

# **Eliciting Persona Characteristics** for **Risk-based Decision Making**



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# Background

- Personas are behavioural specifications of archetypical users; their goals and expectations should be addressed when designing a system [3].
- Previous work [4] has shown how qualitative models can ground personas, but more evidence is needed on the applicability of grounding models in risk-based decision making research.
- We present an approach for eliciting persona characteristics for riskbased decision making that are grounded in an adaptation of the **Observe Orient Decide Act (OODA) model [2].**
- The approach illustrate how the modelling of personas based on decision makers' understanding of risk, aids in designing for risk and uncertainty.

# **OODA to RRP Adaptation**

OODA	Observe	Orient	Decide	Act

- Approach • We conducted an elicitation exercise with 30 industrial participants undertaking a cyber security course in Japan.
- Participants were drawn from 11 different sectors including Transport, Oil, Electricity and Manufacturing, with experience ranging from 1 to 20 years.
- Participants were trained on the *Risk Rationalisation Process (RRP)*: our adaptation of OODA.
- Participants were presented with a cyber security decision making scenario, and asked to rationalise their decisions using RRP.
- The results would highlight RRP's ability in facilitating risk-based decision making, and validate the mapping from RRP to personal modelling.
- CAIRIS [5] was used to derive Toulmin models [1] and personal characteristics from the qualitative model data.

# **RRP to Persona Mapping**



# **Decision Making Facilitation**

- Participants successfully used RRP to make and justify their decisions.
- Participants found that the hypothetical nature of the scenario made identifying the limitations to their rationale hard.
- An inverse relationship was identified between the early stages of  $\bullet$ proactive and reactive risk analysis.

# **Persona Characteristics Facilitation**

- Mapping the seven RRP stages to persona characteristics identified redundant information in several places.
- Redundancies were managed by categorising the RRP stages into three outputs: Assessment, Goals and Validation.

### **Respondents'** Data

Industry/Sector	Role/Position	Years in role/position	Situation Assessment Q. How may the situational be understood better?	Goal Formation What are your goals as a security analyst in the situation?
Chemical	Personnel	1 yr	Interviews with our business manager and BP. Corporate document management policies.	Build secure transmission paths, and if impossible determine whether transmission using e-mails or websites is right or wrong.
Printing	SOC/CSIRT	1 yr	Interviews with our department in charge	Make confidential information handling this time not get jeopardized.
п	Personnel	1 yr	Interviews.	Offer any countermeasures
Vendor	Senior Staff	10 yr	Organize things we want to attempt, those methods, and risks.	make not cause any security incidents such as data tampering / eavesdropping.
Oil	Assistant Manager	10 yr	Monitor the network traffic	Ensure and protect organizational data.
Transportation	Personnel	13 yr	Add electronic signatures and figure out whether there are any manipulations or not.	Achieve secure information transmissions and implement prompt responses to incidents when they occur.
π	Engineer	17 yr	Understand networks / locations of our business partners and urgency of emergency confidential information from the interviews with website vendors, own company, and our business partners.	Determine whether safety could be secured or not.
Steel	Principal Engineer	17 yr	Confirm with BP's system administrator whether they do not really have any procedures to transmit or receive critical information or not. Also, confirm with the manager time limits of transmission of critical information.	Safely and reliably deliver confidential information to other parties. Simultaneously, take adequate measures against information leakage and confirm those measures are safe.

# Thematic Data Clustering



## **Modelled Person Characteristics**



### **Rio Shimazaki (Persona)**

- Activities
  - Threat and vulnerability analysis
  - Threat Intelligence liaison

# **Conclusion & Future Work**

- We have contributed methods for eliciting persona



Cyber Security Analyst

Age: 38 Experience: 4 years Qualification: BSc

- Policy formulation
- Best practice advisor

#### Attitude

- Security advice is unheeded
- Analytical thinking is the best tool

#### Skills

Threat detection and response

#### Motivation

- Solving complex problems
- Training users

characteristics for risk-based decision making by adapting techniques familiar to UX researchers and Human Factors engineers.

Additional studies will be carried out to further identify how RRP

can support design for risk-based decision making.

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Image Source: https://www.flickr.com/photos/nicfill/

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