



**Kymenlaakson
ammattikorkeakoulu**

University of Applied Sciences

**Juhani Pekkola – Research Director
Kymenlaakso University of Applied Sciences**

**Pekka Ylöstalo – Senior Adviser
Finnish Ministry of Employment and the Economy**

Kymenlaakso University of Applied Sciences

Box 9, 48401 Kotka, Finland

Finnish Ministry of Employment and Economy

P.O.Box 32, 00023 Government, Finland

Email juhani.pekkola@kyamk.fi pekka.ylostalo@tem.fi



Kymenlaakson
ammattikorkeakoulu

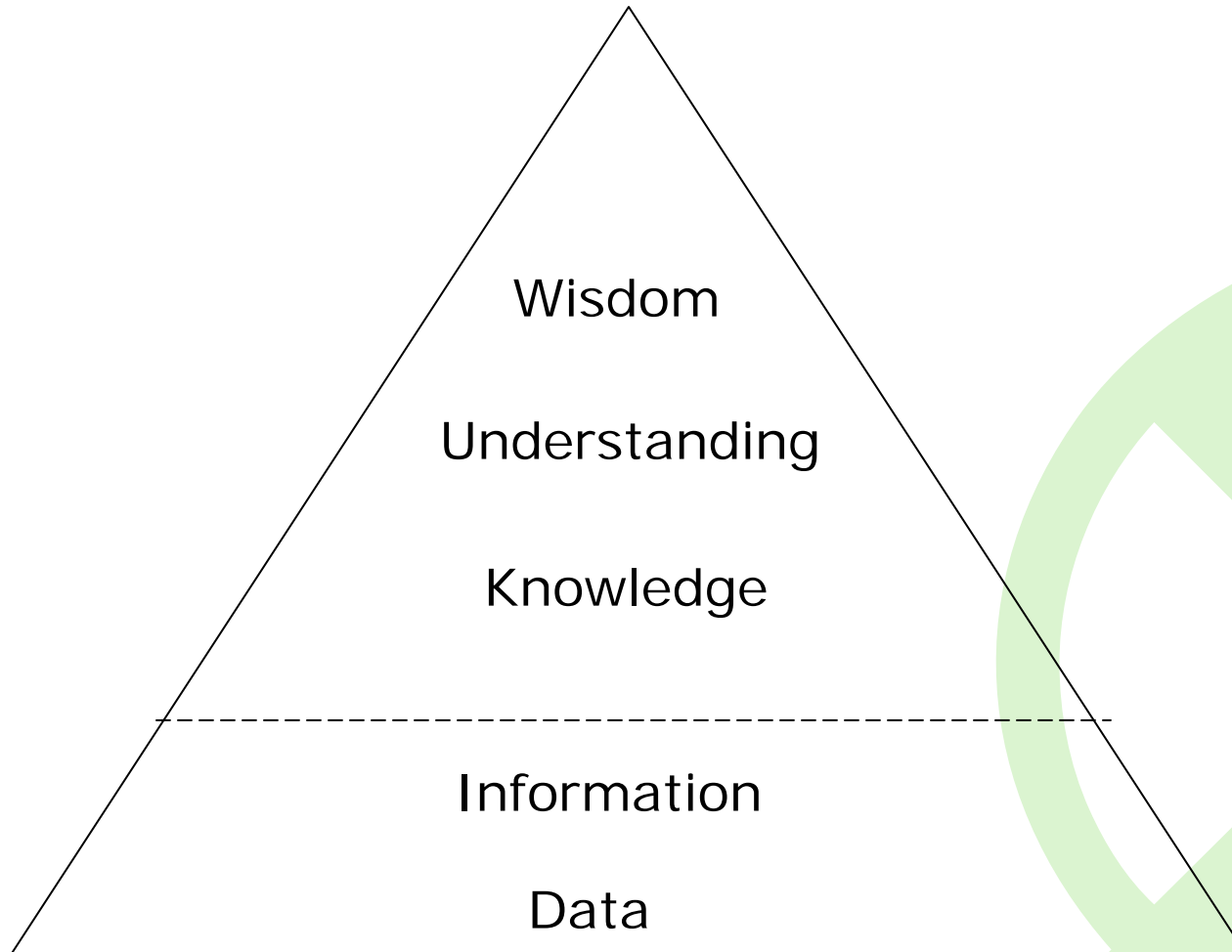
University of Applied Sciences

Generation of tacit knowledge in virtual environment

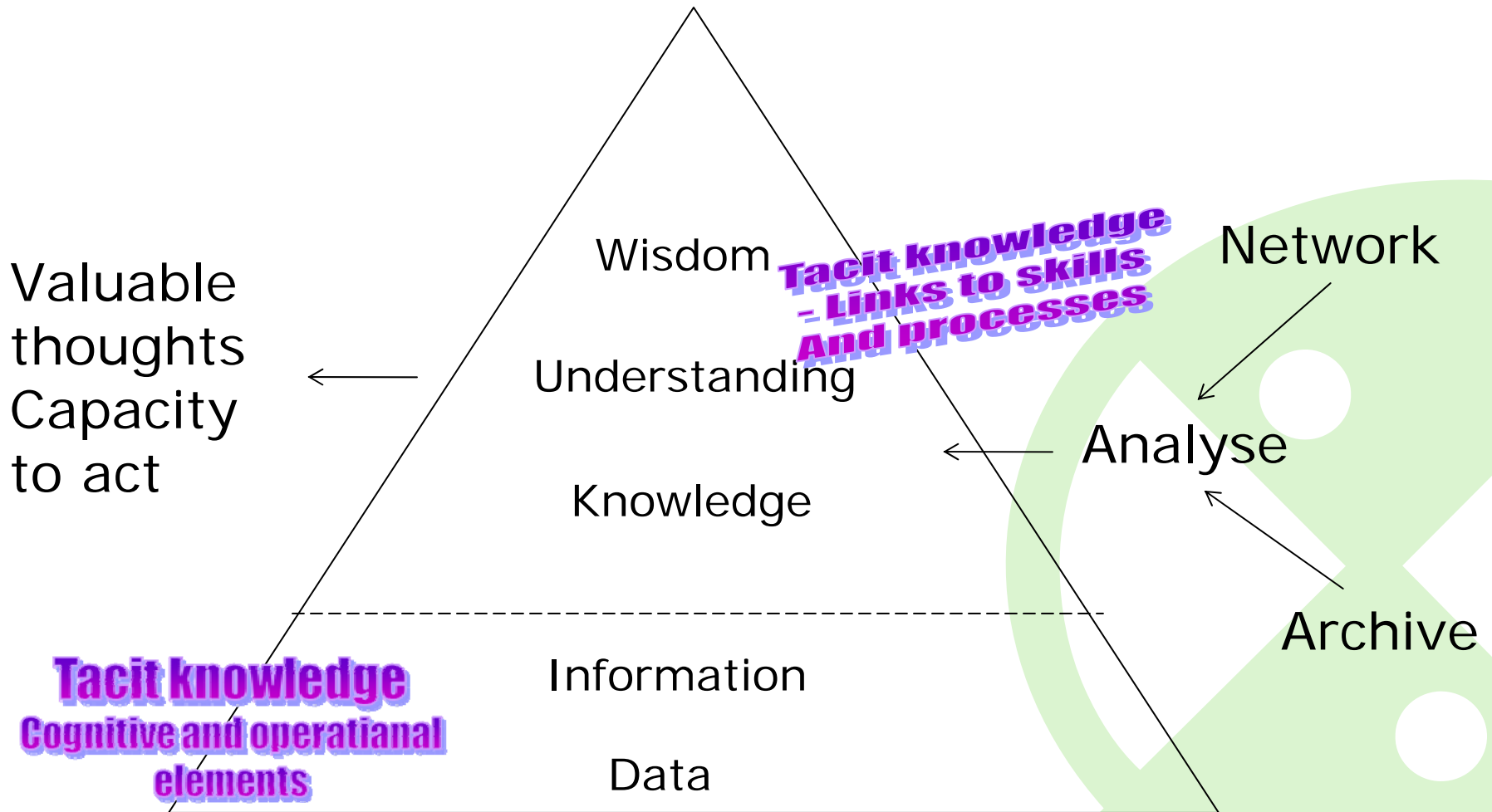
Virtuaalikorkeakoulupäivät, Dipoli, 19.11.2009

*Ryhmä C: Virtuaaliympäristöt pedagogisten haasteiden
ratkaisijana*

The hierarchy of knowledge



The hierarchy of knowledge

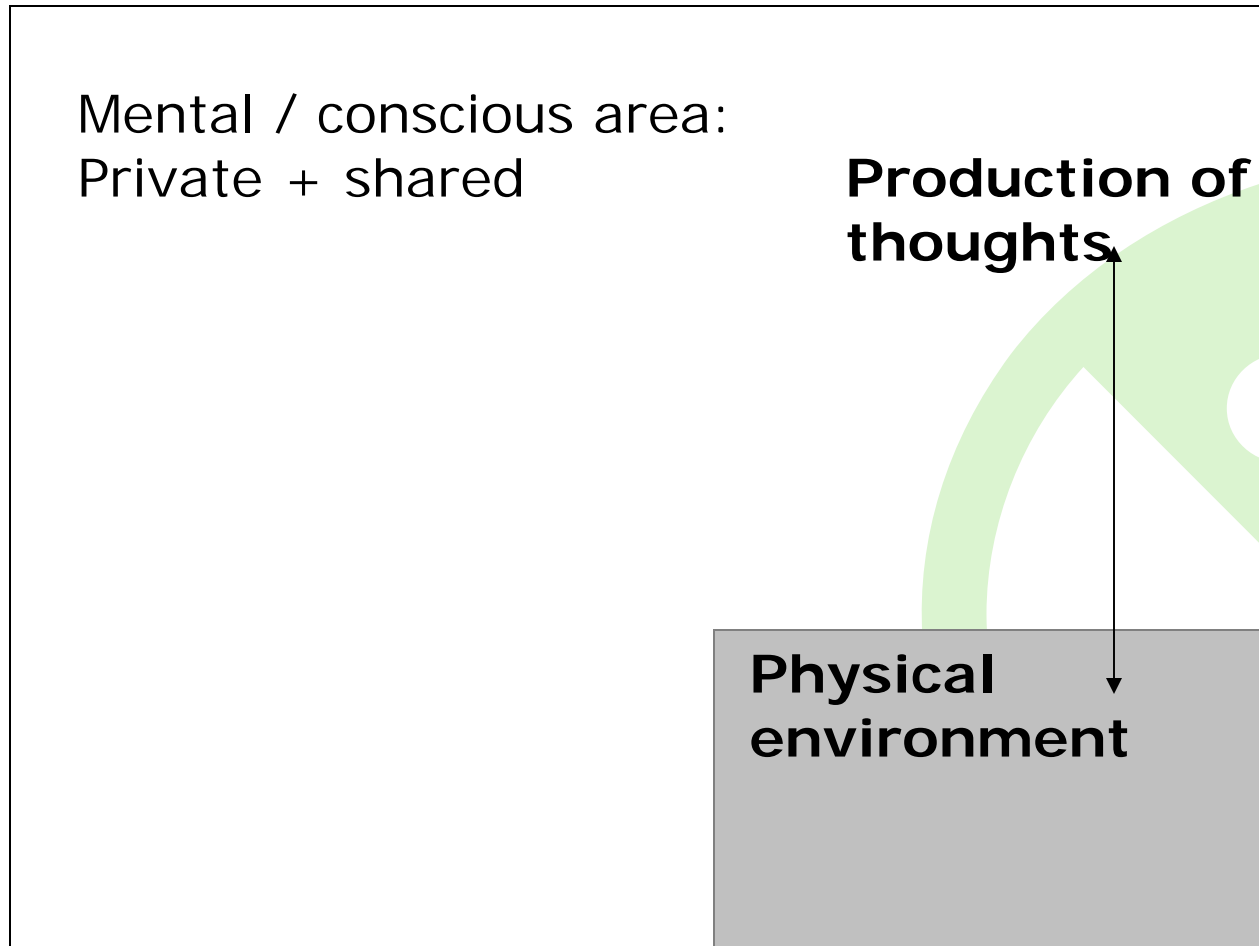


Work places – Work spaces

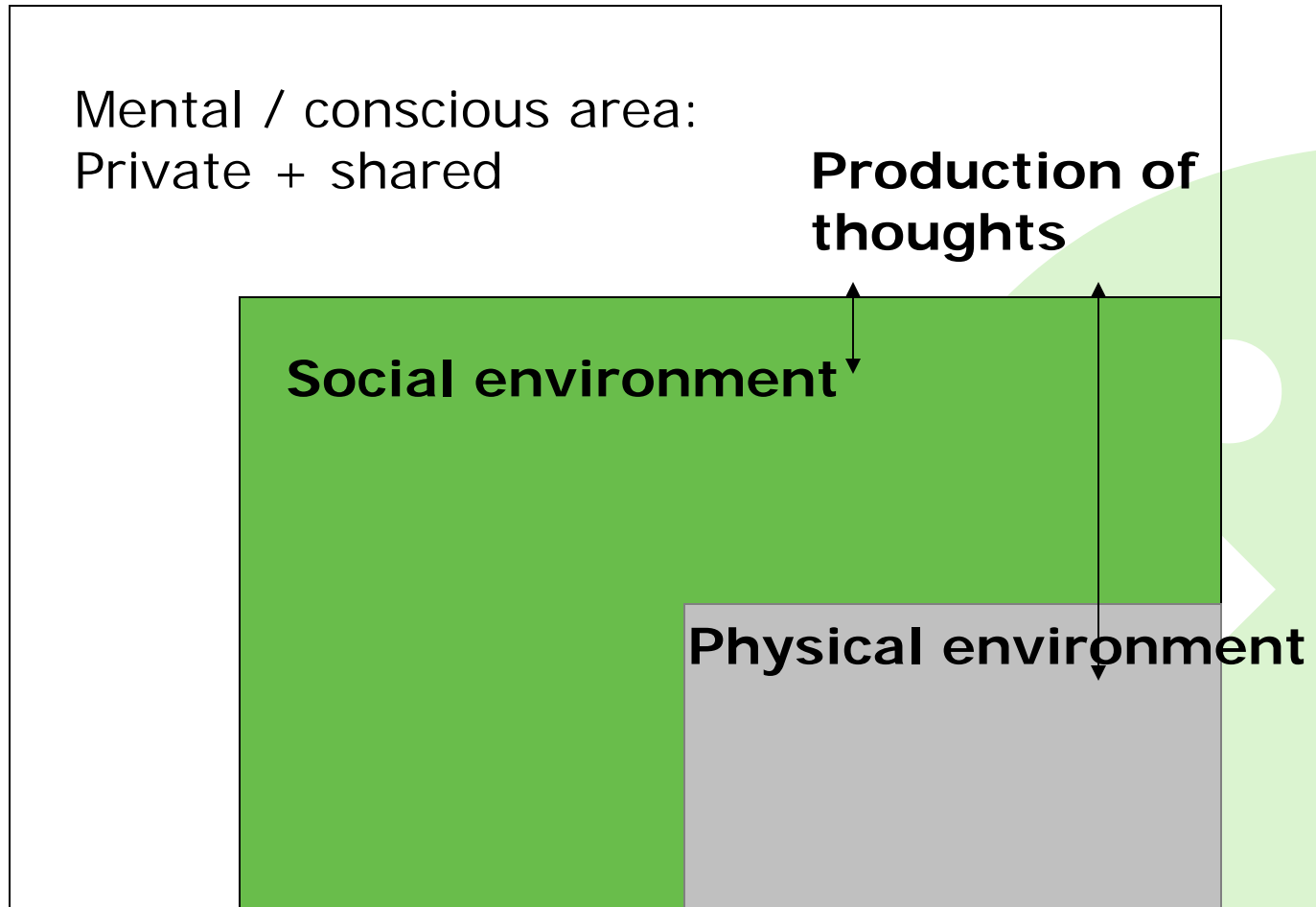
Mental / conscious area:
Private + shared

**Production of
thoughts**

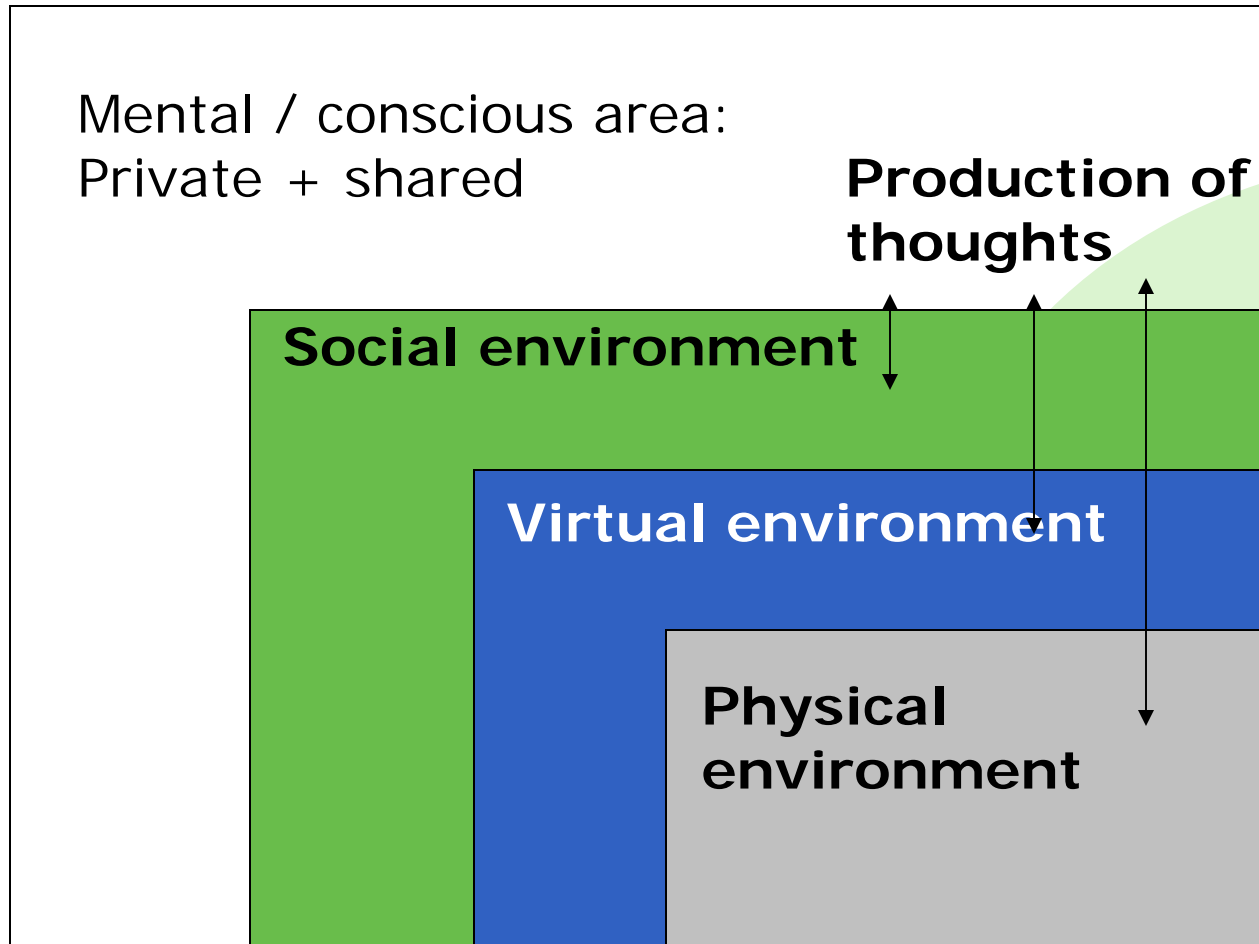
Work places – Work spaces



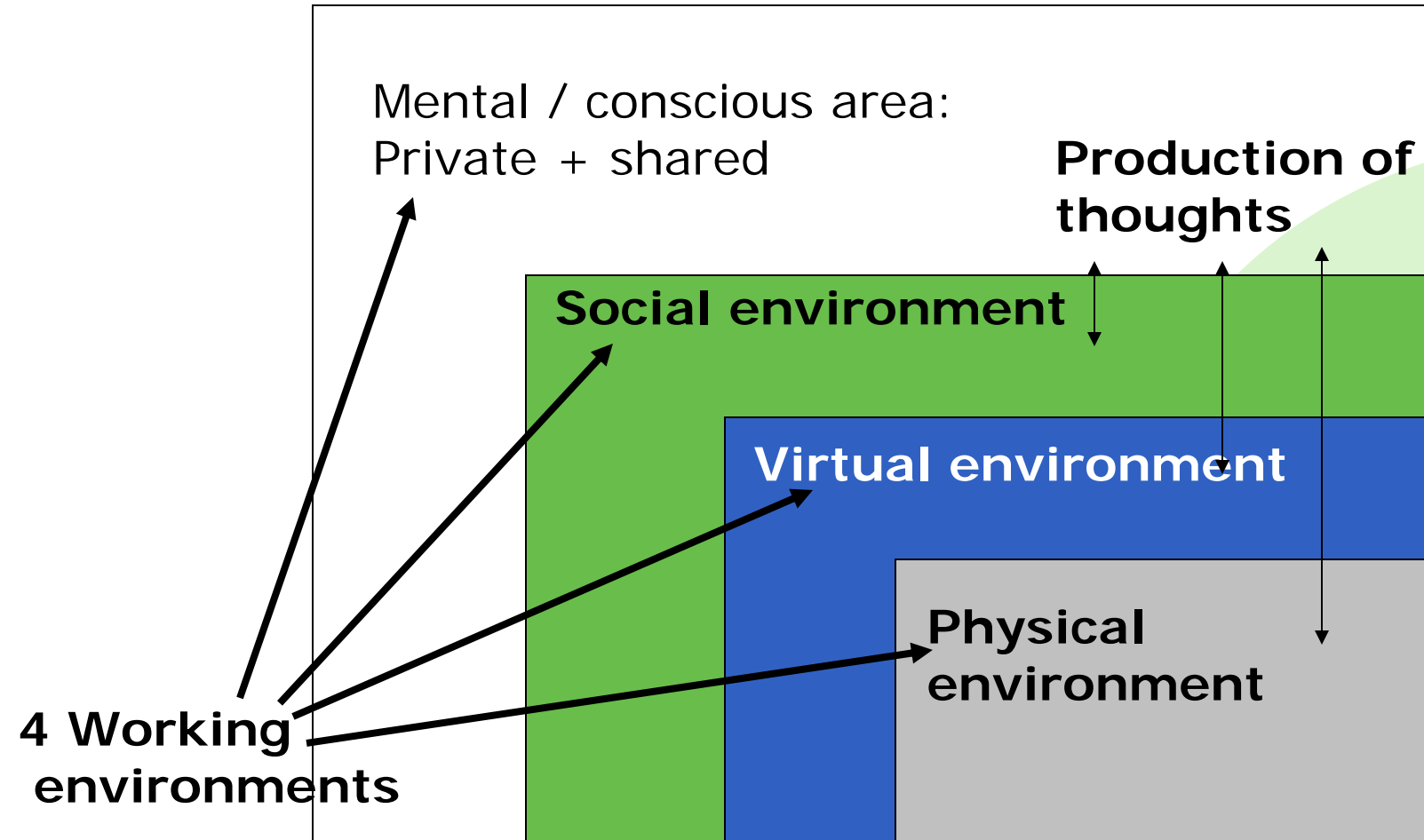
Work places – Work spaces



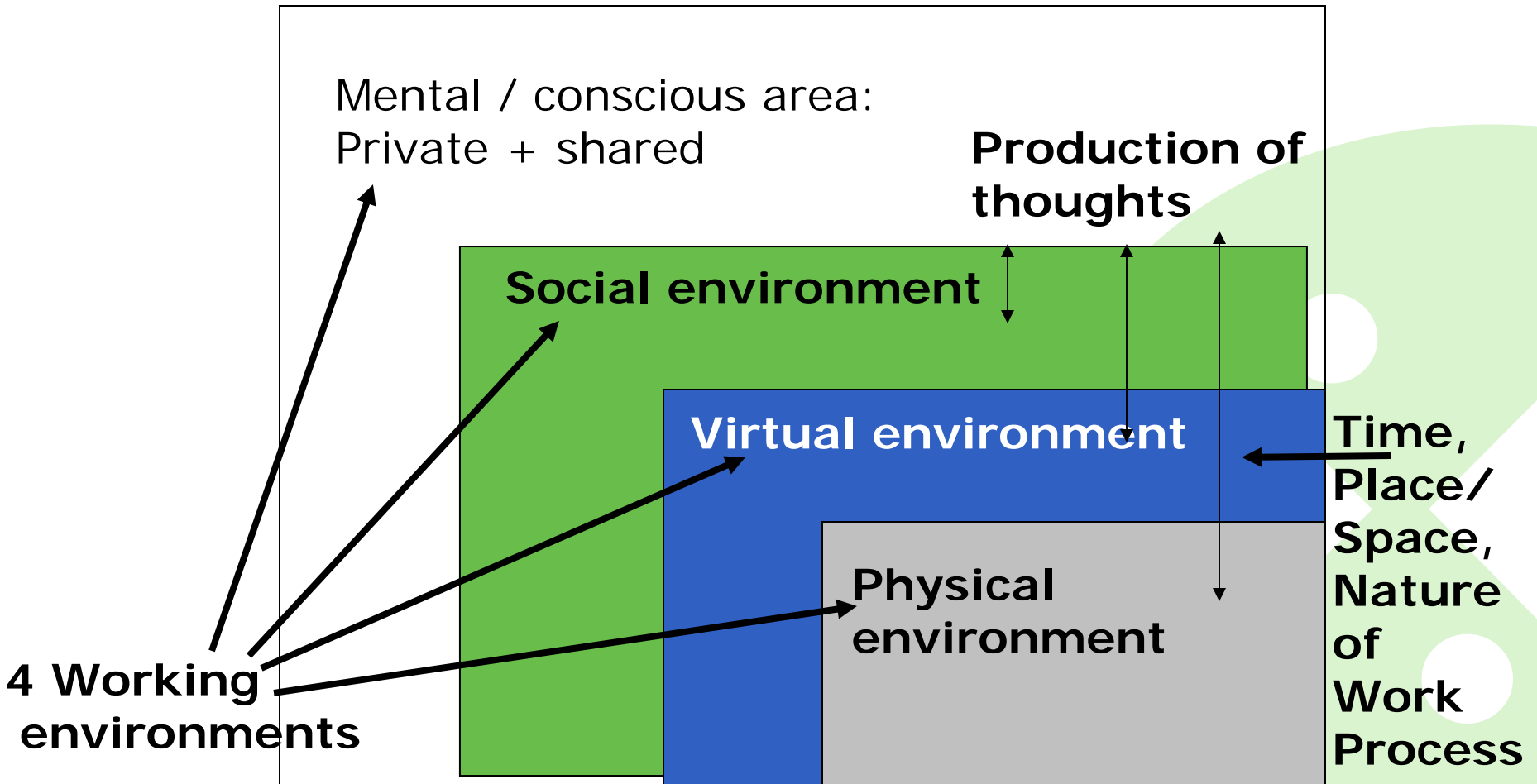
Work places – Work spaces



Work places – Work spaces



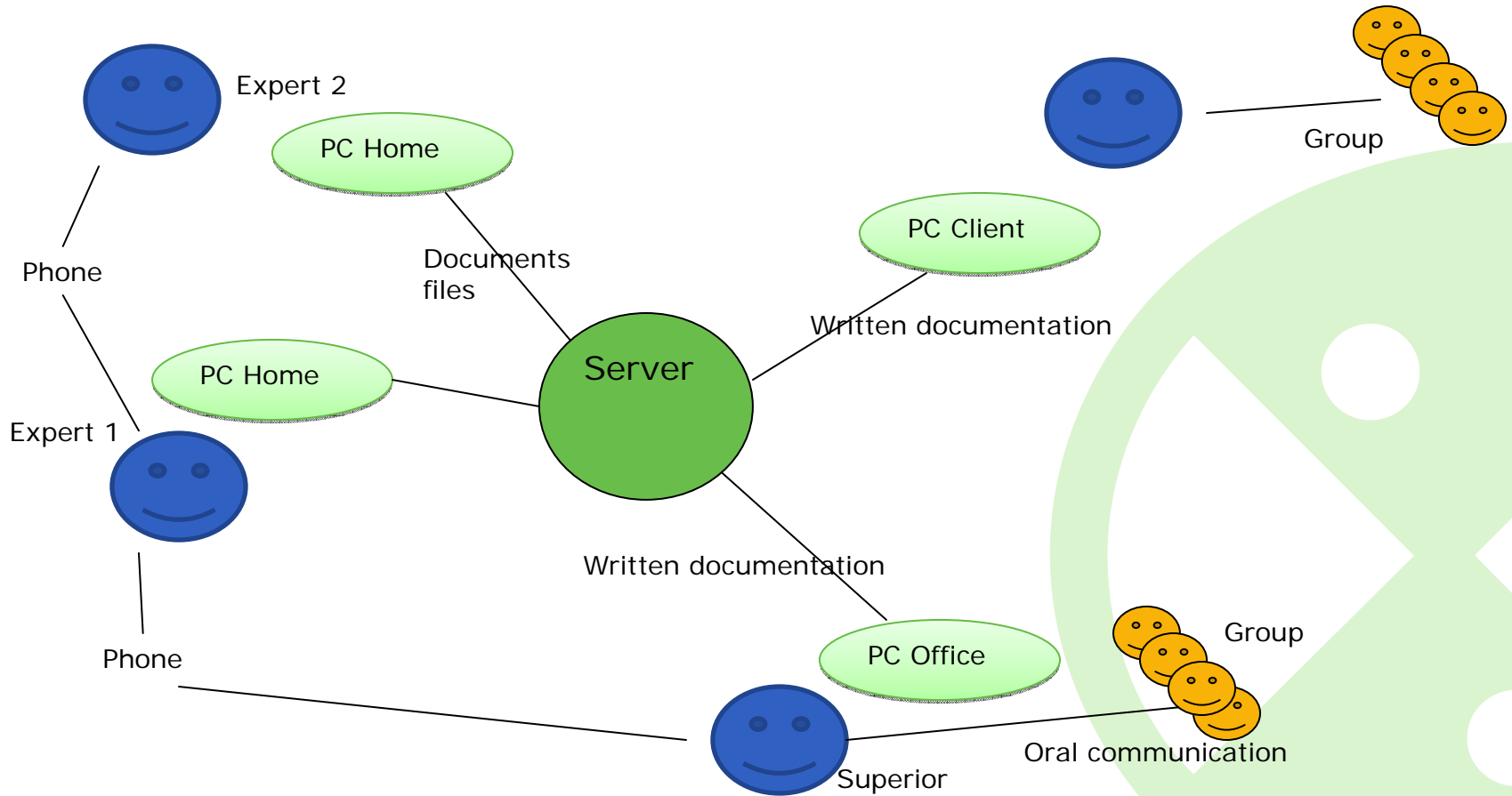
Work places – Work spaces



Information technology / Groupware / Time and Place

| | Same Time | Different Time |
|------------------------|---------------------------------------------|----------------------------------------------|
| Same place | “Face to face” Interaction | Asynchronous interaction |
| Different place | Synchronous and dispersed Interaction | Asynchronous and dispersed interaction |

Typical work organisation / Expert, ICL Invia 1999.



when I go to work then the world...is in machine there... when I go at work it is not that I step in the room but instead when I go to work it mean that I join information systems... This is the real work place. Otherwise there is nothing. If there is no information system or if there is no electricity in pc, one is not at work..."

(Expert statement in interview, ICL Invia, 1999.)

BA; Nonaka & Toyama (2000)

Co-operative and productive working environment "BA" may be:

- Physical place (like: office)
- Virtual space (like: email)
- Human relations between people who share common goals
- Mental spaces, which are described by common experiences, ideas and ideals

The nature of tacit knowledge

The nature of tacit knowledge (Raivola & Vuorensyrjä 1998.)

Tacit knowledge emerges often as non cognitive rules and norms which support other targeted knowledge

Tacit knowledge is transformative and it is like a filter element for knowledge. New experiences are melted as understanding with the concepts one possess and what he/she has got from others who use the language

Tacit knowledge is typical form in craftsmanship but in addition beliefs and interpretations form part of social reality. Shared cultural connection is a background for communication

Tacit knowledge lies deep in social reality. Understanding and learning tacit knowledge is easiest in practical interaction or dialogue

The modes to possess tacit knowledge are up to high degree learning by following models: follow up, identification and learning by doing.

Telework ICL Invia 1999

Technical and social nature of information networks in ICL Invia Oyj

1. Information network and – system compensate local tacit knowledge - Technical nature of the system

2. Information network and – system intermediate tacit knowledge - Social nature of the system

3. Co-operation is based on existing tacit knowledge

Generation of tacit knowledge in virtual environment at telework in ICL Invia Oyj

| Technical and social nature of information networks in ICL Invia Oyj | Information network and – system compensate local tacit knowledge - Technical nature of the system | Information network and – system intermediate tacit knowledge - Social nature of the system | Co-operation is based on existing tacit knowledge |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| The nature of tacit knowledge (Raivola & Vuorensyrjä 1998.) | | | |
| <i>Tacit knowledge emerges often as non cognitive rules and norms which support other targeted knowledge</i> | | h Rules and norms emerge and formulate in discussion | m The system can organise dispersed knowledge |
| <i>Tacit knowledge is transformative and it is like a filter element for knowledge. New experiences are melted as understanding with the concepts one possess and what he/she has got from others who use the language</i> | d Building technical standards and concepts in order to produce general understanding | i The system support social experiences. Discussion is done inside the system – rapidly | n It is possible to increase the amount of dispersed knowledge indirectly |
| <i>Tacit knowledge is typical form in craftsmanship but in addition beliefs and interpretations form part of social reality. Shared cultural connection is a background for communication</i> | e Supporting cultural contacts with technical means and by giving technical structure to it | j The system can produce new and transmit former beliefs and interpretations | o Organisation of shared culture |
| <i>Tacit knowledge lies deep in social reality. Understanding and learning tacit knowledge is easiest in practical interaction or dialogue</i> | f The system support creation of social reality | k The system support interaction and learning | p Building social reality |
| The modes to possess tacit knowledge are up to high degree learning by following models: follow up, identification and | g Human action and technical appearance of work emerge in the information network | l It is possible to make actions and learning possible by observation of others work | q Identification and increased dispersed knowledge |

Virtual presence at work

1. Work via information systems does not mean the end of the generation of tacit knowledge but continuing this process in new formats.
2. Cognitive processes are not tied to physical places.
3. Human beings generate tacit knowledge in social contexts both when acting in physical and virtual environments.

Virtual presence at work

4. The technical information system and the virtual environment can maintain and support parts of social structures already existing.
5. Information systems can support ongoing interaction and learning as well as observations on co-workers performance.
6. Virtual presence at work can support mental and social presence up to such degree, that tacit knowledge is generated and transmitted.