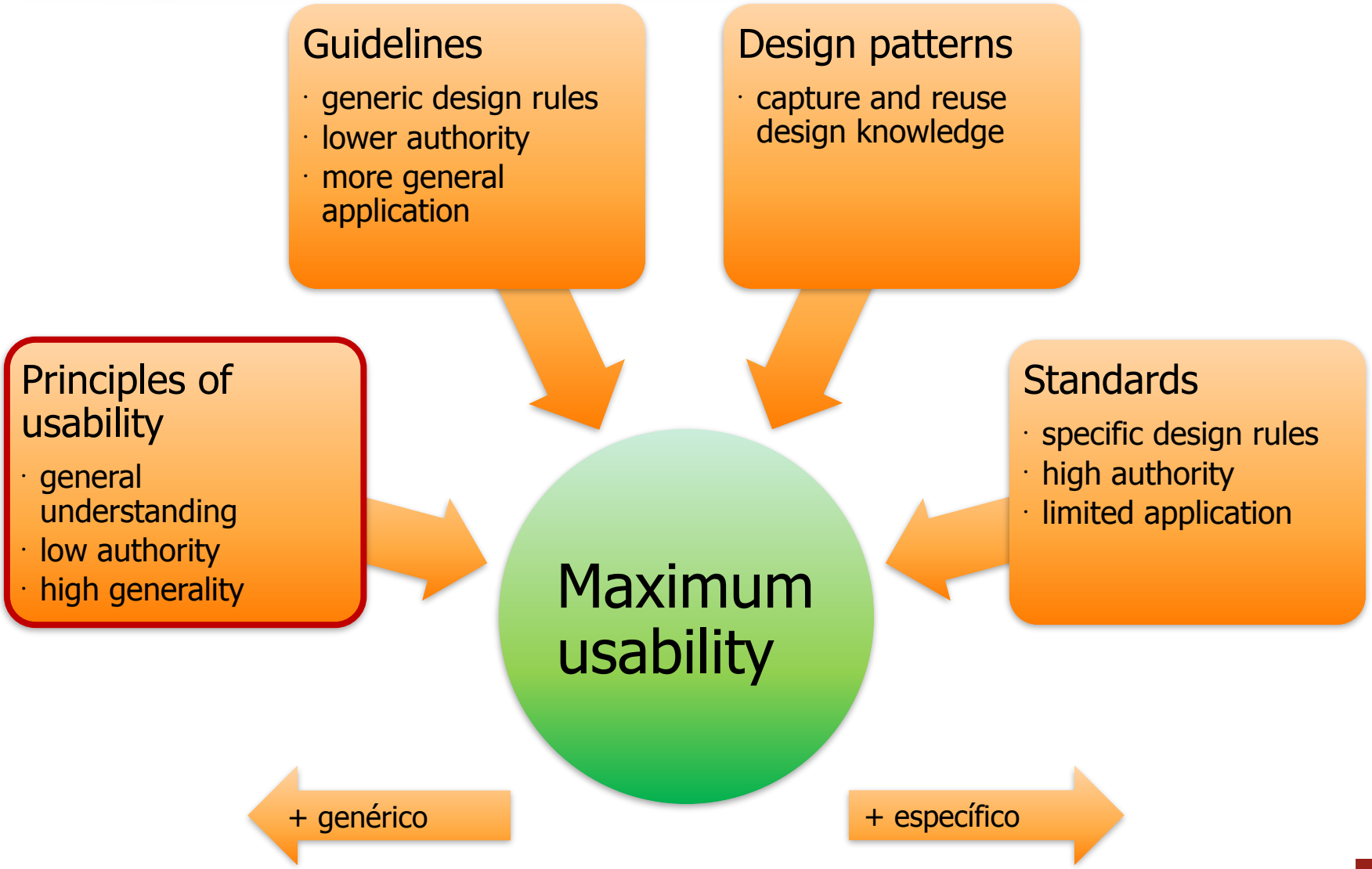
Módulo 7

DESENHAR PARA A USABILIDADE

Designing for maximum usability



Principles for usability

Learnability

- the ease with which new users can begin effective interaction and achieve maximal performance

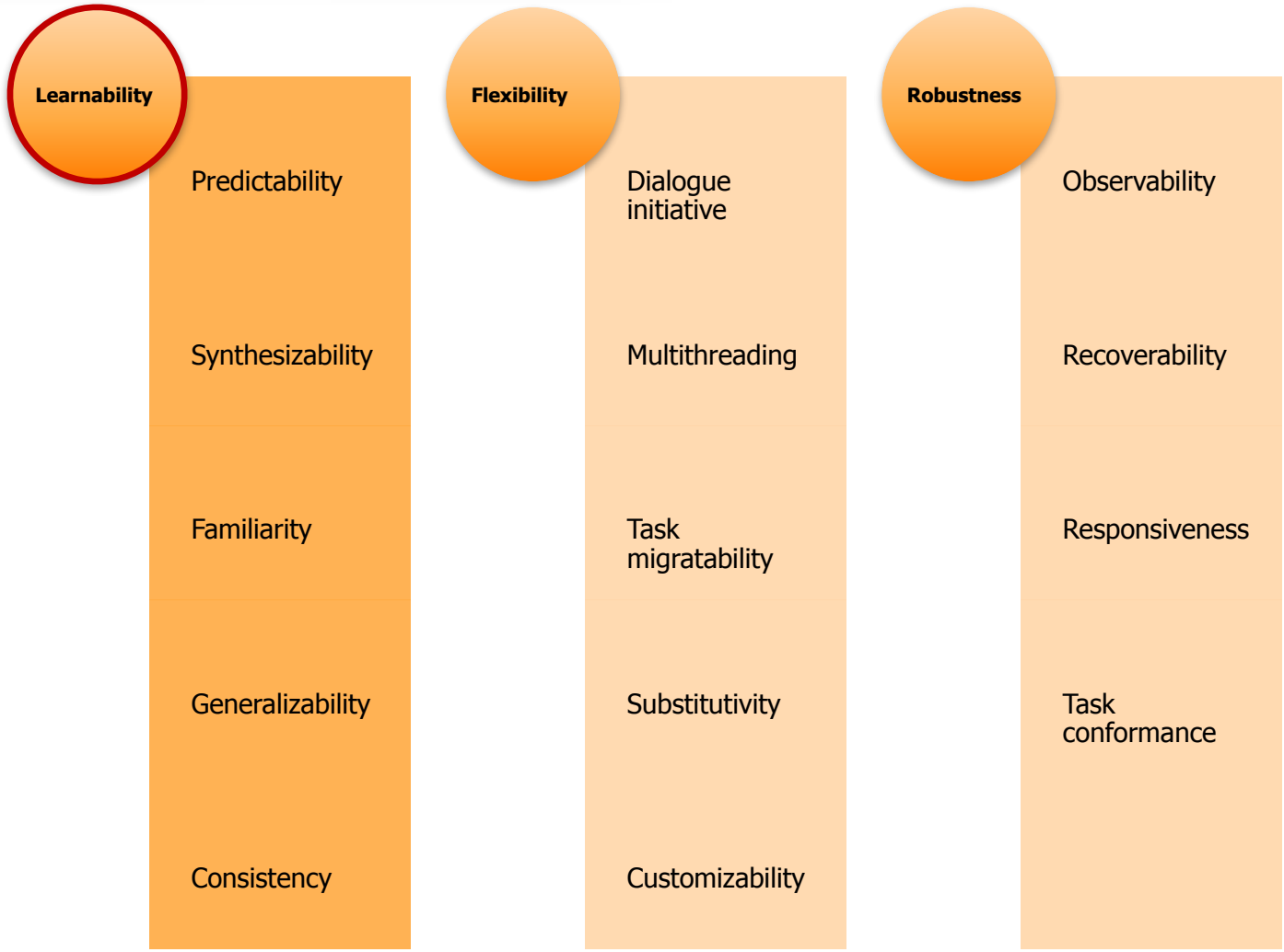
Flexibility

- the multiplicity of ways the user and system exchange information

Robustness

- the level of support provided to the user in determining successful achievement and assessment of goal-directed behaviour

Principles of usability



Principles of learnability 1/5

Predictability

- Ability to determine the effect of actions on the system
- Non-determinism:
  - System view vs. user's view
  - Available information enough?
- Ex.: Criar uma nova pasta no diálogo 'Save As…' (Mac)

Principles of learnability 2/5

Synthesizability (of mental model)

- Assessing the effect of past actions on current state
- Honesty: ability of user interface to provide information about state changes
  - Immediate vs. Eventual honesty
- Ex.: Notificação de envio de SMS num telemóvel.

Principles of learnability 3/5

Familiarity

- How prior knowledge applies to a new system
  - about the world
  - about other systems
- Use of **metaphors** can help
- Examples:
  - Timetables
  - Lack of adoption of Open Source software?

Principles of learnability 4/5

Generalizability

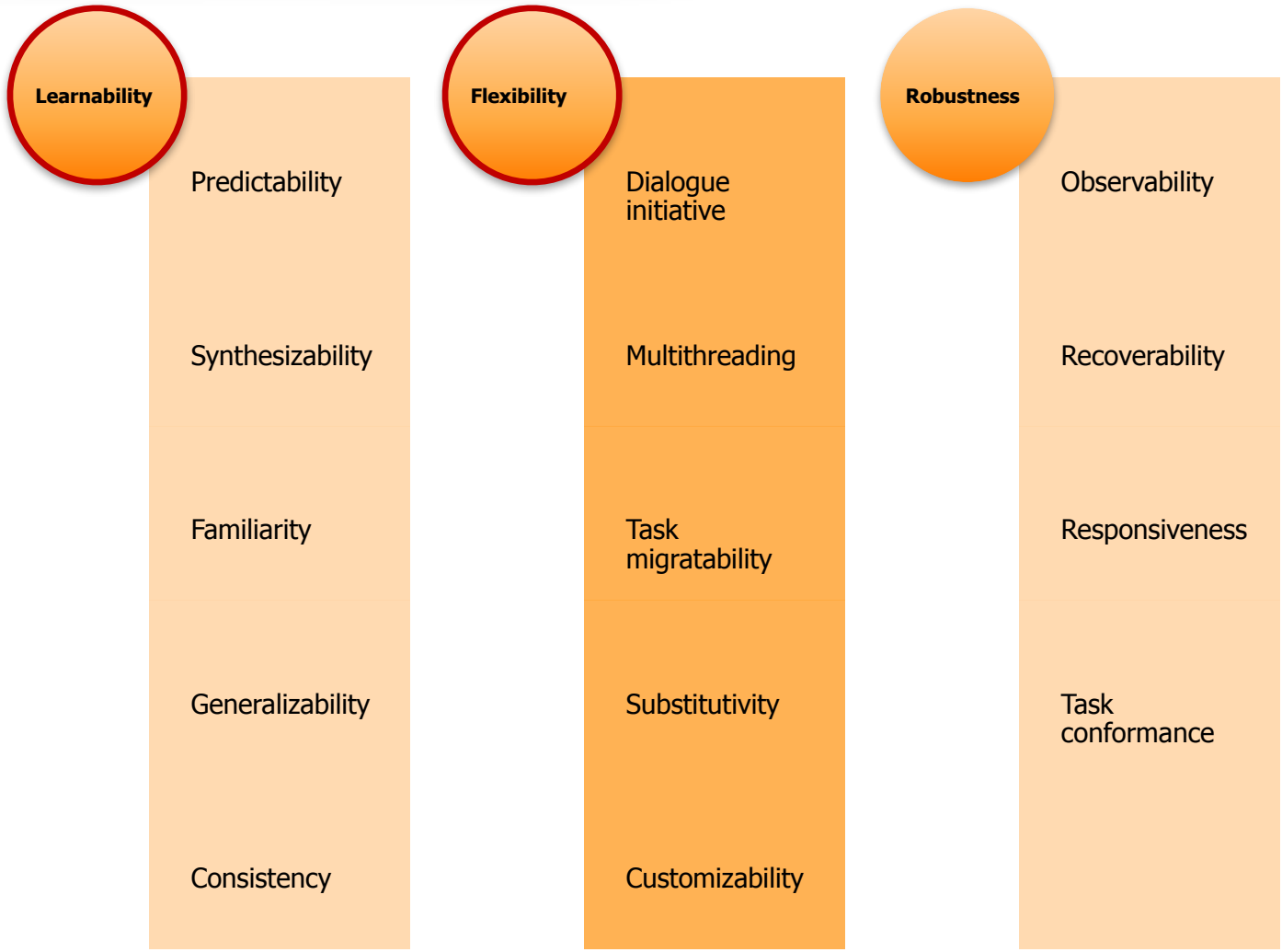
- Extending specific interaction knowledge to new situations
- Explores users' ability to compare similar situations
- A form of **consistency**
- Examples:
  - Copy&Paste services
  - Lack of Drag&Drop to Apps on some Mac OSs?

Principles of learnability 5/5

Consistency

- Probably the **most mentioned principle**!
- Likeness in input/output behaviour in similar situations or task objectives
- Internal consistency
  - Inside the application
  - Example: Toyota AC
- External consistency
  - Between one application and the rest of the system
  - Example: Mac apps menu

Principles of usability



Principles of flexibility 1/5

Dialogue initiative

- System control (less flexibility)
  - Ex.: modal dialogue; wizard; deep menu structures
- User control (more flexibility)
  - Ex.: toolboxes; navigating the web; direct manipulation
- Goal is to maximize user control(?!)
  - Sometimes we want/need to guide users…
  - Good knowledge of tasks will help create feeling of user control
  - Ex. : making search available in input fields

Principles of flexibility 2/5

Multithreading

- The ability of system to support user interaction for more than one task at a time
- Interleaved multithreading
  - Ex.: windowing system (input)
- Concurrent multithreading
  - Ex. 1: multimodality with fusion ("copy that to there")
  - Ex. 2: windowing system (output)

Principles of flexibility 3/5

Task migratability

- Passing responsibility for task control between user and system
- A task can be internal to user, internal to system, or shared
- Ex. 1: Spell checking of a text document
- Ex. 2: Cruise control
- Mudança de "modo" cria complicações

Principles of flexibility 4/5

Substitutivity

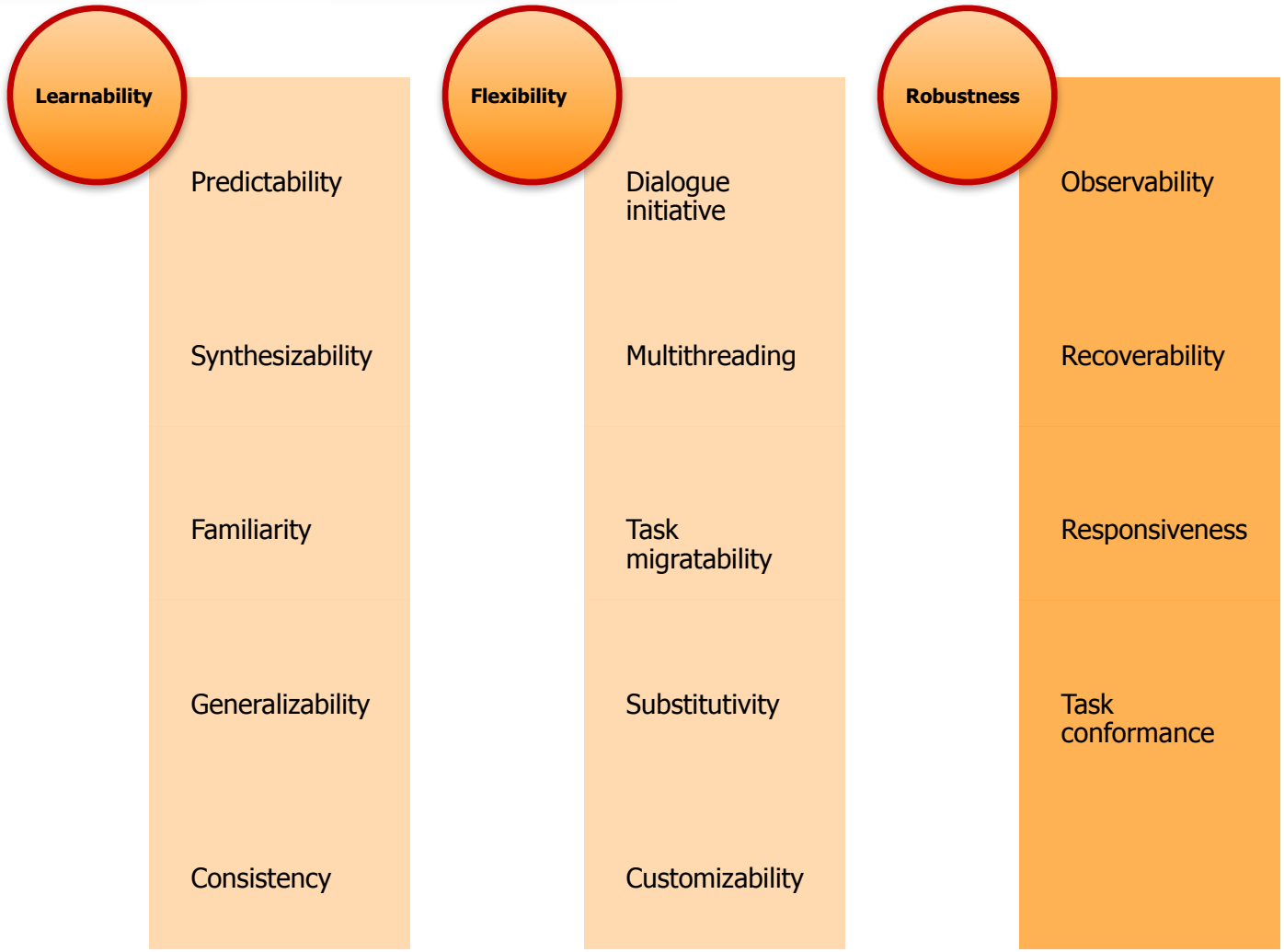
- Allowing equivalent values to be substituted for each other (typically input)
  - Good alternative to error messages
  - Can minimize user errors and cognitive effort
- Representation multiplicity
  - Substitutivity also at the output
  - Ex.: Different views in a word processor
- Equal opportunity
  - Eliminating distinction between input and output
  - Ex.: input de datas; conversões

Principles of flexibility 5/5

Customizability

- Modifiability of the user interface
- Adaptability (Adaptabilidade)
  - Modified by the user
  - Ex.: toolbars; user interface scripting
- Adaptivity (Adaptação)
  - Automatically modified by the system
  - Based on knowledge about the user – tricky!
    - Ex.: MS Windows™ adaptive menus
  - Based on knowledge about the device
    - Ex.: Responsive Web Design

Principles of usability



Principles of robustness 1/4

Observability

- Ability of user to evaluate the internal state of the system from its perceivable representation – c.f. Predictability
- Five aspects
  - browsability – possibility of user to explore current state (limited screen real-estate)
  - defaults – static vs. dynamic; passive recall
  - reachability – possibility of user to navigate observable states
  - persistence – sound vs. icon for notifications
  - operation visibility – what can be done is clear
- Ex.: Showing available slots on a Timetabling system

Principles of robustness 2/4

Recoverability

- The ability of users to take corrective action
- Forward recovery (e.g. when error cannot be undone)
  - accepting error state and working from there
  - Ex.: input validation
- Backward recovery
  - **undo** to return to previous state
- Commensurate effort
  - Hard to undo effects should be hard to do
  - Easy to undo effect should be easy to do
  - Ex.: Trash can
    - easier to undo delete means no delete confirmation needed
    - emptying the trash can cannot be undone so confirmation should be requested

Principles of robustness 3/4

Responsiveness

- How users perceive rate of communication with the system
- Short or instantaneous response times
  - From the user perspective
  - When not possible, provide indication of activity
- Stability of response times also relevant
  - Ex. Menus response times vs motor skills

Principles of robustness 4/4

Task conformance

- Degree to which system services support the users' tasks
  - C.f. Gulf of Execution
- Task completeness
  - Level of support for users tasks
- Task adequacy
  - Match between system support for task and users understanding of task
- Exemplo: Adicionar autores a uma publicação?

Principles of usability