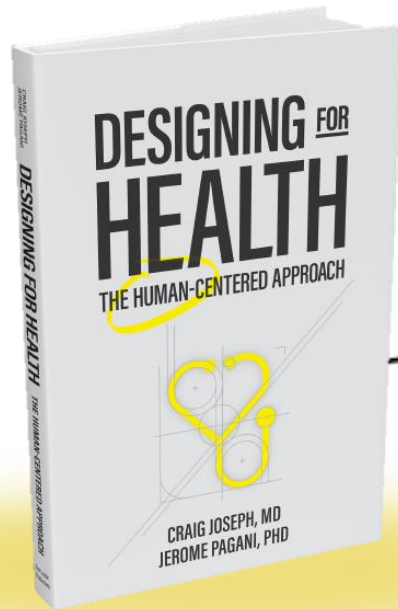


# Plugging in DFH: User Experience at Emory



# Why User Experience? Organizational Excellence!

- **Positive impact on key business goals**

Strategic projects that impact the user experience often are assessed for success based on production release. Having a UX team assess early will ensure user goals will be met **before** Go-Live

- **Reduced development time and cost**

UX Teams can point design where users require it most, prioritizing features appropriately and ensuring critical features do not land in the project's backlog

- **Increased employee satisfaction, lower turnover**

User engagement is an established source of user satisfaction – enabling users to be part of the design process, and creating a culture where users know the organization puts them first

- **Reduce training & support for new staff, new workflows**

Understanding where training needs to be concentrated, and enabling feedback cycles can ensure training is continuously improved – which in turn leads to less customer support call volume

- **Lower risk of implementing the wrong solution**

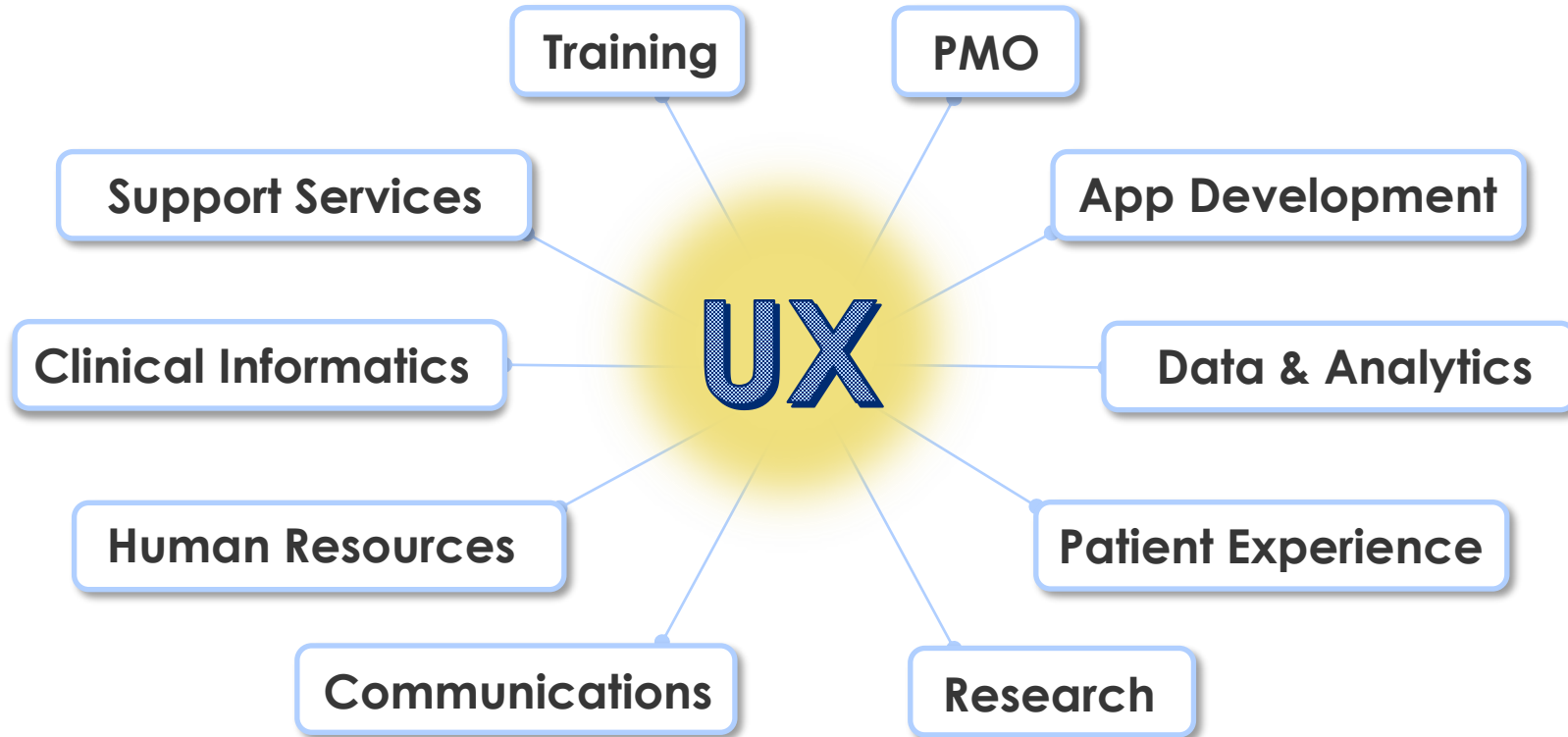
Successful UX engagements will prevent broken solutions from being implemented – preventing major rework cost, protecting user satisfaction, and bolstering organizational confidence

“If you think good design is expensive, you should look at the cost of bad design.”

Dr. Ralf Speth  
CEO, Jaguar Land Rover



# Where is UX found? Well... Everywhere!



# What we do: Team Services

## User Insights



How we **listen** to our users

## User Engagement



How we **learn** from our users

## Usability Evaluation



How we **verify** for our users

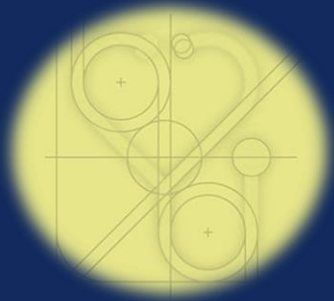
## User Design Workshops



How we **design** for our users

# USER INSIGHTS

*OR "The Stupidity of Not Listening to Your "Real" Experts"*

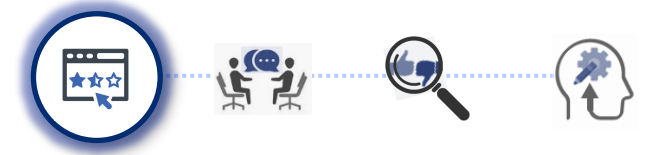


"When we rely exclusively on abstractions,  
we're guaranteed to miss what's really going on"  
- **Chapter 6, Designing for Health**

EMORY  
HEALTHCARE

NORDIC™

# User Insights: How we listen to our users



Epic Satisfaction Survey

Do you agree with the following statement? - Epic helps me do my job

Completely disagree  Completely agree

What would it take to change your rating to a 10 (or to maintain your 10 rating) in the above question?

User feedback is reviewed regularly by the Mass General Brigham Digital Health eCare team.  
Your name and Epic user context will be transmitted automatically to the team with your submission.

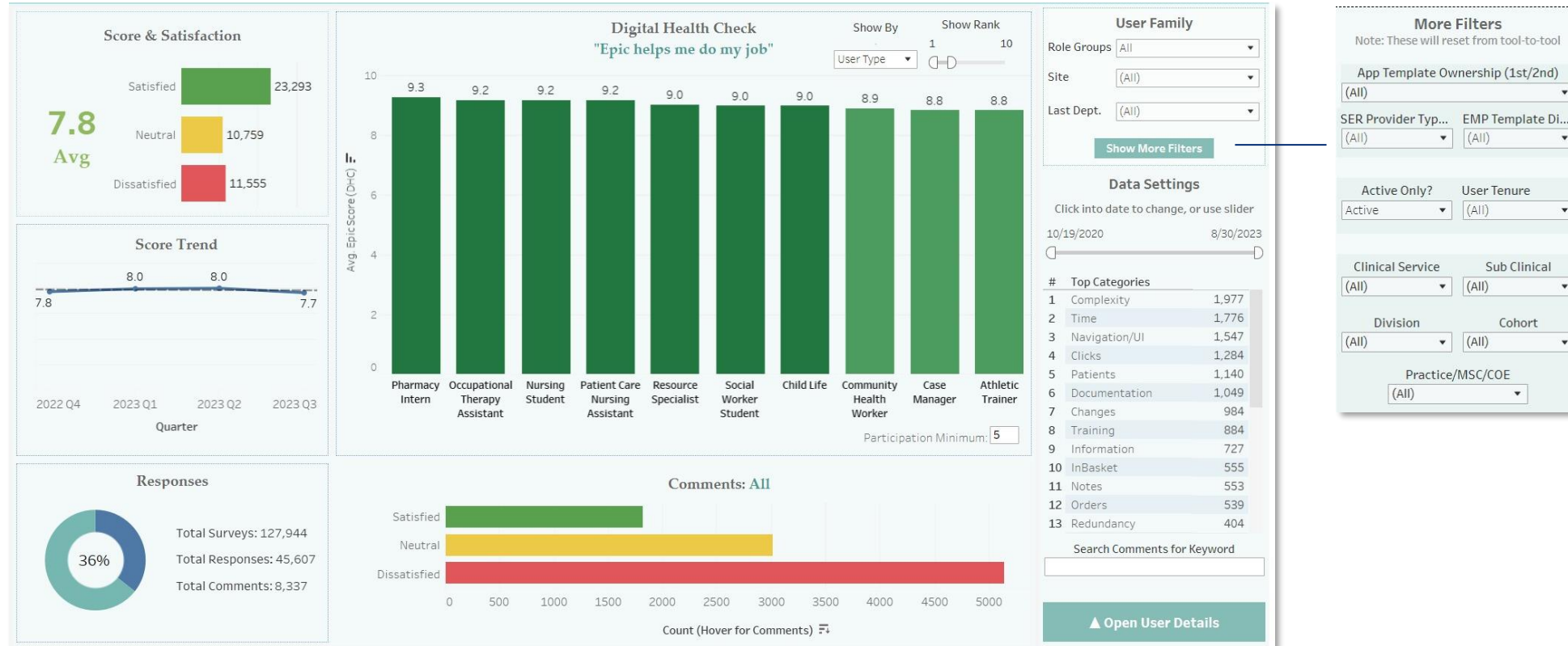
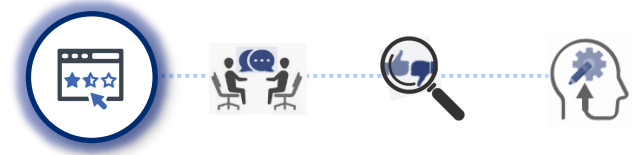
DISMISS SEND



Provisional Patent Application  
Docket: MGB 2021-512

- Survey rolled out to 1/365th of the Epic user population daily as an Epic start-up activity (embedded directly in Epic)
  - Users who respond are scheduled to receive the survey again in 1 year
  - Ability to dismiss survey (postpones survey start-up activity for 6 months) or ignore (will show survey start-up activity next log-in)
- Disclaimer states username & Epic context is sent with submission
- User context captured with each submission:
  - Date & Time taken
  - User ID
  - Epic job (EMP template)
  - Provider Type (if applicable)
  - Site / Department
  - Action taken / Score (if applicable)
  - Free-text Feedback

# User Insights: How we listen to our users



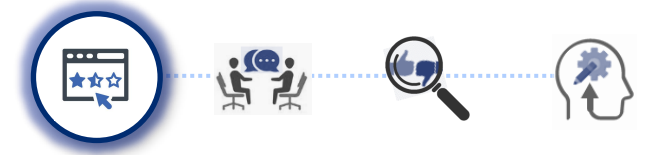
# User Insights: How we listen to our users



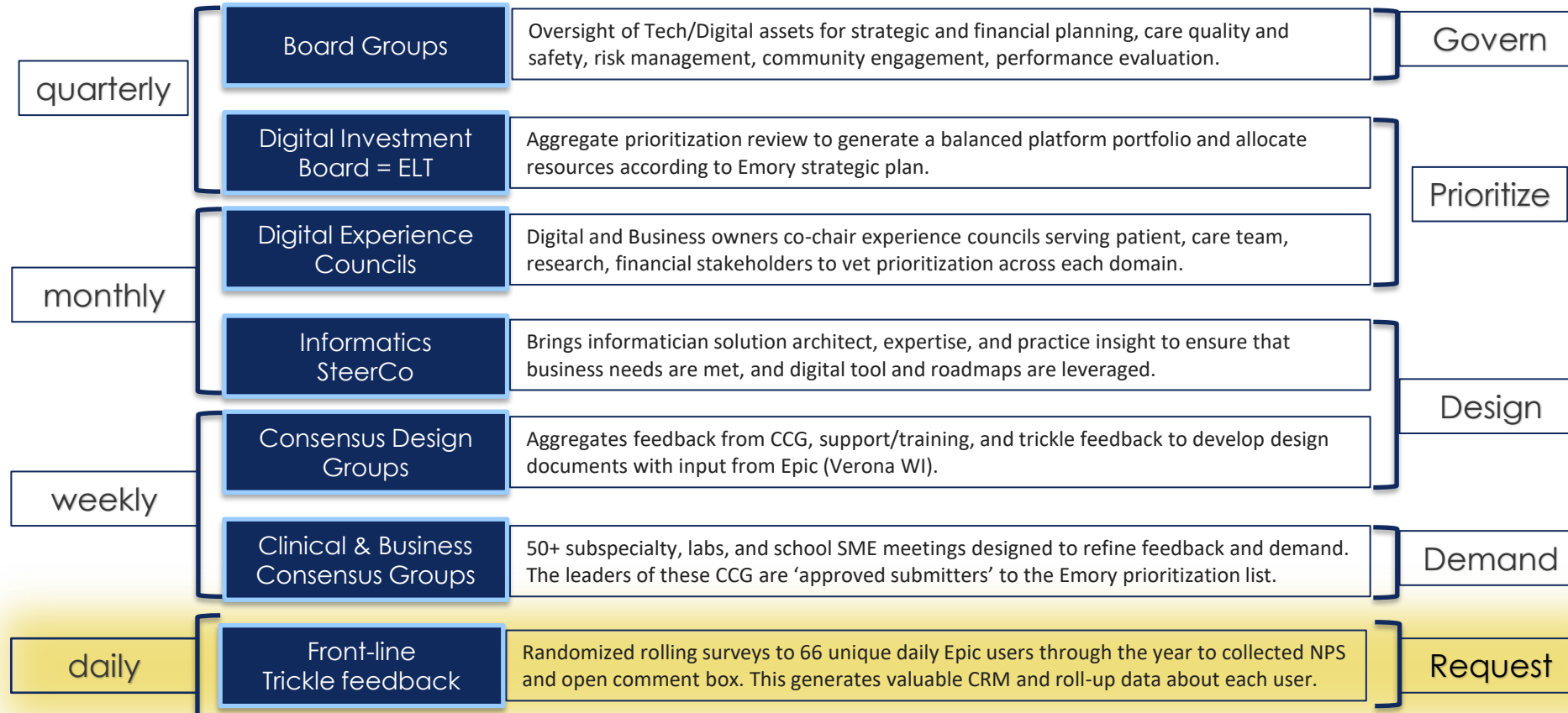
Survey Data		Search Full Name & ID		Only Show Comments?	Assignment Group:	
Total Surveys:	8,337	<input type="text"/>		Yes	N/A	
Total w/ Comments:	8,337					
Total Replies:	790					
Reply Data		Response Date..	User Detail	Score (DHC)	Comments (DHC)	Replied?
<b>Dissatisfied</b>		8/30/2023	RC/Admin NSC N SHORE EYE CARE	9	less clicking at a cadence, front desk perspective	
454 / 4,617 Surveys Replied To (10%)		8/30/2023	RC/Admin EPHO LEXEA OPH ARL	7	Minimize the amount of clicks to do simple tasks that are repeated for each patient. Negate the red exclamation points keeping us from moving forward as we need to enter patient charts prior to ..	
Unresponded: 4,163		8/30/2023	Physician BWP PSYCHIATRY OUT FH	6	Very bulky templates, too many clicks required while writing a note and completing an encounter. It gets logged out in a short time when idle which makes the user experience very annoying.	
<b>Neutral</b>		8/30/2023	RC/Admin NSP PC DAN 104 END	6	there are too many steps to book a simple appt.	
212 / 2,594 Surveys Replied To (8%)		8/30/2023	Medical Assistant NSC CTR ORTHO SURG DAN	0	things constatly do not work, epic goes down too often, the lock key is too fast	
Unresponded: 2,382		8/29/2023	Physician WHP ORTHO MSK PEASE A	1	avoid unnecessary duplication of physician keystrokes and efforts. While EPIC may make a reasonable platform that "does it all," as far as physician documentation of the patient encounter, ...	
<b>Satisfied</b>		8/29/2023	Registered Nurse NWH S WEST	0	Make it less clicking!!!! Should be one click after you do the first assessment then you should be able to click once no change.	
124 / 1,444 Surveys Replied To (9%)		8/29/2023	Registered Nurse MGH ELLISON 3 PACU	6	let the nurses decide what they need and want to document before just changing it or adding things without our input or feedback.	
Unresponded: 1,320		8/29/2023	RC/Admin DF HEALTH INFO MGMT	4	I would like to see improvement in finding external documents	
<b>Surveys Replied To</b>		8/29/2023	Physician MGH INFECTIOUS DISEASE	5	it is a required part of the job	
JCHA	RS... 100	8/29/2023	Registered Nurse MGP OBSTETRICS RHC	7	To many clicks.!	
ADUS	RS... 88					
Lynde	plt.. 69					
BWHI	csP.. 55					
RFAR	.O.. 50					
CLAN	S.O.. 48					
TMBC	RS... 37					



# User Insights: How we listen to our users

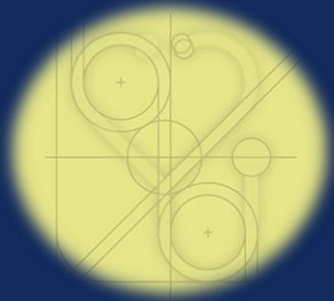


## Emory Digital Governance Model



# USER ENGAGEMENT

*OR GROSS: "Getting Rid of Stupid Stuff"*



"In many cases, stupid stuff is a direct by-product of "one and done" design thinking"

- **Chapter 3, Designing for Health**

EMORY  
HEALTHCARE

NORDIC™

# User Engagement: How we learn from users



## Reach-out example:

Survey Data		Search Full Name & ID		Only Show Comments?	Assignment Group:	
Total Surveys:	8,337	<input type="text"/>		Yes	N/A	
Total w/ Comments:	8,337					
Total Replies:	790					
Reply Data		Response Date..	User Detail	Score (DHC)	Comments (DHC)	Replied?
<b>Dissatisfied</b>		8/30/2023	RC/Admin NSC N SHORE EYE CARE	9	less clicking at a cadence, front desk perspective	
454 / 4,617 Surveys Replied To (10%)		8/30/2023	RC/Admin EPHO LEXEA OPH ARL	7	Minimize the amount of clicks to do simple tasks that are repeated for each patient. Negate the red exclamation points keeping us from moving forward as we need to enter patient charts prior to ..	
Unresponded: 4,163		8/30/2023	Physician BWP PSYCHIATRY OUT FH	6	Very bulky templates, too many clicks required while writing a note and completing an encounter. It gets logged out in a short time when idle which makes the user experience very annoying.	
<b>Neutral</b>		8/30/2023	RC/Admin NSP PC DAN 104 END	6	there are too many steps to book a simple appt.	
212 / 2,594 Surveys Replied To (8%)		8/30/2023	Medical Assistant NSC CTR ORTHO SURG DAN	0	things constatly do not work, epic goes down too often, the lock key is too fast	
Unresponded: 2,382		8/29/2023	Physician WHP ORTHO MSK PEASE A	1	avoid unnecessary duplication of physician keystrokes and efforts. While EPIC may make a reasonable platform that "does it all," as far as physician documentation of the patient encounter, ...	
<b>Satisfied</b>		8/29/2023	Registered Nurse NWH 5 WEST	0	Make it less clicking!!!! Should be one click after you do the first assessment then you should be able to click once no change.	
124 / 1,444 Surveys Replied To (9%)		8/29/2023	Registered Nurse MGH ELLISON 3 PACU	6	let the nurses decide what they need and want to document before just changing it or adding things without our input or feedback.	
Unresponded: 1,320		8/29/2023	RC/Admin DF HEALTH INFO MGMT	4	I would like to see improvement in finding external documents	
<b>Surveys Replied To</b>		8/29/2023	Physician MGH INFECTIOUS DISEASE	5	it is a required part of the job	
JCHA	RS...	100				
ADUS	RS...	88				
Lynde	pit..	69				
BWHI	csP..	55				
RFAR	.O..	50				
CLAN	S.O..	48				
TMB	...	37				
8/29/2023	Registered Nurse MGP OBSTETRICS RHC	7	To many clicks.!			

**Epic Satisfaction Survey Response - Survey ID: 31274**

Hi Michael,

Thanks for your comments today on the Epic survey.

"let's find ways to reduce clicks and be more efficient overall; the pace of Epic upgrades is great but we need to press them to work with us to find better ways of doing our work. they have a great mousetrap and we should help them build a better one."

We are just beginning to measure efficiency of eCare users (across all roles) to tease out what is functionality vs training gap (one could argue that ideally designed system requires no training...). Your comments helped me think about using raw mouse clicks counts as a process measure with an eye to reduce these over time. My informatics team argues that combined workflows with more clicks are sometimes better than disconnected workflows with fewer clicks. I still think in general a good measure of progress would be absolute number reduction in clicks over time.

Thanks so much for taking the time to complete the survey and comment. We are relishing in these invaluable feedback comments.

John Smith

Subject RE: Epic Satisfaction Survey Response - Survey ID: 31274

Hi John,

**Thanks for reaching out; much appreciated. I'm glad you found it helpful.**

Looking at clicks would be a good idea. Also if you want any ideas from the PB space, I'm sure I could find folks to tell you how silly it is that function/field XXX that we use all the time is buried 3 screens down when it should not be.

I think the long-term opportunity for improvement is in the former. Reason being is that in the short term it may be more painful w/more clicks, but a combined workflow allows for better documentation, easier training, higher quality, possibly simpler upgrades (or training related to upgrades), and the opportunity to deploy bots (or Epic automation) to said workflows. If the workflow is disjointed and clunky, then building/deploying/maintaining a bot is 40% more difficult and expensive. And if the workflow is disjointed, then it's also hard to have Epic automate it.

**Though this team may not hear it enough, I want to tell them that what they do in support of all Epic users is greatly appreciated.**

-Micheal

# User Engagement: How we learn from users

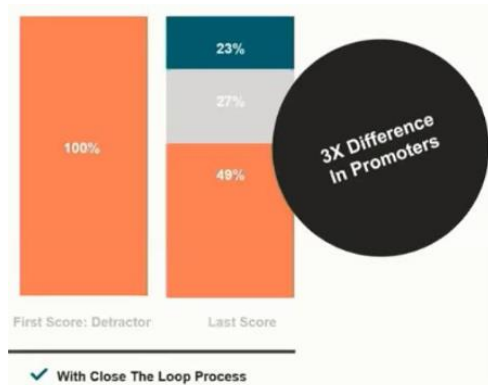


## Impact of Follow Up



The number one driver of survey fatigue was the perception that the organization wouldn't act on the results.

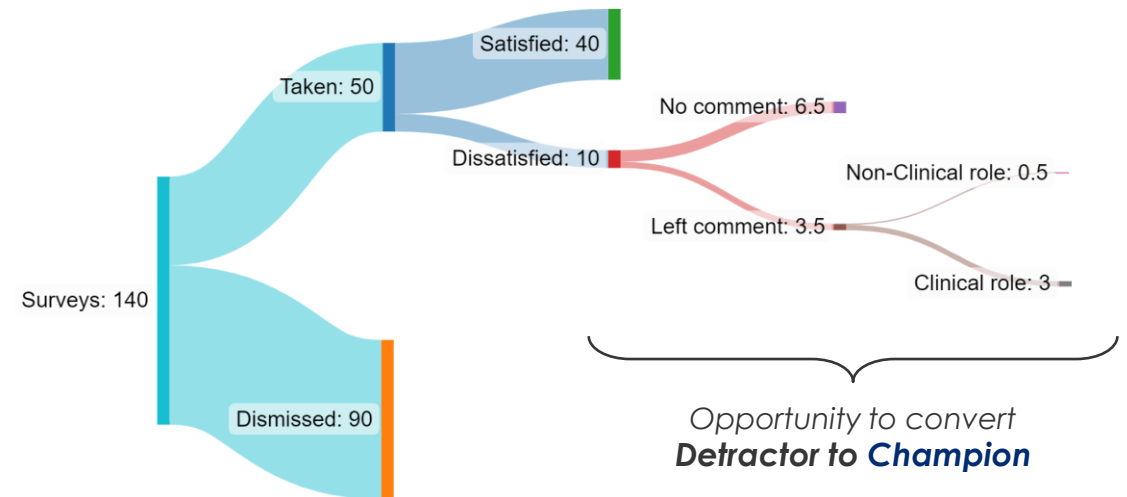
- *Per McKinsey & Company*



Following up on NPS-based surveys has been shown to make the biggest difference in converting detractors to promoters (3X)


- CX Network

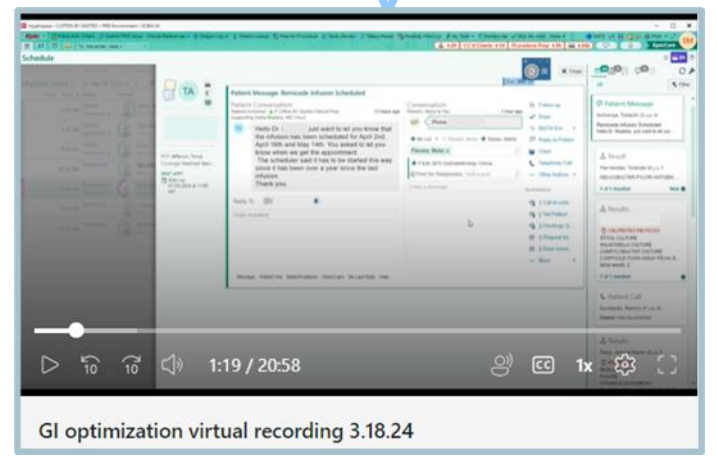
## Survey Replies per Day (Example)



# User Engagement: How we learn from users



- 
- Informatics
  - Training
  - Support
  - App Devs
  - User Experience



Observation Tracker - Survey Results

ID	Title / Description of issue	Feasibility?	App/Readiness/CI/Epic	Solution Routing	Solution Description?	Solved?
1	Message pops back up on sidebar --> has to re-open and click done again for message to be removed	TBD	App/Epic	App/Epic	High level solution Check with Epic/AMB to see if the card activity should be updating IB activity	Y/Pending/N Pending
2	Un-wanted and unnecessary inbox folders showing for providers.	TBD	App (OPT) / RL / CI	App (OPT) / RL / CI	Request to have this folder type suppressed for that department's pool. Or set a 7 day hold limit before purging.	Pending
3	Increase in un-signed encounter, also unnecessary encounter creation.	Y	Readiness, CI	Readiness, CI	Education gap: Educate users to not manually send notes to Provider/APP - GI providers routing notes Needs assistance from CI to determine source	Pending Provider/APP
4	Different folders available for different providers with the same department.	Y	Readiness	Readiness	Epic functioning as designed. Folders only show when a client has an item that needs to be addressed. Therefore, different folders will be available for different providers, at different points in time.	Pending
5	Clients getting lost trying to find the same message they clicked on using the side pop up screen.	Y	Readiness	Readiness	Include in broadcast message - related to item 1 (will check with app team as well re: updating)	Pending
6	This creates Open Encounters that has not been signed due to lack of documentation. Also, confused on the appropriate process for sending	Y	CI	CI	Go to Patient's Chart --> Chart Review --> Find future encounter --> Click Route --> Type comments in free text field --> Route encounter to Provider --> Will show up in	Y



On-site Rounding

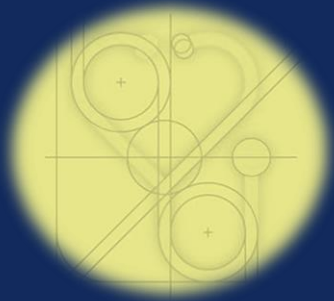
Virtually Recorded  
Screenshare

Transcribed Follow Ups



# UX EVALUATIONS

*OR "Start with the End User (and their Context) in Mind"*



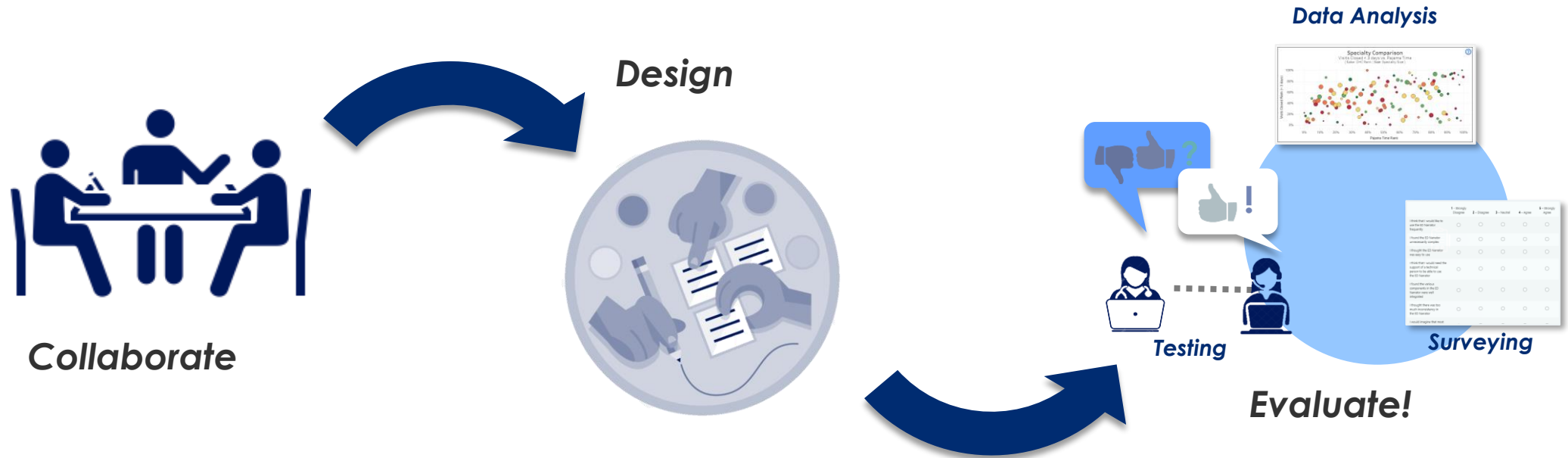
"Iteratively design and refine solutions until they are good enough to go live"

- **Chapter 4, Designing for Health**

EMORY  
HEALTHCARE

NORDIC™

# UX Evaluations: How we verify for our users



# UX Evaluations: How we verify for our users



*Feedback Integration*

*User Surveying*

*UX Interviewing*

*Wireframe Testing*

*A/B Testing*

*UX Testing*

**Direct  
Engagement**



**Indirect  
Analytics**



*Utilization Profiling*

*Efficiency Analysis*

*Support & Issue Insights*

*Satisfaction Variance*

*Pre / Post Measuring*

*Benchmarking*



# UX Evaluations: How we verify for our users



## UX Testing Summary



## How the project changed UX

### UX Results Interpretation

- Usability**
  - Overall usability improvement with 14% improvement with post-design into 'A' range
  - Perceived improvement to ED Narrator simplification
  - Integration tie-in among ED Narrator sections improved
  - Overall new build met nursing expectations
- Efficiency**
  - Overall, initial efficiency showed regression with 19% decrease
  - Primarily attributed to one tester needing in-session reference support (other testers averaged 3% efficiency improvement), and inaccurate pre-build runs involving skipped sections.
- Accuracy**
  - Documentation-wise, post-build allows for more accurate charting as RNs did not commonly document full reassessment in pre-build

## Why the project changed UX

### Prominent Themes & Observations

- Basic Head-to-Toe with WDL Assessment was streamlined and easy to use**
  - Testers expressed a preference for quickly documenting on systems that met WDL definition, then navigating to specific system assessments to document exceptions
- WDL definitions actively leveraged during testing**
  - The WDL definitions appeared conveniently located and were intuitively referenced throughout testing to ensure findings met definitions
- Testers wanted more functionality out of Basic Head-to-Toe**
  - One tester anticipated finding a "No Change" button within the basic head to toe assessment and expressed concern over its absence
  - Another tester described a desired workflow of charting entirely within the basic head to toe assessment rather than having to navigate to other body system assessments

**Click to watch:** [▶](#)  
**Jamie: Impressions (0 27min 24 sec)**  
 Tester describes perceived benefits of WDL workflow within Basic Head to Toe

**Click to watch:** [▶](#)  
**Kendra: Impressions (0 37min 08 sec)**  
 Tester volunteers feedback Basic Head-to-Toe with WDL Assessment

**Click to watch:** [▶](#)  
**Kendra: Scenario 1 Task 2 (0 16min 24 sec)**  
 Tester expresses concern over missing "no change" function

**Click to watch:** [▶](#)  
**Miranda: Impressions (0 28min 33 sec)**  
 Tester expresses wanting to document entirely out of Head-to-Toe

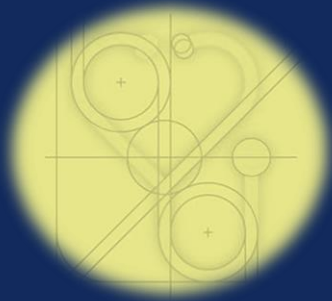
## What about the project changed UX

### Example Findings (Chart-by-Exception):

- Overall users found a **significant usability improvement** with the new workflow across all specialties  
*(Med Surg/ICU: 9% increase to "B" range of SUS, ED : 14% increase to "A" range of SUS)*
- Measured control runs show **substantial action and time savings**, likely to be recognized as RN familiarity with new workflow improves  
*(Med Surg/ICU: 22% improvement; ED: 9% improvement)*
- New workflow leads to **more accurate charting**, as RNs were more likely to document system assessments they may have skipped in legacy workflow  
*(Med Surg/ICU: 7% improvement; ED: 12% improvement)*

# DESIGN WORKSHOPS

*OR "Transparency and Predictability" in design*



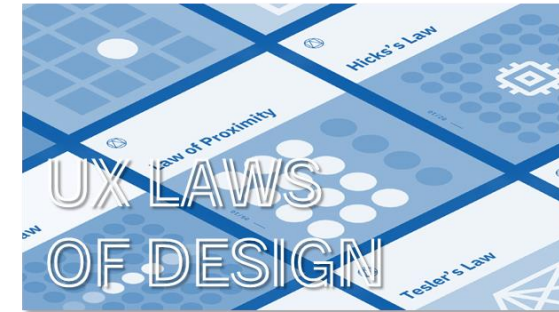
"The more complicated the system,  
the harder we have to work to make it transparent  
and useable for the humans who interact with it"

- **Chapter 5, Designing for Health**

EMORY  
HEALTHCARE

NORDIC™

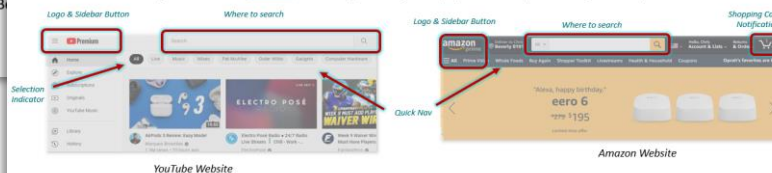
# UX Workshops: How we design for our users



- Laws-at-a-glance**
1. **Jakob's Law** – "Users prefer your site to work the same as others they use"
  2. **Fitts's Law** – "Time to target is a function of distance & target size"
  3. **Hick's Law** – "More choices + More complexity = More decision time"
  4. **Miller's Law** – "Average person can keep 7 (+/- 2) items in their working memory"
  5. **Peak-End Rule** – "Peak and end of experience matter more than sum or average"
  6. **Aesthetic-Usability Effect**
  7. **Von Restorff Effect**
  8. **Tesler's Law** – "A designer should not add more features than necessary"
  9. **Doherty Threshold**
  10. **Postel's Law** – "Be liberal in what you accept, conservative in what you send"

**Jakob's Law**  
*Users prefer your site to work the same as others they use*

Leverage the mental models users may have of how popular sites (and their functions) work:



**?** This is not to say our UX work is 1:1 with popular shopping or video websites; However, what common functions do we enable in our UX work that apply to existing models? What sites or applications may we want to examine that match closely with our functions?



# Hick's Law:

More choices + More complexity = More decision time



Vs.



Choice overload (even if our stomachs are involved!) can lead to fatigue - It is neither efficient or elegant when a UI presents too many options

Sometimes it is better to pre-package features for the anticipated user vs. giving full-range of choice

# Peak-End Rule:

Peak & end of experience matter more than sum or average of experience

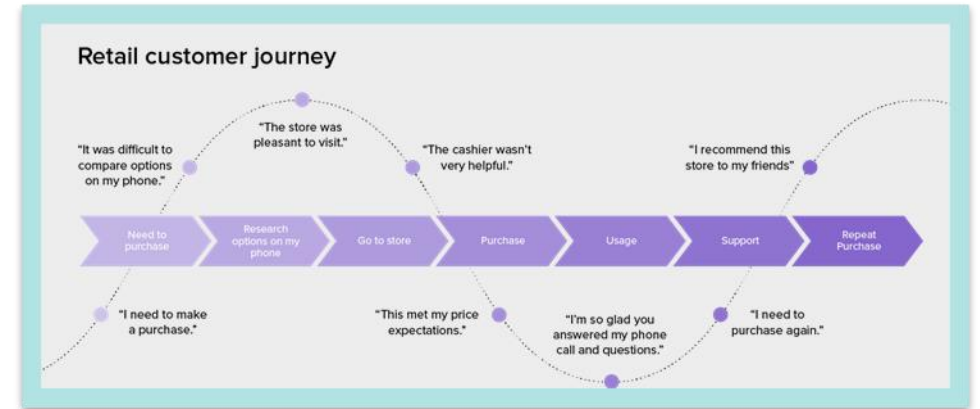


***Applies to much more than UI!***

One tool to help identify moments of emotional peaks is through **journey mapping** – identify user phases and steps as they work through tools, and think through how to improve!

*People will gauge their satisfaction of an experience based on peaks (both positive and negative), and how they felt at end versus their average or sum of experience*

*Negative experiences stand out more than positive ones which is one aspect of **cognitive memory bias***



# Miller's Law:

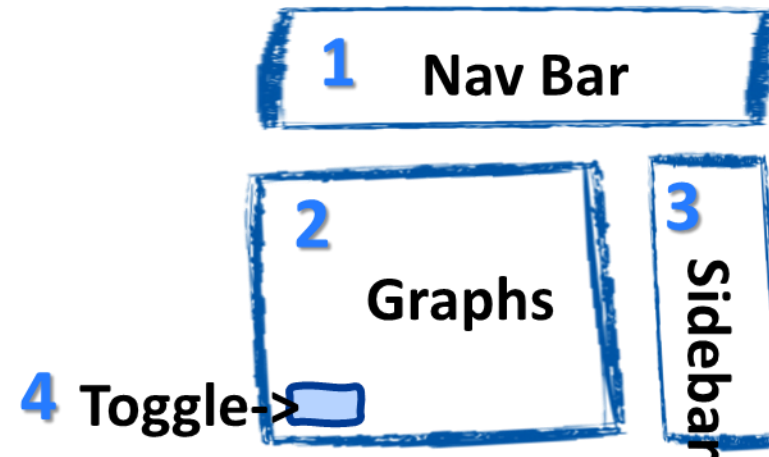
Average person can keep 7 (+/- 2) items in their working memory



The brain carries a certain capacity of working memory for items, and likes to keep a buffer  
If a user **exhausts** this buffer, they can **lose the ability** to process new information effectively

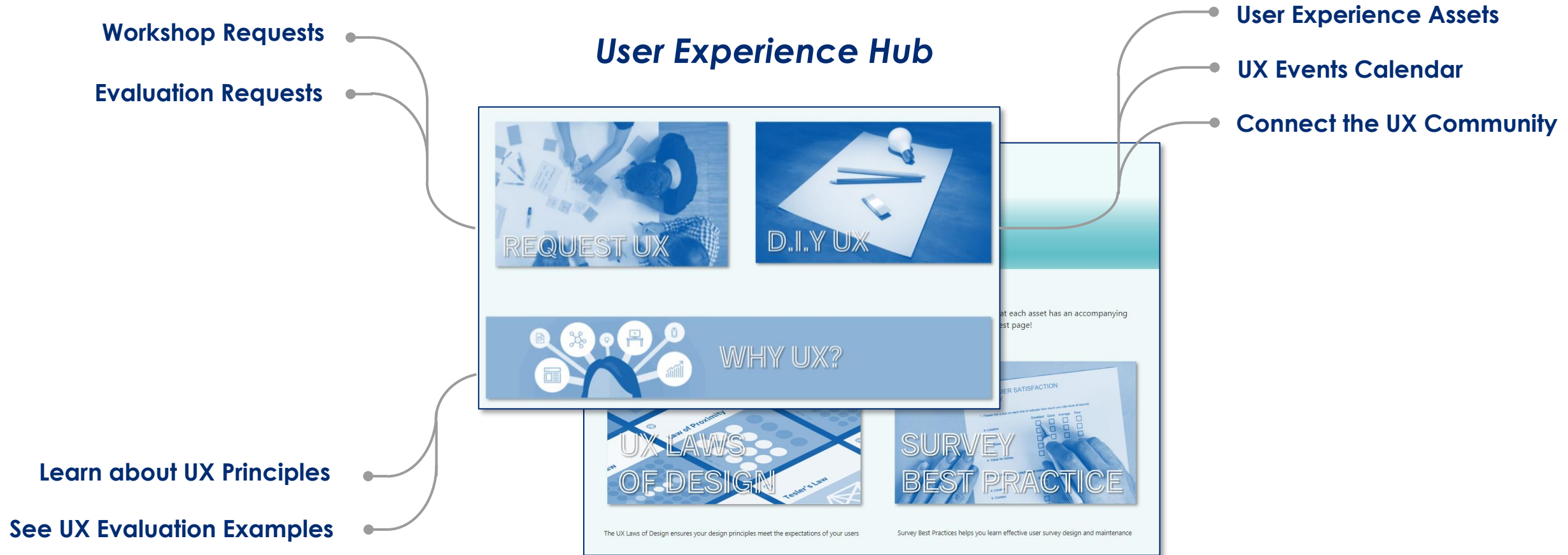


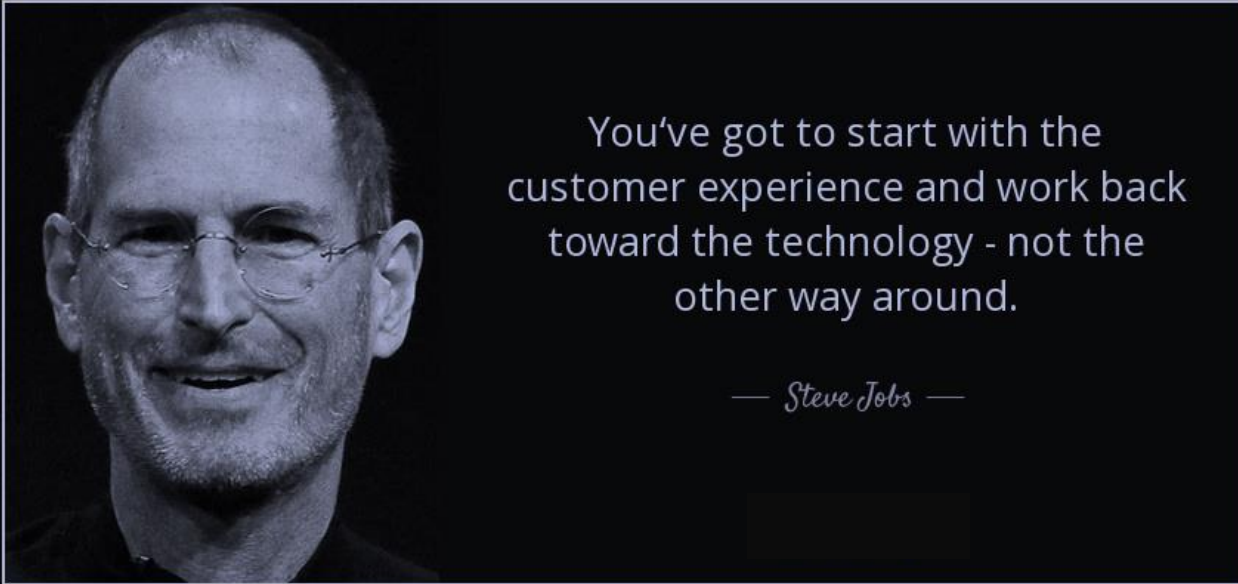
Common misconception that items pertains to bits of info-  
Rather, we process information as 'chunks'



Applies to visual or textual 'chunks' as well, as defined by  
borders, white space, hierarchy, and other visual indicators

# UX Workshops: How we design for our users





You've got to start with the customer experience and work back toward the technology - not the other way around.

— Steve Jobs —

# ANY QUESTIONS?

Craig Joseph, MD - [craig.joseph@nordicglobal.com](mailto:craig.joseph@nordicglobal.com)

Chris Holland – [Christopher.Holland@emoryhealthcare.org](mailto:Christopher.Holland@emoryhealthcare.org)

EMORY  
HEALTHCARE

NORDIC™