

# Test Driven Development (TDD)

1. Write test
2. Write code
3. Refactor code

## Immersive System

↳ Deep mental involvement in system

### Immersion

System  
Properties

User  
Experiences

- technical properties

exp. 1800 × 1920 pixels per eye

LCD panels with dimming

106° horizontal × 96° vertical

- qualities of software side

exp. visual fidelity of graphics

how realistic the AI is

interaction controls

Psychological &  
physiological constructs

Uninform designs

Three Popular constructs related to Immersion

- Presence

- Flow

- Cybersickness

# Presence

- how much one feels like being transported to an alternate space (feeling of being there)
- degree of environmental interaction { perceived fidelity and realism of simulated environment that is conveyed through our senses
- physical vs social presence
  - physically relocated to the virtual space
  - sense of being around other virtual beings
- personality traits } feel higher presence
  - openness
  - extroversion

- Measure Presence
  - subjective data
  - objective data
  - mix of both
- self reporting
  - questionnaires
  - interviews

# Flow "In the Zone"



- mental state of extreme positive engagement
  - loses self-consciousness
- 8 Dimensions
  - clear goals (with good feedback)
  - challenge that matches skill
  - complete concentration
  - loss of self-consciousness
  - sense of control
  - effortlessness
  - transformation of time
  - autotelic experience (motivated by doing the action)
- Measure flow
  - well validated questionnaire instruments (flow scale 2)
    - exp.
    - flow short scale

# Cybersickness

- symptoms of sickness due to cyber activities
  - Nausea
  - Dizziness
  - Disorientation etc.
- measure
  - validated questionnaires
    - simulator sickness questionnaire (SSQ)
    - VR sickness questionnaire (VR SQ)
    - Cybersickness questionnaire (CSQ)
  - Groups
    - Oculomotor symptoms
    - Disorientation symptoms

higher visual vestibular conflict causes more intense symptoms of cyber sickness

# Affordances

- relates system properties to user experiences
- relationship between the properties of an object

object  $\geq$  agent

knob              me

handle              pulling