Casualty Actuarial Society
Dynamic Risk Modeling Committee
Request for Proposal
Creation of Public Loss Simulation Model(s)

1. Casualty Actuarial Society (CAS)
The CAS was organized in 1914 as a professional society with the purpose of advancing the body of knowledge of actuarial science applied to property, casualty and similar risk exposures. This is accomplished through communication with the publics affected by insurance, the presentation and discussion of papers, attendance at seminars and workshops, collection of a library, funded research activities, and other means. The membership of the CAS includes over 4,600 actuaries employed by insurance companies, industry advisory organizations, national brokers, accounting firms, educational institutions, state insurance departments, the federal government, and independent consultants. Additional information about the CAS can be found at www.casact.org.

2. CAS Committee on Dynamic Risk Modeling
The Committee on Dynamic Risk Modeling facilitates research and provides direction, guidance, and support to the profession, regulators, and others regarding dynamic modeling of property/casualty risks. The committee is also responsible for monitoring and coordinating activities with other organizations or CAS committees working in the areas related to property/casualty dynamic risk modeling.

3. CAS Interest in the Subject
The CAS wishes to solicit original research on the topic of stochastic reserving models used by actuaries to estimate unpaid claim distributions. The CAS is specifically interested in studies of the strengths and weaknesses of different models with respect to different statistical features commonly found in insurance data. In order to conduct this kind of research, access to realistic simulated data will be a must.

4. Research Problem Description
The Loss Simulation Model Working Party has created a simulation model prototype in the APL programming language, but has not been able to make significant progress using other languages such as Visual Basic, R or J. While the current APL prototype works as it was intended, the programming language is not readily conducive to other educational and research opportunities compared to other languages. For example, using Visual Basic it is anticipated that most actuaries would be able to readily view, understand and learn from the code as well as be able to offer code to enhance the model. The Committee on Dynamic Risk Modeling requests proposals from qualified developers to produce a public access loss simulation model in a free or inexpensive software environment such as Visual Basic, R or J.

The open source loss simulation model will be available to all CAS members along with the APL prototype now available on the CAS web site at www.casact.org/research/lsmwp. The model will include the basic features in the prototype as well as additional features approved by the CAS after reviewing cost estimates. (This web site includes a seminar presenting a progress report, components of an eventual Working Party paper, APL loss simulation model source and run time programs along with program instructions.) Appendix A to this RFP summarizes basic features of the APL Prototype, while Appendix B summarizes additional features that could be included in the scope of the project if the CAS agrees based upon cost estimates. Appendix C summarizes initial LSMWP work in developing a model in Visual Basic that will be at the disposal of the responders to this proposal.

5. Proposal Requirements

Proposals should include a clear outline of the work that will be performed and the time frame in which it will be performed, including key dates. The proposal should contain an abstract of approximately 200 words that provides the evaluating Committee with an overview of the proposed content and methodology.

The proposal must include a cost proposal. While a maximum budget of $25,000 has been established for this project, the Committee will give preference to a lower cost proposal of otherwise equivalent merit to one or more higher cost proposals. This proposal should be reviewed in conjunction with the attached research agreement, which defines the terms and conditions under which the work is performed. Respondents should demonstrate their interest in and familiarity with the development of software and simulation models by including a resume (if a firm, of the principal consultant(s) performing or directing the work) showing relevant work/research experience and professional accomplishments (e.g., papers published).

The CAS will award the contract(s) to the respondent(s) who, in the judgment of the Committee on Dynamic Risk Modeling and entirely on the basis of his or her written proposal, is best able to perform the work as specified herein. If the Committee determines that no proposal meets the requirements of the RFP, then no contract will be awarded. Receipt of proposals will be acknowledged. Respondents will be provided with a list of all respondents after the proposal submission deadline. Respondents not awarded the contract will be so informed shortly thereafter. Interested researchers should submit their proposals and any questions in writing to:

Casualty Actuarial Society
Attn: Jane Fulton, Research Coordinator
4350 N Fairfax Dr. Ste 250
Arlington, VA 22203
Phone: (703) 276-3100; Fax: (703) 276-3108; E-mail: jfulton@casact.org

The proposals will be reviewed by members of the Committee on Dynamic Risk Modeling. The 2008 membership of the Committee includes:

Nathan J. Babcock, Chairperson

Yazeed F. Abu-Sa'a
Craig A. Allen
Fernando Alberto Alvarado
Joel E. Atkins
Robert A. Bear, Co-Chairperson of Loss Simulation Model Working Party
Lynne M. Bloom
Morgan Haire Bugbee
Sandra J. Callanan
Patrick J. Crowe
Karl Goring
William D. Hansen
Yi Jing
Prakash Narayan
Jie Xiao
Yuanhe Yao
Kan Zhong

Staff Liaison: Jane E. Fulton

6. Groups Invited to Participate
Copies of this RFP will be distributed to the following groups. Respondents do not necessarily need to be a member of one or more of these groups to respond. The list below is not exhaustive.
· The Casualty Actuarial Society (CAS).
· American Risk and Insurance Association (ARIA).
· Institute of Actuaries/Faculty of Actuaries (UK).
· Institute of Actuaries of Australia.
· Educational institutions affiliated with the CAS through the Academic Correspondent and University Liaison Programs.
· The Risk & Insurance Management Society, Inc. (RIMS).
· The Association for Investment Management and Research (AIMR).
· The Global Association of Risk Professionals (GARP).
· The Society of Actuaries (SOA).

7. Schedule
September 19, 2008
RFP distributed

October 17, 2008 (end of business day)
Deadline for questions (must be written) from researchers regarding the RFP.

November 7, 2008
All written questions together with their answers will be distributed to all who submitted questions.

December 12, 2008
Proposal deadline (end of business day).

January 30, 2009
Proposal selection by Dynamic Risk Modeling Committee.

February 27, 2009
Approval by CAS Executive Council.
Draft Report and Final Report due date to be decided by researcher and included in proposal

8. Compensation
A maximum total of $25,000 is available to be awarded to one or more researchers. Payment of award(s) will be contingent upon delivery of an acceptable research product.

9. Presentation, Ownership and Publication of Software and Documentation
The selected researcher(s) will be required to sign the attached research agreement, which defines the terms and conditions under which the work is performed. If asked, the researcher(s) agree to be available to present the report at a CAS meeting or seminar. If travel is required, reasonable expenses will be paid in addition to the compensation provided in Section 8. The user manual (documentation) should be formatted using the template that will be provided by the CAS. The CAS intends to copyright the report, post it to the CAS Web Site, and submit it to the CAS Committee for the Casualty Actuarial Society Forum for consideration as a CAS Forum paper. The author may also wish to submit the paper to the CAS Committee on Review of Papers for consideration of inclusion in Variance.

Variance is the CAS's refereed professional journal. Guidelines for submitting papers for publishing in the CAS Variance may be found at www.variancejournal.org/submit/?fa=guides. The time and effort needed for submission and inclusion in Variance is outside the scope of this RFP. It is intended that any interested party can use the results of the report freely. The research will be considered work-for-hire and all rights thereto belong to the CAS. However, appropriate credit will be given to the researcher(s).

10. Research Agreement

The following is the proposed agreement terms and conditions. The researchers should raise questions about the agreement along with other questions in accordance with the deadlines in Section 7. The researches should also note any changes they wish the CAS to consider as part of their response to the RFP.

Loss Simulation Model Software Development Agreement is made effective the _____ day of ________________, 200_ by and between the Casualty Actuarial Society ("CAS") and _______________________________________ ("CONSULTANT"). Based on mutual consideration, the receipt and adequacy of which are acknowledged, the CAS agrees to contract for the services of the CONSULTANT, and the CONSULTANT agrees to provide services under the terms and conditions of this Agreement.

I. STATEMENT OF WORK

The CONSULTANT shall provide consulting services on behalf of the CAS to produce a loss simulation model in an acceptable software environment along with appropriate documentation. The loss simulation model will include the basic features summarized in Appendix A as well as the following additional features listed in Appendix B that were approved by the CAS after reviewing cost estimates: xxxxxxxxxxxx.

II. PAYMENT FOR SERVICES (To Be Determined)

In full consideration of the services provided hereunder, the CAS agrees to pay CONSULTANT a maximum fee of $xx,000, plus reasonable expenses incurred at the request of, and subject to advance approval by, the CAS. The CAS agrees to pay $xx,000 of the fee at the time of contract award. A monthly statement describing services rendered and expenses incurred shall be submitted to the CAS Committee on Dynamic Risk Modeling at the end of each month in which services are rendered or expenses incurred. Final payment for such services and expenses (less the $xx,000 payment to be made at the time of contract award) shall be rendered by the CAS within 30 days after acceptance of the final model testing and documentation.

III. PERIOD OF PERFORMANCE

CONSULTANT shall provide the services until the project as described in the RFP is completed. This period of performance shall not be changed without the written authorization of the CAS.

IV. NOT-TO-EXCEED TOTAL LIMIT (To Be Determined)

Total payment under this contract including reasonable expenses incurred at the request of the CAS shall not exceed $xx,000, unless authorized in writing by the CAS.

V. INDEPENDENT CONTRACTOR

It is understood and agreed that CONSULTANT is an independent contractor in the performance of this Agreement, CONSULTANT is not an agent or employee of, or partner or joint venturer with the CAS, and CONSULTANT is not authorized to act on behalf of the CAS. CONSULTANT shall assume full responsibility for payment of all federal, state and local taxes with respect to performance of the CONSULTANT's obligations under this Agreement, and the CAS shall not be responsible for any benefits, insurance, or other payments not specifically agreed to in writing or under this Agreement.

VI. RIGHT TO ACT AS CONSULTANT; REPRESENTATIONS

CONSULTANT warrants to the CAS that he/she is not subject to any obligations, contracts, covenants or restrictions that would prevent him or her from entering into or carrying out the provisions of this Agreement. CONSULTANT represents and warrants that the work prepared under this Agreement is the CONSULTANT's own original work; that the CONSULTANT is the sole owner of the work and all the rights being granted to the CAS in this Agreement; that the CONSULTANT has full right and power to make the assignment in this Agreement; that the work does not violate any copyright, proprietary, or personal rights of others; that the work shall contain no material from other copyrighted works without the written permission of the owner of such copyrighted material; that the work is factually accurate and contains no matter scandalous, libelous, unlawful, or otherwise actionable; that the CONSULTANT has not previously in any manner disposed of any of the rights granted to the CAS or previously granted any rights adverse or inconsistent with such grant of rights; that there are no rights outstanding which would diminish, encumber or impair the full enjoyment or exercise of the rights granted to the CAS under this Agreement; and that nothing contained in the contents of the work shall be injurious to the health of the user.

VII. TERMINATION

This Agreement may be terminated by the CAS at any time by giving written notice of such termination to CONSULTANT and paying to CONSULTANT any amounts owed for the pro-rata performance of the services under this Agreement. Upon receipt of such written notice, no further charges will be made under this Agreement. Termination shall not affect the CONSULTANT's obligations under articles IX, X, XI, and XII. CONSULTANT shall not terminate this Agreement except upon material breach by the CAS of its obligations under the Agreement.

VIII. HOLD HARMLESS

CONSULTANT shall indemnify and hold the CAS harmless from any and all suits, claims, damages or losses whatsoever, resulting from any act or omission or breach of any representation, warranty, or obligation under this Agreement by the CONSULTANT, his employees, agents, and subcontractors.

IX. CONFIDENTIALLY

CONSULTANT warrants that, to protect the privacy of respondents to requests for data that can be used to test the model. CONSULTANT will collect only the data needed for the purpose of their inquiry and inform each potential respondent about the general nature and sponsorship of the inquiry and the intended uses of the data. CONSULTANT also acknowledges that the purpose of this project is to create open source software that will be fully documented so that other actuaries may add features and customize the software. Accordingly, CONSULTANT agrees to fully disclose and document the code that it develops. Upon completion of the work, CONSULTANT shall deliver to the CAS all data, documents, reports, programs, or other materials prepared by CONSULTANT in his performance under this Agreement.

X. COPYRIGHT

CONSULTANT hereby assigns to the CAS all right, title, and interest in and to the work resulting from the services under this Agreement, including but not limited to all copyright and all rights subsumed thereunder.

XI. DISCOVERIES

CONSULTANT will promptly disclose to the CAS all discoveries made and ideas conceived by CONSULTANT in his performance of the services under this Agreement. CONSULTANT assigns to the CAS all right and title to such discoveries and ideas, and agrees to execute any and all such documents, as the CAS deems necessary to secure to it all right, title and interest in such discoveries and ideas.

XII. PATENTS

CONSULTANT hereby grants a perpetual royalty free license to any of CAS members or other users of the CAS' publications for use of any patents or other procedures described in the work.

XIII. AMENDMENT

This Agreement may be amended only by a written document, signed by both the CAS and CONSULTANT.

XIV. ASSIGNMENT

CONSULTANT may not assign this Agreement or any right hereunder. Any such attempted assignment shall be void.

XV. GOVERNING LAW

This Agreement shall be governed by the laws of the Commonwealth of Virginia, and CONSULTANT hereby agrees to the exclusive jurisdiction of the courts of Virginia.

CONSULTANT	CASUALTY ACTUARIAL SOCIETY
by	by
Name ____________________________	Name ______________________________
Title ____________________________	Title _______________________________
Date ____________________________	Date _______________________________

Loss Development Simulation Model Working Party Appendix A

Requirements for the Final Software Model

Background: In principle, historical loss experience used for loss reserving could be extremely detailed, including all correspondence and reports in the insurer's claim files. In fact, such detailed information *is* used at one stage in the reserving process, when an estimated case reserve value is assigned to each claim. At an aggregate level, however, insurers typically collapse the vast amount of information in their files into certain numeric quantities, all derived from the date and amount of each event such as a payment or a change in case reserves. This aggregate data may be as detailed as a complete listing of all such policy and claim transactions. More commonly, it consists of one or more "triangles" such as matrix of paid losses by month incurred versus month paid.
Insurers have developed numerous methods to estimate reserves from aggregate data. Explicitly or implicitly, such methods amount to models of the loss process and estimators of the parameters of such models. The appropriateness of a particular reserve method to particular loss data depends on how well the underlying model fits the data and often – because individual data sets may be small – on how well the model fits other data sets believed to be similar, such as those involving the same line of insurance over approximately the same time period.

Since suitable similar data sets may be unavailable, insurers need other ways of evaluating their reserving methods. One way that has proven useful is Monte Carlo simulation. If the insurer can generate numerous synthetic data sets with characteristics believed similar to those of the case at hand, it can apply several candidate estimators to these data sets and see which estimators are most efficient at forecasting the runoff of losses from a particular date, and what bias if any they have in their predictions.
It has been the task of the LSMWP to produce a software simulator that might aid insurers and researchers in investigating such questions. Our goals are for the simulator to be directly applicable to most cases and easily customizable for others. To achieve these goals the simulator must be available in both executable and source code format, be able to run on multiple platforms, and be written in one or more languages that are accessible, free or inexpensive, and widely understood in the actuarial community.
After extensive discussion we have constructed a prototype simulator that confirms the feasibility of the project and offers guidance as to one possible set of features and user interface. This prototype simulator is written in the language APL. While APL is an excellent language for actuarial work and is particularly well suited to prototyping, it is not as easily accessible nor as inexpensive as many other languages, it uses a special character set that makes printing, transmission, and communication of the source code difficult, and its user community is not as large as those of Visual Basic, R, J or similar recent languages. Therefore we wish to create a simulator *with capabilities equal to or greater than those of the prototype, but not necessarily a direct copy of it*, in a language better suited for distribution of open source software than APL.

We recognize that the italicized portion of the preceding sentence implies some vagueness in our requirements. In this document we explain what we consider most important in this project and therefore what will be given greatest weight in evaluating proposals. There are several documents on the CAS web site, www.casact.org/research/lsmwp, that give further insight into our goals and that should be consulted to obtain a full understanding of this project.

Modeling Considerations: We have determined that the most appropriate approach to construct such a simulator is by modeling the loss process at the claim transaction level, rather than by modeling statistics of the loss process such as loss triangles. We describe the loss process in terms of the distributions of (a) number of incurred losses, as a function of time and exposure, (b) size of each loss, i.e. severity, from the viewpoint of the claimant, (c) the probability that the insurer will be liable for payment of the loss, (d) the effect of deductibles, limits, etc., on the amount for which the insurer is liable, (e) the lag between the dates a claim is incurred and is reported, (d) the lag between claim reporting and payment, (e) any "error" in payment amount that may require later correction, usually a subrogation or recovery, (f) the lag between the original payment and receipt or payment of any later adjustment, (g) the value assigned to the case reserve at first notice of each loss, (h) the lag from one valuation of each loss to the next during the period between reporting and payment, and (i) the error between the valuation of a loss and its true value at various points in time between reporting and payment.
As described, this model applies to insurance coverages of the kind that typically involve losses with a single payment followed by a single recovery, such as automobile physical damage. We recognize that there is a slight possibility of multiple recoveries but this has been left out of the model for reasons of simplicity. We have extended the model to apply to coverages that involve losses with multiple periodic payments, such as Workers' Compensation indemnity, and random multiple payments (such as Medical Expense). We have also extended the model to accommodate mixtures of losses with different characteristics, such as are often found in loss triangles, to accommodate correlated distributions such as size of loss and lag to payment, and to accommodate variation in parameters over time, both deterministic and random.

General Requirements: We expect the selected bidder to agree to follow certain general guidelines:

1. The final product should include all of the significant functionality and features of the prototype, but may implement them in its own way which may be quite different from the prototype. Emphasis should be on matching the spirit if not always the letter of the prototype; if a feature was implemented in the prototype in an awkward or unclear or incorrect or numerically unstable way, it should be corrected or replaced.

2. The code should be modularized to the greatest extent feasible, to facilitate future extensions by the CAS and customization by users.

3. An actuary should be actively involved in supervising the design and programming work, so that the final product will reflect an understanding of

how actuaries might wish to use the simulator and how the input and output should be formatted and described to match industry practice.

4. We prefer that the final simulator be coded by “reverse engineering” the prototype and then enhancing it, rather than by translating each function from APL to another language; in this way the final simulator will be largely independent of the prototype and each may be used to confirm the other’s correctness. This requirement should be observed for the mathematical portions of the project but may be relaxed for the user interface. Bidders are welcome to use the APL source code to clarify any aspects of the prototype that are not fully explained elsewhere.

5. Design and code of the final simulator should be fully documented, with special attention to those parts of the program that users may wish to customize.

Features of the Prototype: Bidders should run the prototype and experiment with it to become familiar with its capabilities and its limitations, taking note of the following features in particular.

1. The simulator allows a two-level hierarchy of Types within Lines to accommodate mixtures of different models.

2. The numbers of Lines and of Types within a Line are fully scalable, as are the number of months over which the simulation extends and the expected number of claims per run. There may however be a performance tradeoff when making simulations involving many Lines, Types, months, or claims.

3. Each sample “point” generated by the simulator is a complete simulated loss history. If desired, the entire history may be output, in the form of policy and claim files. Otherwise, the loss history may be condensed into triangles and other summary tables.

4. The user may request a single sample point or a sample of any size. The latter feature is seldom used because of the large number of files it creates. It would be more useful if coupled with a downstream application that could read and process the files sequentially.

5. A succession of single sample points is equivalent to a sample of the same size because the random number seed is not reset unless this is specifically requested. Therefore if an upstream application could make repeated calls to the simulator and process the results each time – for example by applying several reserve estimators – it could use the simulator as the core of a Monte-Carlo test.

6. The user may define the overall date range for a simulation. Each parameter may apply to all months within that date range or (in most cases) may be entered as a vector so as to have different values for different months. The user may input vectors of values directly in the input field (separated by spaces) or may click on the *label* for that field to bring up an input form. In most input forms, spaces left blank will receive the nearest preceding non-blank value, so the user need only enter values for those months where the value changes.

7. Certain sets of variables may be correlated: frequencies across lines, severity and payment lag, and frequencies across Types within a Line. The first two are achieved by correlated sampling; the last is achieved by defining accident frequency at the Line level and then distributing it to different possible numbers of claims for each Type within the Line.

8. Exposures may be entered to control one source of variability in monthly claim frequencies. The remaining frequency parameters are input relative to the exposure in the first month but applied to the actual exposure each month.

9. Many parameters may be set up to vary randomly over time such as might happen when a portion of the insured population lapses each year and is replaced with a sample from a larger universe with possibly different characteristics.

10. Certain parameters are included to increase the verisimilitude of output results. For example, it is common for case reserves and even loss payments to be “round” numbers with, perhaps, only two significant digits; it is possible to request that a given percentage of case reserves be restricted in this way.

Timeline and Priorities: To maintain control of the project and to be able to provide feedback and suggestions during its completion the LSMWP expects the work to be performed in scheduled stages, as follows:

1. Produce a working model that generates a single sample loss history given frequency, severity, and lag distributions for a single Line and Type, under the “single payment” model. The choice of distributions may be limited and there need be only one output format, preferably a paid loss triangle, which may have a single choice of granularity such as year by year and a single choice of format such as date by lag, and a single destination, preferably the screen. The user interface may resemble the prototype or may be quite different if desired, but it should be graphical and it should be the interface to be used in the final product. There should be a development path outlined to make this interface as platform-independent as possible, but the product at this stage need only run under Windows.

2. Extend the model to allow multiple Lines and, within each Line, multiple Types. Include the prototype's model of accident frequency at the Line level distributed to various combinations of claim numbers by Type within the Line. Output may continue to be in a single form for all Lines and Types combined.

3. Extend the outputs to include the full selection of triangles and other files and of granularities and other options. Extend the choice of destination to include Excel and the screen in addition to text files. Extend the output grouping options to allow subsets of the Lines and Types to be grouped rather than only the entire case. At this point the output options should be at least as extensive as those of the prototype. The program should be tested and working for all combinations of Line and Type structures and output formats and destinations.

4. Provide the full complement of distributions for frequencies, severities, lags, and reserve and payment errors and "hooks" for extending the system with additional distributions later. Provide for the periodic and random multiple-payment models. Provide for severity options on the "amounts" pages (limits, deductibles, probability of closure without payment, assumed probability of closure without payment in setting case reserves, etc.)

5. Provide for seasonality and trend, and for monthly vector input of all suitable parameters (e.g. means and standard deviations; it need not apply to parameters that are already vectors such as multinomial probabilities). Provide for minor "verisimilitude" parameters (rounding, workday options, and minimum absolute and relative case reserve change). Set up the structure to support languages and locales.

6. Introduce a model of parameter "drift" over time. We believe this is important to make simulated loss triangles more realistic, and that changes in some parameters may be explained as the result of business turnover, but the specific model in the prototype simulator is inelegant. Improvements in this area are much desired.

7. Complete the model with any proposed enhancements going beyond the prototype and with translation of the interface into at least the languages shown with deactivated buttons on the prototype, plus Spanish. Provide appropriately for locales with different number, currency, and date formatting conventions.

At each stage, the priority is that the model runs correctly, that it incorporates all the required features, and that it be structured so as to permit the remaining features to be added efficiently without “breaking” any of the features already implemented. Bidders should provide estimates of how much time each stage will take to complete.

Potential Additional Features

The following enhancements have been suggested by one or another member of the LSMWP and would be a "plus" in any proposal:

1. An alternative command-line interface.

2. Input and output to and from standard database programs.

3. A more conventional, hyperlinked, help system.

4. A less Spartan interface, with menus, toolbars, and possibly wizards.

5. The ability to pass parameters to and receive sample output from this program directly from other applications.

6. Additional pairs (or groups) of variables whose sample values are correlated.

7. Include covariates as categorical or numeric variables in setting the parameters for the distributions. For example, in the modeling for claim size, if "state" is a categorical variable that affects the parameter of the distribution, we can include this information as input for the model, rather than setting up a separate "type" for each state. The covariate should be passed to the output detailed claim file. (If a statistical language such as R is used in the model, covariates are easy to define and to incorporate into GLMs that produce the distributions currently used in the APL model.)

Loss Development Simulation Model Working Party **Appendix C**

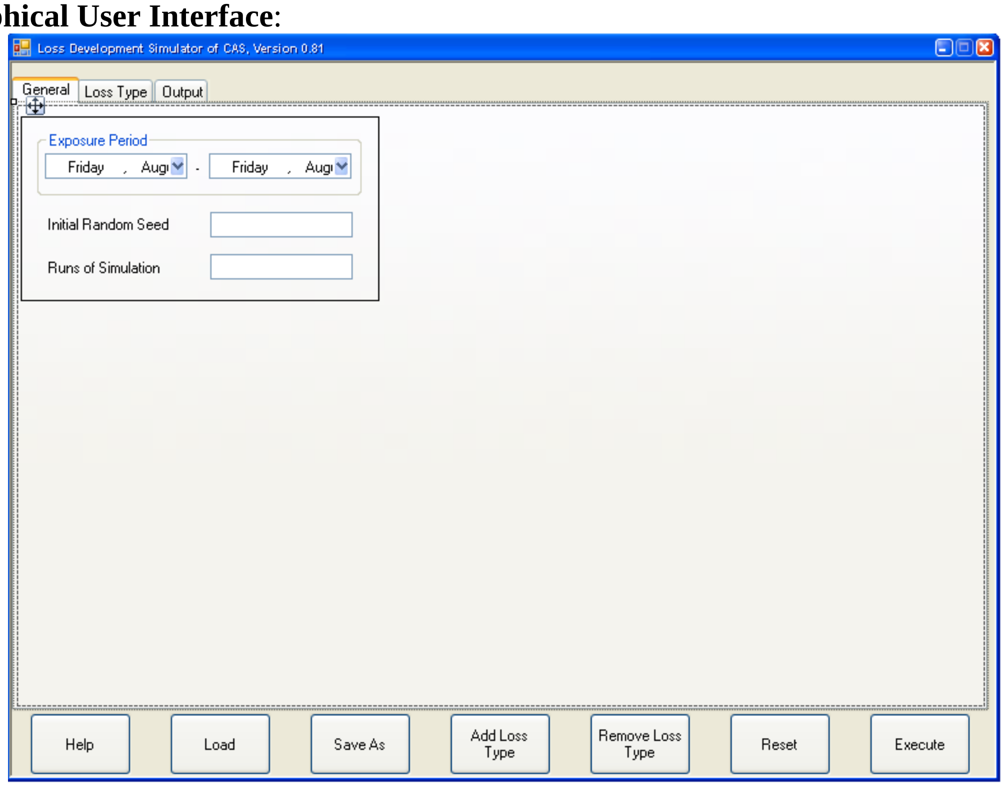
Work already performed on a model using Visual Basic

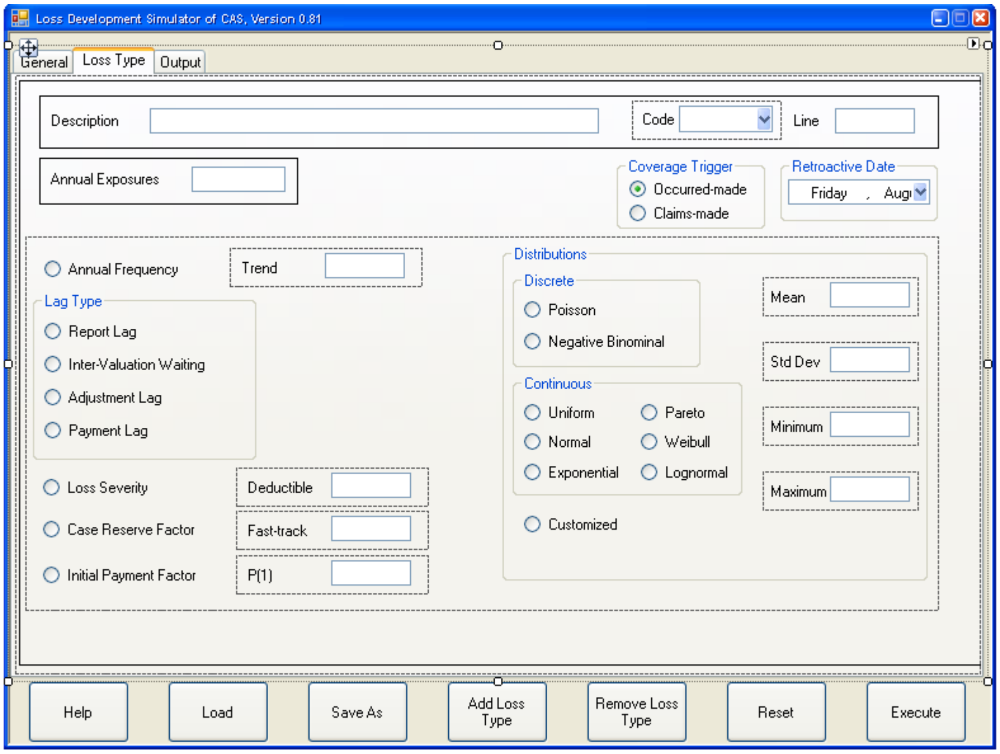
Background: The LSMWP has already performed some work on a model in Visual Basic and this work will be at the disposal of the responders to this proposal. Responders may use the already completed work at their own discretion, building upon the model that has already been started, using functions already written into the model, or not at all. A general framework for the program is prepared but many of the inner-workings are incomplete. Any use of the work completed should be checked, verified, and improved upon by the end-user as if it is their own. This appendix provides a basic run through of the work performed to date in Visual Basic; the actual files completed to date are available upon request.

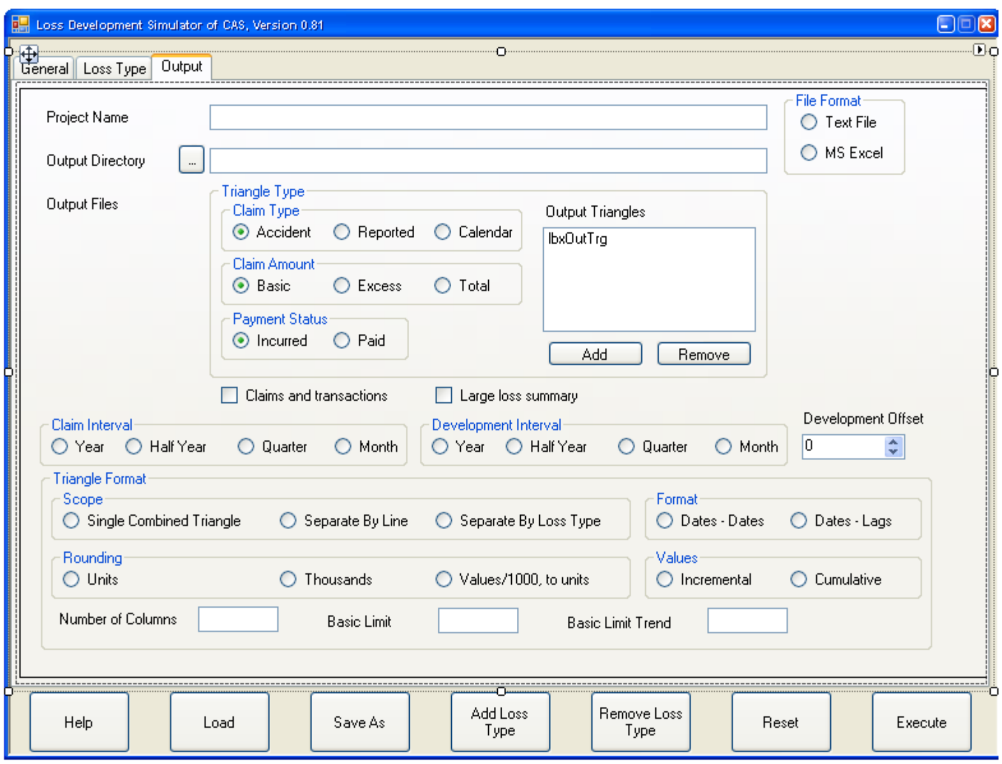
Current Software Format: Microsoft Visual Basic 2008 Express Edition

Distribution Functions Coded:
- Exponential
- Lognormal
- Negative Binomial
- Normal
- Pareto
- Poisson
- Uniform
- Weibull

Graphical User Interface:




Loss Development Simulator of CAS, Version 0.81
General
Loss Type
Output
Description
Code
Line
Annual Exposures
Coverage Trigger
Occurred-made
Claims-made
Retroactive Date
Friday , Augu
Annual Frequency
Trend
Lag Type
Report Lag
Inter-Valuation Waiting
Adjustment Lag
Payment Lag
Loss Severity
Deductible
Case Reserve Factor
Fast-track
Initial Payment Factor
P(1)
Distributions
Discrete
Poisson
Negative Binominal
Continuous
Uniform
Pareto
Normal
Weibull
Exponential
Lognormal
Customized
Mean
Std Dev
Minimum
Maximum
Help
Load
Save As
Add Loss Type
Remove Loss Type
Reset
Execute


Loss Development Simulator of CAS, Version 0.81
General
Loss Type
Output
Project Name
Output Directory
...
Output Files
File Format
Text File
MS Excel
Triangle Type
Claim Type
Accident
Reported
Calendar
Claim Amount
Basic
Excess
Total
Payment Status
Incurred
Paid
Output Triangles
lbxOutTrg
Add
Remove
Claims and transactions
Large loss summary
Claim Interval
Year
Half Year
Quarter
Month
Development Interval
Year
Half Year
Quarter
Month
Development Offset
0
Triangle Format
Scope
Single Combined Triangle
Separate By Line
Separate By Loss Type
Format
Dates - Dates
Dates - Lags
Rounding
Units
Thousands
Values/1000, to units
Values
Incremental
Cumulative
Number of Columns
Basic Limit
Basic Limit Trend
Help
Load
Save As
Add Loss Type
Remove Loss Type
Reset
Execute