Communities, Pratices and Usages

Problematic : *Howto structure data to be useful to human and AI*

This module has a scientific approach :

- course is theory
- practical application is for the student to do by themselves

Collaborative Virtual Environments (CVEs)

Definition :

- digital spaces
- humans with avatars
- virtual humans with autonomous characters

CVEs lay down multiple technical problem :

- huge amount of data to process and to transport
- what data and program do we use

Virtual Reality (VR)

Virtuality continuum :

- Real environment
  - tangible user interface
  - use of captor in the interface
- Mixed reality :
  - augmented reality

Virtual environment :

- virtual reality
- immersion
- example : CAVE

Definition from Jacques Tisseau :

- Triptychs for VR
  - *Immersion* , example : 3D movies
  - *Interaction* , example : video games
  - *Autonomy* , example : computer virus

If you combine *immersion* and *interaction* example : car simulator

If you combine *immersion* and *interaction* and *autonomie*, it becomes **Virtual Reality**

Other Triptychs :

- Definition for Burdea & Coiffet (1993) :
  - *Immersion*
  - *Interaction*
  - *Imagination*
    - The VR need to bring the user to transpose himself in the VR

        - importance to present data and information correctly : context
- Definition for Zeltzer (1992) :
    - *Autonomy*
    - *Interaction*
    - *Presence*
        - This is a complex notion

Collaborative system pose technical problem :

- Colocalisation
- remote system

Immersion and Presence

Definition for *Immersion* :

- technical side of VR
- *Capabilities* for users to *feel* they take part of the VE
- Simulate sensory information to match user's *proprioception*
- Enables users to act naturally in the VE
    - put effect in the VE to imitate mother nature
- can be measured precisely and independently of the user's experience it engenders
- example :
    - field of view
    - frame rate for vision 60 Hz
    - frame rate for haptics 1000 Hz
    - Sensitivity and precision of tracking system
    - latency

Definition for *Presence* :

- Human response to the system
- User naturally behave and feels in the virtual world
- User physiological and psychological reactions are the same
- Feeling or *Illusion* of Presence :
    - Being there
    - No mediation, vanishing of interface
    - Make the user forget that it is a *virtual* experience

Balance between *Immersion* and *Presence*.

Example with the exoskeleton

- Good precision for tracking system
- No no mediation

The book problem :

- presence = action : ecological dimension = part of a world
- presence != engagement or involvement

Sense or *Illusion* of Presence From Slater and Usoh (1993) :

> L'utilisateur est ailleurs que là où il est physiquement, le **ailleurs** est formé par les images, sons et sensations physiques fournis aux ses de l'utilisateur par le système générant l'environnement virtuel.

From Bouvier (2009) :

> Le sentiment **authentique** d'exister dans un monde autre que le monde physique où notre corps se trouve.

Triptych of presence :

- Physical presence : being there + object is there
- Social presence : we are together
- Self presence : the user perceives her virtual self as real

From Lombard and Ditton (1997) :

> The conceptual definition of presence involves the idea of transportation. three distinct types of transportation can be identified : "You are there", "It is there", "We are together".

Tremendous role of *Action*

- VE should *Afford* user to act : concept of *Affordance* for more or see slide 21
- *Proprioception* : congruence between virtual and real self.
- *Causality* : real world pysics, even simple
- *Enaction* : cognition of the world comme with *embodied* action

User Experience (UX)

User Experience and Virtual Reality

Conclusion