Princípios de Usabilidade

Interface Pessoa-Máquina - 25/26 - LEI / UM

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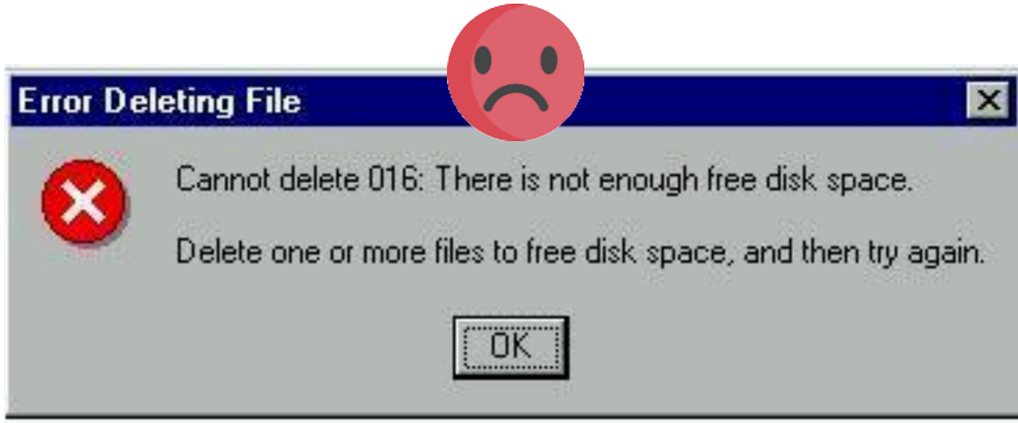
Usabilidade?

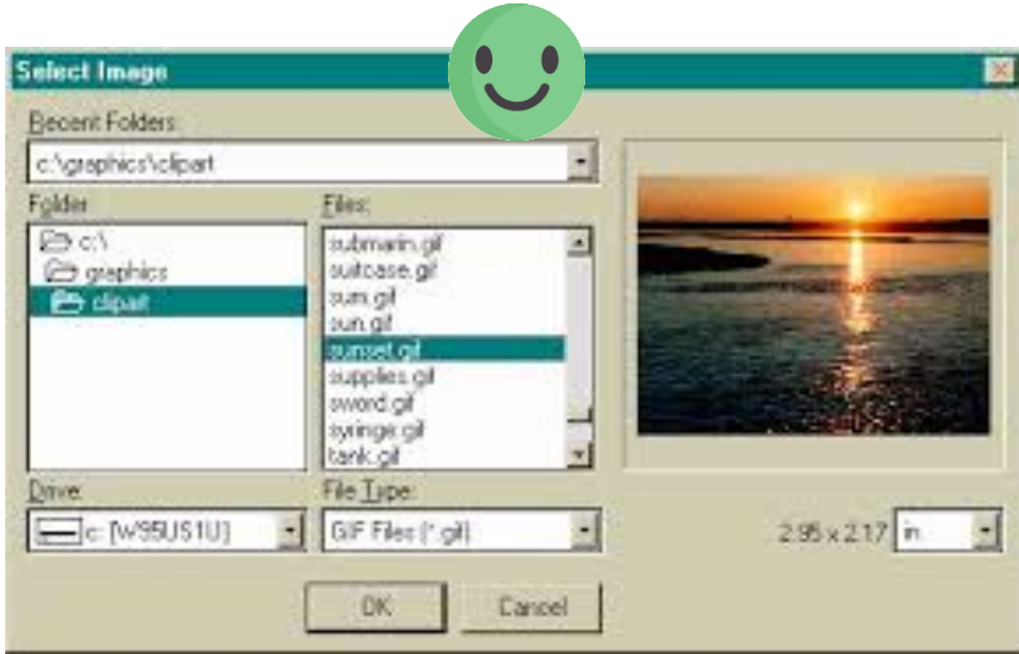
The Interface Hall of Shame is an irreverent look at ineffective interface design. The site includes a collection of images from commercial, corporate, and shareware applications that illustrate how software should ***not*** be designed.

http://hallofshame.gp.co.at/mshame.htm

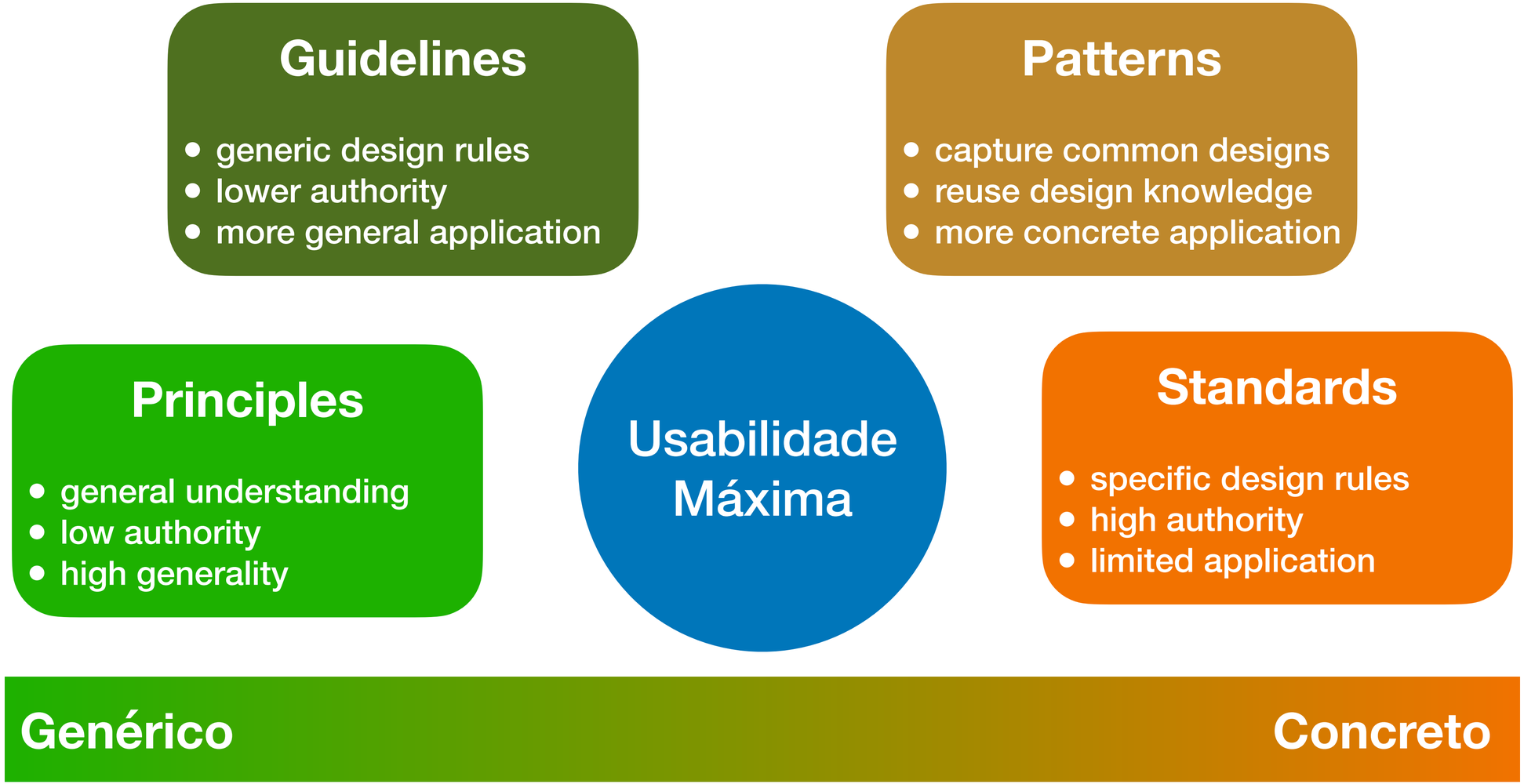
The Interface Hall of Fame is a collection of images that demonstrate interface design solutions that are both creative *and* effective.

http://hallofshame.gp.co.at/mfame.htm





Desenhar para usabilidade máxima



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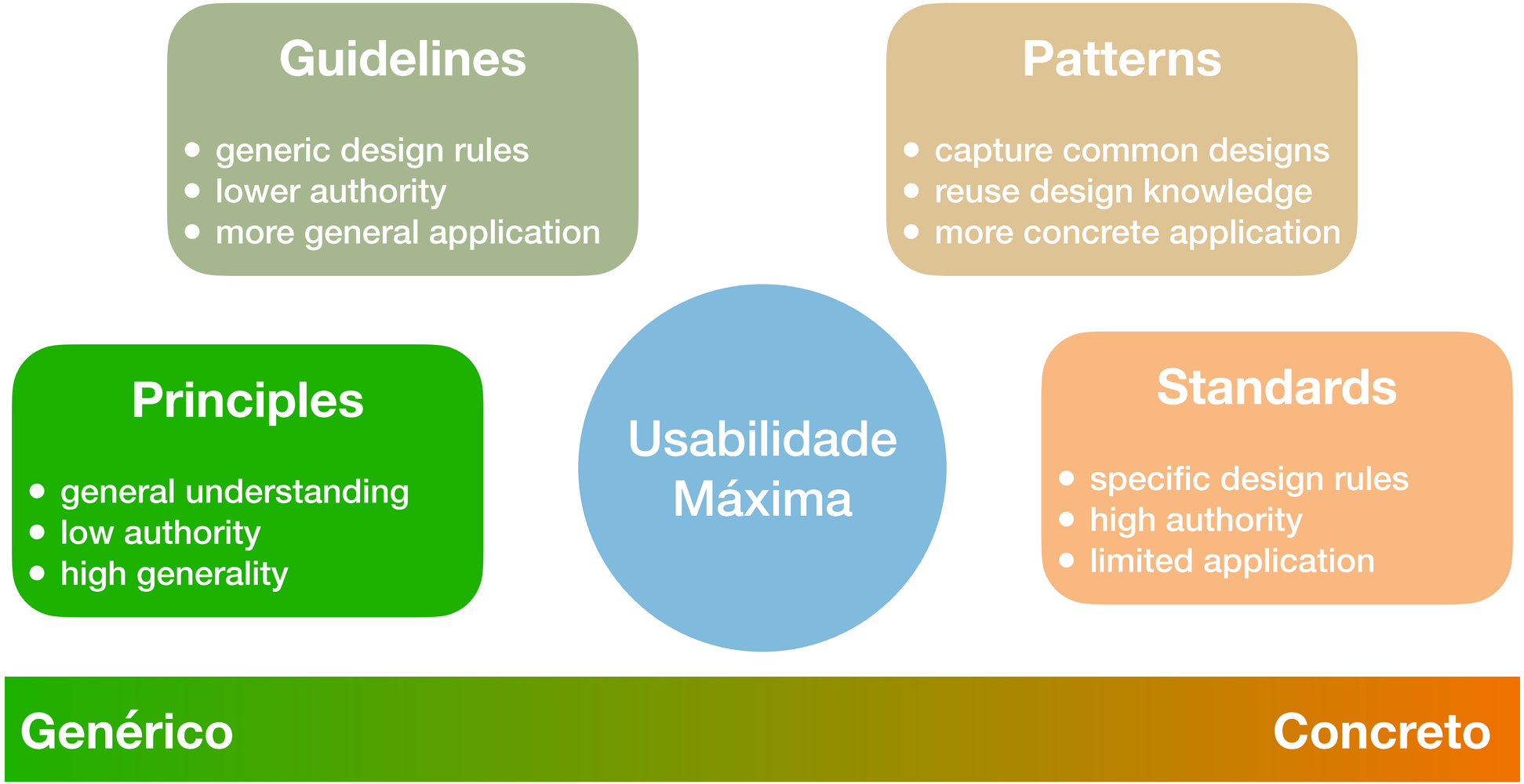
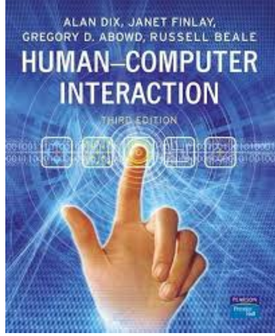
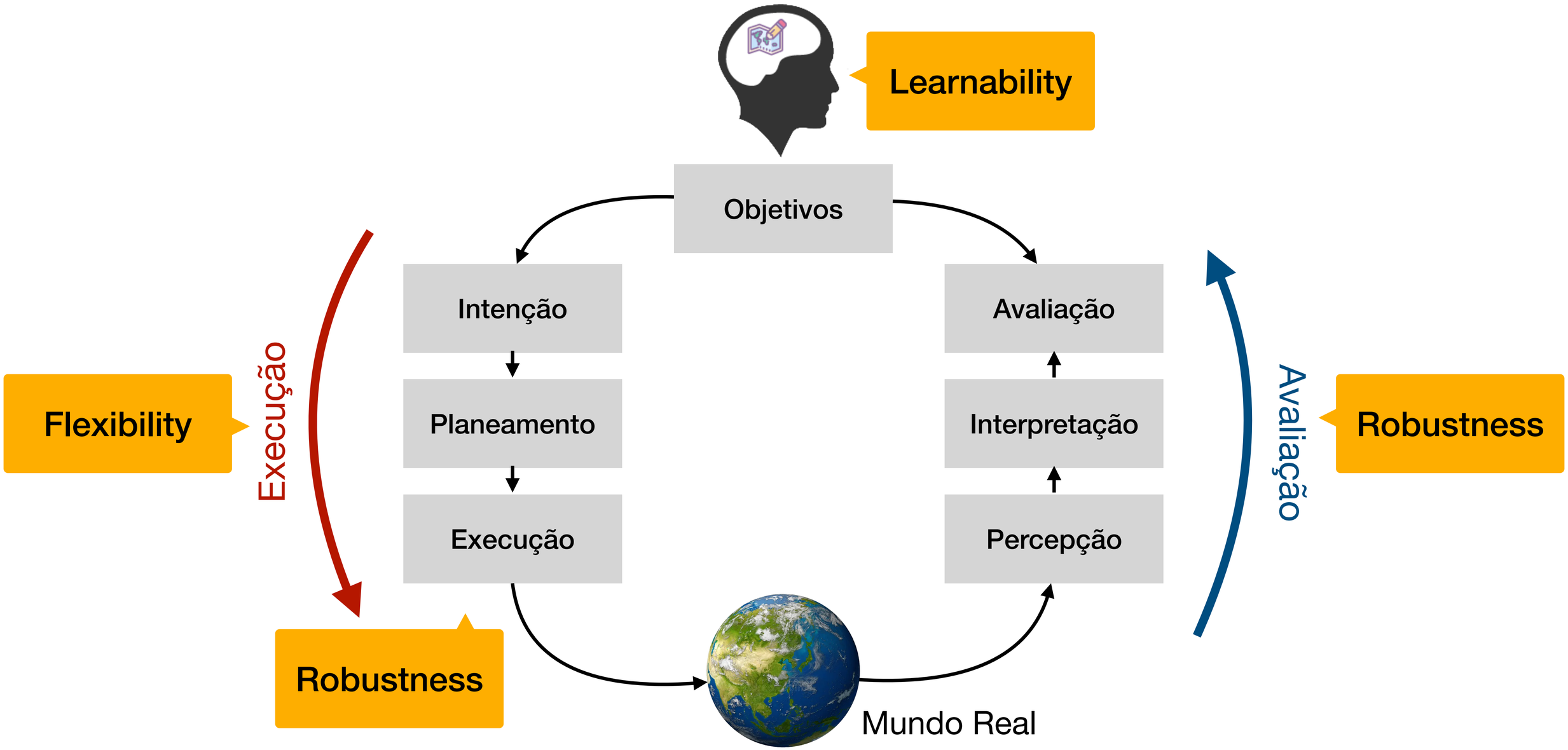




Princípios de usabilidade

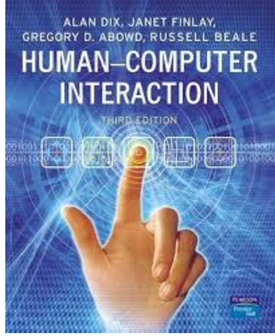
- **Learnability** (a interface é fácil de utilizar?)
  - “the ease with which new users can begin effective interaction and achieve maximal performance”
- **Flexibility** (a interface é adaptável ao utilizador?)
  - “the multiplicity of ways the user and system exchange information”
- **Robustness** (o uso induz poucos erros?)
  - “the level of support provided to the user in determining successful achievement and assessment of goal-directed behaviour”

Princípios de usabilidade



Princípios de usabilidade

Learnability	Flexibility	Robustness
Predictability	Dialogue initiative	Observability
Synthesizability	Task migratability	Recoverability
Familiarity	Substitutivity	Responsiveness
Generalizability	Customizability	Task conformance
Consistency	Multithreading	



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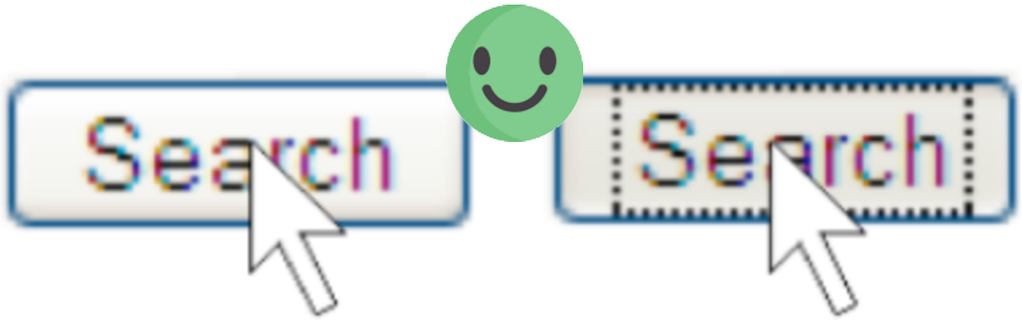
Learnability #1: Predictability

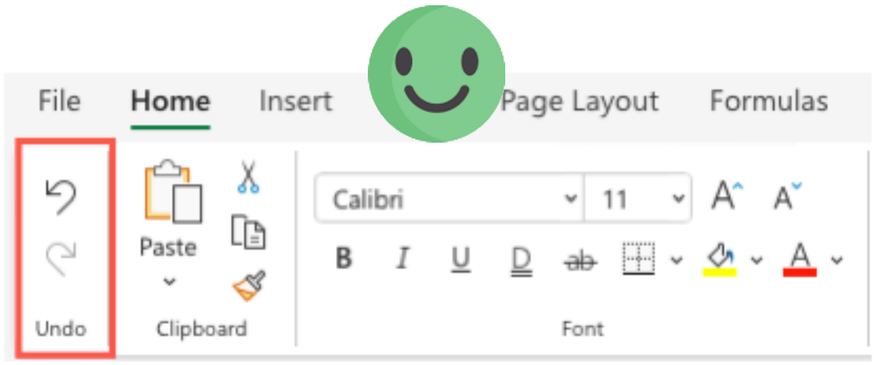
- Capacidade de determinar o efeito de ações no sistema
  - E.g., não permitir ações que iriam falhar

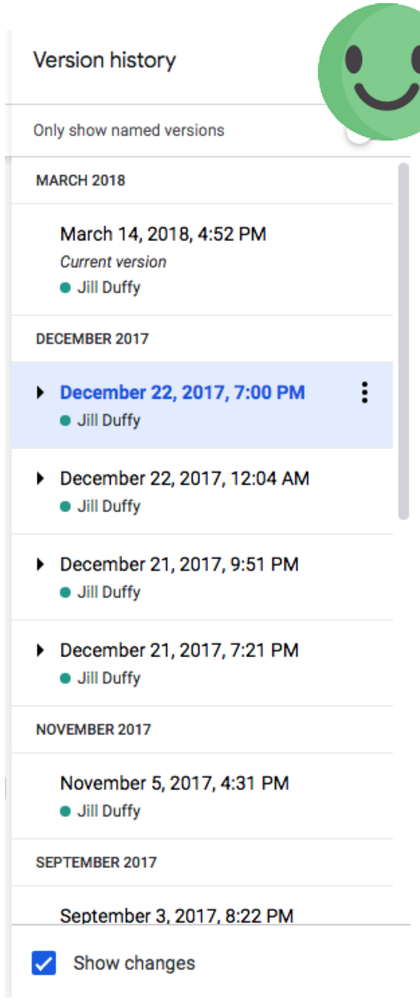
  - E.g, efeito de ações imediatamente visível

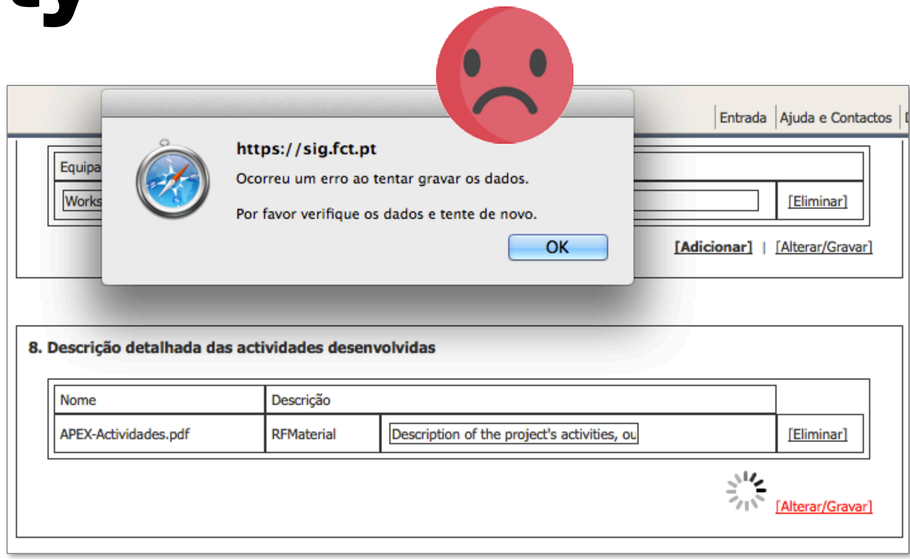


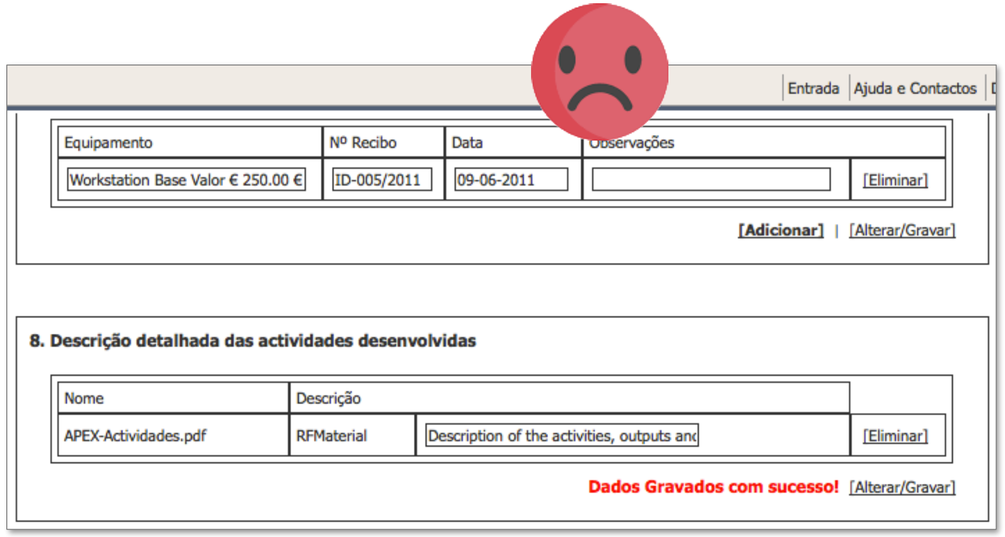
Learnability #2: Synthesizability

- Capacidade de determinar o efeito de ações passadas no estado atual
  - E.g., fornecer feedback consistente com o modelo mental
  - E.g., undo e revision history



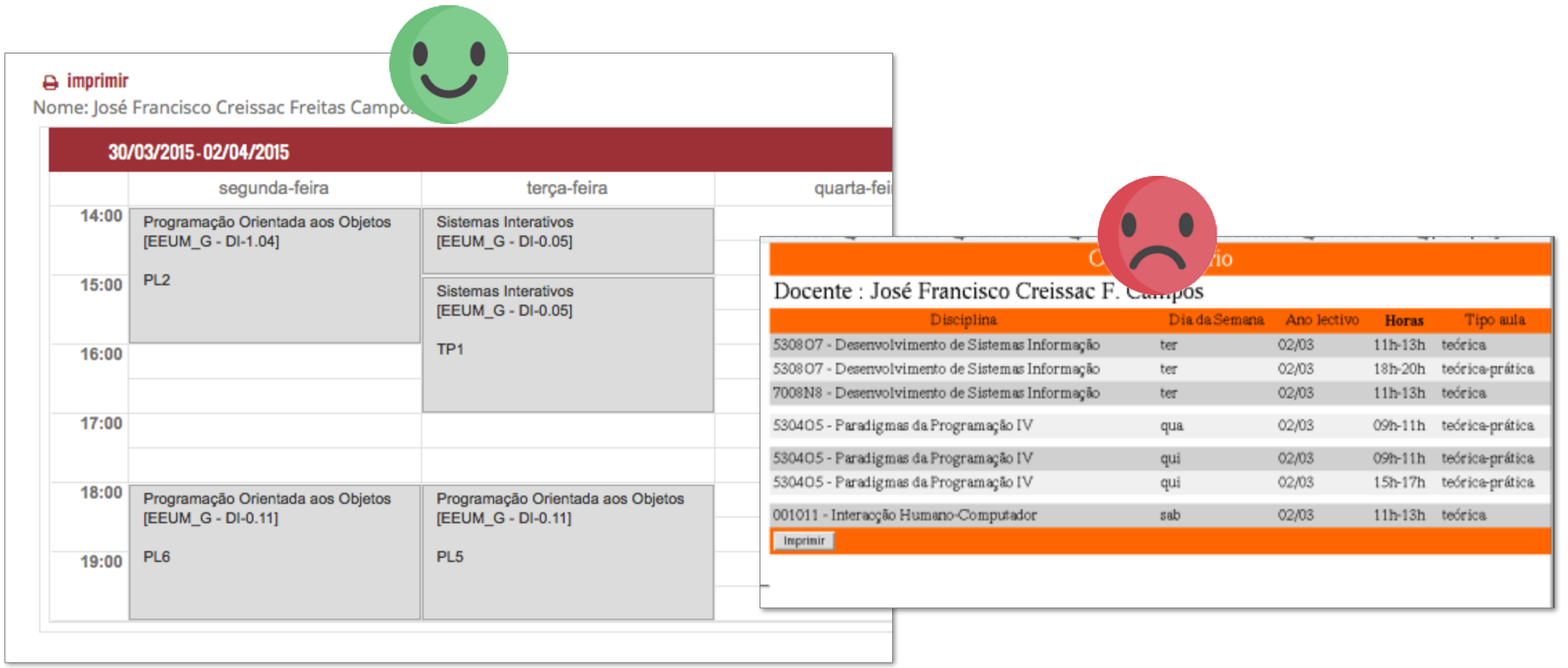


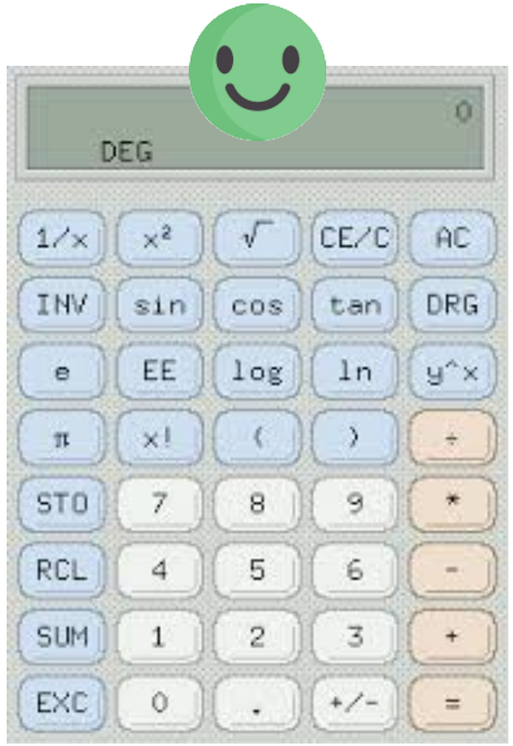




Learnability #3: Familiarity

- Utilidade de conhecimento anterior sobre o mundo ou outros sistemas
  - E.g., calendários
  - E.g., calculadoras





Metáforas

- Usar conceitos familiares para ajudar os utilizadores a compreender o funcionamento do sistema

+ Contribui diretamente para o modelo mental do utilizador

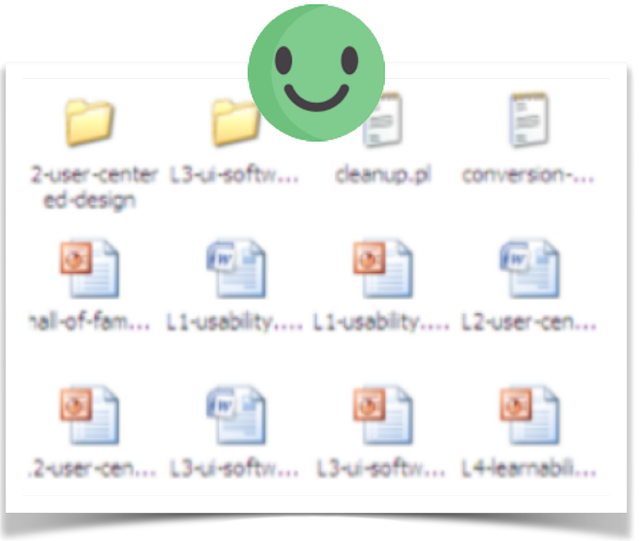
+ Fácil de memorizar

- Difícil de encontrar para designers

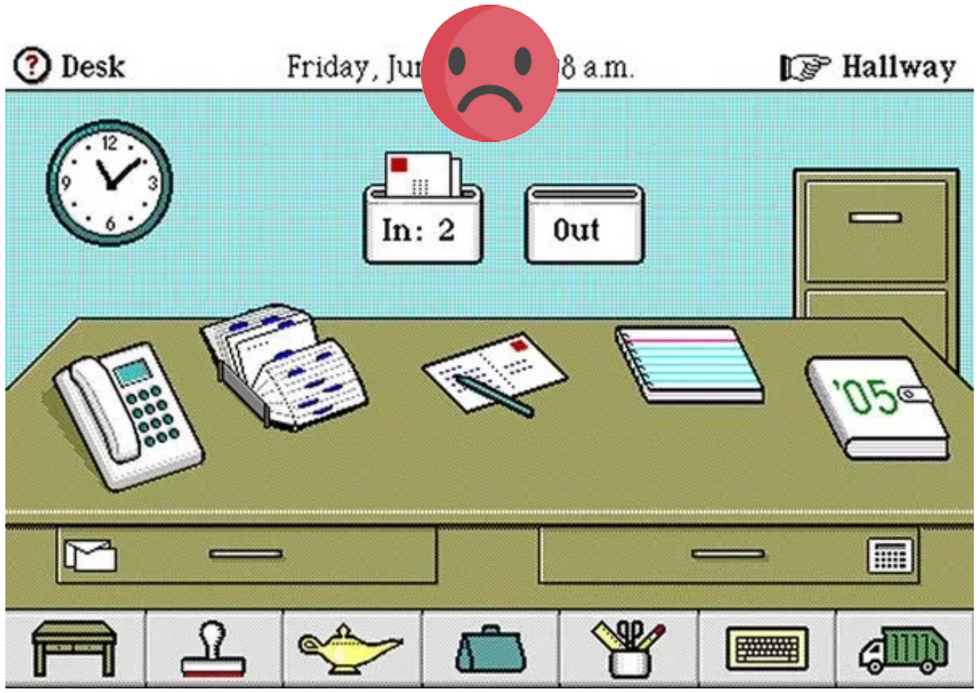
- Pode ser enganador, descontextualizado ou limitador

- Acaba sempre por se quebrar

Trash



Desktop

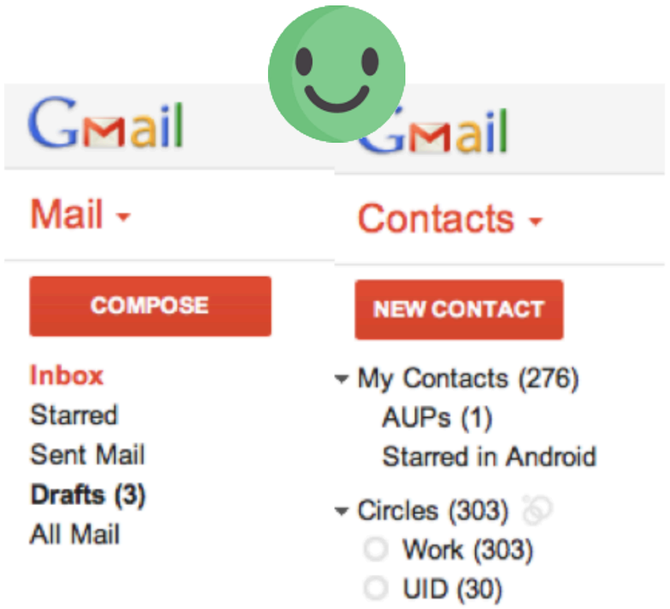


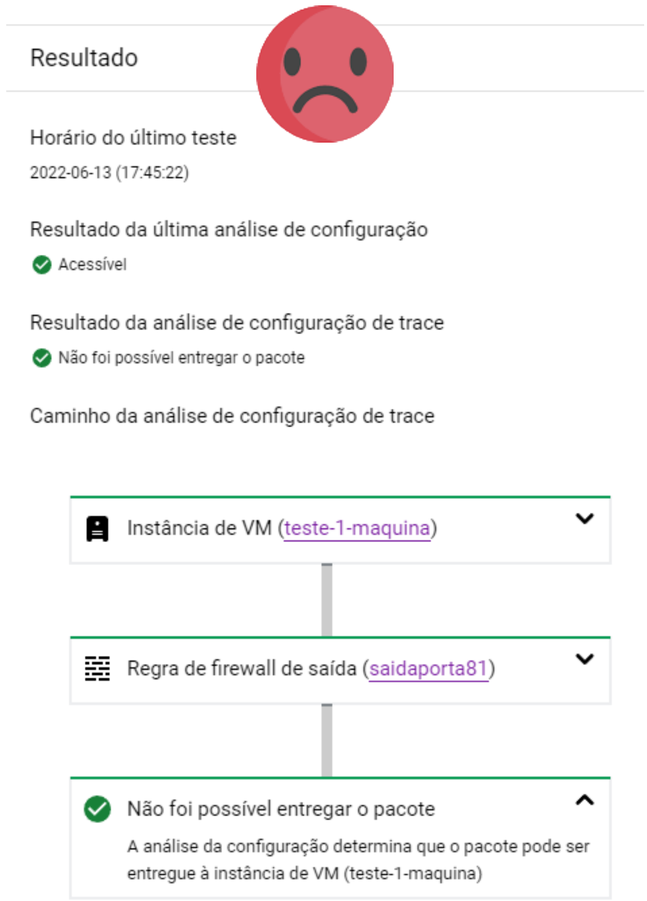
Learnability #4: Generalizability

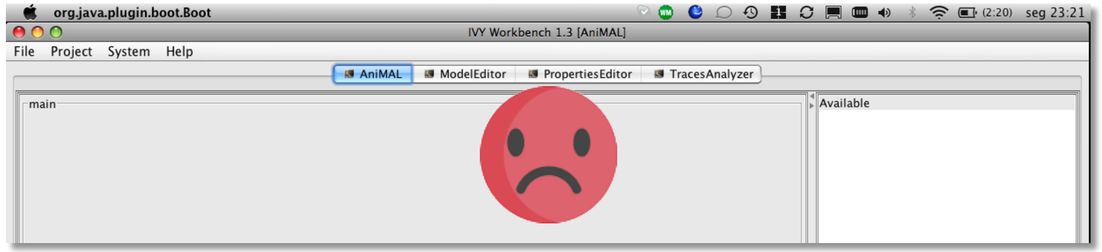
- Capacidade de estender a interação a novas situações
  - E.g., shared clipboard (entre SOs)

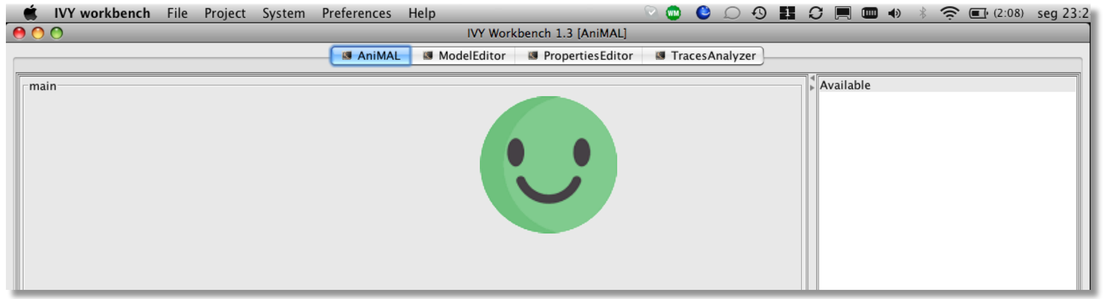
Learnability #5: Consistency

- Comportamentos similares/diferentes em situações ou objetivos similares/ diferentes
  - E.g., interna
  - E.g., externa

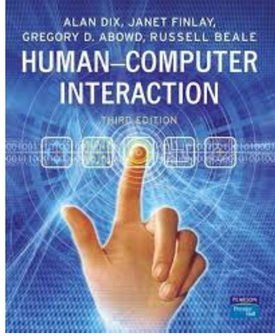








Princípios de usabilidade



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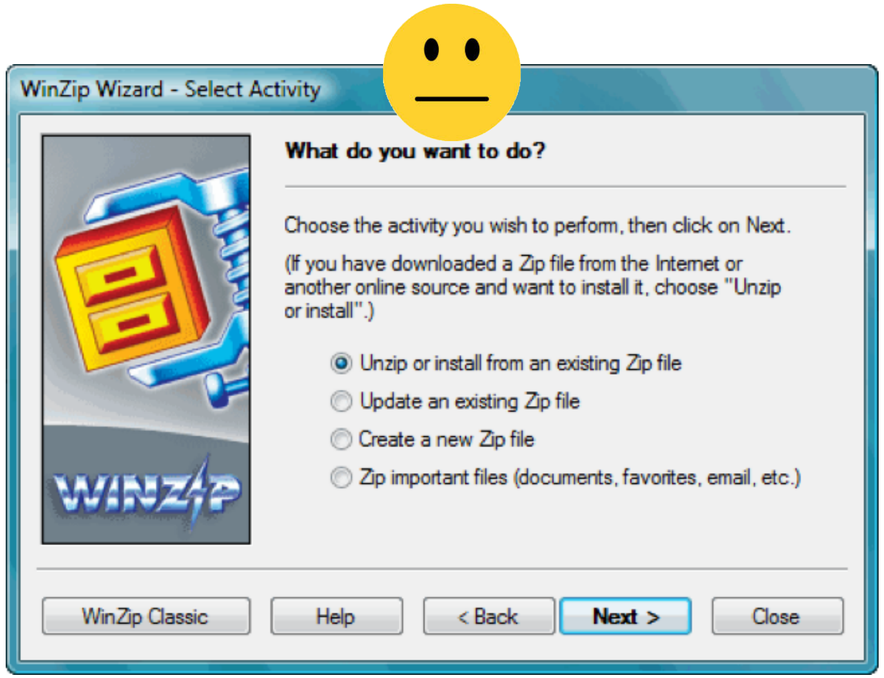
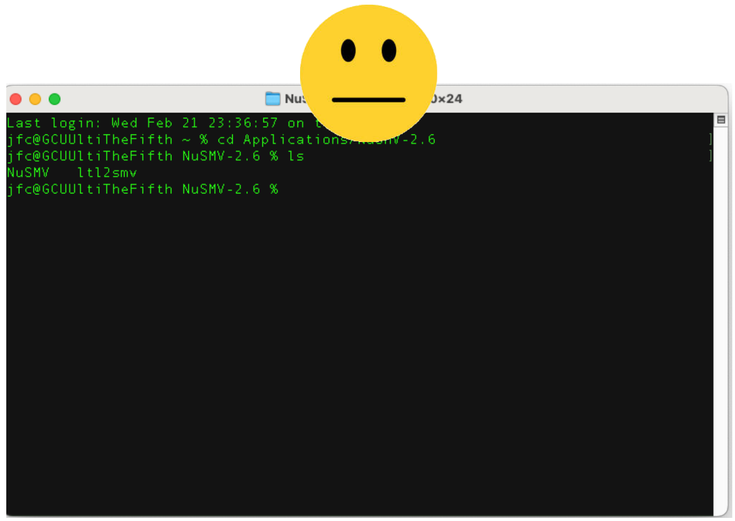
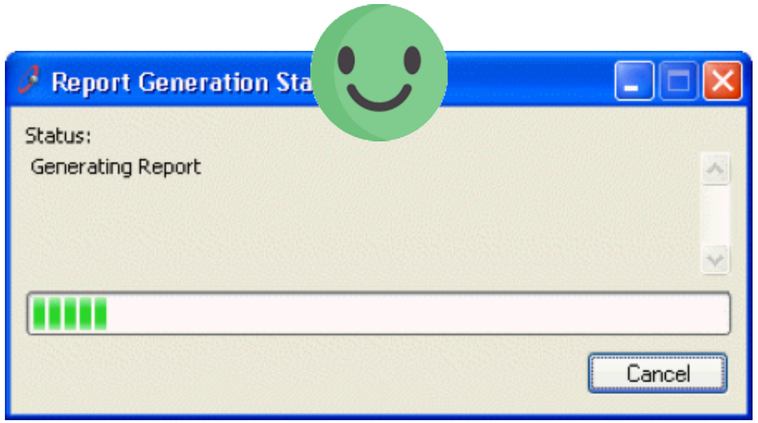
Flexibility #1: Dialogue initiative

- Maximizar o (sentimento de) controle do utilizador
  - E.g., do sistema (menos flexibilidade)
  - E.g., do utilizador (mais flexibilidade)

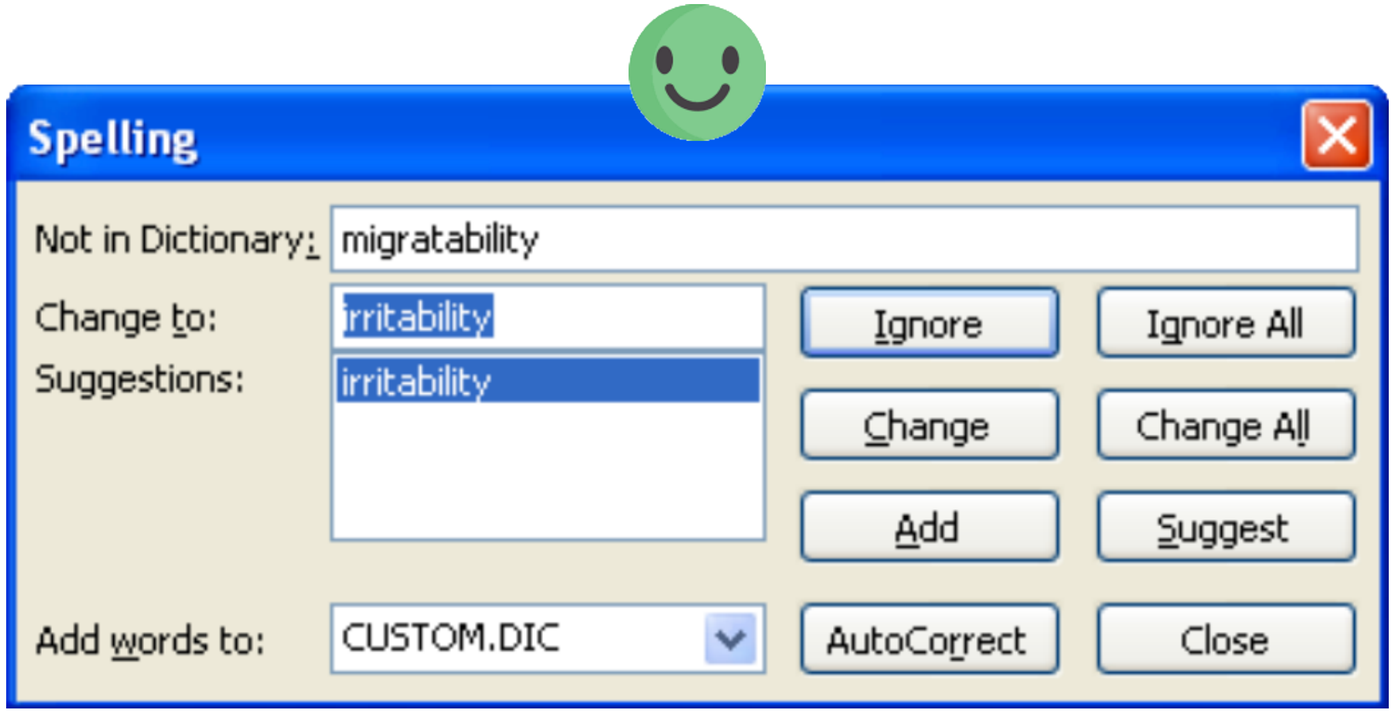






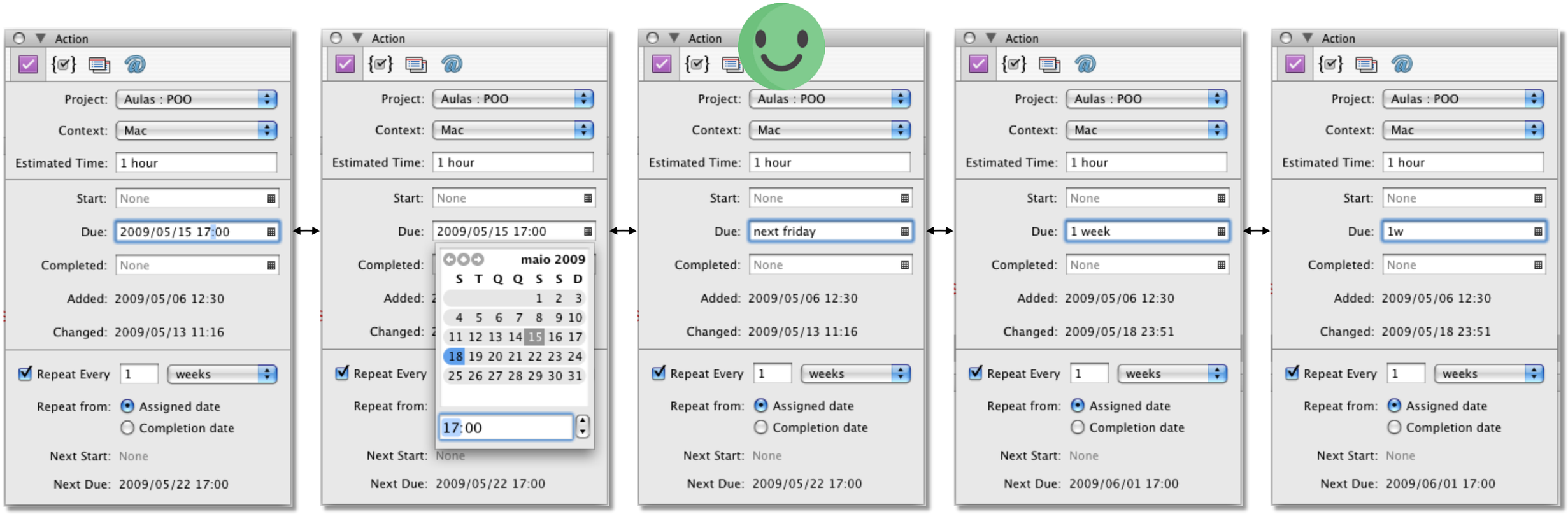
Flexibility #2: Task migratability

- Alternar responsabilidade de controle entre utilizador e sistema
  - E.g., spell checking dictionary
  - E.g., auto pilot



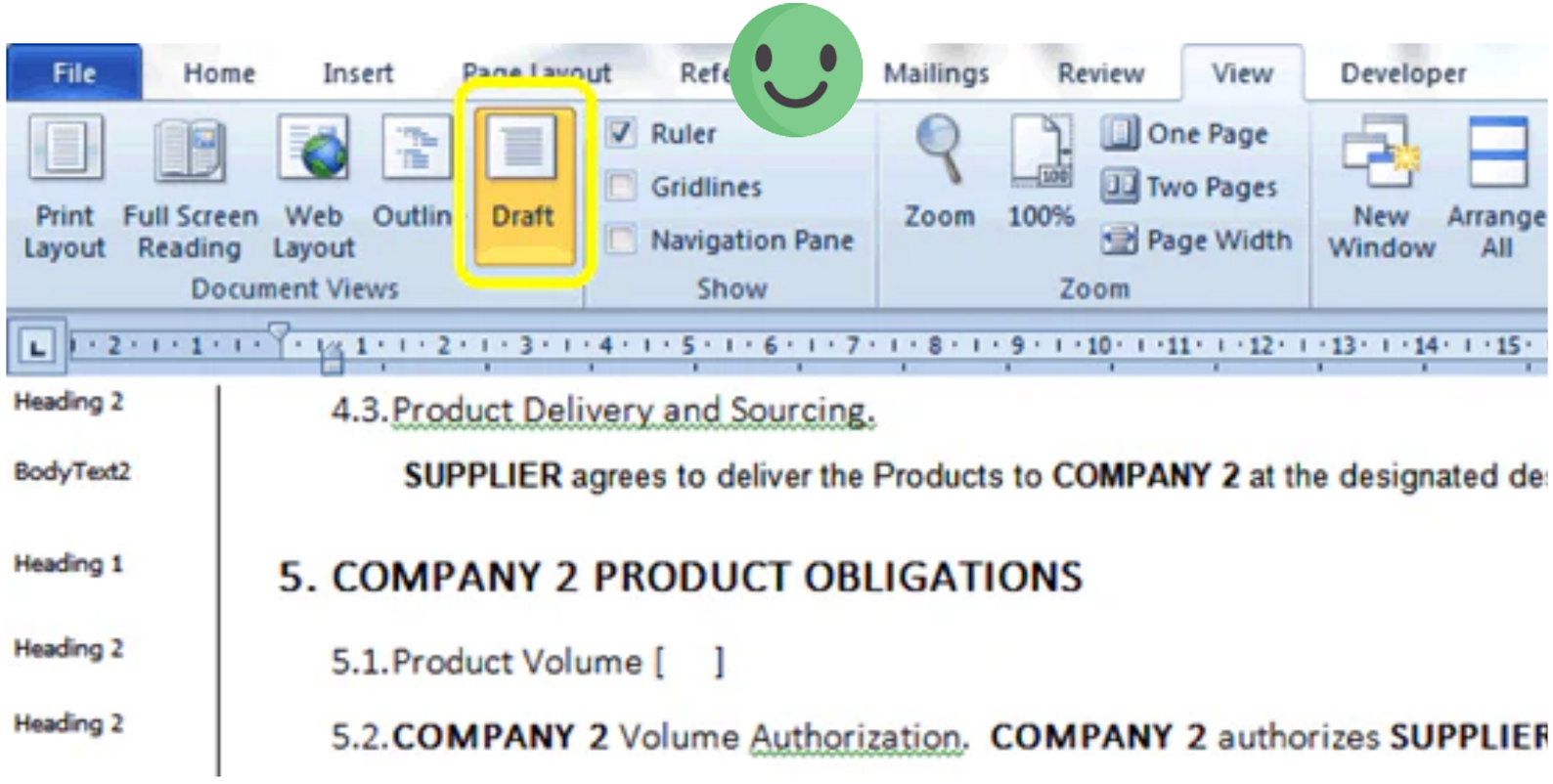
Flexibility #3: Substitutivity

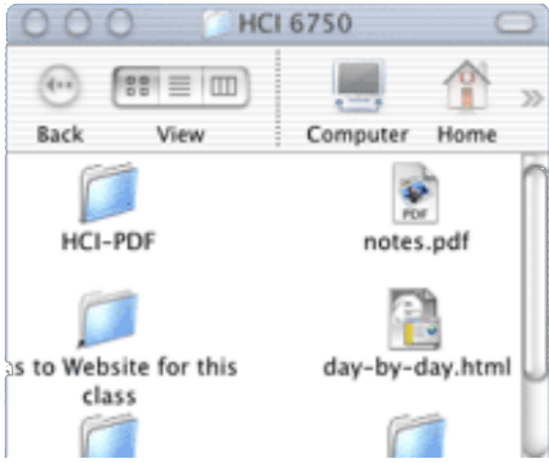
- Suportar valores equivalentes como permutáveis
  - Tipicamente inputs

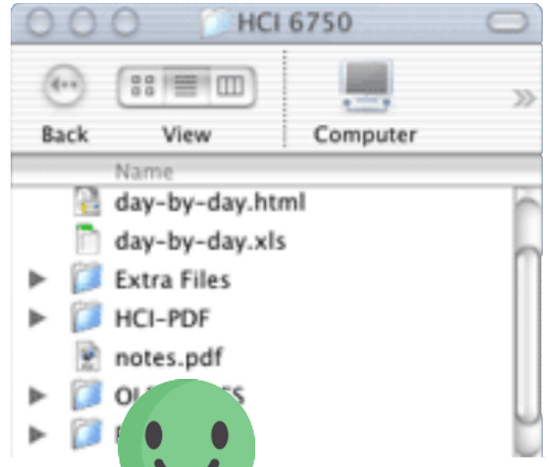


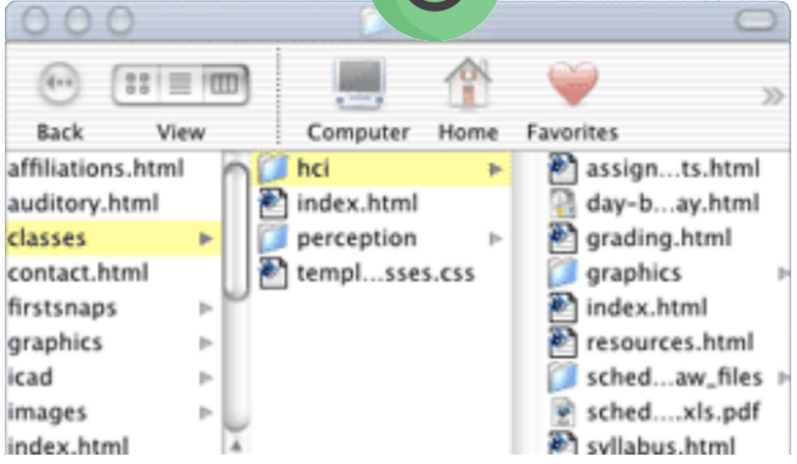
Flexibility #3: Substitutivity

- Suportar valores equivalentes como permutáveis
  - “Representation multiplicity” (ao nível do output)



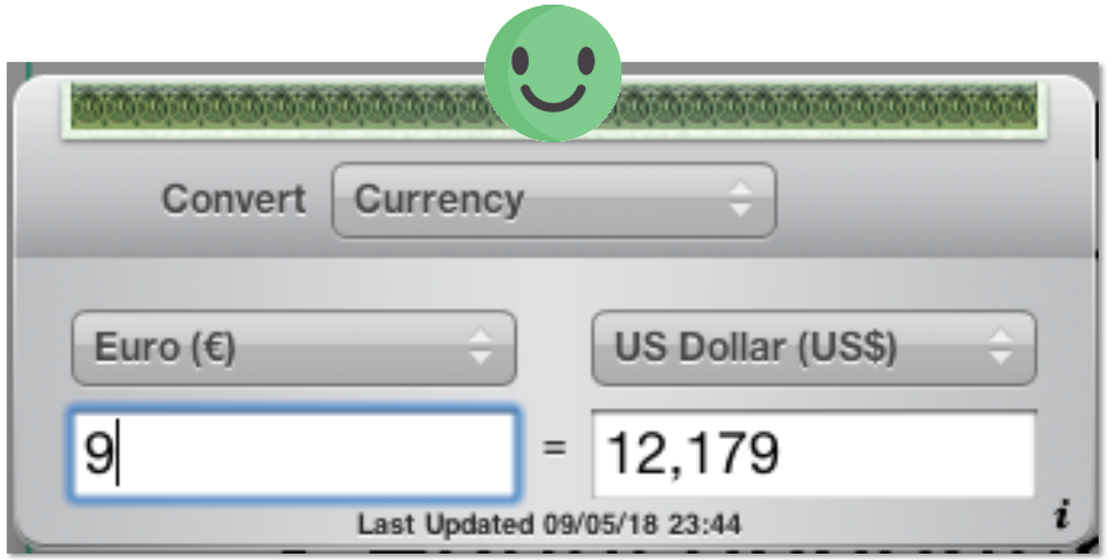


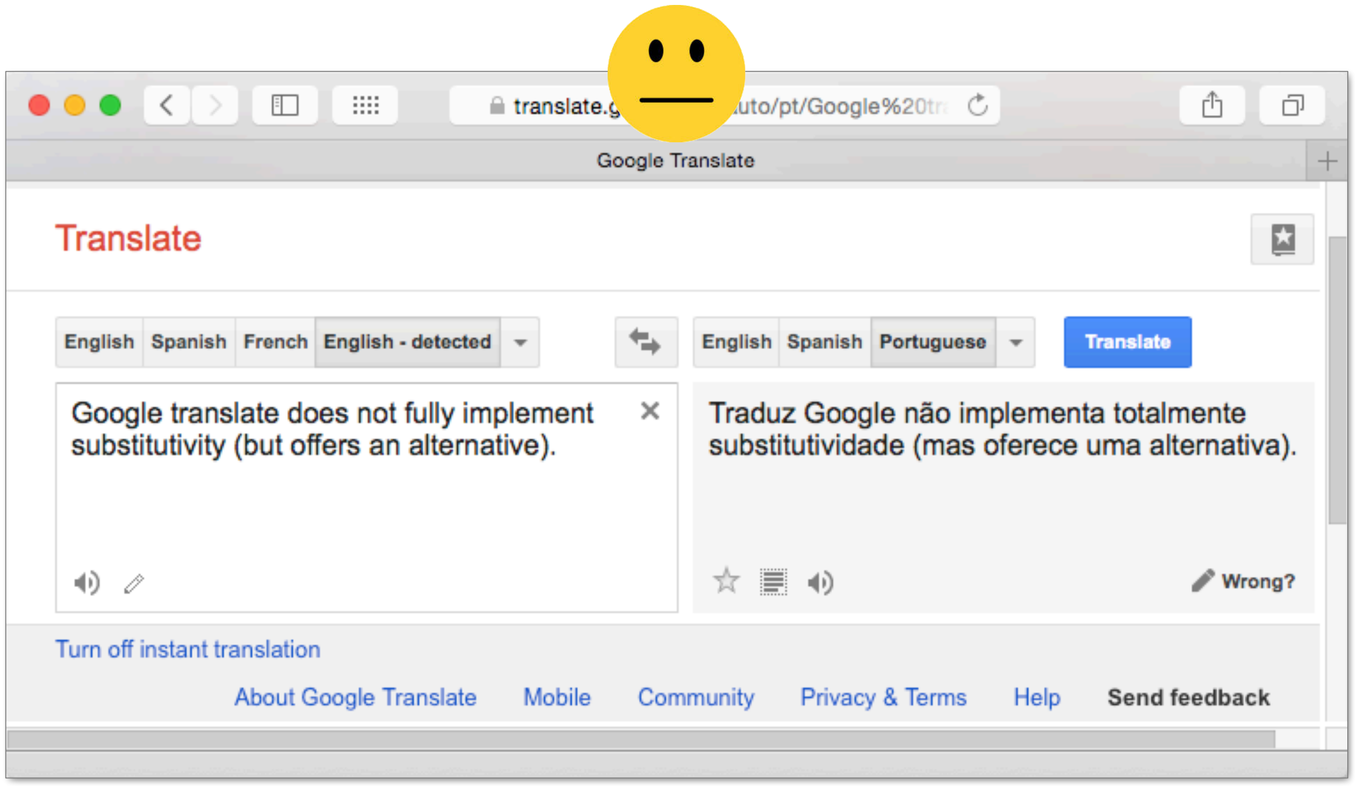




Flexibility #3: Substitutivity

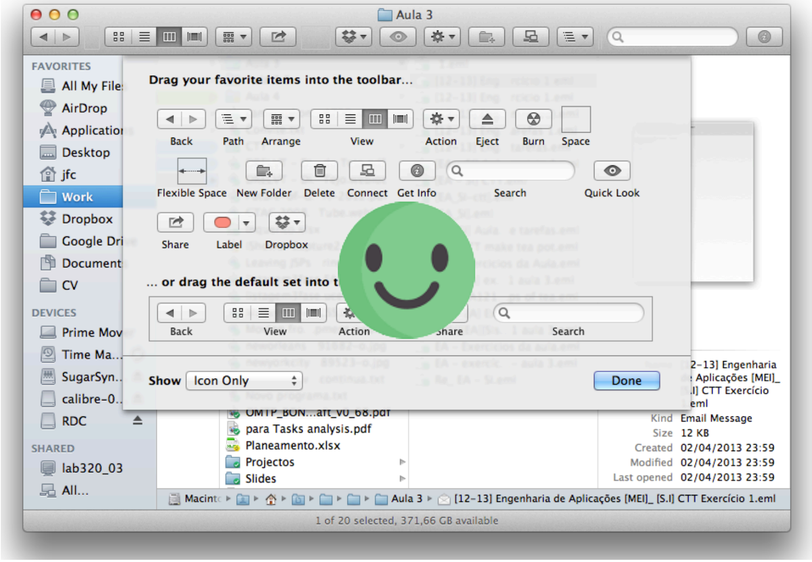
- Suportar valores equivalentes como permutáveis
  - “Equal opportunity” (sem distinção entre input e output)

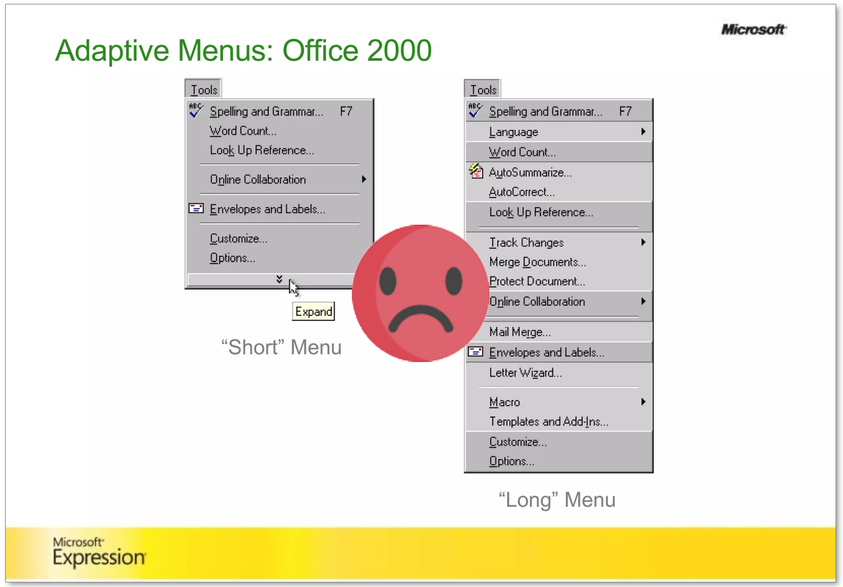




Flexibility #4: Customizability

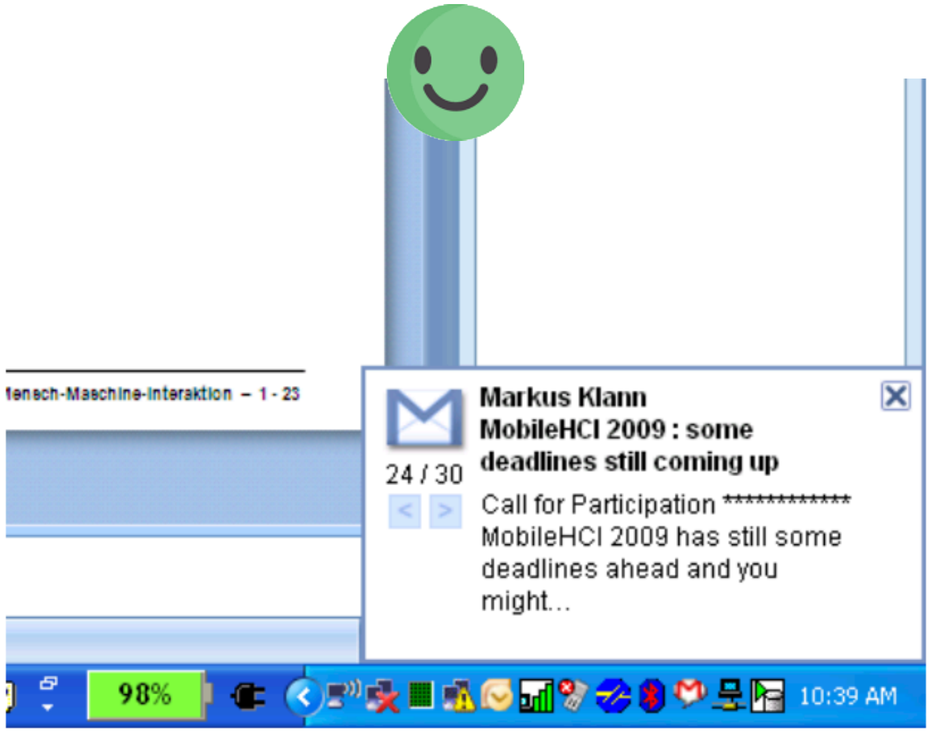
- Facilidade de customização do interface
  - “Adaptability” (pelo utilizador)
  - “Adaptivity” (automaticamente pelo sistema)

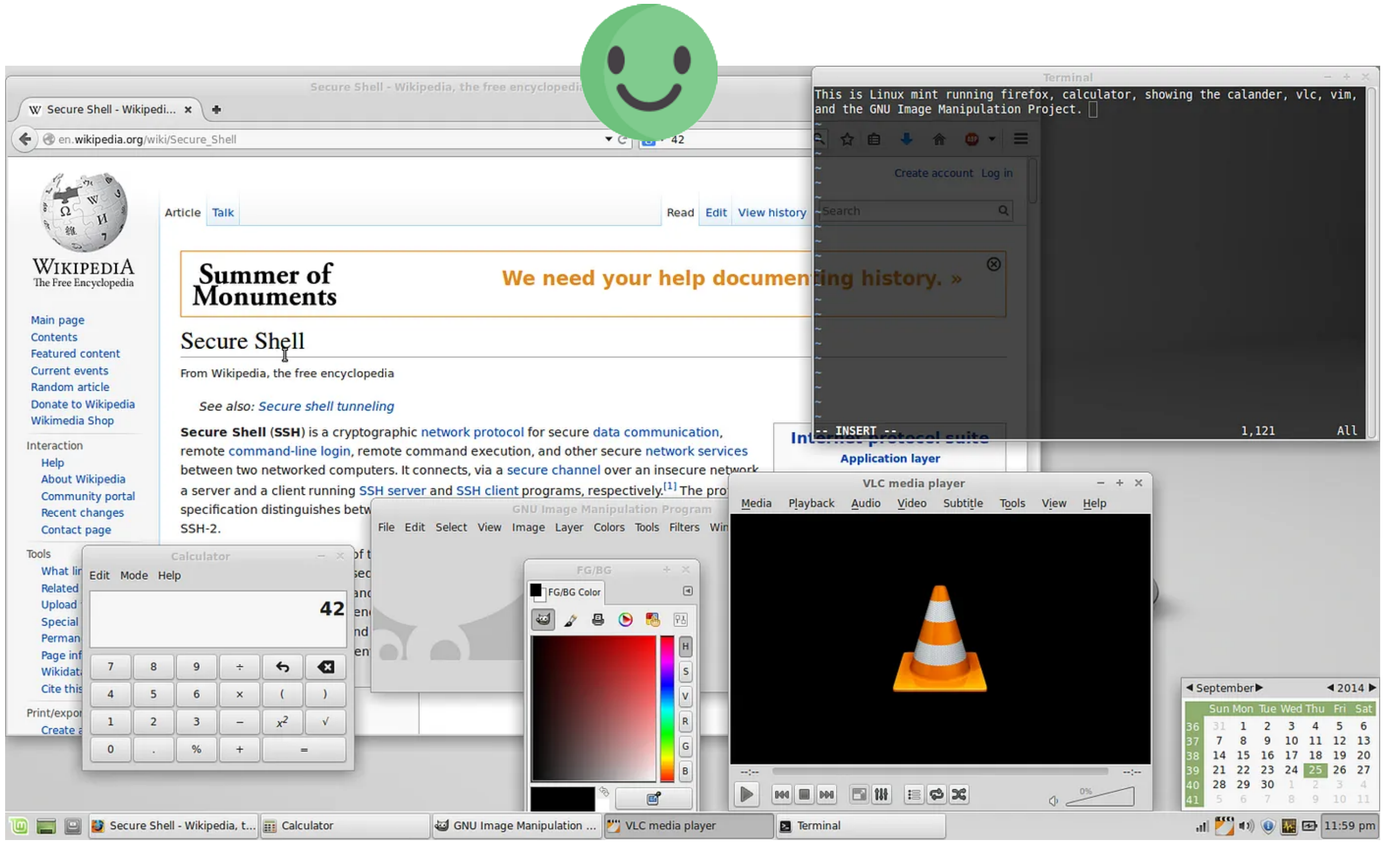




Flexibility #5: Multithreading

- Suportar interação com o utilizador para várias tarefas em simultâneo
  - E.g., WIMP + window systems





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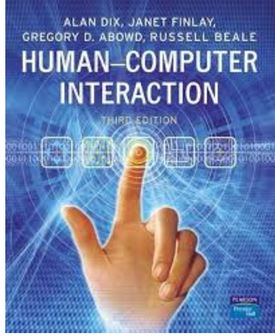

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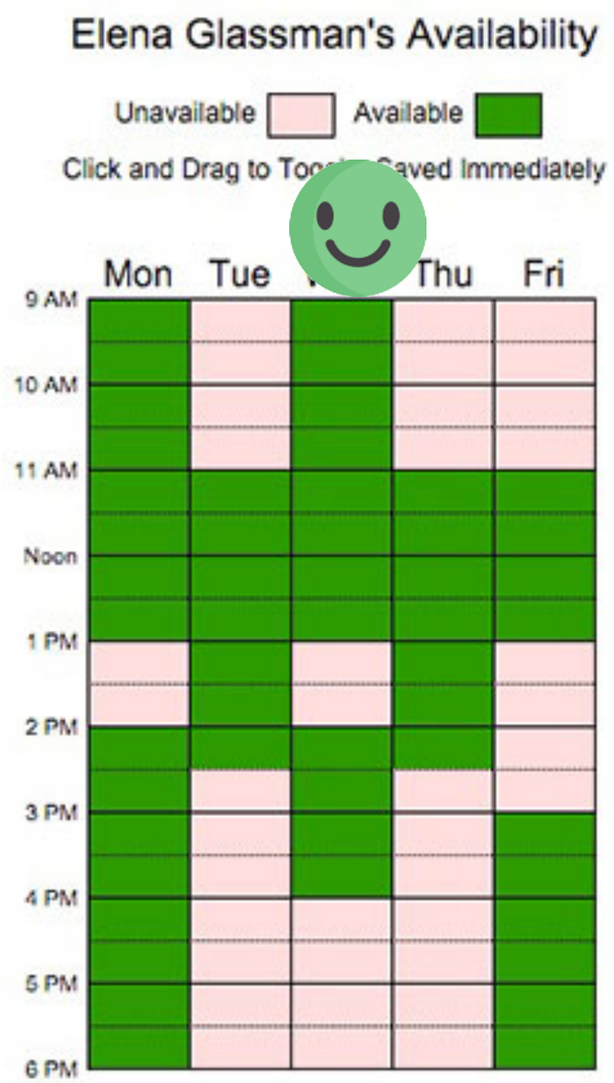
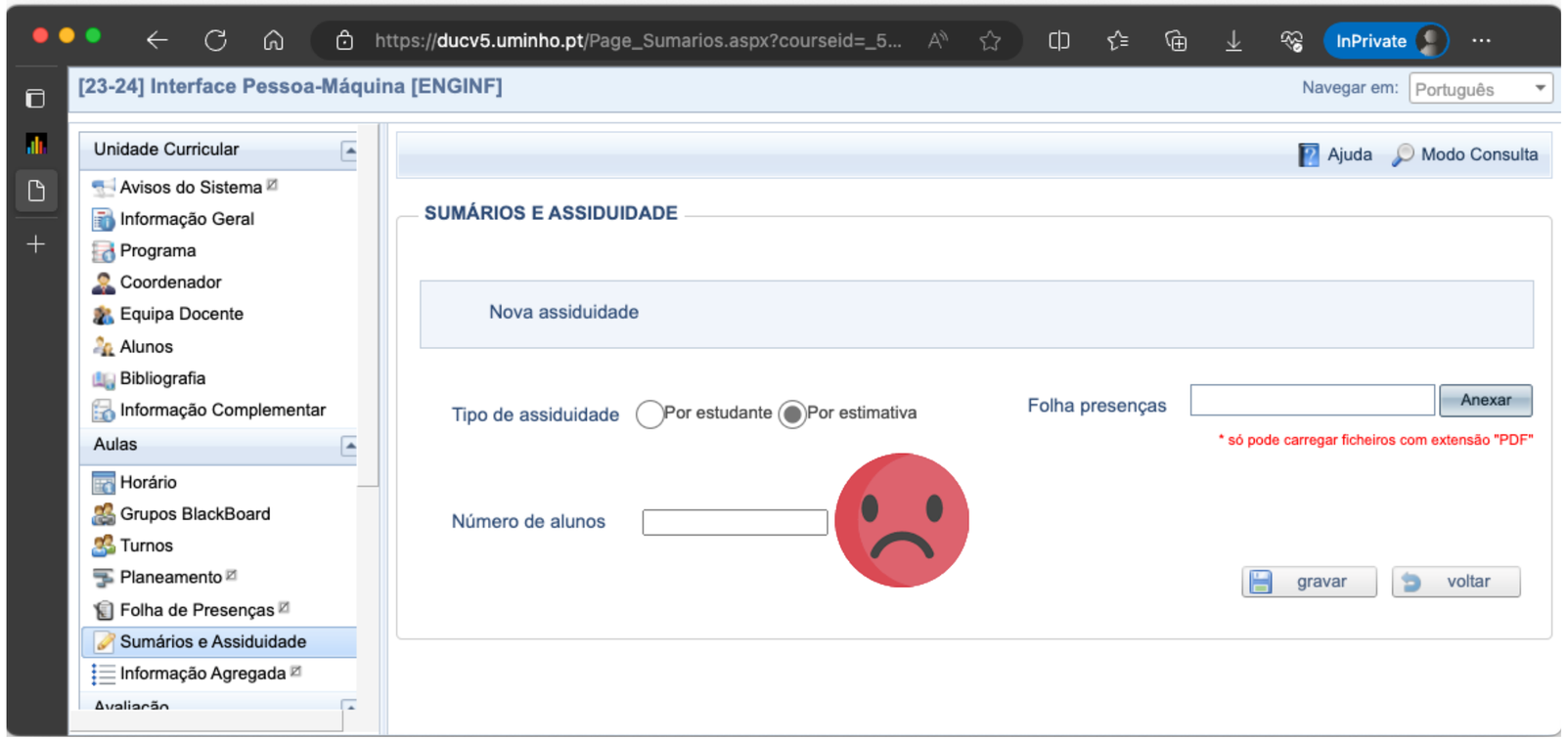
Robustness #1: Observability

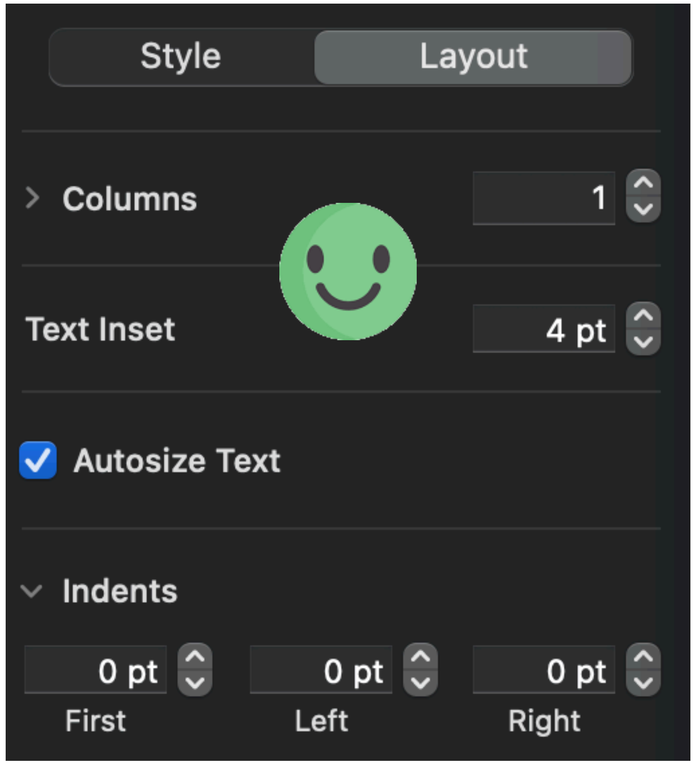
- Capacidade de compreender o estado interno do sistema
  - “Browsability” (explorar o estado atual)



Robustness #1: Observability

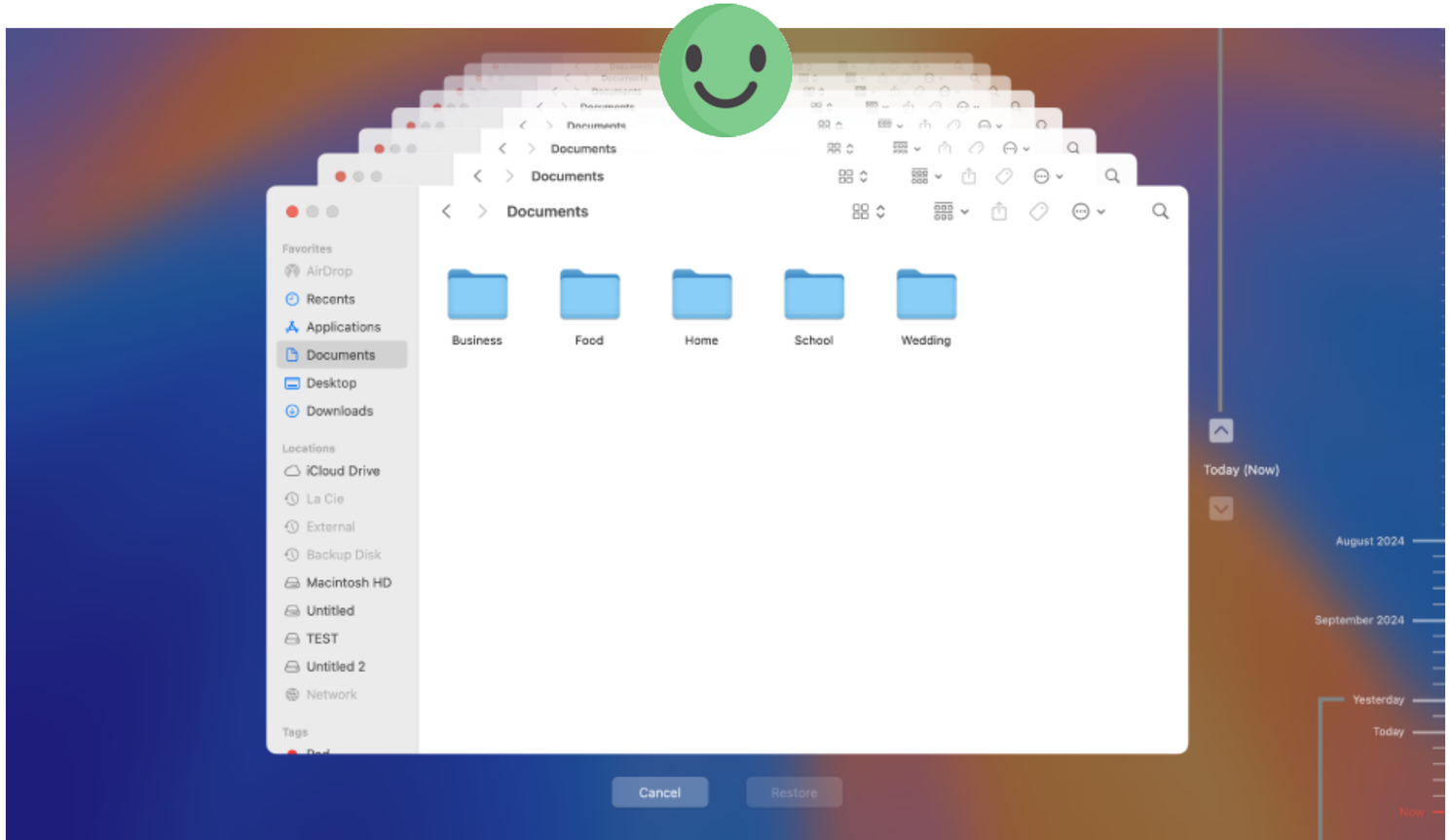
- Capacidade de compreender o estado interno do sistema
  - “Defaults” (e.g. como forma de recordação passiva)





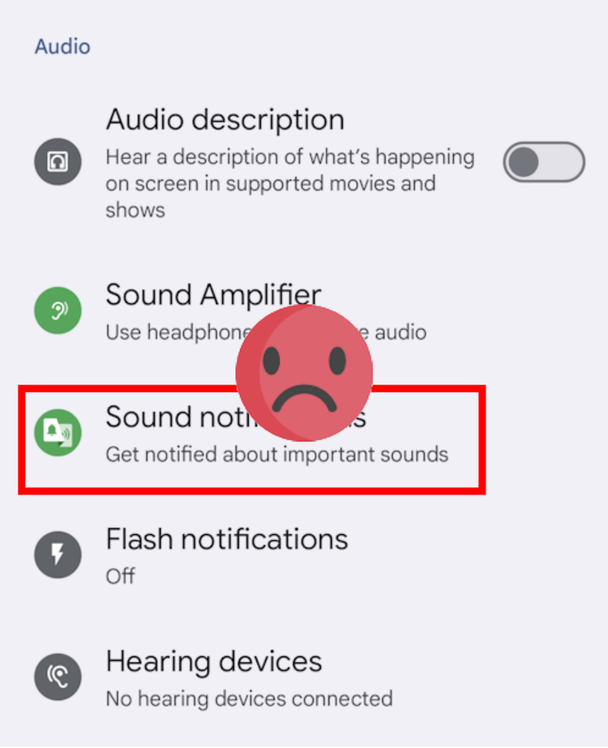
Robustness #1: Observability

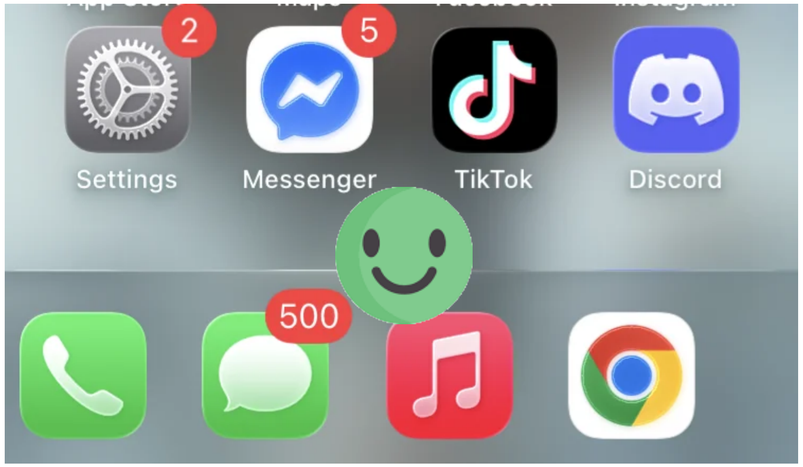
- Capacidade de compreender o estado interno do sistema
  - “Reachability” (navegar estados observáveis)



Robustness #1: Observability

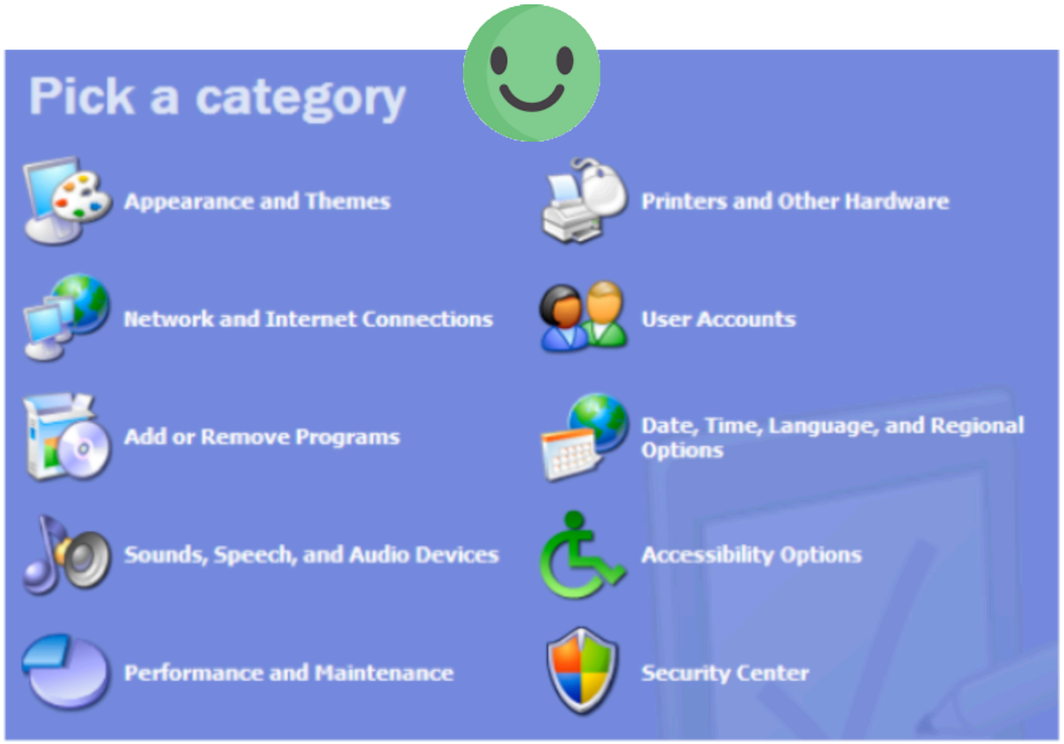
- Capacidade de compreender o estado interno do sistema
  - “Persistence” (e.g., longevidade de notificações)

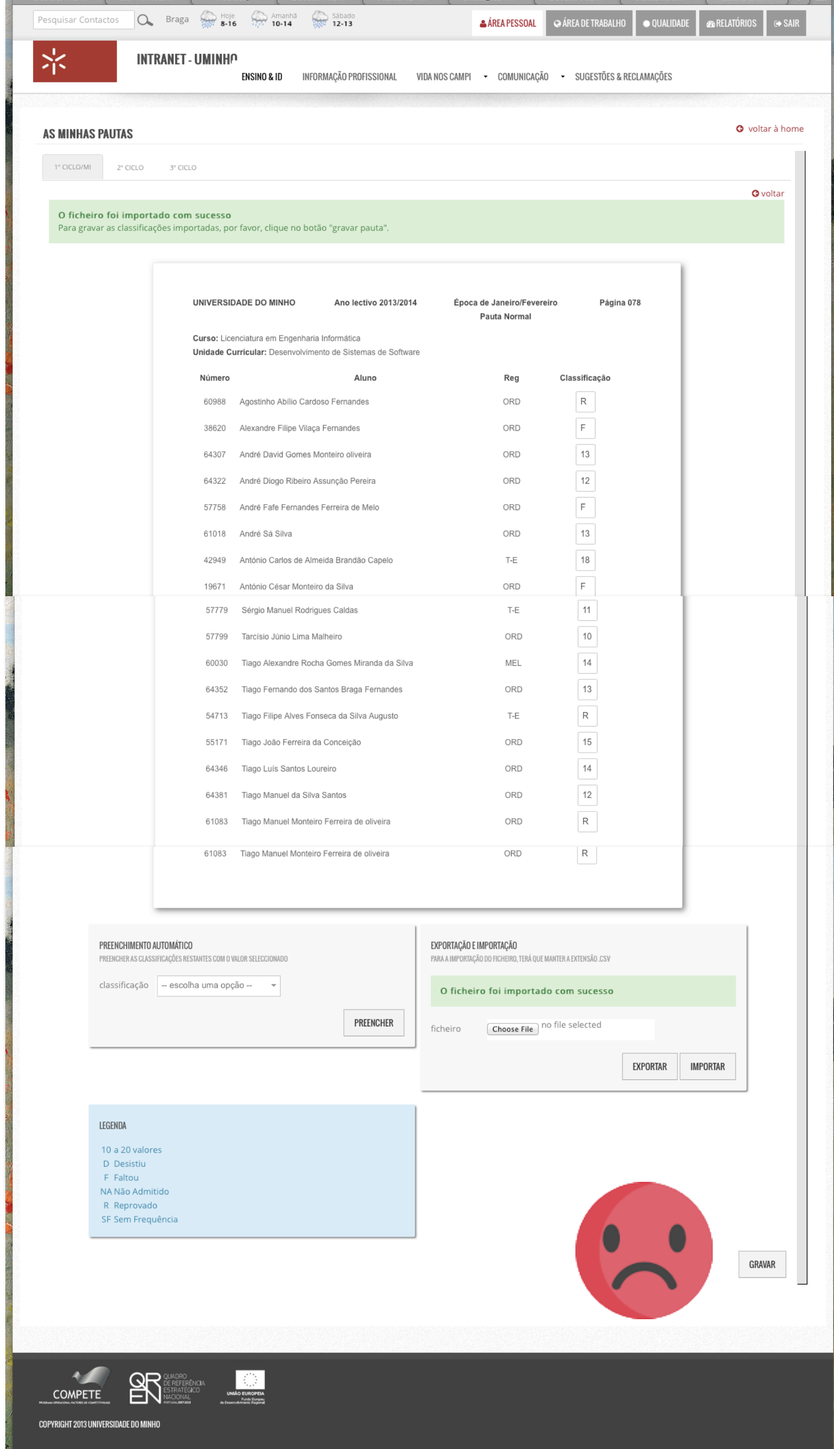




Robustness #1: Observability

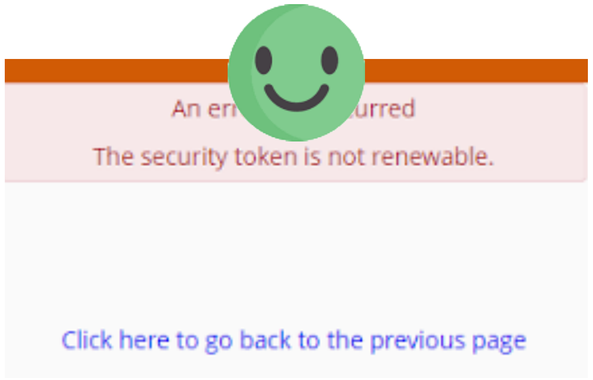
- Capacidade de compreender o estado interno do sistema
  - “Operation visibility” (c.f. perceived affordances)

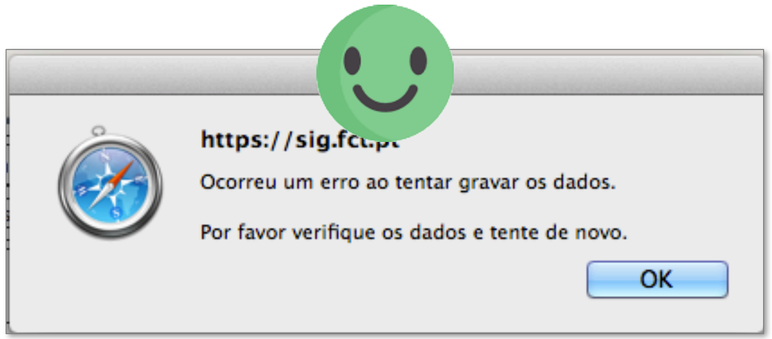


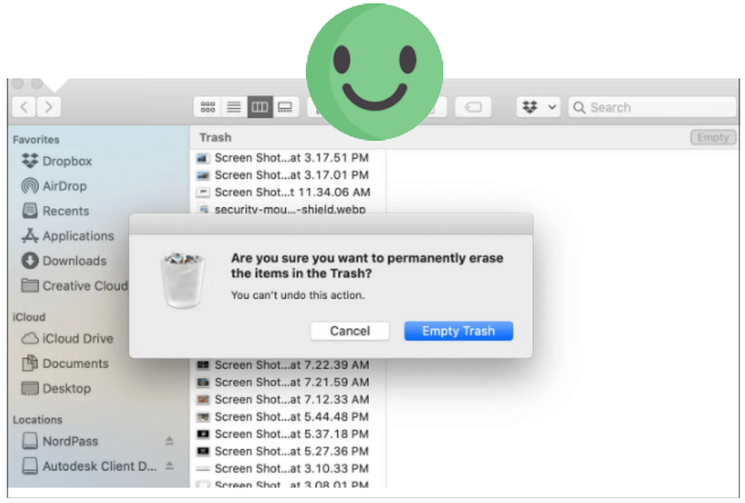


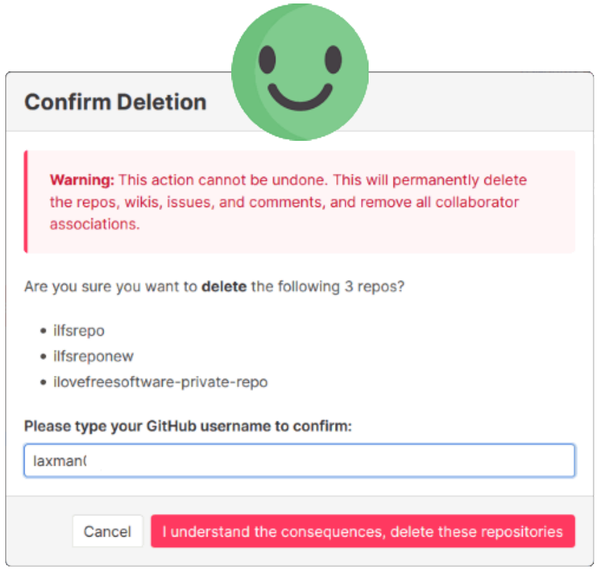
Robustness #2: Recoverability

- Habilidade dos utilizadores executarem ações corretivas
  - “Backward recovery” (voltar a estado anterior)
  - “Forward recovery” (registar erro e avançar)
- “Commensurate effort”
  - dificuldade de executar ação deve ser proporcional à dificuldade de recuperar



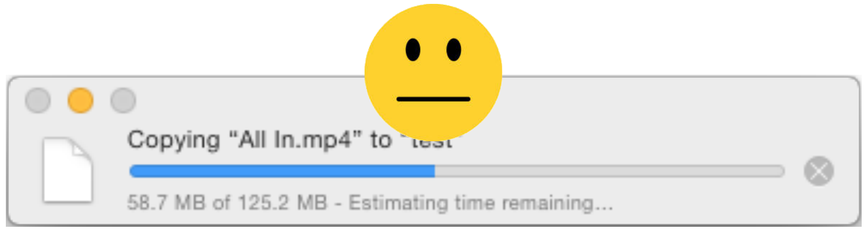


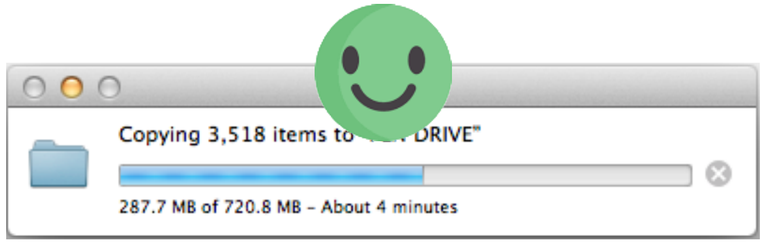




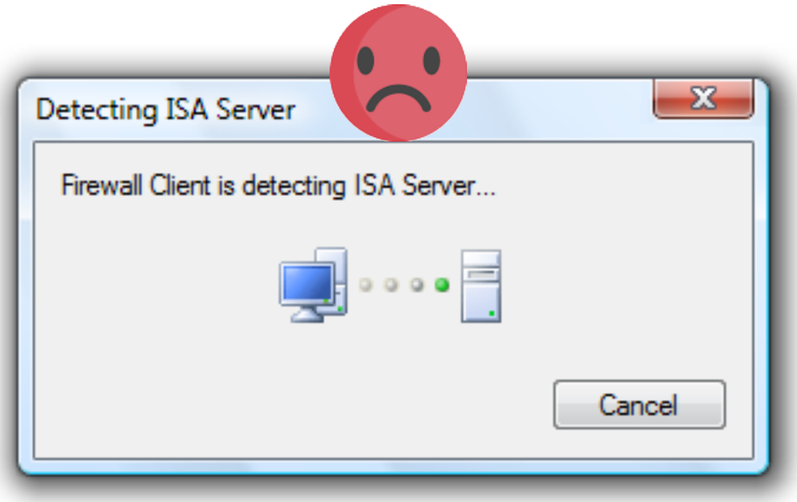
Robustness #3: Responsiveness

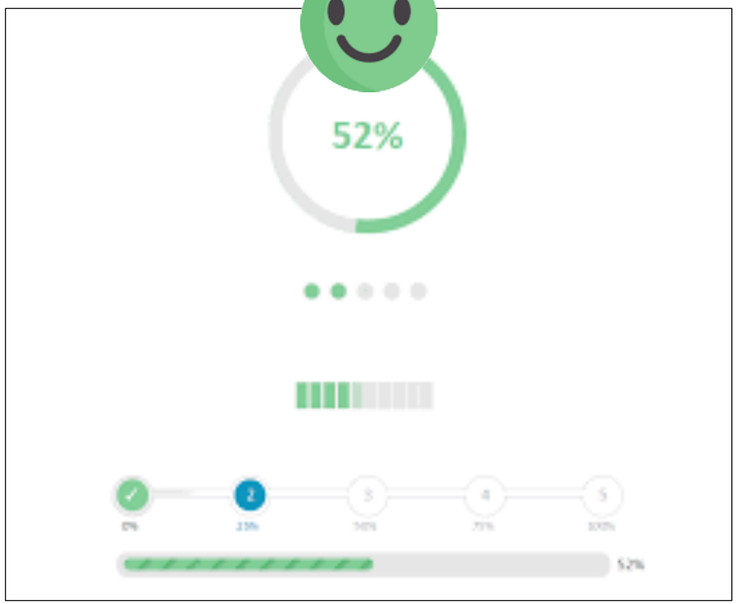
- Qual a taxa de comunicação (percepcionada) com o sistema
  - Tempos de resposta curtos ou instantâneos (percepção humana ~100ms)



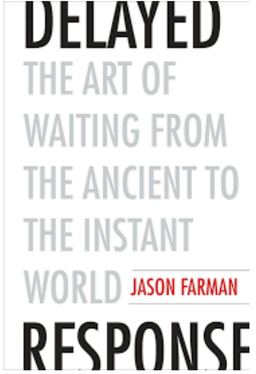


  - Quando não for possível, fornecer indicação de atividade





Robustness #3: Responsiveness



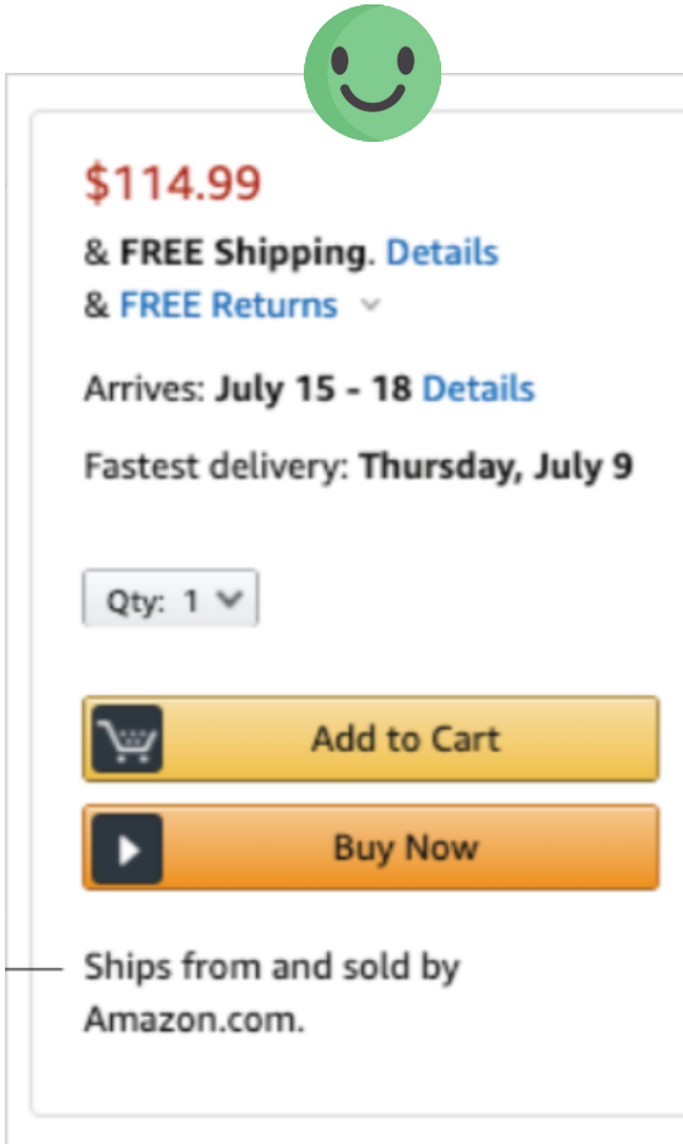
“This is true on our computers and it’s true at lines at Disneyland. You look at it and it tells you how long it’s going to take and you set an expectation. When you get to the front of the line faster than you thought you were going to (or when that particular piece of software loads faster than you thought it was going to), you leave the encounter feeling positive.”

(Jason Farman)

Robustness #4: Task conformance

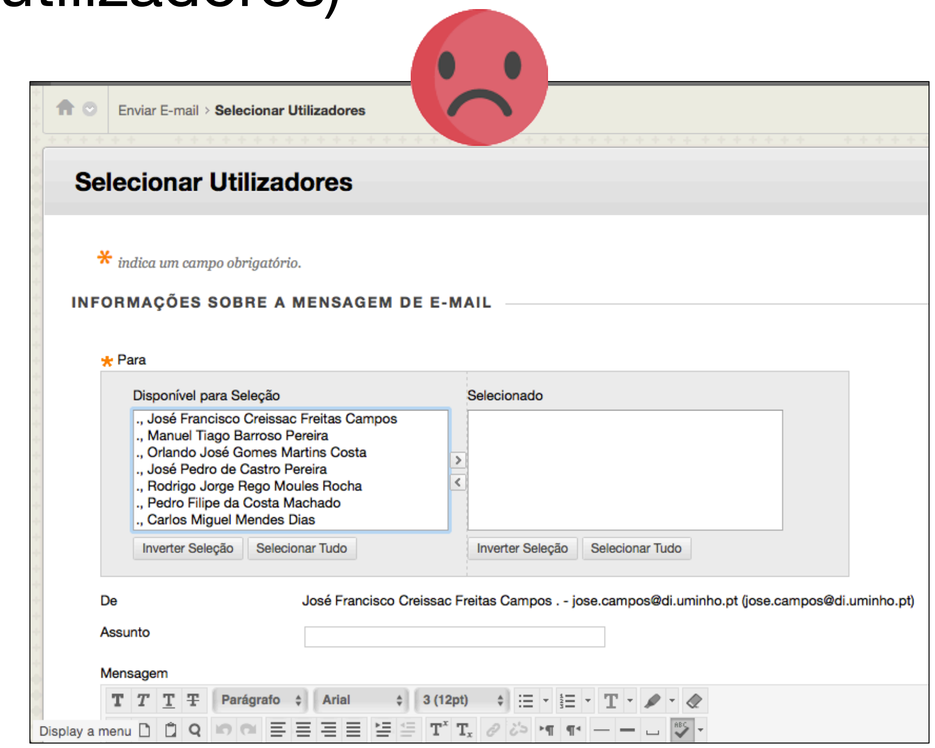
- Quanto o sistema suporta as tarefas dos utilizadores (c.f. fosso da execução)
  - “Task completeness” (nível de suporte)

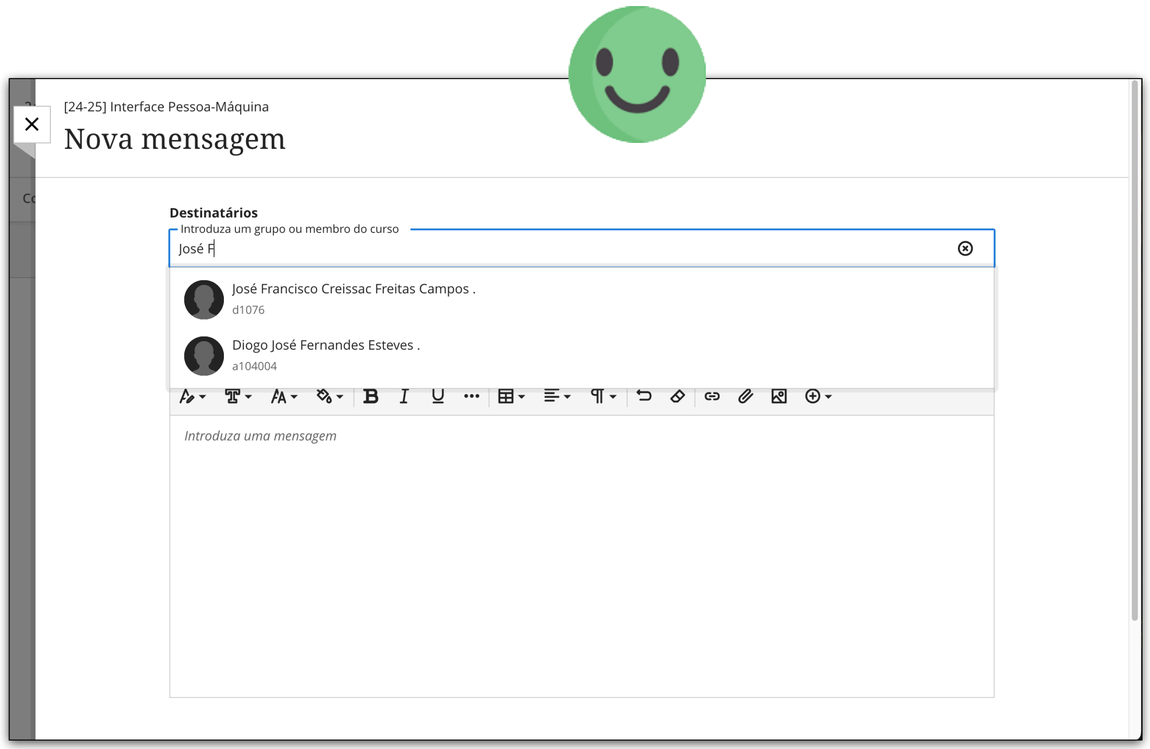
“upsell funnel”



Robustness #4: Task conformance

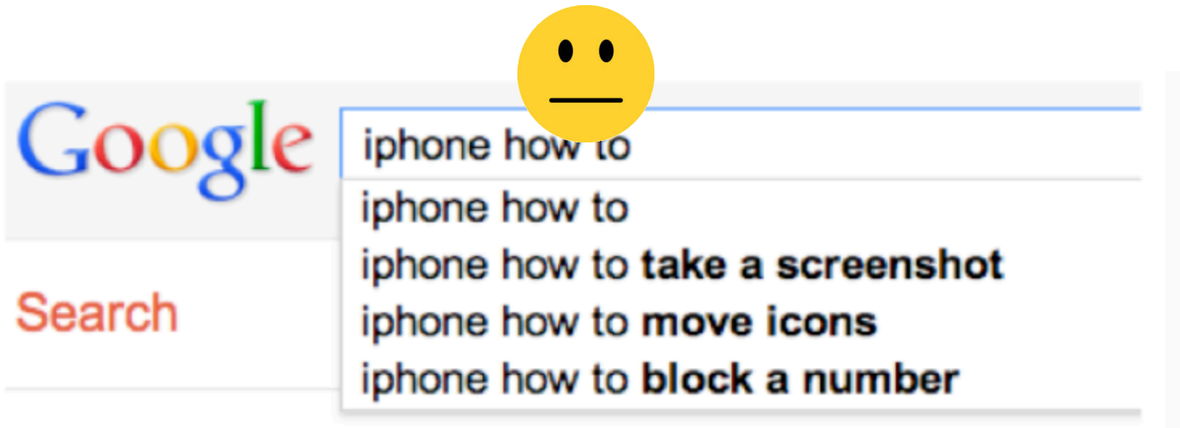
- Quanto o sistema suporta as tarefas dos utilizadores (c.f. fosso da execução)
  - “Task adequacy” (relação entre suporte do sistema e compreensão dos utilizadores)

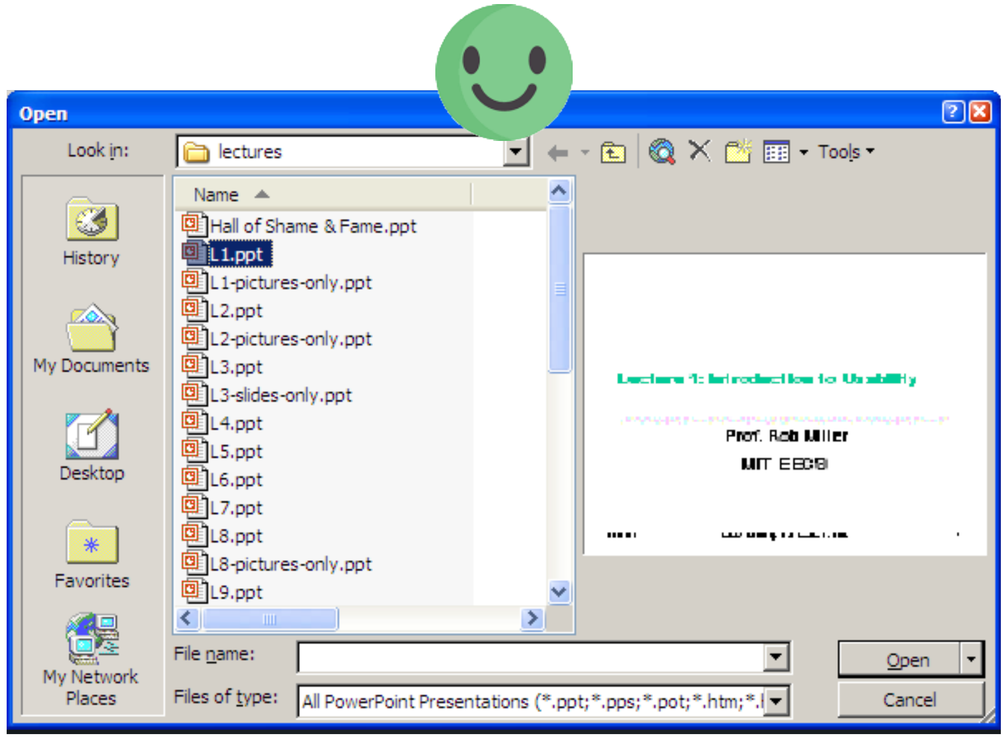




Robustness #4: Task conformance

- Quanto o sistema suporta as tarefas dos utilizadores (c.f. fosso da execução)
  - “Anticipation” ⇒ “Task adequacy”

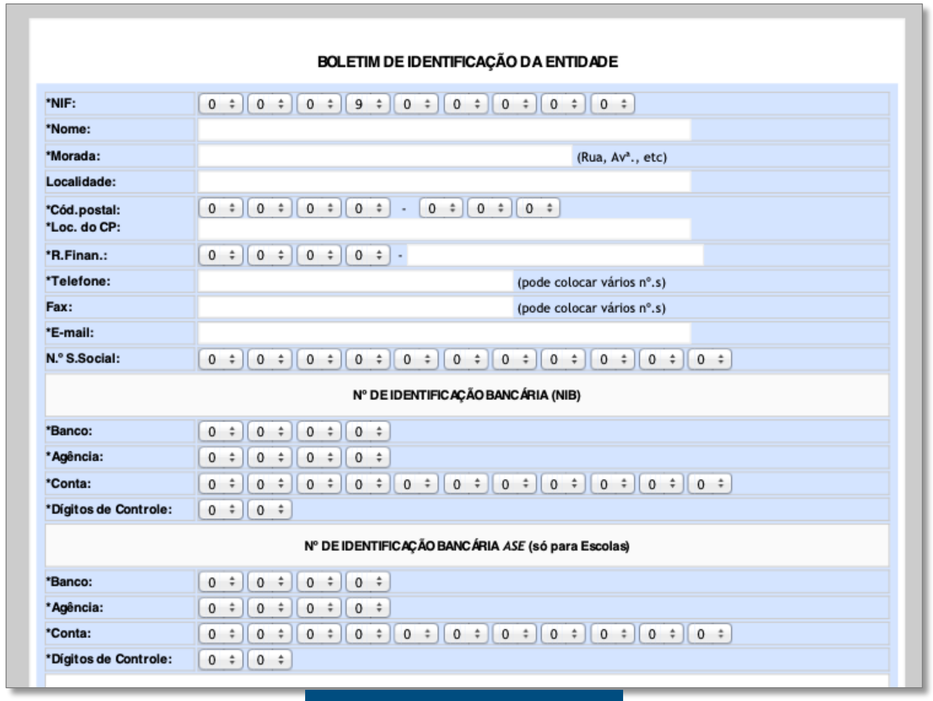




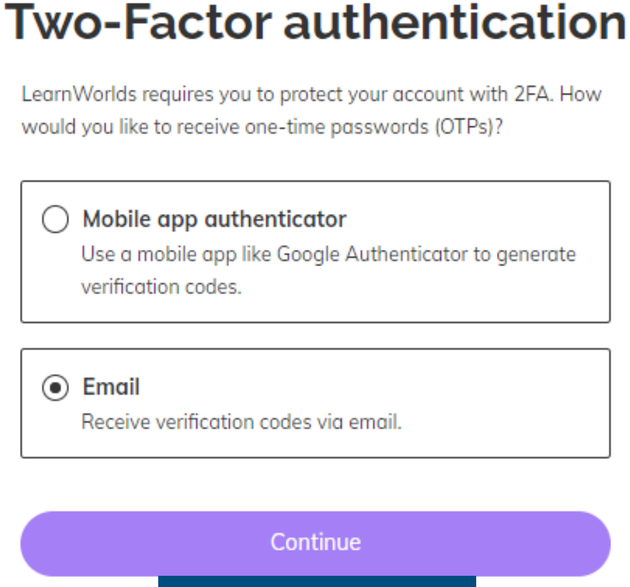
Princípios de usabilidade

- Dimensões podem ser conflituantes
- Necessário tradeoffs

+learnability
- flexibility



+robustness
- flexibility



+robustness
- learnability

Princípios de usabilidade

- Dimensões variam em importância consoante o contexto
  - Learnability: utilizadores novos / tarefas pouco frequentes
  - Flexibility: utilizadores especialistas / tarefas muito frequentes
  - Robustness: tarefas críticas

💡 Diferentes utilizadores podem ter experiências diferentes

❗ Impossível de classificar uniformemente