NEH Application Cover Sheet
Digital Humanities Start-up Grants

PROJECT DIRECTOR

Genady Grabarnik
Assistant Professor

8000 Utopia Parkway
Queens, NY 11439-9000
UNITED STATES

E-mail: grabarng@stjohns.edu
Phone(W): 914-672-6309
Phone(H):
Fax:

Field of Expertise: Technical: Mathematics

INSTITUTION

Saint John's University
Queens, NY UNITED STATES

APPLICATION INFORMATION

Title: *The Spinoza Network*

Grant Period: From 5/2014 to 5/2017
Field of Project: Interdisciplinary: Interdisciplinary Studies, Other

Description of Project: The exposition of texts from a variety of disciplines is in a linear
fashion, which does not reflect logical structure or any other networking of the text. For digital texts, the reader may wish to read in multiple sequences: linear, logical, temporal, etc. For example, Spinoza's Ethics is a complex network of definitions, axioms, propositions, and other entities connected by a relationship of precedence and it can only be read linearly. Therefore, one must perform the tedious task of flipping pages to follow the progression of Spinoza???s argument. Scholars often need to work with the English and original Latin versions which serves to exacerbate the problem and renders hypertext inadequate. For example, Euclid???s Elements and Bradley???s De Causa Dei can be read profitably in strict logical sequence in addition to the linear. This project will develop a technology that can be applied to the text with networked structure, which is not reflected in its linear presentation.

BUDGET

Outright Request	$29,978.00	**Cost Sharing**		
Matching Request		**Total Budget**	$29,978.00	
Total NEH	$29,978.00			

GRANT ADMINISTRATOR

Jared Littman
Director
8000 Utopia Parkway
Queens, NY 11439-9000
UNITED STATES

E-mail: littmanj@stjohns.edu
Phone(W): 718-990-2920
Fax:

List of Participants

Principal Project Participants:

Project Investigator: Grabarnik, Genady Ya.; Assistant Professor, Department of Math. and Computer Science, St. John's University

Roseman, Herbert; Assistant Professor, Department of Philosophy, Columbia University

Advisory Board Members:

Advisory Scholars:
Professor Paul Gaffney, St. John's College, St. Johns University, Queens, NY
Professor Charles Traina, St. John's College, St. Johns University, Queens, NY
Professor Alan Gabbey, Columbia University, New York, NY

Industry Advisor:
Dr. Larisa Shwartz, IBM TJ Watson Research Center, Hawthorne, NY

Abstract

Current digital texts cannot be conveniently presented in any non-linear ordering. But some readers may wish to read texts in multiple sequences: linear, logical, temporal, etc. Spinoza's *Ethics*, a complex network of definitions, axioms, propositions and other entities related by precedence, can only be read linearly. One must flip pages or navigate a sequential file to follow Spinoza's argument. With five books, 258 propositions, 26 definitions and 15 axioms this task is tedious and error prone. Scholars often need to work with the English and Latin versions which exacerbates the problem and renders hypertext inadequate.   Euclid's *Elements* and Bishop Bradley's *De Causa Dei* can also be read profitably in logical sequence. This project will apply a technology to texts with logical (or other) connections between entities not reflected in its linear presentation. The project will incorporate Spinoza's logic into the digital text allowing both linear and in logical reading.

Statement of Innovation

The project creates a technology for converting linear texts into an ordering chosen by the reader. The first text, Spinoza's *Ethics* in English and Latin will be presented in a format that will enable the reader to explore the logical development of Spinoza's propositions backwards to any depth and forward to reveal the impact of any proposition on subsequent arguments. The project also provides the foundation for linking secondary sources to the text.

Statement of Humanities Significance

A text structured isomorphic with Spinoza's argument enables a reader to gain a deeper understanding of Spinoza and obviates memorization of Spinoza's dependencies inherent in his reasoning. It also facilitates integration of secondary texts. The technology developed can present any text in a structure chosen by the reader. For example, a student reader could improve her understanding of a character's role in a novel by reading in sequence only the sections relating to that character.

Narrative

The National Endowment for the Humanities announced a grant to begin to create a platform to share digital content across the nation's libraries. To make books available digitally is a significant objective, but a digital capability will also allow selected books to be read in a richer form than the traditional page-sequential form augmented by hypertext. A significant number of projects use capabilities of enriching books with multimedia content. However none of the projects suggest the possibility to enhance texts by adopting its logical structure. Examples of texts with logical (or other) structure are: Euclid's *Elements*, Spinoza's *Ethics* and Faulkner's *Absalom, Absalom!* All those books can exploit digital technology to create a more enlightening reading experience to its readers.

Spinoza is one of the most important and contemporaneously relevant philosophers of the seventeenth century. Spinoza's naturalistic views of God, knowledge and man have influenced thinkers as diverse as Emerson, Goethe, Schopenhauer, Nietzsche, Hegel, Einstein George Elliot and Kissinger. His masterwork, the *Ethics*, is the only major ethical work that attempts to develop morality as a logical consequence of metaphysics. The *Ethics* is an essential text in the philosophical canon and is still actively read and interpreted by philosophers. Teaching the *Ethics* is a staple of many university philosophy departments.

Just as Euclid starts his work with definitions of the fundamental geometric objects and seeming self-evident axioms, Spinoza begins the *Ethics* with the definitions and axioms that ground his metaphysics and ultimately his ethics. Like Euclid, Spinoza uses these entities to prove propositions and uses proven propositions to derive further propositions. Spinoza also introduces further axioms and definitions at the beginning of each of the five books that comprise the *Ethics*. The *Ethics* can therefore be conceived to be a network of the three types of entities related logically. The proof of each postulate depends upon predecessor postulates which in turn depend upon earlier propositions. Each of the entities, with the exception of the final propositions, has successor entities that logically depend upon it. Like any major ethical work, the complex nature of the subject matter, renders the text open to interpretation. Moreover, the interaction of the entities in the *Ethics* is more complex than Euclid's propositions, and the proofs are not strictly mathematically rigorous. Thus it is often important for researchers and students to understand the interdependencies of the entities in the *Ethics*. Since the *Ethics* is published as a traditional book, it must be read in a linear fashion, but logical structure of the *Ethics* makes it more convenient to read it as a network. A reader studying a proposition will often be interested in understanding its dependencies on previous entities and its effect on successor propositions. The linear nature of a traditional book makes the process of understanding these dependencies inconvenient and error prone. The researcher must flip pages backwards and forwards to trace the precedence relationships amongst propositions.

We propose to develop a computer system to enable the researcher to read the *Ethics* as a logical network by linking a database containing the digital version of the entities of Spinoza's text in English and Latin to a representation of Spinoza's precedence relationships. The relationships would be specified using an annotation tool developed as part of the project. The developed system would allow the reader to read the full text of Spinoza's proof of a proposition along with its direct predecessors on a single screen.

The reader could then select a predecessor and read its direct predecessors and the full text of its proofs. This process could be recursively continued until the ultimate grounding entities are discovered. Moreover, the entities will be displayed in English or Spinoza's original Latin. We propose to make the system available to the public on an artistically attractive Internet site with accompanying background information on Spinoza, his philosophy and links to primary and secondary literature. An initial concept of the user interface may be found in Appendix C.

Environmental Scan

There are two versions of the *Ethics* available on the Internet, both of which use the 1883 R.H.M. Elwes translation. One of the versions, available through project Gutenberg is plain text. A more interesting version, which takes advantage of hypertext, was created by Ron Bombardi (see Appendix A, 1). This hypertext version allows one to use Spinoza's references to move from a proposition to the text upon which it is dependent.   But a simple hypertext implementation cannot accommodate the multiple cascading dependencies inherent to Spinoza's argument.   Also hypertext can only look backward to entities that underlie a proposition and not forward to the chain of later propositions which depend upon a proposition. Finally, clicking on a hypertext link removes a reader to the target text of the link which makes it impossible to focus simultaneously on a text and its links.

Another hypertext version of Book I of the *Ethics* includes the Bombardi's version and hypertext links to many secondary sources and explanations of Spinoza's terms, Appendix A, 4. Also available on the internet is a HTML version of the *Ethics* in Latin. Appendix A, 3. The proposed project plans to use the plaintext and Latin versions of the text.

 Finally we reviewed two NEH projects that address connected information in literary texts. The first project, *Annotation Studio: Multimedia Text Annotation for Students*, researches tools for enabling students to link and share multi-media sources.   The second project, *The Distributed Text: An Annotated Edition of Franz Boas' Pioneering Ethnography*, also links multi-media material to the appropriate sections of the text. Neither of these projects address the objective of the Spinoza Network: to enable a text to be read in two languages in a logical rather than a sequential fashion. The Spinoza Network will build the structure of Spinoza's thinking directly into the text and can serve as an example for presentation of texts which are "demonstrated in geometric order."

History and Duration of the Project

This project has received no previous financial support. The idea for the project occurred to Herbert Roseman when he was studying for his doctorate in philosophy at Columbia University. He combined with Genady Ya. Grabarnik of the Math department of St. John's University who is developing the systems design for the early alpha-level prototype for this system. We plan to keep web site, and source code life for at least five years, and based on feedback and further ideas (for example to use semantic web properties like built in logic) extend the result of the project to cover more books and type of networks by possibly using level II grant in NEH.

Work Plan, for test plan see Appendix D

1. Hire contractor for aesthetic design of website and development of annotating tool
Duration: 1 month, overseen by PI.
2. Create annotating tool with output in XML format (see Appendix B for the draft of metadata xml schema and Appendix C for mockup of the tool's GUI) reflecting Spinoza network structure: type of statement like axiom or propositions, etc., position, elements being direct predecessors. Use some freely available database (MySQL) for persistent storage. Duration: 2 months, consultant, overseen by PI.
3. Use (under) graduate student(s) to tag elements of the Ethics, create precedence table for the statements based on tagging, persist result of tagging in publicly available database (My SQL), student should be able to understand Latin. Duration 3 months, overseen by Content Consultant (CC).
4. Tagging verification, To avoid errors, the whole text of *Ethics* in both English and Latin will be verified by CC. Duration 1 month.
5. Develop front end application prototype (website, web-pages exposed to user), (see Appendix C for mock up GUI) for accessing the network elements. Our preference is to use HTML 5 since it is in our point of view the most mature and aesthetically accomplished web GUI

2

format in comparison to Microsoft's Silverlight or Java FX. Duration 2 month, (starts in parallel with 2), overseen by PI.

6. Develop backend (web server, database side) for the Spinoza Network
Duration 2 month (starts in parallel with 2), overseen by PI.

7. Test deployment of the Spinoza Network on one of the free publicly available servers, Testing and correction of the running application, Duration 2 month (starts with finishing each part of the project), overseen by CC.

8. Spinoza Network goes live on one of the free publicly available servers (Google)

Staff

Genady Ya. Grabarnik is a PI for the project. He holds doctorate in Mathematics from Academy of Sciences, Uzbekistan. His research area is Operator Algebras, Computer Science. He has an extensive software experience from IBM TJ Watson Research Center, where he worked for nine years. He authored over 80 journal and conference articles and has over 70 US patents and applications and a number of publicly available software projects (Appendix A, 5), now supported by Eclipse Foundation as a part of TPTM framework.

Herbert Roseman is the Content Consultant for this project. He holds a doctorate in Philosophy from Columbia University and Masters Bachelors Degrees in Physics from the University of Pennsylvania and the City College of New York. His main area or research is in the philosophy of Darwinian biology as it relates to ethics.

Advisory board

Professor Paul Gaffney, St. Johns University, Queens, NY
Professor Charles Traina, St. Johns University, Queens, NY
Dr. Larisa Shwartz, IBM TJ Watson Research Center, Hawthorne, NY

Consultant to be hired, skills required experience in development of text annotation graphical tools, web site development, preferably HTML, and Google application server.

Graduate students to be hired to use developed annotation tool for annotating Ethics. Student should understand Latin. As an additional benefit, the project will help student to get deeply familiar with Spinoza's work.

Final Product and Dissemination

In the Ethics Spinoza sometimes either clearly refers to his letters and other texts or alludes to these texts in the opinion of commentators. The project would include the technical capability access these references. Examples of such references would be included in the Level I project. The Spinoza research community would add a far more complete set of these references after the Network is made publicly available. The Spinoza Network would simplify the addition of these references and become more representative of the whole of Spinoza's thought. We will collect feedback from users on alpha-level prototype and incorporate them into the future project.

The result of the project will be available publicly as a web site hosted on Google Apps server to researchers and students for enhanced study of Spinoza's *Ethics* for at least five years. The website will be publicized in listservers in the philosophic community and through registration with main search engines. This will be the first step in network presentations of classical books.

3

Budget Form

NATIONAL ENDOWMENT FOR THE HUMANITIES

Applicant Institution: *St John's University*
Project Director: *Grabarnik*
Project Grant Period: *05/15/2014 through 05/14/2015*

click for Budget Instructions

	Computational Details/Notes	(notes)	Year 1 01/01/20__- 12/31/20__	(notes)	Year 2 01/01/20__- 12/31/20__	(notes)	Year 3 01/01/20__- 12/31/20__	Project Total
1. Salaries & Wages								
Project Investigator	Project management, testing, reporting, 1 month salary	26%	$6,000					$6,000
Graduate student	Annotating Ethics 3x87h/m @ 15$/h	100%	$2,580	%		%		$2,580
		%		%		%		$0
		%		%		%		$0
		%		%		%		$0
2. Fringe Benefits								
8%	Fulltime-Faculty during the Summer		$480					$480
8%	Graduate Student		$206					$206
3. Consultant Fees								
Consultant 1/software developer	90h annotating tool, 90h web site design	50$/h	$9,000					$9,000
Consultant 2/ script specialist	120 h Prototype development, consulting on the text annotating, using annotating tool, Testing	50$/h	$6,000					$6,000
4. Travel								
Domestic, Directors Meeting, Washington DC	PI's roundtrip airfare to Washington DC		$500					$500
6. Services								
n/a								$0
7. Other Costs								
Laptop T530 for PI			$2,000					$2,000
8. Total Direct Costs	Per Year		$26,766		$0		$0	$26,766
9. Total Indirect Costs								
12%	Per Year		$3,212		$0		$0	$3,212
10. Total Project Costs		(Direct and Indirect costs for entire project)						$29,978

11. Project Funding	a. Requested from NEH		
		Outright:	$0
		Federal Matching Funds:	$0
		TOTAL REQUESTED FROM NEH:	**$0**
	b. Cost Sharing	Applicant's Contributions:	$0
		Third-Party Contributions:	$0
		Project Income:	$0
		Other Federal Agencies:	$0
		TOTAL COST SHARING:	**$0**
12. Total Project Funding			**$0**

Total Project Costs must be equal to Total Project Funding ----> ($29,978 = $0 ?)
Third-Party Contributions must be greater than or equal to Requested Federal Matching Funds ----> ($0 ≥ $0 ?)

Budget Narrative:

Personnel:
Project Investigator: Dr. Genady Ya Grabarnik will spend time hiring the consultant, create initial data model for annotated texts, implement it using freely available database, architect and implement server site of the application based on freely available application servers (Google Apps). Dr. Grabarnik will be contributing his summer effort (25.56%), towards the grant. Therefore, Dr. Grabarnik is requesting is 25.56% summer effort be covered by the grant, which totals $6,000.

Graduate Student Worker: In addition, a student researcher will also be hired for the project. The student researcher will commit 8 to 9 hours a week during the academic year, at rat e of $8 an hour; during that time the student researcher will assist Drs. Roseman and Grabarnik to annotate Spinoza's Ethics. The student will receive $2,580, over the course of the year.

Fringe Rates:
For the Project Investigator, an 8% summer faculty fringe rate has been applied which is in accordance with St. John's University policy. For the Graduate Assistant, an 8% student fringe rate has been applied which is in accordance with St. John's University policy. Total cost is $686.

Consultants:
Content Consultant: During the summer, Dr. Herb Roseman will work on identifying best source for both Latin and English versions of Ethics, spend time hiring Student Researcher. He will also provide testing of annotation tool, annotated texts of Ethics in English and Latin. He will provide necessary reporting on progress and accomplishment of the project. Results of the progress in the form of join with Dr. Grabarnik paper will be written and submitted to one of the conferences. The content consultant will receive a stipend of $6,000.

Software Developer: We have requested funds to support a software consultant whose responsibilities are to build annotation tool and create an esthetic web site for researchers and student(s) to interact with Spinoza Network. The software consultant will receive a stipend of $9,000.

Supplies:
The Project Investigator is also requesting $2,000 for a laptop, which will solely be used to assist the Project Investigator and Student Researcher with their research for the grant.

Travel:
We have requested funds to support the travel of Dr. Grabarnik to the NEH Digital Humanities Start-Up Grant Director's meeting in Washington, D.C. The total cost of travel is $500.

Indirect Costs:
Indirect costs have been calculated at 12% of the total direct costs. The total cost of In-direct cost is $3,212.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Program Support Center
Financial Management Services
Division of Cost Allocation

26 Federal Plaza, Room 41-122
New York, New York 10278
Phone: (212) 264-2069
Fax: (212) 264-5478
Email: dcany@psc.gov

June 6, 2013

Ms. Sharon Hewitt Watkins
Vice President for Business Affairs & Chief Financial Officer
St. John's University
8000 Utopia Parkway
Off./ Business Affairs, Newman Hall
Jamaica, NY 11439

Dear Ms. Hewitt Watkins:

A copy of an indirect cost rate agreement is being emailed to you for signature. This agreement reflects an understanding reached between your organization and a member of my staff concerning the rate(s) that may be used to support your claim for indirect costs on grants and contracts with the Federal Government.

Please have the agreement signed by an authorized representative of your organization and returned to me by email or fax, retaining the copy for your files. Our fax number is (212) 264-5478 and email address is dcany@psc.gov. We will reproduce and distribute the agreement to the appropriate awarding organizations of the Federal Government for their use.

An indirect cost proposal, together with the supporting information, is required to substantiate your claim for indirect costs under grants and contracts awarded by the Federal Government. Thus, your next proposal based on actual costs for the fiscal year ending 05/31/2015, is due in our office by 11/30/2015.

Sincerely,

Darryl W. Mayes
Deputy Director
Division of Cost Allocation

●Phone: (212) 264-2069   ●FAX: (212) 264-5478   ●E-mail: dcany@psc.gov

ORIGINAL

COLLEGES AND UNIVERSITIES RATE AGREEMENT

EIN: 1111630830A1

ORGANIZATION:
St. John's University
8000 Utopia Parkway
Jamaica, NY 11439

DATE:06/06/2013

FILING REF.: The preceding
agreement was dated
05/27/2010

The rates approved in this agreement are for use on grants, contracts and other
agreements with the Federal Government, subject to the conditions in Section III.

SECTION I: Facilities And Administrative Cost Rates

RATE TYPES: FIXED   FINAL   PROV. (PROVISIONAL)   PRED. (PREDETERMINED)

EFFECTIVE PERIOD

TYPE	FROM	TO	RATE(%)	LOCATION	APPLICABLE TO
PRED.	06/01/2013	05/31/2016	65.00	On-Campus	All Programs
PRED.	06/01/2013	05/31/2016	26.00	Off-Campus	All Programs
PROV.	06/01/2016	Until Amended			Use same rates and conditions as those cited for fiscal year ending May 31, 2016.

*BASE

Total direct costs excluding capital expenditures (buildings, individual items
of equipment; alterations and renovations) and subawards.

ORGANIZATION: St. John's University

AGREEMENT DATE: 6/6/2013

SECTION II: SPECIAL REMARKS

TREATMENT OF FRINGE BENEFITS:

Fringe benefits applicable to direct salaries and wages are treated as direct costs.

TREATMENT OF PAID ABSENCES

Vacation, holiday, sick leave pay and other paid absences are included in salaries and wages and are claimed on grants, contracts and other agreements as part of the normal cost for salaries and wages. Separate claims are not made for the cost of these paid absences.

OFF-CAMPUS DEFINITION: For all activities performed in facilities not owned by the institution and to which rent is directly allocated to the project(s), the off-campus rate will apply. Actual costs will be apportioned between on-campus and off-campus components. Each portion will bear the appropriate rate.

Equipment means an article of nonexpendable, tangible personal property having a useful life of more than one year, and an acquisition cost of $5,000 or more per unit.

ORGANIZATION: St. John's University

AGREEMENT DATE: 6/6/2013

SECTION III: GENERAL

A. LIMITATIONS:

The rates in this Agreement are subject to any statutory or administrative limitations and apply to a given grant, contract or other agreement only to the extent that funds are available. Acceptance of the rates is subject to the following conditions: (1) Only costs incurred by the organization were included in its facilities and administrative cost pools as finally accepted: such costs are legal obligations of the organization and are allowable under the governing cost principles; (2) The same costs that have been treated as facilities and administrative costs are not claimed as direct costs; (3) Similar types of costs have been accorded consistent accounting treatment; and (4) The information provided by the organization which was used to establish the rates is not later found to be materially incomplete or inaccurate by the Federal Government. In such situations the rate(s) would be subject to renegotiation at the discretion of the Federal Government.

B. ACCOUNTING CHANGES:

This Agreement is based on the accounting system purported by the organization to be in effect during the Agreement period. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this Agreement require prior approval of the authorized representative of the cognizant agency. Such changes include, but are not limited to, changes in the charging of a particular type of cost from facilities and administrative to direct. Failure to obtain approval may result in cost disallowances.

C. FIXED RATES:

If a fixed rate is in this Agreement, it is based on an estimate of the costs for the period covered by the rate. When the actual costs for this period are determined, an adjustment will be made to a rate of a future year(s) to compensate for the difference between the costs used to establish the fixed rate and actual costs.

D. USE BY OTHER FEDERAL AGENCIES:

The rates in this Agreement were approved in accordance with the authority in Office of Management and Budget Circular A-21, and should be applied to grants, contracts and other agreements covered by this Circular, subject to any limitations in A above. The organization may provide copies of the Agreement to other Federal Agencies to give them early notification of the Agreement.

E. OTHER:

If any Federal contract, grant or other agreement is reimbursing facilities and administrative costs by a means other than the approved rate(s) in this Agreement, the organization should (1) credit such costs to the affected programs, and (2) apply the approved rate(s) to the appropriate base to identify the proper amount of facilities and administrative costs allocable to these programs.

BY THE INSTITUTION:

St. John's University

(INSTITUTION)

Sharon Hewitt Watkins

(SIGNATURE)

S*HARON HEWITT WATKINS*

(NAME)

VICE PRESIDENT FOR BUSINESS AFFAIRS
& CHIEF FINANCIAL OFFICER

(TITLE)

6/10/13

(DATE)

ON BEHALF OF THE FEDERAL GOVERNMENT:

DEPARTMENT OF HEALTH AND HUMAN SERVICES

(AGENCY)

(SIGNATURE)

Darryl W. Mayes

(NAME)

Deputy Director, Division of Cost Allocation

(TITLE)

6/6/2013

(DATE) 0143

HHS REPRESENTATIVE: Michael Stanco

Telephone: (212) 264-2069

Page 3 of 3

Biographies

Principal project participants

Project Director, PI - Genady Ya. Grabarnik holds doctorate in Mathematics from National Academy of Sciences Uzbekistan. His main area of research is Operator Algebras, Statistics, Computer Science. He has an extensive experience with software projects acquired while working at IBM TJ Watson Research Center, Yorktown Heights for over 9 years. During his research career he authored over 80 journal and peer reviewed articles and has over 70 US patents and patent applications. He is member of editorial board for Indian Journal of Mathematics and International Journal of Operational Research and Information Systems. He authored a number of publicly available software projects with deep usage of XML and RDF based data modeling, like GLA that is now supported by eclipse foundation as a part of TPTM monitoring framework(http://tinyurl.com/gg-glogadapter).

Project consultant - Herbert Roseman earned his doctorate degree in Philosophy from Columbia University in 2000 after a long career as a senior officer of a major financial institution. In that capacity he created several computer systems for the analysis and execution of financial transaction. He received his Bachelors and Masters degree in Physics from The City College and the University of Pennsylvania. He also holds an MBA from Harvard Business School. His dissertation for at Columbia, entitled Optional Games and the Evolution of Altruism, is offered on the Internet. He has taught courses in philosophy over the past ten years and has published papers and participated in philosophic conferences.

Advisory board members and their roles

Advisory Scholars (to advice on usability and scholarly effect of the project)
Professor Paul Gaffney, St. John's College, St. Johns University, Queens, NY
Professor Charles Traina, St. John's College, St. Johns University, Queens, NY
Professor Alan Gabbey, Columbia University, New York, NY
Industry Advisor (to advice on technical part of the project and project schedule)
Dr. Larisa Shwartz, IBM TJ Watson Research Center, Hawthorne, NY

Data Management Plan

1. Expected Data formats

This project is expected to produce two types of data:
a. Software in the form of java code, flash code, metadata for the data storage, database dump.
b. Annotated text of Ethics in English and Latin.

2. Management of Unprocessed or Work-in-Progress Data

a. Software will be stored using GIT source control system hosted on publicly available source control server github.com.
b. To keep work in progress annotations we will use available to all principal investigators in St. John's University public internal storage.

In addition to the software, we will also use text of *Ethics* in English and Latin. The text of the Ethics will be the plaintext version of Elwes translation available from Gutenberg.org. This collection will, as permitted by copyright law and licensing restrictions, be made available to the public for download via our project web site. If copyright law or licensing restrictions prevent such distribution, we will provide sufficient detail to enable those who are interested to locate and retrieve these documents.

3. Data Sharing/Dissemination and preservation of access

All applicable electronic materials produced by the project will be made available through the Spinoza Network website hosted through free publicly available Google hosting servers.
PIs intend to further disseminate data by writing paper summarizing their experience during project and publish it in one of the conferences. They also intend to register website with main search engines to facilitate fast availability of the web site through the search. To further use generated metadata we plan to talk to TEI project to incorporate it into their metadata.

4. Period of Data Retention

The web site will be publicly available for at least five years. Software will be kept in the form of open source software on github.com for at least ten years. An annotated data will be kept in St. John's University internal public storage for at least ten years. If negotiation with TEI project will be successful, then metadata will be retain for the period of life of the TEI project, probably over ten years.

Letter of support for technical work plan

IBM Research
IBM Watson Research Center,
19 Skyline Drive, Hawthorne, NY 10532

September 8, 2013

Office of Digital Humanities
National Endowment for the Humanities
1100 Pennsylvania Ave.
Washington, DC, 20506

To Whom It May Concern:

Please consider this as a letter of support for plausibility of successful completion of Spinoza Network project proposal working plan.

I am Dr. Larisa Shwartz, currently working at T.J. Watson Research Center, IBM as Research Manager. I am an author of more than 40 pier-reviewed scientific publications, and an editorial board member for two international journals: International Journal of Business Analytics and International Journal of Operational Research and Information Systems. I am also a technical committee member for five highly competitive international conferences: ICSOC, SIMUL, SOCA, BDIM and ICDS.

As Research Manager I drive research projects from their proposal to full implementation. Some of my responsibilities are estimating plausibility of successful completion of a project, evaluating and assigning candidates with appropriate skill sets and supervising progression of a project.

After careful consideration of Spinoza Network project proposal working plan, I consider it to be well formed, sufficiently detailed and credible for successful completion. This includes hiring a consultant with appropriate skill set, developing (Graphical User Interface) GUI–based annotation tool, implementation of customer facing front end for improved study of Ethics, design, architecture and implementation of server side hosted on Google App engine. The timeframe identified for completion of the project looks reasonable.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Dr. L. Shwartz,
lshwart@us.ibm.com,
Master Inventor,
Research Manager Dept. Operational Innovation,
T.J. Watson Research Center, IBM

Letters of commitment by advisory board members

BARNARD

Barnard College · Columbia University · 3009 Broadway · New York, NY 10027-6598
(212) 854-4689 · Fax (212) 854-7491

Department of Philosophy

National Endowment for the Humanities: Level I Projects
The Spinoza Network

Apart from its great originality, the structure of Spinoza's *Ethics* makes it a singular work in the history of philosophy. The arguments are presented in a format of geometric structure modeled on Euclid's *Elements*. The title reads: *Ethics, Demonstrated in Geometric Order, and divided into Five Parts...* Spinoza's *Ethics* is by far the most important of the very few philosophical texts that have been presented in anything like a geometric form. The Spinoza Network proposal gives a good description of the special structure of the *Ethics*.

There is one significant difference between Euclid's *Elements* and Spinoza's *Ethics*. In the *Elements* the demonstrative progress is "one-way", from definitions, postulates, and common notions, to the propositions, each proposition depending on what has been previously established. In the *Ethics* (excluding prefaces and appendices) the demonstrative progress is one-way *on the page*, from definitions, axioms or postulates, to the propositions. But not always one-way in sequential dependence. Some of the postulates and propositions could have been chosen as axioms or postulates, very few of the axioms are "axiomatically" obvious, and some axioms could have been re-worked as propositions. Spinoza recognizes this feature of the *Ethics* in Part I, where he notes that Prop. 7 could be taken as an axiom or common notion. This does not mean that the Euclidean spirit is compromised in the *Ethics*, or that its "geometric order" is a philosophical gimmick. Spinoza intends that the whole work be recognized as an edifice of demonstrated truth. Yet the relationships among the propositions, axioms, postulates, scholia and corollaries are more difficult to keep track of than is the case for other philosophical works written in conventional formats.

This is where The Spinoza Network comes in, with an elegant solution to the problem that is of great promise in that it will employ digital technology. In particular, it can be adapted to incorporate other works of Spinoza, including his correspondence. In some of these other writings he often refers to passages in the *Ethics*, and in his early works (the *Short Treatise*, for example) there appear many ideas and doctrines that find their definitive form in the *Ethics*. Furthermore, an important feature of the Spinoza Network solution is that it can be adapted to other texts that are not necessarily philosophical or couched "in geometric order".

The Spinoza Network proposal falls squarely within the context of the NEH recent initiative in the area of digital availability of books. Herb Roseman, ~~the~~ Principal Investigator of the project, and his team deserve full support to work on the Spinoza Network, certainly at Level I (and I would expect later at Level II). I first heard about the initial ideas for this approach to the *Ethics* from Herb when he was a student in my Spinoza grad course in the Fall of 2001. I am very pleased to see that there is now the possibility of his ideas bearing fruit. I strongly recommend that The Spinoza Network be accepted for NEH funding.

I would be happy to comment further on the project and to be included among the consulting scholars.

Alan Gabbey
Professor Emeritus of Philosophy
Barnard College, Columbia University
September 5, 2013

Alan Gabbey,
Professor Emeritus of Philosophy
Barnard College, Columbia University
September 5, 2013

st. john's
UNIVERSITY

Charles Traina

Chairman

St. John's College of Liberal Arts and Sciences

Mathematics and Computer Science Department

Tel 718 - 990-6166

Fax 718 - 990-1650

Address 8000 Utopia Pkwy

Jamaica, NY 11439

September 9, 2013

Dear Awards Committee,

This letter is in support of the project planned by Dr. Genady Grabarnik, and Dr. Herbert Roseman to develop a Spinoza Network, whose purpose is to enable a text (Spinoza's "Ethics") to be read in two languages in a logical rather than a sequential fashion. The Spinoza Network will build the structure of Spinoza's thinking directly into the text and can serve as an example for presentation of texts which are "demonstrated in geometric order".

Given the importance of Spinoza's work, the Spinoza Network, will make it more accessible to students and researchers. Also, it can serve as a model for other philosophical works.

A unique feature of the project is the collaboration of a mathematician and philosopher.

Based on this, the project has merit and should be supported by NEH.

I recommend it without reservation.

Thank you for your consideration.

Charles Traina

Prof. Charles Traina,
Chair, Department of Math and CS,
St. John's University

Office of Digital Humanities
National Endowment for the Humanities
1100 Pennsylvania Avenue
Washington, DC 20506

Philosophy Department

Tel (718) 990-6378
Fax (718) 990-1907
8000 Utopia Parkway
Queens, NY 11439
www.stjohns.edu

September 5th, 2013

To the Selection Committee,

I am happy to write in recommendation of the Spinoza NEH Research Project proposed by Drs. Genady Ya. Grabnarik (Department of Mathematics) and Herbert Roseman (Department of Philosophy) of St. John's University. I believe that this proposal is an ideal candidate for this type of research project because the subject matter, Baruch Spinoza's philosophy, deserves and needs this kind of explication, and the investigators are eminently qualified to do the work. I am certain that the finished product will yield enormous benefits to Spinozan scholars, both those who have been working on him for many years, and newcomers to this research.

Spinoza is undoubtedly one of the most original, profound, and challenging philosophers of the modern period. He has influenced some of the most important intellectuals of our time, including Nietzsche (ethics and politics), Hegel (metaphysics), and Einstein (science and mathematics), just to name a few. He richly rewards those who invest time into his work, although the complexity of his presentation and his enormous systematic ambition make his work less accessible (initially, at least) than many other comparable figures. Generally speaking, he is trying to apply the geometric method to the derivation of his ethics, integrating epistemological and metaphysical principles into a unified ontology. All of his propositions depend upon more fundamental axioms and definitions, all of which are in perfect harmony. Needless to say, one needs some helping navigating his system in order to fully appreciate the various connections and logical implications. This is precisely what a thorough mapping project can offer; it will provide a much-needed tool to allow for optimal research. What Professors Grabnik and Roseman propose is the creation of a linking network in both English and Latin that will allow a researcher to grasp the various connections and implications at once, which in turn allows for a more effective and focused consideration of the philosophical merits of the system.

This is a big project and it requires a thorough familiarity of the Spinozan texts and, most importantly, an acute philosophical appreciation of their philosophical importance. Dr. Roseman has devoted much philosophical research to the work of Spinoza and has developed a highly sophisticated and sensitive appreciation of it. Dr. Grabnarik will assist in turning the various bits of information into a coherent and effective program.

I am enthusiastic supportive of this project and will benefit, as will many others, from its finished product.

Thank you,

Dr. Paul Gaffney
Chair, and Associate Professor of Philosophy

Appendix A.

Bibliography

Electronic Sources

1. Bombardi, Ron. (1997). *Baruch Spinoza, Ethics.*
   http://frank.mtsu.edu/~rbombard/RB/Spinoza/ethica-front.html
2. Elwes, R.H.M. (1883). *The Ethics(translated into English)*
   http://www.gutenberg.org/ebooks/search/?query=spinoza
3. de Spinoza, Benedicti . (1677). *Ethica*.
   http://users.telenet.be/rwmeijer/spinoza/works.htm
4. Yesselman, J.B. *The Ethics-Part I.* http://www.yesselman.com/e1elwes.htm
5. GLA, http://tinyurl.com/gg-glogadapter
6. Heath, Thomas Little, ed. *The thirteen books of Euclid's Elements.* Dover Publications 1956.
7. Faulkner, William. "Absalom, Absalom! 1936." *New York: Vintage* (1990).
8. TEI http://www.tei-c.org/release/doc/tei-p5-doc/en/html/

Books

9. Curley E., translator and editor(1994). *A Spinoza Reade: The Ethics and Other Works.*
   Princeton, NJ: Princeton University Press.
10. Curley E. (1988) *Behind the Geometrical Method: A Reading of Spinoza's Ethics.*
    Princeton, NJ: Princeton University Press.
11. Garrett, D., editor (1996). The Cambridge Companion to Spinoza. Cambridge, UK:
    Cambridge University Press
12. Goldstein R. (2006). *Betraying Spinoza. New York*, NY: Schocken Books.
13. Hart, Alan (1983). *Spinoza's Ethics, Part I and II: A Platonic Commentary, Part 1.*
    Leiden, The Netherlands: E.J. Brill.
14. Lloyd, G. (1994). *Part of Nature: Self-Knowledge in Spinoza's Ethics. Ithaca, NY*:
    Cornell University Press.
15. LLoyd, G. (1996). *Routledge Philosophy GuideBook : Spinoza and the Ethics.* NY:
    Routledge.
16. Nadler, S. (2006). *Spinoza's Ethics: An Introduction.* Cambridge, UK: Cambridge
    University Press
17. Schipper, L. (1993) *Spinoza's Ethics, The View from Within*. NY: Peter Lang.
18. Wetlesen, Jon. (1979) *The Sage and the Way: Spinoza's Ethics of Freedom.* Assen,
    Netherlands: Van Gorcum

Appendix B. Data Structures, relation to TEI

We concentrate on logical ordering as a first implementation of the proposal's idea.

Spinoza's Ethics and Euclid's Elements comprises the following entity: Definitions, Axioms, Propositions, Corollaries, Lemma and Affects.

With the exception of the Definitions any entity can depend upon other entities. The input to the system would be:

1. Each of the entities separated as a distinct record

2. An annotated version of the text that defines the dependencies.

From this input a program would prepare:

1. A table listing each entity and (1) the entities upon which it depends and (2) a pointer to its Latin and English records as defined below

2. A file containing a single English and Latin record for each entity

In addition a program would be written that inverts the table describes in (1) above. This table would be used to find the forward entities that depend upon a given entity

2. Non normalized model draft of meta data xml schema for the project
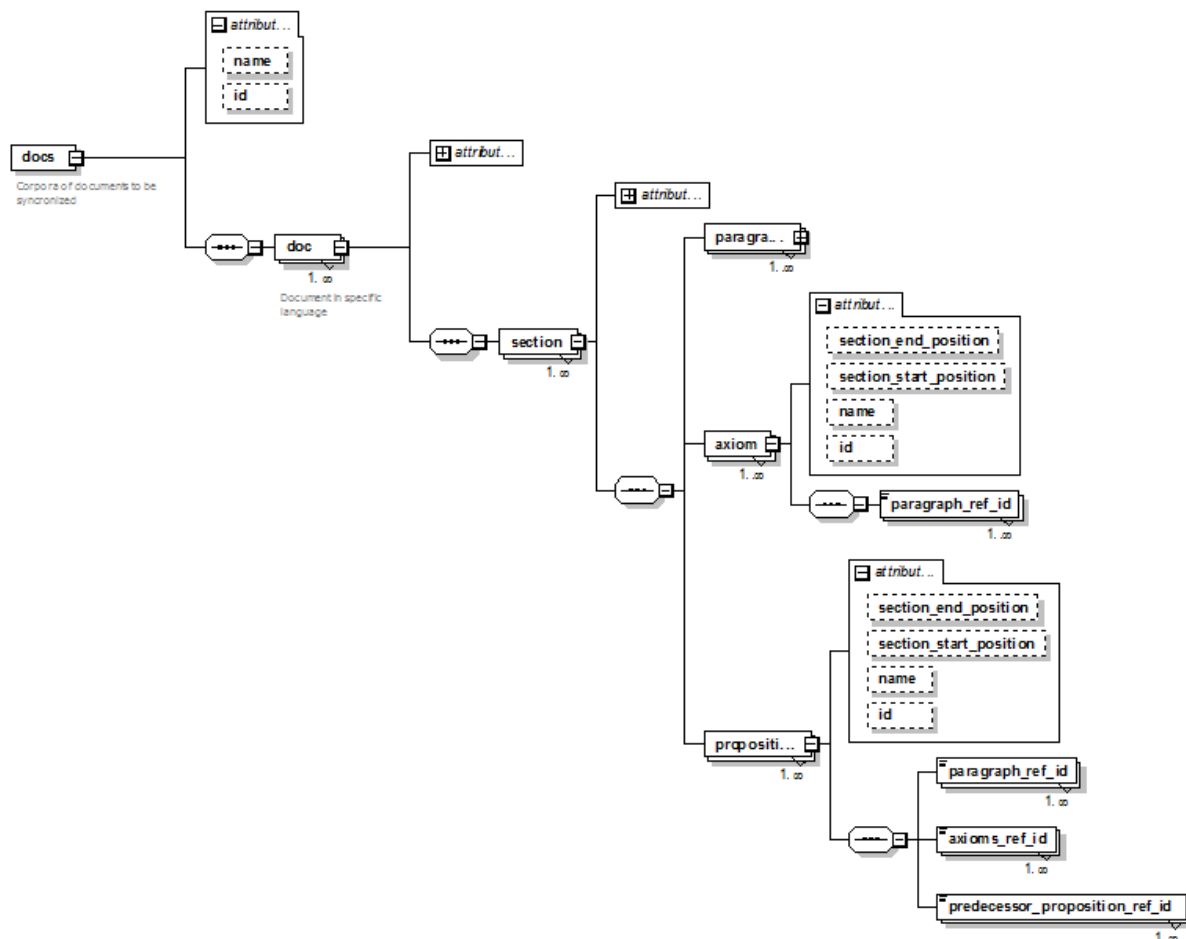
3. Non normalized draft of meta data xml schema for the project (text)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified" attributeFormDefault="unqualified">
<xs:element name="docs">
<xs:annotation>
<xs:documentation>Corpora of  documents to be syncronized</xs:documentation>
```

```
</xs:annotation>
<xs:complexType>
<xs:sequence>
<xs:element name="doc" maxOccurs="unbounded">
<xs:annotation>
<xs:documentation>Document in specific language</xs:documentation>
</xs:annotation>
<xs:complexType>
<xs:sequence>
<xs:element name="section" maxOccurs="unbounded">
<xs:complexType>
<xs:sequence>
<xs:element name="paragraph" maxOccurs="unbounded">
<xs:complexType>
<xs:attribute name="prev_id" type="xs:IDREF" use="optional"/>
<xs:attribute name="id" type="xs:ID"/>
</xs:complexType>
</xs:element>
<xs:element name="axiom" maxOccurs="unbounded">
<xs:complexType>
<xs:sequence>
<xs:element name="paragraph_ref_id" type="xs:IDREFS" maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute name="section_end_position" type="xs:integer"/>
<xs:attribute name="section_start_position" type="xs:integer"/>
<xs:attribute name="name" use="optional"/>
<xs:attribute name="id" type="xs:ID"/>
</xs:complexType>
</xs:element>
<xs:element name="proposition" maxOccurs="unbounded">
<xs:complexType>
<xs:sequence>
<xs:element name="paragraph_ref_id" type="xs:IDREF" maxOccurs="unbounded"/>
<xs:element name="axioms_ref_id" type="xs:IDREF" minOccurs="0" maxOccurs="unbounded"/>
<xs:element name="predecessor_proposition_ref_id" type="xs:ID" minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute name="section_end_position" type="xs:integer"/>
<xs:attribute name="section_start_position" type="xs:integer"/>
<xs:attribute name="name" type="xs:Name" use="optional"/>
<xs:attribute name="id" type="xs:ID"/>
</xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="id" type="xs:ID"/>
<xs:attribute name="name" type="xs:Name"/>
</xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="language" type="xs:language"/>
<xs:attribute name="name" type="xs:Name"/>
<xs:attribute name="id" type="xs:IDREF"/>
</xs:complexType>
</xs:element>
</xs:sequence>
<xs:attribute name="name" type="xs:Name"/>
<xs:attribute name="id" type="xs:ID"/>
</xs:complexType>
</xs:element>
</xs:schema>
```

Appendix C. Screenshots

1. Makeup web site screen

2. Make up screen of annotation tool
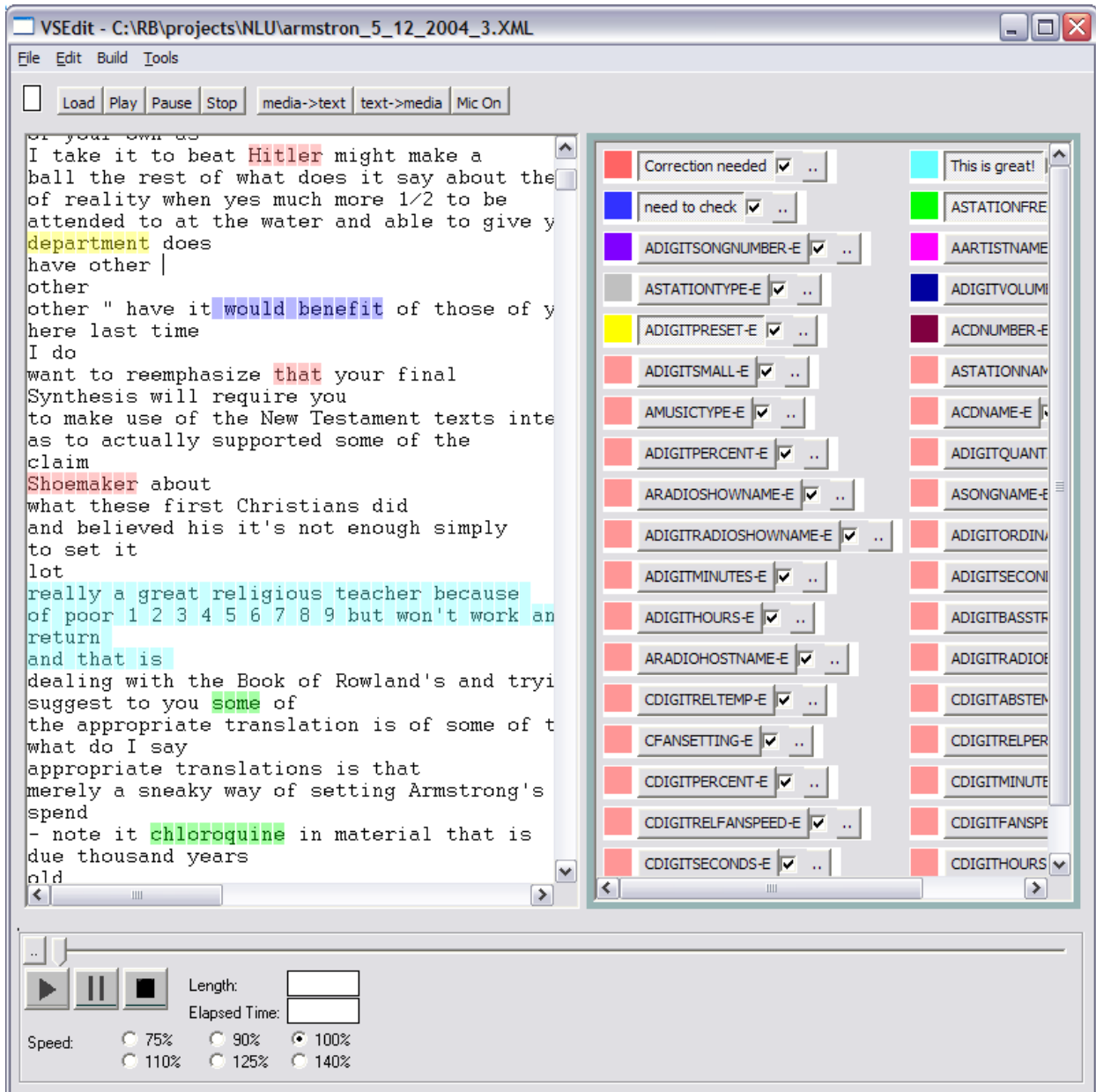
Appendix D.

Work and testing plan

1. Hire contractor for aesthetic design of website and development of annotating tool, hire context consultant (CC) to overview. Duration:1 month, overseen by PI.

2. Create annotating tool with output in XML format (see Appendix B for the draft of metadata xml schema and Appendix C for mockup of the tool's GUI) reflecting Spinoza network structure: type of statement like axiom or propositions, etc., position, elements being direct predecessors. Use some freely available database (MySQL) for persistent storage. Duration: 2 months, consultant, overseen by PI.

Testing. The development should follow Test Driven Development approach to provide necessary uni-testing. System testing will be providing first by context consultant and next by Student researcher during usage period.

Functional testing should cover:

a) Load text file in English and Latin

b) Create appropriate XML tags (see sample schema draft, Appendix B) with automatic generation of unique IDs for tags and positions.

c) GUI support for synchronization between English and Latin versions of the text.

d) Tags support for axioms, propositions

e) Tags support for predecessor axioms and propositions

f) Ability to load already tagged text and visually show tagging and synchronized texts in different languages.

3. Use (under) graduate student(s) to tag elements of the Ethics, create precedence table for the statements based on tagging, persist result of tagging in publicly available database (My SQL), student should be able to understand Latin. Duration 3 months, overseen by CC.

4. Tagging verification, To avoid errors, the whole text of Ethics in both English and Latin will be verified by PI. Duration is 1 month. This point is testing description for 3. Visual verification of the correctness of tagging is provided by analyzing dump of the database or by loading ready tagged text into the tagging GUI. (CC).

5. Develop front end application prototype (website, web-pages exposed to user), (see Appendix C for mock up GUI) for accessing the network elements. Our preference is to use HTML 5 since it is in our point of view the most mature and aesthetically accomplished web GUI format in comparison to microsoft's silverlight or Java FX. Duration 2 month, (starts in parallel with 2), overseen by PI.

6. Develop backend (web server, database side) for the Spinoza Network

Duration 2 month (starts in parallel with 2), overseen by PI.

Functional Testing covers 5. and 6.

We will use test driven development to provide high quality component code.

System testing will be provided when front end GUI will be finished. Members of advisory board and students of Department of Philosophy will use the site and provide beta testing.

Functional testing will cover

a) Loading appropriate book of the text

b) Show contained axioms and propositions

c) For each proposition show predecessors and direct sequences

d) No predecessors are shown for axioms

e) Show direct sequences for axioms

f) Do not show direct sequences for the last propositions

g) Show if requested synchronized Latin text

h) Jump if requested to chosen predecessor or direct sequence

i) Return back if requested from jump (infinite level)

We will not use load testing since we do not expect the site to be exposed to very high traffic.

7. Test deployment of the Spinoza Network on one of the free publicly available servers, Testing and correction of the running application, Duration 2 month (starts with finishing each part of the project), overseen by CC.

8. Spinoza Network goes live on one of the free publicly available servers (Google)

Appendix E. Relation with TEI

First of all we would like to mention a significant effort for creating metadata for text encoding and interchange (see 8. TEI). We looked through the latest available version of TEI version v. 2.5 dated July 26, 2013 and did not find structure capable to directly support annotating and viewing according to (logical or possibly other nonlinear) ordering. From other hand upon success of the proposal, we plan to discuss with TEI community possibility to incorporate the ideas or the project into TEI proposal in order to better dissimilate the idea and results of the project.