

Exploiting the User: Adapting Personas for Use in Security Visualization Design

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professional information analysts

...spend lots of time exploring their data before
they can perform productive analysis.

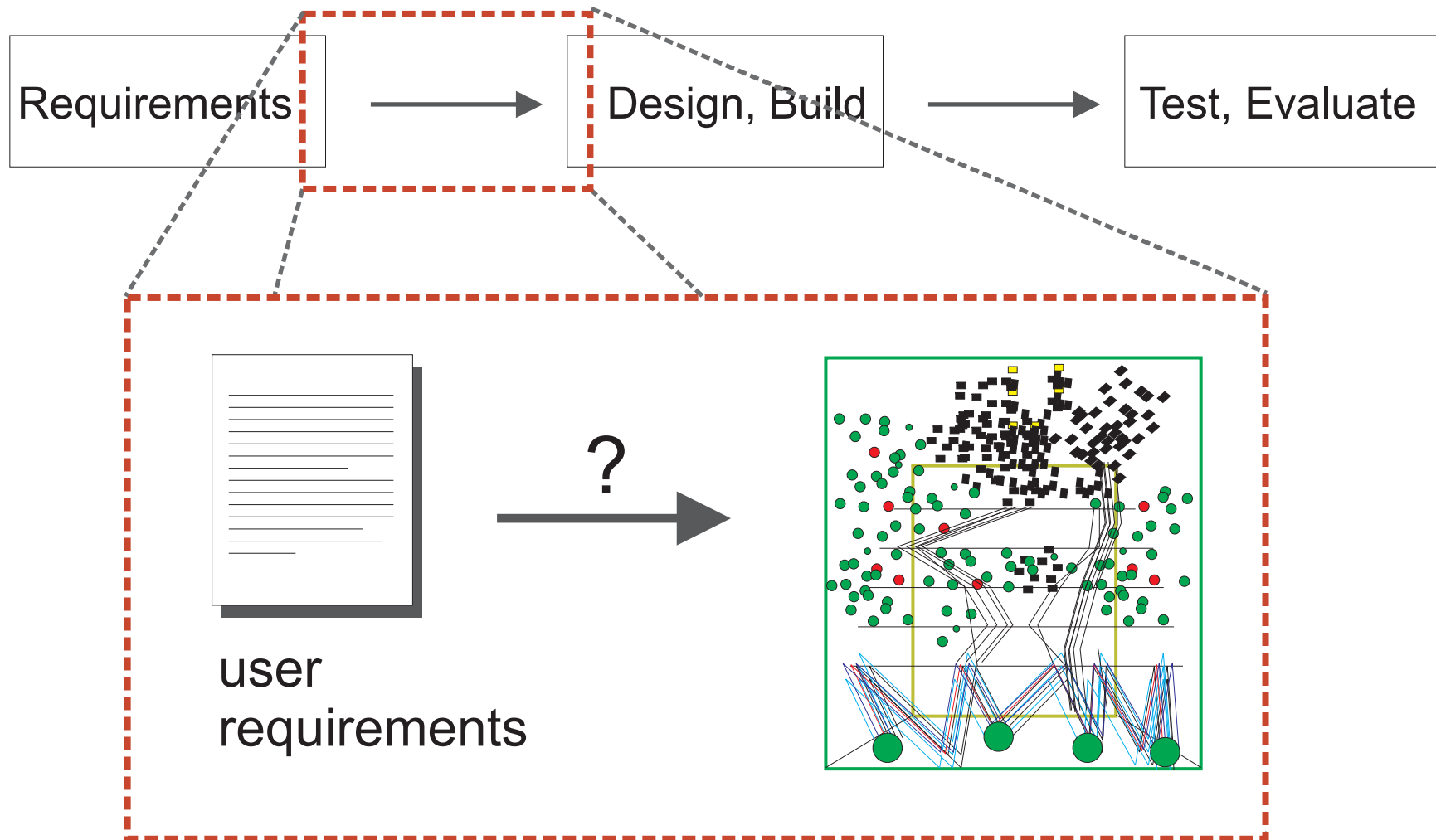
professional information analysts

...need a faster way to get a sense of the data.

...need a faster way to see meaningful changes.

first look problem

Visualization System Design Process



the meta problem

UCAN Design Requirements

The following document is a compilation of the design documents submitted by the UCAN Design Team in January, 1996. The Design Team document has been summarized, herein, to clarify project design issues. As stated at the outset of the UCAN project, the UCAN

data can be supplemented by locally entered data but will match the form and substance of the NCDC data.

- 2.1.1. TD-3200 Summary of the Day, Cooperative stations. (See [Table 3](#))
- 2.1.2. TD-3210 Summary of the Day, First Order stations. This will be limited to the variables reported in the TD-3200.
- 2.1.3. TD-3220 Summary of the Month, Cooperative stations. (See [Table 3](#))
- 2.1.4. TD-3240 Hourly Precipitation. (See [Table 3](#))
- 2.1.5. TD-9641 1961-90 Monthly Station Normals. This dataset is available at the NRCS for distribution to the RCCs as required. (See [Table 4](#))

2.2. Rules for inclusion of data.

- 2.2.1. Stations that are active as of December 31, 1990 and have at least 10 years of data will be included in NRCS datasets.
- 2.2.2. Stations with data and appropriate metadata should be retrievable by NRCS from the RCCs.
- 2.2.3. Stations with less than 1 year of data and no corresponding metadata will be not be added to the active database. A list of these stations, however, will be maintained for future reference.
- 2.2.4. Datasets delivered to NRCS should be period of record through December 31, 1995 for sites included.
- 2.2.5. Rules for inclusion of ValHiDD corrections:

- 2.2.5.1. All max and min temperature ValHiDD corrections will be added to the UCAN database. Original temperature observations will be placed in a look-aside table.
- 2.2.5.2. Precipitation and snowfall ValHiDD corrections for COOP stations will be added to the UCAN database. Original observations will be placed in a look-aside table.
- 2.2.5.3. Precipitation and snowfall ValHiDD corrections for FIRST-ORDER stations will be added to the UCAN database and original observations placed in a look-aside table, with the following exception. ValHiDD corrections with a ValHiDD error code of 59 (precip estimated from snowfall and snow depth) will be put in a look-aside table and the ORIGINAL observations will be put in the UCAN database.
- 2.2.5.4. Snow depth ValHiDD corrections for COOP stations be added to the UCAN database and original observations placed in a look-aside table, with the following exception. Snow depth values that ValHiDD changes from zero to missing will go into the UCAN database as zero and the ValHiDD missing value and associated error code will go in the look-aside table.
- 2.2.5.4. Snow depth ValHiDD corrections for FIRST-ORDER stations with an error code of either 11 (data value exceeds all time extreme) or 91 (several elements keyed off column) will be added to the UCAN database and original observations placed in a look-aside table. All other snow depth ValHiDD corrections for FIRST-ORDER stations will be put in a look-aside table and the ORIGINAL observations will be put in the UCAN database.

Poor requirements capture
can lead to requirements
that are lost,
forgotten or
ignored.

why it persists

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Table 3. RCC Variable Names

TD 3200 - Summary of the Day (includes TD 3210) Var Long Name Source Units Note

TMAX Daily Maximum Temperature 3200 DegF TMIN Daily Minimum Temperature 3200
DegF TOBS Temperature at Obs time 3200 DegF PRCP Daily Precipitation 3200 .01

Inches EVAP Dail

3200 DegF MXP

3200 0.1 Inches S

snow depth 3200

Minimum Soil Ten

Soil Temperature

TD 3240 - Hourly

Precipitation 3240

3220 - Summary

Var Long Name Source

HTDD Monthly He

Inch precip 3220

Number days >=

3220 Number DP

>= 1.0 Inch precip

DP50 Number da

monthly precip 32

DSNW Number of

minimum temp. <

DegC 3220 Numt

DT32 Number da

minimum temp. <

DegF 3220 Numb

DX15 Number da

maximum temp. <

DegF 3220 Numb

EMXT Extreme m

temp. for the mon

MMXT Monthly m

3220 DegF MMN

MMXP Monthly m

Maximum snow d

evaporation 3220

Total monthly sno

FRZD Freeze dat

temp 3220 DegF

Lowest minimum soil temp for the month 3220 DegF 1 LNnn

Lowest minimum soil temp for the month 3220 DegF 1 MOnn Monthly mean soil temp at

obs time 3220 DegF 1 HOnn Highest soil temp for the month at 3220 DegF 1

observation time LOnn Lowest soil temp for the month at 3220 DegF 1 observation time

TD 3240 - Hourly Precipitation Var Long Name Source Units HPCP Hourly Precipitation 3240
.01 Inches DP03 Daily summary of Hourly Precip 3240 .01 Inches **TD 3220 - Summary
of the Month**

Var Long Name Source Units Note CLDD Monthly Cooling Degree Days Base 65 3220 DegF
HTDD Monthly Heating Degree Days Base 65 3220 DegF DP01 Number days >= 0.1
Inch precip 3220 Number DP03 Number days >= 3.0 mm precip 3220 Number DP05
Number days >= 0.5 Inch precip 3220 Number DP0H Number days >= 0.01 Inch precip
3220 Number DP0Q Number days >= 0.25 Inch precip 3220 Number DP10 Number days
>= 1.0 Inch precip 3220 Number DP25 Number days >= 25.0 mm precip 3220 Number
DP50 Number days >= 50.0 mm precip 3220 Number DPNP Departure from normal
monthly precip 3220 .01 Inch DPNT Departure from normal monthly temp 3220 DegF
DSNW Number of days with snow depth >= 1 inch 3220 Number DT00 N umber days
minimum temp. <= 0 DegF 3220 Number DT15 Number days minimum temp. <= 15
DegC 3220 Number DT30 Number days maximum temp. >= 30 DegC 3220 Number
DT32 Number days minimum temp. <= 32 DegF 3220 Number DT60 Number days
minimum temp. <= 60 DegF 3220 Number DT70 Number days maximum temp. >= 70
DegF 3220 Number DT90 Number days maximum temp. >= 90 DegF 3220 Number
DX15 Number days maximum temp. <= 15 DegC 3220 Number DX32 Number days
maximum temp. <= 32 DegF 3220 Number DX60 Number days maximum temp. <= 60
DegF 3220 Number EMXP Extreme max daily precip. in the month 3220 .01 Inch, Date
EMXT Extreme max daily temp. for the month 3220 DegF, Date EMNT Extreme min daily
temp. for the month 3220 DegF, Date MMNT Monthly mean minimum temp. 3220 DegF
MMXT Monthly mean maximum temp. 3220 DegF MNTM Monthly mean temperature
3220 DegF MMNP Monthly mean minimum temp of 3220 DegF evaporation pan water
MMXP Monthly mean maximum temp of 3220 DegF evaporation pan water MXSD
Maximum snow depth during the month 3220 Inch, Date TEVP Total m onthly
evaporation 3220 0.01 Inch TPCP Total monthly precipitation 3220 0.01 Inch TSNW
Total monthly snowfall 3220 0.1 Inch TWND Total monthly wind mov ement 3220 Miles
FRZD Freeze data: dates of occurrence 3220 Date 2 MNnn Monthly mean minimum soil
temp 3220 DegF 1 HNnn Highest minimum soil temp for the month 3220 DegF 1 LNnn
Lowest minimum soil temp for the month 3220 DegF 1 MOnn Monthly mean soil temp at
obs time 3220 DegF 1 HOnn Highest soil temp for the month at 3220 DegF 1
observation time LOnn Lowest soil temp for the month at 3220 DegF 1 observation time
MXnn Monthly mean maximum soil temp 3220 DegF 1 HXnn Highest maximum soil temp
for the month 3220 DegF 1 LXnn Lowest maximum soil temp for the month 3220 DegF 1

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Soil Temperature

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Precipitation 3240

3220 - Summary

Var Long Name Source

HTDD Monthly He

Inch precip 3220

Number days >= 0

3220 Number DP

>= 1.0 Inch precip

DP50 Number day

monthly precip 32

DSNW Number of

minimum temp. <=

DegC 3220 Numb

DT32 Number day

minimum temp. <=

DegF 3220 Numb

DX15 Number day

maximum temp. <

DegF 3220 Numb

EMXT Extreme m

temp. for the mon

MMXT Monthly m

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FRZD Freeze data

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FRZD F

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Lowest r

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MXnn Monthly mean maximum soil temp 3220 DegF 1 HXnn Highest maximum soil temp

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3220 Number DT32 Number days minimum temp. <= 32 DegF 3220 Number DT60 Number
days minimum temp. <= 60 DegF 3220 Number DT70 Number days maximum temp. >= 70
DegF 3220 Number DT90 Number days maximum temp. >= 90 DegF 3220 Number
DX15 Number days maximum temp. <= 15 DegC 3220 Number DX32 Number days
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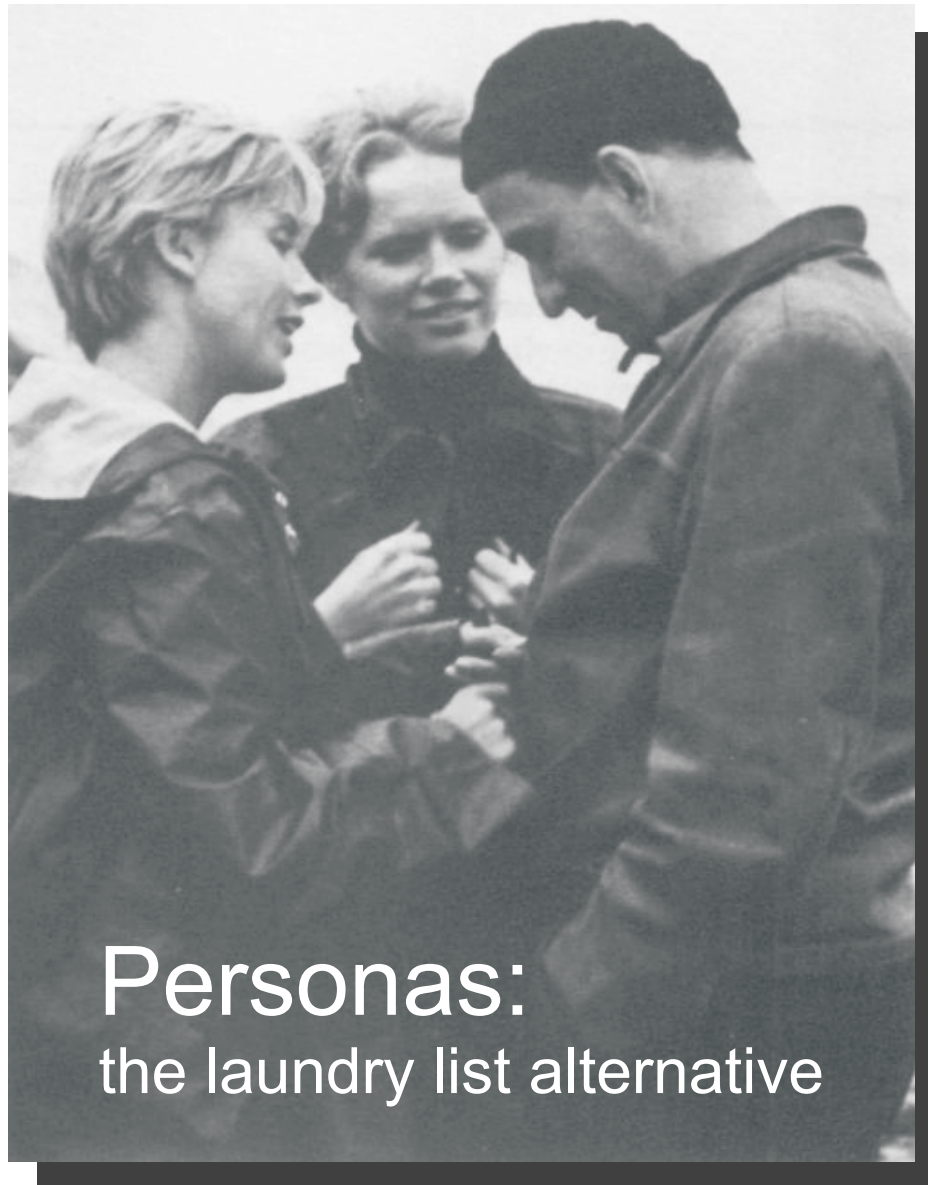
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Personas:
the laundry list alternative

A persona is the
archetype of the
target user.

It tells the story
about the user
requirements data.

a solution

The personas method

Helps address the meta-problem regarding user requirements

Can keep a user involved throughout the project.

Captures user requirements data in a usable way.

Accessible HCI* method for those unfamiliar with the user-centered design process.

Less time and resource-intensive compared to other HCI methods.

*human-computer interaction

some benefits

Summary:

Take the user data gathered.

Capture it in the form of a persona.

Use the persona as a member of the team.

Details:

1. Define the user population
2. Transform user data into a persona (or personas)
3. Personalize the persona(s)
4. Consult persona(s) in the design decisions
5. Evaluate results and persona retention

method in a nutshell

Decided on:
professional information analysts

Analyzed:
job postings
organizations related to job postings
literature review
interview

Found:
3 different types of information analysts:
policy, intelligence, cyber

defining the user

Decided to:

create 3 different personas

Wrote the story about user data:

included details about goals, primary tasks,
work environment, expertise, systems

Personalized the personas:

gave them names and faces

Found:

that specific persona characteristics are
highly organization dependant; also the rise
of the accidental analyst

transforming the data

Frank Kreuse

Cyber Analyst, EOBU (a defense industry supplier)

Background:

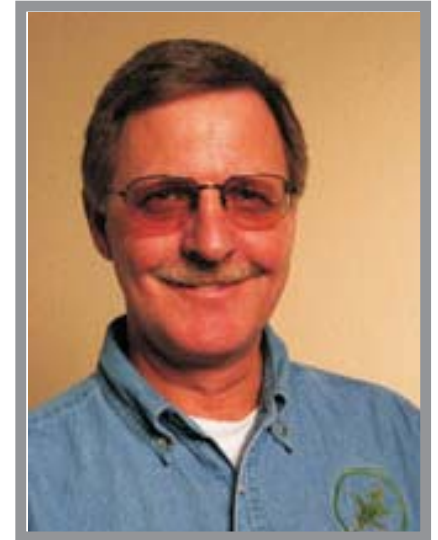
Frank has a B.S. in Information Systems. He specialized in technical writing and has CISSP certification. His training, experience and certification establishes him as an expert user.

Work Environment & Information Mgmt:

Frank has access to sophisticated data capture tools but better analytic tools are still lacking. Much of the data that he works with is generated by network scanning tools. However, he primarily relies on MS Excel to keep track of the data that is of interest to him so that he can perform analyses such as “what if” queries.

Tasks:

Part of Frank’s duties is to produce risk analysis reports based on test results derived from system assessment tools such as Tivoli Netview and DISA SRR.



**Frank Kreuse - EOBU
Cyber Analyst**

the foundation document

Data-to-features matrix

Persona Data			Features
<i>Frank Cyber Analyst</i>	<i>Terry Intelligence Researcher</i>	<i>Rob Consumer Safety Officer</i>	
"Frank is not always the person required to respond to intrusions. ...he must be aware of and be able to access information about how each incident is being handled by the team. ...network monitoring information comes from a variety of tools so Frank needs to know where the information came from."	"Terry must perform her analysis in a highly collaborative environment and the data she receives from the Intelligence support staff comes from many varied sources. ... at times she must do quality control on the information she receives from the newer support staff by making sure they are coming from credible sources."	"Rob works for an agency that utilizes antiquated computer and information systems. One of the daily challenges that Rob faces is keeping track of the many alerts he receives about food safety incidents to be investigated. He relies on where the alert came from to determine priority for investigation."	1. Functional: Need a summary of the metadata about the information being used in analysis.

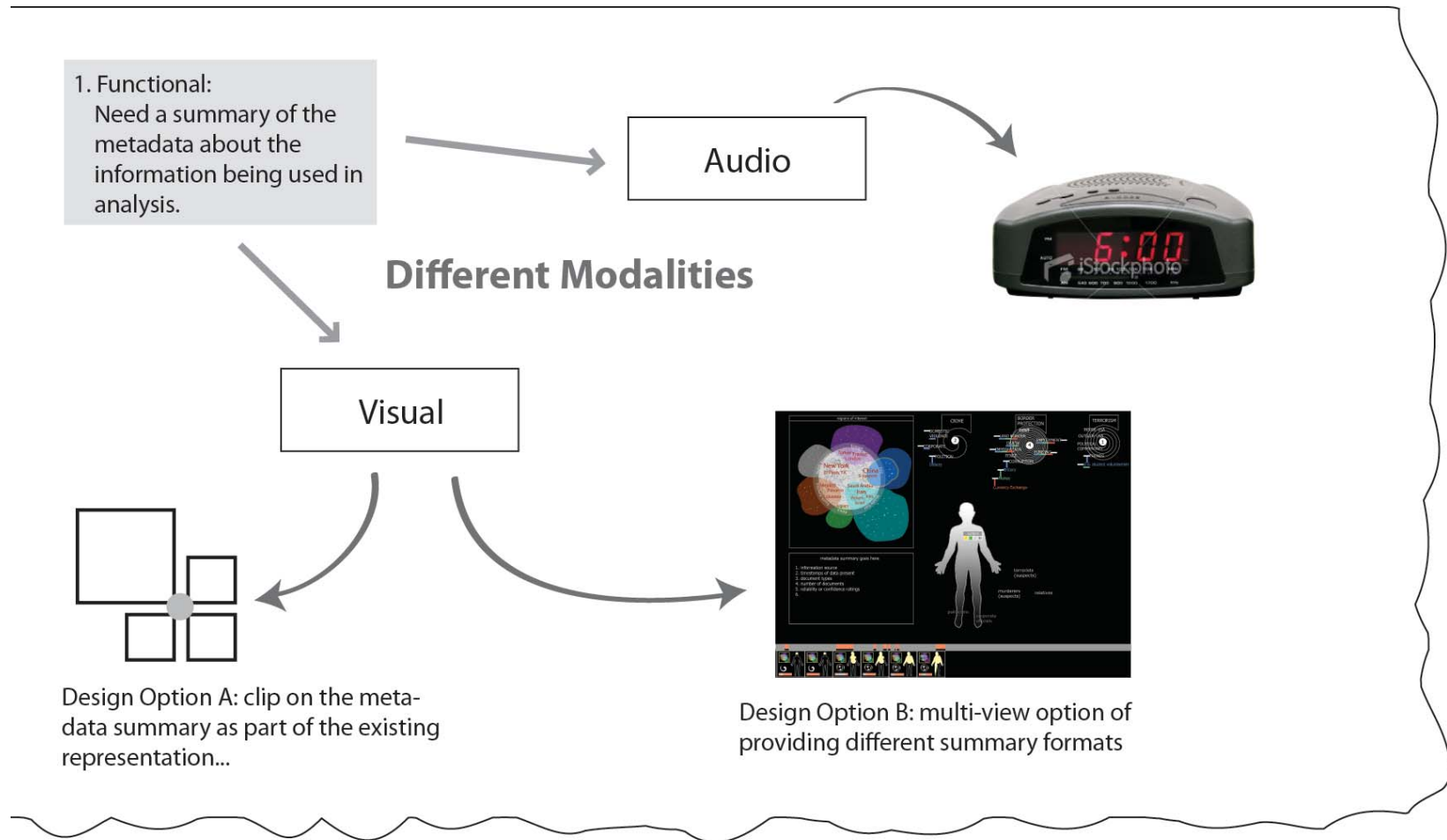
collaborate with the persona

Persona-weighted features matrix

Features	Persona Weights			Weighted Priority
	Frank (weight = 40)	Terry (weight = 40)	Rob (weight = 20)	
1. Functional: Need a summary of the metadata about the information being used in analysis.	2 (Must-have)	2 (Must-have)	2 (Must-have)	200
2. Non-functional: Need information change alerts to be rapidly customize-able.	2 (Must-have)	1 (Helpful)	0 (Doesn't matter)	120
<p>weight = percentages totaling to 100% or on a scale such as 1-5 score = -1 harms persona 0 does not matter to persona if the feature is there or not +1 helpful to the persona +2 is a must-have feature for the persona</p>				

collaborate with the persona

Features-to-design map



collaborate with the persona

Yahoo! 3-fold persona card (CHI '06)

<http://www.uie.com/brainsparks/2006/05/18/yahoos-approach-to-keeping-personas-alive/>



**MALE HOBBYIST USER
BRETT**

AGE: 27
 GENDER: Lives with parents
 OCCUPATION: Suburban rancher
 PHONE: 55,000
 LOCATION: Aurora, suburban Chicago
 EDUCATION: BA in Psychology
 MARRIAGE: Divorced

Brett is an amateur photographer and would like to go pro some day so he can quit his day job. He is interested in the Internet, using it as a source of both news and entertainment, spending a lot of time on the computer both at work and at home.

REMARKS:
 Brett is a hobbyist photo shooter and spends at least some time every week taking pictures but he's not a professional. He's not a fan of the Internet as well as working with his own photos. He has a digital camera with him all the time and takes pictures of everything and everything that others take pictures of. He likes to take pictures of everything and everything that others take pictures of. He likes to take pictures of everything and everything that others take pictures of.

CAMERA PHONE REMARKS:
 Brett needed a camera phone to take his pictures because he had to work on his digital camera because of his camera. He needed a camera phone to take his pictures because he had to work on his digital camera because of his camera.

DESIGNER FOR CAMERA PHONE:
 • Can be anything from everyday shots, portraits, and event photos

DESIGNER FOR CAMERA PHONE:
 • Storage of photos in cloud
 • Editing tools
 • Commenting on photos posted by others
 • Viewing others' photos in order (and maybe their own)

DESIGNER FOR CAMERA PHONE:
 • Real person's photos by the day taken but he is interested in being able to search photos by subject, date, location and other things.

DESIGNER FOR CAMERA PHONE:
 • Real person's photos by the day taken but he is interested in being able to search photos by subject, date, location and other things.



**EVENT ORIENTED CASUAL USER
ROBBI**

AGE: 38
 GENDER: Single
 OCCUPATION: University admissions Counselor
 PHONE: \$14,000
 LOCATION: Mesa, Arizona
 MARRIAGE: Divorced

Robbi wants to capture important moments and share them with the people who are important to him. He wants to make sure that the people who are important to him are the people who are important to him.

REMARKS:
 Robbi is a casual user who takes pictures of important moments and shares them with the people who are important to him. He wants to make sure that the people who are important to him are the people who are important to him.

CAMERA PHONE REMARKS:
 Robbi needs a camera phone to take his pictures because he had to work on his digital camera because of his camera. He needed a camera phone to take his pictures because he had to work on his digital camera because of his camera.

DESIGNER FOR CAMERA PHONE:
 • Social media
 • Location
 • Event photos
 • Commenting on photos posted by others
 • Viewing others' photos in order (and maybe their own)

DESIGNER FOR CAMERA PHONE:
 • Real person's photos by the day taken but he is interested in being able to search photos by subject, date, location and other things.

DESIGNER FOR CAMERA PHONE:
 • Real person's photos by the day taken but he is interested in being able to search photos by subject, date, location and other things.



**COMPULSIVE LIFE DOCUMENTER
BRAD**

AGE: 25
 GENDER: Single with a girlfriend, lives in a small town
 OCCUPATION: Freelance writer
 PHONE: \$14,000
 LOCATION: Mesa, Arizona
 MARRIAGE: Divorced

Brad wants to capture important moments and share them with the people who are important to him. He wants to make sure that the people who are important to him are the people who are important to him.

REMARKS:
 Brad is a compulsive life documenter who takes pictures of everything and everything that others take pictures of. He likes to take pictures of everything and everything that others take pictures of.

CAMERA PHONE REMARKS:
 Brad needs a camera phone to take his pictures because he had to work on his digital camera because of his camera. He needed a camera phone to take his pictures because he had to work on his digital camera because of his camera.

DESIGNER FOR CAMERA PHONE:
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example collaboration tool

A meta-problem exists when designing security visualizations. Improper requirements capture can lead to lost, forgotten or ignored user requirements.

The personas method provides an explicit way to deal with this problem throughout the design, development and evaluation of a project.

Critical to address this meta-problem in order to better ensure the usability of the security visualization.

conclusion

Thank you!

questions?