Virtual communities

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Virtual Communities, Definition

- Also called **Online Communities, Web Communities**
- A network of individuals or artifacts,
  with a shared object of interest or goal,
  and using ICT-mediated communication means.

Virtual Communities, Definition

- Comments on the definition
  - Broad definition, covers many different applications →General principles + Variations.
  - Situated in the Application layer of the OSI model, Open Systems Interconnection
- Main "components": **actors** (human, artifact), **platform** (shared environment), **services**, **contents**, **contexts**.

Origins, periods

- 70' Internet
  - PLATO (70): a learning system with email, chat room
  - Usenet (80): read and post messages, discussion forum
- 90' HTML, Web browser.
  - 1993 : browser with web forms (1st : Mosaic, incl. also images). **Begining of stored user generated content**
- 2000': Web 2.0: user contents are published. Blogs : share + comment → social web (social networks)
- Around 2010: Web 3.0 (unclear definition): Semantic web + Web of things + Wearable sensors + Connected Humans & Objects interconnected + intelligent

VCs: at the crossroads of different disciplines…

- HCI Human Computer Interaction
- Social science, Psychology, Persuasive systems
- Software engineering
- Networks and communication
- Information systems, Digital documents, Knowledge management
- Multi-Agent Systems
- Connected objects, Internet of things
- Wearable sensors, Context awareness

Agenda

- Introduction
- Types of VCs
- Modeling the user

Other related topics
- Modeling the interactions
- Modeling the contents of VCs
- Services in VCs
  - Recommendations
  - Shared content edition
  - Automation (assistant)
- VC user interface
- Analyzing VCs

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Types of VCs

- Task centric VCs
- User centric VCs
- Topic centric VCs

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Types of VCs

- **Task centric VCs**
- User centric VCs
- Topic centric VCs

Task centric VCs
for co-design, co-creation

Users share a same task.
They collaborate together for a single (complex) result.
Competences are brought together

Example:
- Collaborative document writing
- Collaborative ontology editing
- Team of players in a video game (quest)

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Types of VCs

- Task centric VCs
- **User centric VCs**
- Topic centric VCs

User centric VCs
for supportive communities, persuasive communities

A user is followed by other users and receives their feedback.
Interaction, support, supervision are provided.
An target can be defined (nb of steps)

Examples
- Patient monitoring and support
- Facebook
- Twitter (partly): following people

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Types of VCs

- Task centric VCs
- **User centric VCs**
  - **Group-centric VCs**
- Topic centric VCs

Group-centric VCs
Sub-type of user centric VCs

Group of users are followed by other users.
Target: group's results

Examples:
- Collective diet program
- A group to maintain level of activity

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Types of VCs

- Task centric VCs
- User centric VCs
- **Topic centric VCs**

Topic centric VCs
for Information sharing

Users share a same topic of interest.
They search and exchange on knowledge or experience (documents, data…).

Examples:
- Web portal for medical questions
- Human rights monitoring system (collect data, analyze data)
- Twitter (partly): following hashtag

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Types of VCs

- Task centric VCs
- User centric VCs
  - Group-centric VCs
- **Topic centric VCs**
  - **Ephemeral VCs**

Ephemeral VCs
Sub-type of topic centric VCs

Users share a same location (or event).
They interact on the current location/event.

Example:
- During a basketball match

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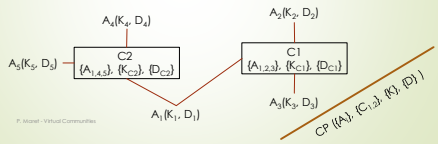
An abstract model

- Actor: Knowledge, Decision capabilities $A_i(\{K_i\}, \{D_i\})$
- Community: C_j ($\{A_j\}$, $\{K_j\}$, $\{D_j\}$)
- Community platform: CP ({A}, {C}, {K}, {D})



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Comments on the model

- Community platform
  - Services: registration, yellow pages (the existing communities), backup, etc.
- Actors
  - Autonomous players (people or programs)
  - Have their own individual environment. Perception = gather knowledge from the environment
- Knowledge: any pieces of information: document, structures and unstructured data…

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Comments on the conceptual model

- Decision capabilities: abilities for actions, communications, etc. (manual or automated)
- Community
  - Contain a list of actors with possibly different roles
  - Community knowledge: Domain of interest, shared knowledge, possibly goals roles, policy,
  - Decision capabilities: actions related to community management
    Example: policy regarding shared contents (content analysis), priority of messages, old message deletion, etc.

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Examples of VCs

- Can you list some…?

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Examples of VCs (w.r.t. the conceptual model)

- Facebook
  - Actors: Registered humans and bots
  - Communities: Shared messages on friend's page
  - Content: Unstructured information
  - Actions: Read, Send, Like, Invite, Accept…
  - Platform's role: store user profiles, control contents

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Examples of VCs

- Twitter
  - Actors: Registered humans and bots
  - Unstructured information (messages)
  - Actions: Read, Send, Follow
  - Communities: people reading/writing a hashtag; people following people
  - Platform: stores profiles and contents

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Examples of VCs

- Communities for Human rights monitoring (El Morr, 2012)
  - Actors: Registered humans such as citizens, researchers
  - K: Unstructured data: messages, images, files
  - D: Read/Send message or data, upload/download files, …
  - Communities: different communities managed by supervisors. Shared knowledge: structured in folders, files/messages received.
  - Communities of communities: List accessible

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Examples of VCs

- Health related communities
  - Communities: people around people, possibly managed by supervisors
  - Information based
    - Examples: losing weight together https://www.diet.com , caring bridge (stronger together) https://www.caringbridge.org
    - Shared knowledge: messages exchanged
  - Activity based [Eloumi 2016]
    - Actors: People equipped with sensors, helpers, supervisor
    - Knowledge shared: Structured data: steps, physical activity value, heart beat value, etc.; Unstructured data: messages

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Examples of VCs : Collaborative editing

- Encyclopedia, crowd sourcing
  - Wikipedia
  - Wikidata https://www.wikidata.org/wiki/Wikidata:Main_Page
    - Piscopo 2017 on the dynamics of editing
  - Enterprise memory (not publicly accessible)
- Co-design
  - Document shared editing tool (Googledoc)
  - Collaborative text translation platform
  - Collaborative ontology design platform

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Other examples

- Collaborative games
- Group-based learning
- Distributed system control
  - Ex: community of sensors exchanging values and acting accordingly (comfort into a room through distributed artifacts)
- Research community
  - The community selects contents (see Research and Innovation course)
    - No unique central platform
  - Instrumented reviewing process
    - Easychair platform
    - Open review process: See http://www.semantic-web-journal.net