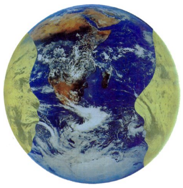


An Overview of Distributed Dialogue Processing^{tm} (DDP)
Level 1: Feedback

A note to the Reader:

This PDF document is a collection of works originally created between 1990 and 1995. The original works were never intended to form a coherent collection and there has been no attempt to update them to do so. My purpose here has been to preserve these works for their historical value and to provide people interested in understanding DDP a body of reference materials to assist them. Though the content, particularly in technical details, is in some ways, 'aged', it can nevertheless provide an interested reader with an understanding of the basic conceptuary of DDP (which remains as relevant as ever today). I encourage the reader to initially suspend concern over specific implementation details and instead let the 'whole' of DDP'S design intentions sink in.

To understand the context of this document it is necessary to understand that DDP is a way of implementing a vision about the nature of human learning. In particular, DDP is a sister technology to Electronic Publishing for Learning and was developed in order to create a mechanism through which 'learning environments' could learn about the learning needs of the learners using them and evolve their interface and contents accordingly. Though the phenomenology of this vision is touched on in the "Introduction" section of this document, you can learn more about the learning vision at http://www.implicity.com and more on the story behind DDP at http://www.implicity.com/ddp/. This work was originally developed by DiaCom technologies which subsequently became the 2way Corporation and has applied the concepts of DDP to corporate intranets. I recommend reading the premises (pgs 4-6) and the patent summary (pgs 28-33) most of all.

David Boulton
August 2000

Introduction:

Processing collective intelligence is the core process of successful organizations. Dialogically engaging an individual's intelligence is the core process of successful education.

> An organization that lacks sufficient awareness of its customers', employees', stakeholders' or suppliers' needs fails. Organizations that are able to learn from the collective experiences of their customers, employees and suppliers — their constituencies — are best able to adapt to the rapidly changing world in which they function.
>
> Attempts to educate that can't respond to the real-time learning needs they provoke, disinvite and dull their students' intelligence. Attempts to educate that unfold learning objectives in dialogical response to the needs they provoke, engage and sharpen their students' intelligence.

Organizations, political, business or education (whether actual or virtual), are collective systems that primarily consist of people and the sub-systems that organize, mediate and focus their relationships. These systems mediate product and market development, planning, management information, performance support, customer sales and support, training and curriculum development and distribution, employee and student assessment, and other similarly distributed activities. Ultimately, how well they connect, mediate, facilitate and channel the intelligence of their human constituents is the *key to their efficiency and the core of their value*.

How well these systems can connect, mediate, facilitate and channel intelligence is restricted to the *scope and detail* of the interactions they can enable between and among their human constituents. The broader the scope and the finer the detail, the greater the *"bandwidth of collective intelligence"* they can mediate. Although many of these systems are already computer-based, their designs, to date, have focused on automating and/or augmenting the specific tasks and functions involved, *not on mediating the intelligence of the humans involved.* **Distributed Dialogue Processing**$^{\mathbf{TM}}$ represents an attempt to envision and implement a new layer of organizational infrastructure specifically intended to increase the flow of intelligence in these and other kinds of human systems.

Distributed Dialogue Processing^{TM}(**DDP**) is a ground floor layer of networking infrastructure that provides the constituents in a human system the means to engage one another in a contextually synchronized, relevant to their situation and low-overhead-to-participate, Distributed Dialogue™. DDP provide a means for processing the experiences of such a constituency and maximizing the opportunity for each contributor to learn from the experiences of each of their constituents. DDP also provides each constituent with the means to exercise their core capacity to make and articulate the kind of meaningful distinctions characteristic of participating in a Dialogue. The first step towards understanding the functional nature and design intent of Distributed Dialogue Processing™ is to understand its premises:

The Premises:

Premise 1) There is an implicit relationship between every person that contributes 'content' to a product, process, service or issue (thought in the form of words or work component/product in the form of artifacts) and the person(s) (constituents) who interact with that contribution. Each contribution defines a constituency. This constituency consists of all those involved or related to the creation and intention behind the contribution and all those who interact with the contribution. (Where 'contribution' can be broken down into elements as granular as a word)

Premise 2) In its most elemental form, relationships within a constituency are governed by the following three laws of human systems:

> **I)** The success of any effort to design, develop or improve any 'system' ...
>
> > curriculum, classroom, school district, pedagogy, project, product, process, service, issue, etc.
> >
> > > in terms of its systemic performance: organizational efficiency, cost-effectiveness, optimal achievement of intent
>
> depends on the volume, dimensional extent (scope) and granularity (detail) of the feedback it can gather and learn from.
>
> **II)** The volume, scope and detail of feedback flow within a system or constituency is inversely related to how difficult it is for its constituents...
>
> > actual "customers"; learners, teachers, parents, administrators, curriculum providers, assessors, superintendents, board members, stakeholders, etc.,
>
> to articulate their feedback in the context and in the moment of their interactions with the system.
>
> **III)** A system's ability to learn from the feedback it gathers is directly related to how well its "owners"...
>
> > - persons responsible for any one or all of the resources available in the system
> > - persons responsible for any one or all aspects of the implementation, mission or intent behind a system (above)
>
> process and understand (in correlation to their areas of responsibility and priorities) the feedback they receive.

Premise 3) Taken to its most elemental level, the optimal 'place' from which to design the feedback layer between members of a constituency is the 'stutter'. Stutter: A perturbation in the flow - an involuntary 'drop-out' or 'disconnect' in the flow of engaging or interacting.

> Every "stutter" in the flow of an individual's interactions with any "resource" (contribution) intended to support or facilitate their learning, performing, participating, using or enjoying...
>
> > any or all aspects of: a product, process, service, i.e., a website, course, book, computer simulation, game, etc.
>
> is a great opportunity for both the individual and for all those involved in providing what he or she is interacting with. Each "stutter" represents the ***best possible source*** of information from which to become more intelligent and more effective (independently and in relationship with one another.)
>
> For the individual interacting with a resource, each stutter is an internal feedback signal indicating that something is missing, needed or incomplete. It also provides, if reflected on and distilled (disambiguated), the ***best possible source*** of internal information from which to understand what is missing or needed and, given the available options, how to best proceed.
>
> For the people and organizations that benefit, profit or are responsible for providing the "resources" (contributions), the ***best possible source*** of information from which to intelligently evolve and cost-optimally improve them stems from understanding...
>
> > in precise relation the specific contributions they are responsible for
>
> where and why people stutter.

Premise 4) Historically, feedback gathering methods have been based on person-to-person interviews, paper-based forms or the unstructured use of electronic mail. Although some software producers have created product-specific electronic forms for use during beta testing, most still follow the “feedback form” mentality of their paper-based predecessors.

Person-to-person interviews are after-the-fact events (i.e., the feedback is gathered long after the actual experience occurred) and are too costly for continuous, widespread intelligence gathering or distributing. Paper-based forms are also after-the-fact and, by their nature, lack detail. E-mail systems impose the “overhead” of establishing context and addressing -- too much overhead to collect most people’s ‘as its happening’ stutters (the most valuable kind). Many organizations are already rebelling against the burden imposed on recipients by the sheer volume of e-mail traffic. Additionally, product specific electronic feedback gathering is implicitly limited to the product for which it was created.

Given the pressure placed upon organizations to quickly learn as much as possible about the needs and wants of their employees, vendors and customers, (constituents) a need exists for a technology that can help them gather and learn from feedback. To date, there are no software products known that are designed specifically to facilitate feedback gathering and processing.

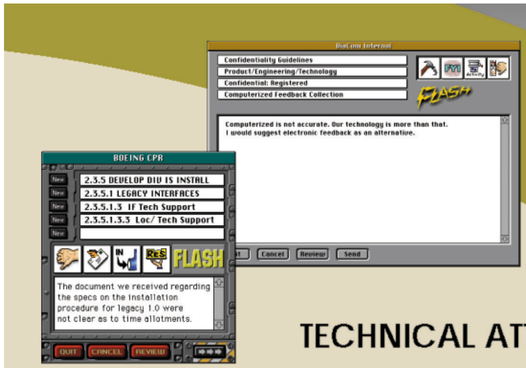
Implementation—Gathering Feedback

As previously discussed, every “stutter” that occurs during a user’s interaction with any aspect of a system is a potentially valuable learning opportunity for both the individual and all those responsible for that aspect of the system. DDP is designed to significantly reduce the difficulty associated with a user articulating (feeding-back) such stutters.

The image on the page to your right depicts a series of interface tools surrounding an X-like pattern emanating from the central logo. The central pattern illustrates aspects of DDP’s core protocol (US Patent # 5537618 & 5566291). The moment someone stutters (as represented by the logo) DDP gathers all of the context information that can be automatically discerned from the user’s machine. This includes the technical, organizational (and/or curriculum) as well as personal/demographic attributes. Informed by this information, DDP next provides the user with a simple menu system with which to “point” to WHERE they are in the system with which they are interacting. (Whenever the system discerned information is sufficient to do so, the dialog system automatically “wakes up” synchronized with where they are, for example in the midst of a website, CBT, multimedia, performance support, corporate information or commercially available on-line system)

Once the “location” of the user has been established, DDP presents the user with a series of icon or text menus, specific to their location, that enable the user to quickly articulate: WHAT their situation is (for example: Question, Suggestion, Problem, Complaint, Kudos, Disaster), WHEN they need a response (for example: FYI-Never, Not Urgent, ASAP, Waiting or Stopped), WHO their message can be seen by (for example: Everyone, the System Team, Not their Teacher, No One except the specifically responsible person).

Once the location and situation have been established, DDP (depending on whether it’s operating in a Web, Client/Server, WAN, LAN or e-mail based infrastructure) presents the user with a selectable list of the “top” feedback messages previously received from their location and situation (for example the top 10 <u>complaints</u> regarding <u>caveat 17</u> of the new <u>vision care insurance policy</u>). If the user’s current situation is represented in the list, the user simply “selects” the appropriate message, presses the “reinforce” button and is immediately returned to what they were previously doing. (Total elapsed time since the initial stutter is between 5 and 10 seconds depending on the network.)



DiaCom Internal

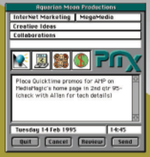
Confidentiality Guidelines
Product/Engineering/Technology
Confidential: Registered
Computerized Feedback Collection

Computerized is not accurate. Our technology is more than that.
I would suggest electronic feedback as an alternative.

BOEING CPR

2.3.5 DEVELOP DIV IS INSTALL
2.3.5.1 LEGACY INTERFACES
2.3.5.1.3 IF Tech Support
2.3.5.1.3.3 Loc/ Tech Support

The document we received regarding the specs on the installation procedure for legacy 1.0 were not clear as to time allotments.

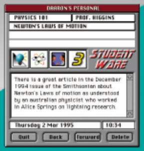


Aquarian Moon Productions

InterNet Marketing | MegaMedia
Creative Ideas
Collaborations

Place Quicktime promos for AMP on MediaMagic's home page in 2nd qtr 95-(check with Allen for tech details)

Tuesday 14 Feb 1995 | 14:45

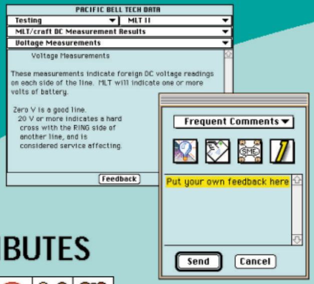


DARON'S PERSONAL

PHYSICS 101 | PROF. HIGGINS
NEWTON'S LAWS OF MOTION

There is a great article in the December 1994 issue of the Smithsonian about Newton's Laws of motion as understood by an australian physicist who worked in Alice Springs on lightning research.

Thursday 2 Mar 1995 | 10:34



PACIFIC BELL TECH DATA

Testing | MLT II
MLT/craft DC Measurement Results
Voltage Measurements

Voltage Measurements

These measurements indicate foreign DC voltage readings on each side of the line. MLT will indicate one or more volts of battery.

Zero V is a good line.
20 V or more indicates a hard cross with the RING side of another line, and is considered service affecting.

Put your own feedback here

TECHNICAL ATTRIBUTES

NAME (optional) | NETWORK
ADDRESS | PLATFORM
TELEPHONE/FAX | OPERATING SYSTEM
E-MAIL ADDRESSES | APPLICATION
GENDER | DATA BASE
STATUS (marital) | DOCUMENT
CHILDREN | OBJECT
LANGUAGES | ATTRIBUTE

SYSTEM DISCERNABLE

GENERAL ATTRIBUTES

WHO NO ONE! BOSS SME

WHEN FYI FRI 3 STOP

WHAT

WHERE

Chained | Pop-Up Menus
Allow Users to Descend
And "Point" to location
And "Context" of Situation

SYSTEM AUGMENTED

USER NAME

IF THE COMPETITIVENESS OF A COMPANY DEPENDS ON ITS CAPACITY TO SATISFY THE NEEDS OF ITS CUSTOMERS -- THEN ITS COMPETITIVENESS DEPENDS ON HOW WELL IT IS AWARE OF THE NEEDS OF ITS CUSTOMERS.

IF A COMPANY'S PERFORMANCE DEPENDS ON HOW WELL IT PROVIDES FOR THE NEEDS OF ITS EMPLOYEES -- THEN ITS PERFORMANCE DEPENDS ON HOW WELL IT IS AWARE OF THE NEEDS OF ITS EMPLOYEES.

IF THE EFFECTIVENESS OF AN EDUCATION OR TRAINING EFFORT DEPENDS ON HOW WELL IT SUPPORTS THE INDIVIDUAL LEARNING NEEDS OF ITS STUDENTS -- THEN ITS EFFECTIVENESS DEPENDS ON HOW WELL IT IS AWARE OF THE INDIVIDUAL LEARNING NEEDS OF ITS STUDENTS.

TIME & DATE

KEY POINT | RESOURCE
TOPIC | METHOD/PROCEDURE
SUBJECT AREA | TASK
CLASS | JOB
GRADE | PRODUCT/SERVICE
SCHOOL | PROJECT
SCHOOL DISTRICT | DEPARTMENT
COUNTY | COMPANY

ORGANIZATIONAL/CURRICULUM ATTRIBUTES

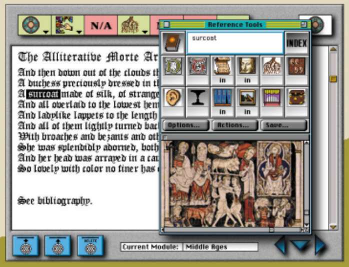
REVIEW — Review check box list of previous feedback messages from your location (filtered by WHAT and WHEN above)

REINFORCE — If previous message reflects your situation reinforce (check) it

GENERATE — If previous messages don't represent your situation generate unique message

SEND — Send feedback message

SITUATION SPECIFIC ATTRIBUTES



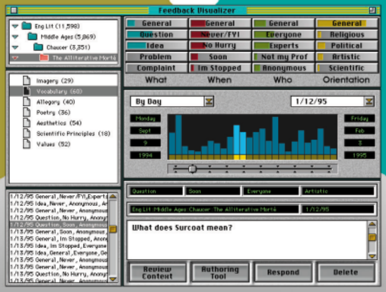
The Alliterative Morte Ar
And then down out of the clouds th
A duchess preciously dressed in th
A surcoat made of silk, of strange
And all overlaid to the lowest hem
And ladylike lappets to the length
And all of them lightly turned bac
With broaches and bezants and oth
She was splendidly adorned, both
And her head was arrayed in a ca
So lovely with color no finer has

See bibliography.

Reference Tools

surcoat

Current Module: Middle Ages



Feedback Visualizer

Eng Lit (11,598)
Middle Ages (5,869)
Chaucer (3,351)
The Alliterative Morté

Imagery (29)
Vocabulary (60)
Allegory (40)
Poetry (36)
Aesthetics (54)
Scientific Principles (18)
Values (52)

What	When	Who	Orientation
General	General	General	General
Question	Never/FYI	Everyone	Religious
Idea	No Hurry	Experts	Political
Problem	Soon	Not my Prof	Artistic
Complaint	Im Stopped	Anonymous	Scientific

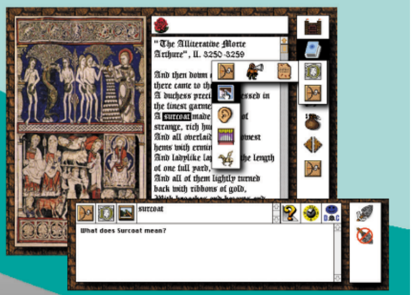
By Day | 1/12/95

Monday Sept 9 1994 — Friday Feb 3 1995

```
1/12/95 General, Never/FYI, Experts
1/12/95 Idea, Never, Anonymous, Ar
1/12/95 General, Never, Anonymous
1/12/95 Question, No Hurry, Anony
1/12/95 Question, Soon, Anonymous
1/13/95 General, Soon, Anonymous,
1/13/95 General, Im Stopped, Anon
1/13/95 Idea, Im Stopped, Everyone
1/13/95 Idea, General, Everyone, Ge
1/13/95 General, Never, Anonymous
1/13/95 General, Never, Anonymous
1/13/95 Question, No Hurry, Anony
1/13/95 General, Never, Anonymous
```

Question | Soon | Everyone | Artistic
Eng Lit:Middle Ages:Chaucer:The Alliterative Morté | 1/12/95

What does Surcoat mean?



"The Alliterative Morte Arthure", ll. 3250-3259

And then down
there came to th
A duchess preci essed in
the finest garme
A surcoat made of
strange, rich hu
And all overlaid owest
hems with ermin
And ladylike la the length
of one full yard,
And all of them lightly turned
back with ribbons of gold,

surcoat

What does Surcoat mean?

If, and only if, the list of previously received feedback does not adequately represent their situation or experience does the user generate a message. The user then articulates their specific situation (in text, voice or video) and presses the “send” button.

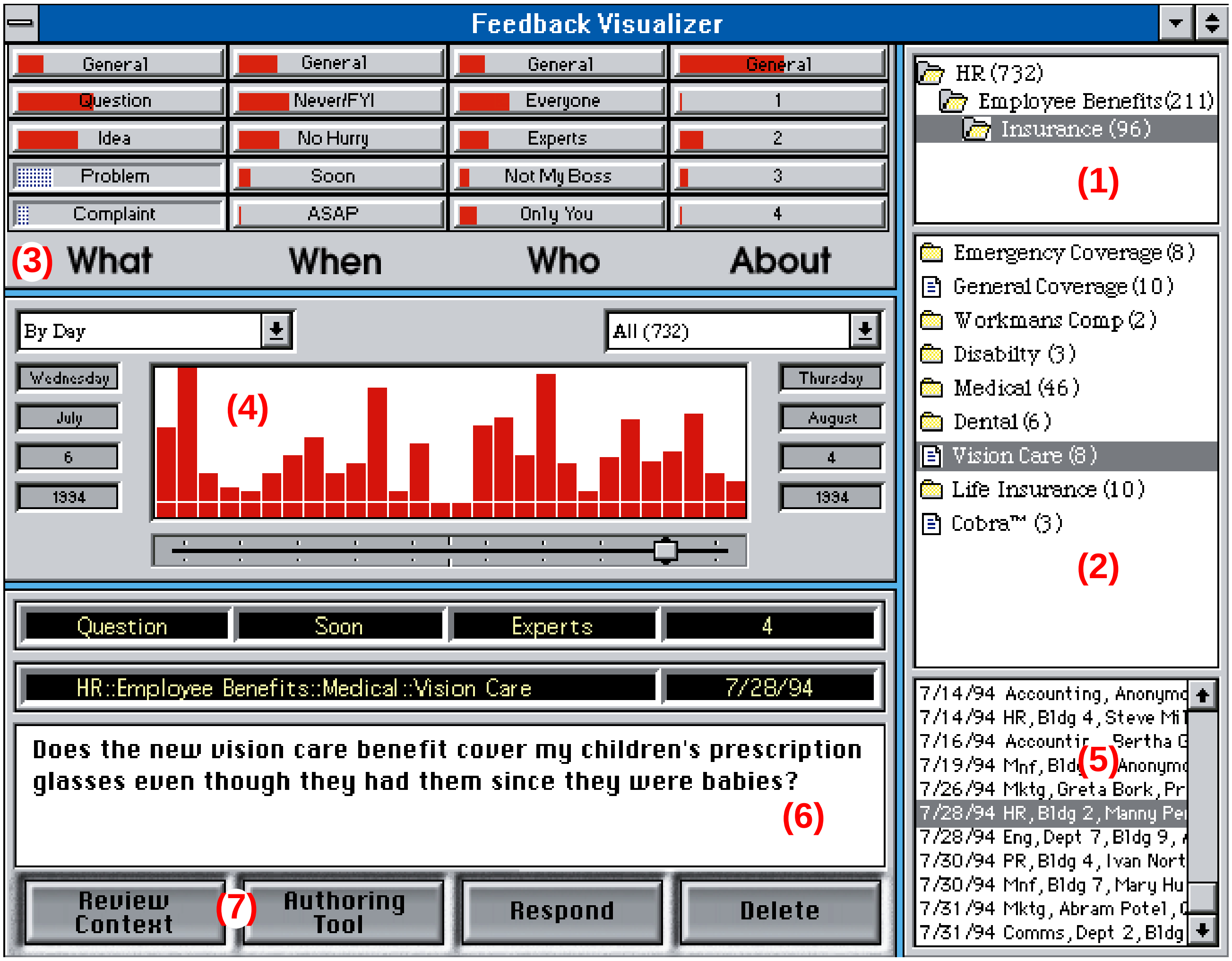
The DDP protocol, as just described, automates or augments the process of “capturing” the context; invisibly “addressing” the message, and annotating the “situation attributes” of a user’s feedback event. It provides users with an environment that, with minimal difficulty, enables them to clarify and articulate important details of their own thought process while contributing to the improvement of the products, services, companies or educational systems with which they interact. The DDP protocol can be embedded in any software product and accessed through the product's help or general menu system

Learning from Feedback

The image on adjacent page is an actual screen shot of the DDP Feedback Visualizer (US Patents # 5566291 and 5537618). To those persons who are directly responsible for an aspect or component of a “system” (or others interested in learning about such a person’s “space”), the Visualizer represents the equivalent of a radar system that can “zoom” through “views” ranging from the “orbital” to the “sidewalk”. Enabling them to see and respond to the patterns or specific messages of their “constituents”, the DDP Visualizer is designed to make processing and learning from feedback messages (from dozens to millions) as powerful and simple as possible.

The image to your right illustrates seven of the Visualizer’s component sub-systems . The top right **sub-system (1)** allows a user to navigate among the selectable “locations” they are responsible for or authorized to explore. Assisting the user in navigating are the numbers appearing to the right of each location. These numbers reflect the count of messages received by the system at each location and as conditioned by all other currently selected filters (situations and time). Selecting an area for inquiry, every other sub-system (category, situations, time and the filtered group list) readjusts to reflect the distribution of messages at the newly selected location. The same process applies to navigating and selecting among the categories and sub-categories (more detailed locations) available in the next **sub-system (2)** . **In effect, these two sub-systems enable a user to focus where they want to learn within the domain of their responsibility or authority (example: show me all messages about *insurance*, regarding *vision care*, that have come from *parents* in the *northwestern region*....)**

Sub-system (3) displays the categories of attributes (WHAT, WHEN etc.) and the specific attributes (Question, FYI etc.) that are associated with the system as a whole or more specifically to a selected location, category or sub-category. The red bar overlaid on top of each attribute (Question, Idea etc.) indicates the percentage of the messages currently selected (by location, category, sub category or time) that share this attribute (for example the % of **questions** about vision care). A glance across the array of attribute indicators reveals the overall distribution pattern of all categories and attributes at once. Each attribute is also a button that upon selection filters all the feedback messages in the scope of previous selections by that attribute (for example, selecting "problem" would reduce the number of messages in all locations and times to the number of messages that are problems). **In effect, this sub-system enables the user to see and select patterns of feedback as they distribute across the attributes associated with the location of their inquiry. (Example continued: Show me all *questions* about insurance, regarding vision care, that have come from parents in the northwestern region that request I respond *ASAP...*)**



Question | Soon | Experts | 4

HR::Employee Benefits::Medical::Vision Care | 7/28/94

Does the new vision care benefit cover my children's prescription glasses even though they had them since they were babies?

```
7/14/94 Accounting, Anonymo
7/14/94 HR, Bldg 4, Steve Mi
7/16/94 Accountir   Bertha G
7/19/94 Mnf, Bld    Anonymo
7/26/94 Mktg, Greta Bork, Pr
7/28/94 HR, Bldg 2, Manny Pe
7/28/94 Eng, Dept 7, Bldg 9,
7/30/94 PR, Bldg 4, Ivan Nort
7/30/94 Mnf, Bldg 7, Mary Hu
7/31/94 Mktg, Abram Potel,
7/31/94 Comms, Dept 2, Bldg
```

Sub-system (4) displays the distribution over time of the selected feedback messages. The sub-system's main window displays and allows selection of the feedback messages across a scope of time whose "units", the vertical bars, can be set to: minutes, hours, days, weeks, months, quarters or years and whose vertical height indicates the relative distribution of the quantity of selected messages across time. Additionally, the window's parameters can be set to "scopes" including: today, this week, last week, this month, last month, this quarter, last quarter, this year and last year. The "slider" allows the user to move the window across the scope selected and center it over the time span of their inquiry. Selections can be made to any number of units in any combination of contiguous or discontiguous groupings. Selections result in all other sub-systems of the Visualizer being updated to reflect the messages that occurred only in the selected time units. **In effect, this sub-system enables the user to see and select patterns of feedback messages as they distribute across the time span of their inquiry. (Example continued: Show me all <u>questions</u> about <u>insurance</u>, regarding <u>vision care</u>, that have come from <u>parents</u> in the <u>northwestern region</u> that request I respond <u>ASAP</u> and that were sent in *<u>July 1994</u>...)***

NOTE: Although all of the sub-systems described so far interactively and collectively sift the messages being processed, each sub-system works independently of the others and no order or sequence of "focusing" is imposed by the system. A user is free to follow any inquiry thread that suggests itself during their use of the tool.

Sub-system (5) displays the filtered list of feedback messages according to the overall selections made in sub-systems (1- 4). The header display of each feedback message can be arranged to further reflect the user's preferences (who sent the message, which department, class or school it came from, the date it was created, the situation or urgency level, etc.). The user may scroll through the list and select a particular feedback message to examine (read, hear or watch). **In effect, this sub-system enables the user to see and select from a list of feedback messages that matches their criteria of search. (Example continued: Show me all questions about insurance, regarding vision care, that have come from parents in the northwestern region that request I respond ASAP that were sent in July 1994, and order the list by *urgency*.)**

Sub-system (6) displays the actual content of feedback messages selected in the list box of sub-system (5), this will later include "playing" voice and video feedback messages. Above the feedback content display window are a series of "heads up" indicators that display once again the location, category, sub-category(s), date (and/or time) and the specifically selected attributes (Question, Soon, Experts, etc.) of the particular message being reviewed. This sub-system is also used to display "top feedback" lists and the distribution of "reinforcements" to the items on it (not shown in the illustration). **In effect, this sub-system enables the user to read the actual content of any individual feedback message sent by a user.** "reinforcements" to the items on it (not shown in the illustration). **In effect, this sub-system enables the user to read the actual content of any individual feedback message sent by a user.**

Sub-system (7) consists of four buttons which enable the following functions:

1) Review Context - this button launches the application that generated the feedback message and automatically sets it to simulate the actual condition or situation it was in when the user sent the feedback.

2) Authoring Tool - this button launches the authoring tool that created the menu locations and icon/text attributes associated with a user's area of authority or responsibility and allows the user (if authorized) to adjust or edit the menus and icons to facilitate easier, deeper and more specific feedback capture.

3) Respond - this button launches a mail system interface and passes to it the feedback sender's mail address. This enables the Visualizer owner to respond by note or attachment if appropriate or necessary.

4) Delete - this button deletes (if authorized) or merely masks from a particular user's view the feedback message currently under review.

In effect, this sub-system enables users to take a variety of actions including: helping them better understand the perspective of the message sender, changing the feedback capture configuration (menus and icons) that user's see at this location, sending a return message (and if desired, an accompanying attachment) and deleting a message.

In addition to the sub-systems shown and discussed, the Visualizer can be set to "scan" for "out-of-range" patterns in areas of recurring interest to its user. It can also be made to generate printed reports and/or output formatted files that could be subsequently processed by other analytical tools including common spreadsheet and database applications.

Processing Feedback

Underlying and mediating the messaging interactions between the DDP protocol and the Visualizer is a proprietary, object-oriented data base called Deep CoreTM. The data base is C++ for portability and performance and was specifically designed to provide the contextual, semantic and media attribute-processing dexterities necessary for optimally handling the non-symmetrical data associated with Distributed Dialogue ProcessingTM. Deep CoreTM is designed for operation in client/server and file sharing networks and, alternately, can be used in conjunction with most popular mail systems. Deep CoreTM can function as a stand alone data base with the Company's products or can subordinate itself to the role of API in order to seamlessly integrate with a customer's existing data base systems.

General Applications

There is an increasing number of businesses and schools (from Fortune 1000 to elementary schools and universities) that are concerned with developing the talent and capacities of their employees and students. For all the reasons stated so far, organizations have to come to realize that the most valuable asset of their "human capital" is their people's ongoing capacity to learn (whatever they know will be obsolete fast - their ongoing capacity for learning is the real indicator of their ability to adapt to the changing needs of their employers). Education systems, driven by this as well as more altruistic agendas are shifting, slowly, but surely, from their previous emphasis on regurgitating "facts and skills" to their new objective: developing learning-oriented, knowledge-athletes. These organizations are also committed to improving their core competencies and capabilities. Whether under the banner of TQM, Core Process Reengineering (CPR), Organizational Learning or other popular management methodologies, educational systems are spending millions of dollars in attempts to improve the intelligence and effectiveness of their organizational systems.

Additionally, thousands of organizations are committed to efforts that further the technical capabilities of their internal infrastructures. Along with the movement towards group-, team-, department- and enterprise-level computing systems has come the opportunity to "virtually re-centralize" many administrative service and support systems. Student assessment, classroom and school management, teacher training and student learning support systems are all being affected.

Both of these strategic directions are heading towards an inevitable convergence. The senior administrators responsible for developing their organization's human assets, implementing management changes and developing their technical infrastructure share two common problems:

> They are spending significant capital, time and mind share on efforts that require numerous, time consuming and costly iterations before stabilizing.
>
> They are involved in complex processes of change whose effectiveness depends on how well they can organize and distribute complex human interactions.

In both cases, how rapidly and cost-effectively they can train the people involved, and subsequently "de-bug" the people/content/technology/organization relationships and processes, depends on how well they can gather and process feedback. The more rapidly and comprehensively they understand the difference between what works and what doesn't, the more effectively and less expensively can they accomplish their objectives. Feedback is the currency through which each can optimize their particular activities while together learning to interface with and support one another.

The Web — May 1996

Today Web technology is primarily used as a medium to ‘broadcast’ information. Employed as intranets within corporate firewalls, Web technology is enabling information providers to publish their materials to the benefit of management, employees and in some cases vendors. Outbound, across their firewalls, companies are using the Web to publish materials that promote their brands and to provide sales and support information to their customers.

In addition to publishing, the Web is also emerging as a medium for conducting electronic commerce. Online shopping malls and catalog based sales systems will soon offer Web users the ability to purchase everything from theatre tickets and clothing to semiconductors and publicly traded company stocks.

Critical to a Web-company’s effectiveness and competitiveness, in either publishing or commerce, will be its ability to rapidly learn from and respond to its users and customers. Eventually, every object in a publication or aspect of a transaction will become a portal through which its “owners” and the people using or buying it engage in a dialogue. This *distributed dialogue*™ will act as a *context-sensitive learning loop* that connects a company’s managers, employees and vendors and any one or all of them and their users or customers on the Web. It will also provide the foundation for adding negotiation and bartering capabilities to electronic commerce.

However, whereas the tools for the Web publication of information are already strong and evolving and the tools for Web-based transaction processing are rapidly emerging, there are no tools capable of facilitating such a dialogue. Email is inadequate because it lacks context sensitivity and because it takes so much time and effort. Current feedback forms are little more than over-generalized surveys or self-addressed email windows. The statistical interpretation of turn-style counter "hits", provides no access to the subjective experience of users.

Distributed Dialogue™ within and between an enterprise and its customers requires tools that can extend the Web’s ability to context-sensitively connect content owners and end users. It requires tools that can lower the barrier to gathering user feedback (in the flow of and in the context of their experiences) and distribute that feedback to the owners of the relevant Web “spaces”. Further, it requires tools that enable the content owners to detect and analyze the aggregate patterns within the feedback they receive and respond to their users or customers either individually or in groups.

True interactive, distributed dialogue™, revolutionizing the design, delivery, evolution and support of products is the real promise of the Web and an opportunity exists to own the prime mover identity and position in the marketplace for providing the paradigm, technology and products that facilitate it.

1995 - THREE LAWS OF FEEDBACK ON THE WEB

1) The **success** of any effort to design, develop or improve a web site...
- in terms of its implementation(s): structure, navigability, intuitiveness, esthetics, content clarity, systemic performance, etc.
- in terms of its mission(s): marketing, advertising, customer sales and support, employee training and support, etc.

depends on the scope and detail of the **feedback** it can gather, process and learn from.

2) The more difficult it is for users...
- potential and actual customers, employees, vendors, stockolders, etc.

to give feedback the less feedback users will give.

3) The more difficult it is for owners...
- persons responsible for any one or all aspects of the implemention or mission of the site (above)

to process and understand the feedback they receive, the less they will pay attention to or learn from it.

THE QUANTUM SEMANTIC SEED OF A FEEDBACK EVENT

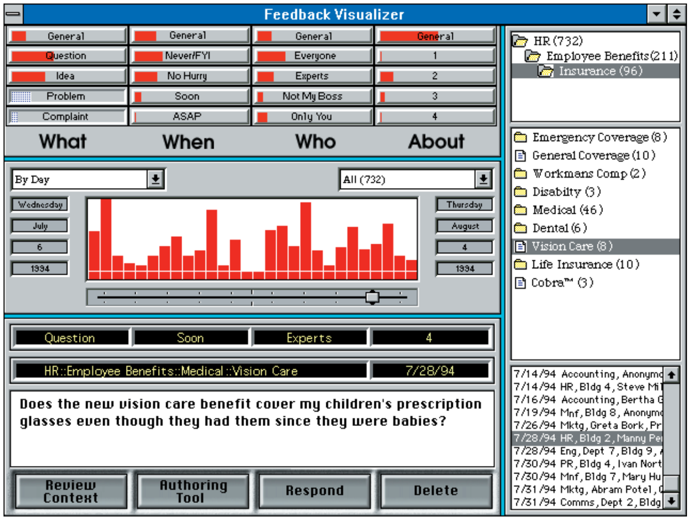
stutter: an initially involuntary hick-up in the (micro-time) flow of engaging or interacting that unfolds into the impulse to question, complain, propose, contribute, negotiate, etc.

Every “stutter” in the flow of an individual’s interactions with any aspect of a web site is, potentially, a great opportunity. For both the "user/customer" and for all the “owners” involved in providing what they’re interacting with, each stutter represents an opportunity to become more intelligently effective and to do better business.

To the people interacting with a site, a stutter is an internal feedback signal that something is needed, missing or not right. It also provides, if reflected on and distilled, the best possible source of internal information from which to understand what’s missing or needed and, given the site’s available options, how to best proceed.

To the people and organizations that benefit, profit or are responsible for any or all aspects of a web site, accessing their user's stutters (in the form of feedback), in precise correspondance to the anatomy of their site and its business or educational objectives, is the best possible basis for intelligently and cost-effectively evolving it.

VISUALIZER



By Day

All (732)

HR (732)
Employee Benefits (211)
Insurance (96)

Emergency Coverage (8)
General Coverage (10)
Workmans Comp (2)
Disabilty (3)
Medical (46)
Dental (6)
Vision Care (8)
Life Insurance (10)
Cobra™ (3)

Question | Soon | Experts | 4

HR::Employee Benefits::Medical::Vision Care | 7/28/94

Does the new vision care benefit cover my children's prescription glasses even though they had them since they were babies?

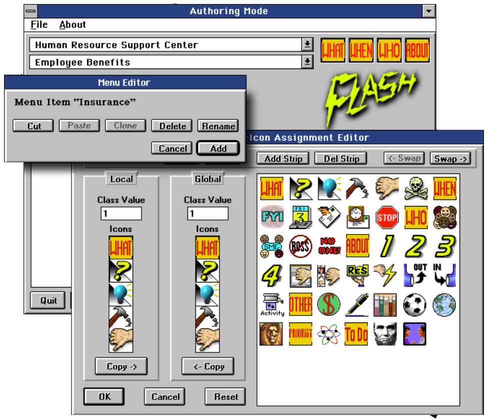
```
7/14/94 Accounting, Anonymo
7/14/94 HR, Bldg 4, Steve Mi
7/16/94 Accounting, Bertha G
7/19/94 Mnf, Bldg 8, Anonymo
7/26/94 Mktg, Greta Bork, Pr
7/28/94 HR, Bldg 2, Manny Pe
7/28/94 Eng, Dept 7, Bldg 9, A
7/30/94 PR, Bldg 4, Ivan Nort
7/30/94 Mnf, Bldg 7, Mary Hu
7/31/94 Mktg, Abram Potel, C
7/31/94 Comms, Dept 2, Bldg
```

AUTHORING TOOL

FLASH
(JAVA APPLET)

DISTRIBUTED DIALOGUE PROCESSING™ (DDP)

DDP IS DESIGNED TO PROVIDE AN EVOLUTIONARY LEARNING LOOP BETWEEN THE OWNERS OF A WEB SITE AND THEIR VIRTUAL CONSTITUENTS (USERS, CUSTOMERS, VENDORS, TEAM MEMBERS, EMPLOYEES, ETC.,). WHETHER IT'S ABOUT THE NAVIGABILITY, CONTENT, MEANING, ACCURACY OR OFFERING, DDP ENABLES WEB OWNERS (AT THE LEVEL OF SITE, PAGE OR OBJECT) TO UNDERSTAND THE "INTERACTION EXPERIENCES", OF THE PEOPLE WHO INTERACT WITH THE "STUFF" IN THEIR "SPACE".



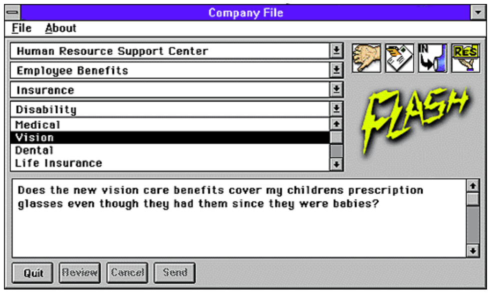
Human Resource Support Center

Employee Benefits

Menu Item "Insurance"

Class Value: 1

Class Value: 1



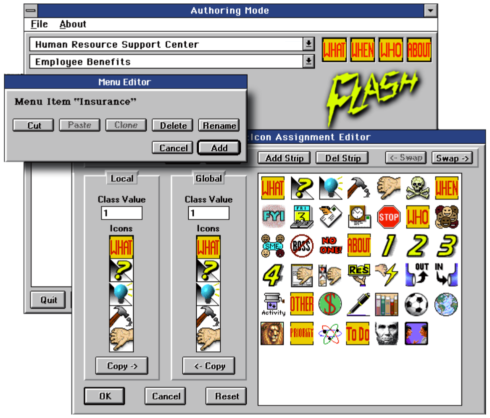
Human Resource Support Center

Employee Benefits

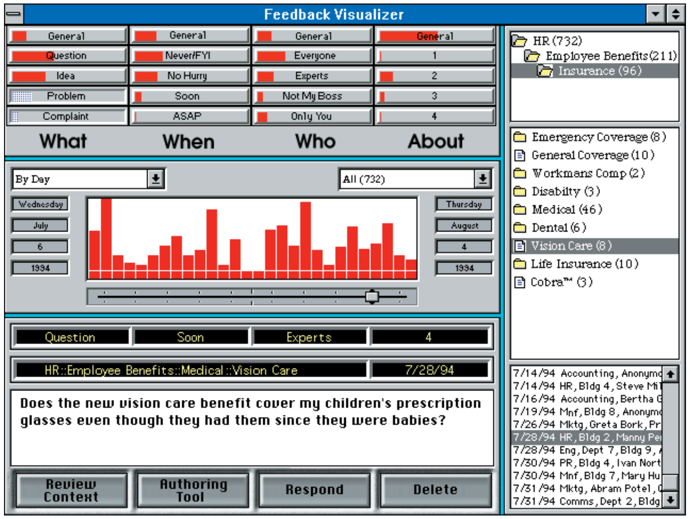
Insurance

Disability
Medical
Vision
Dental
Life Insurance

Does the new vision care benefits cover my childrens prescription glasses even though they had them since they were babies?



AUTHORING TOOL



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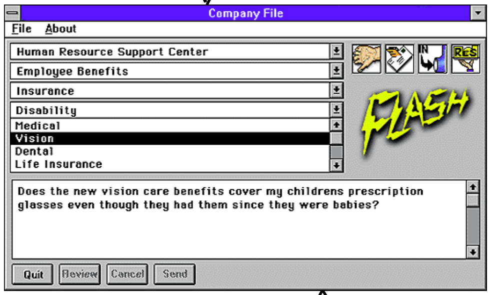
7/31/94 Comms, Dept 2, Bldg
```

VISUALIZER

WEB SERVER

FLASH

Distributed Dialogue Processing System (level 1)
• Authoring Tool - Generates menus for locations, situations and creates Web-Sync™ File • Flash(message generator) - Recieves contextual support resources from Web-Sync™ file - creates feedback case records (messages) and sends to web server. • Visualizer - abstracts ram database summary of web server's feedback (message) data base and reviews/responds to messages



Human Resource Support Center
Employee Benefits
Insurance
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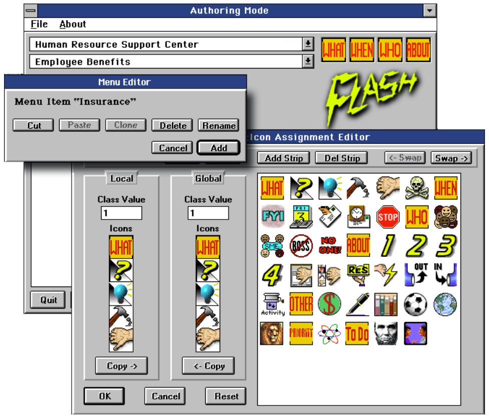


Authoring Mode

File About

Human Resource Support Center

Employee Benefits

Menu Editor

Menu Item "Insurance"

Cut Paste Clone Delete Rename

Cancel Add

Icon Assignment Editor

Add Strip Del Strip <- Swap Swap ->

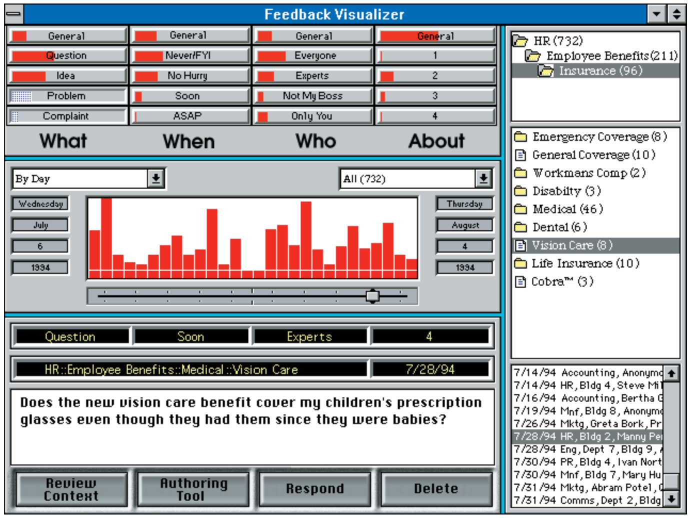
Local — Class Value: 1 — Icons — Copy ->

Global — Class Value: 1 — Icons — <- Copy

OK Cancel Reset

Quit

1 "OWNER"



Feedback Visualizer

What	When	Who	About
General	General	General	General
Question	Never/FYI	Everyone	1
Idea	No Hurry	Experts	2
Problem	Soon	Not My Boss	3
Complaint	ASAP	Only You	4

By Day — All (732)

Wednesday July 6 1994 — Thursday August 4 1994

Question — Soon — Experts — 4

HR::Employee Benefits::Medical::Vision Care — 7/28/94

Does the new vision care benefit cover my children's prescription glasses even though they had them since they were babies?

Review Context — Authoring Tool — Respond — Delete

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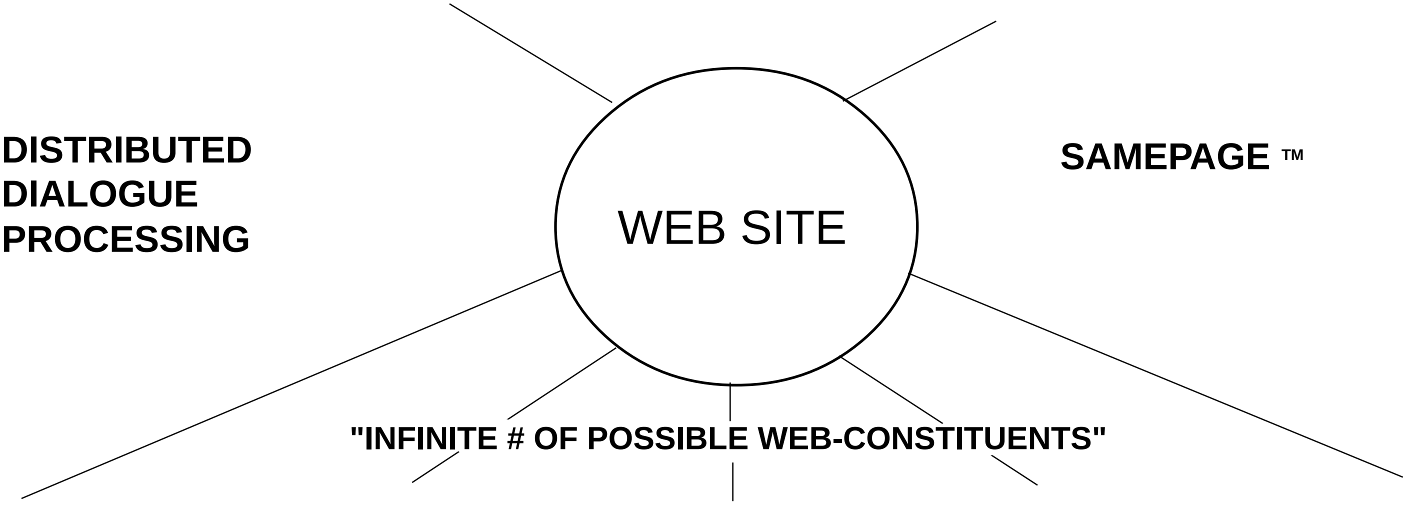
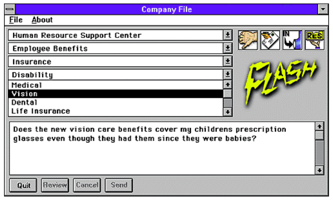


DISTRIBUTED
DIALOGUE
PROCESSING

WEB SITE

SAMEPAGE ™

"INFINITE # OF POSSIBLE WEB-CONSTITUENTS"



Company File

File About

Human Resource Support Center

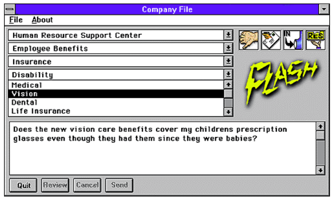
Employee Benefits

Insurance

Disability
Medical
Vision
Dental
Life Insurance

Does the new vision care benefits cover my childrens prescription glasses even though they had them since they were babies?

Quit Review Cancel Send



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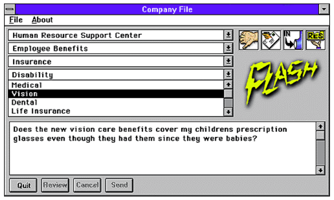

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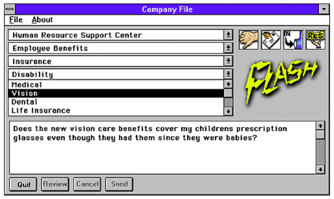

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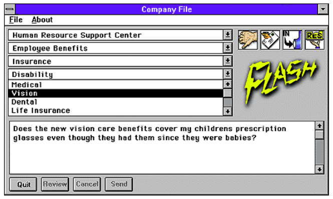

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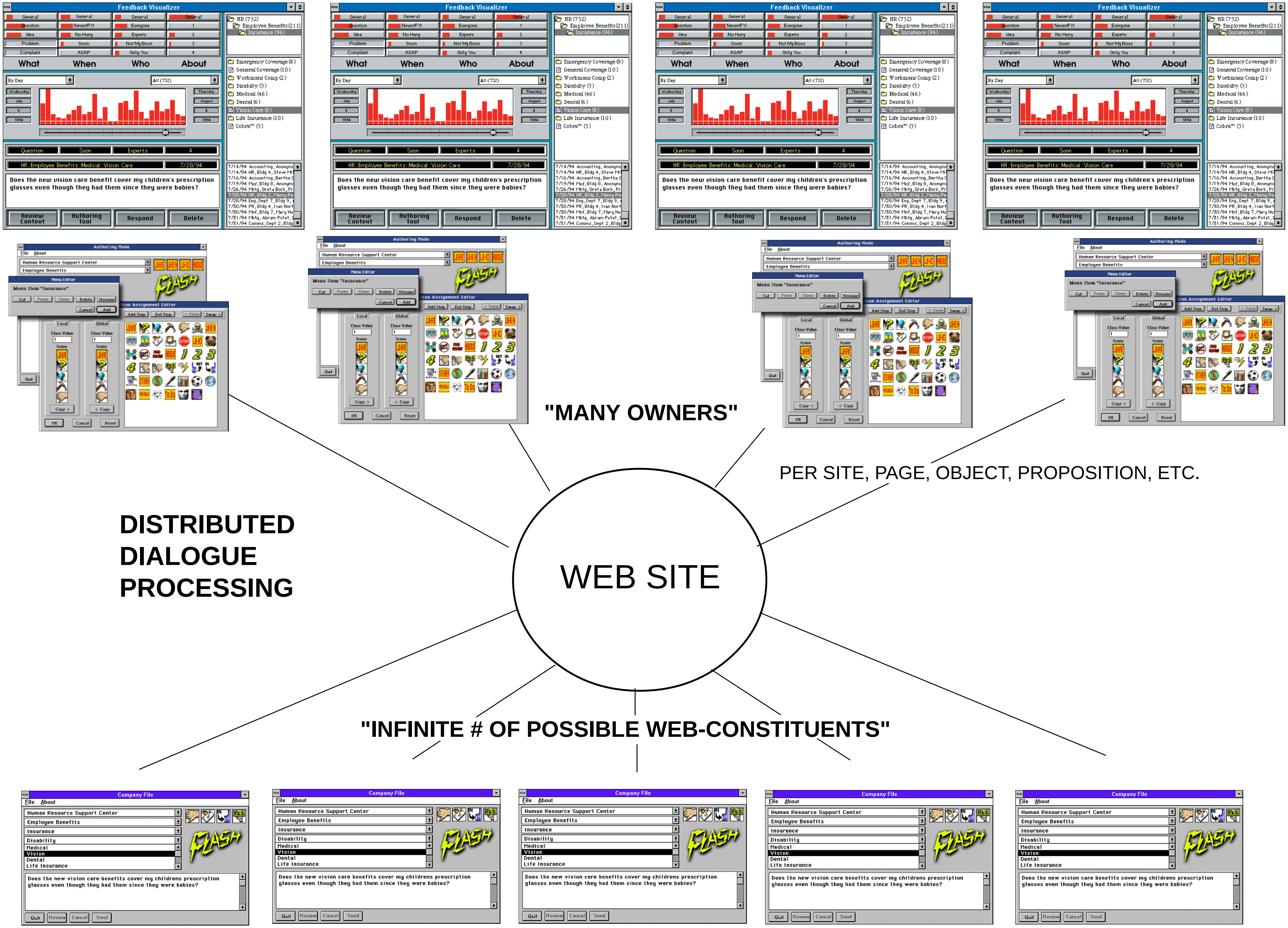

"MANY OWNERS"

PER SITE, PAGE, OBJECT, PROPOSITION, ETC.

DISTRIBUTED DIALOGUE PROCESSING

WEB SITE

"INFINITE # OF POSSIBLE WEB-CONSTITUENTS"

HR (732)
Employee Benefits (211)
Insurance (96)

Emergency Coverage (8)
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By Day

All (732)

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Question | Soon | Experts | 4

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7/31/94 Mktg, Abram Potel,
7/31/94 Comms, Dept 2, Bldg

Human Resource Support Center
Employee Benefits

Menu Item "Insurance"

Local: Class Value 1
Global: Class Value 1

Human Resource Support Center
Employee Benefits
Insurance
Disability
Medical
Vision
Dental
Life Insurance

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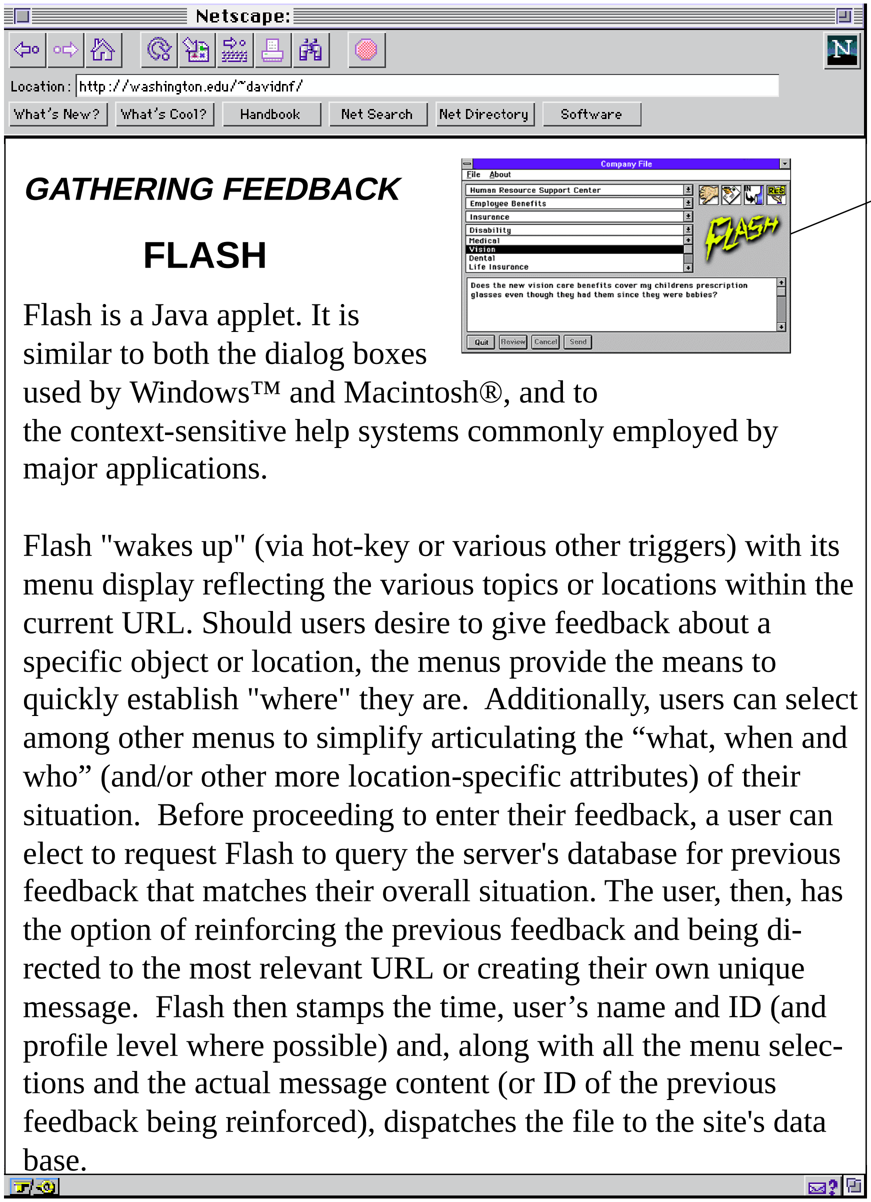


GATHERING FEEDBACK

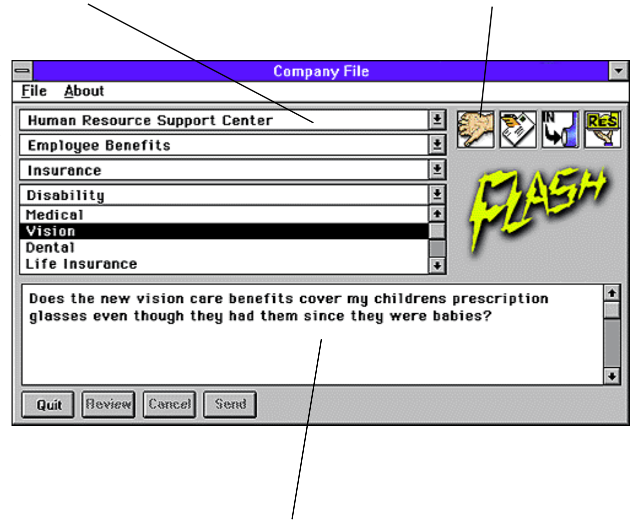
FLASH

Flash is a Java applet. It is similar to both the dialog boxes used by Windows™ and Macintosh®, and to the context-sensitive help systems commonly employed by major applications.

Flash "wakes up" (via hot-key or various other triggers) with its menu display reflecting the various topics or locations within the current URL. Should users desire to give feedback about a specific object or location, the menus provide the means to quickly establish "where" they are. Additionally, users can select among other menus to simplify articulating the “what, when and who” (and/or other more location-specific attributes) of their situation. Before proceeding to enter their feedback, a user can elect to request Flash to query the server's database for previous feedback that matches their overall situation. The user, then, has the option of reinforcing the previous feedback and being directed to the most relevant URL or creating their own unique message. Flash then stamps the time, user’s name and ID (and profile level where possible) and, along with all the menu selections and the actual message content (or ID of the previous feedback being reinforced), dispatches the file to the site's data base.

Menus for indicating or pointing to user's context/location

Icon pop-up menus for quick articulation of situation



Human Resource Support Center
Employee Benefits
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Data entry/display window for entering messages or reviewing previous feedback.

Reduces the user's overhead to giving feedback via:

- Instant hot key or button activation
- A (moveable) "dialog" box at their "place" on the page
- Menus (in some cases auto-positioned) for pointing to "where" they are
- Icon menus for situations: Question, Problem, Complaint, etc., ("what")
- Icon menus for required response urgency: none, asap, etc., ("when")
- Icon menus for selecting level of their profile to be "stamped" ("who")
- Icon menus, dynamic and specific to their location: >$, 8.25%, etc.,
- Ability to review and reinforce previous feedback messages matching their location and situation

Flash provides users the ability to quickly and context-sensitively articulate and dispatch a unique message, or "vote" about a common issue or problem without concern for addressing, security or the potential intimidation and time consumption of having to establish all of the "background" necessary to explain what they mean.

UNDERSTANDING FEEDBACK

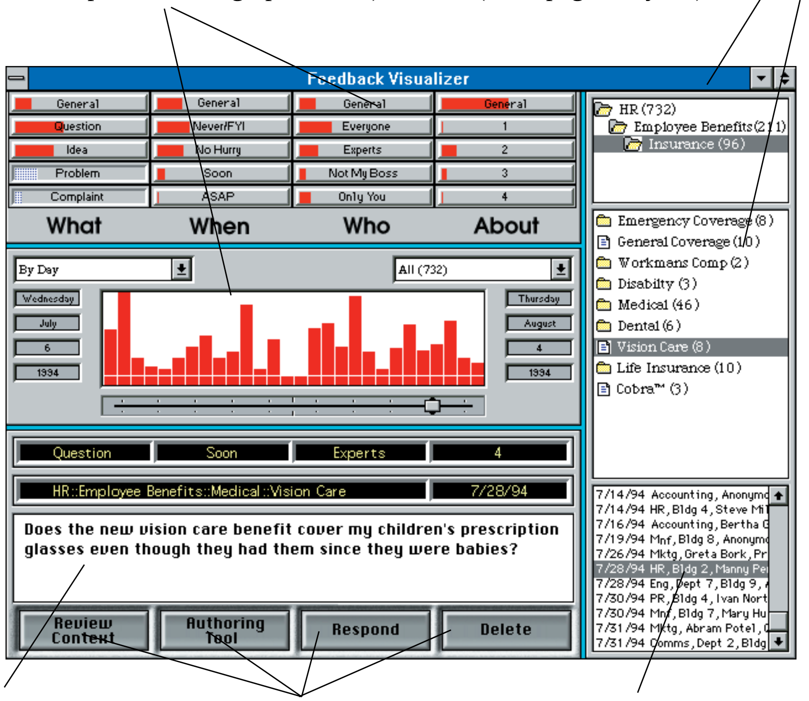
THE VISUALIZER

The Visualizer provides "owners" (those responsible for an aspect or component of a Web site) the means to survey, detect and analyze the aggregate patterns within the feedback messages they receive. The Visualizer also enables owners to review individual feedback messages from their web site users and to respond to them (via auto-targeted email) individually or in groups.

The Visualizer consists of an array of displays and selectors that correspond to the locations within an owner's area of responsibility, the attributes of possible or historic user experiences specific to each of those locations and the demographic and profile attributes of their users. By selecting among the locations or attributes (in any non-linear order) patterns emerge and a list of messages representative of the total selections is presented. Choosing a record from the list causes the record's message content to be displayed and the Vizualizer's response mechanisms to be targeted. The owner can then broadcast a response to all the people with a common issue or specifically respond to a single individual. The Vizualizer can also call and position "Plug-ins" to simluate related non-web page context or the DiaCom Authoring Tool for adding to or editing the feedback support resources (sync-kits) provided to user's via the Flash applet.

Display/select among "attribute" filters (situations, profile, demographic, time)

Navigate/select among " locations" (sites, pages, objects)



What	When	Who	About
General	General	General	General
Question	Never/FYI	Everyone	1
Idea	No Hurry	Experts	2
Problem	Soon	Not My Boss	3
Complaint	ASAP	Only You	4

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Question | Soon | Experts | 4

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Review individual messages

Respond to individual or grouped messages

Display/select among "filtered" messages

Increases owner intelligence about user experiences via:

- All-at-once patterning of user feedback at any and all levels of Web structure
- Ability to "drill down" to discover unexpected user experiences
- Ability to correlate profile, demographic, location, timing and situational issues

Increases owner's ability to respond to and satisfy users via:

- Grouping messages with essentially same meaning for broadcast response
- Integrating graphical data base inquiry with auto-targeted e-mail response

The Visualizer provides owners a tool for iteratively, non-linearly, travelling within and responding to the interaction experiences (discretely and in aggregate patterns) of their Web constituents.

THE AUTHORING TOOL

The Authoring Tool (AT) is used to create a "Websync™" file which:

1) Contains a "map" of the locations (text menus) and situations (text and/or icons) corresponding to an "owner's" area of responsibility (e.g., anatomy web site, page, object, plug-in content, applet).

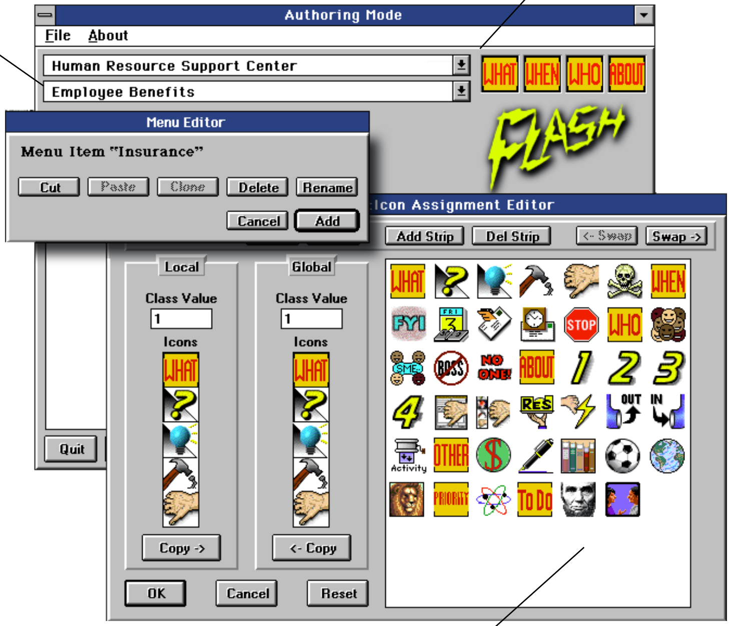
2) Contains Sync-kits which contain the text and icon menu content used by the Flash applet to resource user choices at a selected location.

3) Contains frequent feedback lists (FFB) associated with each location and configuration of situation (as relevant in responding to previous feedback).

The Websync™ file either stands alone or is integrated with other "owners" files to create a larger overall map which in turn is used to provide Flash and the Visualizer with the resources needed to simplify the gathering and understanding of feedback.

Text menu editor for creating, editing or classifying menus

GUI exactly like Flash (menus & icons)



Human Resource Support Center

Employee Benefits

Menu Item "Insurance"

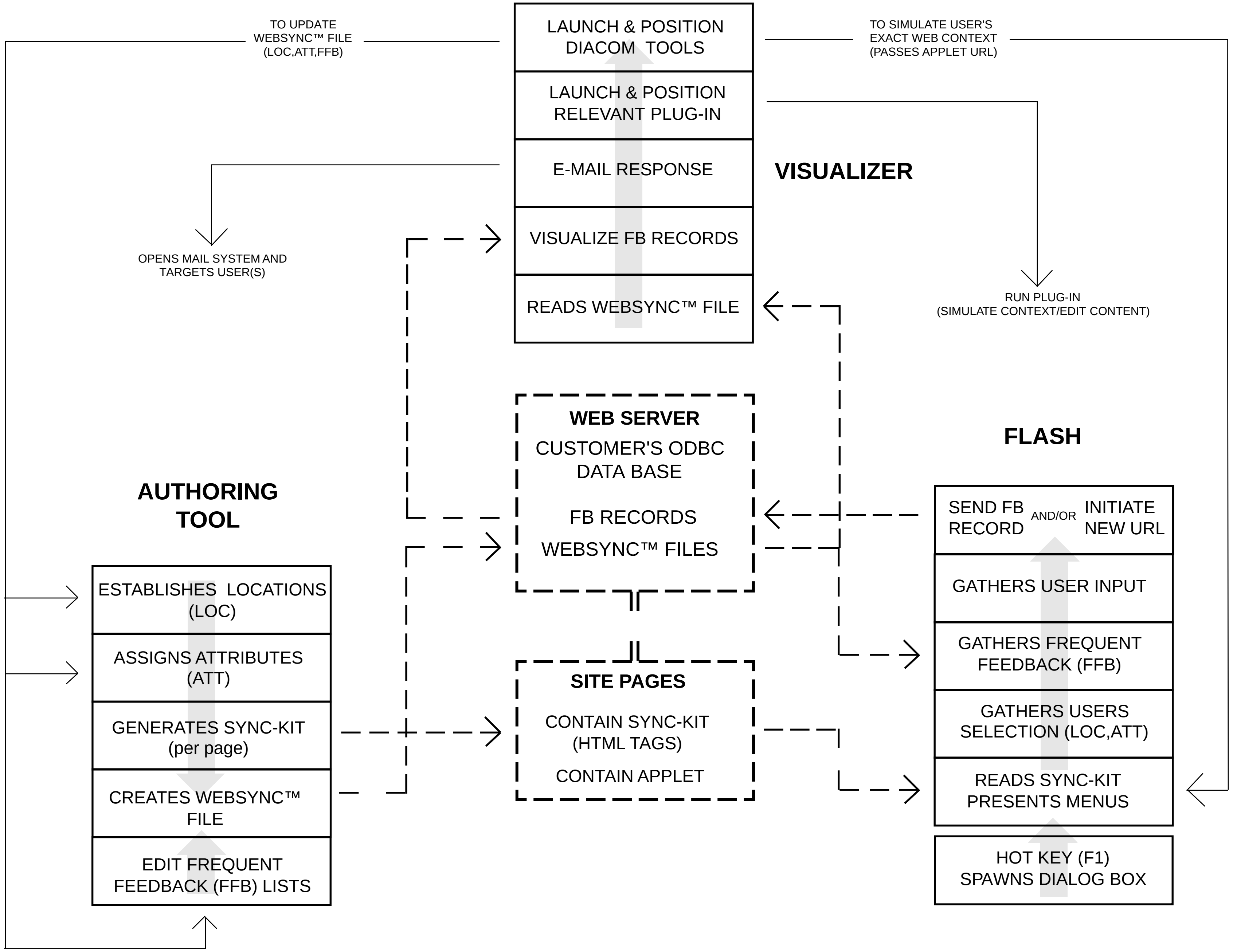
Class Value 1

Class Value 1

Authoring Mode
File About
WHAT WHEN WHO ABOUT
FLASH
Menu Editor
Cut Paste Clone Delete Rename
Cancel Add
Icon Assignment Editor
Add Strip Del Strip <- Swap Swap ->
Local
Global
Icons
Copy ->
<- Copy
OK Cancel Reset
Quit
WHAT WHEN FYI STOP WHO SME BOSS NO ONE! ABOUT 1 2 3 4 RES OUT IN Activity OTHER PRIORITY To Do

Icon menu editor for creating, assigning, editing or classifying icon menus

The AT shares the same GUI as Flash and extends it through additional editing systems. A text menu editor allows owners to create, edit, move, categorize, delete or assign functionality to text menus representing locations. An icon menu editor functions similarly and can additionally be used to import icons. A text editor and list box assignment editor are used to create and edit frequent feedback lists.



TO UPDATE WEBSYNC™ FILE (LOC,ATT,FFB)

LAUNCH & POSITION DIACOM TOOLS

LAUNCH & POSITION RELEVANT PLUG-IN

E-MAIL RESPONSE

VISUALIZE FB RECORDS

READS WEBSYNC™ FILE

VISUALIZER

TO SIMULATE USER'S EXACT WEB CONTEXT (PASSES APPLET URL)

OPENS MAIL SYSTEM AND TARGETS USER(S)

RUN PLUG-IN (SIMULATE CONTEXT/EDIT CONTENT)

WEB SERVER

CUSTOMER'S ODBC DATA BASE

FB RECORDS

WEBSYNC™ FILES

FLASH

SEND FB RECORD AND/OR INITIATE NEW URL

GATHERS USER INPUT

GATHERS FREQUENT FEEDBACK (FFB)

GATHERS USERS SELECTION (LOC,ATT)

READS SYNC-KIT PRESENTS MENUS

HOT KEY (F1) SPAWNS DIALOG BOX

AUTHORING TOOL

ESTABLISHES LOCATIONS (LOC)

ASSIGNS ATTRIBUTES (ATT)

GENERATES SYNC-KIT (per page)

CREATES WEBSYNC™ FILE

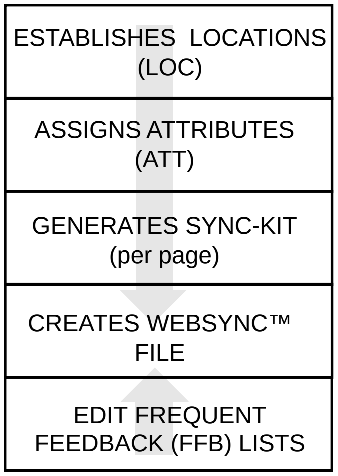
EDIT FREQUENT FEEDBACK (FFB) LISTS

SITE PAGES

CONTAIN SYNC-KIT (HTML TAGS)

CONTAIN APPLET

AUTHORING TOOL



ESTABLISHES LOCATIONS (LOC)

ASSIGNS ATTRIBUTES (ATT)

GENERATES SYNC-KIT (per page)

CREATES WEBSYNC™ FILE

EDIT FREQUENT FEEDBACK (FFB) LISTS

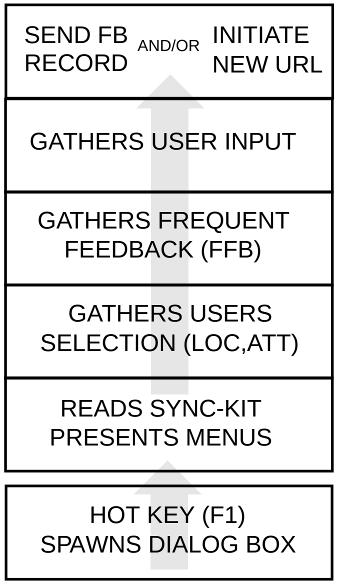
Creates/edits a series of dropdown menus, representing the current location within the tree structure of nodes within the Websync™ file. A shift-click on an entry allows adding, deleting and editing of menus/nodes.

Creates/edits a series of dropdown strips of icons, representing possible attribute selections for the currently selected menu/node. A shift-click on a strip invokes an Attribute Editor. The Attribute Editor allows drag-and-drop definition of icons in attribute strips, as well as text boxes for entering or editing the text descriptions of strips and icons.

During the creation of each new location/node in the tree a Sync-kit (see Sync-kit file) is generated and assigned and contains the text and icon content that gets (HTML) tagged to the page

The Websync™file contains all of the above (see Websync™ file)

FLASH



SEND FB RECORD AND/OR INITIATE NEW URL

GATHERS USER INPUT

GATHERS FREQUENT FEEDBACK (FFB)

GATHERS USERS SELECTION (LOC,ATT)

READS SYNC-KIT PRESENTS MENUS

HOT KEY (F1) SPAWNS DIALOG BOX

If the user selected a particular FFB that is associated with a responding URL the applet will take the user to the new URL. If not, when the user is done with his message input, he clicks on the “Send” button, which causes Flash to compile the user’s input into a feedback record, and output it as a record onto the site server's database.

Flash provides the user with the option to select a frequent feedback item or to dismiss the FFBs and enter an editable text field in which the user can enter any comments.

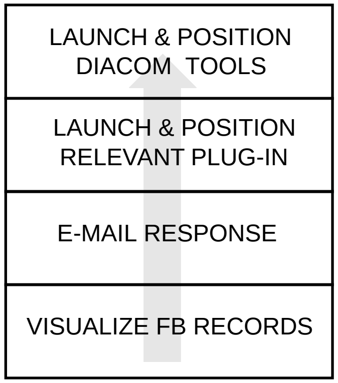
Flash sends the LOC and ATT ids corresponding to the user's menu selection (or alternately an auto positioning string) to the site's database and recieves and presents a selectable list of locationally and situationally (in future personal profile) relevant frequent feedback.

Flash displays a set of popup menus which are specific to the location specified by the Sync-kit. The user may use these menus to further navigate and to select attributes, such as type of situation and the urgency of the message.

Flash awakens, reads Sync-kit for page and presents user with menus.

Initially the applet remains hidden and awaits a hot key (F1 though others can be assigned) or a button click to spawn the Flash dialog box component.

VISUALIZER



LAUNCH & POSITION DIACOM TOOLS

LAUNCH & POSITION RELEVANT PLUG-IN

E-MAIL RESPONSE

VISUALIZE FB RECORDS

The Visualizer launches and sends positiong information to the Authoring Tool or Flash in order to simulate the user's context or to edit the Websync™ or Sync-kits based on the feedback.

The Visualizer launches and sends positiong information to the plug-in associated with the feedback.

One of the demographic items recorded for anyone who sends feedback is the sender's email address. The Visualizer allows an owner to send email to the person who sent that feedbackor to forward the feedback. An owner can also use the visualizer to dynamically create a group (people requiring the same response) and broadcast mail to them.

The Visualizer allows the user to see patterns in feedback records by presenting each field of interest in a feedback record as "active display." Active displays present a graphical view of the data, using the graphics that are relevant for that particular type of data. Different types of data may be displayed as bar charts, hierarchical trees, or timelines. These displays are active in the sense that bars in the bar charts or nodes in the trees can be clicked, to add or to delete the items represented by this bar or node from the currently selected set of attributes.

The currently selected set of records consists of those that are specified by the current selections in all the displays. Thus, each display conditions the values displayed in all the other displays, and is itself conditioned by the selections in those displays.

The user can select which fields of the feedback are of interest, arrange their active displays at the desired locations in the window, and resize any of the displays. These selections are saved in the Visualizer's configuration file, and will be used as the initial window configuration the next time the Visualizer is run.

At anytime the user can see a scrolling list containing summaries of all the feedback records currently in the selected set. Any item in this list can be double clicked to display that feedback record. The group as a whole can be targeted for broadcast email.

READS WEBSYNC™ FILE

When the owner selects a database using the File Open dialogue box, The Visualizer begins by "scanning" the Websync™ file. During this scan, The Visualizer builds an internal representation of the tree structure of it, including attribute definitions at each node level. Internally, each node is assigned a "toggle" number. Each unique attribute encountered is also assigned a "toggle" number. When all the "toggles" referenced by a feedback record are "on", then that feedback record has been selected.

WEBSYNC™ FILE

The Websync™ file is used to synchronize the operating contexts of the Authoring Tool, Visualizer and the Flash applet. The file contains:

A map, in the form of a tree that corresponds to the web "area" (site, page, object) it represents. Each specific location (node) in this tree maps to a Sync-kit.

A field that contains the URL and or any other unique ID specific to the page or the area on the page represented by the Websync™ file.

A template for every visualizable field in the feedback record. (This includes, but is not limited to, demographic information as well as location specific situational attributes.) These templates will be read by the Visualizer when it opens the associated set of feedback records, to configure how the Visualizer displays the information in these records. Thus, the Visualizer does not need to read any of the actual feedback records before configuring itself.) This template will include: a user readable text string describing the field, a full path to the field within the record, and any additional information necessary to describe the content of the field, its range of permissible values, etc.

A number which uniquely identifies this Websync™ file, and which appears in each feedback record that is associated with it.

A database of frequent feedback (FFB) summaries for each location and by each situational category (as relevant). This is called by the Flash applet after it has focused the inquiry to a single location and specific situation (in order to reduce the overhead carried in a page or the size and time associated with downloading an over generalized list).

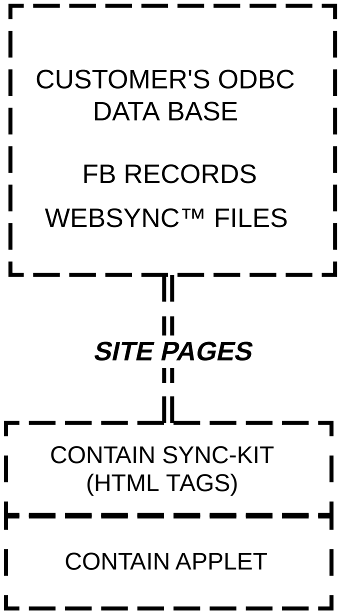
SYNC-KITS

Sync-kits carry the actual serial numbers of the nodes (locations) within a Websync™ file. These unique numbers are assigned by the Authoring Tool when nodes are created. A Sync-kit also contains the various menu and icon resources that are associated with its location. These are the resources that provide the Flash applet with the display content (navigational menus and situation-description icons) as well as the mini map of corresponding ID numbers that are used to request frequent feedback lists and that get "stamped" into a feedback record. Sync-kits are mapped by the Authoring Tool into HTML tags and subsequently embedded into their corresponding Web pages.

In order to provide for various performance differences between user machines, each attribute has 3 resources: an icon for icon menu operations, a short text string for text menu operations and a longer string that provides a rich description of its meaning (used in Flash's display status line to elaborate on the meaning of potential choices the user is examining). If the user is operating at a speed less than 28.8 the Flash applet will select the text only mode.

CUSTOMER APPLICATION

The Customer Application (or a secondary supervising/ mediating application or OS) must interact with DDP in 3 ways and optionaly but optimally in 4.



The Customer Application must provide and detect a trigger with which a user may initiate the feedback process. This can be a button, a menu item or a hot-key.

Once triggered the Customer Application must associate the user's location within its anatomy with a SyncNum. This can be accomplished by discrete links or by a table held internally or externally. (The system can function without SyncNums but the user is then required to manually position Flash's menus to correspond to their location)

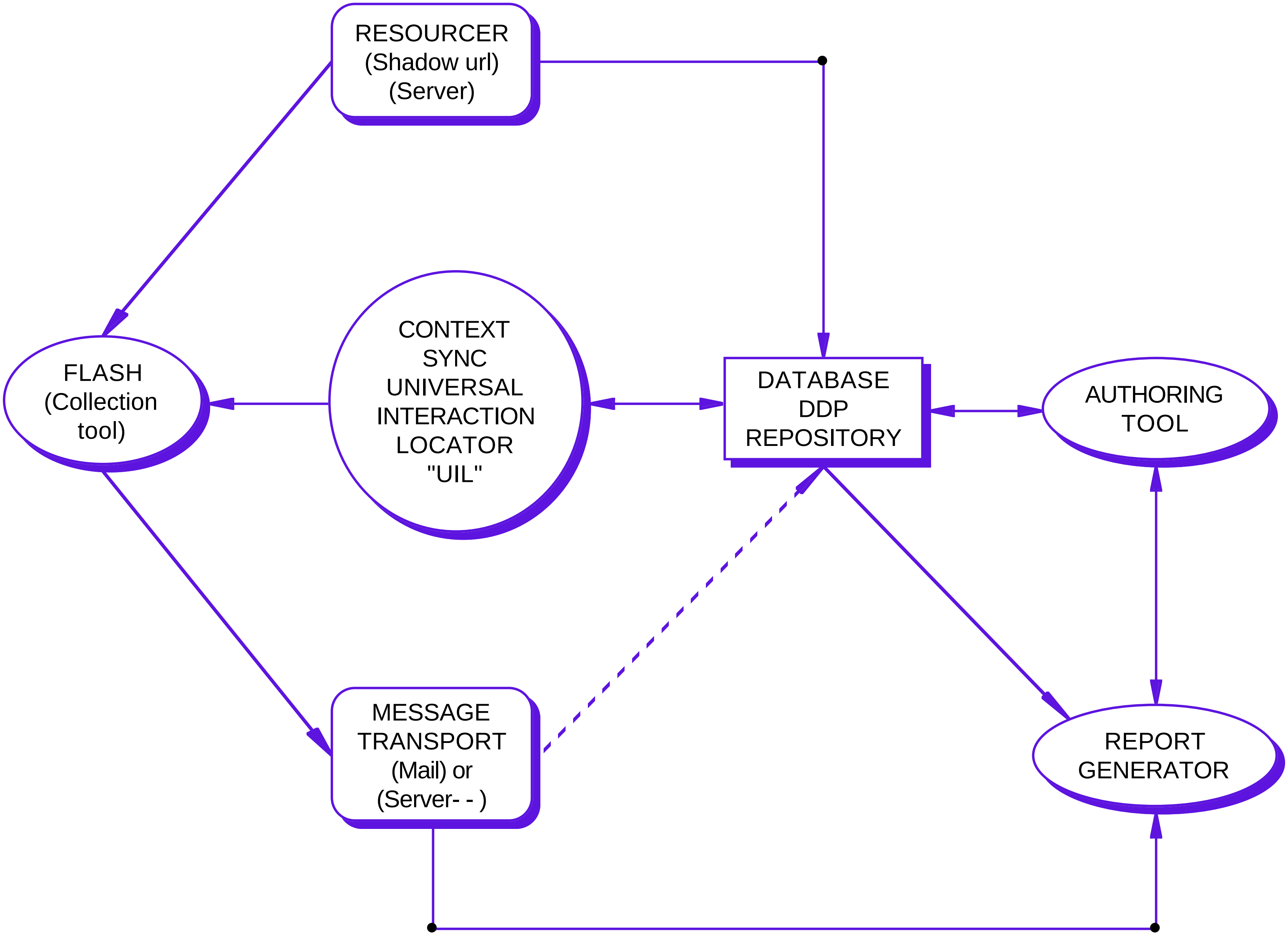
The Customer Application intiate the launch of Flash and passes it the SyncNum of its current location (see Synchronizing the Applications)

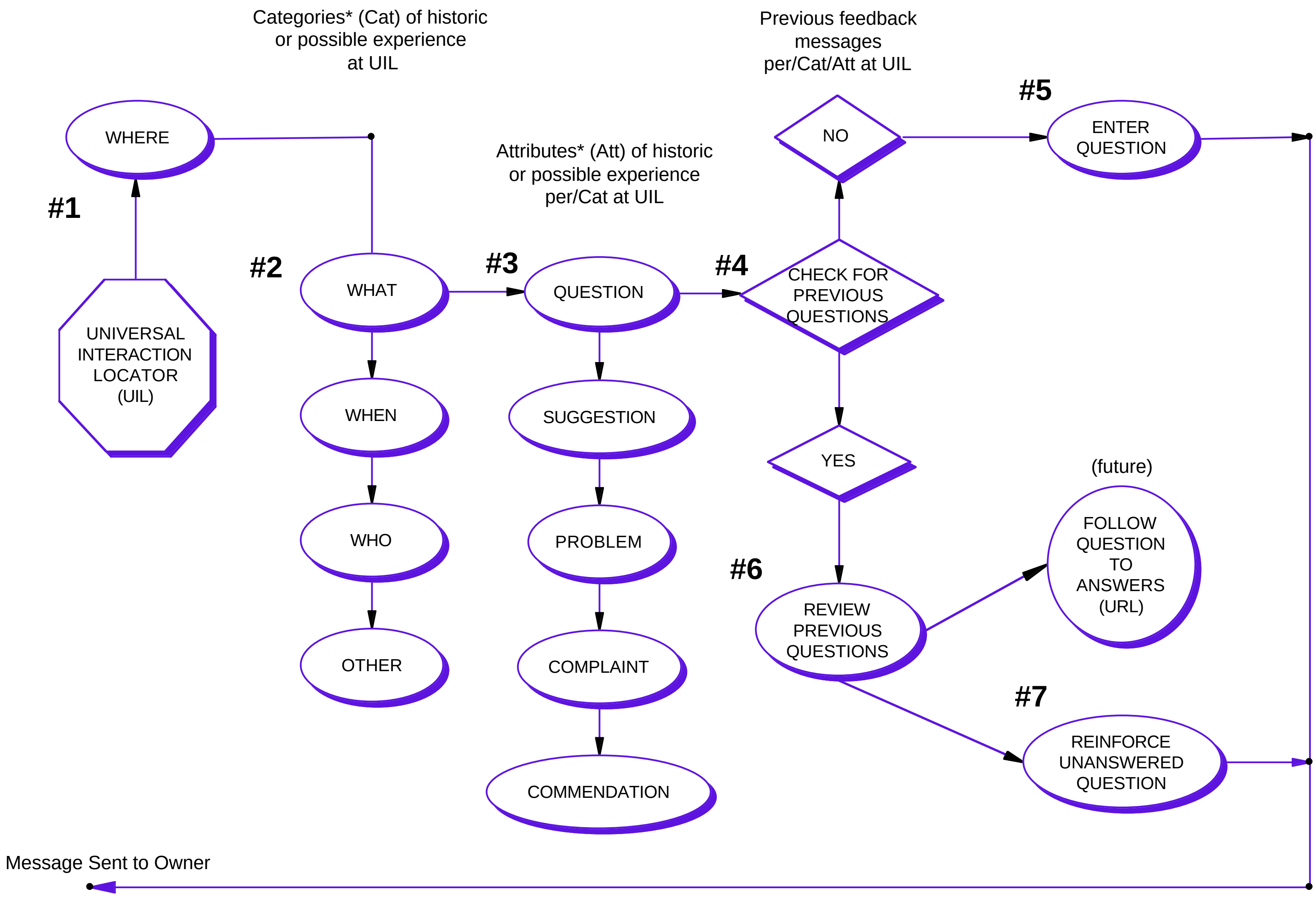
The Visualizer sends Positiong Information to the Customer's Application in order to position it such that the context the user was in when feedback was given is clear. In some cases this includes opening an application and document in read/write in order to edit the content in response to the feedback (see Synchronizing the Applications)

OTHER ASPECTS

After Flash has generated a feedback record and placed it into the output directory, the record must be moved to the appropriate (area owner's) Visualizer’s input directory. (The Flash output directory and the Visualizer input directory may be the same directory (sharing or client/server), in which case no moving is required.) File transportation can be facilitated my various message transporters including e-mail systems.

After the record has arrived in the Visualizer’s input directory, it is merged into a Feedback database which will be used as input to one or more Visualizers. When there are numerous owners that want overlapping access to feedback a larger "company" feedback database can be used to contain all company feedback and can be used in conjunction with a client/server version of the Visualizer. DiaCom's database can provide the full functionality or act as API to the customers existing data base system.


RESOURCER
(Shadow url)
(Server)
FLASH
(Collection
tool)
CONTEXT
SYNC
UNIVERSAL
INTERACTION
LOCATOR
"UIL"
DATABASE
DDP
REPOSITORY
AUTHORING
TOOL
MESSAGE
TRANSPORT
(Mail) or
(Server- -)
REPORT
GENERATOR


Categories* (Cat) of historic or possible experience at UIL
Previous feedback messages per/Cat/Att at UIL
#5
WHERE
NO
ENTER QUESTION
Attributes* (Att) of historic or possible experience per/Cat at UIL
#1
#2
#3
#4
WHAT
QUESTION
CHECK FOR PREVIOUS QUESTIONS
UNIVERSAL INTERACTION LOCATOR (UIL)
WHEN
SUGGESTION
YES
(future)
WHO
PROBLEM
FOLLOW QUESTION TO ANSWERS (URL)
#6
OTHER
COMPLAINT
REVIEW PREVIOUS QUESTIONS
#7
REINFORCE UNANSWERED QUESTION
COMMENDATION
Message Sent to Owner

* Infinite and variable to the context of UIL though restricted to 6-8 in number per UIL

US5537618: Method and apparatus for implementing user feedback

The United States of America

The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person or persons having title to this patent the right to exclude others from making, using or selling the invention throughout the United States of America for the term of seventeen years from the date of this patent, subject to the payment of maintenance fees as provided by law.

Bruce Lehman

Commissioner of Patents and Trademarks

Sandra L Morton

Attest

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Vucenic; Wayne , Cupertino, CA
Stallings; John P. , Campbell, CA

Applicant(s): **DiaCom Technologies, Inc.**, Seattle, WA

Issued/Filed Dates: **July 16, 1996** / Dec. 22, 1994

Application Number: **US1994000362801**

IPC Class: **G06F 3/14;** G06F 17/60;

ECLA Code: **G09B5/06C; G09B7/04;**

Class: **Current: 345/326;** 345/348; 434/118;
Original: 395/161; 395/155; 395/159; 395/153; 434/118;

Field of Search: **395/161,155,600,140,156,159,153 434/118,322,323,350**

A method and apparatus for implementing user feedback. A user may activate an enter feedback mode command in a computer environment to provide feedback in a feedback interface. A feedback record is created and the user's context within a product, process, service, or issue to which the feedback refers is recorded in the feedback record. Attribute icons that the user may select to identify the nature of the feedback are displayed in the feedback interface. Selected attributes, the time at which the feedback is made, the physical location and identity of the user, and comments by the user are recorded in the feedback record. A feedback visualizer for a reviewer for organizing and presenting user feedback receives feedback from users, the feedback being were collected and stored in a database. The visualizer identifies a reviewer's visualization preferences, which include indications of feedback attributes that the reviewer desires to review. Collected feedback records are then filtered in accordance with the visualization preferences to create a combined set of records that include the records having the preferred attributes. The visualizer graphically displays an indication of the number of records in the combined set. A reviewer can change his visualization preferences, and the feedback records are refiltered and displayed in accordance with the changed preferences. The reviewer can also select a specific feedback record to display message content stored in the record and respond to the feedback.

74 claims—1st claim
What is claimed is:

1. A method for organizing and presenting user feedback, where the feedback includes a portrayal of a user comment about the user's experiences within a user's context within a product, process, or service, and wherein the feedback is to be evaluated by a reviewer who is interested in user feedback, the feedback being arranged into a multiplicity of independent feedback records, each feedback record being independent from the product, process, or service and being arranged to contain information indicative of the user's context within a product, process, or service and a plurality of predefined attribute identifiers that identify the nature of the feedback provided, wherein the attribute identifiers are arranged into a plurality of predefined attribute categories, each category organizing a plurality of the attribute identifiers into a related group to readily describe and categorize the feedback entered by the user, such that a plurality of said attribute identifiers are arranged as different options for the user within each category, and wherein just one attribute identifier in each category is stored in each of the multiplicity of feedback records to describe the user's experiences as related to the particular category of feedback in which that one attribute is included, the method comprising the steps of:

- identifying the reviewer's visualization preferences, wherein the visualization preferences include indications of the predefined attribute identifiers that the reviewer desires to review, wherein all of the attribute identifiers in each of the associated attribute categories are displayed to allow the reviewer to indicate at least some of said preferences;
- filtering the feedback records in accordance with the visualization preferences to create a combined set of records that includes each of the feedback records having predefined attribute identifiers in accordance with the visualization preferences; and
- displaying an indication of the number of feedback records in the combined set so as to present the reviewer with a distribution of the feedback records having desired attribute identifiers within the displayed categories that may be readily ascertained and analyzed by the reviewer with respect to each category.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to a system that facilitates the collection, organization, and visualization of user feedback. In one described implementation a system for permitting users of computer software to make feedback as to the content of the software while the software is in use is described.
2. Background of the Related Art

Organizational learning systems are incorporated in such organizations as schools, which teach students a curriculum, and businesses, which teach employees skills. An organizational learning system typically includes at least two basic roles: a learner and a teacher. The learner wishes to learn new concepts, procedures, or other information. The teacher ideally wishes to present the information to the learner in a way that best meets a learner's individual learning needs. However, it often occurs that the learner "stutters" in the learning process or "flow": the learner comes upon a concept, instructions, or information that he or she does not understand, either partially or completely. It is in the teacher's interest to know which information the learner had trouble understanding, if the learner had trouble due to the presentation method or style, and how the presented information can be improved to facilitate learning. Once the teacher has obtained and understood these aspects of the taught information, the teacher can change and improve the presentation of the information to more fully meet the learners' learning needs and facilitate the learning process. A critical resource for the teacher to discover how to improve taught information and the learning organization is learner "feedback", which is the information, comments, suggestions, and questions sent from the learners to the teacher about the taught information.

The most essential feature of any self-regulating, self-correcting, or self-optimizing system is feedback. Without feedback, the system is stagnant: learners or users will continue to have problems learning or interfacing within the system, and have no way to voice those problems to effect improvements. Learners know which parts of taught information gave them the most trouble or could best be improved, and it is essential in the system's implementation to capture and analyze their feedback. It is critical that the learning system gathers feedback and presents the feedback to people who can improve the learning system so that the system may continually improve.

For example, a business organization must continually improve and refine its products and internal processes to remain competitive. A business' ability to optimize its products and services is directly related to how well it can "learn" from its customers' experiences of those products and services through customer feedback. Feedback is also necessary for internal departments and processes within a business. The more effectively that employees can learn a new procedure or suggest improvements to, for example, manufacturing processes, the better will the business perform competitively.

Feedback is just as necessary in education. A student may often reach a point in course material where he or she does not understand the concepts being taught. If the student can indicate to the teacher where the difficult material is, the teacher can be more aware of difficult concepts and can improve the course. Or, the student might eventually struggle to understand a concept and have his or her own suggestions of how to better present the material. If these learning needs of the learner are not addressed using feedback, the learner may become used to skipping over difficult concepts, ignoring their own questions about the concepts since those questions are not answered within the system. If the learner can provide feedback about a course, the course can be improved and the outcome is better learners.

Feedback is also very necessary in other environments besides learning environments. For example, a testing environment in which a product or service, such as software, is being tested for operability, reliability, ease of use, etc., can implement user feedback. Product users and testers can send feedback about products or services which can greatly aid developers in testing and developing those products and services. Similarly, any product, process, service, or issue experienced by users can be improved through the collection and analysis of feedback.

In the past, the need to collect feedback from learners and other types of users has been recognized by organizations. Typically, however, feedback-gathering systems have been inefficient at best. One of the most prevalent problems in prior feedback-gathering systems is motivating users to supply accurate and worthwhile feedback. There are several reasons why users typically resist feedback. One reason is that users complain that giving feedback takes too much time and is too distracting. Conventional feedback-gathering methods typically take the form of supplying the user a questionnaire or similar response opportunity after at least a large portion of the material being taught has been presented or after a service has been experienced. For feedback to be given in any amount of detail, relatively lengthy questionnaires are required which can take a great a deal of time to complete. In addition, since such questionnaires are typically filled out long after any problems were experienced, it may be difficult for the user to remember the details of a problem or suggestion. For example, it may be difficult for a learner to remember all the details of course materials and in which areas he or she had trouble and/or suggestions.

Another reason users typically are not motivated to supply feedback is that they know what is wrong or what needs to be changed, but they don't know enough about the entire situation or concept to explain the problem. That is, a user often does not know or cannot explain the context of the problem or suggestion that is necessary to "place" the feedback in the mind of the recipient. The step of describing the context of a user's problem can therefore take a lot of time and potentially cause misunderstandings between the reviewer or provider and the user.

Other reasons why users are not motivated to supply feedback are that users often do not know whom to give the feedback to and are reluctant to provide critical and useful feedback for fear of possible reprisals. The user may want only certain reviewers to receive his or her feedback, but typically has no control over the visibility of the feedback to reviewers. Also, in many cases, a user may believe that the reviewer does not really want to hear the feedback. A user may believe that nothing will result from their feedback--i.e. that there is little reason to voice their opinion, since they cannot change anything. If users are not motivated to provide feedback, they may start to neglect their own questions and become used to ignoring questions or suggestions they may have about a course subject, product, issue, etc. The user may become accustomed to accepting a product or service with which they are dissatisfied without trying to add their own input about how to improve the product or service.

The prior art feedback systems not only have problems in gathering feedback, they also generally fail to provide an efficient and functional way to organize and present feedback to a teacher, supervisor, or reviewer. Once the gathering of feedback has been accomplished, the reviewer must somehow organize that feedback into logical and relevant categories. This can be quite a problem when a large number of feedback items are collected. Once the feedback is organized, the reviewer must determine a method to present the feedback in a way that will show significant patterns within the feedback and help the reviewer to draw conclusions from the feedback. Since the organization and presentation of feedback can involve substantial amounts of time and effort for the people involved, an organization may have no specific method to view feedback and may just examine a few responses to determine what an "average" user is "complaining about." This method does not consider the individual user and his or her learning needs or other needs. Or, an organization may organize feedback into specific categories, each category having a simple percentage indicating how many learners provided a specific response. Such a system does not allow a reviewer to view feedback in more than a few simple patterns which may not be the most effective way to draw conclusions from feedback. In addition, an individual teacher may want to view a particular subset of the total collected feedback in a way specific to his or her own course material or personal duties. When a system does not provide for presenting feedback to an individual reviewer's needs, the time and effort required to organize and view feedback in relevant ways can in itself be a deterrent to taking steps to improve the learning system.

In view of the described drawbacks of existing feedback systems, what is needed is a feedback system that minimizes the effort and time required of individual users to enter feedback and provides motivation for the users to supply the feedback. The system would provide easy, quick feedback opportunities as the user is learning or using the provided product or service. What is also needed is a feedback system that organizes and presents collected feedback to reviewers quickly and in a form relevant to the reviewer's needs so that the reviewer may easily draw conclusions about aspects of the product or service provided to the user which require improvement.

SUMMARY OF INVENTION

The present invention addresses the problems in the prior art by providing a method and apparatus for implementing user feedback. A feedback interface of the present invention quickly and easily collects feedback from a user. A feedback viewing interface of the present invention receives feedback data from one or more users and presents the feedback data to a reviewer according to specific preferences of the reviewer. The feedback system of the present invention collects feedback from users and presents feedback to reviewers in forms capable of promoting improvement in systems incorporating these roles.

A preferred method and apparatus of the present invention acquires user feedback from a user relating to the user's experiences in a specified context or location. The feedback includes a portrayal of a user comment about the user's experiences at the user's context or location, and a reviewer who is interested in user feedback will typically evaluate the feedback. An enter feedback mode command may be activated by the user to provide feedback. When an enter feedback mode command is received, such as selecting a feedback icon in a graphical user interface, a feedback record is made. The location or context of the user in a product, process, service, physical location, issue, etc. referred to by the feedback is recorded in the feedback record. A multiplicity of attribute indicia are displayed that the user may select to quickly and simply identify the nature of the feedback and minimize the user's time and effort. The attributes selected by the user are recorded in the feedback record. In various preferred embodiments, the method may also include the step of recording in the feedback record the time at which the feedback is made, an indication of the physical location of the user, an identification of the user, and/or comments made by the user. Preferably, a feedback dialog box is displayed having attribute icons that serve as the attribute indicia and a feedback message box arranged to receive comment inputs from the user. The user can input the feedback while using a wide variety of devices and environments, including application programs, educational software, a manual, or test software. The feedback dialog box also preferably includes a list of prompted feedback items which are feedback items that have been entered by other users and/or have been entered many times. The list allows a user to quickly review and select a feedback item if it matches his or her own feedback and thus reinforce the importance of that feedback item to users of the feedback system.

A method and apparatus for organizing and presenting user feedback to a reviewer is also described. The feedback has been preferably arranged into a multiplicity of feedback records, each record being arranged to contain feedback information referring to the user's location or context within a product, process or service, or issue and a plurality of attribute identifiers that identify the nature of the feedback provided. The method includes the step of identifying a reviewer's visualization preferences that include indications of the attribute identifiers that the reviewer desires to review. The feedback records are then filtered in accordance with the visualization preferences to create a combined set of records that include each of the records having attributes in accordance with the preferences. The method further includes displaying an indication of the number of records in the combined set that include the indicated attribute identifiers. In preferred embodiments, the method also includes the steps of receiving an indication of a change in the reviewer's visualization preferences, refiltering the feedback records in accordance with the changed visualization preferences, and displaying an indication of the number of records in the refiltered combined set. The attribute identifiers are preferably displayed in bar chart form or pie chart form, and are preferably arranged into attribute categories, wherein just one attribute identifier in each attribute category may be stored in the feedback record. The bar graphs may be selected or deselected to add or subtract, respectively, records that include that particular attribute from the combined set of presented feedback records. The visualization preferences include an indication of a time range of interest to the reviewer and an indication of the context of the user in a product, process, or service that is of interest to the reviewer. The reviewer can also preferably select a specific feedback record to display a message content stored in the selected feedback record and directly respond to the feedback.

A method and apparatus for implementing a feedback system including at least one user and at least one reviewer in a computer environment is also described. The method includes the step of collecting a feedback item from a user while the user is using a software program on a first computer system, where the feedback item includes a context or location of the user within a product, process, or service. The feedback item is then provided to a reviewer on a second computer system and presented to the reviewer according to preferences of the reviewer. The first computer and the second computer are preferably connected in a computer network. A feedback interface is preferably displayed to the user on the first computer system, and at least one attribute is preferably provided which the user can assign to the feedback item. The feedback item is stored in a feedback record, which also preferably stores the time and physical location of the user and an inputted message from the user. The feedback record is preferably stored on a database with other feedback records, which are read from the database and presented to the reviewer by displaying a viewing interface on the second computer system. The viewing interface preferably displays bar charts which each indicate the number of feedback items having a particular attribute. A message content of feedback items can also be displayed when the reviewer selects particular feedback items. The reviewer can preferably select a subset of feedback items which are presented in the viewing interface, and can select to display only a set of feedback items having a particular attribute, user location, context, and/or time of creation.

The present invention collects user feedback from individual users in a quick, functional, and versatile manner. The users can enter feedback with minimal distraction, effort or time and can quickly specify the intended meaning, the precise context, and the desired response for the feedback. Users thus have direct motivation for entering feedback. Since users are able to provide feedback quickly and conveniently, a learner or other user can become more used to questioning problems and suggesting solutions. A learner, for example, thus becomes more internally aware of his or her meaning needs, and the outcome is better learners that will follow through with their own questions rather than ignoring those questions.

The present invention also has the advantage of organizing and presenting user feedback to reviewers who desire to view feedback to improve a provided process, product or service and/or help the users of the system, product, process or service. The feedback visualizer of the present invention presents overall patterns in received user feedback and also presents specific feedback message content from individual users. The reviewer can select to view different attributes and properties of the feedback as required by the reviewer's needs. With the ability to view feedback quickly, conveniently, and flexibly, a reviewer can more easily draw conclusions from the feedback and implement improvements to the provided process, product or service.

These and other advantages of the present invention will become apparent to those skilled in the art after reading the following descriptions and studying the various figures of the drawings.

US5566291: Method and apparatus for implementing user feedback

The United States of America

The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person or persons having title to this patent the right to exclude others from making, using or selling the invention throughout the United States of America for the term of seventeen years from the date of this patent, subject to the payment of maintenance fees as provided by law.

Bruce Lehman

Commissioner of Patents and Trademarks

Sandra Z Morton

Attest

Inventor(s): **Boulton; David A.** , Apros, CA
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Stallings; John P. , Campbell, CA

Applicant(s): **Diacom Technologies, Inc.**, Scotts Valley, CA
News, Profiles, Stocks and More about this company

Issued/Filed Dates: **Oct. 15, 1996** / June 6, 1995

Application Number: **US1995000466463**

IPC Class: **G06F 3/14;**

Class: **Current: 345/326;** 345/348; 434/118;
Original: 395/161; 395/159; 395/155; 434/118;

Field of Search: **395/161,159,155,156,153,157 434/118,322,323,350**

(note this is the same as US5537618 in summary and differs in its claims as relates to 'collecting feedback')

40 claims - 1st Claim

What is claimed is:
1. A method for acquiring user feedback from a user during operation of a computer environment, wherein the computer environment includes an enter feedback mode command that the user may activate to provide feedback and wherein when an enter feedback mode command is received, the method comprises the steps of:

- creating a feedback record in response to a user activating said enter feedback mode command;
- recording the user's feedback context within a product, process, service, or issue in the feedback record after said enter feedback mode command has been activated, the feedback record being independent of and separate from the product, process, service, or issue;
- displaying a multiplicity of attributes that the user may select to identify the nature of the user feedback and displaying a plurality of attribute categories in which the attributes are arranged, each of the categories organizing a plurality of the attributes into a related group to readily describe and categorize the feedback entered by the user, the attributes being arranged in each category as different options for the user to select within each category; and
- recording the attributes selected by the user and each attribute category in the feedback record after said enter feedback mode command has been activated, wherein just one attribute in each category may be selected by the user and stored in the feedback record to describe the user's experiences as related to the particular category in which the one attribute is included, where the feedback record is available to be evaluated with a plurality of other feedback records by a reviewer who is interested in user feedback so that the reviewer can provide help to the user or improve the product, process, service, or issue, wherein the reviewer's analysis of a pattern and distribution of said feedback records in the categories is facilitated by providing the same categories in each of the feedback records.