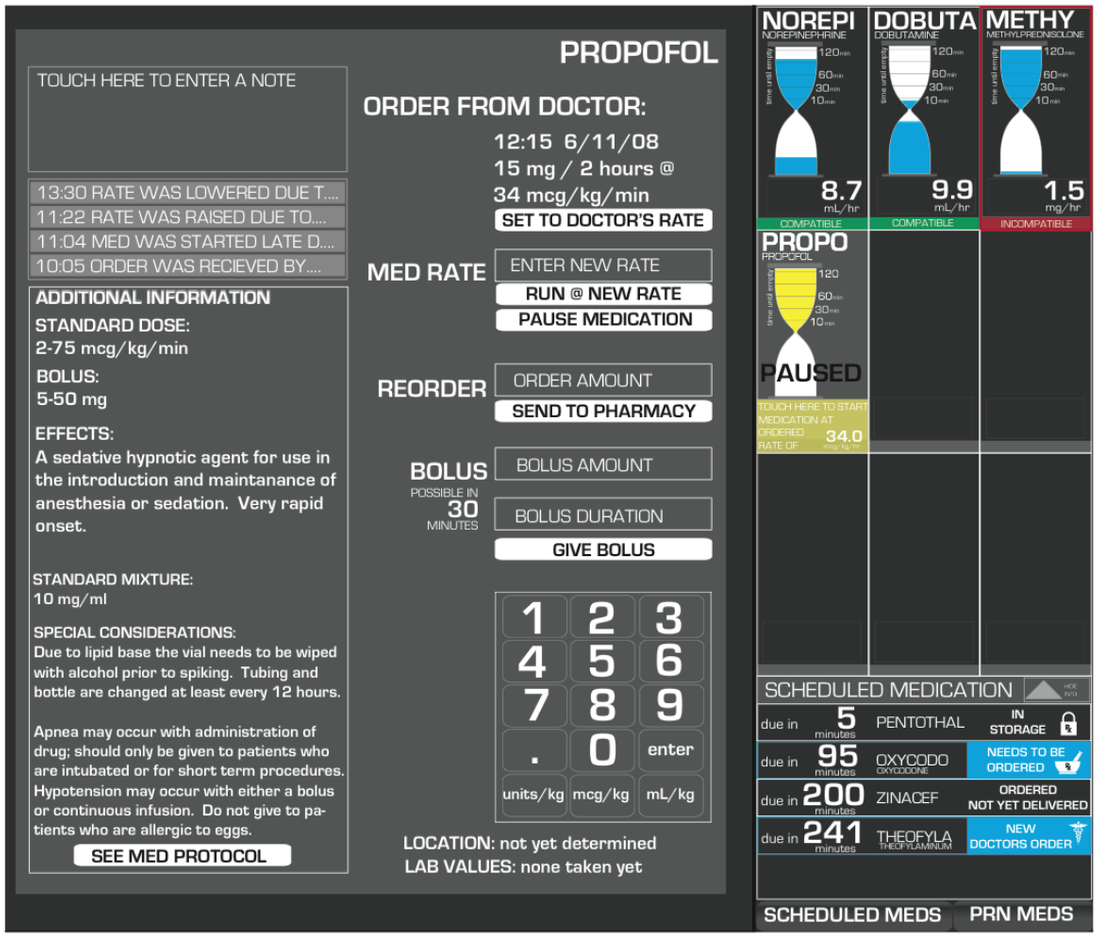
How could this be improved to help you do your job better?_____

VALIDATION

USABILITY & ACCURACY



To start the new medication, Propofol, you scanned it on the side of the monitor and then appeared on the monitor in yellow.

Which medication below is shown as not compatible with Propofol:
- A) Norepinepherine
- B) Methylprednisolone
- C) none
- D) don't know

Is Propofol currently being delivered:
- A) Yes
- B) No
- C) don't know

Which medication will run out first:
- A) Norepinepherine
- B) Methylprednisolone
- C) Dobutamine
- D) don't know

What is your opinion of the information presentation?

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- ☐ strongly like

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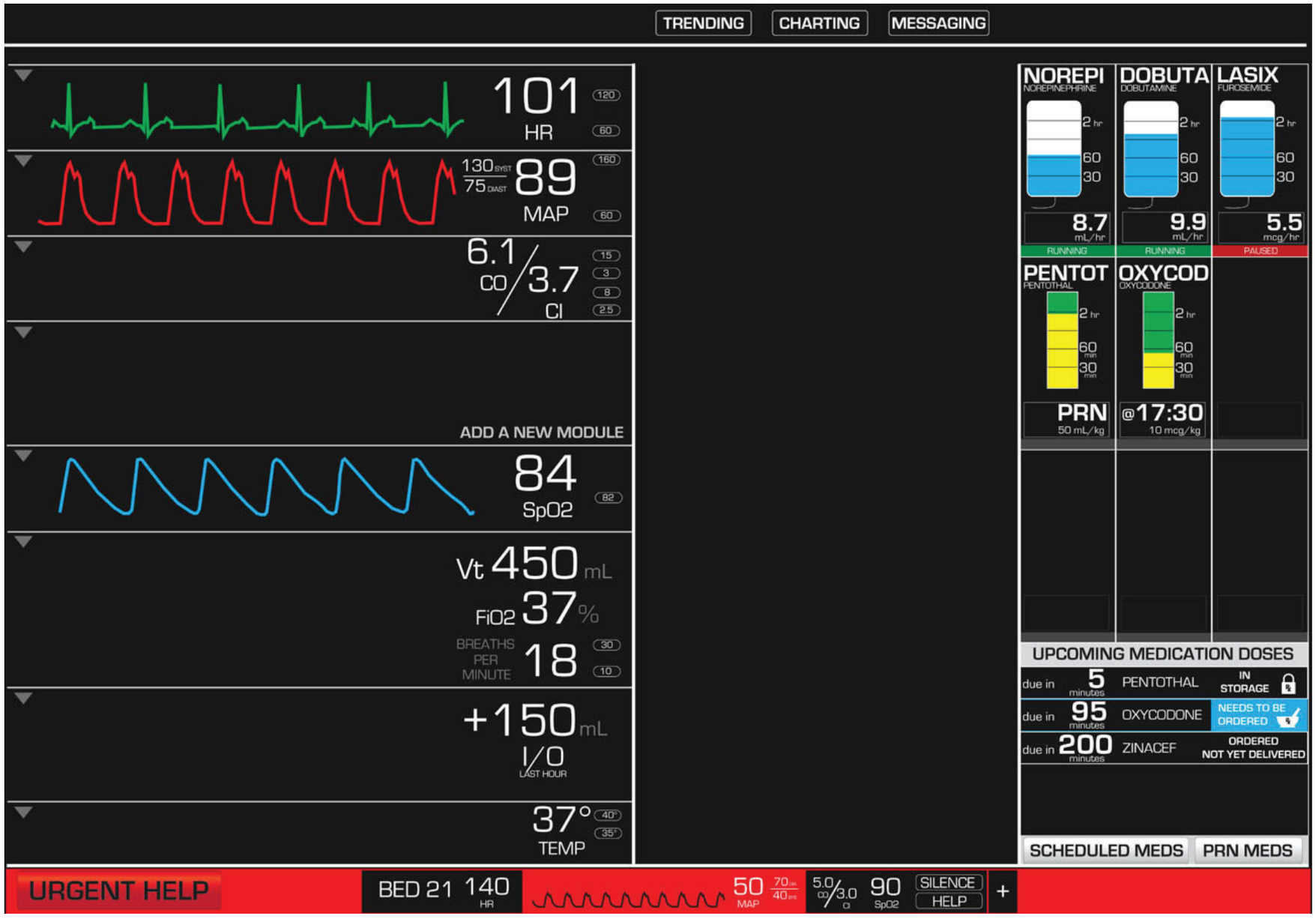
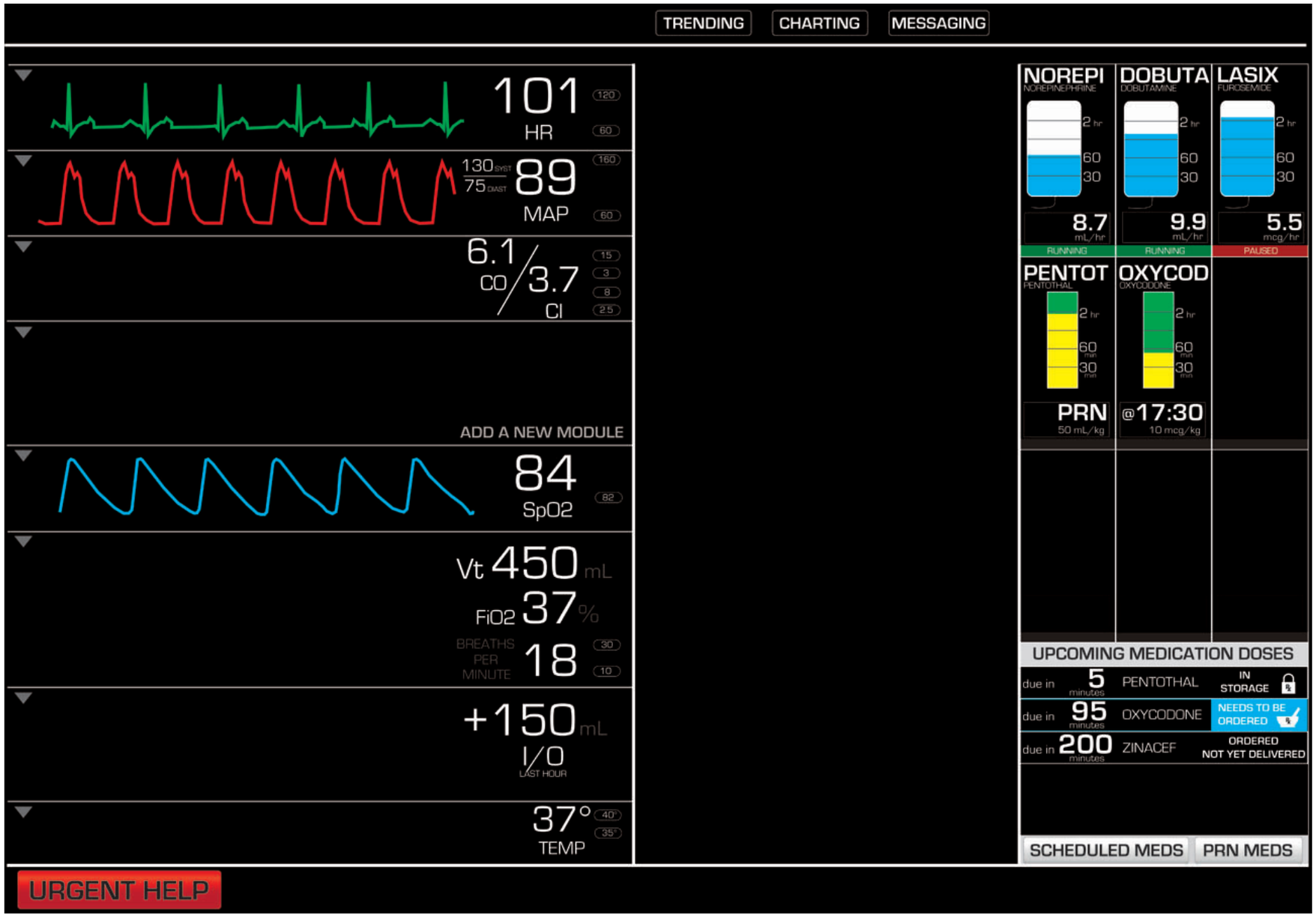
CONCLUSION

SCREEN BUILDS



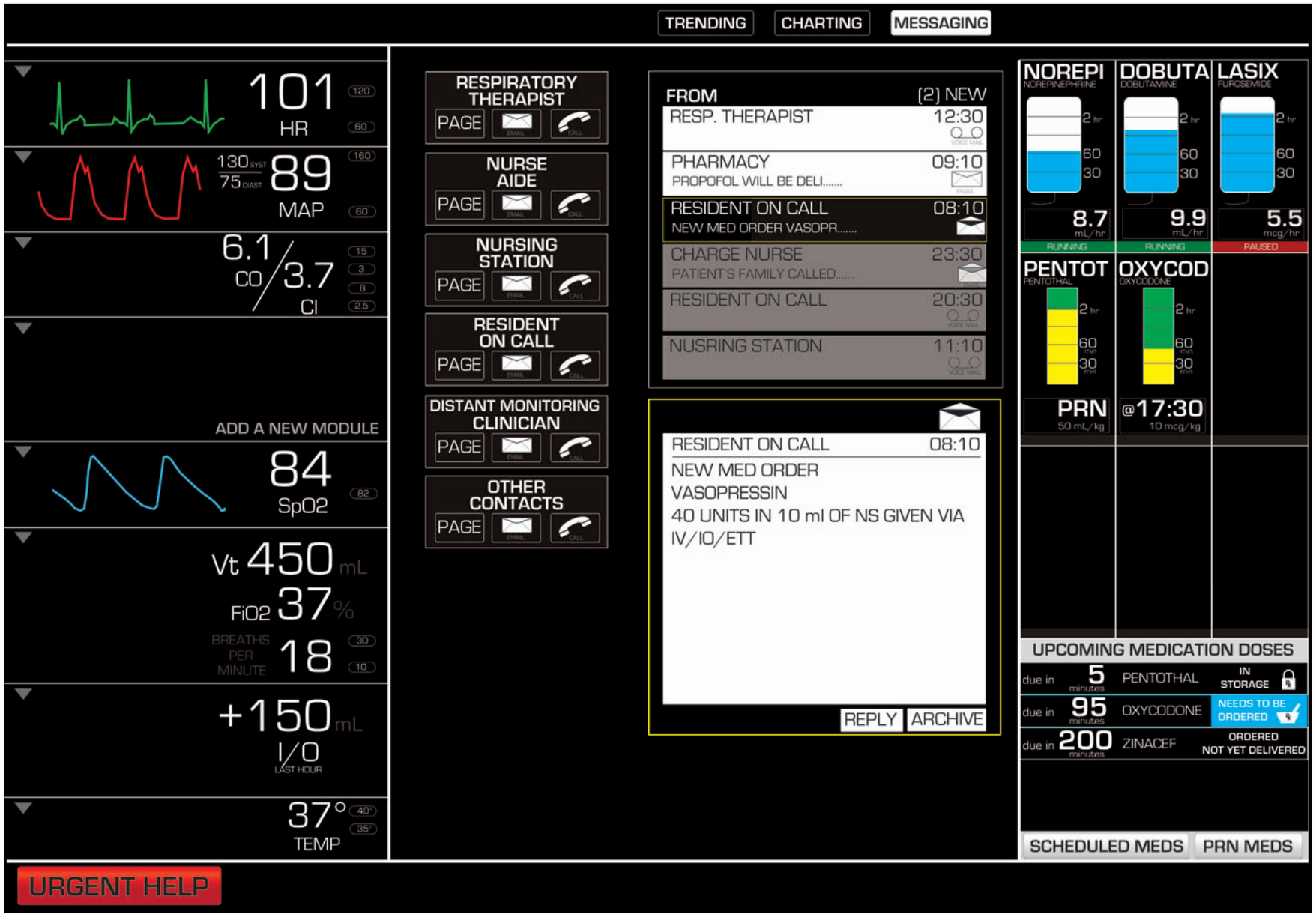
CONCLUSION

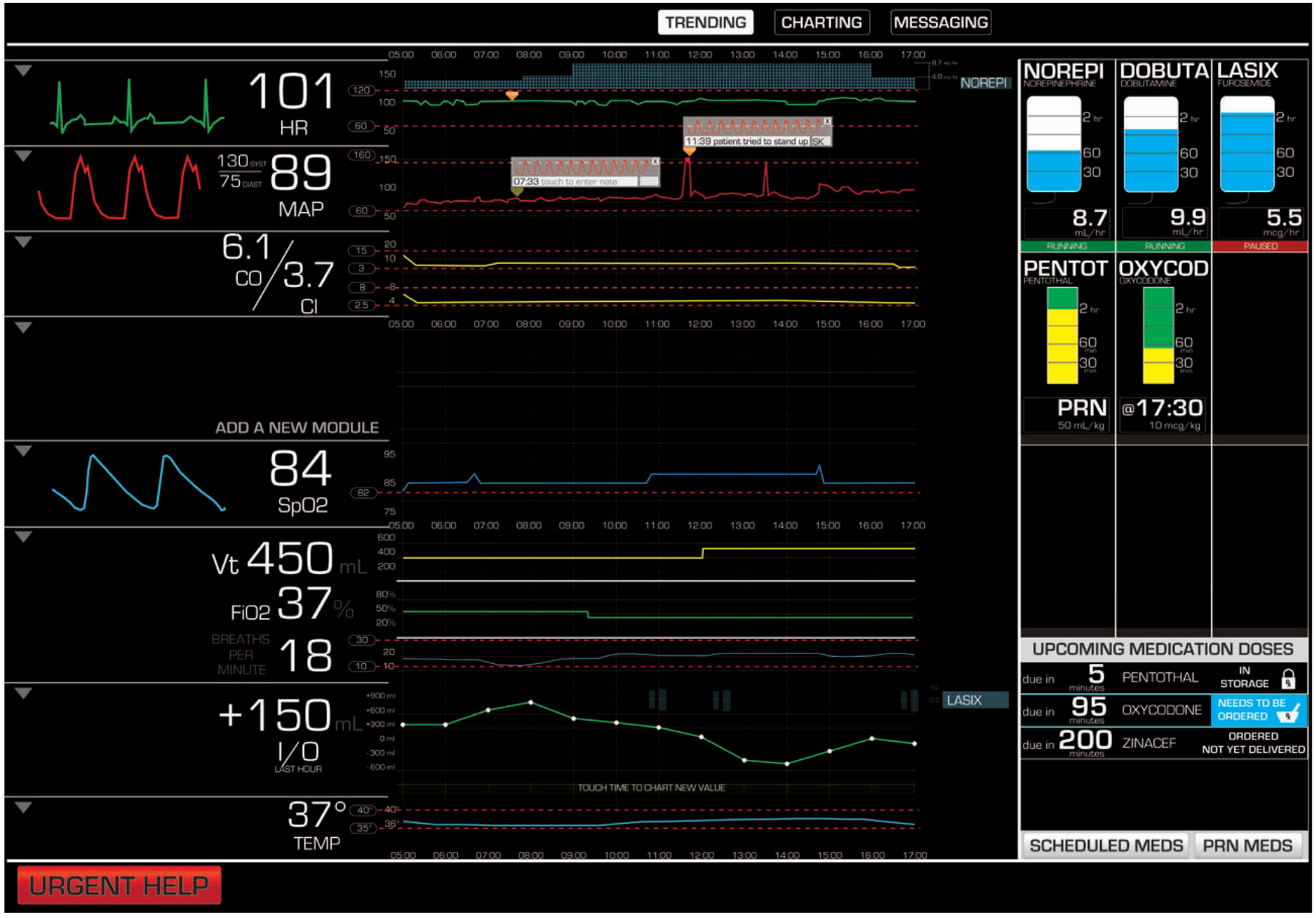
SCREEN BUILDS



CONCLUSION

SCREEN BUILDS



CONCLUSION

SCREEN BUILDS