

# SYSTEM EVALUATION FOR QUALITY ASSURANCE

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# INTRODUCTION

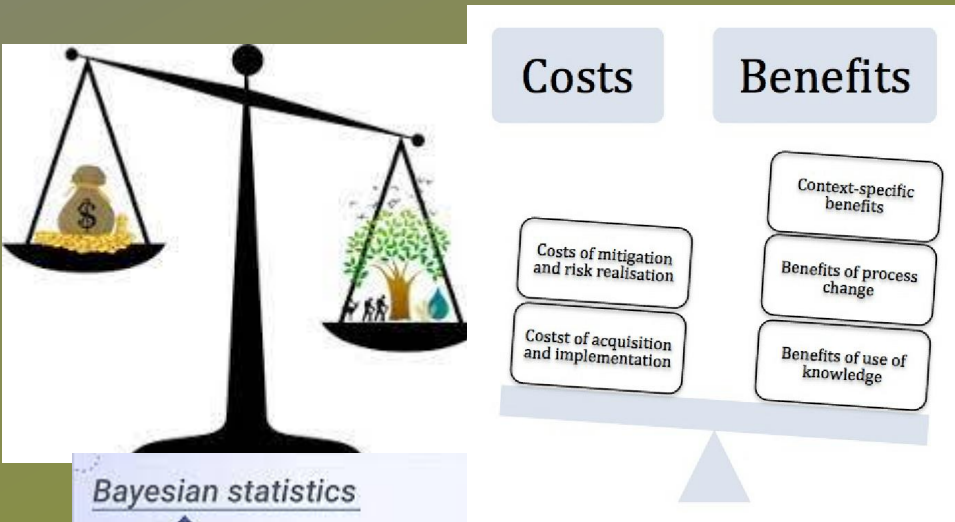


- ▶ Throughout the systems development life cycle, the analyst, management, and users have been evaluating
- ▶ the evolving information systems and
- ▶ networks
- ▶ to give feedback for their eventual improvement.

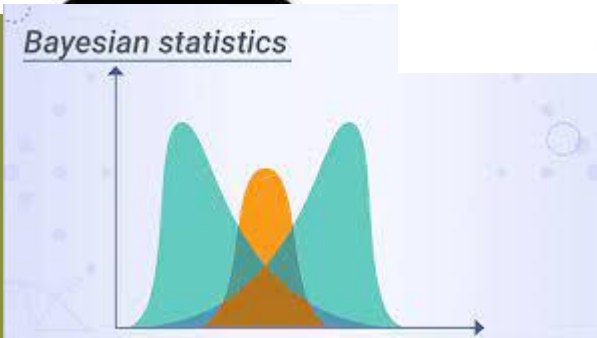


- ▶ Evaluation is also called for following system implementation.

# EVALUATION TECHNIQUES



- ▶ In recognition that the ongoing evaluation of information systems and networks is important, many evaluation techniques have been devised.
- ▶ Cost-benefit analysis;
- ▶ models that attempt to estimate the value of a decision based on the effects of revised information using information theory, simulation, or Bayesian statistics;
- ▶ User evaluations that emphasize implementation problems and user involvement;
- ▶ Information system utility approaches that examine the properties of information.





- ▶ Each type of evaluation serves a different purpose and has inherent drawbacks.
- ▶ Cost-benefit analysis may be difficult to apply, because information systems provide information about objectives for the first time, making it impossible to compare performance before and after implementation of the system or distributed network.
- ▶ The revised decision evaluation approach presents difficulty, because all variables involved with the design, development, and implementation of the information system cannot be calculated or quantified.
- ▶ The user involvement approach yields some insight for new projects by providing a checklist of potentially dysfunctional behavior by various organizational members, but it stresses implementation over other aspects of IS design.
- ▶ The information system utility approach to evaluation can be more comprehensive than the others if it is expanded and systematically applied.



# THE INFORMATION SYSTEM UTILITY APPROACH

- ▶ The information system utility approach for evaluating information systems can be a comprehensive and fruitful technique for measuring the success of a developed system.
- ▶ Utilities of information include possession, form, place, and time.
- ▶ To evaluate the information system comprehensively, these utilities must be expanded to include actualization utility and goal utility.
- ▶ Then the utilities can be seen to address adequately the questions of who (possession), what (form), where (place), when (time), how (actualization), and why (goal).
- ▶ An information system can be evaluated as successful if it possesses all six of these utilities.
- ▶ If the system module is judged as “poor” in providing one of the utilities, the entire module will be destined to fail.
- ▶ A partial or “fair” attainment of a utility will result in a partially successful module.
- ▶ If the information system module is judged as “good” in providing every utility, the module is a success.





Information Systems Modules	Form Utility	Time Utility	Place Utility	Possession Utility	Actualization Utility	Goal Utility
Inventory Lists <b>Success</b>	<b>Good.</b> Acronyms used were the same as shipping codes. As systems grew, too much information was presented; this overload called for summary information.	<b>Good.</b> Reports were received at least one hour before scheduled shipments on a daily basis.	<b>Good.</b> Inventory lists were printed at the regional blood center. Lists were delivered to hospitals with the current shipments.	<b>Good.</b> The same people who originally kept manual records received these reports.	<b>Good.</b> Implementation was easy because hospitals found the inventory lists to be extremely useful.	<b>Good.</b> Information about the location of particular units was made available.
Management Summary Reports <b>Success</b>	<b>Good.</b> Summary report was designed to exact format specifications of manual summary reports developed by the blood administrator for city hospitals.	<b>Good.</b> Same as listings.	<b>Good.</b> Summary reports were printed at the center where they were needed.	<b>Good.</b> Blood administrators who originally kept manual reports received these reports.	<b>Good.</b> Blood administrators participated in the design of the reports.	<b>Good.</b> Summary reports helped reduce outdated and prevent shortages.
Short-Term Forecasting <b>Success</b>	<b>Good.</b> A forecast was issued for each blood type.	<b>Good.</b> Forecasts were updated daily.	<b>Good.</b> Printed at blood center.	<b>Good.</b> Administrators concerned with distribution and collections received the report.	<b>Good.</b> Output design could have been more participative.	<b>Good.</b> Shortages were prevented by calling in more donors.
Heuristic Allocation <b>Failure</b>	<b>Poor.</b> The people who allocated blood mistrusted the mysterious numbers produced by the computer.	<b>Good.</b> Reports were provided one hour before allocation decisions were made.	<b>Good.</b> Printed at blood center.	<b>Fair.</b> Administrators responsible for daily blood allocation received the original.	<b>Poor.</b> Too many people were involved with blood inventories to be able to participate in the design of the system.	<b>Poor.</b> This was not an immediate goal of the blood region. Shipping costs were passed on to patients.



### ▶ **POSSESSION UTILITY.**

- ▶ Possession utility answers the question of who should receive output, or, in other words, who should be responsible for making decisions.
- ▶ Information has no value in the hands of someone who lacks the power to make improvements in the system or someone who lacks the ability to use the information productively.

### ▶ **FORM UTILITY.**

- ▶ Form utility answers the question of what kind of output is distributed to the decision maker.
- ▶ The documents must be useful for a particular decision maker in terms of the document's format and the jargon used.
- ▶ Acronyms and column headings must be meaningful to the user.
- ▶ Furthermore, information itself must be in an appropriate form. For example, the user should not have to divide one number by another to obtain a ratio. Instead, a ratio should be calculated and prominently displayed.
- ▶ At the other extreme is the presentation of too much irrelevant data. Information overload certainly decreases the value of an information system.



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### ▶ PLACE UTILITY.

- ▶ Place utility answers the question of where the information is distributed.
- ▶ Information must be delivered to the location where the decision is made.
- ▶ More detailed reports or previous management reports should be filed or stored to facilitate future access.



### ▶ TIME UTILITY.

- ▶ Time utility answers the question of when information is delivered.
- ▶ Information must arrive before a decision is made. Late information has no utility.
- ▶ At the other extreme is the delivery of information too far in advance of the decision.
- ▶ Reports may become inaccurate or may be forgotten if delivered prematurely.





- ▶ **ACTUALIZATION UTILITY.**
- ▶ Actualization utility involves how the information is introduced and used by the decision maker.
- ▶ First, the information system has value if it possesses the ability to be implemented.
- ▶ Second, actualization utility implies that an information system has value if it is maintained after its designers depart, or if a one-time use of the information system obtains satisfactory and long-lasting results.

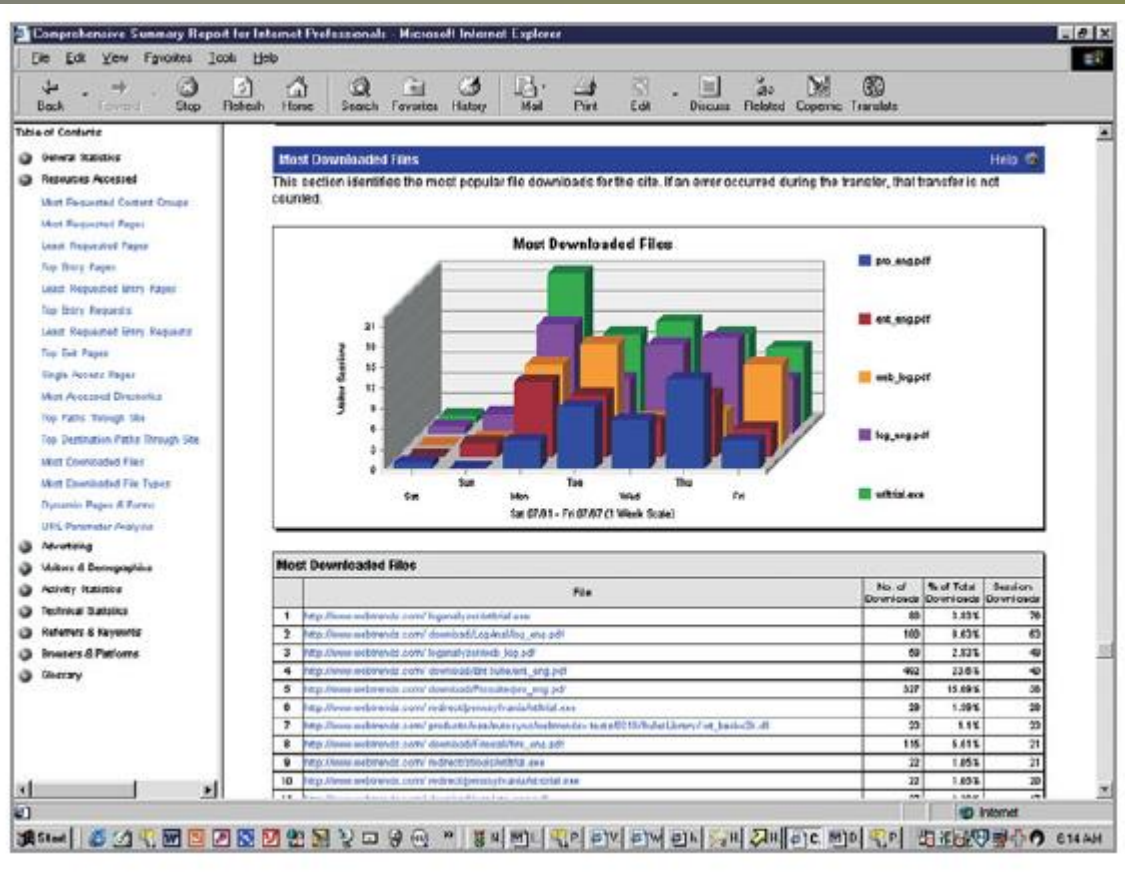


- ▶ **GOAL UTILITY.**
- ▶ Goal utility answers the “why” of information systems by asking whether the output has value in helping the organization obtain its objectives.
- ▶ The goal of the information system must not only be in line with the goals of decision makers, but it must also reflect their priorities.

# EVALUATING CORPORATE WEB SITES



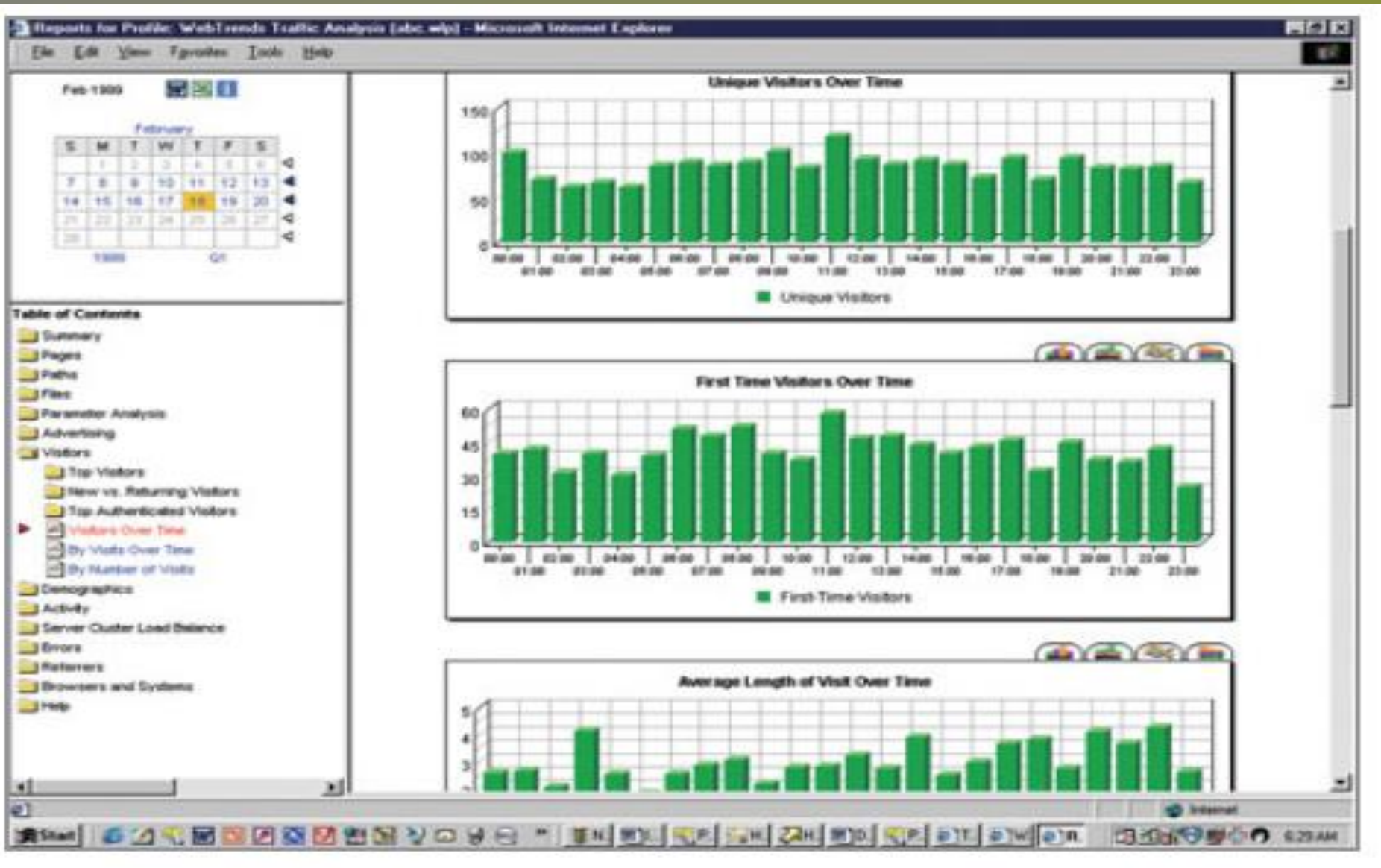
- ▶ Analysts can use the information system utility approach previously described to assess the aesthetic qualities, content, and delivery of the site.
- ▶ As an analyst or Webmaster, you should go and analyze Web traffic.
- ▶ A visitor to your Web site can generate a large amount of useful information for you to analyze.
- ▶ This information can be gathered automatically by capturing information about
  - ▶ the source,
  - ▶ including the previous Web site the user visited
  - ▶ the keywords used to find the site;
  - ▶ the information can also be obtained through using cookies (files left on a user's computer about when they last were on the site).



A sample report from Webtrends Corporation showing the most downloaded files on the corporate Web site

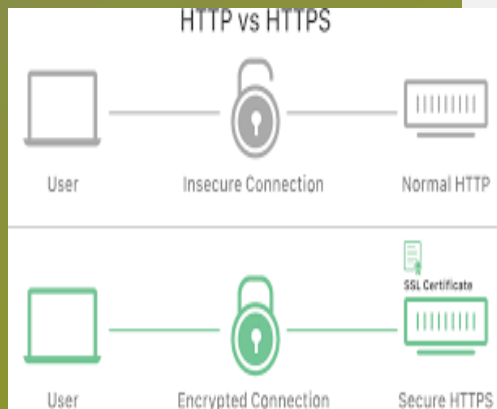
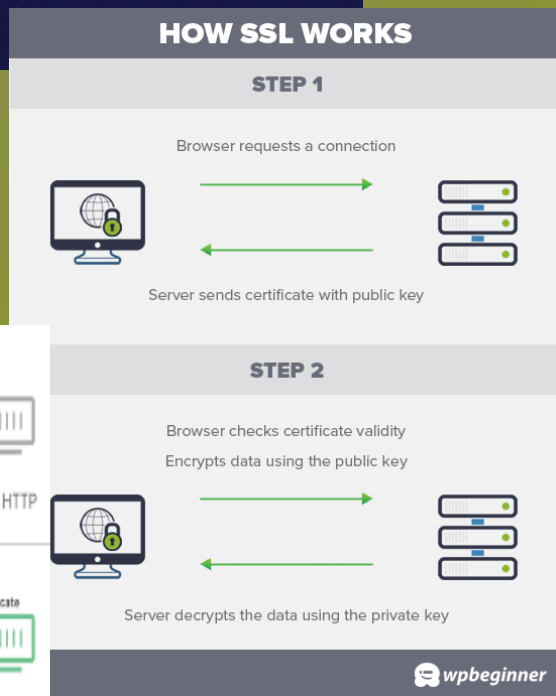
- ▶ A leading Web activity monitoring package is Webtrends, that shows the most downloaded files on the Web site by day of the week.
- ▶ The cost is an ongoing budget item for maintaining the Web site.)
- ▶ Information to help you evaluate your client's site and make improvements is plentiful and easy to obtain.
- ▶ The seven essential items are:
  - ▶ 1. Know how often your client's Web site is visited
  - ▶ 2. Learn details about specific pages on the site
  - ▶ 3. Find out more about the Web site's visitors
  - ▶ 4. Discover if visitors can properly fill out the forms you designed
  - ▶ 5. Find out who is referring Web site visitors to the client's site
  - ▶ 6. Determine what browsers visitors are using
  - ▶ 7. Find out if the client's Web site visitors are interested in advertising





A report comparing statistics on visitors generated by Commerce Trends (from Webtrends Corporation)

# SSH AND SSL



- ▶ At a very high level, SSH and SSL are both technologies to help encrypt and authenticate the data that passes between two computers (e.g. your laptop and your website's server)
- ▶ The key **difference between SSH vs SSL** is that
- ▶ **SSH** is used for creating a secure tunnel to another computer from which you can issue commands, transfer data, etc.
- ▶ SSH is used to remotely log in to another computer (e.g. a web server) and create a secure connection to issue commands (via SSH tunneling). For example, if you want to connect to your site's server to execute commands using WP-CLI, you'll use SSH.
- ▶ On the other end, **SSL** is used for securely transferring data **between** two parties – it does not let you issue commands as you can with **SSH**.
- ▶ SSL is used for encrypting data in transit between two locations, such as your web browser and the server of a site that you're visiting. SSL is what adds the "green padlock" in web browsers and it's also what you use if you want to securely accept credit card information (or other sensitive data) on your website.



