Resilience Scaling Technologies - Usability

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Contributors

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- Review panel
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- Propose a usability-centered reading of D13 (from resilience building to resilience scaling technologies: directions)

Definition

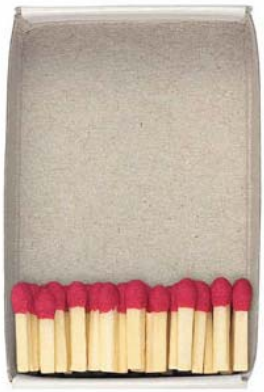
Neilsen's definition [Nie
ability is a quality attribut
rfaces are to use"
word "usability" also refe
during the design proces
) **learnability** (how easy is
rst time they encounter the
)
ne
)
not
- d)
err
- e)

se-of-

ks the

learned the design, how quickly can

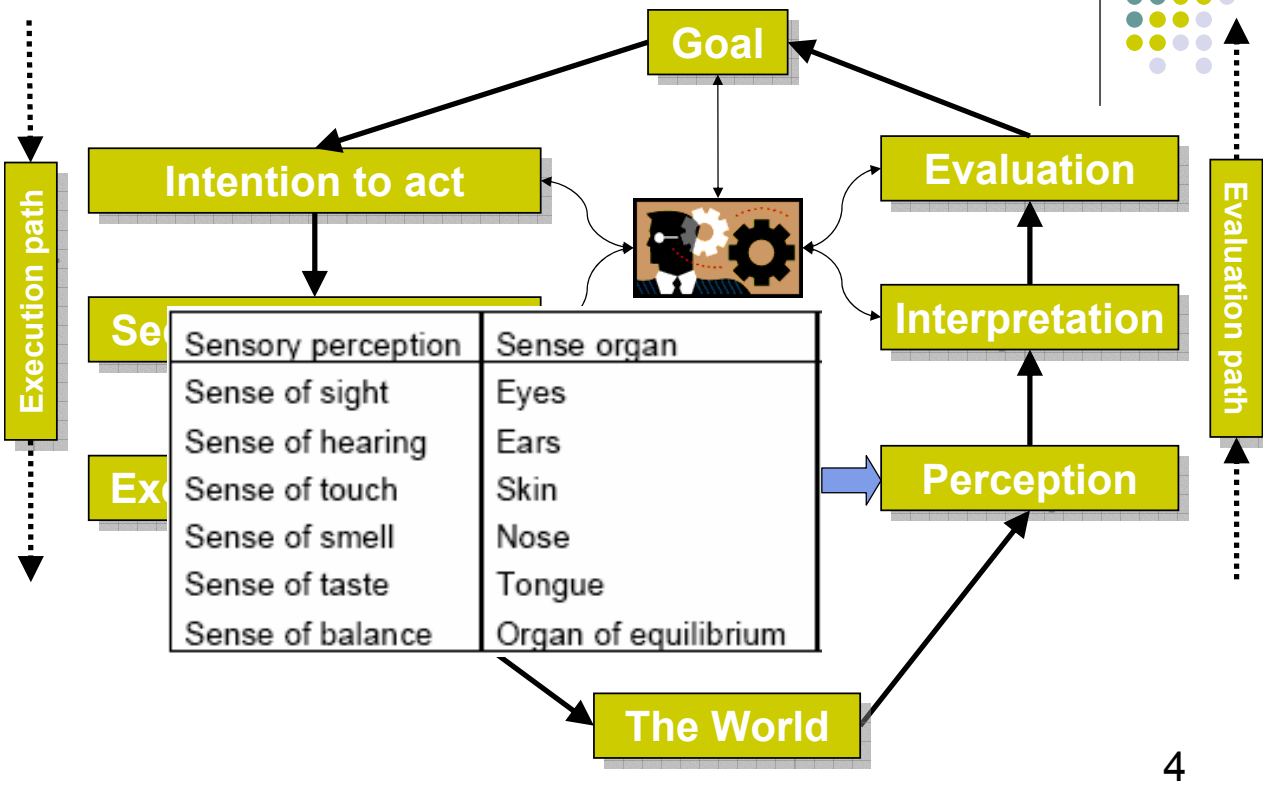
turn to the design after
re-establish proficienc
users make, how sever
recover from the errors
it to use the design?)



- Other or
satisfac
specifie

fer to **utility**, **efficie**
ed set of users can
lar environment.

Action Theory – Norman 86

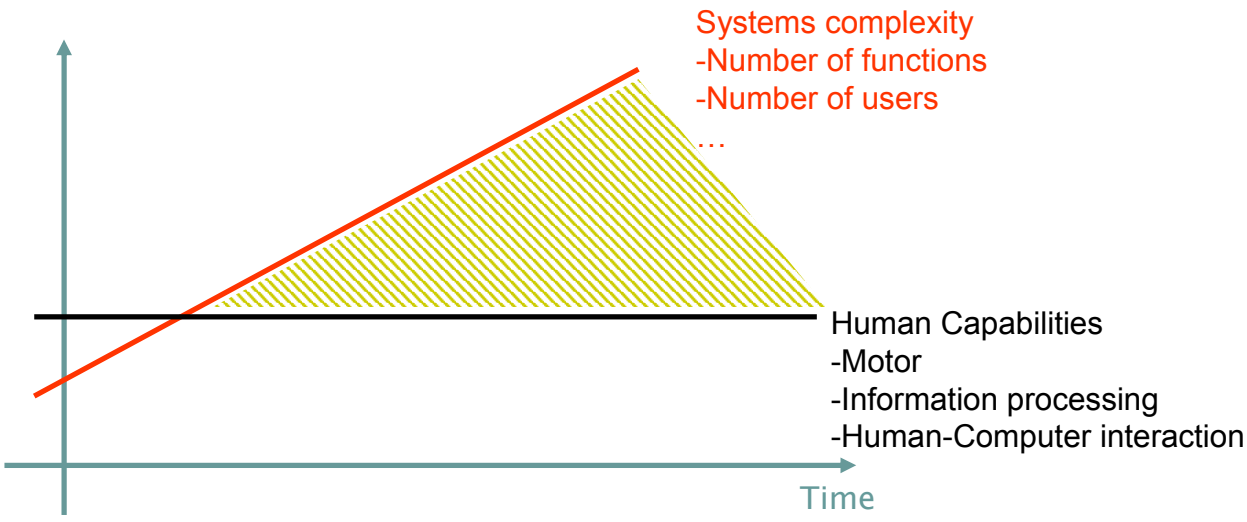


Resilience Scaling Technologies

- **Diversity**
- **Assessability**
- **Evolvability**

- **Usability**: At the core of a research domain
  - ACM SIGCHI largest SIG (Special Interest Group) at ACM
  - 8.87% of downloaded papers in the ACM DL (first of all SIGs)
  - UPA (Usability Professional Association)
  - World Usability Day every year

Usability - Diversity



Diversity of input/output/interaction to increase communication bandwidth (multimodal interfaces, interaction design, …)

Usability - Diversity

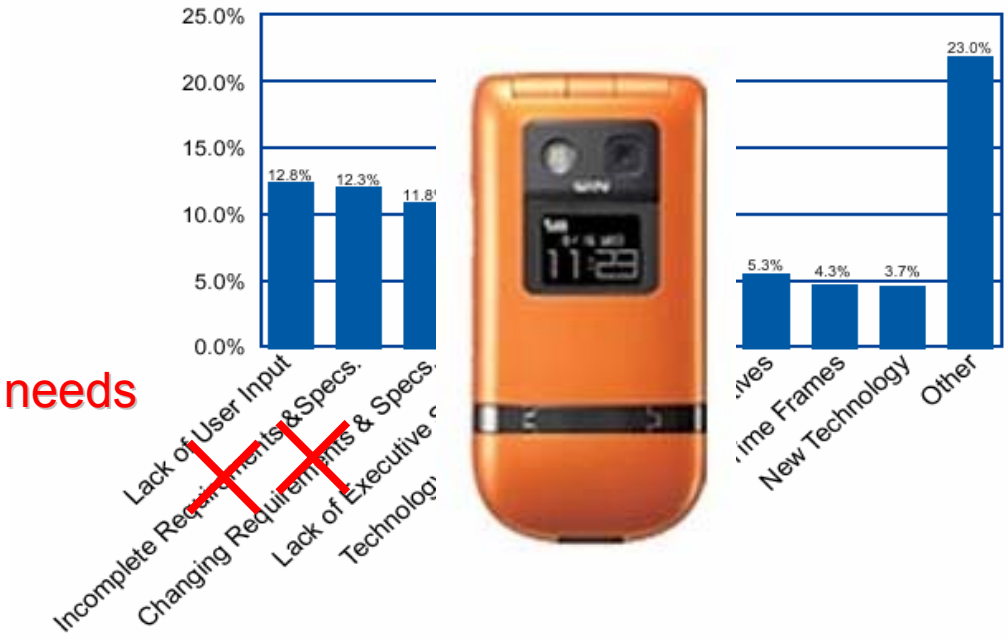
- Diversity on Input/output devices and interaction techniques
- Diversity of users
  - Web applications (e-gov, …)
  - Gaming (want to know more about that?)
  - Command and control systems (responsibility, …)
  - Peace keeping operations (OTW) (language, training, …)
- Diversity of contexts of use

Usability - Assessability

- COST action 294 MAUSE on MAturing USability Evaluation Methods
  - Methods
  - Tools
  - Formative - Summative evaluation
- Usability laboratories
- Usability heuristics
- What do to with the measures … Prodi-Berlusconi debate “you use statistics like a drunk man on the street uses a pavement lamp; not for seeing better but for standing still”

Designing for Evolvability

Why Software Projects Fail (source Boehm 2006) - Average overrun: 89.9% on cost, 121% on schedule, with 61% of content



needs

352 companies - 8,000 software projects. Source: *The Standish Group, 1995*

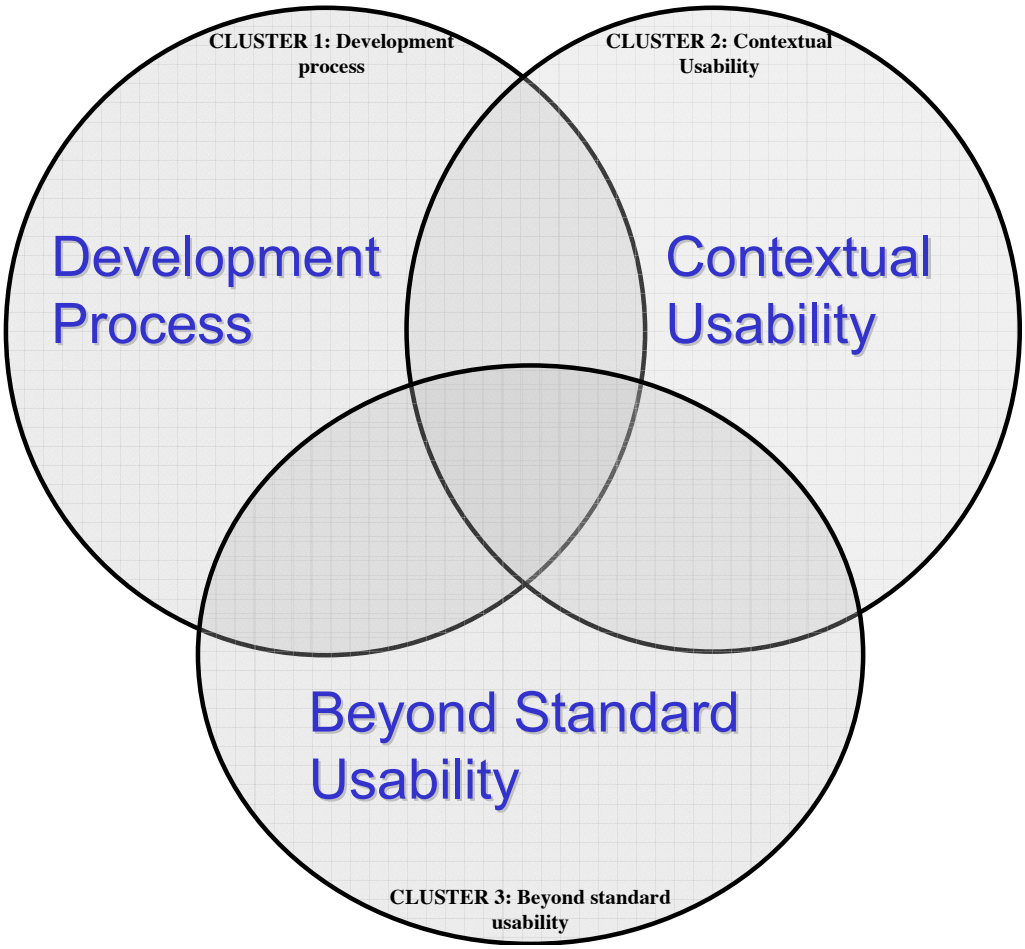
Usability – Evolvability

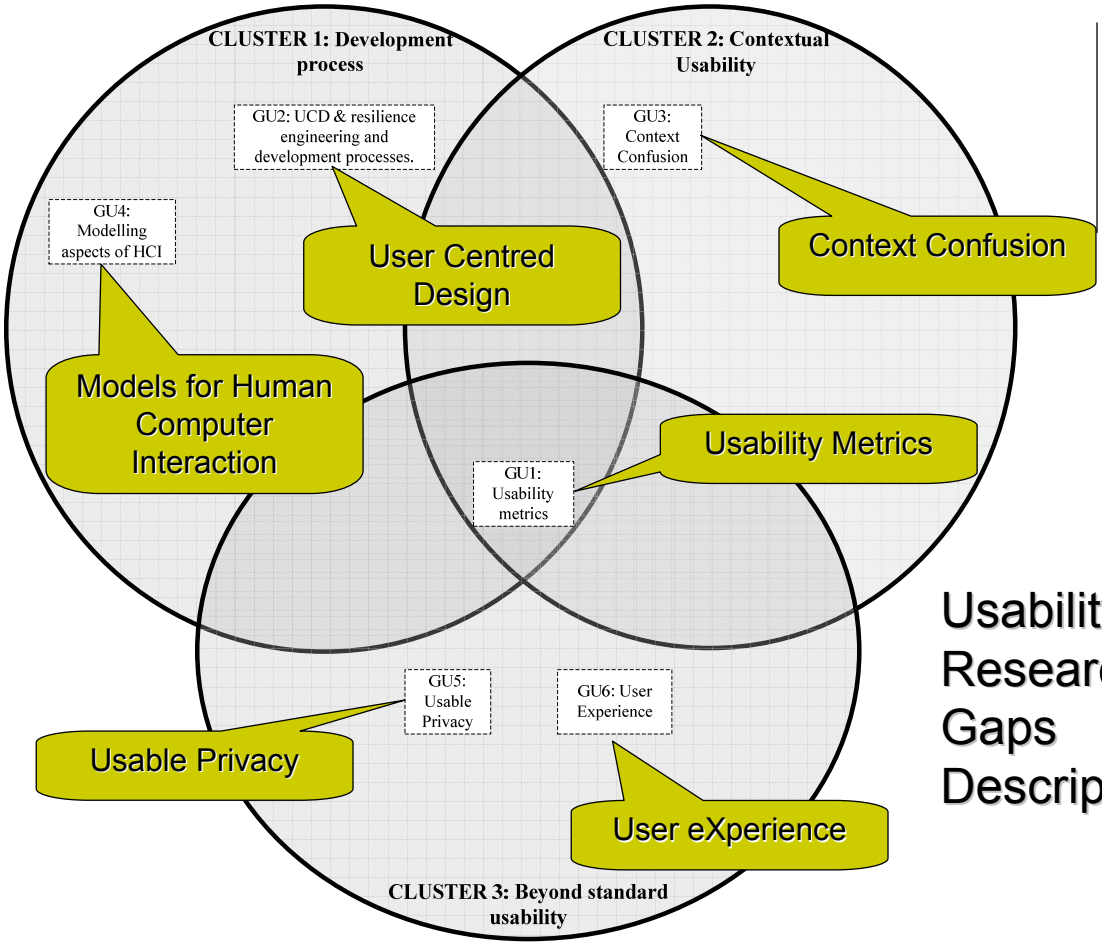
- Users evolve too
  - Practice
  - Training
  - Aging
- Evolution by means of barriers
  - Barrier = systems that prevent or stop ar
  - Ammunition loading problem in tanks
    - Recurrent problem
    - No recorded problem on operation
    - Solution to re-design and deploy new load
    - Usage study on operation (3 days)

- Same philosophy in software (patches) - what about the resilience of such systems?
- Problem with web applications

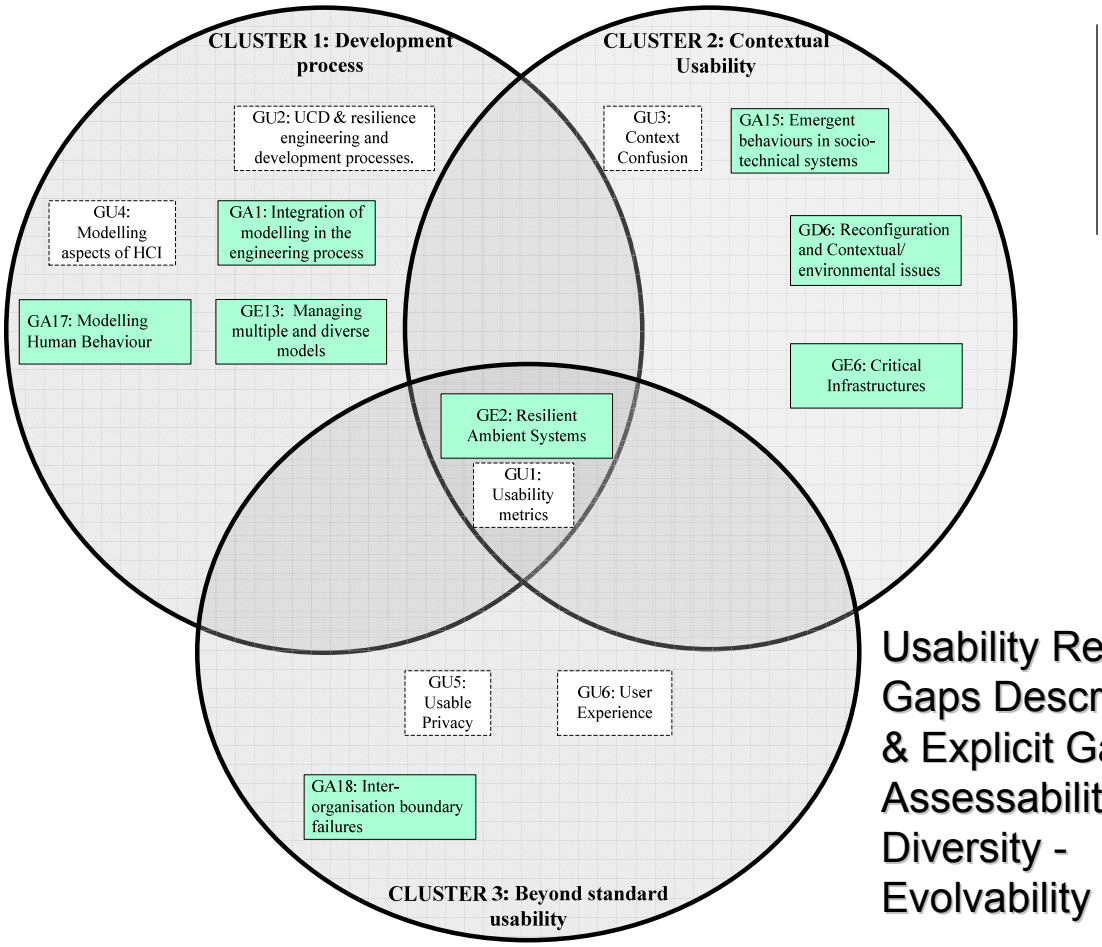
Overview of the Talk

- Introduction to Usability principles
  - Definition
  - The specificity of Usability with respect to the other resilience scaling technologies
- Categorisation of the identified research gaps
- Detailed presentation of the research gaps descriptions
- Conclusions

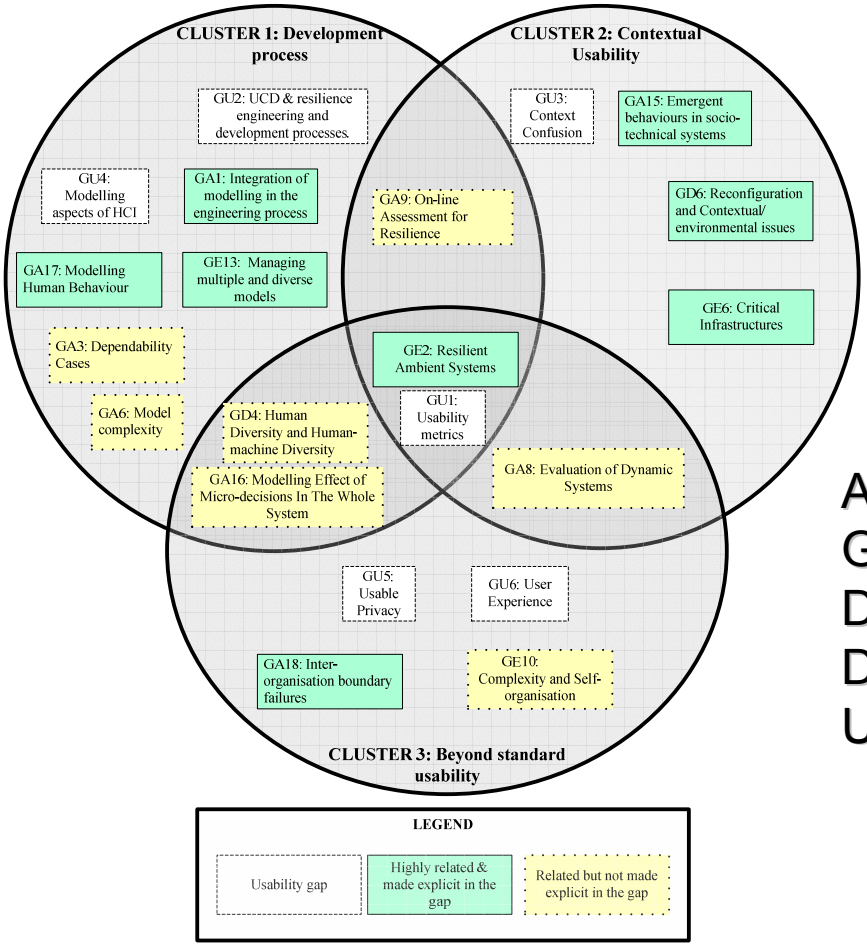




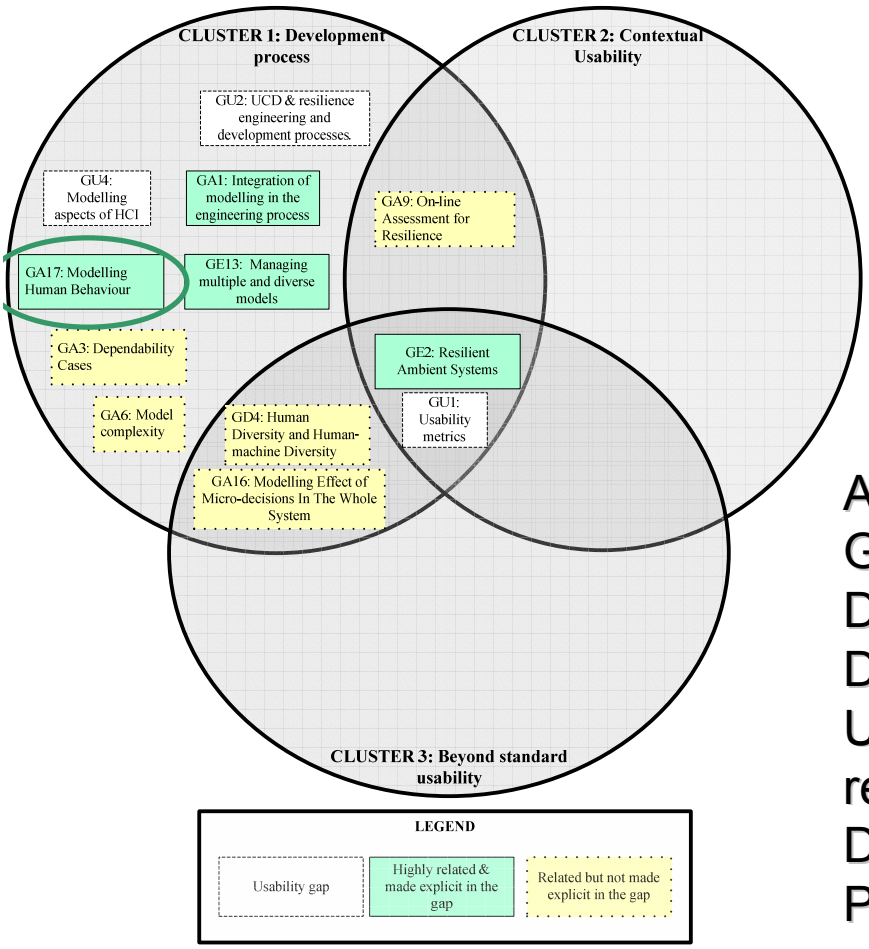
Usability Research Gaps Descriptions



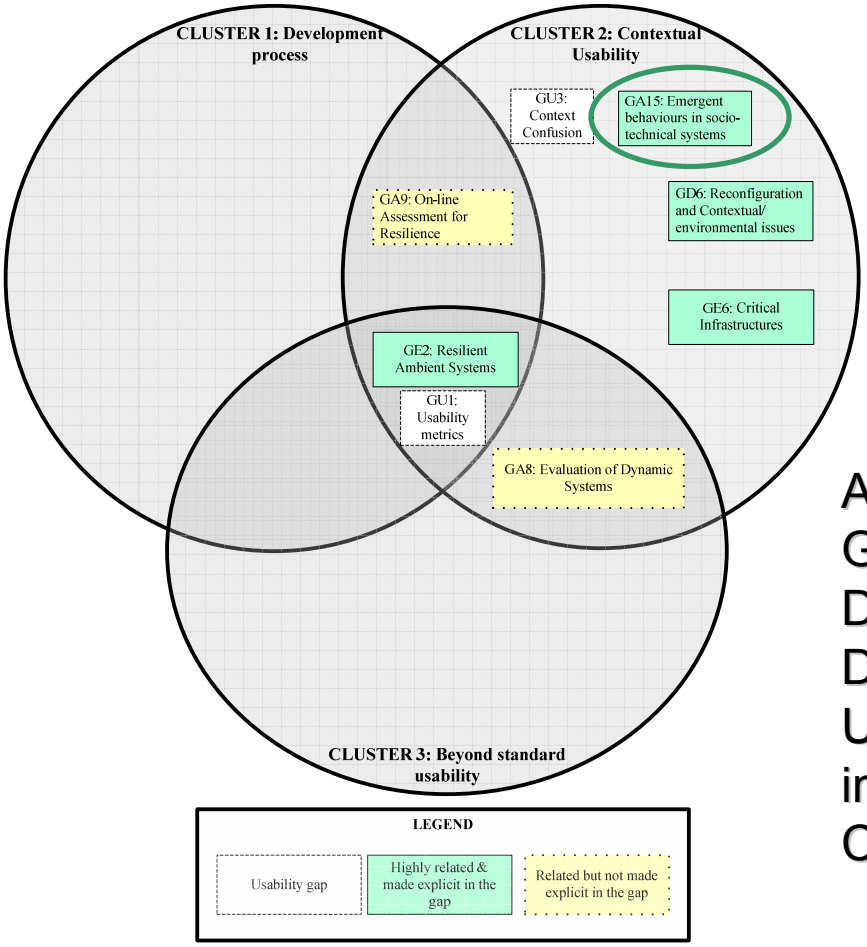
Usability Research Gaps Descriptions & Explicit Gaps – Assessability – Diversity - Evolvability



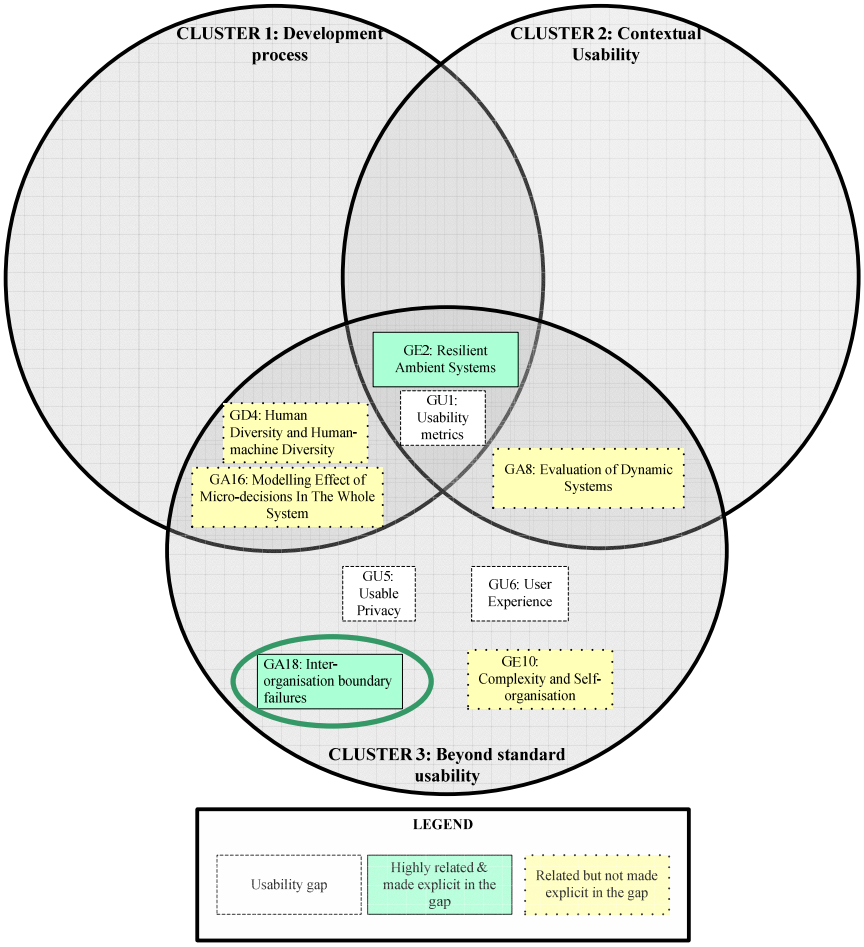
All the Research Gaps Descriptions Dealing with Usability



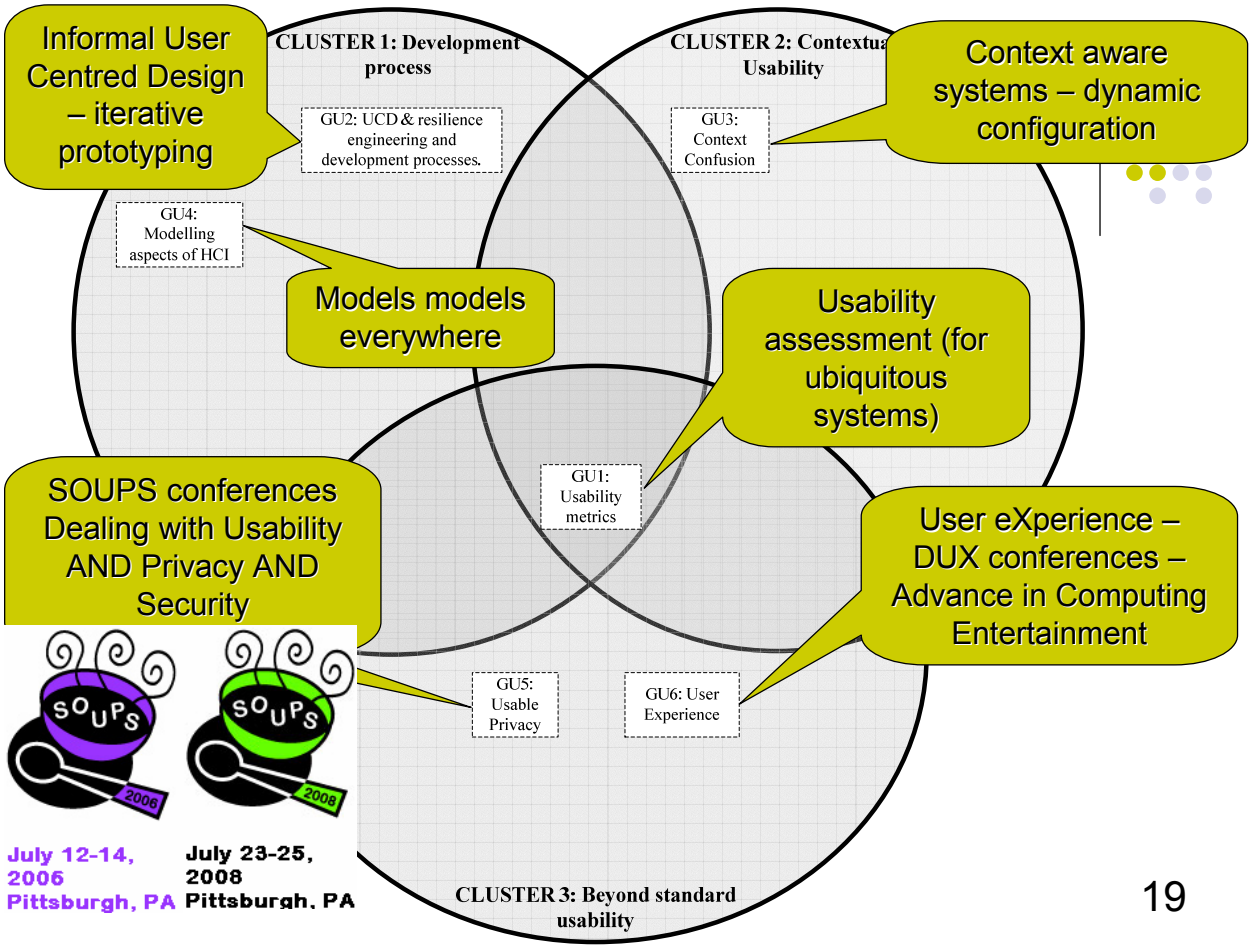
All the Research Gaps Descriptions Dealing with Usability and related to Development Processes



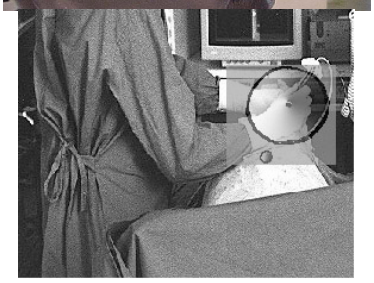
All the Research Gaps Descriptions Dealing with Usability influenced by Context



All the Research Gaps Descriptions Dealing with Usability and rasing new issues (not addressed by standard Usability)


Informal User Centred Design – iterative prototyping
CLUSTER 1: Development process
GU2: UCD & resilience engineering and development processes.
CLUSTER 2: Contextua Usability
GU3: Context Confusion
Context aware systems – dynamic configuration
GU4: Modelling aspects of HCI
Models models everywhere
Usability assessment (for ubiquitous systems)
SOUPS conferences Dealing with Usability AND Privacy AND Security
GU1: Usability metrics
User eXperience – DUX conferences – Advance in Computing Entertainment
GU5: Usable Privacy
GU6: User Experience
July 12-14, 2006 Pittsburgh, PA
July 23-25, 2008 Pittsburgh, PA
CLUSTER 3: Beyond standard usability

0) Context

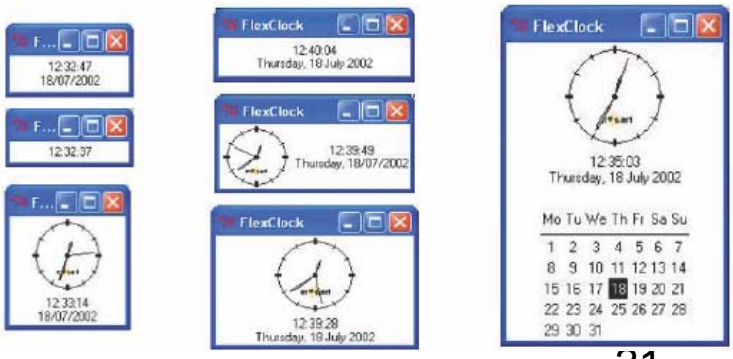



Tom's Restaurant


2006

1) Contextual Usability

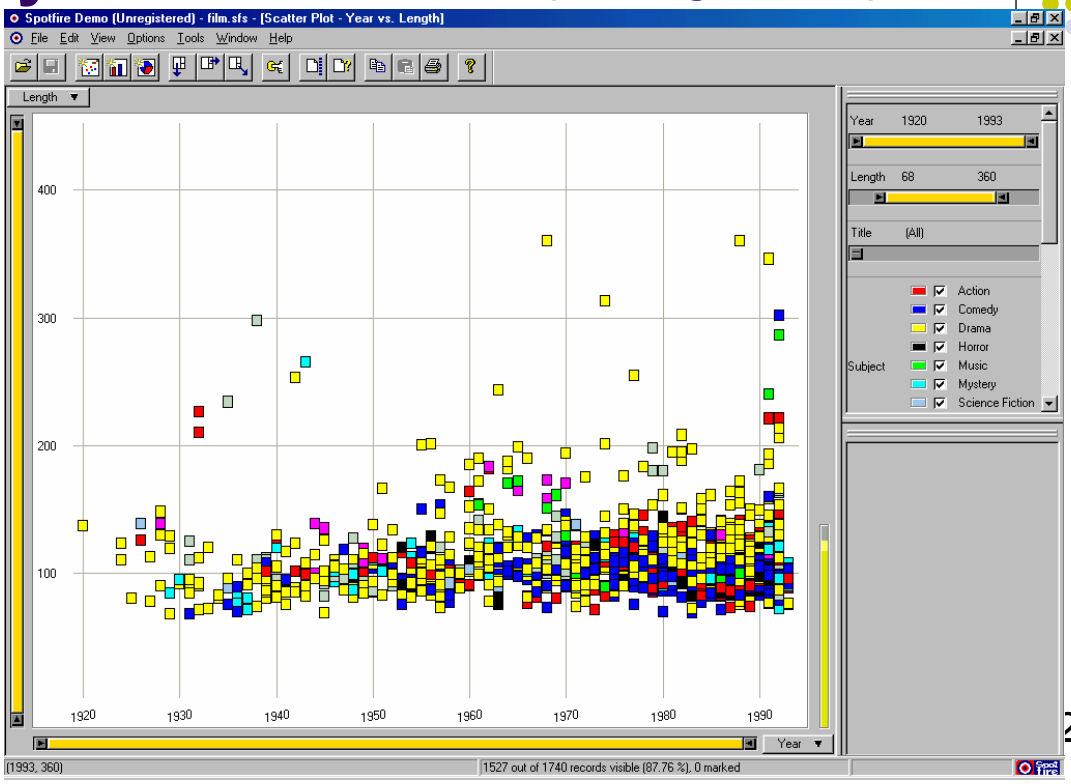
- Plasticity of user interfaces
  - Diversity of contexts
  - Dynamic evolvability of the presentation
  - Assessability of the usability of context aware systems (Usability Metrics GU1)
    - Of each presentation
    - Of the evolvability (context confusion GU3)
- Roles migration - function allocation – authority sharing
  - Modes
  - Keeping the user in t
- User Errors (contex
  - Reducing the likeliho
  - Reducing the impact
  - Increasing the recov



2) Usability Metrics - Assessment

- UEMs conducted by experts
  - Usability Inspection Methods, Guideline Reviews, …
  - Any type of interactive systems
- UEMs involving the user (User Centred Design GU2)
  - Empirical evaluation, observations, …
  - Any type of interactive systems (from low-fi prototypes to deployed applications)
- Computer supported UEMs
  - Automatic testing based on guidelines, …
  - Task or system models-based evaluations (modelling aspects of HCI GU4), metrics-based evaluation, …
  - Applications with standardized interaction techniques (Web, WIMP)

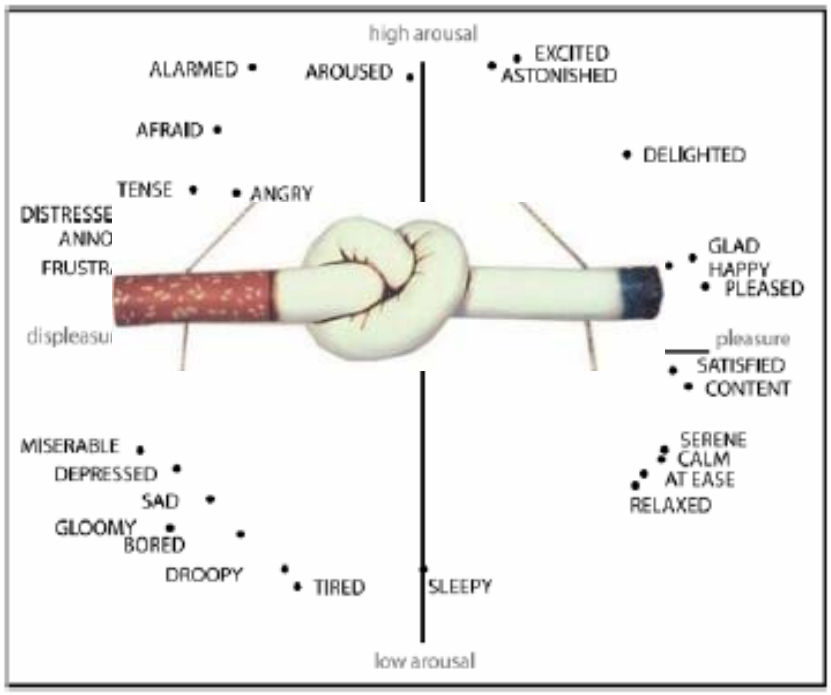
3) Development Process - Dynamic Queries (Ahlberg et al. 94)



3) Development process

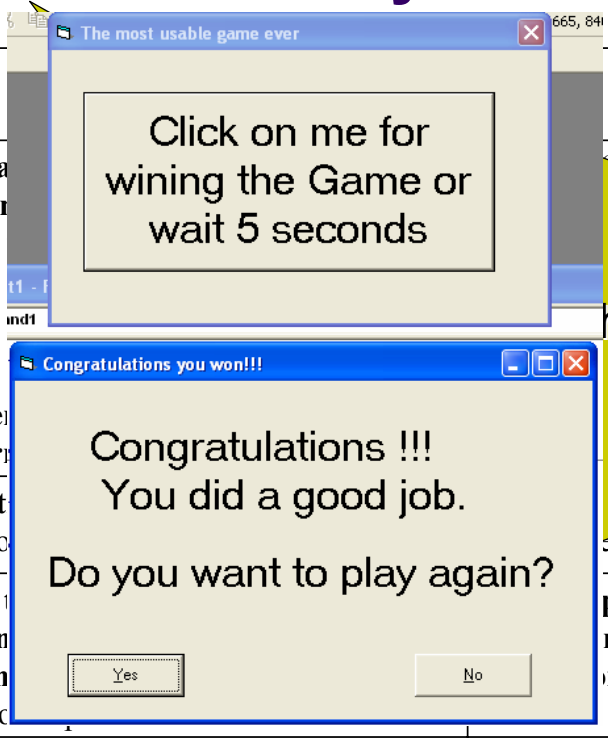
- There is a need for (GU4 Modelling aspects of HCI)
  - Methods
  - Processes
  - Notations
  - Tools
- to deal with the user interface design, construction and evaluation (GU1 Usability Metrics)
- to address the new challenges raised by ubiquitous systems and to support
  - Diversity of users and contexts of use (GU3 context confusion)
  - Evolvability of needs and uses situations (GU3 context confusion)
  - Assessability of the usability (GU1 usability metrics)
- Designing for usability makes things more complicated

4) Beyond Standard Usability



Two-dimensional affective space defined by valence and arousal: The circumplex model of affect (Russell, 1980).

UX versus Usability



		UX focus
Holistic	**Do-goa** … competent, be happy) **Instru** … balanced toward for … atic and pragmatic • … h • … s chair is not … at all but I'll buy it) **Efficie** … ffects trust) **Perfor**
Subjective	**Object** … sk/interpret how the to c … eels)
Positive	**Avoid** … positive **Hygie** … rs **Preven** … n erro

Conclusion

- 6 research gap descriptions have been provided and presented (central to usability)
- They define a set of important research challenges for addressing resilience of interactive sytems (paving the way for the next 18 months of ReSIST)
- They do not cover all the issues … by far
  - Management
  - Training
  - Work procedures
  - Cooperative activities
  - …

In Usability t… …the key

- Whatever tool y… …l b… use them differe…
- You may build t… machine the res…
- You may inform… do as they want…
- You may define… process but the… and easiest for…

Thank you for your attention

Questions ?

Top 10 Games Industry Facts

- 1. US computer and video game software sales grew six percent in 2006 to $7.4 billion – almost tripling industry software sales since 1996.
- 2. Sixty-seven percent of American heads of households play computer and video games.
- 3. The average game *player* is 33 years old and has been playing games for 12 years.
- 4. The average age of the most frequent game *buyer* is 38 years old. In 2007, 92 percent of computer game buyers and 80 percent of console game buyers were over the age of 18.
- 5. Eighty-five percent of all games sold in 2006 were rated "E" for Everyone, "T" for Teen, or "E10+" for Everyone 10+. For more information on ratings, please see www.esrb.org.
- 6. Eighty-six percent of game players under the age of 18 report that they get their parents' permission when renting or buying games, and 91 percent say their parents are present when they buy games.
- 7. Thirty-six percent of American parents say they play computer and video games. Further, 80 percent of gamer parents say they play video games with their kids. Sixty-six percent feel that playing games has brought their families closer together.
- 8. Thirty-eight percent of all game players are women. In fact, women over the age of 18 represent a significantly greater portion of the game-playing population (31%) than boys age 17 or younger (20%).
- 9. In 2007, 24 percent of Americans over the age of 50 played video games, an increase from nine percent in 1999.
- 10. Forty-nine percent of game players say they play games online one or more hours per week. In addition, 34 percent of heads of households play games on a wireless device, such as a cell phone or PDA, up from 20 percent in 2002.

Back