

**Federal Financial Institution  
Examination Council  
Call Reports:  
Selecting a Technical Approach**

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## Abstract

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The Federal Financial Institution Examination Council (FFIEC) has decided to modernize the Condition and Income Report collection process. The agency has issued a Request for Information to the application software development community and intends to select a technical approach by the first quarter of 2002. The current decision-making approach regarding changes to the report collection process is to convene a series of high-level meetings with no set agenda for the purpose of discussing the merits of various proposals. Typically, this approach takes months to arrive at a decision and it is not uncommon for a complex decision to take a year or more. This project is designed to interject a methodical, structured approach (AHP) into the decision making process so that decisions can be reached in a more timely fashion. Of thirteen responses to the RFI, six were selected for evaluation based on cost and technical merit of the recommended approach to data integrity, data transmission, and data repository.

## Background

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The Federal Financial Institution Examination Council (FFIEC) is an umbrella organization empowered by Congress to collect financial data from depository institutions with branches in the United States for the purpose of regulation and oversight of the banking industry. The cornerstone of the FFIEC's financial data collection process is the Report of Conditions and Income, more commonly referred to as the Call Report. For many years, banks were asked to file two of the four reports required each year on surprise dates, or "on call." As a result, the report acquired the name Call Report.

Currently the Call Report consists of over 4,000 distinct data elements collected for approximately 9,000 institutions on a quarterly basis. This report is a primary source of financial data used for the supervision and regulation of banks, and is used as an editing benchmark for many other reports. The Call Report collects basic financial data from commercial banks with details on assets, liabilities, income and expenses.

Data collection is handled via a central collection point located in Dallas, Texas. Data collected at the Dallas site is converted to electronic form, if required, and batched into files. The electronic files are submitted to the Federal Government's secure network via the Dallas Federal Reserve Bank. The data is then transmitted electronically to the Board of Governors of the Federal Reserve, a member agency of the FFIEC. The Board then distributes the data to other member agencies including the Federal Deposit Insurance Corporation (FDIC).

Each individual agency of the FFIEC is responsible for examining a portion of the Call Reports submitted to check for validity and quality of the data. This process is referred to as "editing" and involves executing edit programs to check submitted data. Currently there are over 1,000 validity and quality edits that each Call Report is required to pass. Any edit failures are researched by the responsible agency to obtain corrected data or to enter an edit explanation for the failed data. The agencies exchange the edited data on a flow basis so that each agency has a complete copy of the final, edited data.

Finally, after the data for all institutions has been successfully edited, it is made available to the public. This publicly available data is important to economists and others to provide a basis for economic trends and forecasting. In order to release data more quickly, yet still maintain the quality of the data, the FFIEC is undertaking a modernization of the collection process. The agency intends to select a new technical approach to report collection by the first quarter of 2002. The technical approach selected will provide the basis for a solicitation to application software vendors to bid on the development and implementation of the selected approach.

## Goal

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To select a technical approach that Regulatory Agencies can adopt to improve the quality and timeliness of data released to the public after collection of the quarterly Conditions and Income Report.

## Approach

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As is customary in the business world, the FFIEC issued a "Request for Information" (RFI) to obtain vendors' ideas for possible industry solutions to their information management problem. The intent was to collect and analyze the responses so that the FFIEC could find a preliminary answer and become more aware of the best features of potential solutions. These components would then be included as requirements in the subsequent search for the ultimate product, the process known as a "Request for Proposals" (RFP). Vendors are ultimately interested in the RFP and the technical specifications for the product deliverable that it will contain. By responding to the RFI, vendors hope to influence the content of the RFP by pointing out the merits of a particular approach in which they have expertise.

Many individuals and organizations rely on the most common methods of decision making such as "seat of the pants" intuition or ineffective planning meetings. Some, attempting to obtain a "more scientific" result, mistakenly assume that choices can just be ranked in order of preference. Accurate decision-making, however, is more complex. Trying to compare more than a couple of alternatives and, in turn, evaluate all of their individual features is above the short-term memory capacity and discrimination ability of most people.

Expert Choice is a PC-based Decision Support software application that relies on Analytic Hierarchy Process (AHP) and provides a systematic approach for decision-making. The intent is to find the "best" choice, i.e. the one that best fulfills the objectives. AHP concentrates on the achievement of objectives and allows decision-makers to derive weighted priorities for consideration. Expert Choice allows the decision-maker to structure a problem into a hierarchy in terms of the goal, objectives and sub-objectives of the decision. Comparative judgments are then performed on all combinations of elements within the same hierarchy level of objectives/sub-objectives. Judgments can be entered in numerical, graphical or verbal terms. Local priorities derived from these comparisons are then synthesized to determine the value of the priorities relative to the overall goal. The alternatives are then evaluated against these derived priorities to determine the best alternative.

Lastly, since decision-making is a process and may involve modification or adjustments, the results of the model should be reviewed to ensure consistency with general understanding, or that the answer “makes sense”. If it does not, either the model must be reworked or the perceptions of the decision-makers adjusted.

## Alternatives

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In response to the RFI issued by the FFIEC, thirteen proposed solutions were received. Of these thirteen, some were immediately eliminated from consideration because they were simply marketing packets and failed to address the RFI. All remaining responses that addressed all, or even part, of the RFI were evaluated.

It should be noted that vendors are not required to submit cost proposals since this is merely a request for information, although some vendors chose to submit costs. In general, the costs associated with each proposal are variable because the government may elect to perform some of the work or may choose to host the installation. Therefore, any vendor cost estimates submitted with the RFI were adjusted based on these considerations and approximate costs were developed for vendors not submitting cost estimates.

The sections below describe the main features of each proposal and discuss the pros and cons of each.

## RDBMS

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The RDBMS proposal consists of a proprietary product marketed by RDMBS running on any of several commercially available databases. It includes the following functionality:

- Public rules database for vendors and respondents
- Data is validated on-line as it is entered and respondents may enter edit explanations
- Corrections are entered on-line in an interactive web server
- Internet, diskette, and hardcopy report submittal are all considered
- Transmission security uses LDAP

The public rules database for validity and quality edits is an interesting idea. Vendors and respondents would be able to access English language descriptions of the edits that they could then incorporate into their preparation software. Data would be pre-edited when submitted to the FFIEC. In addition, the proposal addresses all three formats in which Call Reports are likely to be submitted. On the down side, the proposal does not address the technical implementation of two important areas related to data access: user authentication and on-line access by the agencies. Also, the proprietary software proposed runs on a limited number of databases, which does not include DB2, the database of choice of the FFIEC.

## TFS

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TFS is a vendor of Call Report preparation software and the expertise they have gained in that role was reflected in the proposal. They had a good understanding of the process, the current limitations, and the FFIEC's desire for a scalable solution. The proposal contained the following features:

- Preparation software vendors incorporate validity and quality edits into front-end software
- Edit explanations are entered as report is prepared then transmitted to FFIEC with other data as one package
- Corrections can be entered on-line or as a resubmission
- Internet and modem data upload
- Detailed security methodology including SSL and VPN
- File transfer option to move data behind agency firewalls to existing repositories

This proposal has some interesting features. First, the edits are pushed out to the existing preparation software so vendors remain in partnership with the government. Transmitting the edit explanations with the original financial data is a simple approach that may reduce errors and will help distribute the processing load since edits are done off-line. Finally, the option to resubmit corrected reports in their entirety rather than providing the functionality for on-line editing of submitted data is a good one. The proposal makes a very strong argument for resubmitting the entire report to correct errors as the only means of modification to ensure that bank records of filed reports stay synchronized with data on file at the regulatory agencies.

## VPF

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VPF is also a Call Report preparation software vendor so this proposal has some similarities to the TFS proposal. The main points of the proposal are:

- Preparation software vendors incorporate validity and quality edits into front-end software
- Edit explanations are entered as report is prepared then transmitted to FFIEC with other data as one package
- Allow corrections by retransmission only; agencies can edit any data
- Support modem or internet file upload
- Hosting at the vendors existing facility

This proposal contains an excellent discussion of the advantages and disadvantages to allowing on-line real-time updates to submitted reports. It makes a very compelling argument that updates should be prohibited and supports resubmission as the only method of report correction. Interestingly, this is the way the current system operates. In addition, the proposal provides for the regulatory agencies to be able to modify any data; however, in practice the regulatory agencies never modify data submitted by respondents. This vendor has a processing facility in operation that could host the data collection.

## BlueNet

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This proposal was submitted by BlueNet, a large application development software vendor and is based entirely on their product. The main points are:

- Quality and validity edits performed on the repository after data is collected
- Edit explanations are entered on-line in real-time.
- Internet submission

The proposal focuses mainly on the data collection and does not adequately address the technical features of the data repository. The data collection presents some shortcomings. First the data is edited upon receipt, which is contrary to one of the governments stated goals, to reduce edit burden. Secondly, on-line real-time data entry via the Internet presents several technical challenges such as saving sessions, session length, and number of concurrent sessions, which are not addressed. Finally, data correction for prior periods, which is a requirement of any solution, is not discussed.

## AllNet

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AllNet is also a Call Report preparation software vendor and has a good understanding of the process requirements. The features of the proposal are:

- Preparation software vendors incorporate validity and quality edits into front-end software
- Edit explanations are entered as report is prepared then transmitted to FFIEC with other data as one package
- Supports internet submission with user authentication by known IP address
- Design based on 9,000 logical databases, one for each respondent
- Single data repository for agencies with edited data
- Historical data storage

The most unusual feature of the proposal is the concept of creating a logical database for each of the 9,000 depository institutions. This would certainly prevent unauthorized access to other institution's data but would require a tremendous administrative effort because there are constant mergers and acquisitions within the banking industry. An advantage of this proposal is the attention to historical data. While not addressed in the RFI this vendor was savvy enough to recognize the advantages to be gained from making historical data available such as trending analysis and enhanced edit checking.

## NetGate

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NetGate is teamed with Microsoft and submitted a completely web-based solution. The main features of this proposal are:

- Web service to perform data edits any time in collection cycle
- Data correction requires resending full report
- Multiple options for security (SSL, VPN, IP, PKI)
- Proprietary product (BizTalk) for web-based data viewing

An attractive feature of this proposal is the web service concept used for data validation. The service would be callable by vendors, depository institutions, and the regulatory agencies. This would create a single source for edit rules that would be controlled by the FFIEC and not open to interpretation by the vendors as is the case with published English language rules. In addition, this proposal provides sufficient technical detail regarding the security implementation. An all web solution requires particular attention to security since the Internet is an open environment; a fact that is recognized by this vendor. The only disadvantage to this solution is that it fails to address the institutions that do not have the technology to submit reports via the Internet.

## Objectives

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The goal, or overall objective, of this project is to select a technical approach to electronic collection of the FFIEC Condition and Income Report. The objectives necessary to achieve this goal are described in the following sections. In addition, each objective is further defined by sub-objectives designed to provide additional detail in support of the parent objective. Sub-objectives are discussed in the section pertaining to the corresponding parent objective.

## Data Integrity

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As stated in the background section, one desired outcome from the implementation of an electronic Call Report collection process is reduction in the time and level of effort on the part of the regulatory agencies to edit incoming data. Accordingly, the sub-objective to have data corrected by the respondents and submitted to the FFIEC “pre-edited” is highly desirable. A related sub-objective is to have the edit explanation for valid edit failures provided by the respondent at the time the report is submitted rather than having a government employee contact the respondent to determine the reason for the edit failure. This sub-objective will result in slightly less significant timesavings than the first sub-objective and so it is slightly lower in terms of desirability.

## Data Transmission

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The Internet is an open transport environment so particular attention must be paid to securing transmissions. For this reason the two sub-objectives related to security are the most desirable for this objective. These two sub-objectives are security and user authentication. Security is necessary to prevent unauthorized users from obtaining in-transit data. User authentication is designed prevent the submission of fraudulent Call Reports.

Secondly, the FFIEC must be conscious of the regulatory burden placed on depository institutions. This refers to the cost to the institutions of complying with requirements to submit Call Report data. To the extent possible, the FFIEC must control costs and not require institutions to procure expensive software or hardware in order to file regulatory reports. Therefore, it is desirable that proposed solutions provide some mechanism for respondents with less technological capabilities to file reports.



The final sub-objective is for institutions to be notified that the FFIEC has received their filing. This is important in the case of electronic submissions so that institutions are aware in the event that reports are lost in transmission.

## Data Repository

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To reduce interagency data transmission necessary for synchronization, the FFIEC would like to create a central repository of edited data available to all regulatory agencies and to respondents. Since portions of the Call Report are confidential, the institutions must not be allowed to access the data submitted by their peers. The regulatory agencies, on the other hand, should have full access to all data.

A flexible hosting arrangement is somewhat desirable since the government may opt to host all or part of the installation. The ability to access historical data is a “nice to have” since it will support edits that check for data fluctuations across time.

Of these four sub-objectives, restricting data access by respondent is of the highest priority.

## Cost

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While cost is a large consideration once the proposal phase is reached, at this point in the process cost estimates are rough, perhaps even an order of magnitude off. For this reason, cost is the lowest priority of all the objectives.

The approach that is selected should not be prohibitively expensive nor should it cause an undue burden for the depository institutions. Therefore, cost has been divided into three sub-objectives: low cost to the respondents, reasonable initial cost, and low ongoing costs.

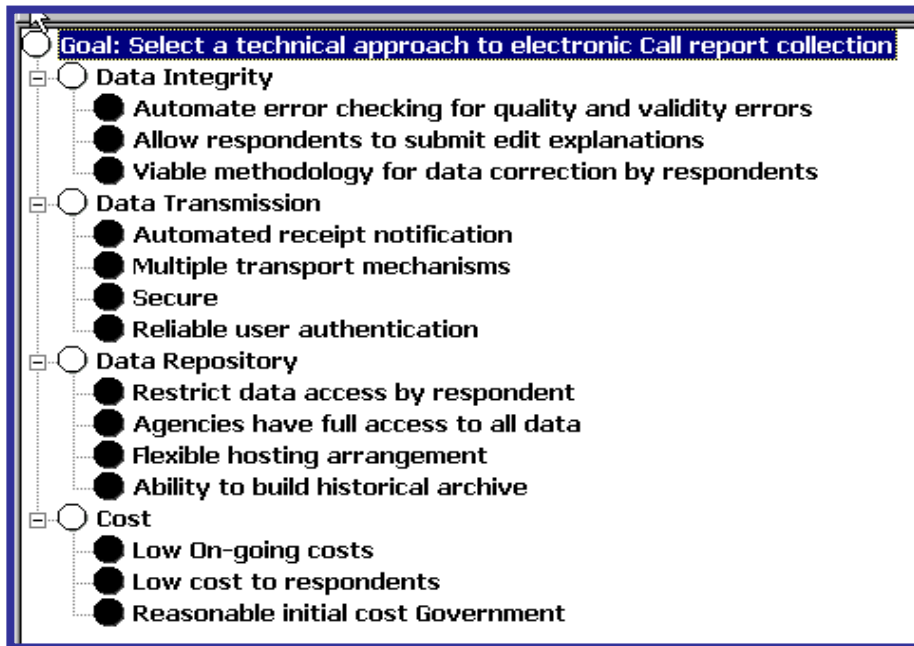
Of the proposals received, those that propose vendor hosting have the greatest ongoing costs. Initial costs varied greatly by proposal and are quite unreliable at this early juncture. The possibility for a decision by the government to perform a portion of the work further complicates both the initial and ongoing cost estimates. The government may elect to participate in the initial development, thus reducing the initial costs. Also, the government may opt to host the collection site at one of the agencies, which would completely eliminate ongoing costs.

The proposals with lowest cost to the respondents are those that are based on existing vendor collection software as the transmission mechanism. On-line input methods will be the most costly for the respondents since it requires manually entering thousands of data elements via a web interface.

## Expert Choice Model

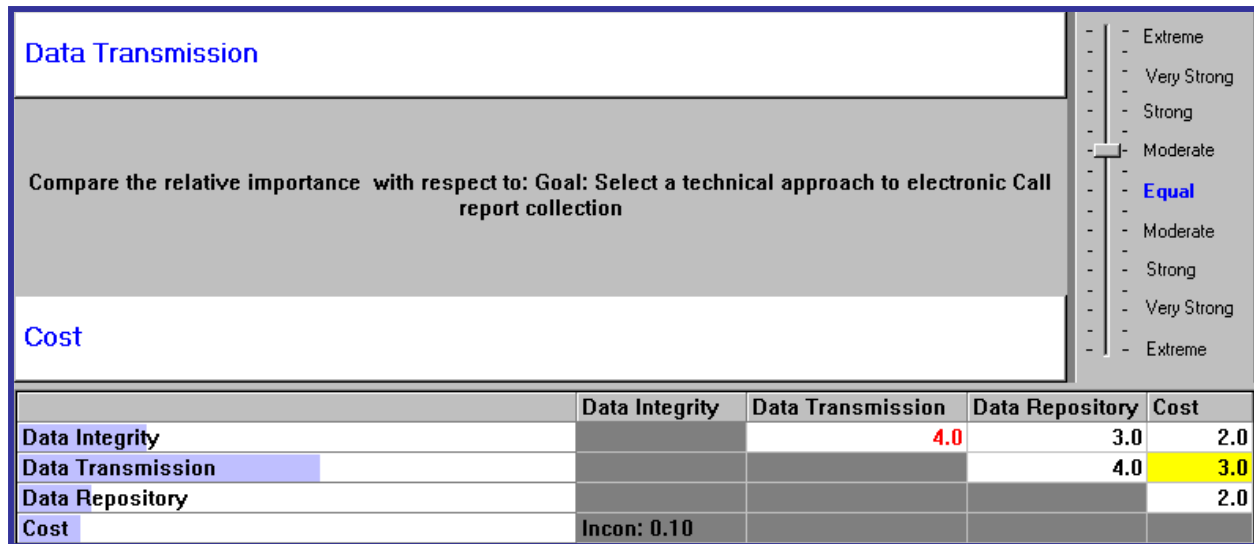
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The goal, objectives, and sub-objectives were first organized into a hierarchy using the Expert Choice program as shown in Figure 1.



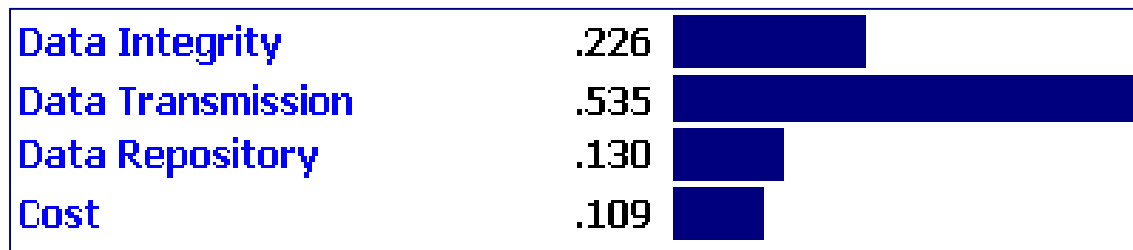
**Figure 1. Initial Expert Choice Model View**

To establish priorities, pairwise comparisons of the four objectives were conducted relative to the overall goal. That is, each objective is compared against its peers, two at a time, relative to its parent (goal) in order to prioritize the organization's objectives. Comparisons were also performed for the individual sub-objectives relative to their respective parent objectives. These comparisons were made in verbal terms, as most of the categories weren't associated with numerical values. An example of a pairwise comparison is shown in Figure 2. In this example, the sliding scale on the right side of the frame shows that the decision maker felt that Data Transmission was moderately more important than Cost. The associated value of 3.0 is then assigned to this comparison in the intersecting yellow box. Once enough of these comparisons are made for the category, relative priorities are computed and visually represented as the blue bars highlighting the respective objectives.

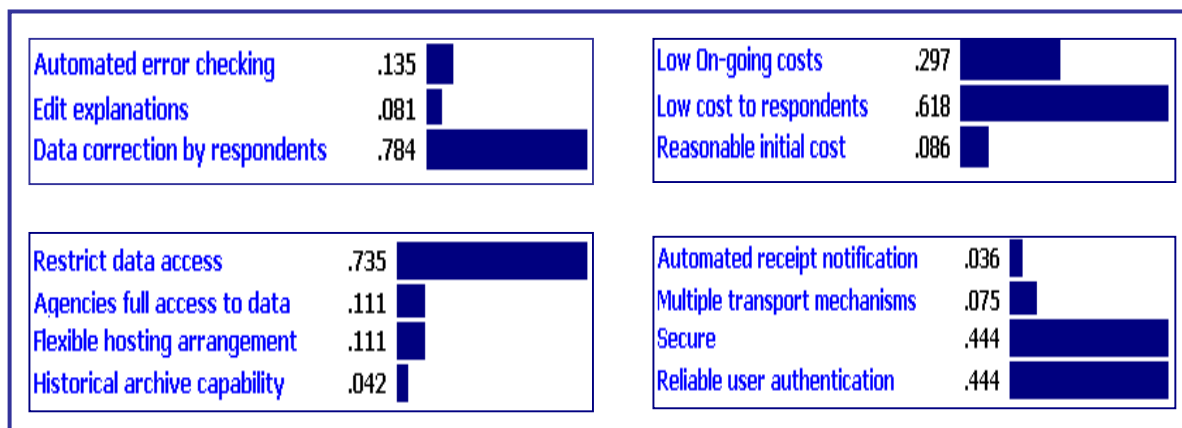


**Figure 2. Pairwise Comparison: Data Transmission vs. Cost**

The results of the pairwise comparisons among the objectives are shown in Figure 3. Both graphical and numerical values represent the ratio scale priorities of the objectives relative to the overall goal. Ratio scale priorities not only show the relative order of priority but also the relative extent of the difference between each objective. Sub-objective comparisons are shown in Figure 4.

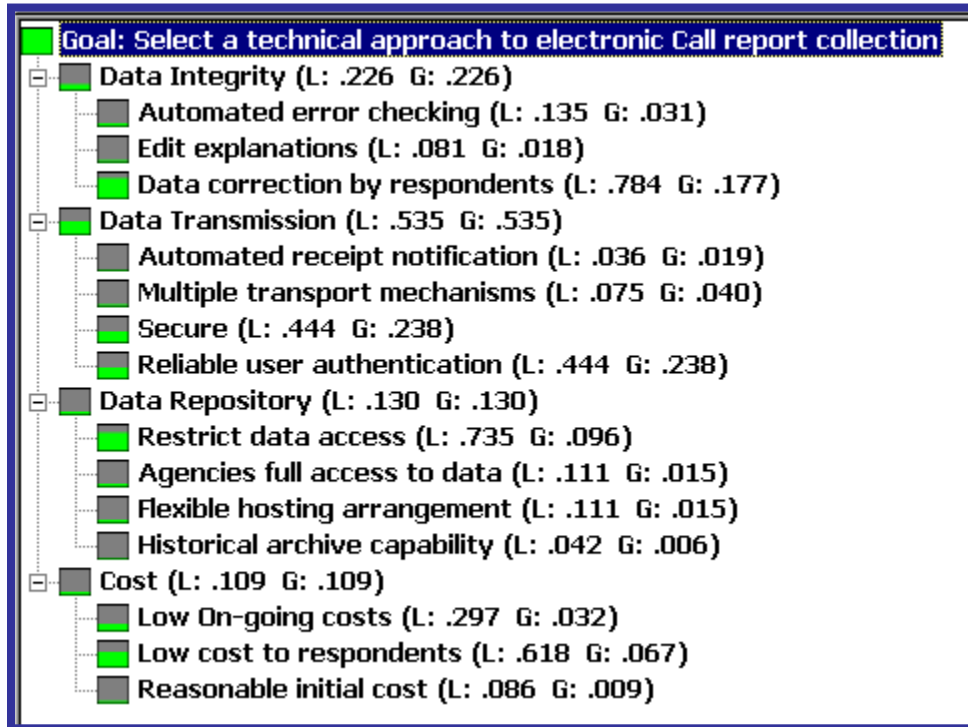


**Figure 3. Pairwise Comparison Results: Data Transmission vs. Cost**



**Figure 4. Sub-objective Pairwise Comparison Results**

Figure 5 shows the completed hierarchy. The results of the objective and sub-objective pairwise comparisons are incorporated with the relative ratio scale priorities indicated in the green “fill boxes”. Each level of cluster groupings is vertically aligned. Also, both the local priorities (relative to parent of each cluster) and global priorities (relative to overall goal) are listed numerically after each objective/sub-objective. For example, the local priority for each sub-objective under Data Integrity shows its importance (percentage) in terms of the parent objective. The global priority is its importance relative to all other sub-objectives or in terms of the overall goal.

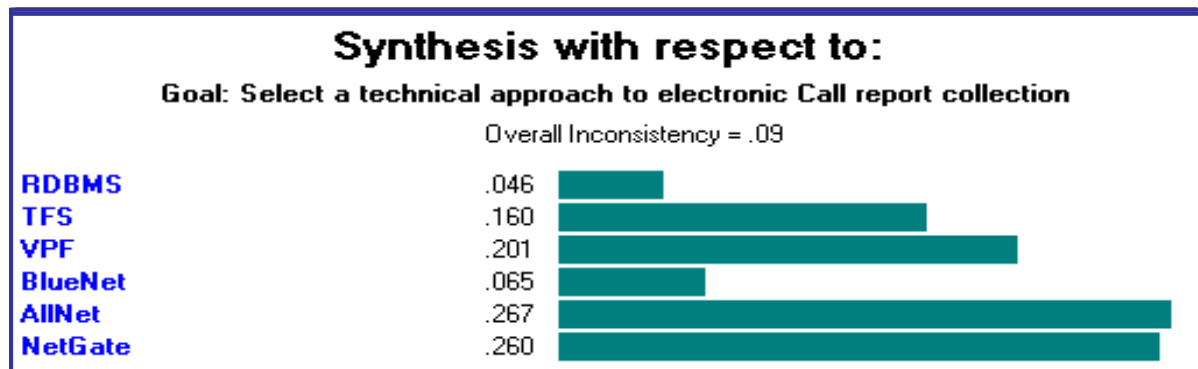


**Figure 5. Model View with ratio-scale priorities**

Next, pairwise comparisons among the alternatives were performed with respect to each covering objective (lowest level sub-objectives) to derive the relative preferences for each alternative in every category. The comparison procedure was basically the same as earlier described for the objectives and sub-objectives.

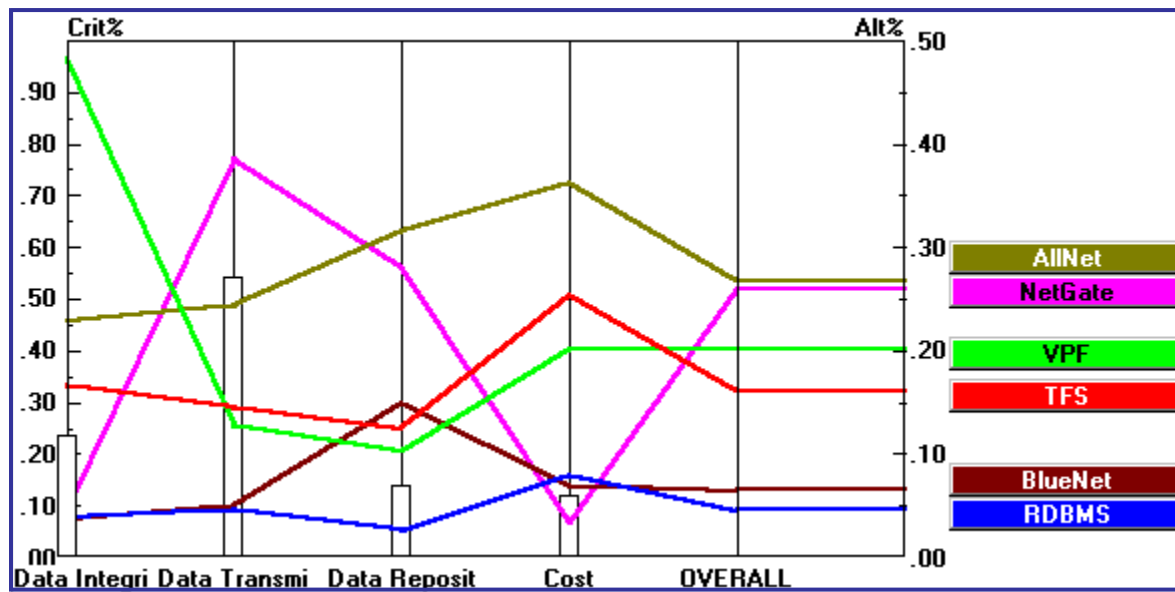
## Results and Analysis

Once all alternative comparisons were completed, the results were synthesized to reveal the relative priorities of the alternatives. The alternative with the highest score or longest bar has been determined to be the most preferable. It is the choice most aligned with the objectives of the overall goal. However the top two alternatives, AllNet and NetGate, were closely ranked and scored significantly higher than the other alternatives. Either of these choices would make a good standard from which to measure the submissions for the subsequent RFP. The results are shown in Figure 6.



**Figure 6. Sub-objective Pairwise Comparison Results**

A Performance Sensitivity graph, Figure 7, is an excellent view of the model's results. It shows each alternative as a different color line vertically plotted with its ratio scale value (%) for each objective. The priority of each objective is also displayed as a vertical box showing its relative value. This graph makes it easy to visualize which objectives are deemed most important and which alternatives scored higher for each objective. This graph can also be used in the software to see how adjustments in objective priorities affect the overall rankings.



**Figure 7. Performance Sensitivity**

As stated earlier, the results of the model indicate that AllNet and NetGate scored very close with AllNet narrowly finishing as the most preferable. Gradient Sensitivity graphs show the alternatives' priorities with respect to one objective at a time and are useful to demonstrate how much variation in priority would be required to change the overall result of the model. The vertical red line represents the priority of the selected objective. The priorities for the alternatives are determined by the intersection of the alternative's line with the objective's (vertical) priority line. Figures 8 and 9 are Gradient Sensitivity graphs for Data Integrity and Cost. Both graphs reveal that only minor adjustments in priority for either would result in a reversal of outcomes for the top two alternatives. The blue arrow points to the original result; the red arrow indicates the adjusted outcome. NetGate could easily become more preferable than AllNet as a result of minor fluctuations in priorities.

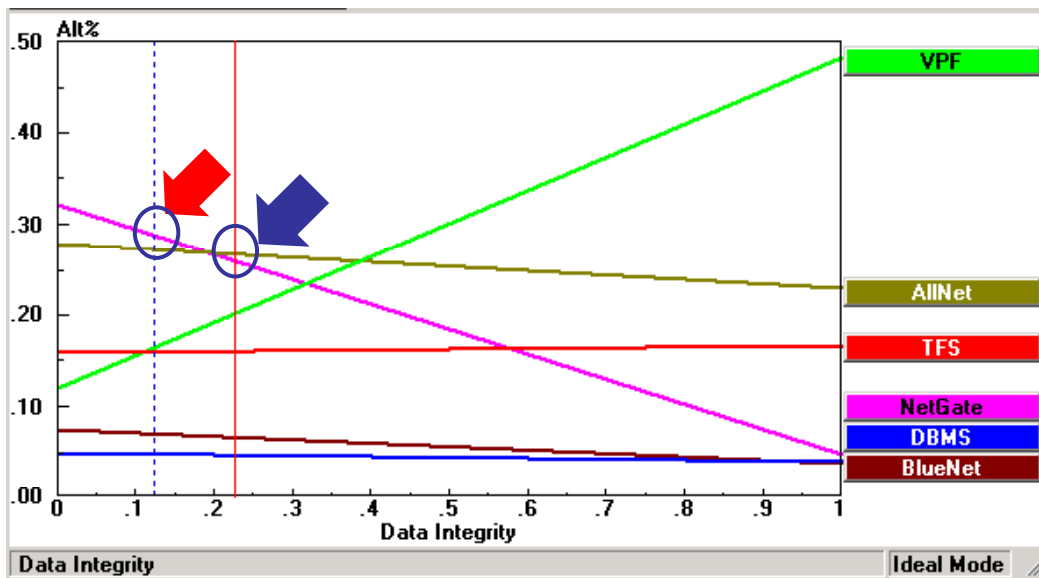


Figure 8. Gradient Sensitivity: Data Integrity

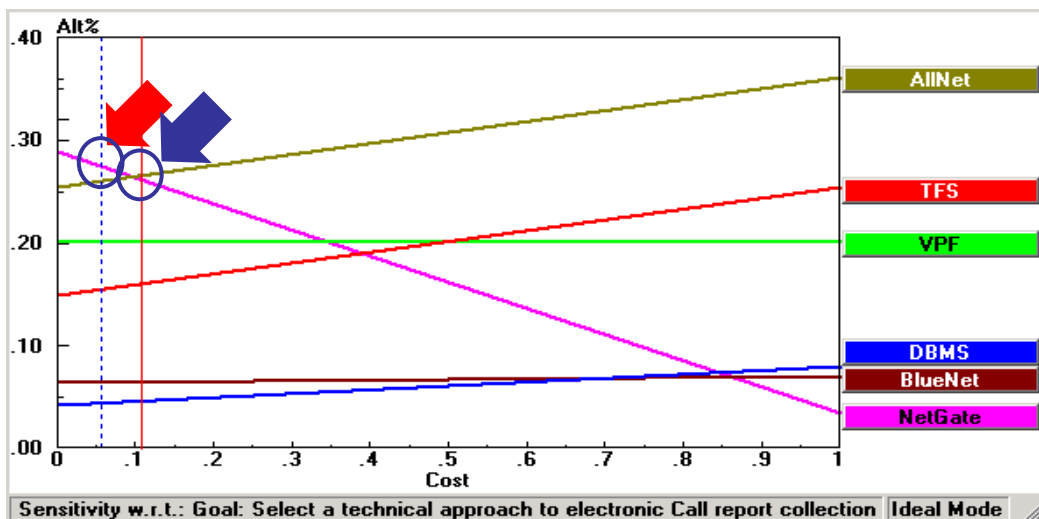


Figure 9. Gradient Sensitivity: Cost

## Conclusion

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AllNet was the most preferable alternative and NetGate was closely preferred as second according to the current priority of objectives and sub-objectives. As decision-making is an iterative process, the priorities may change and, in turn, so will the end result. Expert Choice allows the decision-maker to easily adjust the inputs to quickly see the new result. As a result of this model, the best attributes of AllNet and NetGate will be recommended to the FFIEC to be included in their upcoming RFP.