

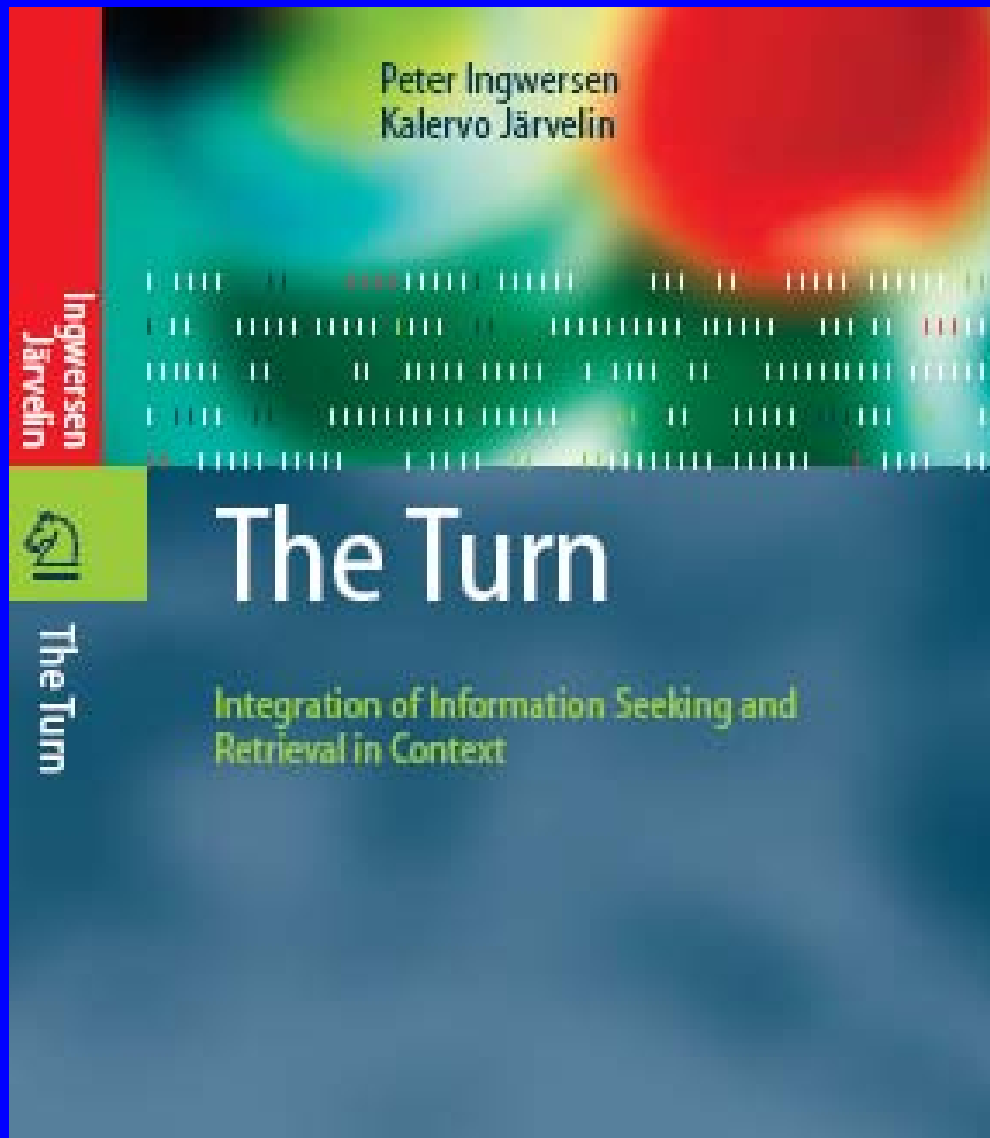
# Contexts in Information Seeking & Retrieval (IS&R)

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Seeking and Retrieval in Context.** By Ingwersen,  
P. & Järvelin, K. Springer, 2005



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# Outline

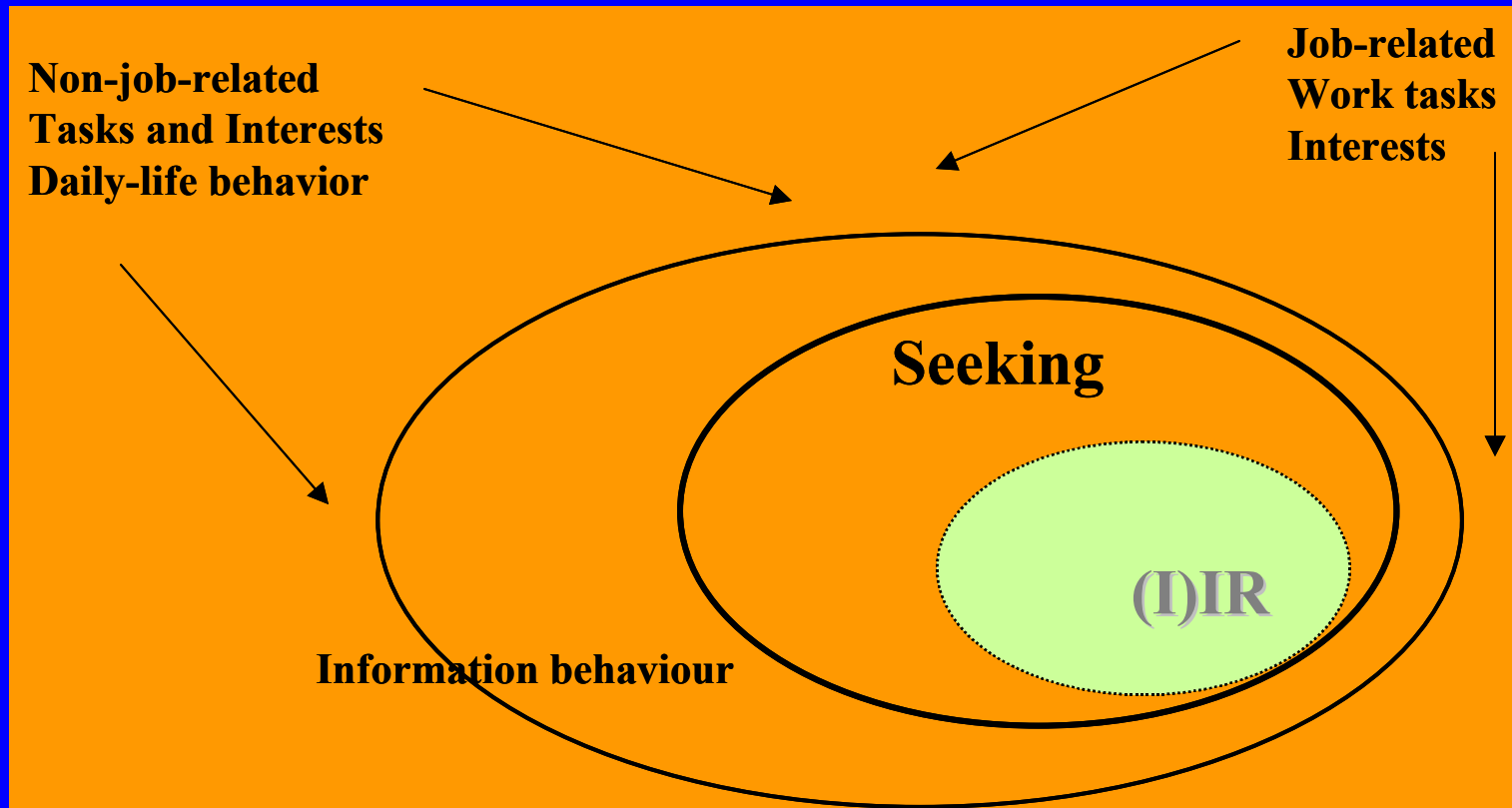
- Context in IS&R – Wilson’s nested model
- Basic conceptions
- The cognitive perspective – the puzzle model: mutual contextualization, leading to
- The nested model of contexts
- Examples of using the model
- Conclusions

# Contexts in IR: fundamentals

- **IR**: increasingly integrated with Information Seeking into **IS&R** – due to IT advancements
- ***Intentionality as reason for IS&R:***
  - ***Perceived work tasks*** or non-job related daily-life tasks or interests – leading to ...
  - ***Perceived search tasks*** (instrumental cognitive-emotional & physical activities serving the work task) – not simply '*tasks*' ...

**are central phenomena in IS&R**  
**... and in information behavior:**

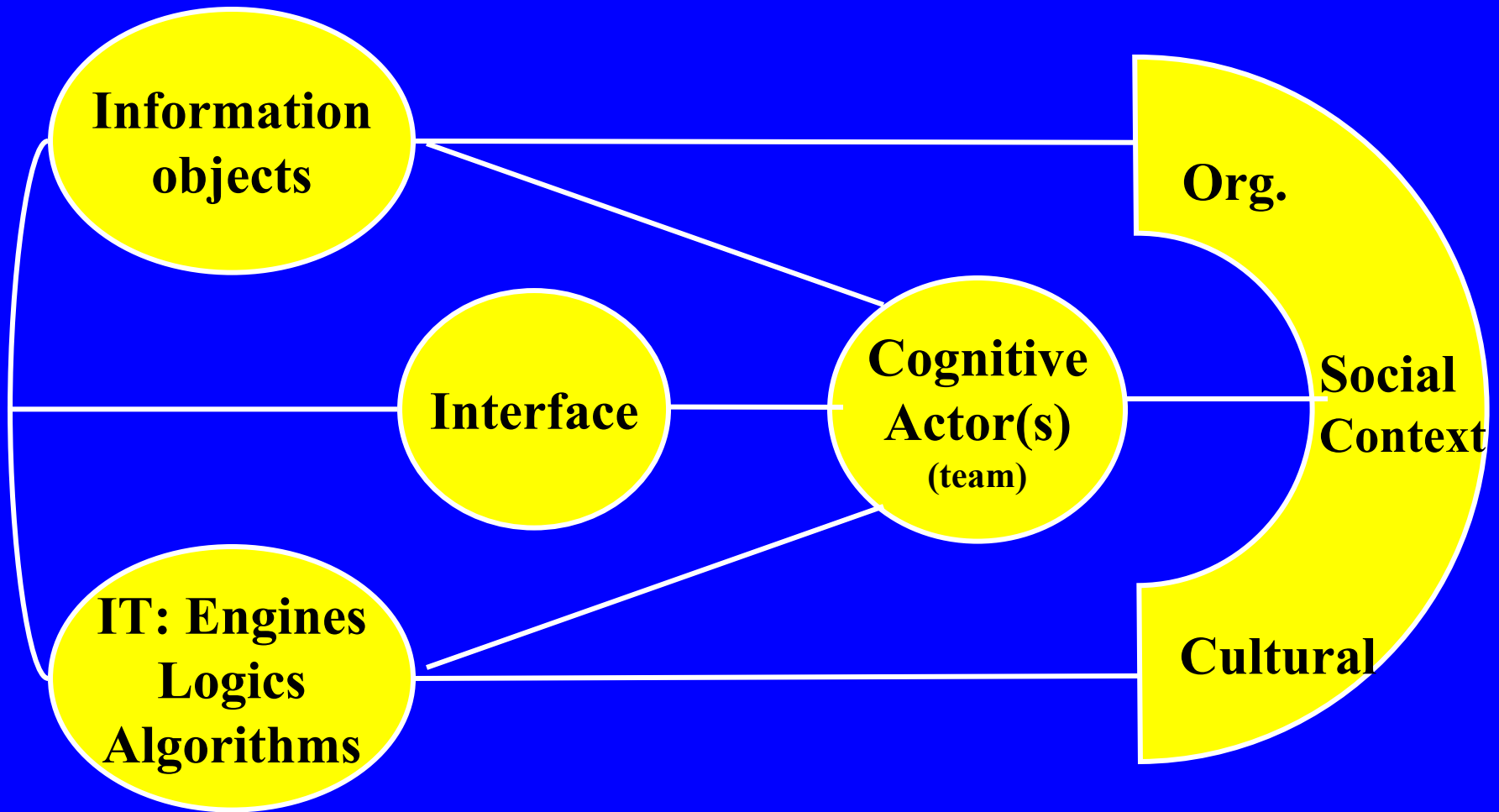
# Nested model of IS&R



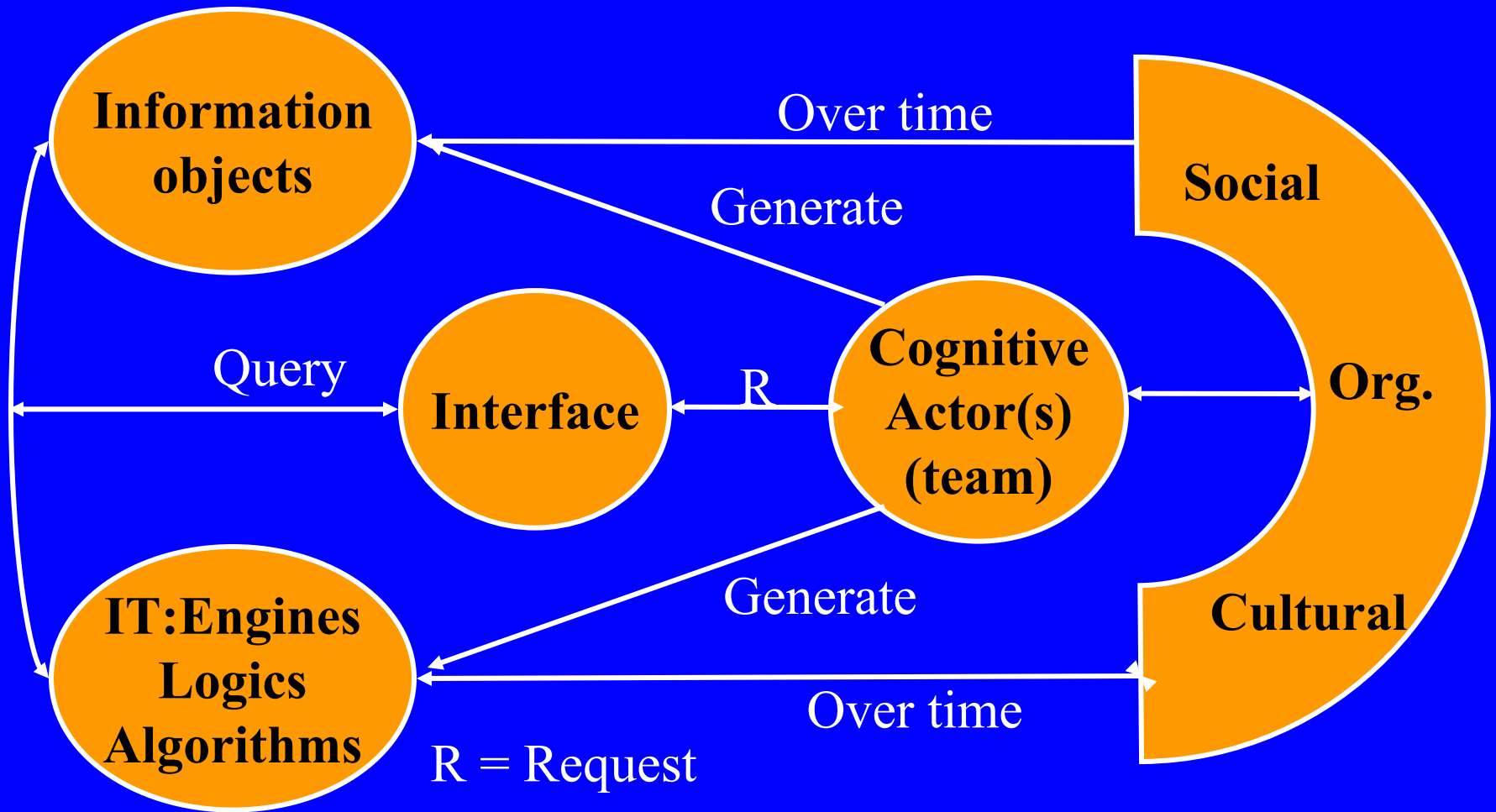
# Information behaviour ... and other central concepts in IS&R

- **Information behaviour:**
  - to *create* information – e.g., on the Net; as indexer
  - to *produce* publications – e.g., as publisher
  - to *use* and *communicate* – face-to-face; e-mail
  - to *manage* information sources – e.g. selectivity
- **Information seeking (behaviour)**
  - Information behaviour with *desire* for Information
  - *Information need* exist
  - Searching *information sources* – e.g. colleagues
- **Information Retrieval (IR)**
  - *Searching information space* via systems

# Simplistic general model of cognitive IS&R: The Puzzle Model



# Simplistic model of (I)IR, use & creation



# IR seen as Processes of Cognition that

- **involve cognitive structures representing cognitive actors of different origin, according to previous model:**
- **AUTHORS** of information object structures
  - **Indexers and thesaurus designers**
- **DATABASE architecture & algorithmic designers**
- **INTERFACE functionality designers**
- **INDIVIDUAL SEARCHERS** in seeking situations
- Collective cognitive structures: **teams & domain – socio-org. context**
- **SELECTORS: producers, editors, vendors ...**

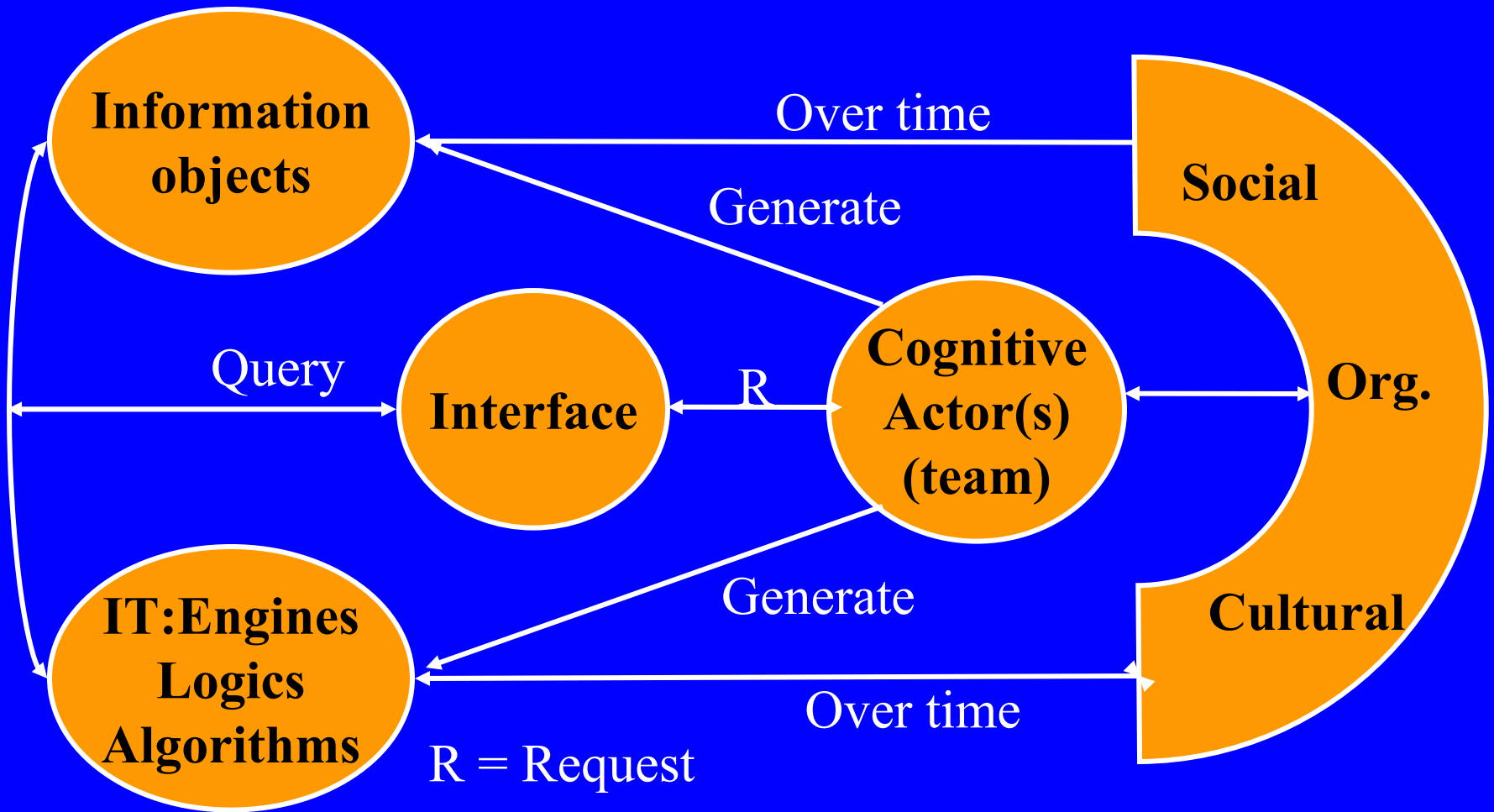
# The cognitive perspective:

- Cognitive actors are **influenced** (not determined) by the (perceived) **socio-org. and systemic situation and contexts**
- Cognitive actors perceive & interpret situations according to their **historic context** (experiences)
- Cognitive actors are individually different – even in alike situations and contexts
  - Inter-indexer, -searcher, -assessor inconsistency

# Cognitive IS&R: Situation in Context

- Interactive IS&R is **always** performed in context
- IS&R (including social) *interaction* functions as **context** for the involved actors – such as – searchers or interfaces / system engineers
- Situation: a (perceived) **work task situation** within the framework of an organization or social-cultural context – or
- a spontaneously created (non-job related) **daily-life** task or **interest situation**
- Is **mixed** with *emotional factors*, like *uncertainty*

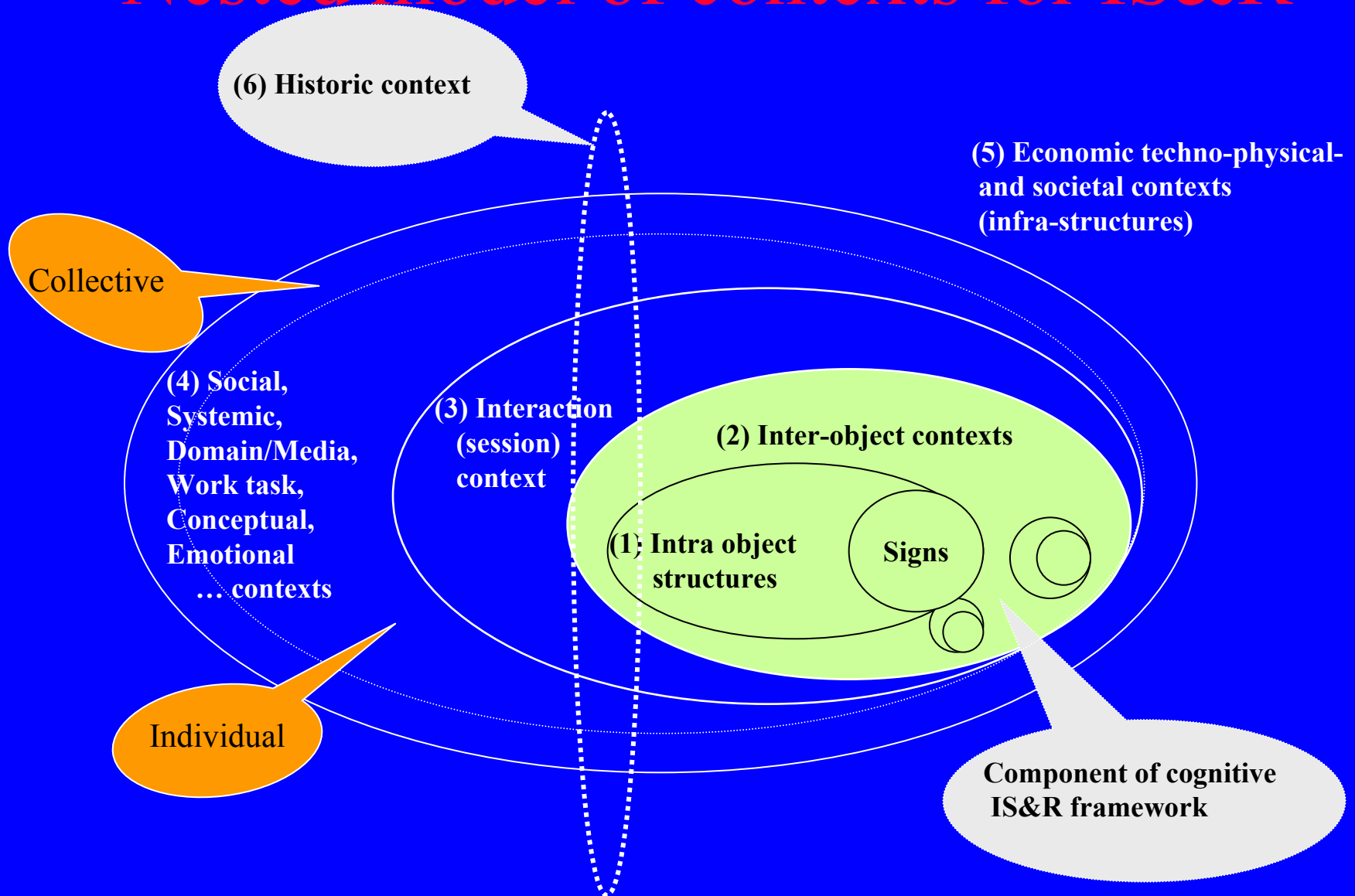
# Simplistic model of *IS&R*, use & creation – the cognitive framework



# There are thus many contexts ...

- All framework components are contextual to one another – not only context to actors!
- For *each component* there are *5 nested contexts*:
  1. *Object structures*, i.e., signs / features in context of:
  2. *Inter-object contexts* or structures, i.e., object relations like links or citations
  3. *Interaction (session) context*, providing evidence of behavior between two components (like in HCI)
  4. *Social, systemic, domain-work task context*
    - *Component-dependent individual* (actor [author; searcher; ...]; systemic [engine; interface; information]; domain/work task)
    - *Component-dependent collective* (socio-org.; cultural; systemic)
  5. *Techno-economic & physical infrastructure, political & society contexts*

# Nested model of contexts for IS&R



# Use of the nested context model – 1

If the central component is *Information Space* during IS&R, examples:

1. Intra-Object structures: terms, image features, ...
2. Inter-Object contexts: links, citations, clusters, ...
3. Interaction (session): search/authoring process *evidence*, e.g., algorithmic processes, auto-indexing; eye/mouse movements, WT descriptions, explicit RF, key-strings, ...
4. Component-dependent *individual* context (conceptual-emotional): engine logic/algorithms, ...; interface functionality, ...; actor, ...
4. Component-dependent *collective* context: (local) socio-org. structures/conditions: domain vocabulary, natural WTs, time constraints, preferences, searchers' WT perceptions, their implicit RF behavior; (local) systemic conditions
5. Infrastructural contexts: Network type, speed

# Use of the nested context model – 2

If the central component is **Searching Actor(s)**:

1. Intra-Object structures: individual knowledge, emotions, WT perception ...
2. Inter-Object contexts: collaboration, social networks
3. Interaction (session): search process evidence, e.g., eye/mouse movements, WT description, explicit RF; social interaction
4. Component-dependent *individual* context (conceptual-emotional): interface functionality, ...; other actors, ...; object
4. Component-dependent *collective* context: (local) socio-org. structures/conditions: domain vocabulary, natural WTs, time constraints; (local) systemic conditions: algorithms; (local) information space; ...
5. Infrastructural contexts: Network type, speed; cost

# Concluding notes - 1

- The **historic context** penetrates all other structures at a given situation!
- The current searcher is **also** surrounded by an **immediate session-based interaction context** – which becomes increasingly central to system-searcher performance and support, i.e., to fulfill the perceived situation at hand: the search task and work (or daily-life) task

# Concluding notes - 2

- ***Session-based context*** involves the use of searcher characteristics for algorithmic purposes, such as:
  - **Eye movements, key and mouse activities**
  - **Implicit Relevance Feedback behavior and inference based on, e.g.,**
    - **What searchers look at in documents**
    - **The search path used:** from object to object – within object elements, between features ...
  - **Explicit Relevance Feedback activities - always**
  - ***In context of individual and collective contexts!***

# Concluding notes - 3

- *IS&R in Context* also concerns the interaction between **Documents** and **IT platform** – in a **Temporal** context of (influenced by) **Socio-org. manifestations, domains, (work) tasks** – *and the remote Infrastructures.*

THANK YOU!