Immersion in e-learning

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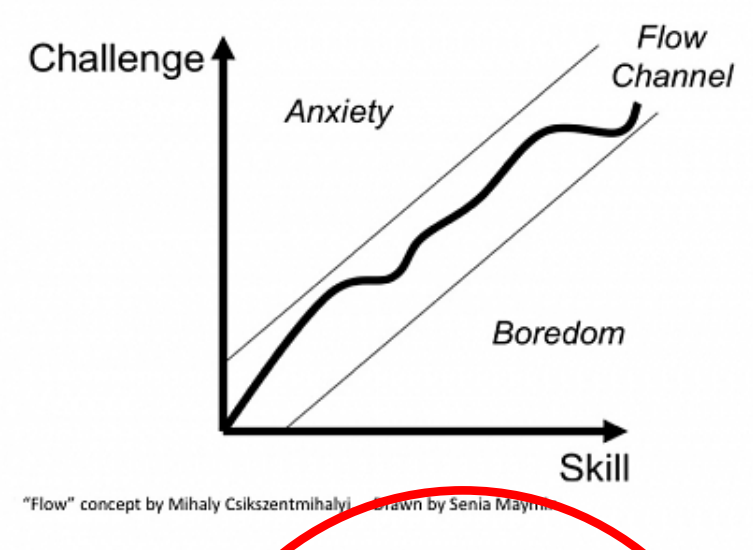
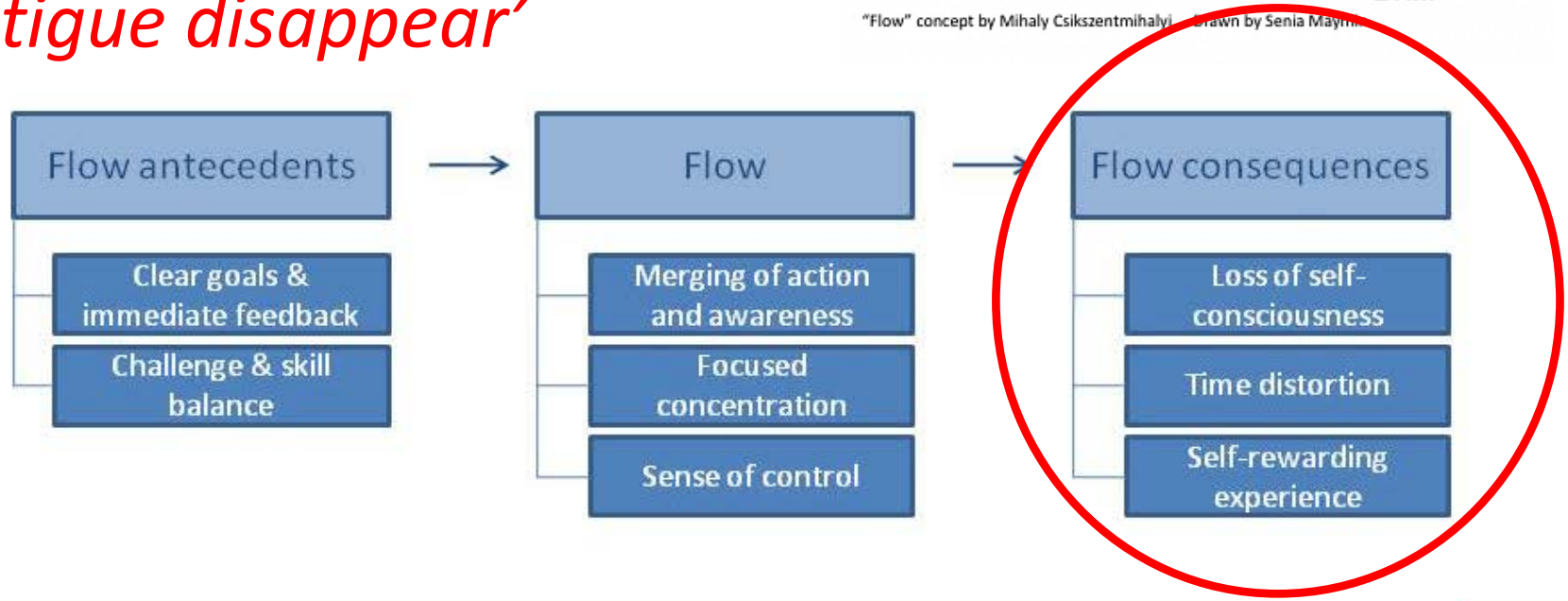
WARWICK
THE UNIVERSITY OF WARWICK

What is immersion in e-learning?

- Based on psychological concept of flow:

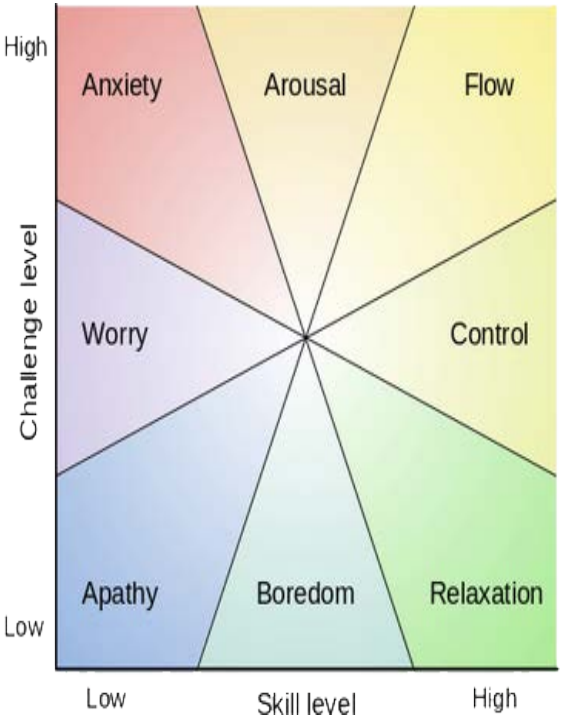
learners 'are so engaged in learning that time and fatigue disappear'





3 conditions to meet for achieving a flow state

1. being involved in activities with clear and structured goals and progress
2. performing tasks with articulate and immediate feedbacks
3. having a good balance between perceived challenge level and skill level

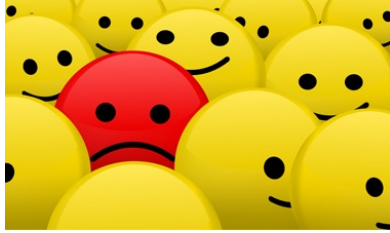


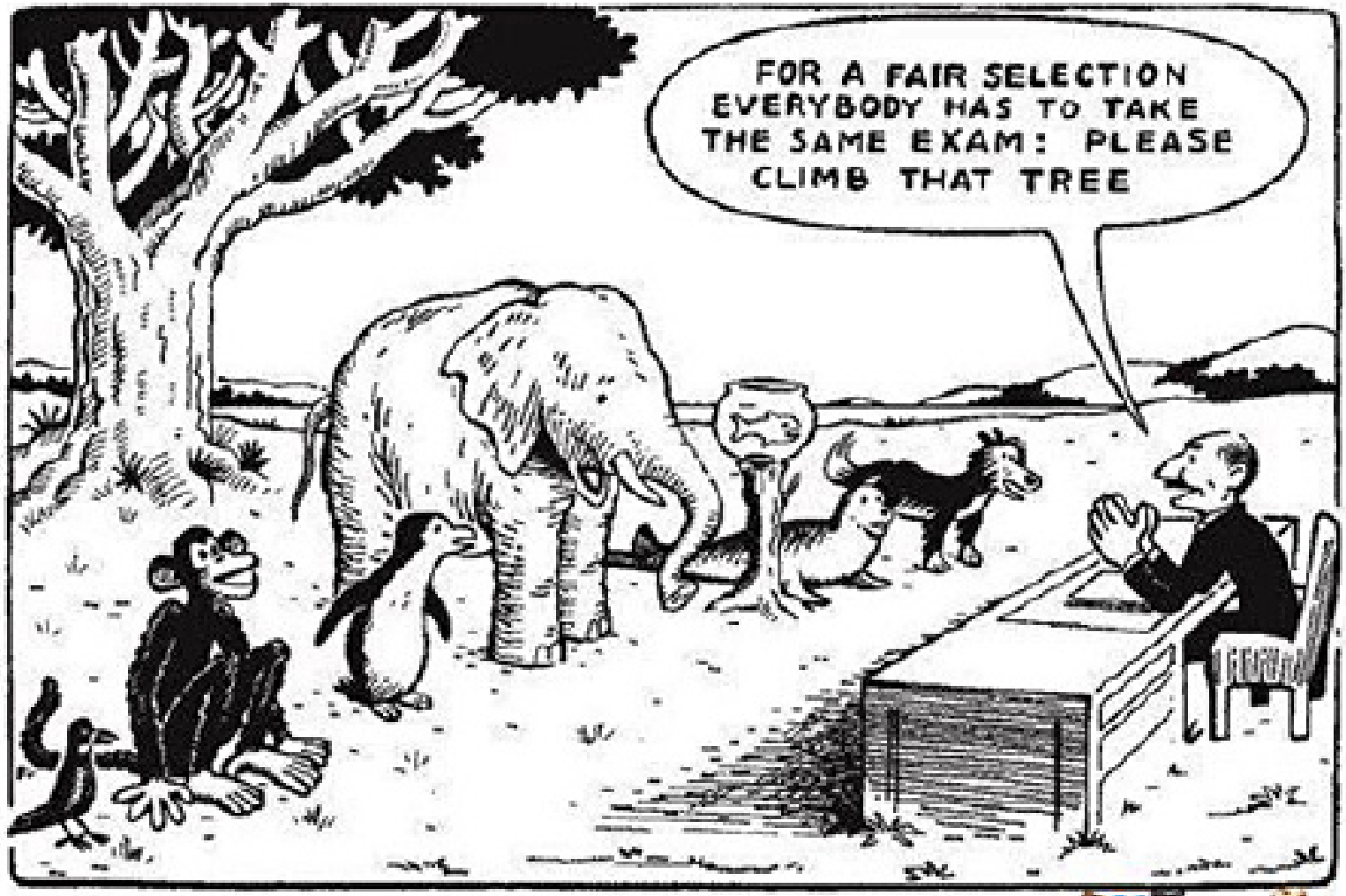
Csikszentmihalyi's flow model

Progression of Immersion Mechanisms

- Personalised Learning, Adaptive Hypermedia
- E-learning 2.0, Social E-learning
- Visualisation & Familiarity
- Gamification & Feedback

Personalised Learning

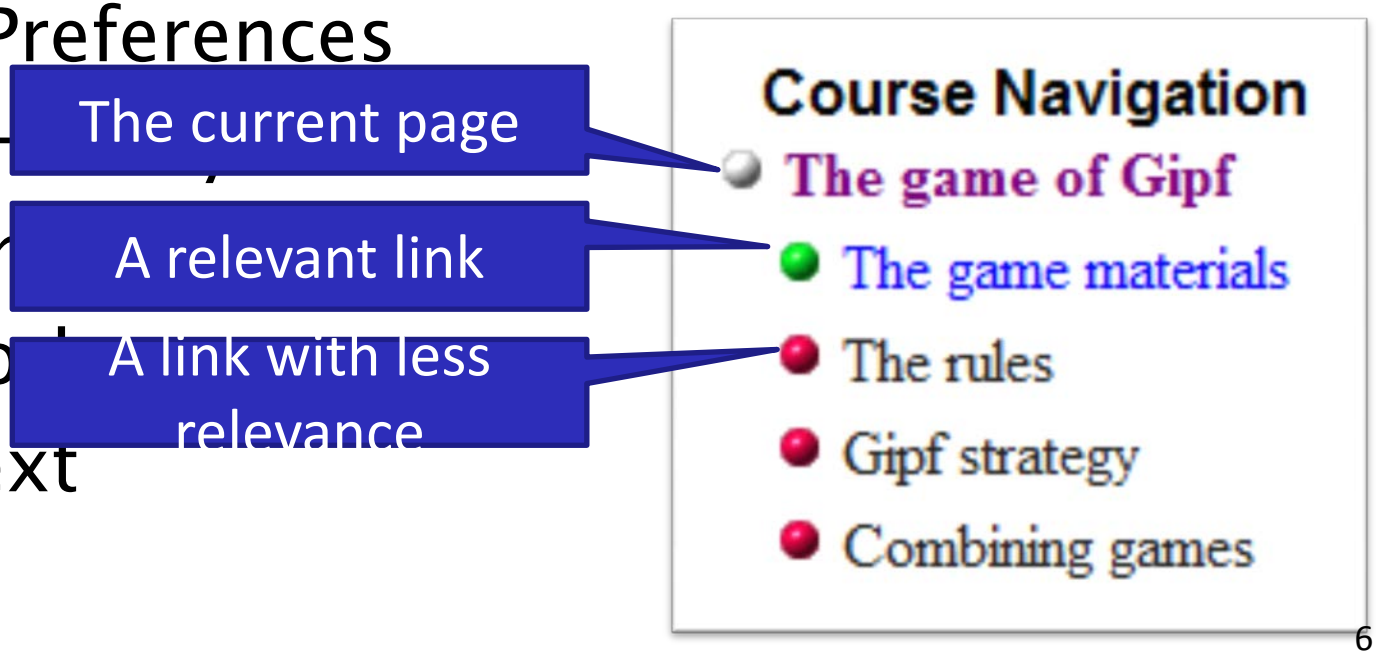




memecenter.com MemeCenter

Adaptive Hypermedia

- Allows content to be personalised and recommended to users based on
  - User Preferences
  - User H
  - Preser
  - Netwo
  - Context
  - etc.



Adaptive Hypermedia

ICALT 2010

ICALT

Conference Program
Hosting City
Accomodation

About Hosting City

Location

The city of Sousse is located in the east-central part of the country on the Mediterranean coast.

The old part of the city, known as the medina, was declared by UNESCO a World Heritage Site in 1988.

Todo List

Conference Program
Accomodation

guest - Logout | Next: Conference Program | Course List

Adaptive Hypermedia

ICALT 2010

ICALT

Conference Program
Hosting City
Accomodation

About Hosting City

Location

The city of Sousse is located in the east-central part of the country on the Mediterranean coast.

The old part of the city, known as the medina, was declared by UNESCO a World Heritage Site in 1988.

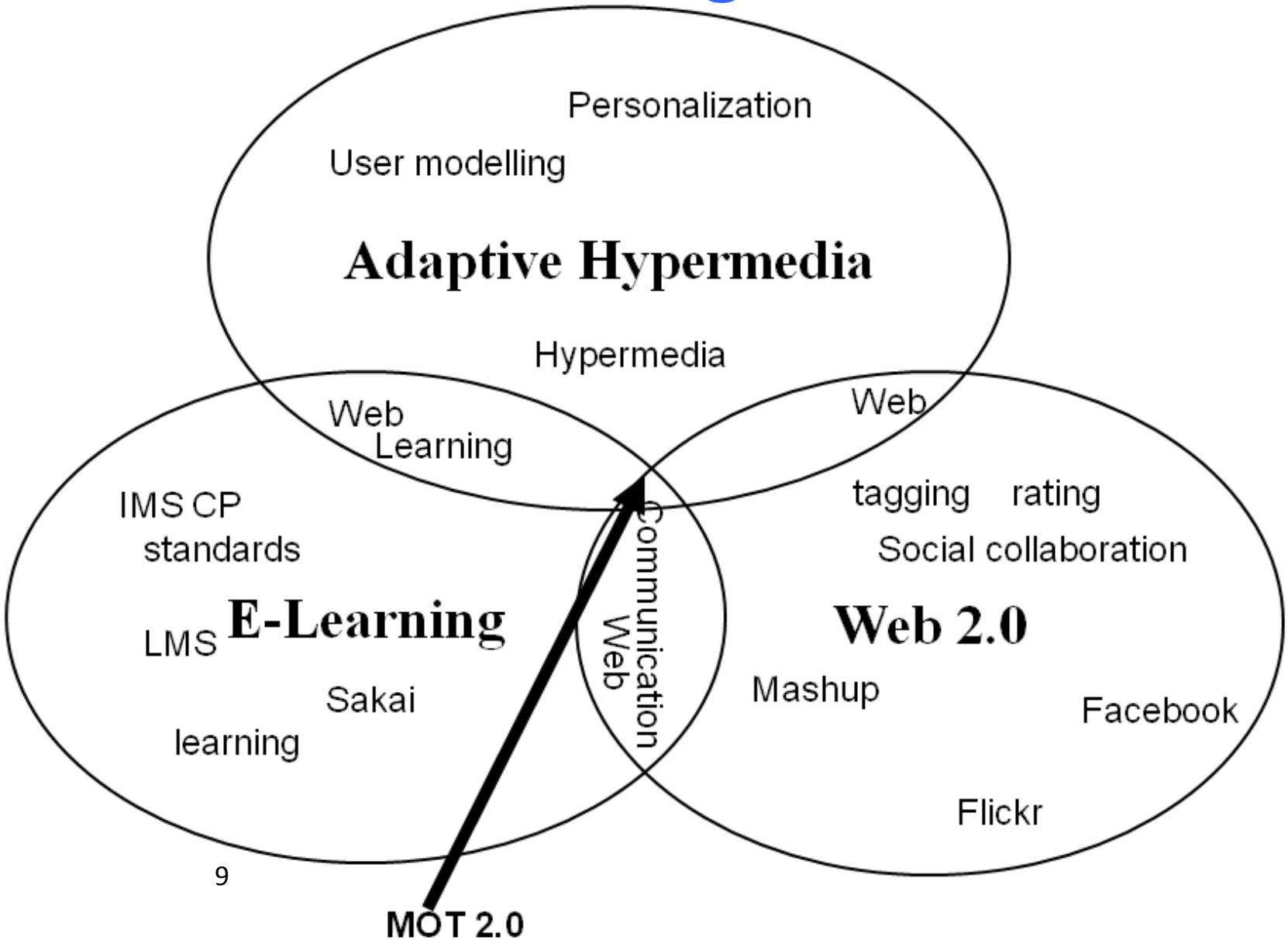
Weather

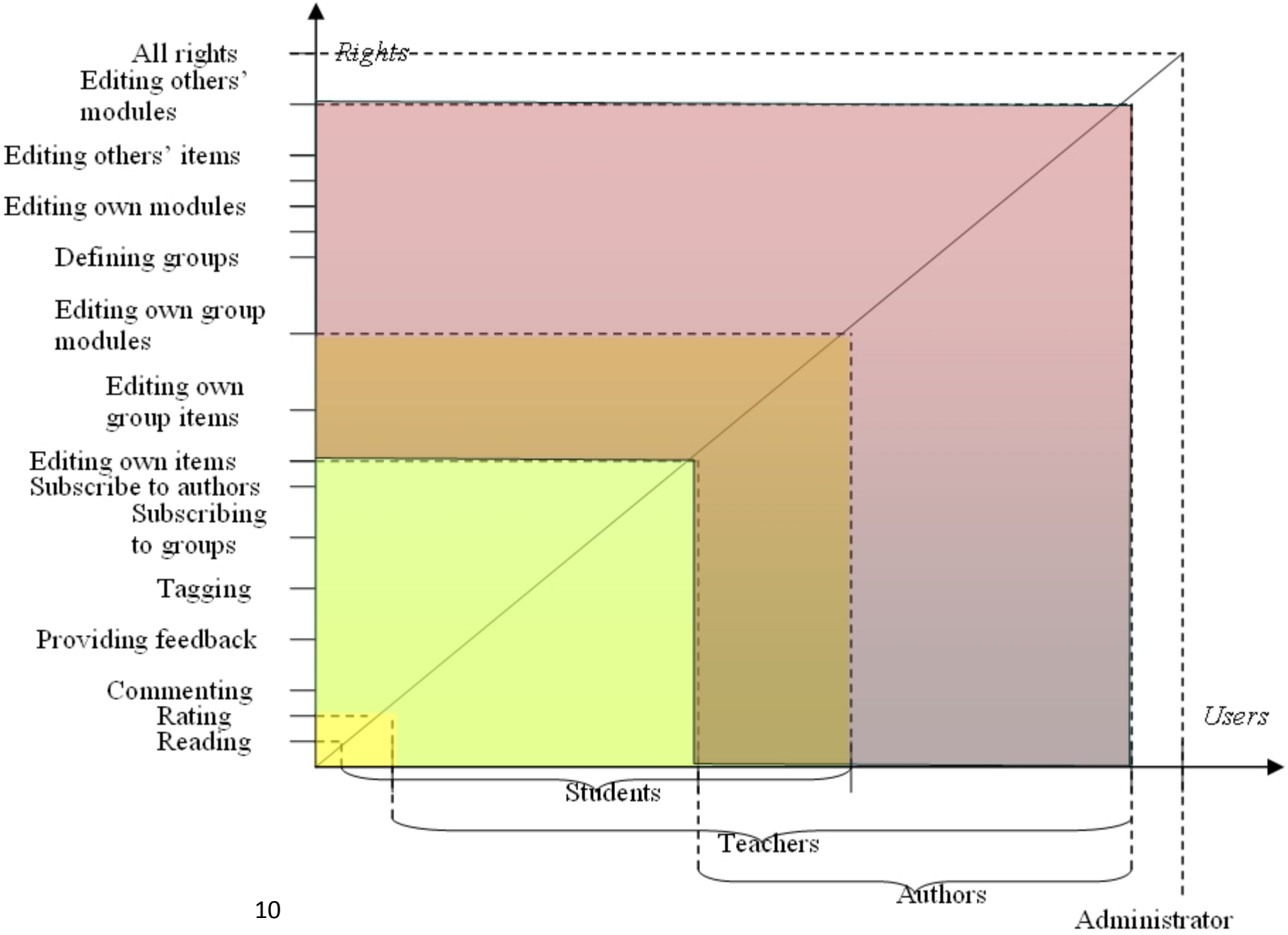
This period of the year (July) in Sousse is summer time. Temperatures are in the 25-35°C and may reach

Todo List
Accomodation

guest - Logout Next: Accomodation Course List

Social E-Learning: MOT 2.0




All rights
Editing others' modules
Editing others' items
Editing own modules
Defining groups
Editing own group modules
Editing own group items
Editing own items
Subscribe to authors
Subscribing to groups
Tagging
Providing feedback
Commenting
Rating
Reading
Rights
Users
Students
Teachers
Authors
Administrator

Hi **cspjae**

- Collaborative Filtering
  - Introduction
  - Uses for Collaborative Filtering
  - User Tasks
  - Collaborative Filtering vs Content-Based Filtering
  - Acquiring Ratings
  - Explicit vs Implicit Ratings
  - Cold Start Issues
  - Ongoing Challenges to Collaborative Filtering
  - Privacy and Security
  - Trust
  - Summary
  - References
  - copyright

Collaborative filtering uses the assumption that people with similar tastes will rate things similarly. Content-based filtering uses the assumption that items with similar objective features will be rated similarly. For example, if you liked a web page with the words "tomato sauce," you will like another web page with the words "tomato sauce." The challenge is to cleanly extract the features of items that are most predictive. One then builds a user profile of features from the items a user has rated, and then compares that user profile to item profiles of new items whose features are extracted [1]. Content-based recommendations are discussed in Chapter 10 of this book [48]. Content-based filtering and collaborative filtering have long been viewed as complementary [1].

Content-based filtering can predict relevance for items without ratings (e.g., new items, high-turnover items like news articles, huge item spaces like web pages); collaborative filtering needs ratings for an item in order to predict for it. On the other hand, content-based filtering needs content to analyze. For many domains content is either scarce (e.g., restaurants and books without text reviews available) or it is difficult to obtain and represent that content (e.g., movies and music). Collaborative filtering does not require content. A content filtering model can only be as complex as the content to which it has access. For instance, if the system only has genre metadata for movies, the model can only incorporate this one extremely coarse dimension.

Vote here!

Rate: 4/5 - Very good

Tags: *E.g: Social Web, Facebook*

collaborative filtering, content-based, Content-based filtering, model

Feedback: Add Feedback?

By **salman**: I liked it!
By **Nerin**: Very informative

Save changes

Collaborative Filtering; Content-Based Recommendation Systems; Data Mining for Web Personalization;

Social Actions

Module Structure

Recommended Modules

Hi **fawaz**

- Collaborative Filtering
  - Introduction
  - Uses for Collaborative Filtering
    - User Tasks
    - Collaborative Filtering vs Content-Based Filtering
  - Acquiring Ratings
    - Explicit vs Implicit Ratings
    - Cold Start Issues
  - Ongoing Challenges to Collaborative Filtering
    - Privacy and Security
    - Trust
  - Summary
  - References
  - copyright

Designers of web services should carefully identify the possible tasks users may wish to accomplish with their site as different tasks may require different design decisions. From a marketing perspective, this is the value added by the CF system. In this section, we consider user tasks for which collaborative filtering is useful. Tasks for which people use collaborative filtering that have been studied include:

Module Structure

Social Actions

1. Help me find new items I might like. In a world of information overload, I cannot evaluate all things. Present a few for me to choose from. This has been applied most commonly to consumer items (music, books, movies), but may also be applied to research papers, web pages, or other ratable items.

2. Advise me on a particular item. I have a particular item in mind; does the community know whether it is good or bad?

recommended experts

3. Help me find a user (or some users) I might like. Sometimes, knowing who to focus on is as important as knowing what to focus on. This might help with forming discussion groups [39], matchmaking, or connecting users so that they can exchange recommendations socially.

4. Help our group find something new that we might like. CF can help groups of people find items that maximize value to group as a whole [46] . For example, a couple that wishes to see a movie together or a research group that wishes to read an appropriate paper.

Chat tool

5. Help me find a mixture of "new" and "old" items. I might wish a "balanced diet" of restaurants, including ones I have eaten in previously; or, I might wish to go to a restaurant with a group of people, even if some have already been there; or, I might wish to purchase some groceries that are appropriate for my shopping cart, even if I have already bought them before.

6. Help me with tasks that are specific to this domain. For example, a research paper recommender [60] might also wish to support tasks such as "recommend papers that my paper should cite" and "recommend papers that should cite my paper." Similarly, a recommender for a movie and a restaurant might be designed to distinguish between recommendations for a first date

Vote here!

Rate: 4/5 - Very good

Tags: *E.g: Social Web, Facebook*

collaborative filtering

Feedback: Add Feedback?

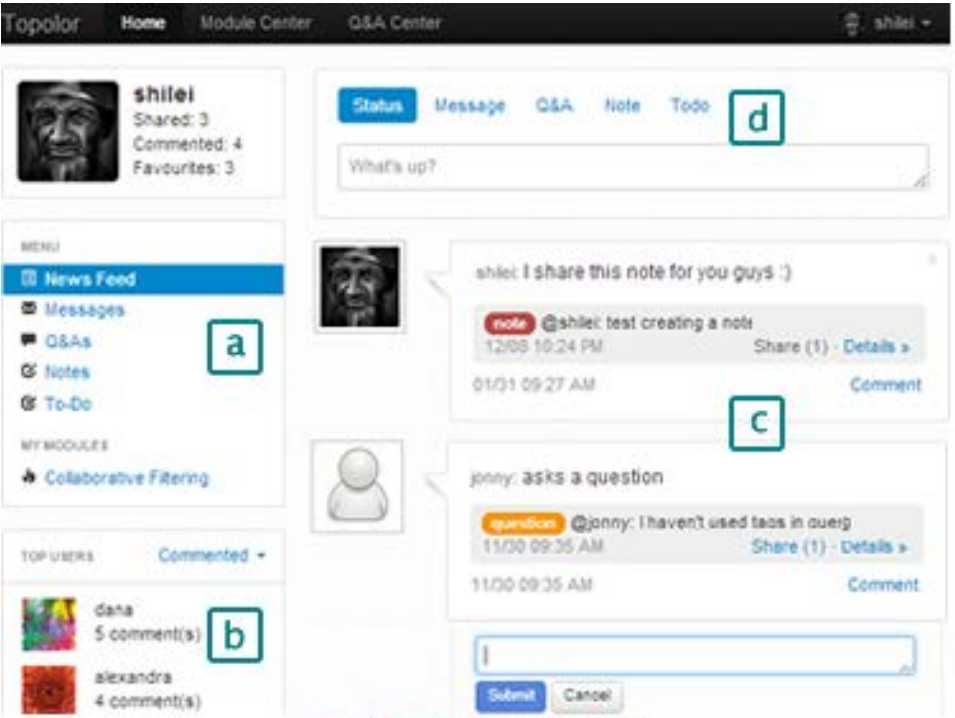
By **cspjak**: Another task may also be considered : "Help me find group, I may belong to". Many people are lost in

Save changes

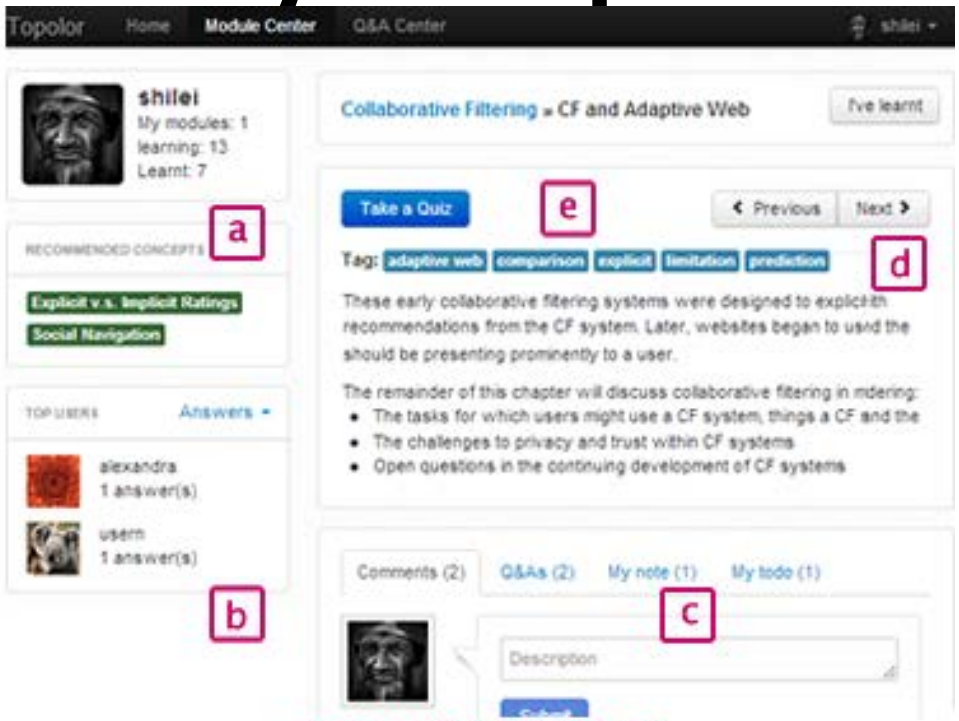
Experts in this module: fawaz; sagar; csuffl;

various users right
csugal: yeah
fawaz: CF is the process of filtering or evaluating items through the opinions of other people
csugal: they're used all over the place
csuffl: I get some javascript error popup and can't enter text in the Feedback box
fawaz: CF uses users' opinions, and not the items
sagar: ya but there is there any mechanism to verify the opinions
csugal: maybe we don't have

Visualisation & familiarity in Topolor1



1. Topolor – Home



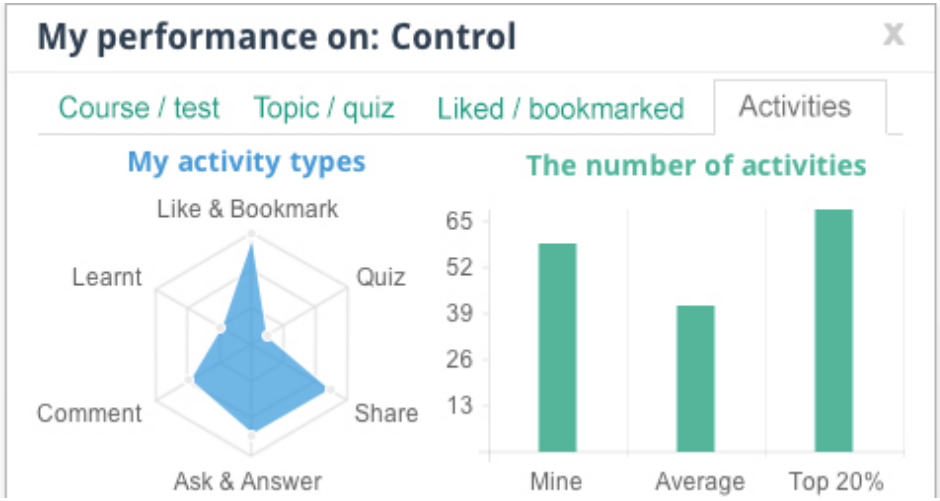
2. Topolor – Module

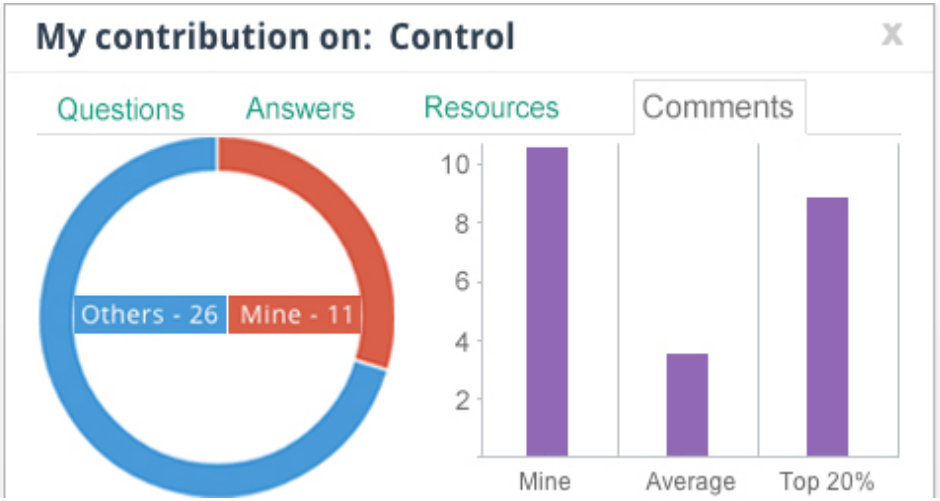
a)messages, Q&A list, notes, to-do.
b)Learning peer list:
c)Information flow wall
d)Posting tool

a)Learning topic adaptation.
b)Learning peer adaptation & Messaging
c)Web2.0 tools.
d)next
e)Quiz

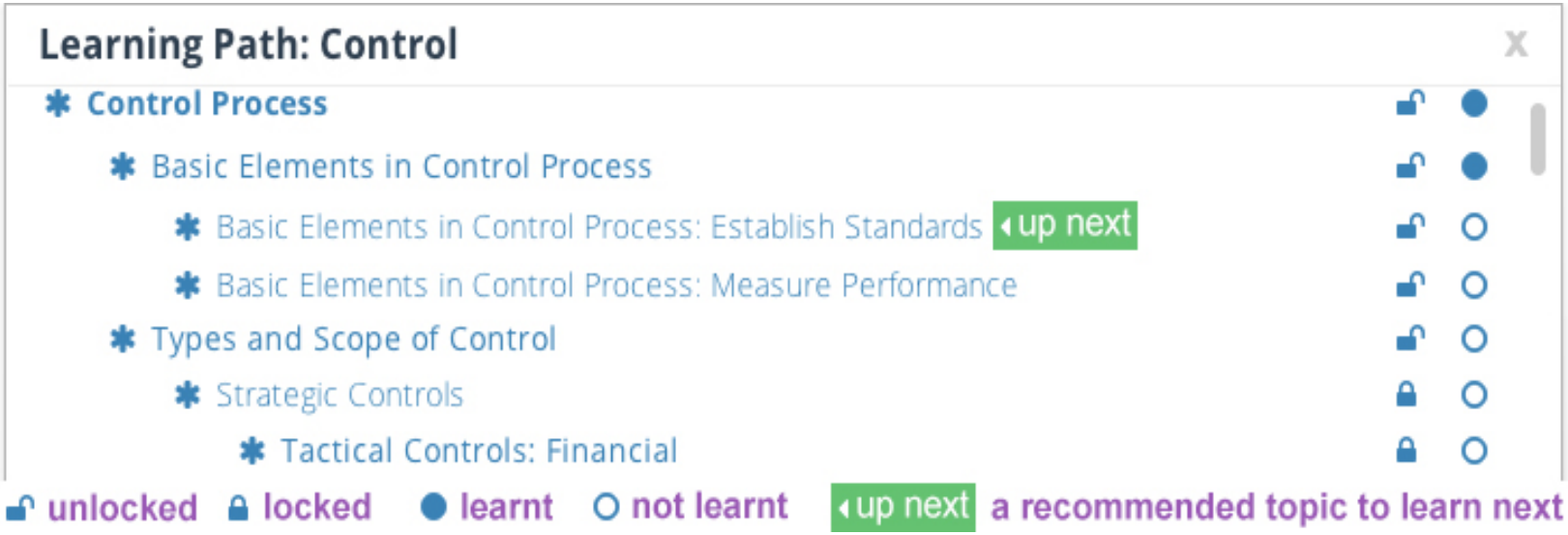
Visualisation of social status, comparison & learning progress in Topolor 2

- Topolor's support for the sense of competence and relatedness include the comparison of learner performance and contribution





Structured &chunked goals with increasing challenges



Gamification


games
strategies that use game attributes to achieve other goals
fun games purely for entertainment
serious games
gamification

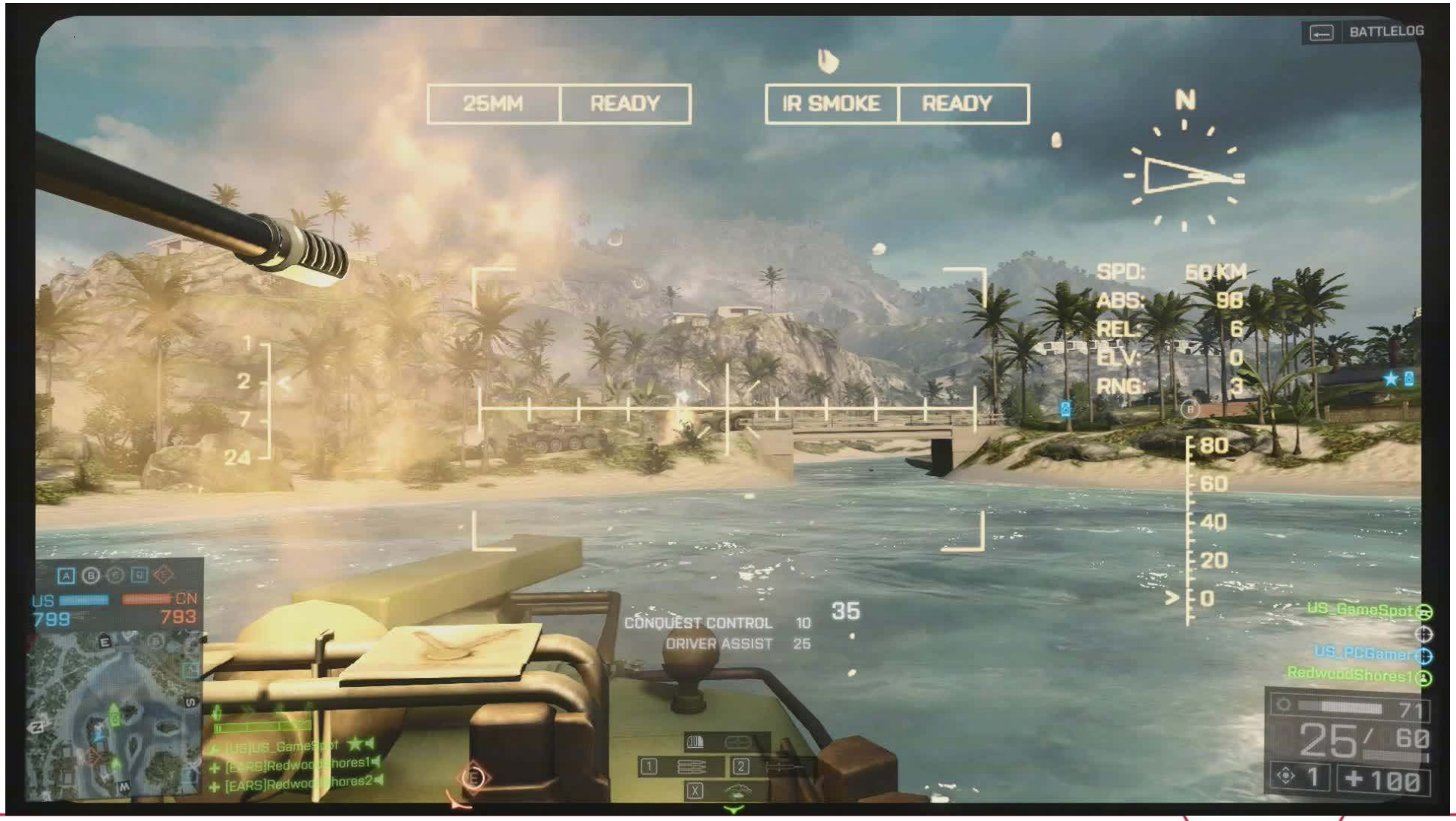
Games characteristics?

multidimensional levels of interactivity and feedback

feedback is frequent, instantaneous/ immediate

feedback is highly visible

feedback is fine-grained



feedback is volatile

feedback is traceable

challenges conquered (vs. distance to achievement)

distance to achievement

Graphical User Interfaces - Mozilla {Build ID: 2003021008}

File Edit View Go Bookmarks Tools Window Help Debug QA

http://wwwis.win.tue.nl:8080/servlet/AHA/Get/29350/home/index.xml

Search

Home Bookmarks Trafficnet nos-TT 730/1 - files ... Classic FM Home Cam AEX - Euronext Amst...

Road Map

- top
- introduction
- UI design
- ergonomic advice
- evaluation
  - without users
    - cogn. walkthrough
      - who
      - prepare
      - look for
      - results
    - action analysis
      - formal
      - informal
    - heuristics
  - with users
  - assignment
- UI development
- Java
- applets
- assignments

- instructions

TU/e

Paul De Bra has read 96 pages and still has 16 pages to read. (these read, these still to do)
color preferences - knowledge and settings - change password - message board - log out

Evaluating User-Interface Design Without Users

There are good reasons for performing evaluations without users (in addition to testing with users):

- Users have only limited time for taking part in the design and evaluation. Therefore, the user-interface should be free of (trivial) problems which can be easily foreseen and avoided.
- Evaluation with only a few users may not reveal all problems a large number of final end-users will experience, because not all possibilities of the application and user-interface will be tried.
- While the user-interface is being developed the test-users are still learning the interface. They may not encounter the problems experienced users will encounter later.

There are three popular evaluation techniques which are performed without involving test-users:

- **cognitive walkthrough**: this technique is especially useful for task-centered design.
- **action analysis**: this technique is used to estimate the time an expert user will need to perform a task using the interface.
- **heuristic evaluation**: using a checklist one may catch a wide variety of problems, but this technique requires evaluators with knowledge of usability problems.

Interactivity with other players, social aspects

Access to information in multiple, redundant ways

Gamification: Feedback

- *multidimensional levels of interactivity and feedback*
- *feedback is frequent, instantaneous/ immediate*
- *feedback is highly visible*
- *feedback is fine-grained*
- *feedback is volatile*
- *feedback is traceable*
- *distance to achievement, instead of challenges conquered (distance from start point)*
- *Interactivity with other players, social aspects*
- *Access to information in multiple, redundant ways*

Immediate Feedback in Topolor 2

2. **Within the context of organizations, control involves...**

Control Process

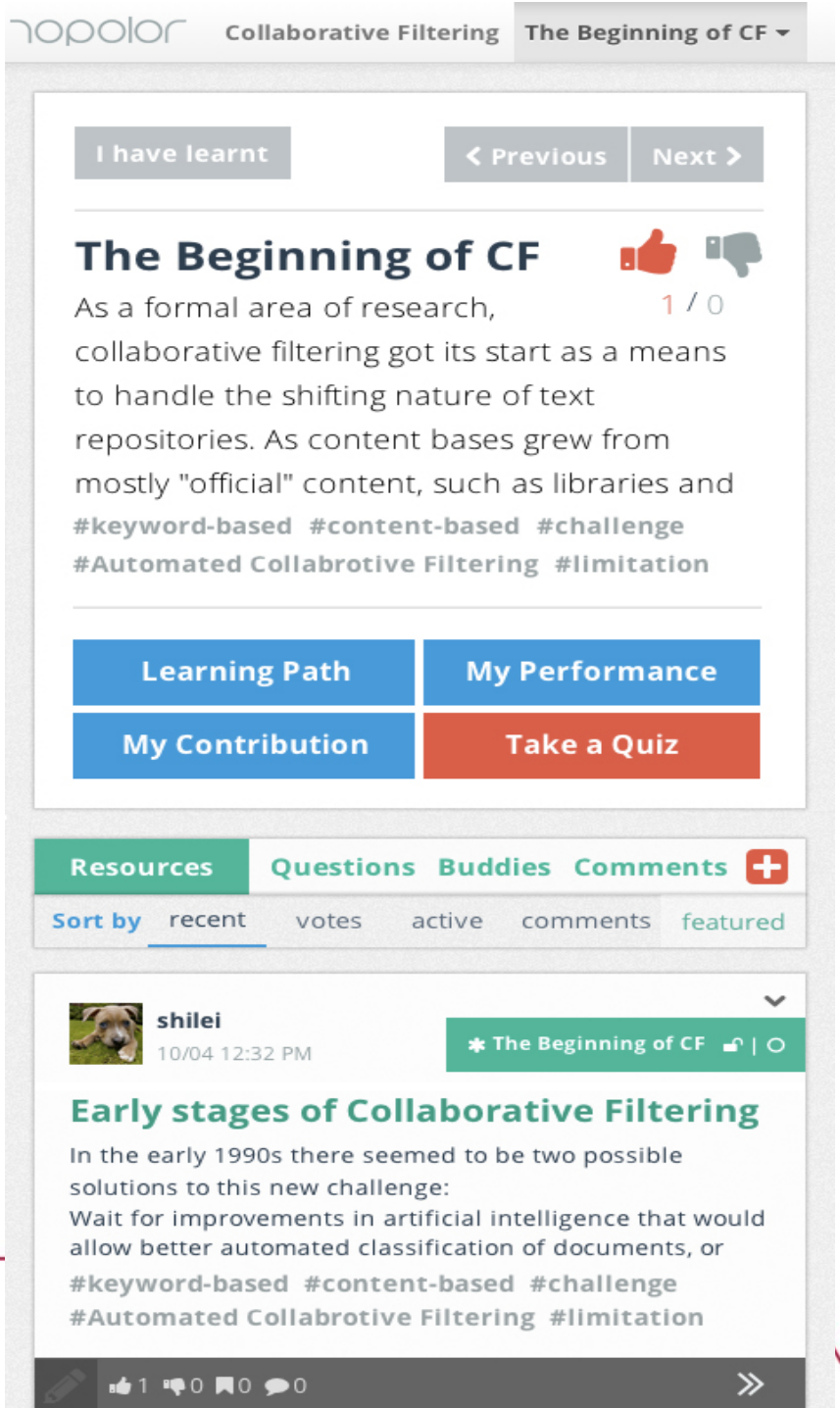
A. arranging the organization's workforce in some sequence.

B. tracking flow of transactions across different organizational departments.

C. regulating activities and behaviors to accomplish specific organizational objectives.

Your answer: A Correct answer: C

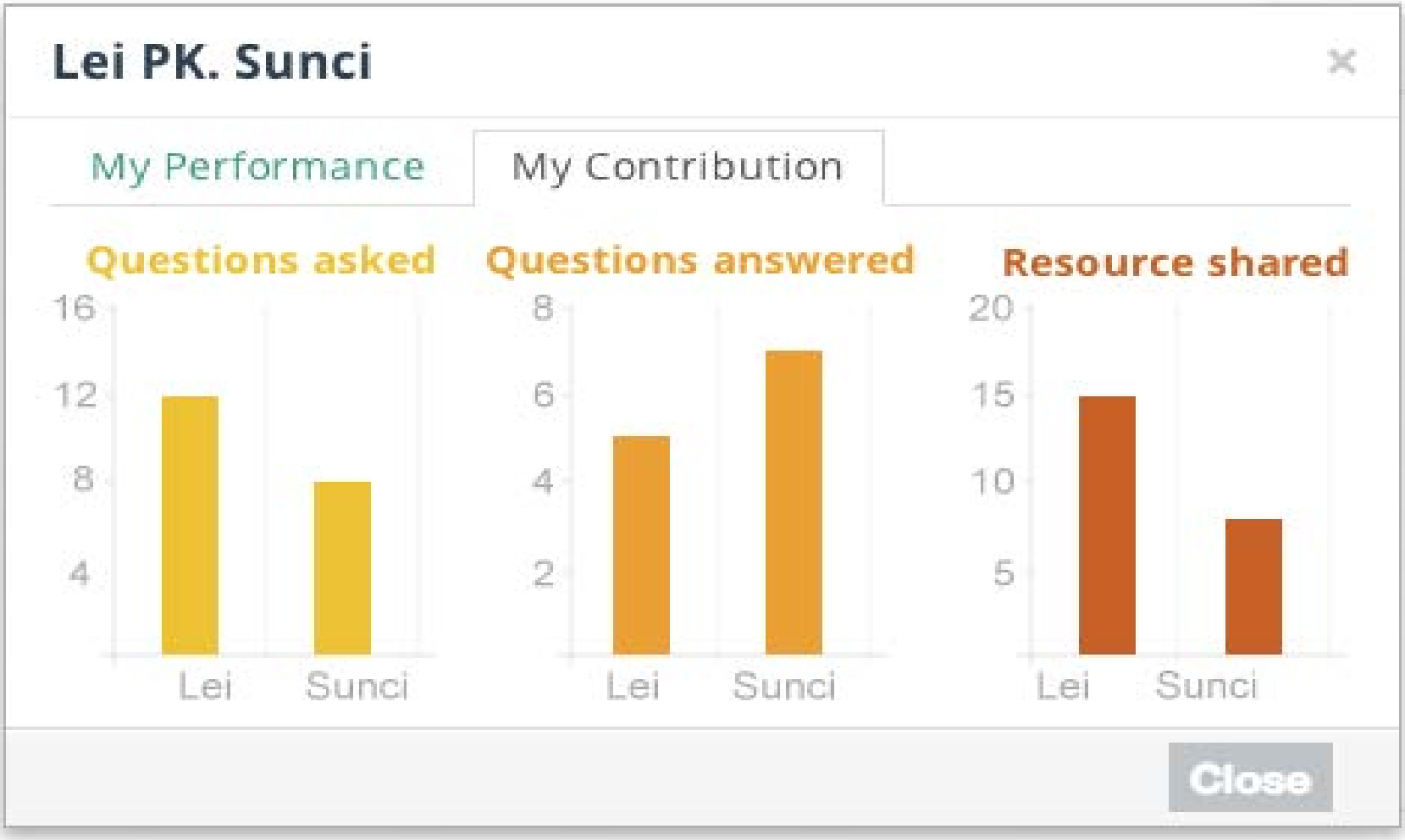
Feedback is fine-grained



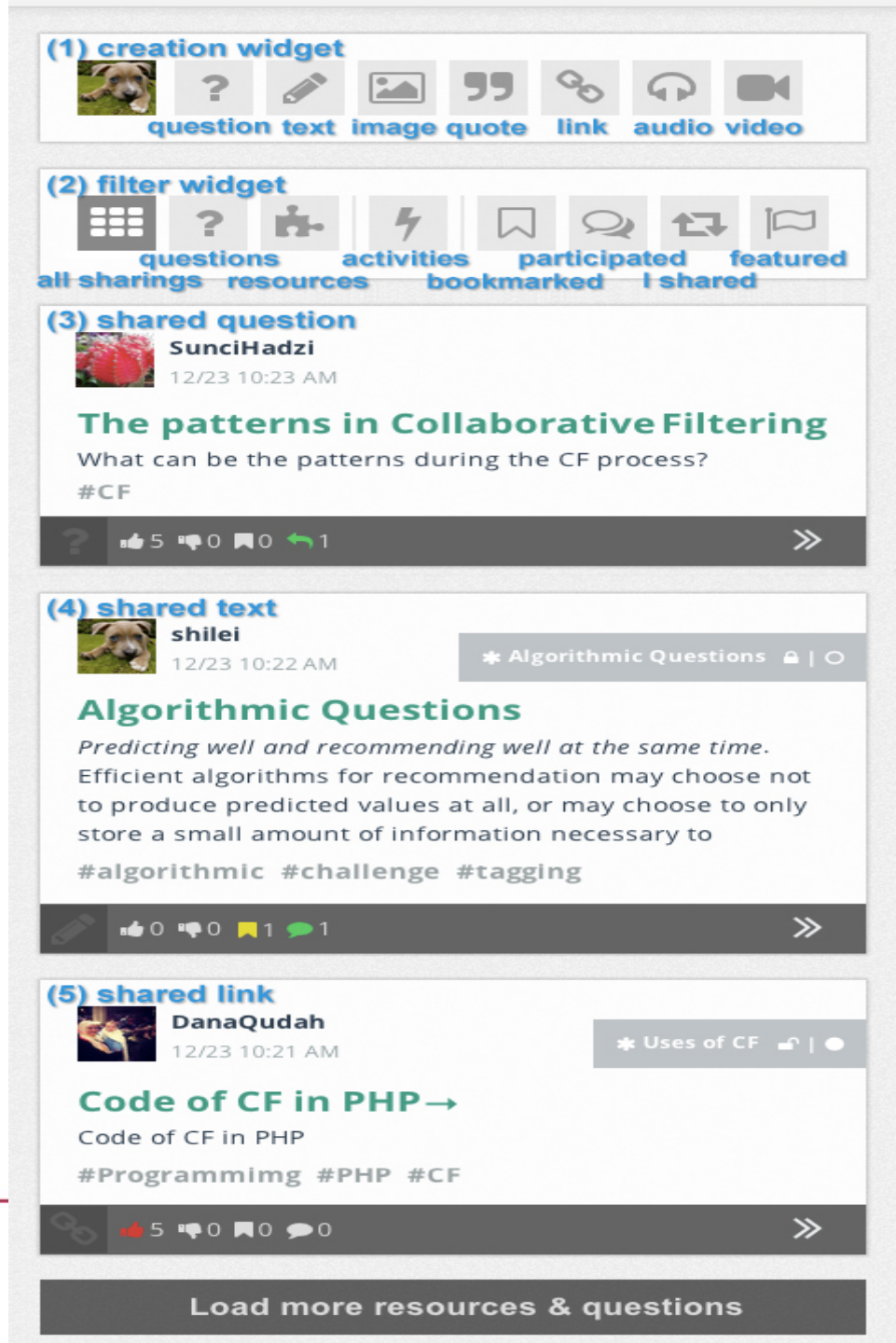
Gamification: Social aspects

- *interactivity with other players; social aspects*
  - Competitive vs. collaborative element, group forming, chat, different type of interaction, mediation (tutor-learner versus peer learning; filtering (– education, context), re-mediation)

Competition: Player vs. Player

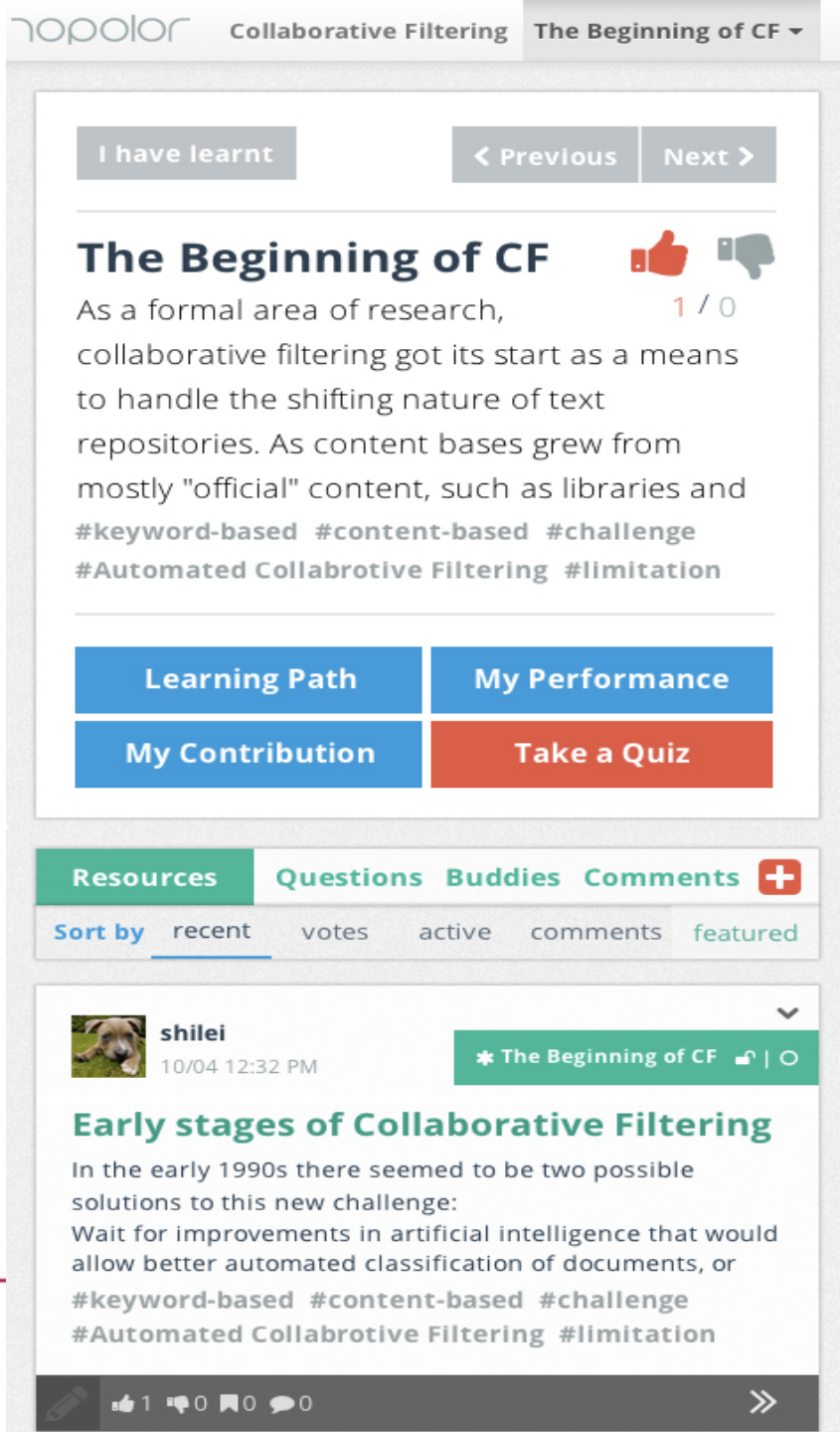


Social aspect: sharing



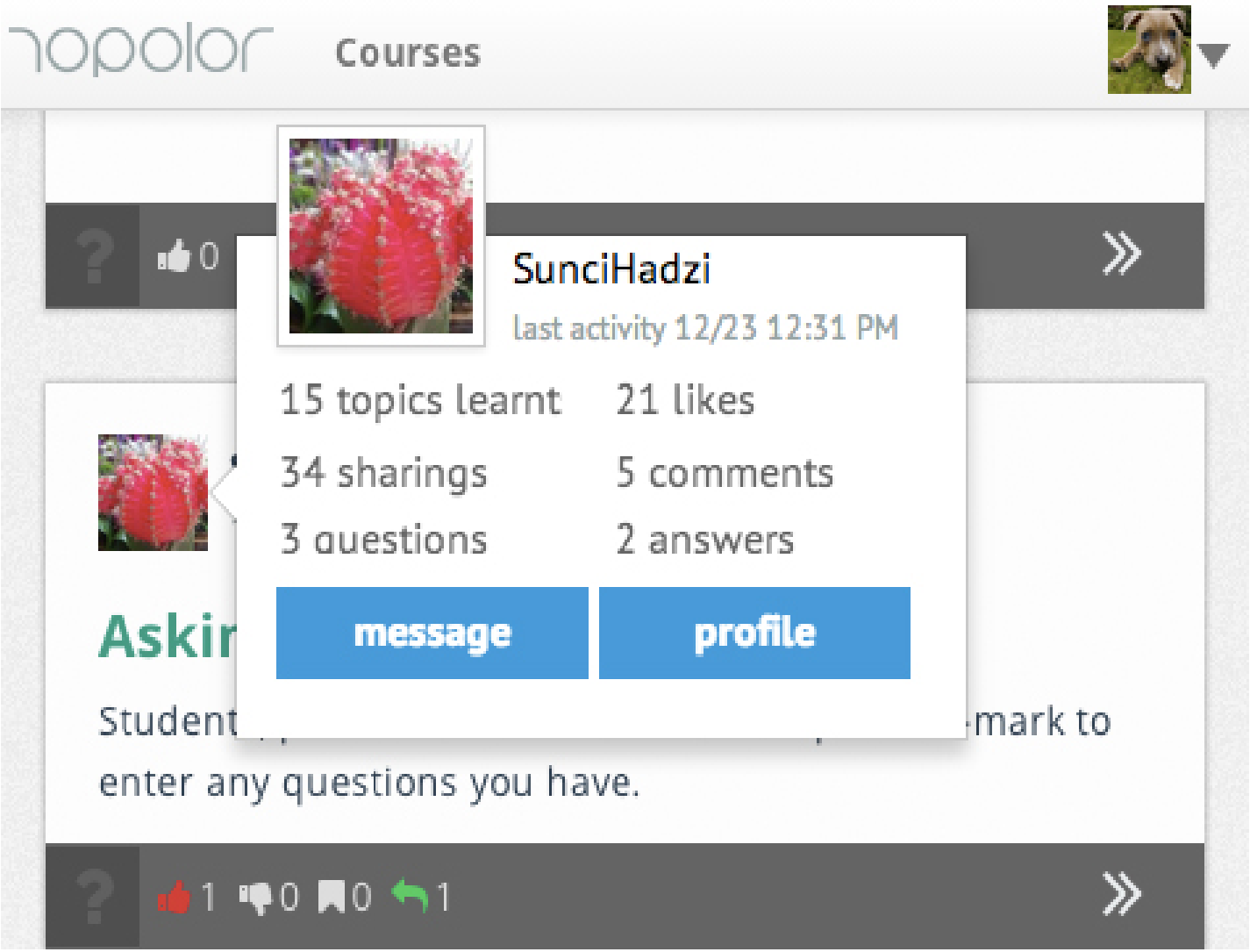
Gamification: Rewards

- *Barriers to access versus rewards*



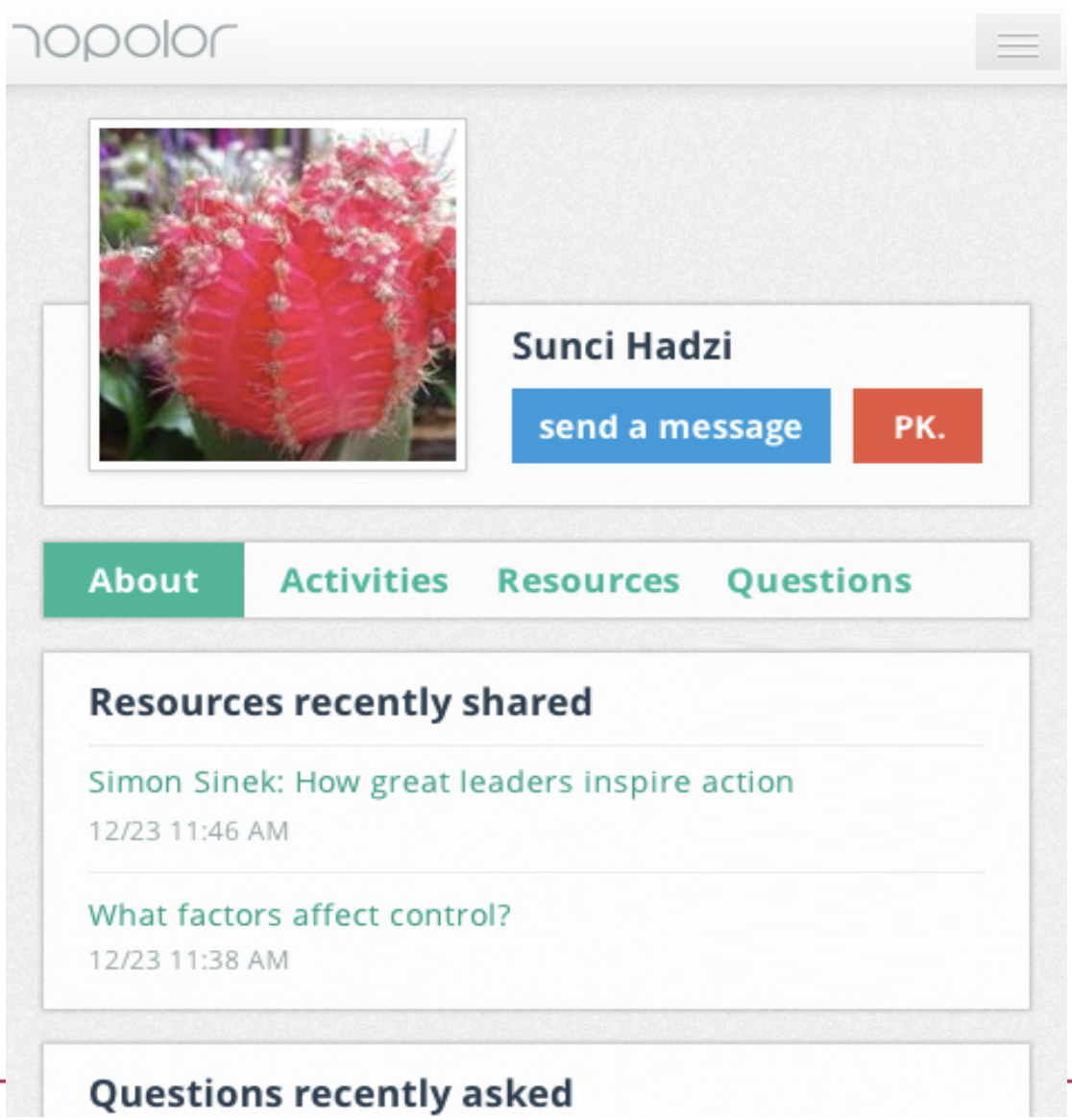
Gamification: multi-dimensionality

- *Access to information* (such as feedback) *can be obtained in multiple, redundant ways*


Courses
0
SunciHadzi
last activity 12/23 12:31 PM
15 topics learnt
21 likes
34 sharings
5 comments
3 questions
2 answers
message
profile
Askin
Student
mark to
enter any questions you have.
1
0
0
1

Gamification: Freedom

- Rules of the ‘game’ <-> versus freedom (‘shoot someone/ anyone’)


nopolor
Sunci Hadzi
send a message
PK.
About
Activities
Resources
Questions
Resources recently shared
Simon Sinek: How great leaders inspire action
12/23 11:46 AM
What factors affect control?
12/23 11:38 AM
Questions recently asked

Gamification: Centrality of Learning

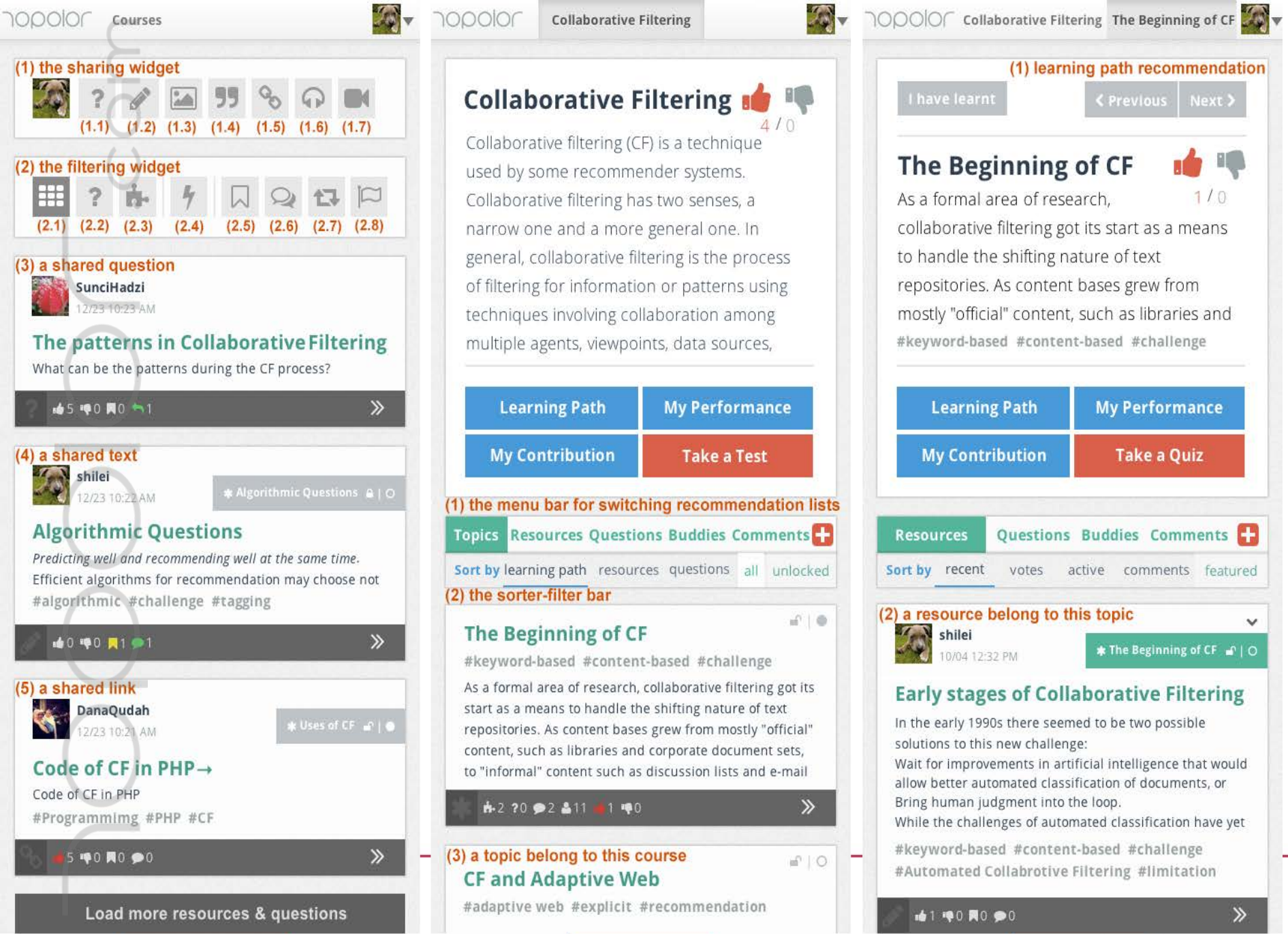
- vicarious learning (learning almost as a side effect) in games
  - Learning whilst interacting
- Knowledge has a function in the game
- Packaging of content and information in smaller sized ‘packages’, encased in other information (or, more interestingly activities and context)
  - E.g.: course – lesson – resources …

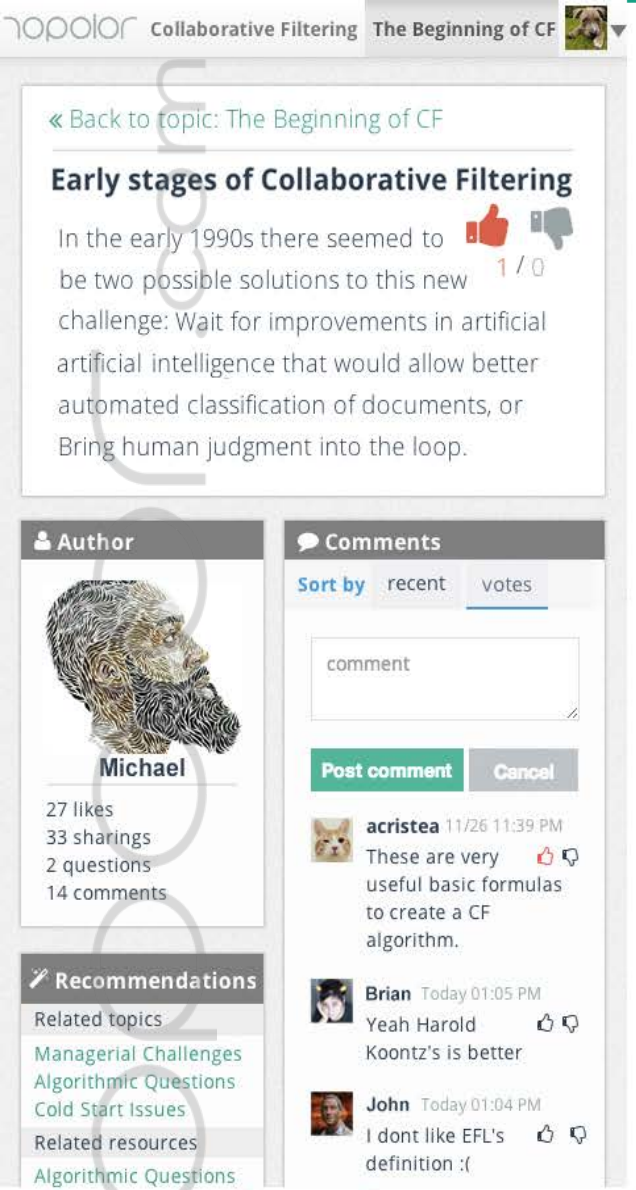
Gamification: Emphasis on Process

- *Information* and *process* both as first hand citizens
  - E.g., interaction – views, messages …

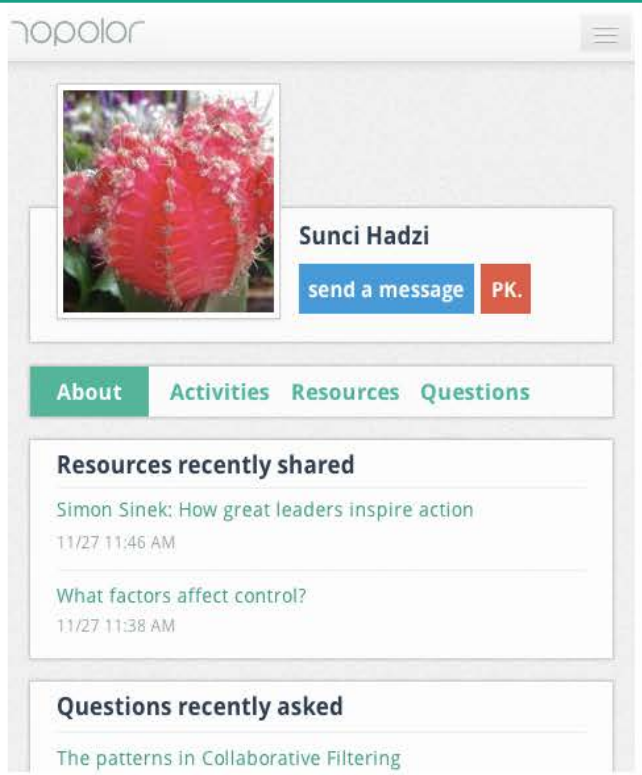
other gamification features

- **storytelling**: tours for guiding ‘newbie’ learners to use various features
- **profile pages**: publishing learning activities, learning status statistics, visualisations of performance and contribution
- **leaderboard**;
- **team building**: discussing and commenting on learning contents
- **peer reviewing**: rating peers’ posts and comments

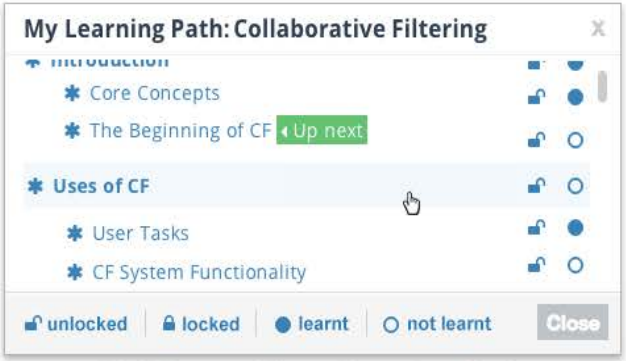

nopolor
Courses
(1) the sharing widget
(1.1) (1.2) (1.3) (1.4) (1.5) (1.6) (1.7)
(2) the filtering widget
(2.1) (2.2) (2.3) (2.4) (2.5) (2.6) (2.7) (2.8)
(3) a shared question
SunciHadzi
12/23 10:23 AM
The patterns in Collaborative Filtering
What can be the patterns during the CF process?
(4) a shared text
shilei
12/23 10:22 AM
Algorithmic Questions
Algorithmic Questions
Predicting well and recommending well at the same time.
Efficient algorithms for recommendation may choose not
#algorithmic #challenge #tagging
(5) a shared link
DanaQudah
12/23 10:21 AM
Uses of CF
Code of CF in PHP→
Code of CF in PHP
#Programmimg #PHP #CF
Load more resources & questions
(a) The Home Page
nopolor
Collaborative Filtering
Collaborative Filtering
4 / 0
Collaborative filtering (CF) is a technique used by some recommender systems. Collaborative filtering has two senses, a narrow one and a more general one. In general, collaborative filtering is the process of filtering for information or patterns using techniques involving collaboration among multiple agents, viewpoints, data sources,
Learning Path
My Performance
My Contribution
Take a Test
(1) the menu bar for switching recommendation lists
Topics Resources Questions Buddies Comments
Sort by learning path resources questions all unlocked
(2) the sorter-filter bar
The Beginning of CF
#keyword-based #content-based #challenge
As a formal area of research, collaborative filtering got its start as a means to handle the shifting nature of text repositories. As content bases grew from mostly "official" content, such as libraries and corporate document sets, to "informal" content such as discussion lists and e-mail
(3) a topic belong to this course
CF and Adaptive Web
#adaptive web #explicit #recommendation
(c) A Course Page
nopolor
Collaborative Filtering
The Beginning of CF
(1) learning path recommendation
I have learnt
Previous
Next
The Beginning of CF
1 / 0
As a formal area of research, collaborative filtering got its start as a means to handle the shifting nature of text repositories. As content bases grew from mostly "official" content, such as libraries and
#keyword-based #content-based #challenge
Learning Path
My Performance
My Contribution
Take a Quiz
Resources Questions Buddies Comments
Sort by recent votes active comments featured
(2) a resource belong to this topic
shilei
10/04 12:32 PM
The Beginning of CF
Early stages of Collaborative Filtering
In the early 1990s there seemed to be two possible solutions to this new challenge:
Wait for improvements in artificial intelligence that would allow better automated classification of documents, or
Bring human judgment into the loop.
While the challenges of automated classification have yet
#keyword-based #content-based #challenge
#Automated Collabrotive Filtering #limitation
(f) A Topic Page



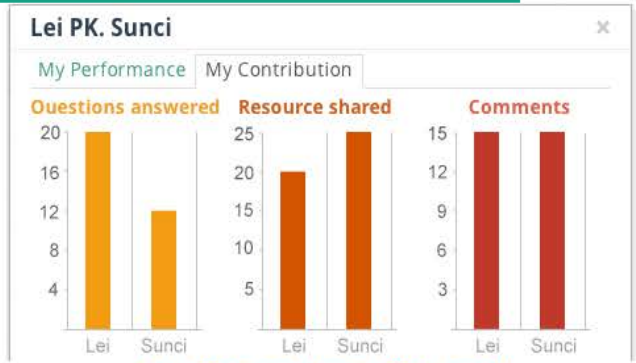
(b) A Resource Page



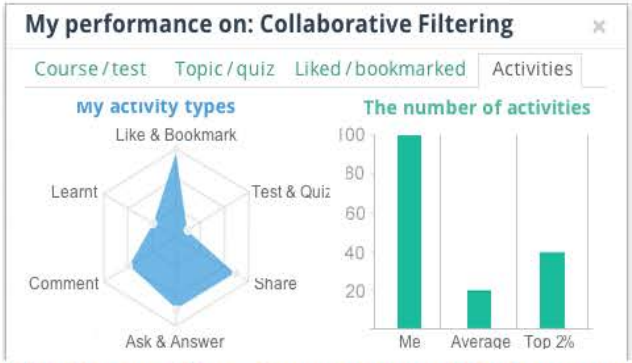
(d) A Profile Page



(e) A Pop-up View - Learning Path



(g) A Pop-up View - 'PK.' mode



(h) A Pop-up View - Comparison of Performance

(i) A Pop-up View - Comparison of Contribution

Recommended Reading

– immersing learners

- **Personalised, Social e-learning:**
  - H. Ashman, T. Brailsford, A. I. Cristea, Q. Z. Sheng, C. Stewart, E. Toms and V. Wade· " The Ethical and Social Implications of Personalisation Technologies for e-Learning (local copy) " International Journal of Information MAnagement (IJIM), Special Issue on IS Ethics: Past, Present and Future at Information & Management, Elsevier, 51(6), September 2014, p. 819–832, 2014
  - Shi, Lei and Cristea, Alexandra I., 2016 " Simplifying is not always best : learners thrive when using multifaceted open social learner models. IEEE MultiMedia, 23 (1). pp. 36-47. ISSN 1070-986X (IF: 1.767).
  - Shi, L., Cristea, A. I., Awan, M., Stewart, C., Hendrix, M., " Towards Understanding Learning Behavior Patterns in Social Adaptive Personalized E-Learning Systems.", In Proceedings of the 19th Americas Conference on Information Systems (AMCIS 2013), pages 1 - 10, Chicago, Illinois, USA, August 15 - 17, 2013. Association for Information Systems, 2013.
  - Cristea, Alexandra I. and Shi, Lei 2016, " Motivational gamification strategies rooted in self-determination theory for social adaptive E-Learning. " In: Intelligent Tutoring Systems (ITS) 2016, Zagreb, Croatia., 6-10 Jun 2016. Published in: Lecture Notes in Computer Science, In: Micarelli A., Stamper J., Panourgia K. (eds) Intelligent Tutoring Systems. ITS 2016.
  - A. I. Cristea and F. Ghali, " Towards Adaptation in E-Learning 2.0 "(pdf) , The New Review of Hypermedia and Multimedia, Vol. 17, No. 2 (April 2011), pp. 199-238, Taylor & Francis, Inc. Bristol, PA, USA, DOI 10.1080/13614568.2010.54128, 2011

Recommended Reading

- Adaptation languages and Authoring:
  - Stash, N., Cristea, A.I., and De Bra, P. , "Adaptation languages as vehicles of explicit intelligence in Adaptive Hypermedia" , In International Journal on Continuing Engineering Education and Life-Long Learning, vol. 17, nr 4/5, pp. 319-336, InderScience, 2007. DOI:10.1504/IJCEELL.2007.015045, 2007.
  - A. I. Cristea and C. Stewart, "Automatic Authoring of Adaptive Educational Hypermedia (copy here) ", book chapter II in "Web-based Intelligent E-Learning Systems: Technologies and Applications", ZongMin Ma (Ed.), Information Science Publishing (IDEA group); pp. 24-55, Hard Cover (ISBN: 1-59140-729-X), Perpetual E-Access (ISBN: 1-59140-731-1),2006
  - J. Khan, A. I. Cristea and C. Stewart, 2011 " Adaptive Authoring of Adaptive Hypermedia: Towards, Role-based, Adaptive Authoring. ", In Proceedings Computers and Advanced Technology in Education - 2011, 734-042, ACTA Press, DOI: 10.2316/P.2011.734-042

– flexible, easy to create adaptation

(Further) recommended Reading

- Personalised e-health: – emotional support
  - Hadzidedic Bazdarevic, Suncica and Cristea, Alexandra I., 2016 " Do personalisation and emotions affect the use of cancer-related websites? Online Information Review. ISSN 1468-4527.
- Personalised Advertising: – liking adds
  - Dana A. Al Qudah, Alexandra I. Cristea " MyAds - A proposed adaptive social online advertising framework (local copy) " International Journal JOEBM - Journal of Economics, Business and Management. Vol.1, No.4, P.P 401-406 ISSN: 2301-3567, DOI: 10.7763/JOEBM 2013
- Election prediction : – predicting the future
  - Tsakalidis, A. ; Papadopoulos, S. ; Cristea, A.I. ; Kompatsiaris, Y., 2015, " Predicting Elections for Multiple Countries Using Twitter and Polls (local copy) " IEEE Intelligent System, 30(2)

(Further) recommended Reading

- Social (Net) mining: – understanding people
  - Yiwei Zhou, Elena Demidova, and Alexandra I. Cristea, 2016 " What's New? Analysing Language-specific Wikipedia Entity Contexts to Support Entity-Centric News Retrieval Transactions on Computational Collective Intelligence, Springer, LNCS.
  - George Gkotsis, Karen Stepanyan, Alexandra I. Cristea, Mike Joy , " Entropy-based automated wrapper generation for weblog data extraction "(pdf), The World Wide Web Journal, Springer US, Vol 16, Iss. tbc, November 2013
  - Zhou, Y., Kanhabua, N. and Cristea, A. I. , 2016, " Real-time timeline summarisation for high-impact events in twitter. In ECAI 2016, 29th of August - 2nd of September, 2016, The Hague, The Netherlands, IOS Press.
  - Adam Tsakalidis, Maria Liakata, Theo Damoulas, Brigitte Jellinek, Weisi Guo, Alexandra Cristea, 2016, " Combining Heterogeneous User Generated Data to Sense Well-being , COLING 2016, December 11-16, Osaka, Japan
  - Zhou, Y., Kanhabua, N. and Cristea, A. I. , 2016, " Real-time timeline summarisation for high-impact events in twitter. In Proceedings of the 22nd European Conference on Artificial Intelligence (ECAI 2016), 29th of August - 2nd of September, 2016, The Hague, The Netherlands
  - Zhou, Yiwei and Cristea, Alexandra I. 2016, " Towards detection of influential sentences affecting reputation in Wikipedia. " In: WebSci '16, Proceedings of the 8th ACM Conference on Web Science, Hannover, Germany, 22-25 May 2016, pp. 244-248

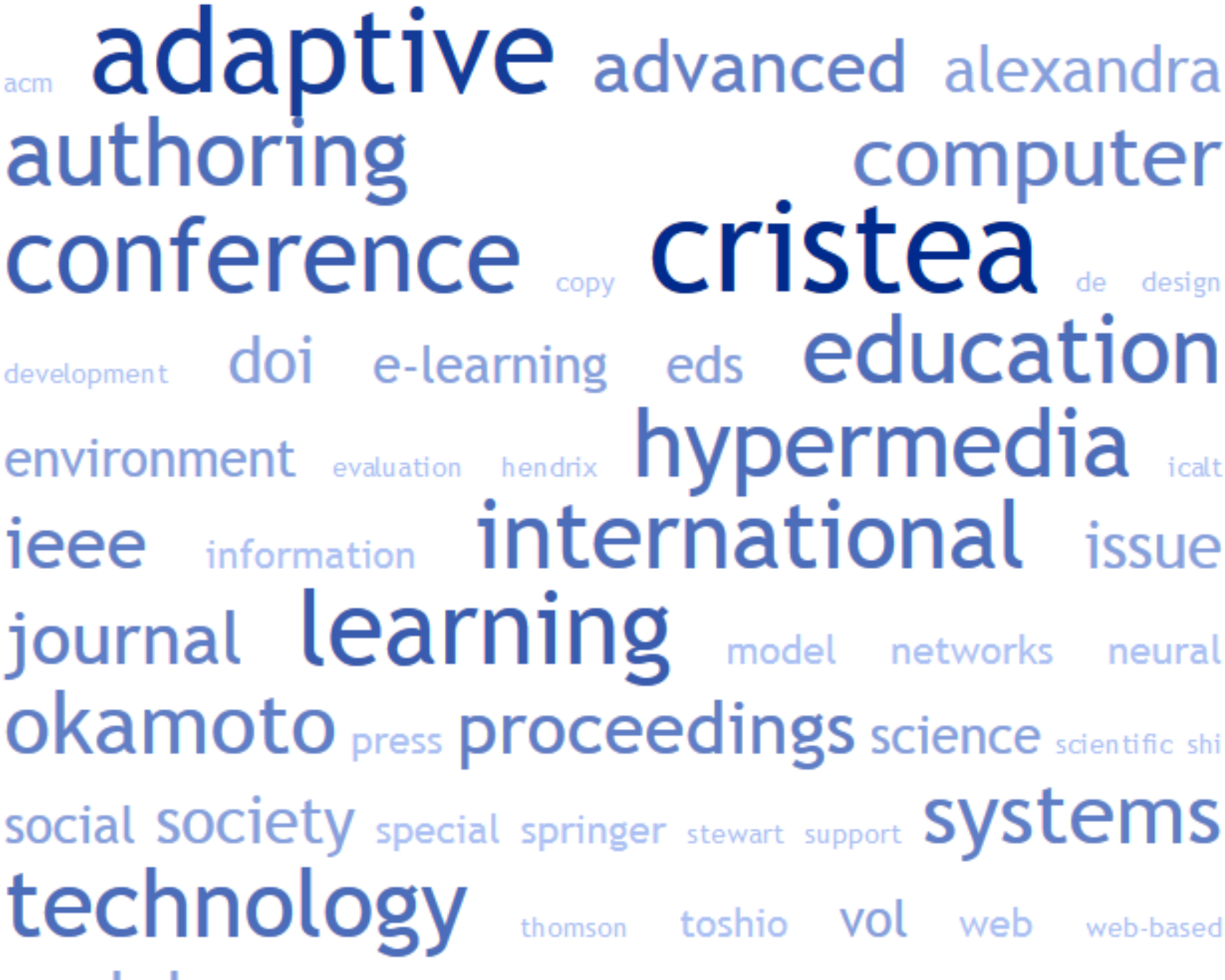
Demos

Try out at:

- Topolor2: http://www.topolor.com/
- Topolor1: http://topolor-shek.rhcloud.com
- Topolor1.1: http://www.alamri.co.uk/

Thank you!

Any questions?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e-learning: where-to?

*augumented face-to face learning.

www.topolor.com

w. synergetic learning: social support

priviledge for "have" vs "have-nots"

teacher moderation

? avatars. (too much control?).

*just learning (not obvious "e")

(raw)

data → information →

?