

Thesaurus maintenance WG workshop minutes

The Thesaurus maintenance WG workshop was held in Heraklion, Crete, on Friday, 28th September 2018. It was held at FORTH premises STEP-C, Building B, room 211.

Introducing the members of the Working Group to the tools developed for maintaining the BackBone Thesaurus (BBT) -namely, the BBT-browser and BBTalk -(i), testing their applicability and verifying their functionality in real use (ii), identifying and semantically validating missing and/or proposed hierarchies from the BBT (iii), discussing the involvement of the WG in the maintenance of the BBT -establishing the rules of engagement -(iv) and advocating for the use of the BBT in order to augment its user base (v) were among the principal goals of the workshop.

For the list of participants and the program of the workshop, the reader is referred to Appendix A and Appendix B, respectively.

Topics presented (Workshop parts I & II)

In his opening speech, Martin Doerr, Head of the BBT curators committee, welcomed everyone at the workshop and briefly touched upon the involvement of FORTH in thesaurus maintenance, specially mentioning the Getty Research Institute -in fact, it was a past collaboration with the Getty during the 90s which motivated work on thesauri at FORTH. Martin Doerr also gave an overview of the challenges currently posed in terminology alignment.

Helen Goulis, co-chair of the WG, representing the Academy of Athens and the Greek Research Infrastructure Network for the Humanities, took over and outlined the goals of the WG and the work outcomes regarding the building of the methodological principles of the BBT and the development of its tools and services, to date. George Bruseker (coordinator of Centre for Cultural Informatics, FORTH) followed to discuss the topic of terminology harmonization and illustrated how the BBT can actually contribute to it, by helping achieve interoperability between specialist thesauri.

Aside a very short summary of the features and methodology on which is based the BBT (Eleni Tsouloucha), the first part of the workshop revolved around the development of a platform to maintain BBT-aligned thesauri. Christos Georgis talked about the functionalities and key-features of BBTalk, namely a tool whereby to propose changes in the structure of the BBT in the form of submissions and to align/connect terms of specialist thesauri to the BBT on the one hand, and to maintain the said submissions and connections on the other. Christos Georgis focused on the roles assumed by the users of the BBTalk, as well as their interactions in the given context and showcased how online discussions can be carried out among users with different access rights (contributors, curators, reviewers, and administrator).

Next, functionality and key-features of the BBT Browser and the Federated thesauri viewer were presented by Matej Durco and Ksenia Zaytseva. The BBT browser prototype (which is part of SKOSMOS based ACDH Vocabs application) is currently hosting BBT and will host copies of other thesauri schemes connected with (aligned to) BBT, by uploading the SKOS/RDF representation of these thesauri to ACDH Vocabs (or by invoking SPARQL queries to the thesauri sparql-endpoints, if available). The also presented ACDH Vocabularies visualization prototype that allows the selection and the presentation of multiple thesauri (concept schemes) as a concept trees, while displays the “neighbourhood” of a concept while in parallel displays the relations between concepts from different thesauri. They presented the requirements of the SKOS/RDF representation of thesauri and they stressed several issues concerning the data quality: general consistency issues, such as proper SKOS representation; and common features required for proper visualization. Finally, Elias Tzortzakakis presented THEMAS an open source web application for the creation and management of multilingual thesauri, that provides built-in and custom enabled integrity constraints, a workflow

implementation based on multiple user groups, ease of navigation and variety of presentations and the ability for real time integration with other systems, and Anastasia Axaridou presented VISTA an open source web application tool for visual alignment of different terminologies, that enables the interactive alignment of the terminologies presented in tree-like structures, by drag'n'dropping terms from a source terminology tree to the target terminology tree, based on alignment rules, enabling full and partial alignment and the explicit exclusion of terms or sub-trees of the source terminology.

The second part of the workshop comprised sessions concerning use cases of the BBT and was intended as a report on how well the BBT fares when it comes to integrating various vocabularies and specialist thesauri. The need to address the challenges and problems posed to the BBT and the means to resolve them was the focal point of this session.

George Bruseker started by presenting the case of PARTHENOS project, part of which has been the alignment of highly specialized vocabularies and thesauri to the BBT by means of the existing management and use components, with the aim to make these vocabularies tractable to cross-disciplinary search across data integrated on the content level. Thus far it been shown that the BBT can adequately accommodate domain specific vocabularies that the user communities within the Research Infrastructures associated to PARTHENOS consider highly relevant and important. Apart from that, integrating the vocabularies of the PARTHENOS project to the BBT has served as a means to validate the BBTalk and the BBT Browser as well.

Next, representing the Academy of Athens, Gerasimos Chrysovitsanos, Patricia Kalafata, Athanasios Karasimos, Athina Iakovidou and Irini Mergoupi-Savaidou discussed the challenges their team came across while analyzing data from the terminology developed for DYAS Humanities Thesaurus, in the framework of the DARIAH-GR project. It was the first team to contribute to the bottom up method we applied to discover the appropriate upper level concepts for the BBT model. The DYAS Humanities Thesaurus covers most of the Arts and Humanities disciplines (History, Archaeology, Epigraphy, Ethnology, History and Philosophy of Science, Anthropology, Linguistics, Classics, Philosophy, Theatre & Theatre Studies, Modern Greek Literature, Ottoman and Turkish Studies, Musicology and History of Art), with Numismatics being the latest entry in their fields of expertise. The main problems they were faced with have to do with facets or hierarchies necessary to capture relations present in their specialist thesauri that are not declared in the BBT f.i. topological relations of inclusion or overlap that would allow them to define concepts that are presumably spatiotemporally construed, such as "Modern Greek Literature", "Byzantine Literature" etc., whereas concept-terms denoting types of Greek Theatre -like the Cretan Theatre for instance are admitted in the DYAS thesaurus); or they weren't fully developed when BBT-integration of the DYAS Thesaurus began (groups and collectivities > organizations).

Camilla Colombi and Lena-Marie Vitt, representing the Rome department of DAI, described their experience of recasting the ancient Realkatalog (used at DAI Rome since mid 1800s) and three other thesauri used in different departments of the DAI (Frankfurt, Madrid, Eurasia/Berlin) as a hierarchically structured thesaurus heavily drawing on the BBT facets and hierarchies -namely the iDAI.welt-thesaurus. The undertaking of such a massive task has been positively evaluated, seeing as the integration of DAI's specialist thesauri under one common scheme has substantially decreased the overall number of concepts deployed plus it has enabled them to be represented in a more concise and coherent manner. Moreover, they presented two use cases of integrating terms from the domain of Archaeology into the Dariah BBT. The said use cases form a stark contrast with respect to the degree of effectiveness of the resulting classification. Specifically, the hierarchy "Mobile Objekte" -corresponding to "Mobile objects" in the BBT -has proved very useful, as can be demonstrated by (i) the fact that it is densely populated with a rich structure of narrower terms (ii) that, in their turn, are consistently defined through isA relations. On the other hand, the speakers marked the difficulty to handle the facet "Conceptual objects" and its underlying hierarchies -especially the "Symbolic" and "Propositional objects", a fact that not only lead to inconsistencies in their thesauri, but also sounded unnatural once translated to German.

The topic brought up by Maria Chatzi and Garyfallia-Christina Dimakopoulou, representing ASFA, revolved around problems posed by not including topological relations of inclusion or overlap that

are deemed necessary for defining spatiotemporally construed concepts -f.i. “Modern Greek Art” and the means to resolve them.

Closing the second part of the workshop, Blandine Nouvel, Director of FRANTIQ, and Evelyne Sinigaglia, Coordinator of the PACTOLS¹ Thesaurus WG, gave an outline of the aims, the user base and the structure of PACTOLS as of today, and explained that PACTOLS is currently undergoing extensive reorganization. Part of this reorganization was carried out using the BBT, namely the terms listed under Sujets (subjects) > Iconographie (iconography)² were mapped to the appropriate BBT terms. The speakers marked their intention to test the BBT on other branches of the PACTOLS vocabularies, but they also mentioned that there are some hierarchies missing -f.i. there should be a designated hierarchy within Conceptual objects to accommodate deities.

Discussion session (Workshop part III)

The third part of the session was divided in two sections; the former meant to address the problems from using the BBT that were brought to our attention by the members of the Thesaurus Working Group and to lay the ground rules for developing an effective and community-maintained meta-thesaurus for the humanities; the latter revolving around the dissemination of the work carried out by the Thesaurus Maintenance Working Group, the establishment of new collaborations and securing the resources to carry on in this line of work.

Addressing BBT problems

Starting by the issues raised by the WG members regarding the terms and hierarchies that were claimed to be missing or considered poorly defined/unsatisfactory by the participants at the workshop, these were all addressed and resolved.

The hierarchies reported as missing, despite being necessary for archaeological documentation, involve the following: (i) Living beings (or Biological objects), (ii) Organizations, (iii) Languages and (iv) Deities. Of these, (ii) and (iii) are already under implementation -they are now undergoing discussion through the official channel of BBTalk -a decision that we reached shortly before the workshop. As for (iv) Deities, we have all acknowledged the need to create a separate hierarchy in order to accommodate them. It was debated whether the latter should be incorporated under the facet “Roles” or “Conceptual objects” instead. The issue has not been decided upon, seeing that deities can be viewed as personifications of natural or cultural phenomena on the one hand -which could favor their classification as a role -but on the other hand, they do represent abstractions of the human mind, i.e. the material that concepts are made of. Furthermore, treating deities as roles would be tantamount to adopting a structuralist approach to myth, thereby imposing our view of the world to a phenomenon so deeply entrenched in human culture that cannot be completely captured by a rationalistic approach. Thus, we preferred for this topic to be resolved through constructive dialogue via the BBTalk, rather than deciding on the fly. For (i) Living beings, we decided that to create a separate hierarchy under Material things.

The facets and hierarchies that were considered poorly defined/unsatisfactory by the participants at the workshop -namely (i) Other activities, (ii) Types of Epochs, (iii) Propositional and (iv) Symbolic objects-can be grouped into three different categories. Starting at the top of the list, the hierarchy (i) Other activities was identified as problematic and contradicting the principles which thesaurus building should be based on, hence it is to be deleted.

Turning to (ii) Types of Epochs, things are a bit different. Based on its scope note, the facet Types of Epochs *comprises types of cultural, social, intellectual phenomena consistent with each other thus creating intelligible unities. These types of phenomena are spatially and temporally limited and their consistency relies on the appearance of at least one qualitative element that links them in a unity. The spatial and temporal restriction is a formal feature of the facet “types of epochs”. That means that the facet “types of epochs” has no reference to specific realizations of these types of*

¹ Peoples, Anthroponymes, Chronologies, Toponymes, Lieux et Sujets.

² Comprises 96 concepts already in the PACTOLS Subjects list, plus another 158 candidate terms.

phenomena. Consequently, this facet does not include time periods such as the Renaissance or the Roman period, or the period of the Balkan wars etc., but the types of their categorization, i.e. the abstract concepts by virtue of which it is possible to conceive the cultural, social and intellectual phenomena as coherent.

That Epochs of Technology,³ for instance, defined by formal, qualitative properties can be subsumed under Types of Epochs, but any instances of it -such as the Stone Age, the Industrial Revolution, etc. cannot -seems to be a source of pressure for the BBT. However, the fact that both places and time intervals participate in inclusion/overlap part-whole relations rather than transitive isA ones, precludes them from being included in the thesaurus. The conclusion we arrived at is that inasmuch as a well-defined period can be described based on the defining structural properties that serve to demarcate it -the latter intensional properties are to be derived inductively, as abstractions from a series of constitutive phenomena -then it can be subsumed under the Types of Epochs facet. Differently put, the relevant concepts in a thesaurus should be thus defined if they are to be subsumed under Types of Epochs.

Finally, (iii) Propositional and (iv) Symbolic objects were explained more thoroughly and were contrasted to meaning (propositional) and form -which are extremely polysemous, and hence should not serve as labels for thesauri hierarchies, unless disambiguated by a suitable qualifier. The specific problem that was presented by the DAI participants, i.e. the problem of wanting to classify characters, like alphabet letters, or patterns, like meanders, at the same level as paintings/drawings etc. (under the label Visual objects) was addressed and resolved. The same issue was brought to our attention by G.Chrysovitsanos, in the context of classifying alphabets in the DYAS Humanities Thesaurus.

Developing the BBT community

Regarding the effort to lay the ground rules for developing an effective and community-maintained meta-thesaurus for the humanities, there were three broader issues put to discussion; (i) the roles and responsibilities managing the content of BBT, (ii) the means to do so in an orderly and well-documented manner, i.e. through BBTalk and finally (iii) feedback on the tools developed so far -in terms of features and functionalities that might need improvements or that have not been implemented yet.

As for the first topic, Christos Georgis quickly summarized the different roles involved in the curation and management of the content of BBT -namely contributor, curator, reviewer and administrator. He went on to explain how the curators have the final say on any changes implemented on BBT -content wise -by actively engaging in the discussions regarding the current and future proposals for changes on the BBT core structure, using the online platform of BBTalk, so that their discussions will be documented. What was noted by all participants, is that the curators committee -now comprising of M.Doerr (Head), Ch.Bekiari, G.Bruseker, L.Harami, E.Tsouluha (FORTH-ICS); H.Katsiadakis, H.Goulis, G.Chrysovitsanos, P.Kalafata and Y.Tzedopoulos (AA); C.Colombi and L.Vitt (DAI) -must put in more effort in this task. It was mentioned that ideally, we would like the user base of the BBT to grow substantially, so that the involvement of the entire DARIAH Thesaurus Maintenance WG in the committee will be called for. Furthermore, Blandine Nouvel and Evelyne Sinigaglia (FRANTIQ) have taken an interest in participating in the curators committee, whereas Athanasios Karasimos (A.A) has declared his intention to take up the role of the reviewer and provide advice on content management, where needed. Jonathan Ward (Getty) suggested that he could review the mappings of AAT to BBT.

Content management has primarily to do with semantically validating the alignment of the terms of specialist thesauri to the respective BBT terms, as well as with discussing and reviewing the terms and facets of the BBT. The former task is still in a preliminary stage. The latter however, which relates to implementing changes in the structure of BBT, touches upon the voting system designed and (partially) implemented through BBTalk -topic No. (ii), above.

³ A term in the DYAS thesaurus.

The BBTalk supports (or rather will support) a voting procedure. Once a member of the curators committee decides that the discussion around a submission has reached a conclusion, he/she can call for a vote on the said submission. The system will provide the curators a form for stating the conclusion under voting, to set the voting period (preset to 15 days, but can alter) and initiate the voting phase, for the given submission. Voting is applicable only to submissions marked as "under discussion".

Once the voting starts, the status of the submission is set to "under_voting". An email is sent to all the members of the committee, specifying that they must vote for the given submission. The system will also notify the members of the curators committee of the upcoming deadline, 24 hours prior to the expiration of the voting period, by email. The voting period can be extended by the the person who called it. The curators can select among the three (3) following choices: "in-favor", "against" and "neutral". The form will contain explicitly the concluding statement under voting, along with links to the submission-discussion.

By the end of the period the members of the curators committee, are fed with the voting statistics: how many committee members participated in the voting process (%) and how many of the votes were "in-favor" (%), "against" (%) or "neutral" (%). We can configure to count neutral votes as members that "did-not-vote", by setting a presentation parameter, in the statistics page, counting as 100% of the votes only the sum of the votes "in-favor" and "against". The votes are visible to all curators.

Having the statistics at hand the head of the committee can end the voting phase and manually declare the next phase, by changing the status of the submission: to "accepted, under implementation", or back to "under-discussion". We have agreed that for the time being more than 50% of the members of the committee should vote in order for the voting to be credible. And the submission can be accepted if the votes "in-favor" are 60% or more of the total votes.

The voting procedure can break by a Veto vote. Veto is a special vote that any curator may exercise. It has to be accompanied by a strongly argued justification. A veto form will be provided, asking the user to argue his/her justification. The head curator again decides on the fate of the Veto. Either Veto is accepted and the voting phase is canceled resulting in the submission getting back to the "under-discussion" status, or it is rejected and the voting continues. All curators are notified for the veto exercised and its justification, along its acceptance or rejection and the respective justification.

Regarding the feedback on the tools developed so far, in terms of features and functionalities that might need improvements or that have not been implemented yet, all participants agreed, that the interface was nice and easy to work with. They marked however that they would rather be informed of ongoing actions through notifications in the platform rather than via decontextualized emails. Furthermore, they all commented on the lack of a multilingual environment -both in terms of the interface and the content, (i.e. labels of system functions and buttons, as well as messages provided by the system should be multilingual, but also facet names and hierarchy names, along with their scope notes and other content should also be multilingual). In view of that shortcoming, the participants from DAI and FRANTIQ mentioned that they can provide translations of the terms, facets and scope notes, which they have implemented for their own thesauri. Incorporating these translations will yield a quadrilingual interface and content, as a first step.

The final topics raised and addressed have to do with establishing new collaborations and fundraising, both of which are tightly tied to achieving a high impact factor through the dissemination of our work.

In this context, aside AA and DAI, FRANTIQ has also agreed to link PACTOLS to the BBT and use the platform of BBTalk to submit requests for changes and declare connections to their thesauri.

Concerning the fundraising efforts, the participants were informed that we, at FORTH, AA and DAI, have submitted a joint proposal for funding to DARIAH-eu, whereby we have proposed a budget for iterative development on the BBTalk tool in response to user needs in the course of adoption. Our aim is to implement already identified tweaks and take on new needs as users identify requirements

not already well-understood. The proposal was submitted within the framework of the DARIAH Theme 2018 call for papers, under the Strategic Service Sustainability plan for DARIAH.

All participants were aware of the need to expand the user base of the BBT by getting more people and institutions to become actively involved in what we see as an emerging community. We agreed that this is to be achieved by means of approaching researchers and research institutions and advocating in favor of the BBT Service as a single online access point for humanities researchers to browse for well-formed terms and thesauri to be used in their projects or to contribute to the research community by linking their structured vocabularies to the BBT and/or proposing extensions of the BBT into new domains of expertise. To this end, we have agreed to capitalize on relations established among the partners in this project -namely FORTH-ICS, AA , DAI, ACDH-ÖAW and FRANTIQ to other institutions in the context of DARIAH -but not exclusively -in order to negotiate relationships with potential sustainability partners.

In order to achieve maximal dissemination of our work and to create a dynamic around the BBT and the Thesaurus Maintenance WG, we have decided to organize a meeting in Athens in which we will report on the progress made thus far and plan our next steps. The meeting is to be attended by new interested parties as well.

The participating institutions have all agreed on the proposal to update the existing documentation on BBT and its supporting tools, such that it will incorporate all the new functionalities and be more user-friendly. Aside from that, we have decided to make a set of training video tutorials publicly available to help new users familiarize themselves with the tools. These will comprise of a series of videos relating to the use of the BBTalk as an alignment tool, the procedures and the steps required to make a submission or a connection, and navigating through the federated thesaurus viewer.

These discussion points above are to serve as the basis for drafting a memorandum of understanding among the institutions who attended the workshop regarding the future of the Thesaurus Maintenance WG and BBT.

Appendix A: Participants List

A/A	NAME	INSTITUTION	CONTACT DETAILS
1	Martin Doerr	FORTH-ICS (GR)	martin@ics.forth.gr
2	George Bruseker	FORTH-ICS (GR)	bruseker@ics.forth.gr
3	Eleni Tsouloucha	FORTH-ICS (GR)	tsoulouha@ics.forth.gr
4	Lida Charami	FORTH-ICS (GR)	lida@ics.forth.gr
5	Christos Georgis	FORTH-ICS (GR)	georgis@ics.forth.gr
6	Elias Tzortzakakis	FORTH-ICS (GR)	tzortzak@ics.forth.gr
7	Anastasia Axaridou	FORTH-ICS (GR)	axaridou@ics.forth.gr
8	Evelyne Sinigaglia	Centre national de la recherche scientifique -CNRS (FR)	evelyne.sinigaglia@cnrs.fr
9	Blandine Nouvel	Centre national de la recherche scientifique – CNRS, Director of FRANTIQU (FR)	blandine.nouvel@frantiq.fr
10	Camilla Colombi	Deutsches Archäologisches Institut - DAI (DE)	Camilla.Colombi@dainst.de
11	Lena Marie Vitt	Deutsches Archäologisches Institut - DAI (DE)	lena.vitt@dainst.de
12	Jonathan Ward	Getty (editorial head of vocabularies development)	JWard@getty.edu
13	Gregg Garcia	Getty (technical head of vocabularies development)	GGarcia@getty.edu
14	Matej Durco	OAW (AUS)	Matej.Durco@oeaw.ac.at
15	Ksenia Zaytseva	OAW (AUS)	Ksenia.Zaytseva@oeaw.ac.at
16	Athanasios Karasimos	Academy of Athens - AA (GR)	akarasimos@academyofathens.gr
17	Athina Iakovidou	Academy of Athens - AA (GR)	Aiakovidou@academyofathens.gr
18	Gerasimos Chrysovitsanos	Academy of Athens - AA (GR)	gchrysovitsanos@academyofathens.gr
19	Eirini Mergoupi Savaidou	Academy of Athens - AA (GR)	esavaidou@academyofathens.gr
20	Eleni Gouli	Academy of Athens - AA (GR)	egouli@academyofathens.gr
21	Kleopatra (Patritsia) Kalafata	Academy of Athens - AA (GR)	pkalafata@academyofathens.gr
22	Maria Chatzi	Athens School of Fine Arts (GR)	mchatzi@asfa.gr
23	Garyfallia-Christina Dhmakopoulou	Athens School of Fine Arts (GR)	chrisdimak@gmail.com

Appendix B: Workshop Agenda / Program

Thesaurus maintenance WG workshop, Heraklion, Crete ¹

Friday, 28th September 2018

- 9.00-9.30** Welcome, Presentation of WG members and workshop objectives
Welcome speech by Martin Doerr.
Recap of the work and goals of the WG to date. (H.Goulis)
The BBT as an overarching meta-thesaurus for the humanities; its actual and potential contribution to terminology harmonization and interoperability of local thesauri. (G.Bruseker)
- 9.30-11.40** Part I; A platform for maintaining federated thesauri
Demonstration of BBT management and use components already developed:
- 9.30-9.40 Presentation of BBT's features and functionality. (E.Tsouhouha)
9.40-10.00 BBTalk (Ch.Georgis)
10.00-10.20 BBT Browser & Federated thesauri viewer. (M.Durco, K.Zaytseva)
Discussion
- 10.30-10.45** COFFEE BREAK
Types of tools for complete management workflow:
- 10.45-11.05 Thesaurus Management System-THEMAS. (E.Tzortzakakis)
11.05-11.25 Visual Terminology Alignment System –VISTA. (A.Axaridou)
Discussion
- 11.40-15.00** Part II; Use cases and challenges posed to the BBT
- 11.40-12.00 Integrating local thesauri to the BBT by means of the existing management and use components; the case of PARTHENOS. (G.Bruseker)
12.00-12.20 Challenges in implementing the BBT. Lessons to be learned from the DYAS Humanities Thesaurus. (G.Chrysovisanos, A.Falierou, H.Goulis, A.Iakovidou, P.Kalafata, A.Karasimos, E.Mergoupi-Savaidou, G.Tzedopoulos & H.Katsiadakis)
12.20-12.40 Integrating archaeological terms into the Dariah BBT – two use cases. (C.Colombi, L.Vitt)
Discussion
- 13.00-14.00** LUNCH BREAK
- 14.00-14.10 Integrating art terms into the Dariah BBT: ASFA' s contribution. (Ch.Dimakopoulou, M.Chatzi)
14.10-14.30 Peoples et cultures, Anthroponymes, Chronologie, Toponymes, Lieux et Sujets – PACTOLS. (B.Nouvel, E.Sinigaglia)
Discussion
- 15.00-18.00** Part III; The future of the Thesaurus Maintenance WG
The prospect of developing a community-maintained meta-thesaurus. Discussion on features vs. needs.
- 15.30-15.45** COFFEE BREAK
Networking, establishing new collaborations and funding.

¹ SUBJECT TO MINOR CHANGES.

In the context of the General Data Protection Regulation (2016/679 / EU), known as "GDPR", which came into force on 25 May 2018, we would like to inform you that the **Thesaurus maintenance WG workshop** event, which will take place in Heraklion, Crete, on the 28th of September 2018, will be video recorded while, in the context of the event, photos will be taken. The video and the photos will be used by the organizers to promote the **Thesaurus maintenance WG workshop** to the media (e.g. press releases in newspapers, magazines and other media, including websites, social media, etc.). These publicity actions aim to inform the public or/and the scientific community on the event itself and to broadly disseminate its scientific results. By participating, you declare that you are informed about the collection and use of the aforementioned video/audio data and you consent. If you would like to learn more about our privacy policy and your rights, you can visit our website (https://www.forth.gr/gfx/pdf/PrivacyPolicy_EN.pdf).

Appendix C: Photos from the workshop



The team outside ICS-FORTH building



Discussion in room 211



Martin Doerr



Helen Goulis



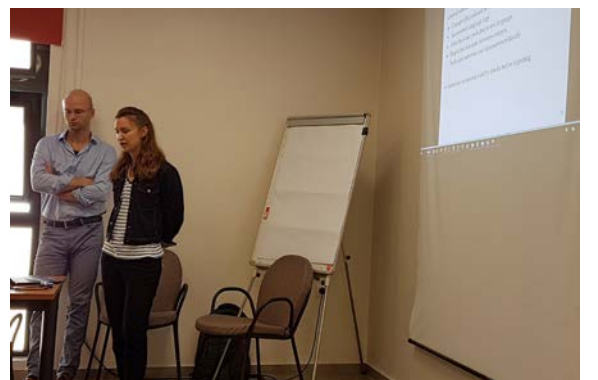
George Bruseker



Eleni Tsouloucha



Christos Georgis



Matej Durco, Ksenia Zaytseva



Elias Tzortzakakis



Anastasia Axaridou



Gerasimos Chrysovitsanos, Patricia Kalafata



Lena-Marie Vitt, Camilla Colombi



Garyfallia-Christina Dimakopoulou



Blandine Nouvel, Evelyne Sinigaglia