

<b>FOR Govt Use Only</b> [Proposal Number] <hr/> <hr/>
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**AQUAINT (Advanced Question Answering for Intelligence) Program  
Phase 2**

**Broad Agency Announcement (BAA)  
BAA 03-06-FH**

**VOLUME 3 – Cost Information**

**1. Company / Agency Information:**

Columbia University, Department of Computer Science  
(Company / Agency Name)

1214 Amsterdam Avenue,  
(First Line of Address)

450 CS Building, M/C 0401  
(Street Address)

New York  
(City)

NY  
(State)

10027  
(Zip Code)

**2. Company / Agency Point of Contact Information:**

Vasileios Hatzivassiloglou  
(POC Name)

Research Scientist  
(POC Title)

212-939-7110 / 212-666-0140  
(POC Telephone and FAX Nos. (Include Area Code))

vh@cs.columbia.edu  
(POC e-mail)

**3. Type Of Contract (Check One):**

- FFP                       CPFF                       CPAF  
 FPI                          CPIF                       Other (Specify) Cost-Reimbursement

**4. Proposed Cost (A + B = C):**

	4.a. Cost	4.b. Profit / Fee	4.c. Total
Year 1	<u>989,882</u>	<u>                    </u>	<u>989,882</u>
Year2	<u>989,455</u>	<u>                    </u>	<u>989,455</u>



## **BAA 03-06-FH - VOLUME 3 - Cost Information (CONTINUED)**

This proposal is submitted in response to BAA 03-06-FH and reflects our estimates and/or actual costs as of this date and conforms to the instructions in FAR15.804-6(b)(1), and Table 15-2. By submitting this proposal, the Offeror, if selected for negotiation, grants the contracting officer and authorized representatives(s) the right to examine, at any time before award, those records which include books, documents, accounting procedures and practices, and other data regardless of type and regardless of whether such items are in written form, in the form of computer data, or whether such supporting information is specifically referenced or included in the proposal as the basis for pricing, that will permit an adequate evaluation of the proposed price.

Patricia Welch  
**13. Name (Typed)**

Assistant Director  
**14. Title**

The Trustees of Columbia Univ  
**15. Company / Agency Name**

\_\_\_\_\_  
16. Signature

\_\_\_\_\_  
Date

# **Fusing Rich Information Extracted from Multiple Media and Languages to Generate Contextualized, Complex Answers**

## **AQUAINT Phase II Proposal**

Columbia University (Primary Contractor)  
University of Colorado at Boulder (Subcontractor)

Technical Point of Contact: Vasileios Hatzivassiloglou ([vh@cs.columbia.edu](mailto:vh@cs.columbia.edu))  
Volume III: Cost Information

### **PART I: Summary of Costs**

#### **A. Cost and Fee Summary**

The proposed project will be executed by groups at Columbia University in the City of New York (primary contractor) and at the University of Colorado at Boulder (subcontractor). The two groups will develop certain components separately according to their areas of expertise and will collaborate in the development of other components and the integration of components, both within the proposed system and for delivery to the government, the AQUAINT testbed, and other participants in AQUAINT Phase II.

The total cost of the project is \$1,979,337 over the two years of Phase II, including \$1,306,998 in direct costs and \$672,339 in indirect costs (overhead) as mandated by standard procedures at the proposing institutions. While the total cost exceeds the upper limit of the range suggested for in the Proposer Information Pamphlet for full system proposals (\$900,000 per year) by approximately 10%, the same team was funded during AQUAINT Phase I at the level of \$900,000 per year. The 10% increase in cost represents the realized increases in costs such as salaries and tuition of approximately 5% per year during the past two years. Thus, the increase in cost represents similar effort to that currently funded by ARDA as part of Phase I, and the limit of \$900,000 per year would actually force us to reduce the overall effort from the 2001-2003 levels.

Of the total \$1,979,337 in costs, \$125,506 (6.34%) represent administrative costs related to overall project administration and reporting to the government. These include a portion of the salary of the Principal Investigator (Dr. Vasileios Hatzivassiloglou), a portion of his travel costs to the projected AQUAINT workshops and other meetings with government representatives, and 10% of the annual salary of an administrative assistant (Mr. Matthew Schlager) at Columbia University. The remaining \$1,853,831 (93.66%) of the requested funds represent the cost of execution of the proposed plan in terms of carrying out the research, developing software, and evaluating the performance of methods and systems developed in the project.

These research and development costs are shared approximately equally between the two teams, while the project-wide administrative costs are budgeted for the primary contractor. The total direct cost over phase II for the Columbia University part of the effort is \$685,787, and the total direct cost over phase II for the University of Colorado part of the effort is \$621,211; in

addition, Columbia University will incur \$412,632 in indirect costs over the same period and the University of Colorado will incur \$259,707 in indirect costs.

This budget is based on the assumption that the starting date of the contract will be 1/1/2004 and the end date 12/31/2005. A substantial delay in the project's start date will necessitate minor alterations in the projected costs due to natural increases of salaries, stipends, and tuition, and due to predetermined rules for the calculation of fringe benefit rates and overhead set by the two Universities. Costs are evenly distributed between the two years of the contract, although some costs are slightly higher in Year 2 due to projected increases of salaries and tuition by 3.9%-6%; on the other hand, travel and equipment costs are higher in Year 1. We request \$989,882 for Year 1 and \$989,455 for Year 2.

The total cost is divided in four focus areas, around which the technical rationale, milestones, and deliverables are organized. For **Extracting Rich Semantics** we request \$677,474 (\$162,246 for the semantic parser, \$179,499 for identifying and annotating opinions, \$166,369 for extracting events, and \$169,360 for identifying contradictions, perspectives, and time-ordered processions). For **Generating Complex Answers** we request \$364,746 (\$94,837 for definitions, \$71,766 for biographies, \$112,081 for unified fusion of answers across question types, and \$86,062 for new methodologies for the evaluation of long answers). For **Diverse Data Modalities** we request \$411,194, including \$211,789 for multilingual support for Chinese and Arabic, \$164,868 for processing spoken language documents, and \$34,537 for processing semi-structured data such as web pages. Finally, we need \$501,302 for supporting our goal of **System Integration**, including \$129,654 for building an interactive dialog interface over multiple questions, \$237,643 for integrating the system components and maintaining the system, and \$134,005 for administrative costs and overall project co-ordination.

While we itemized the cost by research focus, note that there are dependencies between these areas, and that work in one area often relies on progress in another area earlier in the pipeline. For example, work in the area of unified answer fusion (part of the complex answer generation task) presupposes that there is multi-source text richly annotated with perspective, opinion, and semantic information from which a composite answer will be produced. Consequently, the above costs do not always include what would be necessary to achieve the goals of a given task if other earlier tasks or components were not funded; the proposal represents a total system with many interactions, as detailed in Volume I.

In the next section, we present breakdowns of the total cost according to both the main research areas/milestones and the major categories of expenses (labor, tuition, travel, equipment and supplies, other direct costs, indirect costs). We also include detailed breakdowns of labor costs according to specific personnel (including the amount of time funded by the project), and of all expenses cumulatively by detailed expense category and separately for the two sites.

## B. Detailed Cost Summary

### B.1. Breakdown by research areas/milestones/major deliverables

#### BREAKDOWN OF COSTS BY TASK

	Year 1	Year 2	Total
<b>A. Extraction of Rich Semantics</b>			
1. Semantic Role Parsing	83,253	82,993	166,246
<i>Salaries</i>	38,995	40,438	79,433
<i>Personnel costs ( benefits and tuition)</i>	14,556	15,208	29,764
<i>Equipment, Computer Fees and Supplies</i>	2,400	640	3,040
<i>Travel</i>	3,580	3,040	6,620
<i>Indirect Costs</i>	23,722	23,667	47,389
2. Identifying and Annotating Opinions	89,165	92,334	181,499
<i>Salaries</i>	41,583	43,549	85,132
<i>Personnel costs ( benefits and tuition)</i>	10,379	10,957	21,336
<i>Equipment, Computer Fees and Supplies</i>	1,155	830	1,985
<i>Travel</i>	2,503	2,221	4,724
<i>Indirect Costs</i>	33,545	34,777	68,322
3. Event Extraction	83,788	86,581	170,369
<i>Salaries</i>	38,071	39,946	78,017
<i>Personnel costs ( benefits and tuition)</i>	14,365	14,916	29,281
<i>Equipment, Computer Fees and Supplies</i>	1,160	827	1,987
<i>Travel</i>	2,858	2,576	5,434
<i>Indirect Costs</i>	27,334	28,316	55,650
4. Contradictions, Perspectives, and Timelines	84,130	87,230	171,360
<i>Salaries</i>	38,187	40,138	78,325
<i>Personnel costs ( benefits and tuition)</i>	13,231	13,825	27,056
<i>Equipment, Computer Fees and Supplies</i>	1,086	789	1,875
<i>Travel</i>	1,804	1,522	3,326
<i>Indirect Costs</i>	29,822	30,956	60,778
Total for Task A	340,336	349,138	689,474
<b>B. Generating Complex Answers</b>			
1. Definitions	47,787	49,050	96,837
<i>Salaries</i>	20,275	21,368	41,643
<i>Personnel costs ( benefits and tuition)</i>	9,455	9,794	19,249
<i>Equipment, Computer Fees and Supplies</i>	998	708	1,706
<i>Travel</i>	1,804	1,522	3,326
<i>Indirect Costs</i>	15,255	15,658	30,913

2. Biographies	36,546	37,220	73,766
<i>Salaries</i>	15,808	16,575	32,383
<i>Personnel costs ( benefits and tuition)</i>	4,772	5,007	9,779
<i>Equipment, Computer Fees and Supplies</i>	940	650	1,590
<i>Travel</i>	1,804	1,522	3,326
<i>Indirect Costs</i>	13,222	13,466	26,688
3. Unified Answer Fusion	56,221	57,860	114,081
<i>Salaries</i>	24,060	25,317	49,377
<i>Personnel costs ( benefits and tuition)</i>	9,573	9,961	19,534
<i>Equipment, Computer Fees and Supplies</i>	982	692	1,674
<i>Travel</i>	2,492	2,210	4,702
<i>Indirect Costs</i>	19,114	19,680	38,794
4. Evaluation of Long Answers	43,143	44,919	88,062
<i>Salaries</i>	19,861	20,805	40,666
<i>Personnel costs ( benefits and tuition)</i>	4,960	5,248	10,208
<i>Equipment, Computer Fees and Supplies</i>	578	433	1,011
<i>Travel</i>	1,376	1,376	2,752
<i>Indirect Costs</i>	16,368	17,057	33,425
Total for Task B	183,697	189,049	372,746

**C. Diverse Data Modalities**

1. Multilingual Support: Chinese and Arabic	106,537	107,252	213,789
<i>Salaries</i>	50,581	52,515	103,096
<i>Personnel costs ( benefits and tuition)</i>	18,903	19,745	38,648
<i>Equipment, Computer Fees and Supplies</i>	2,529	726	3,255
<i>Travel</i>	3,580	3,040	6,620
<i>Indirect Costs</i>	30,944	31,226	62,170
2. Spoken Language (Audio) Documents	83,520	83,348	166,868
<i>Salaries</i>	39,594	41,099	80,693
<i>Personnel costs ( benefits and tuition)</i>	13,217	13,795	27,012
<i>Equipment, Computer Fees and Supplies</i>	2,314	583	2,897
<i>Travel</i>	3,580	3,040	6,620
<i>Indirect Costs</i>	24,815	24,831	49,646
3. Semi-Structured Data	17,156	17,381	34,537
<i>Salaries</i>	8,061	8,392	16,453
<i>Personnel costs ( benefits and tuition)</i>	1,788	1,866	3,654
<i>Equipment, Computer Fees and Supplies</i>	86	57	143
<i>Travel</i>	1,435	1,165	2,600
<i>Indirect Costs</i>	5,786	5,901	11,687
Total for Task C	207,213	207,981	415,194

**D. Integrated System**

1. Interactive Dialog over Multiple Questions	65,029	64,625	129,654
<i>Salaries</i>	29,821	30,984	60,805
<i>Personnel costs ( benefits and tuition)</i>	11,357	11,863	23,220
<i>Equipment, Computer Fees and Supplies</i>	2,229	526	2,755
<i>Travel</i>	2,500	2,230	4,730
<i>Indirect Costs</i>	19,122	19,022	38,144
2. Integration of Independent Modules	119,294	118,657	237,951
<i>Salaries</i>	50,388	52,651	103,039
<i>Personnel costs ( benefits and tuition)</i>	20,453	21,490	41,943
<i>Equipment, Computer Fees and Supplies</i>	4,759	2,052	6,811
<i>Travel</i>	4,392	3,288	7,680
<i>Indirect Costs</i>	39,302	39,176	78,478
3. Overall Project Coordination	74,313	60,005	134,318
<i>Salaries</i>	26,355	27,935	54,290
<i>Personnel costs ( benefits and tuition)</i>	6,694	7,063	13,757
<i>Equipment, Computer Fees and Supplies</i>	991	687	1,678
<i>Travel</i>	2,232	1,668	3,900
<i>Indirect Costs</i>	<u>38,041</u>	<u>22,652</u>	<u>60,693</u>
Total for Task D	258,636	243,287	501,923
<b>Project Total</b>	<u><u>989,882</u></u>	<u><u>989,455</u></u>	<u><u>1,979,337</u></u>
<b>Total requested for two years:</b>		<b>\$1,979,337</b>	

**B.2. Detailed Cumulative Budget****CUMULATIVE PROPOSED BUDGET**

	<b>Year 1</b>	<b>Year 2</b>	<b>Total</b>
<b>A. Salaries and Wages</b>			
Principal Investigators	147,319	153,808	301,127
Postdoctoral/Research Associates	127,393	132,902	260,295
Research Programmer	**,**	**,**	**,**
Administrative assistant	*,**	*,**	*,**
Graduate Research Assistants	97,348	102,228	199,576
Undergraduate data annotators	2,000	2,000	4,000
Total Salaries and Wages	431,642	451,399	883,041
<b>B. Fringe Benefits</b>			
Non-student personnel	79,860	83,829	163,689
Students	2,497	2,616	5,113
Total Fringe Benefits	82,357	86,445	168,802
<b>C. Travel</b>			
1) Columbia-Colorado Project Meetings	5,400	5,400	10,800
2) AQUAINT-level meetings	16,560	11,040	27,600
3) Conferences – result dissemination	13,980	13,980	27,960
Total Travel	35,940	30,420	66,360
<b>D. Other Direct Costs</b>			
1) Materials and Supplies	3,500	2,700	6,200
2) Publication and Dissemination Costs	400	400	800
3) Non-capital equipment	14,000	4,100	18,100
4) Computer Services Fees	9,000	8,000	17,000
5) Graduate Student Tuition	71,872	74,823	146,695
Total Other Direct Costs	98,772	90,023	188,795
<b>E. Total Direct Costs</b>	648,711	658,287	1,306,998
<b>F. Indirect Costs</b>	341,171	331,168	672,339
<b>G. Total Costs</b>	989,882	989,455	1,979,337
<b>Total requested for two years:</b>		<b>\$1,979,337</b>	

**B.3. Detailed Budget for the Primary Contractor (Columbia University)**

**COLUMBIA UNIVERSITY -- PROPOSED BUDGET**

	<b>Year 1</b>	<b>Year 2</b>	<b>Total</b>
<b>A. Salaries and Wages</b>			
Principal Investigator: Vasileios Hatzivassiloglou 40% FTE	**,***	**,***	***,***
Co-Principal Investigator: Kathleen McKeown 1 month FTE	**,***	**,***	**,***
Research Scientist: Rebecca Passonneau 20% FTE	**,***	**,***	**,***
Postdoctoral Fellow: Hong Yu 50% FTE	**,***	**,***	**,***
Research Programmer: Andrew Schlaikjer 100% FTE	**,***	**,***	***,***
Administrative assistant: Matthew Schlager 10% FTE	*,***	*,***	*,***
Graduate Research Assistants: Computer Science			
Sasha Blair-Goldensohn			
50% time, 9 months Academic Year	19,404	20,570	39,974
100% time, 3 months Summer	6,300	6,678	12,978
Elena Filatova			
50% time, 9 months Academic Year	19,404	20,570	39,974
100% time, 3 months Summer	6,300	6,678	12,978
Undergraduate data annotators	2,000	2,000	4,000
Total Salaries and Wages	227,678	239,480	467,158
<b>B. Fringe Benefits</b>			
All except graduate students (@26.2% for 1/1/04 - 6/30/04, 26.4% for 7/1/04-6/30/05, 26.6% for 7/1/05-12/31/05)	46,359	49,021	95,380
Graduate students (@8.15%, summer portion only of graduate student stipend)	1,027	1,089	2,116
Total Fringe Benefits	47,386	50,110	97,496
<b>C. Travel</b>			
1) 3 Project Personnel to Colorado for Planning meetings, once each year, 2 days each: [See attached budget justification]	2,700	2,700	5,400

2) 2 Project Personnel to each of 5 AQUAINT program meetings (3 meetings in Year 1, 2 meetings in Year 2), 3 days each:	8,460	5,640	14,100
3) 4 Project Personnel to Conferences yearly:	6,880	6,880	13,760
Total Travel	<u>18,040</u>	<u>15,220</u>	<u>33,260</u>
<b>D. Other Direct Costs</b>			
1) Materials and Supplies	1,500	1,500	3,000
2) Publication and Distribution Costs	400	400	800
3) Non-capital equipment (see justification)	7,000	4,100	11,100
4) Computer Science Dept. computing service fees for each participant except co-PI	6,000	6,000	12,000
5) Tuition (2 GRAs)	30,036	30,937	60,973
6) University of Colorado subcontract	440,384	440,534	880,918
Total Other Direct Costs	<u>485,320</u>	<u>483,471</u>	<u>968,791</u>
<b>E. Total Direct Costs</b>	<u><u>778,424</u></u>	<u><u>788,281</u></u>	<u><u>1,566,705</u></u>
<b>F. Indirect Costs</b>			
@63.5% on every item except tuition and subcontract	195,583	201,174	396,757
@63.5% on first \$25,000 of University of Colorado subcontract	15,875	0	15,875
Total indirect costs	<u>211,458</u>	<u>201,174</u>	<u>412,632</u>
<b>G. Total Costs</b>	<u><u>989,882</u></u>	<u><u>989,455</u></u>	<u><u>1,979,337</u></u>
<b>Total requested for two years:</b>		<b>\$1,979,337</b>	

**B.4. Detailed Budget for the Subcontractor (University of Colorado at Boulder)**

**UNIVERSITY OF COLORADO SUBCONTRACT -- PROPOSED BUDGET**

	<b>Year 1</b>	<b>Year 2</b>	<b>Total</b>
<b>A. Salaries and Wages</b>			
Co-Principal Investigator: Wayne Ward 3 months FTE	**,**	**,**	**,**
Co-Principal Investigator: Daniel Jurafsky 1 month FTE, Summer	**,**	**,**	**,**
Co-Principal Investigator: James Martin 2.25 months FTE, Summer	**,**	**,**	**,**
Research Associate: Kadri Hacioglu 5 months FTE	**,**	**,**	**,**
Research Associate: Mona Diab 6.5 months FTE	**,**	**,**	**,**
Graduate Research Assistants: Comp Sci Research Assistant #1, To be named 50% time, 9 months Academic Yr	15,799	16,415	32,214
100% time, 3 months Summer	7,171	7,451	14,622
Research Assistant #2, To be named 50% time, 9 months Academic Yr	15,799	16,415	32,214
100% time, 3 months Summer	7,171	7,451	14,622
<b>Total Salaries and Wages</b>	<b>203,964</b>	<b>211,919</b>	<b>415,883</b>
<b>B. Fringe Benefits</b>			
All except graduate students (@ 21.2%)	33,501	34,808	68,309
Graduate students (@ 3.2%)	1,470	1,527	2,997
<b>Total Fringe Benefits</b>	<b>34,971</b>	<b>36,335</b>	<b>71,306</b>
<b>C. Travel</b>			
1) 3 Personnel to Columbia for Planning meetings, once each year, 2 days each: [See attached budget justification]	2,700	2,700	5,400
2) 2 Personnel to each of 5 program meetings (3 in Year 1, 2 in Year 2), 3 days each:	8,100	5,400	13,500
3) 5 Personnel to Conferences yearly:	7,100	7,100	14,200
<b>Total Travel</b>	<b>17,900</b>	<b>15,200</b>	<b>33,100</b>

<b>D.</b>	<b>Other Direct Costs</b>			
	1) Materials and Supplies	2,000	1,200	3,200
	2) Non-capital equipment			
	Two workstations in Year 1	7,000	0	7,000
	3) UnixOps Computing services fees	3,000	2,000	5,000
	4) Tuition Remission: 2 Non-resident	41,836	43,886	85,722
	Total Other Direct Costs	<u>53,836</u>	<u>47,086</u>	<u>100,922</u>
<b>E.</b>	<b>Total Direct Costs</b>	<u>310,671</u>	<u>310,540</u>	<u>621,211</u>
<b>F.</b>	<b>Indirect Costs</b>			
	(@ 48% between 1/1/04-6/30/04, 48.5% between 7/1/04-6/30/05, and 49% between 7/1/05-12/31/05, on all items except tuition)	129,713	129,994	259,707
<b>G.</b>	<b>Total Costs</b>	<u>440,384</u>	<u>440,534</u>	<u>880,918</u>
	<b>Total requested for two years:</b>		<b>\$880,918</b>	

## **PART II: Supporting Cost and Pricing Information**

We request a total of \$1,979,337 for both Columbia University and the University of Colorado over the two years of AQUAINT Phase II (\$989,882 in Year 1 and \$989,455 in Year 2, assuming for pricing purposes to that we start on January 1, 2004). As we noted in the Cost and Fee Summary, this represents a departure from the suggested range of up to \$900,000 per year for full-system proposals. However, we have put a team in place as part of AQUAINT Phase I that was funded at the level of \$900,000 per year. We request a 10% increase over the funding provided during 2001-2003 to account for the natural increase of costs such as salaries and tuition while maintaining the same level of effort as in our current Phase I project.

Most of the direct cost part of the above amount is for directly supporting the salaries of research personnel. Forty percent of annual salary each year are requested for the principal investigator, Dr. Vasileios Hatzivassiloglou, and three months of annual salary each year are requested for Dr. Wayne Ward, who will act as the subcontractor's principal investigator and coordinate efforts within the University of Colorado group. One month of annual salary each year are requested for two of the other co-principal investigators, Dr. Kathleen McKeown at Columbia University and Dr. Daniel Jurafsky at the University of Colorado. 2.25 months of summer salary per year are requested for the remaining co-principal investigator, Dr. James Martin at the University of Colorado. Funds are also requested for supporting, at Columbia University: one research scientist, Dr. Rebecca Passonneau, at 20% effort (annual salary of \$\*\*\*,\*\*\*); a postdoctoral fellow, Dr. Hong Yu, at 50% effort (annual salary of \$\*\*,\*\*\*), and one research programmer, Andrew Schlaikjer at 100% effort (annual salary of \$\*\*,\*\*\*). At the University of Colorado, the project will fund two research associates, Dr. Kadri Hacioglu (5 months per year, \$\*\*,\*\*\* annual salary) and Dr. Mona Diab (6.5 months per year, annual salary of \$\*\*,\*\*\*). In addition, we request support for two Ph.D. graduate students at the Department of Computer Science of each institution. Tuition costs (\$14,280 per student at Columbia University and \$20,418 per student at the University of Colorado for academic year 2003-2004) and a monthly stipend (currently \$2,100 at Columbia and \$1,726 at Colorado; in both cases, preset by the respective Departments) are requested for each student. The stipend costs extend over both the academic year at both institutions and over the three summer months (at the same rate) at Columbia and over two summer months (at double rate) at Colorado. The students in both groups will commit 50% of their time to this project during the academic year and 100% of their time during the summer.

Given the accelerated schedule and increased dissemination requirements of the AQUAINT program, we also request support for an administrative assistant at 10% effort (annual salary of \$\*\*,\*\*\*). The administrative assistant will help with tracking costs, planning meetings, arranging travel, and preparing reports. Increases of 5% on salaries, 6% on stipends, and 3% on tuition have been projected for the second year of the contract at Columbia University. The corresponding rates estimated by the University of Colorado are 3.9% on salaries and stipends and 4.9% on tuition. \$2,000 per year is requested to cover the cost of employing undergraduate students as part-time annotators to supplement existing data resources and create new ones. At a typical college work-study rate of \$10/hour the budgeted amount allows for a significant expansion of collections with annotations that may be too specific to our approach to warrant annotation at the AQUAINT program level (for example, locating and marking conflicting or

complementary answers for a given question), yet would otherwise require significant amounts of time from more highly compensated personnel.

In addition to salary and tuition costs, the Columbia team requests \$1,500 per year for materials and supplies, \$400 per year for publication and dissemination costs, and \$1,000 per year for six of the seven members of the team (except Dr. McKeown) for computer services fees charged by the Department. The Colorado group has similarly budgeted for \$2,000 in Year 1 and \$1,200 in Year 2 for materials and supplies, and \$3,000 in Year 1 and \$2,000 in Year 2 for departmental computing services fees. Each site requests funds for purchasing two PC workstations in Year 1 (each budgeted at \$3,500, allowing the acquisition of a high performance PC with a high quality monitor and large local disks). The Columbia group is also planning to acquire a third workstation (\$3,500) in Year 2 as well as additional disk space to accommodate data collections (\$600).

We also request coverage of anticipated travel costs, calculated as follows: *Travel between contractor and subcontractor*, at one trip each year from each site to the other for three project personnel at each site for a two-day planning meeting (\$500 airfare, \$100 ground transportation, \$150 per diem costs). *Travel to program meetings*, consisting of three trips during Year 1 and two trips during Year 2, for two persons from each site, to AQUAINT-level meetings convened by ARDA. Travel costs for program meetings have been estimated at \$500 airfare, \$100 ground transportation, \$300 registration costs, and \$150 per diem for Colorado and \$170 per diem for Columbia, assuming a three-day meeting. We anticipate a Phase II kickoff meeting early in Year 1 in addition to the two standard PI meetings/workshops each year. Finally, *conference travel* has been budgeted for the dissemination of results. Columbia budgets for \$600 airfare (to allow for occasional foreign travel), \$100 ground transportation, \$300 registration, and four days at \$180 per diem. Colorado follows the same assumptions, but with a three-day duration and \$140 per diem. Four trips to conferences yearly are requested by Columbia and five such trips yearly by Colorado. The meetings that we will attend will include the major conferences and workshops in the areas of natural language processing, information retrieval, and speech, such as the Annual Meeting of the Association for Computational Linguistics, the North American ACL Chapter's Annual Meeting, the Annual Meeting of the American Association for Artificial Intelligence, the Annual Conference of ACM's Special Interest Group on Information Retrieval, plus specialized meetings such as TREC.

On the salary amounts requested for the principal investigators, research scientist, postdoctoral fellow, research programmer, and annotators at Columbia, fringe benefits at rates of 26.2% between 1/1/04 and 6/30/04, 26.4% between 7/1/2004 and 6/30/2005, and 26.6% between 7/1/05 and 12/31/05 have been applied. Graduate students at Columbia University are charged fringe of 8.15% only during the three summer months each year. A year-round fringe rate of 3.2% for graduate students and 21.2% for all faculty and professional personnel applies at Colorado. On all budget items except tuition, Colorado charges overhead at a rate of 48% for the period 1/1/04-6/30/04, 48.5% for the period 7/1/04-6/30/05, and 49% for the period 7/1/05-12/31/05. Columbia's indirect cost rate of 63.5% also applies to all budgeted amounts except tuition. In addition, Columbia charges this overhead rate to the first \$25,000 of the Colorado subcontract in order to absorb costs related to the subcontract's administration.