

finding the
COMMON GROUND

*improving usability of software in the
manufacturing sector*

***Nancy Rasche**, Purdue University
user experience designer
giving a **VOICE** to the **USER***

quick story.



MODEL I / MODEL III
ACCOUNTS PAYABLE
CAT. NO. 26-1554

Radio Shack TRS-80 SOFTWARE

why?

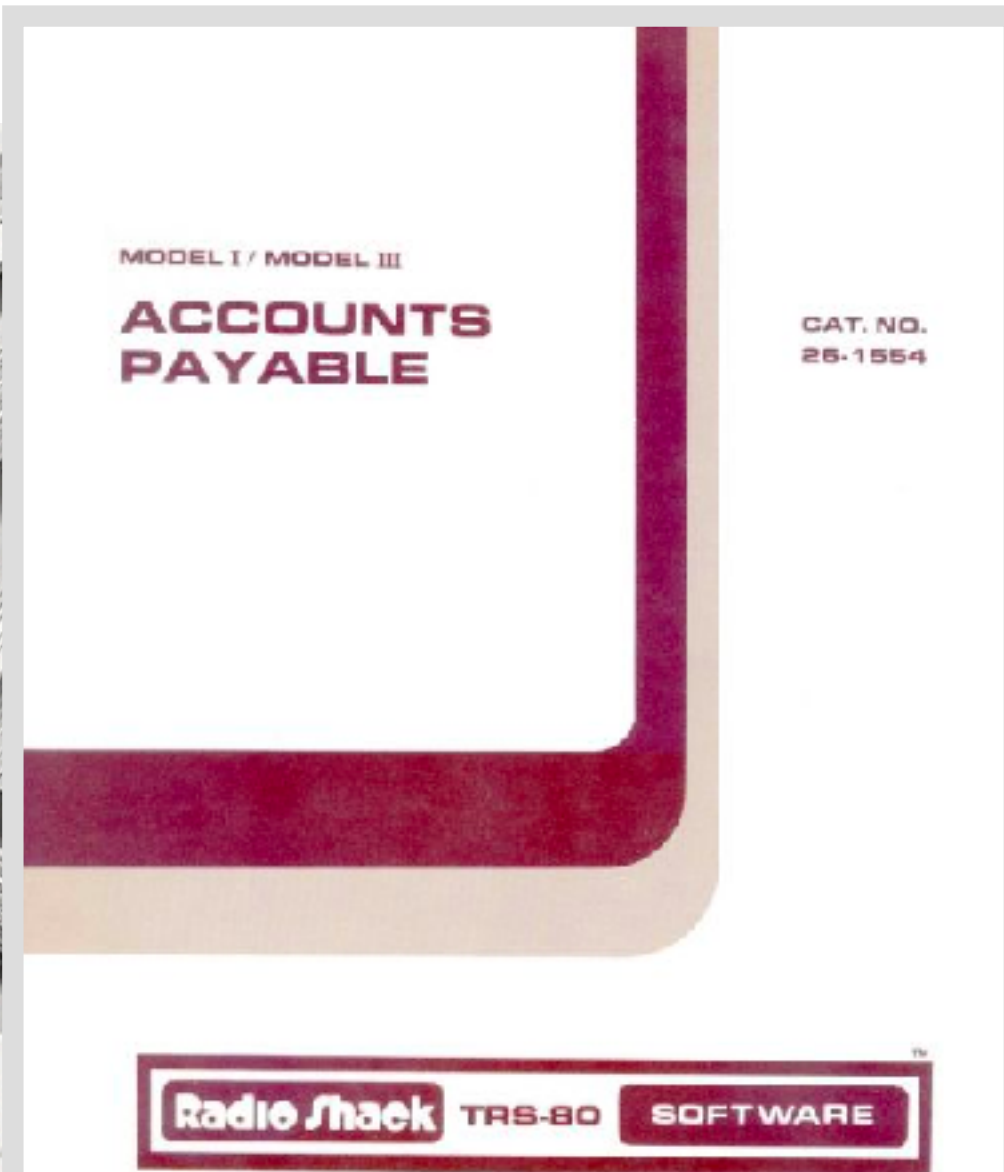
look at what I can do

(~100 pages in manual)

VS.

what I needed it to do

(3-4 pages of manual)



QUESTION?

Raise your hand if you can remember the **introduction** of the Personal Computer?



technology by the generations

look who's about to enter the workforce



pc pioneers

Remembers the *birth of the computer*, personal computer, internet and mobile phones.

Remembers the first software challenges. Accepts that you *have to "learn" tools*.

internet pioneers

Remembers the *birth of the personal computer, internet* and mobile phones.

Remembers the slow connection speeds and internet limitations.

mobile pioneers internet natives

Remembers the *birth of smart phones and mobile computing*, but *has always known the internet*.

Remembers getting first smart phone and needs to be socially connected.

? pioneers (AR/VR/AI?) mobile natives

Has always known internet and mobile.

They are tech savvy and *grew up connected*.*



*soon to enter the workforce

technology by the generations

look who's about to enter the workforce

mobile pioneers *internet natives*

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? pioneers *mobile natives*

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**soon to enter the workforce*

WHY should we care?

Users expect more and can be impatient with tech issues. They are not used to the development growing pains.

Want to determine their own software purchases. We are seeing this already in industry.

Future of Work video this morning asked... "will our CHILDREN be prepared?"

I ask... "will WE be prepared for our children to enter the workforce?"

today's **AGENDA**

giving a **VOICE** to the **USER**



where are we in the generational mindset. **Why should it matter?**

consumer software is ahead of enterprise software in usability. **Is there something to be learned?**

current enterprise software has a broad scope. **Is there complexity that is unnecessary?**

data integration is being implemented at a quick rate. **Is there a data bust for the digital thread?**

summarize topics presented.

discuss questions about the talk.

What are the next steps?

topics for discussion
(issues, thoughts and ideas)



Nancy Rasche

Assistant Professor of Practice in Computer Graphics Technology. Background in manufacturing as an Industrial Designer.

Primary research emphasis is front-end design and development of enterprise software solutions to improve the user's experience and to ease new software adoption.



QUESTION?

Raise your hand if you **deleted an app** within 5 minutes of downloading it?



learning from enterprise software ~~vs.~~ consumer software *giving a VOICE to the USER, the BUYER is not the consumer*

Consumer software is a commercial software application intended to **FULFILL THE GOAL OF THE END-USER**. It usually is focused on one task.

consumer software:
users select

New enterprise software for daily tasks (outside of PLM) is often **chosen by teams and employees**. Must understand the user needs and expectations more than ever.

Enterprise software is purpose-designed software that is used to **SATISFY THE NEEDS OF AN ORGANIZATION** rather than those of the end-user.

enterprise software:
executives select

Traditional enterprise software is **sold to executives and employees must learn and use the tools provided**. Avoidance and work arounds are common.

Think about: WHY is software FREE in HS and college? WHO is in control?



learning from
enterprise software ~~vs.~~ consumer software
*giving a **VOICE** to the **USER**, how we approach **new software***

consumer software:
user discovery

User discovery focused. Provide **value to users in discovering the process** with **on-boarding and easy to use help and documentation.**

enterprise software:
training required

Training is expected for all users. This should be an exception, not the norm. Most workflow processes are not complex. **Difficulty in finding the needed features and/or next steps is a design problem, not a lack of training problem.**

Think about: HOW do we approach new software? WHERE is the value?



learning from enterprise software ~~vs.~~ consumer software *giving a VOICE to the USER*

GET USERS EXCITED ABOUT NEW SOFTWARE, show its worth it.

UX principle of **VISIBILITY** (effectiveness) - the usability of a system is improved when **its status and methods of use are clearly visible.**

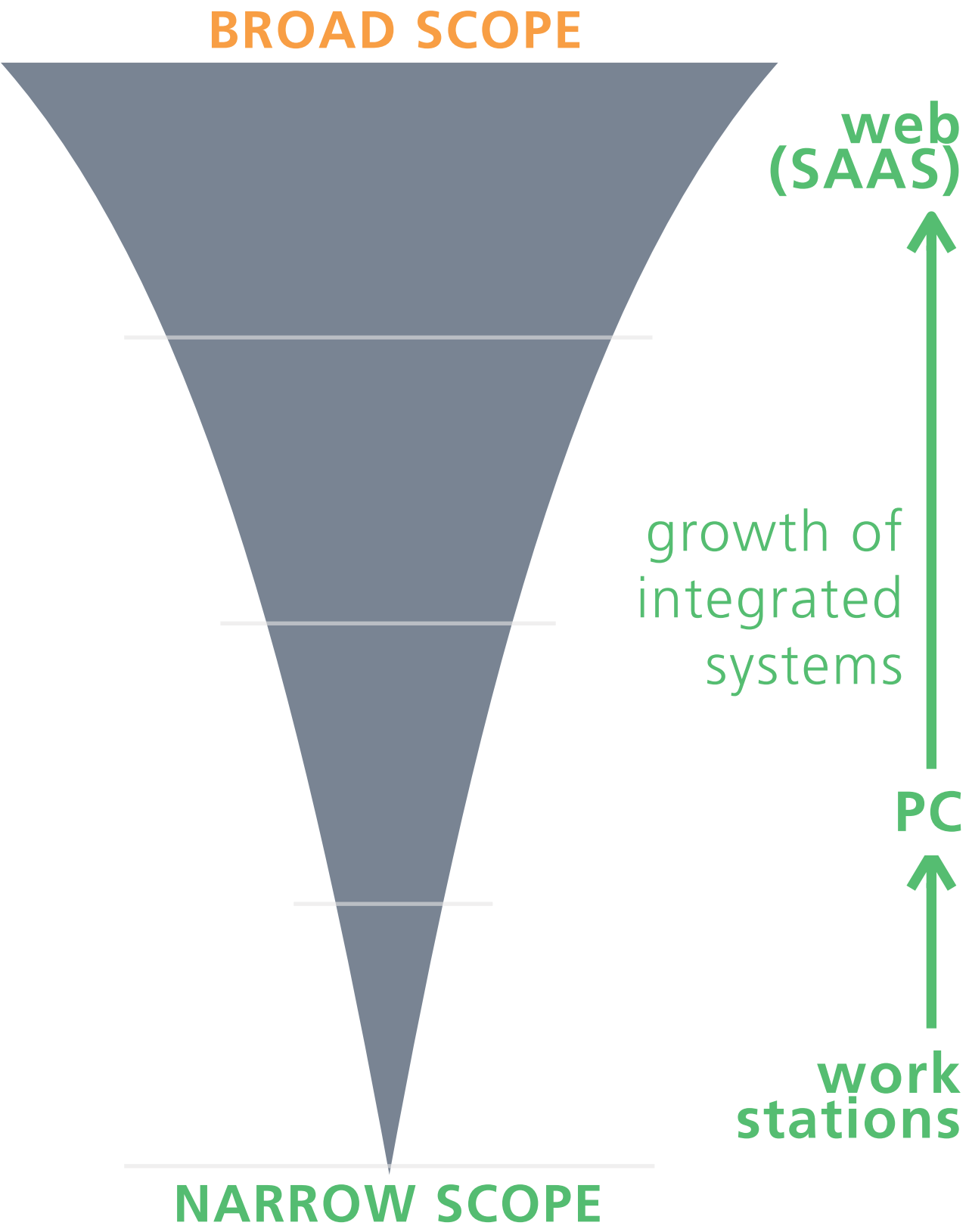
- make sure the **product communicates the core VALUE**
- show users how your **product makes their lives easier**

UX principle of **HICK'S LAW** (efficiency) - **time it takes to make a decision increases** as the **number of alternatives increases.**

- find ways to **simplify the interface** for specific job roles (AUTH_N)

learning from enterprise software ~~vs.~~ consumer software

giving a **VOICE** to the **USER**, **BROAD SCOPE** adds complexity



INTEGRATED SYSTEMS commercial, configured

Enterprise software is designed to accommodate as many use cases as possible in as many departments as possible.

LEGACY SOFTWARE usually built internally

Most *legacy software* was created for one single use case in one department.

are we back to... 

look at what I can do

vs. **what I needed it to do?**

learning from enterprise software ~~vs.~~ consumer software

giving a **VOICE** to the **USER**, **BROAD SCOPE** adds complexity

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LEGACY SOFTWARE *usually built internally*

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UX principle of **LAYERING** (effectiveness) - process of **organizing information into related groupings** in order to **manage complexity and reinforce relationships** in the information.

- **improve navigation by grouping** for workflow/job role
- make the functions **appear at just the right time**, such as **providing actions needed in each context** for each job role

thoughts and ideas

web
(SAAS)

growth of
integrated
systems

PC

work
stations

QUESTION?

Raise your hand if you often **search for information** (data) **that is more than 8 years old?**

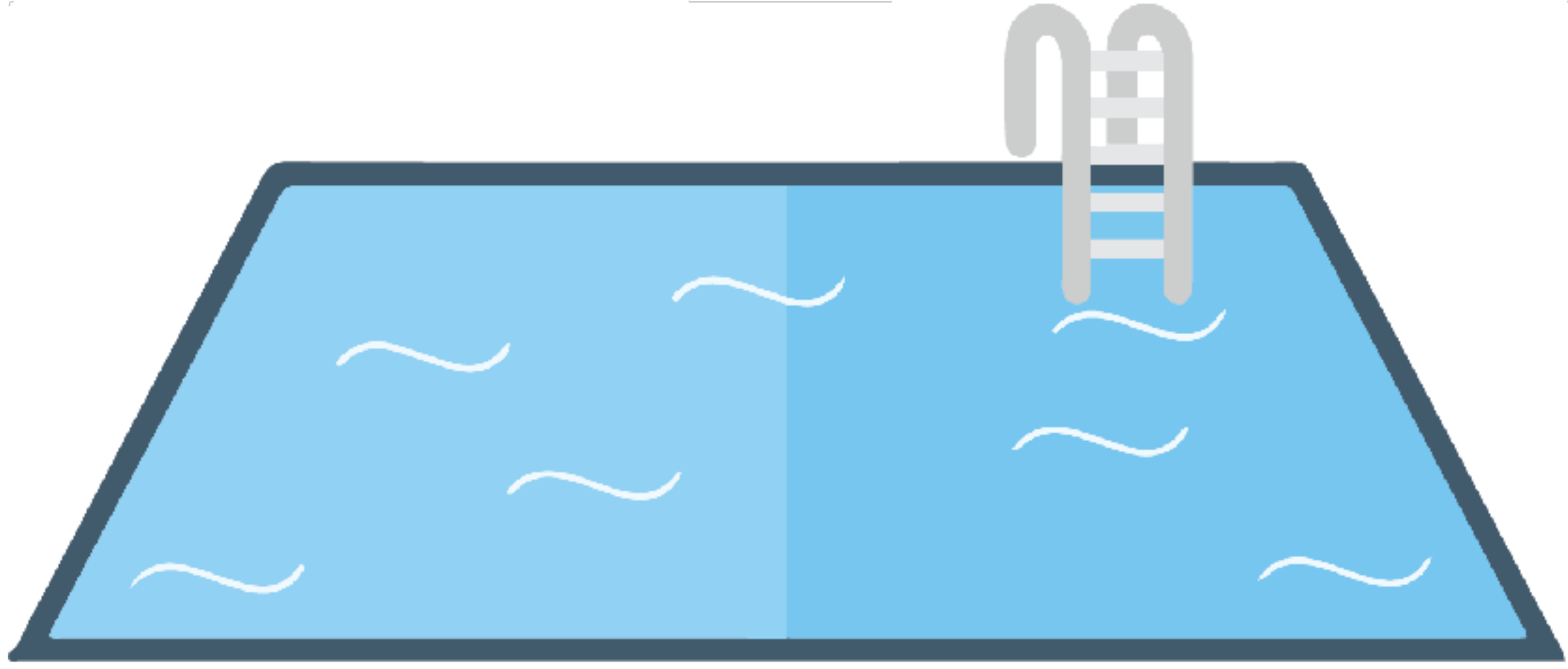


learning from enterprise software ~~vs.~~ consumer software

giving a **VOICE** to the **USER**, *bursting of data in digital world*,
we need to prevent **data overload**



its like trying to find a drop of water in the **lake of global data**
(adding to difficulty is versions, knowledge of code/attributes, etc.)



reduce to **CURRENT DATA** to olympic sized **pool**



reduce by **PROJECT** to **team** bucket



reduce by **WORKFLOW** to **my** cup

lake of global data



learning from enterprise software ~~vs.~~ consumer software

giving a **VOICE** to the **USER**, *bursting of data in digital world*,
we need to prevent data overload



UX principle of **5 HAT RACKS** - only 5 ways to organize information: **category** (*similarity; job role or project*), **time** (*dates; current*), location (spatial), alphabet (sequence), and continuum (magnitude).

- allow **USERS** to **organize or link their own data to deliverables, projects, and/or by job roles**
- reduce cognitive load (amount of working memory needed) by **using AUTH_N to automatically reduce data quantity**

learning from enterprise software ~~vs.~~ consumer software

giving a VOICE to the USER, **SUMMARY** of topics

WE NEED TO PREPARE
high expectations for usability

Has always known
internet and mobile.

Is tech savvy and **grew up**
connected.*



*soon to enter
the workforce

thoughts and ideas



**the buyer is not the
consumer & goals of
organization over user
goals**

- **VISIBILITY** - make the **important things obvious**
- make sure the **product communicates the core VALUE**
- show users how your **product makes their lives easier**
- **HICK'S LAW** - **simplify the interface** for specific job roles



**broad scope adds
complexity**

- **LAYERING** - **improve navigation by grouping for job role**
- **make the functions appear at just the right time**, such as providing actions needed in each context for each job role

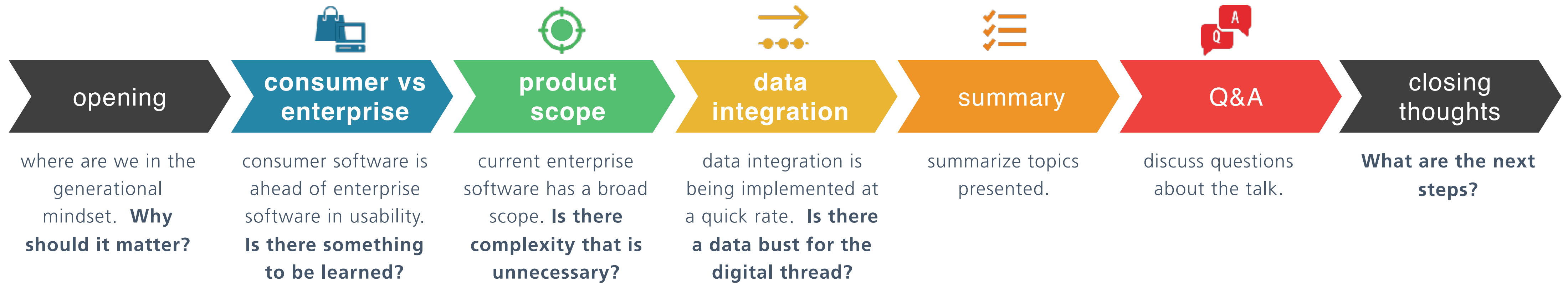


**bursting of data in
digital world**

- **5 HAT RACKS** - **reduce by current data** (pool), **by project/deliverables** (bucket), **and by workflow/job role** (cup)
- allow users to **organize or link their own data to deliverables, projects, and/or by job roles.**
- reduce cognitive load



Q&A



- **VISIBILITY** - make the **important things obvious**
- **VALUE &** makes their lives easier
- **HICK'S LAW** - **simplify the interface**

- **LAYERING** - **improve navigation by grouping &** make the functions **appear at just the right time**

- **5 HAT RACKS** - **reduce by current data** (pool), **by project/deliverables** (bucket), **and by workflow/job role** (cup)
- allow users to **organize their own data &** reduce cognitive load

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*what can you do?
do you want the answers?*

*finding the
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