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(54) **Title**: GRAPHICAL USER INTERFACE FOR SEARCH REQUEST MANAGEMENT

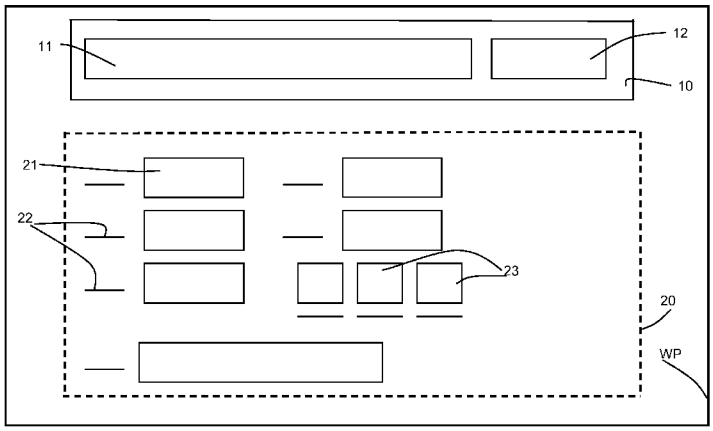


Fig. 1

(57) **Abstract**: The invention relates to a computer apparatus for generating a graphical user interface on a display screen, the graphical user interface having: - a first command interface area for inputting and displaying cryptic commands for the definition of a search request, - a form-based second command interface area having fields for displaying parameters of the search request, - the computer apparatus further comprising area for coupling the first and the second command interface areas such that the input of cryptic commands with the first command interface area generates a pseudo-simultaneous display of parameters reflecting at least some of the cryptic commands, the means for coupling comprising: • means for parsing the cryptic commands, • program instructions for extracting structured data from the cryptic commands, • means for storing the structured data within JavaScript objects, • program instructions for filling fields of the second command interface area by mapping the structured data.

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GRAPHICAL USER INTERFACE FOR SEARCH REQUEST MANAGEMENT

FIELD OF THE INVENTION

The present invention relates to a computer apparatus, method and computer program product providing a graphical user interface for the management of search requests.

One application is the processing of search and booking requests for various transportation means such as, but not limited to, air or car and for other aspects of a trip such as, but not limited to, hotel accommodations.

BACKGROUND OF THE INVENTION

Travel requests are typically conducted via inputs to a computer device, such as a personal computer, and these inputs are then sent to a search engine of a computerized system such as a Global Distribution System (GDS) for processing purposes. Major GDSs are known under the following trademarks: Amadeus, Sabre, Apollo and Worldspan. The GDSs are capable of replying

with travel solutions matching the user's request. Users typically are travel agents skilled in translating the travel criteria of their clients into a computer request format compatible with the GDS with which they are used to working. The travel agent is required to type GDS-specific commands, known as cryptic commands, on a computer keyboard to dialog with a software application using a command line (i.e. text-based) user interface.

Within the past two decades, more user-friendly, graphical interfaces have been developed. These interfaces offer new possibilities for building search requests to users who have no knowledge of the cryptic formats used by the GDSs. In addition, providing a graphical user interface, or GUI, has now become standard for all software applications developed since at least the beginning of the 1990's on most modern operating systems (OS) including Microsoft Windows, Apple Macintosh OS (registered Trademarks) and all derivatives of UNIX, the time-sharing OS originally conceived at Bell Laboratories. GUI components include images, icons, dialog boxes, etc. on screen windows. The user can control the application by moving a pointer on the screen or using keyboard equivalents and selecting GUI components while pointing at them or by using keyboard equivalents. This interface is in contrast to the command line interface, whereby communication is achieved through an exchange of text strings.

The GUI is often preferred because command line interfaces require that numerous commands be learned and remembered by the user of a software application before she or he can use it efficiently. However, once mastered, command line commands can enable significantly faster interaction with the system. Cryptic commands are indeed often more efficient for very skilled users such as expert travel agents. Today, experienced travel agents use cryptic language commands which are unique to each of the GDSs. Travel agents are generally more comfortable with one cryptic language than another. In a multi-GDS/multi-content travel procurement environment, however, it is essential for these agents to be able to work in other languages as dictated by those sources. Different global distribution systems and travel reservation sources have access to different content and some travel agency clients will require that their travel bookings be reserved in a specific GDS/source in order to obtain

discounts or preferred rates. Therefore, having access to many GDSs/sources is a strong requirement for travel agencies.

Experienced travel agents are quicker and more efficient using a cryptic command line entry than form-based fields in a GUI environment. Commands can take very few keystrokes to obtain results and there is generally no scrolling or clicking required with cryptic commands. If an agent does not know a command, however, cryptic is not as efficient as a GUI because commands are not intuitively obvious and the agent needs to access the help environment to find the GDS command. Inexperienced agents have two options – 1) to learn one or more GDS languages through extensive training, or 2) to use a completely graphical, user-friendly, but less efficient, booking tool. A system is needed that would combine the advantages of both of these options.

The invention proposes a new apparatus, method and computer program which intend to reach this goal. According to the invention a new GUI combines a first command interface area dedicated to cryptic commands and a second command interface area having a form-based design. By combining the two interfaces, the invention provides a new experience to the user who can enter cryptic commands in one command interface area of the UI and dynamically see the effect of his/her input in a friendly manner in a second command interface area. In a preferred embodiment, the user can use either command interface area as an input interface, and thereby select the interface most adapted to his or her needs and skills. The invention is also capable of converting a cryptic request so that it is compatible with any GDS, independent of the original cryptic language format entered by the agent. This means that travel requests can be entered in any GDS cryptic language, converted into the form-based input, and then sent to the search (or travel booking) engine which may request content from, or make the reservation with, any GDS or content source.. As an example, with this functionality, an agency can have 5 different agents (1 Sabre expert, 1 Worldspan expert, 1 Apollo expert, 1 Amadeus expert, and 1 inexperienced agent) all using the same tool and requesting and receiving the same information from whatever content sources have been configured in the rules and administration engine without needing to be retrained on a new GDS language. Another objective of the invention is to

standardize data stream exchanged between the client applications and server. In another preferred embodiment using web applications, the parsing and processing of the travel requests can be handled by logic and code embedded within the form.

Further objects, features and advantages of the invention will become apparent to the ones skilled in the art upon examination of the following description in reference to the accompanying drawings.

SUMMARY OF THE INVENTION

The invention relates to a computer apparatus for generating a graphical user interface on a display screen. The graphical user interface, or GUI, comprises a first command interface area for inputting and displaying cryptic commands for the definition of a search request, and a form-based second command interface area having fields for displaying parameters of the search request.

The computer apparatus further comprises means for coupling the first and the second command interface areas such that the input of cryptic commands in the first command interface area generates a pseudo-simultaneous display of parameters reflecting at least some of the cryptic commands. More precisely, the coupling means may involve the following features:

- means for parsing the cryptic commands,
- program instructions for extracting structured data from the cryptic commands,
- means for storing the structured data within JavaScript objects,
- program instructions for filling fields of the second command interface area by mapping the structured data.

In a preferred embodiment, the second command interface area allows for the input of parameters of the search request and the means for coupling are configured to generate a pseudo-simultaneous display of cryptic commands reflecting at least some of the graphical input parameters.

According to further optional aspects of this apparatus:

- at least the second graphical input command interface area is embedded in a Hyper Text Mark-up Language page,

- it comprises program instructions for generating a visual indication of a parsing status of the cryptic commands,
- the first command interface area comprises means for selecting a code type of cryptic commands and the means for parsing comprise a set of parsers each dedicated to a code type of cryptic commands,
- it comprises means for creating a query in a canonical format on the basis of the structured data and means for converting the query into a search request in a code type of cryptic commands compatible with a remote search engine,
- the graphical user interface is a web page generated by a web application,
- the means for coupling are embedded within the web page.

The invention also concerns a method for generating a graphical user interface on a display screen comprising the steps of:

- in a first area of the display screen, displaying a first command interface for inputting and displaying cryptic commands for the definition of a search request,
- in a second area of the display screen, displaying a form-based second command interface having fields for displaying parameters of the search request,
- coupling the first and second command interface areas such that the input of cryptic commands in the first command interface area generates a pseudo-simultaneous display of parameters reflecting at least some of the cryptic commands.

Optionally the method may also include any of the features indicated below:

- the step of coupling comprises parsing the cryptic commands,
- the step of coupling comprises extracting structured data from the parsed cryptic commands,
- the step of coupling comprises storing said structured data within JavaScript objects,
- the step of coupling comprises filling fields of the second command interface area by mapping the structured data,

- it comprises the steps of inputting parameters of the search request on the second command interface area and coupling the first and second command interface areas to generate a pseudo-simultaneous display of cryptic commands reflecting at least some of the input parameters,
- it comprises the steps of creating a query in a canonical format on the basis of the structured data and of converting the query into a search request in a code type of cryptic commands compatible with a remote search engine,
- the remote search engine is part of a computerized travel reservation system,
- the search request is transmitted directly to the remote search engine,
- the search request is communicated to an intermediary engine for application of travel policy rules and then transmitted to the remote search engine,
- the cryptic commands input on the first command interface area are of a first code type which is not compatible with the remote search engine,
- the steps of returning travel solutions to the graphical user interface in reply to the search request and displaying the travel solutions with fields codes of the first code type,
- it comprises the steps of returning travel solutions to the graphical user interface in reply to the search request and simultaneously displaying the travel solutions and at least one of the first and second interfaces for the input of follow up commands,
- it comprises the step of defining a bypass code and the step of sending the cryptic commands to a remote search engine without the step of extracting structured data each time the bypass code is detected during the step of parsing the cryptic commands.

A third aspect of the invention is a computer program product comprising computer executable instructions for causing a computer to operate the method of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic illustration of a GUI as displayed according to the invention.

Figures 2, 3 and 4 are diagrams describing some aspects of the invention.

Figure 5 provides an example of relationships between a computer apparatus and other components of a reservation system.

Figures 6 to 26 illustrate examples of GUI generated according to the invention.

DETAILED DESCRIPTION

The following detailed description refers to the accompanying drawings. While the description includes exemplary embodiments, other embodiments are possible, and changes may be made to the embodiments described without departing from the spirit and scope of the invention.

The apparatus of the invention can be implemented within a conventional personal computer, the later comprising a display screen, input means such as a keyboard and a pointer like a mouse, and communication means. Communication means typically include hardware for transmission over a network and software components such as a browser (e.g. Netscape ®, Internet Explorer ® or the like).

A GUI is provided for building requests such as requests for travel products, for availability, for booking travel products etc. The requests are then handled by a remote system typically a search engine of a server part of one GDS.

To generate GUI on the display screen, the invention may operate as a web application supported by a web browser like the ones previously cited and produce web pages embedding the required logic and code.

An example of web page WP is depicted in figure 1 in a purely schematic fashion. It comprises a first region corresponding to a first command interface area 10. The first command interface area is for the input of cryptic commands and operates as a command line interface. It comprises a text entry zone 11 for the user's input. It may also include a button 12 (or any adapted GUI component) for selecting the code type of the cryptic commands the operator wishes to use. This renders the invention fully flexible and adaptable to any code type.

The web page WP also comprises a second command interface 20 which is advantageously a HTML (for Hyper Text Mark up Language) form. Any GUI component helpful for building the request can be incorporated in this section. In figure 1, text entry zones 21 corresponding to fields are depicted. Field names 22 are located near the Text entry zones 21. Checkboxes 23 are also depicted with their corresponding description.

Examples of fields are Departure and Arrival dates, Origin and Destination airports, number and names of the travellers, connections, booking class…

Optionally the second interface 20 comprises a plurality of tabs to present the various fields in various form portions in a differentiated manner according to the type of data. A first tab may be assigned to Air travel, another to Hotel and so forth.

In a first aspect of the invention, the input of commands by the first interface 10 dynamically affects the display of the second interface 20. The reverse function is also possible as depicted in figure 2. As the user is typing the text in the text entry zone 11, the text is parsed on every key up event. The means for parsing are advantageously JavaScript-based like the rest of the logic used for the coupling means. The invention may be used to interact with a plurality of GDSs and the parsing means are designed accordingly in that case. A single monolithic parser can be utilized or individual parsers (depending on the code type of the cryptic commands) forming a set of parsers. Typically parsers will be implemented per GDS. The parsing of the commands is preferably context sensitive to not only the GDS selected, but also the previous commands and the current context of the page. If the previous command entered and sent to server was an air availability command (e.g. AD12OCTBOSORD8A) a follow up air availability command may be used (e.g. ACR15OCT). The parser will use the previous context of the search to pre-fill the HTML form for air availability. Then only the modified fields of the follow up command will be used. The same principle of context sensitivity applies to “short sell” commands. It is possible to send the cryptic command for short selling a flight on the flight availability page. On other pages, the short sell command for air is not relevant, and therefore will be ignored by the parser(s).

Referring now to figure 3, the cryptic commands are also processed to extract structured data. The parsing means may comprise program instructions in this perspective. The structured data extracted by the parser from the command is stored within a JavaScript object. While the parsers are typically very different for different GDSs, the objects representing the commands (e.g. air availability object, hotel availability object) are typically shared between GDSs. That is to say, the object used to store the information from the parsing of a first GDS air availability is the same, or derived from the same base object, as the object used to store the information from the parsing of an air availability command of another GDS. This allows the input of the command in the format of one GDS for eventual submission on any other GDS or non-GDS system.

The objects store several different types of data. The primary functionality is to store the structured data (e.g. dates, times, origin city, etc.) parsed from the cryptic command in a normalized format. In addition, the objects store the raw text input, the tokenized results of the parsing, the GDS assumed for the parsing, any errors encountered during parsing, and other relevant information.

After the parsing and the storing of the information, JavaScript is used to dynamically show the user feedback about the parsing of the commands. The GUI is used to provide a visual indication of the status of the parsing. HTML indicating which parts of the commands were parsed, and which parts of the commands were not parsed is shown to the user. There are several different statuses used internally in the parsing objects that can be conveyed through the user. In addition to a status of success, the following statuses can be conveyed to the user through mouse-over, text styles, and highlighting:

- failure to parse (i.e. the parser did not understand the text),
- too many repetitions (e.g. the user entered four preferred carriers and the form only supports three),
- unsupported (i.e. the parser understands the text, but the HTML form does not support the input or the input) is inappropriate for the web-based environment.

Subsequently, JavaScript is used to update the HTML form fields with the structured data from the data objects. The information updated in the form includes the relevant structured information (e.g. dates, times) as well as hidden

information used by the system (e.g. a JSON representation of the parsed cryptic objects.). JSON (short for JavaScript Object Notation) is a lightweight computer data interchange format. It is a text-based, human-readable format for representing simple data structures and associative arrays called objects.

To allow for both cryptic and form based input, HTML forms allowing the types commands sent to the GDS must be available. Typically, this means that on any page that has a cryptic input text box, there will also be forms for air search, car search, hotel search, PNR search, profile search, etc. In addition, the parser will also utilize the forms used for the selection of flights and other "short sell" entries. This form-based input is used for most commands except for the cryptic bypass. The cryptic bypass is discussed as a special case below.

When the user is done entering the cryptic command, it is possible to modify the data sent to the server by modifying the HTML form. Alternatively, they can simply submit the form by pressing enter as they would when sending the GDS a command.

For the purposes of the back end, there is no difference whether the information was entered by the agent in cryptic or via the HTML form directly since the data has been normalized by the parsers. This abstracts the agent's preference for entering in cryptic (or not) from the abilities of the system. Typically, it has been possible to provide more robust features when using a web application with structured HTML inputs as opposed to entering cryptic directly on the GDS.

Returning to figure 3, the data extracted as described before are used to create a canonical query, the canonical data model being a design pattern used to communicate between different formats. Instead of writing translators between each format of cryptic commands, it is sufficient to write a unique converter between the canonical format and each format of cryptic command codes.

Figure 4 illustrates that the canonical query is converted in the code type format compatible with the remote system which will process the request. The request is then sent to the GDS or any other device capable of handling with the request.

Figure 2 more precisely shows that the two interfaces may be used to enter the information required for constructing the search request. The data being formatted as structured data, the two sources of user input are combined and the user benefits from the advantages of the two types of interface.

The present description mainly focuses on the case where data input is made by means of the first interface and where the data are further processed to populate the second interface. However the input may also be made with the second interface and the first interface is populated using a data conversion in the reversed direction but using a similar processing.

Turning now to figure 5, the relationships between the computer apparatus and the rest of the system is depicted. In a first embodiment the request 2a is directly sent to the GDS computer system. In another embodiment 2b/2c, the request is firstly received at an intermediary engine in charge of applying travel management rules and settings to the request. Instead of manually applying policy to requested travel itineraries, the agent uses this rules engine that can apply policy rules and filter results display 3b/3c automatically. Since the invention allows agents to use the same technology, but keep their comfortable and efficient mode of entry via cryptic command, travel agents can benefit from the automatic profile and rules lookup, too. This saves time for the agent, makes the client call more productive, and improves the agent's ability to accurately represent and comply with the company and agency policies.

Figure 5 also shows that a request in the format 1 of GDS 1 may be built and sent on the basis of an original input of cryptic commands in another format (format 2) for which the agent is more skilled. The results can also be presented on the display screen with indications given using the format 2.

There are some cases where it is advantageous to send commands directly to the GDS and receive text responses instead of parsing the commands and filling in an HTML form. These cases are handled by the invention as a cryptic bypass. The parsers for the GDS are configured with a command or commands that should be passed directly to the GDS. Additionally, the parsers are configured with commands (bypass code) that should pass directly to the GDS and put the parser in bypass mode. Once in bypass mode, the parser will send all commands (or a configurable, but different subset of commands) through the

bypass until the bypass is terminated with a configurable command or commands. Commands that are sent through the bypass mode are done using an AJAX call to the server. The server passes the commands to the GDS and returns the text response. This text response is received by the browser and displayed in a text area for the agent.

Figures 6 through 26 show examples of GUI generated with the apparatus and according to the method of the invention.

Figure 6 depicts a web page displayed by a browser for initiating a travel request. In addition to various peripheral information, the window includes a "quick start" region with the two interfaces described before. The user first selects the name of the code type he wants to work with among choices defined by the name of the corresponding GDS. A default code type is preferably defined. The user can now input cryptic commands in the text entry region.

This is illustrated in figure 7 in which the typing in the command line is dynamically translated and displayed in the region located under the first interface and corresponding to the form-based interface. The fields of this portion are automatically filled.

Helping tools are proposed to the agent and a particular one is depicted in figure 8 where visual indications about the status of the cryptic commands are given. Indeed the parsing step produces a display about the parsing status notably by assigning a color to the command strings, a color code being predetermined to reflect a particular status. Figures 9 and 10 further represent this feature with the following color codes: green for commands successfully parsed, red for commands that cannot be parsed and grey for commands entered in an invalid format.

Figures 11 to 13 provide with examples of GUI obtained as results are displayed. According to the embodiment of figure 11, the results are presented in a list located under the two command interfaces. Alternatively the window of figure 12 only displays the first command interface and the list of results. In the later list, codes can be used to describe the fields of each travel solution and they are advantageously in the format used for typing the request.

In figure 13, further commands on the first interface can be used for selecting a travel solution, refining the request etc. If a travel solution is

selected, a window like the one of figure 14 is displayed for further steps of the reservation such that entering a request for finding a return flight. Return solutions are then suggested on a further window like in figure 15.

Turning now to figures 16 through 21, steps for booking an accommodation are exemplified. The Hotel tab of the second command interface is selected with the mouse or any other pointer or the tab is automatically displayed as the user types the appropriate command in the first command interface (see figure 16). In a way similar to the flight request explained above, the user inputs the criteria of the hotel request either via the command line or via the form proposed in the second command interface. This corresponds to figure 17 to 19. Upon validation of the request, the computer apparatus waits for the reply of the remote system and finally obtains the results presented in a further window like in figure 20. Again at least one of the command interfaces remains available for further entry like a selection command depicted in figure 21.

A bypass mode enables the agent to use an alternative operating mode for cases not supported by the previously described interfaces. Upon typing a bypass command in the first command interface, a dedicated tab is open in lieu of the form-based interface as illustrated in figure 22. Further inputs can be done by the agent with a display in this tab as given in the examples of figures 23 and 24. A quit command in figure 25 closes the tab which is replaced by the original GUI window of figure 26.

Although consisting of preferred embodiments, the examples illustrated by the various figures do not intend to limit the scope of the invention.

The term of travel agent used within the description is only given as an example of potential user. Also reservations of flights and hotel rooms are purely indicative.

CLAIMS

1. A computer apparatus for generating a graphical user interface on a display screen, the graphical user interface having:

- a first command interface area for inputting and displaying cryptic commands for the definition of a search request,
- a form-based second command interface area having fields for displaying parameters of the search request,
- the computer apparatus further comprising area for coupling the first and the second command interface areas such that the input of cryptic commands with the first command interface area generates a pseudo-simultaneous display of parameters reflecting at least some of the cryptic commands, the means for coupling comprising:
  - means for parsing the cryptic commands,
  - program instructions for extracting structured data from the cryptic commands,
  - means for storing the structured data within JavaScript objects,
  - program instructions for filling fields of the second command interface area by mapping the structured data.

2. Computer apparatus according to claim 1 wherein the second command interface area is configured to allow for the input of parameters of the search request and the means for coupling are configured to generate a pseudo-simultaneous display of cryptic commands reflecting at least some of the input parameters.

3. Computer apparatus according to claim 1 or 2 wherein at least the second command interface area is embedded in a Hyper Text Mark-up Language page.

4. Computer apparatus according to any of the preceding claims comprising program instructions for generating a visual indication of a parsing status of the cryptic commands.

5. Computer apparatus according to any of the preceding claims wherein the first command interface area comprises means for selecting a code type of cryptic commands and the means for parsing comprise a set of parsers each dedicated to a code type of cryptic commands.

6. Computer apparatus according to any of the preceding claims comprising means for creating a query in a canonical format on the basis of the structured data and means for converting the query into a search request in a code type of cryptic commands compatible with a remote search engine.

7. Computer apparatus according to any of the preceding claims wherein the graphical user interface is a web page generated by a web application.

8. Computer apparatus according to claim 7 wherein the means for coupling are embedded within the web page.

9. A method for generating a graphical user interface on a display screen comprising the steps of:

- in a first area of the display screen, displaying a first command interface for inputting and displaying cryptic commands for the definition of a search request,
- in a second area of the display screen, displaying a form-based second command interface having fields for displaying parameters of the search request,
- coupling the first and second command interfaces such that the input of cryptic commands with the first command interface generates a pseudo-simultaneous display of parameters reflecting at least some of the cryptic commands.

10. Method according to claim 9 wherein the step of coupling comprises parsing the cryptic commands.

11. Method according to claim 10 wherein the step of coupling comprises extracting structured data from the parsed cryptic commands.

12. Method according to claim 11 wherein the step of coupling comprises storing said structured data within JavaScript objects.

13. Method according to claim 10 or 11 wherein the step of coupling comprises filling fields of the second command interface by mapping the structured data.

14. Method according to any of claims 9 to 13 comprising the steps of inputting parameters of the search request on the second command interface and coupling the first and second command interfaces to generate a pseudo-simultaneous display of cryptic commands reflecting at least some of the input parameters.

15. Method according to claim 11 comprising the steps of creating a query in a canonical format on the basis of the structured data and of converting the query into a search request in a code type of cryptic commands compatible with a remote search engine.

16. A computer program product comprising computer executable instructions for causing a computer to operate the method according to any of the claims 9 or 15.

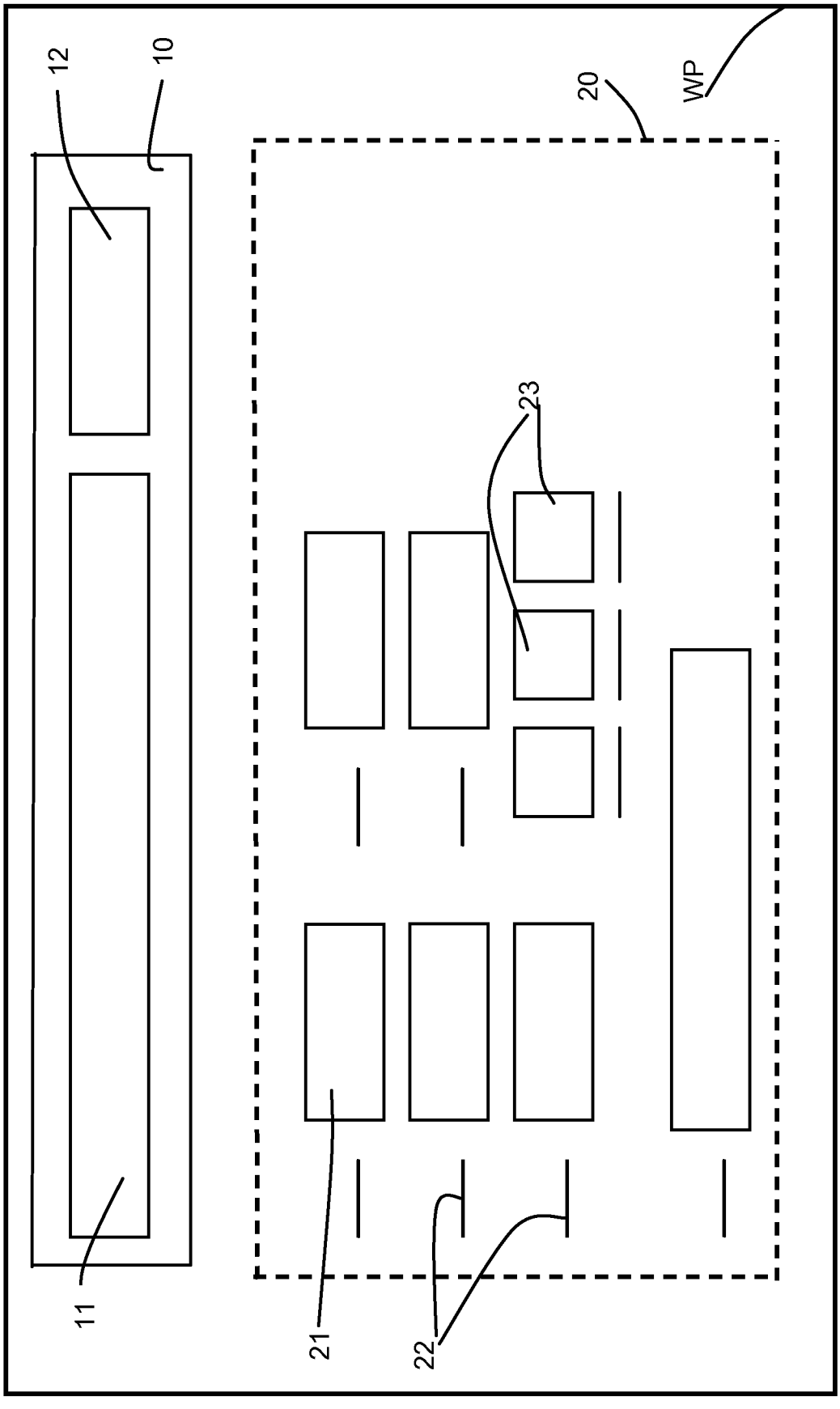


Fig. 1

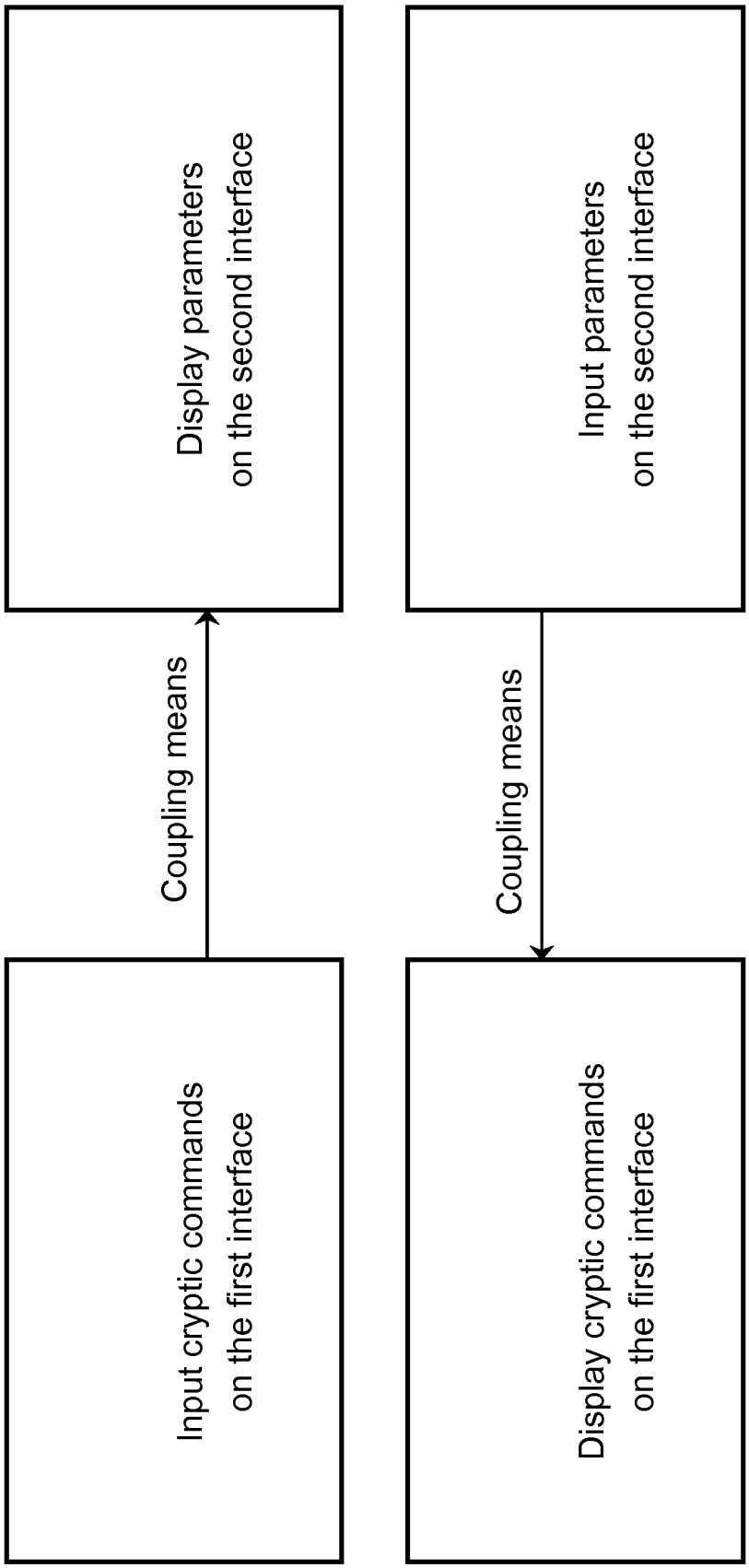

Display parameters on the second interface
Input parameters on the second interface
Coupling means
Coupling means
Input cryptic commands on the first interface
Display cryptic commands on the first interface

Fig. 2

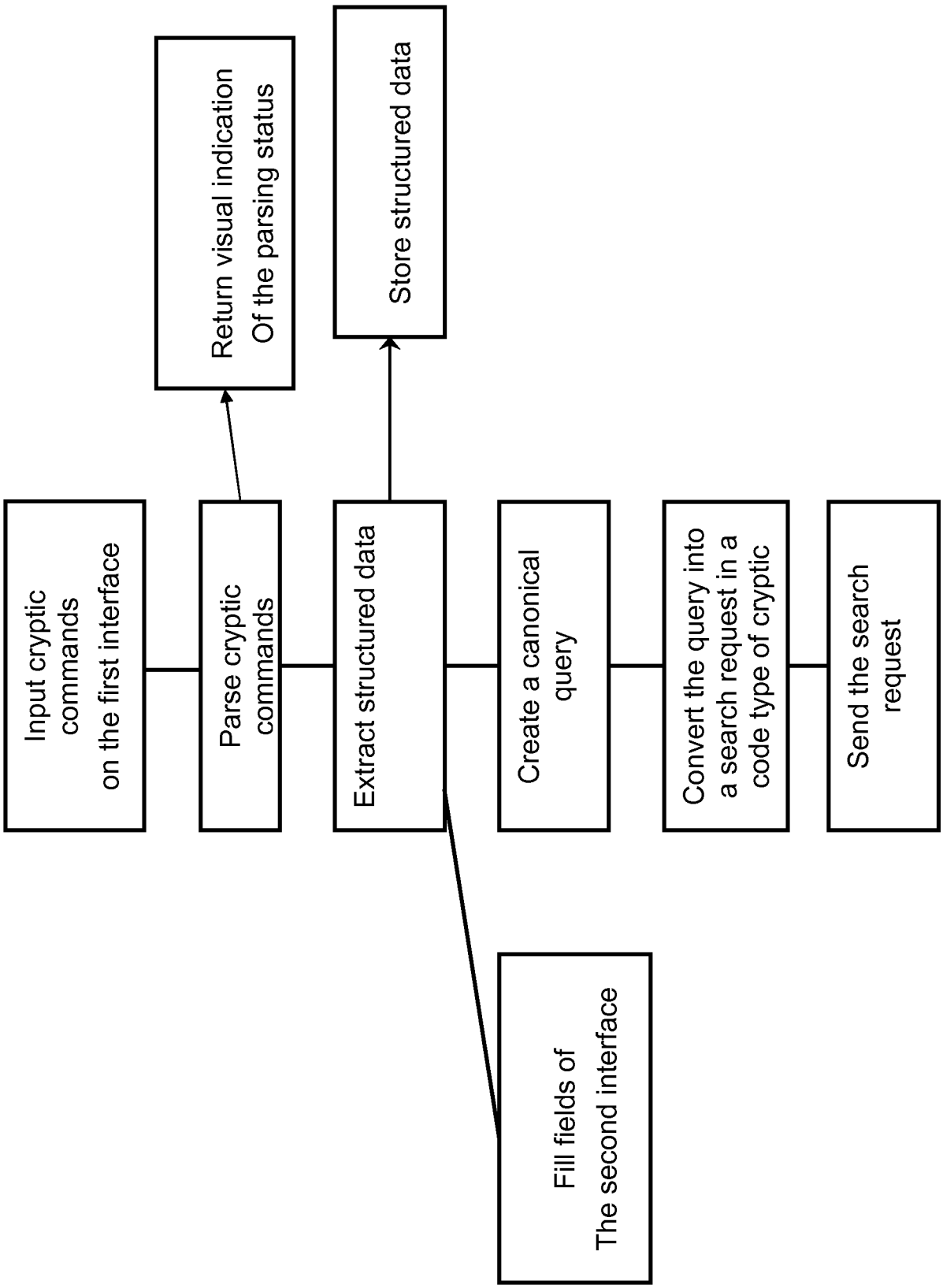

Input cryptic commands on the first interface
Parse cryptic commands
Extract structured data
Create a canonical query
Convert the query into a search request in a code type of cryptic
Send the search request
Return visual indication Of the parsing status
Store structured data
Fill fields of The second interface

Fig. 3

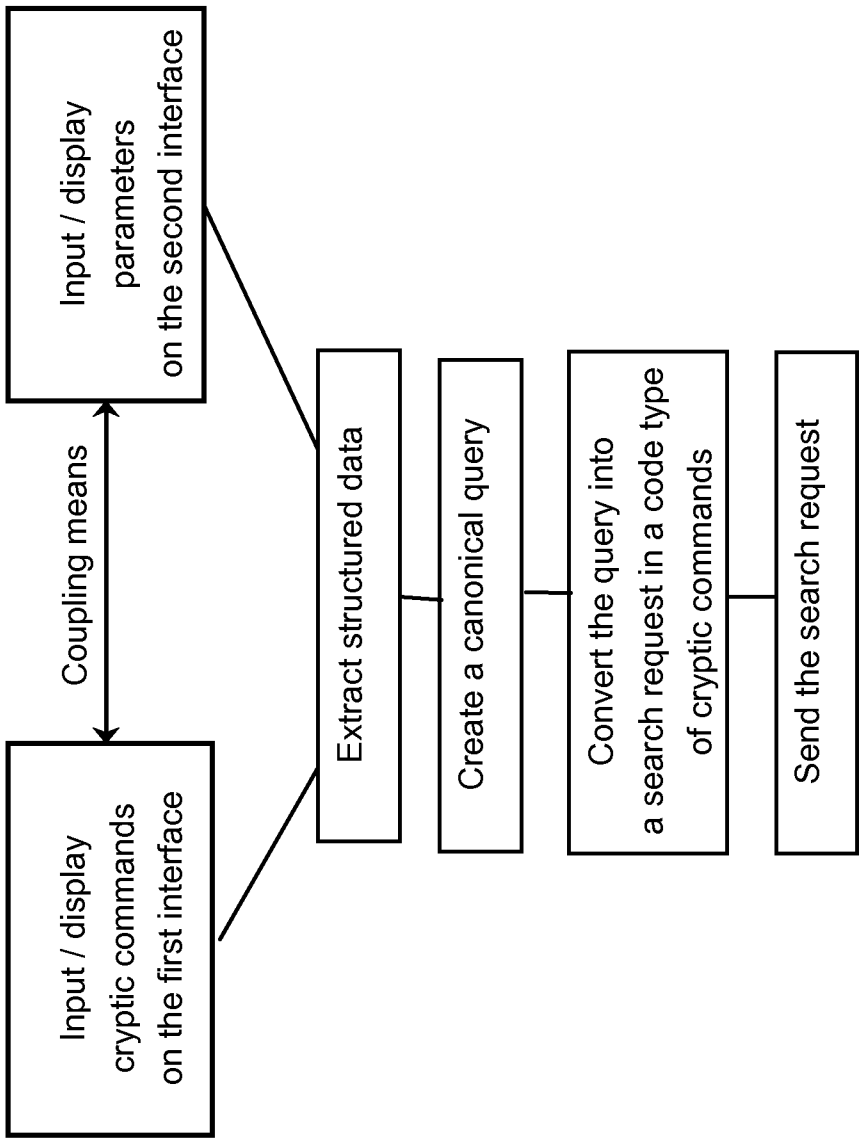

Input / display
parameters
on the second interface
Coupling means
Input / display
cryptic commands
on the first interface
Extract structured data
Create a canonical query
Convert the query into
a search request in a code type
of cryptic commands
Send the search request

Fig. 4

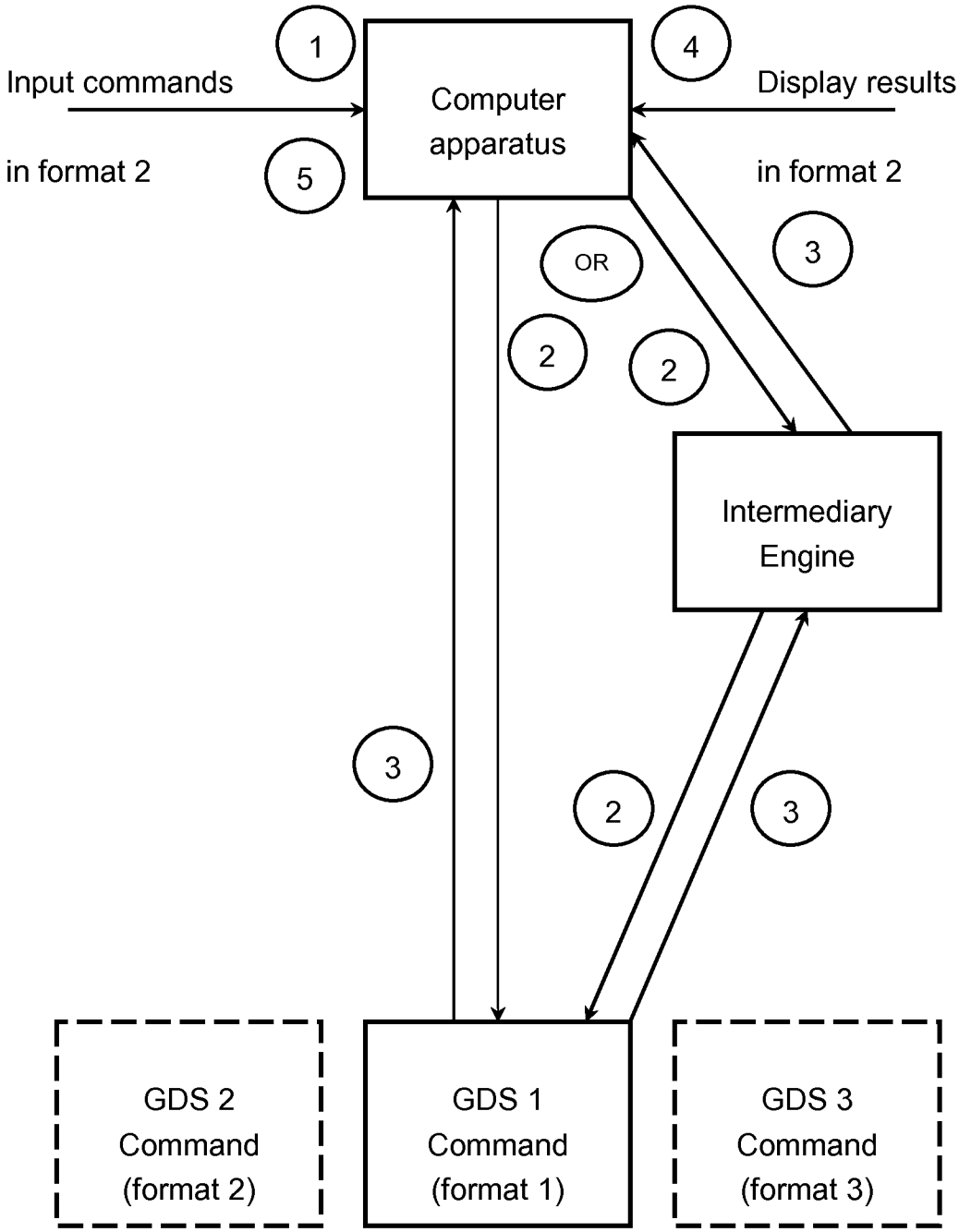

1
Input commands
in format 2
5
Computer apparatus
4
Display results
in format 2
3
OR
2
2
Intermediary Engine
3
2
3
GDS 2 Command (format 2)
GDS 1 Command (format 1)
GDS 3 Command (format 3)

Fig. 5

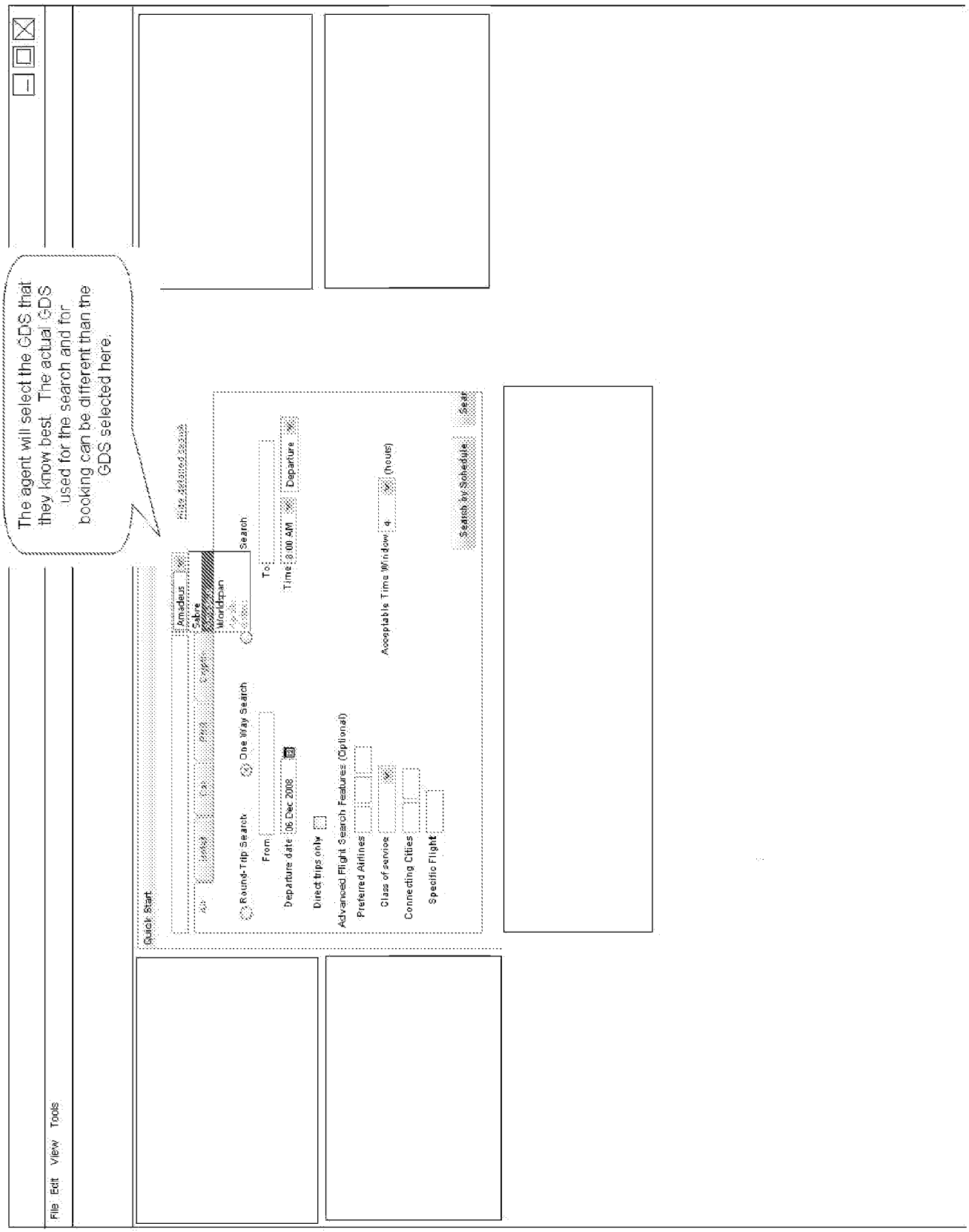

The agent will select the GDS that they know best. The actual GDS used for the search and for booking can be different than the GDS selected here.
File Edit View Tools
Quick Start
Amadeus
Sabre
Worldspan
Search
Round-Trip Search
One Way Search
From
To
Departure date 06 Dec 2008
Time 8:00 AM
Departure
Direct trips only
Advanced Flight Search Features (Optional)
Preferred Airlines
Class of service
Acceptable Time Window: 4
(hours)
Connecting Cities
Specific Flight
Search by Schedule
Sear

FIG.6

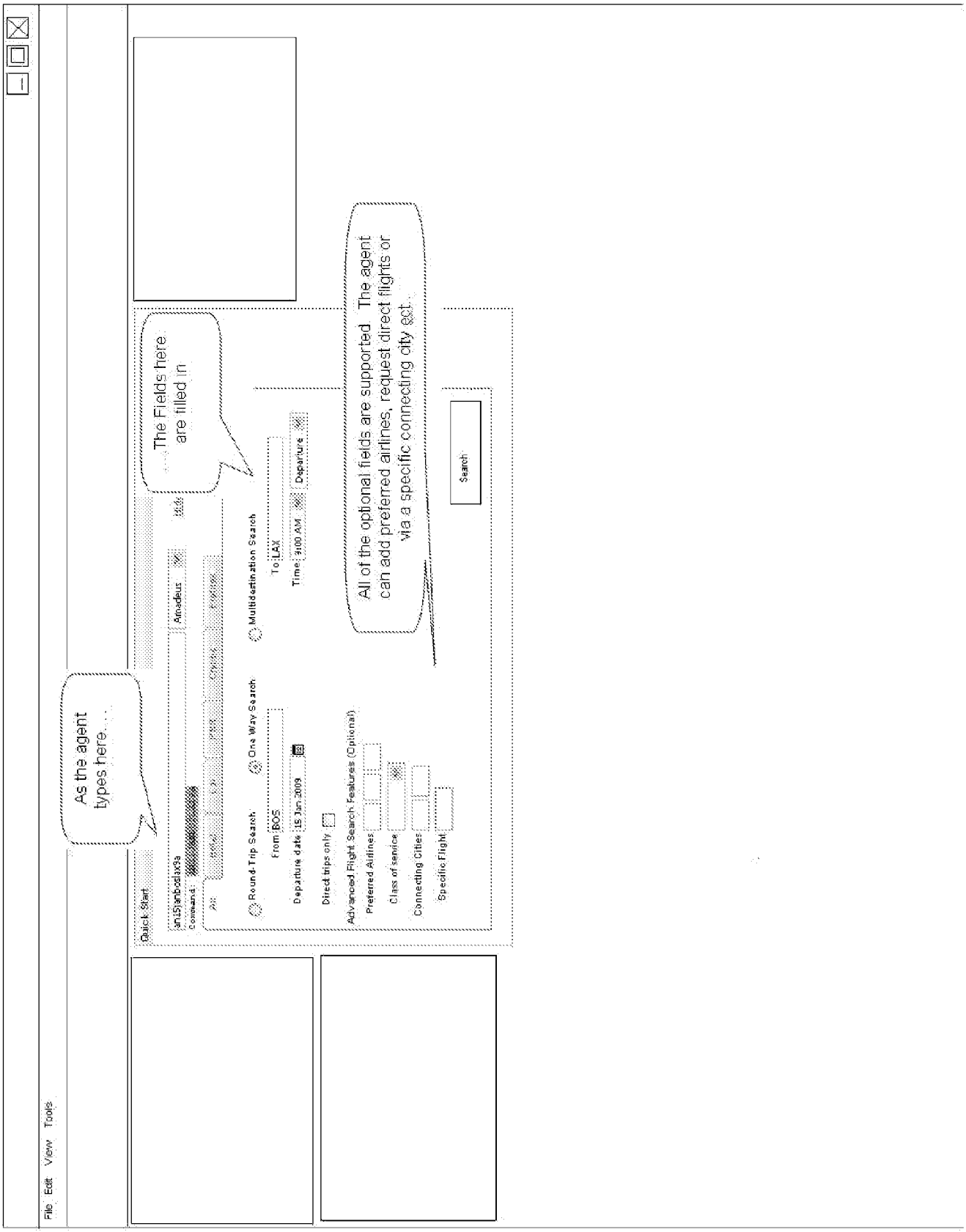

File Edit View Tools
As the agent types here...
Quick Start
Amadeus
Command:
Round-Trip Search
One Way Search
Multidestination Search
From:BOS
To:LAX
Departure date: 15 Jan 2009
Time: 9:00 AM
Departure
Direct trips only
Advanced Flight Search Features (Optional)
Preferred Airlines
Class of service
Connecting Cities
Specific Flight
Search
The Fields here are filled in
All of the optional fields are supported. The agent can add preferred airlines, request direct flights or via a specific connecting city ect.

FIG.7

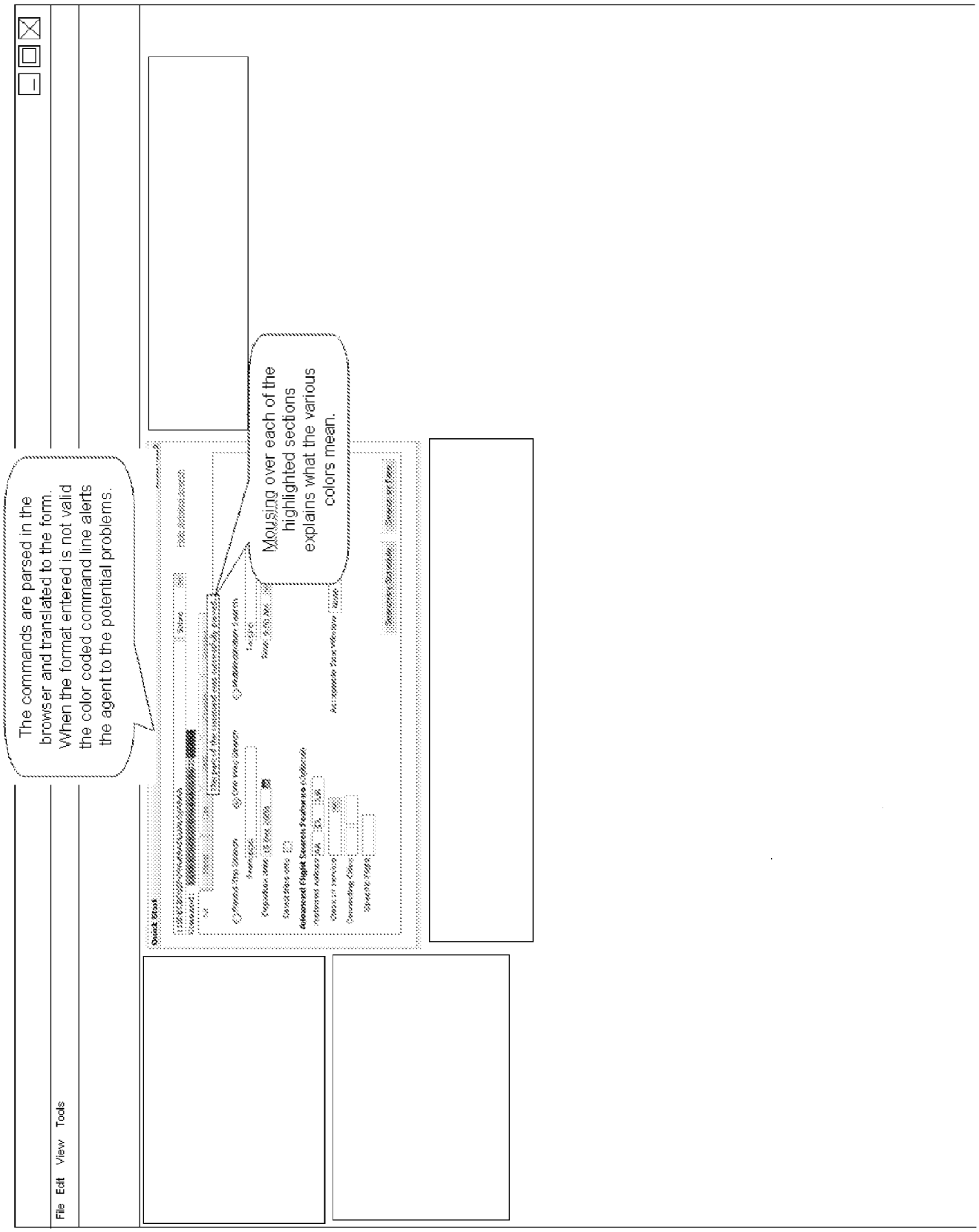

The commands are parsed in the browser and translated to the form. When the format entered is not valid the color coded command line alerts the agent to the potential problems.
Mousing over each of the highlighted sections explains what the various colors mean.
File Edit View Tools

FIG.8

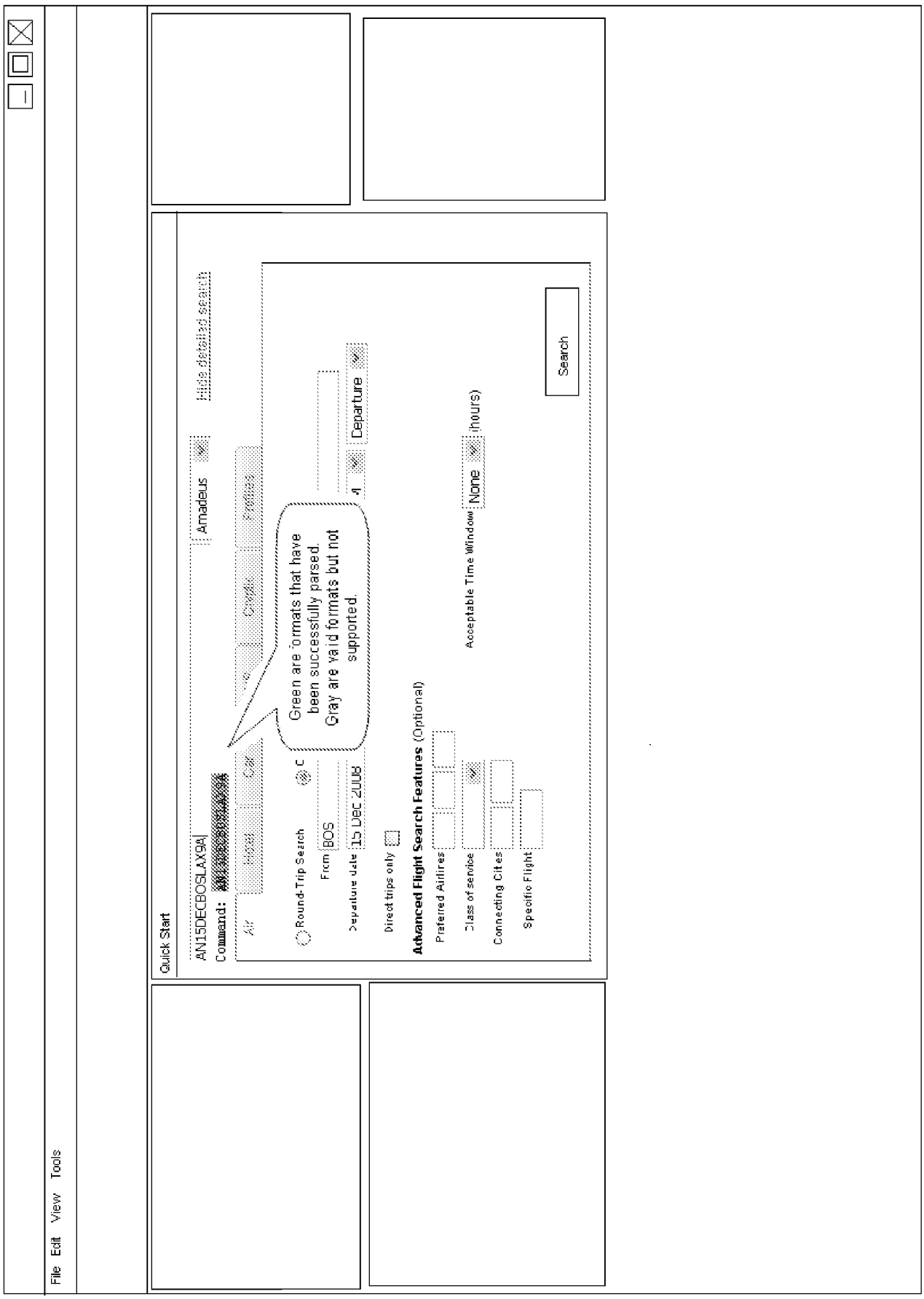

File Edit View Tools
Quick Start
AN15DECBOSLAX9A
Command:
Amadeus
Hide detailed search
Air
Hotel
Car
Credit
Profiles
Round-Trip Search
From BOS
Departure date 15 Dec 2008
Direct trips only
Green are formats that have been successfully parsed.
Gray are valid formats but not supported.
Departure
Advanced Flight Search Features (Optional)
Preferred Airlines
Class of service
Connecting Cities
Specific Flight
Acceptable Time Window None (hours)
Search

FIG.9

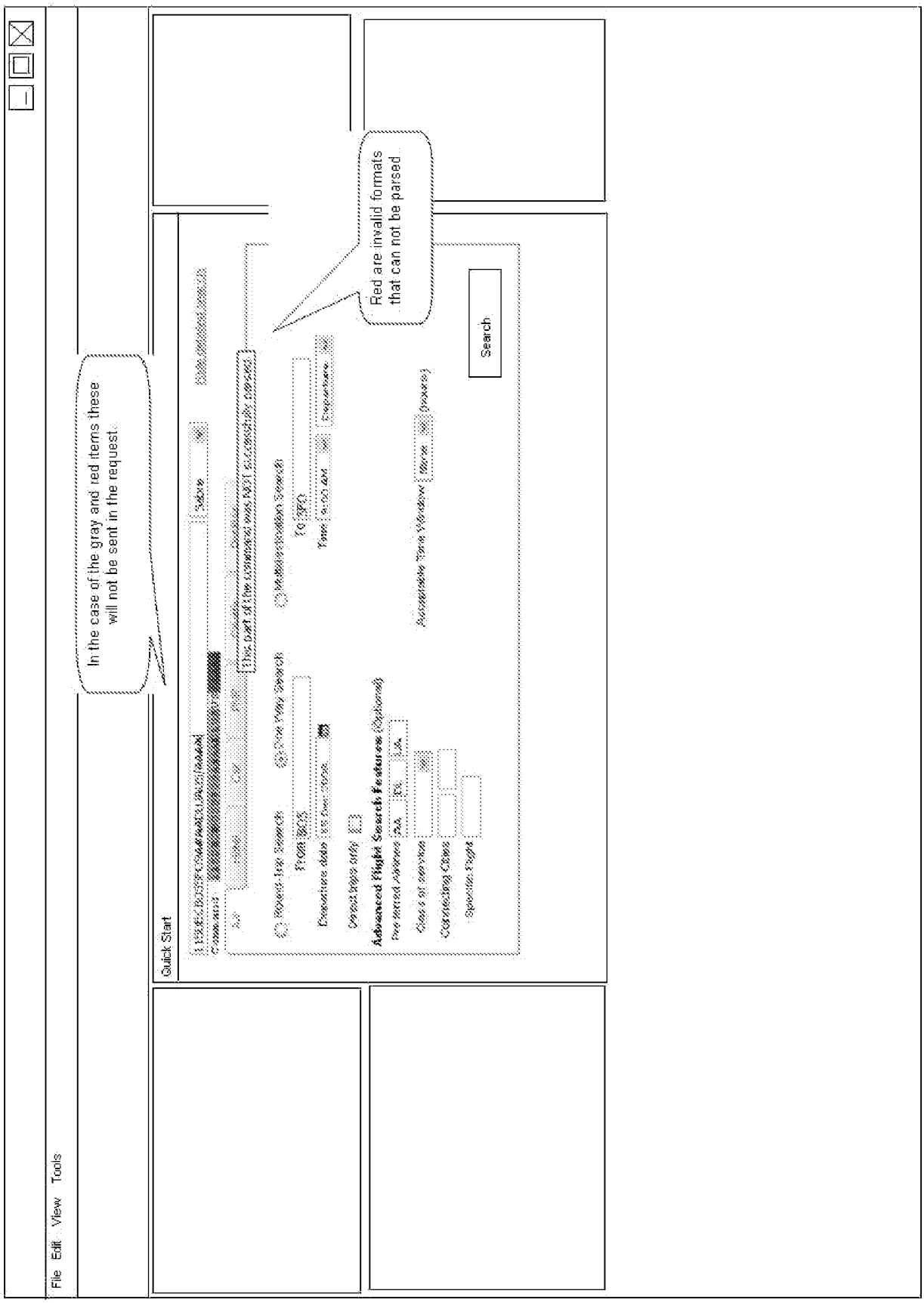

File Edit View Tools
Quick Start
In the case of the gray and red items these will not be sent in the request
Red are invalid formats that can not be parsed
Search

FIG.10

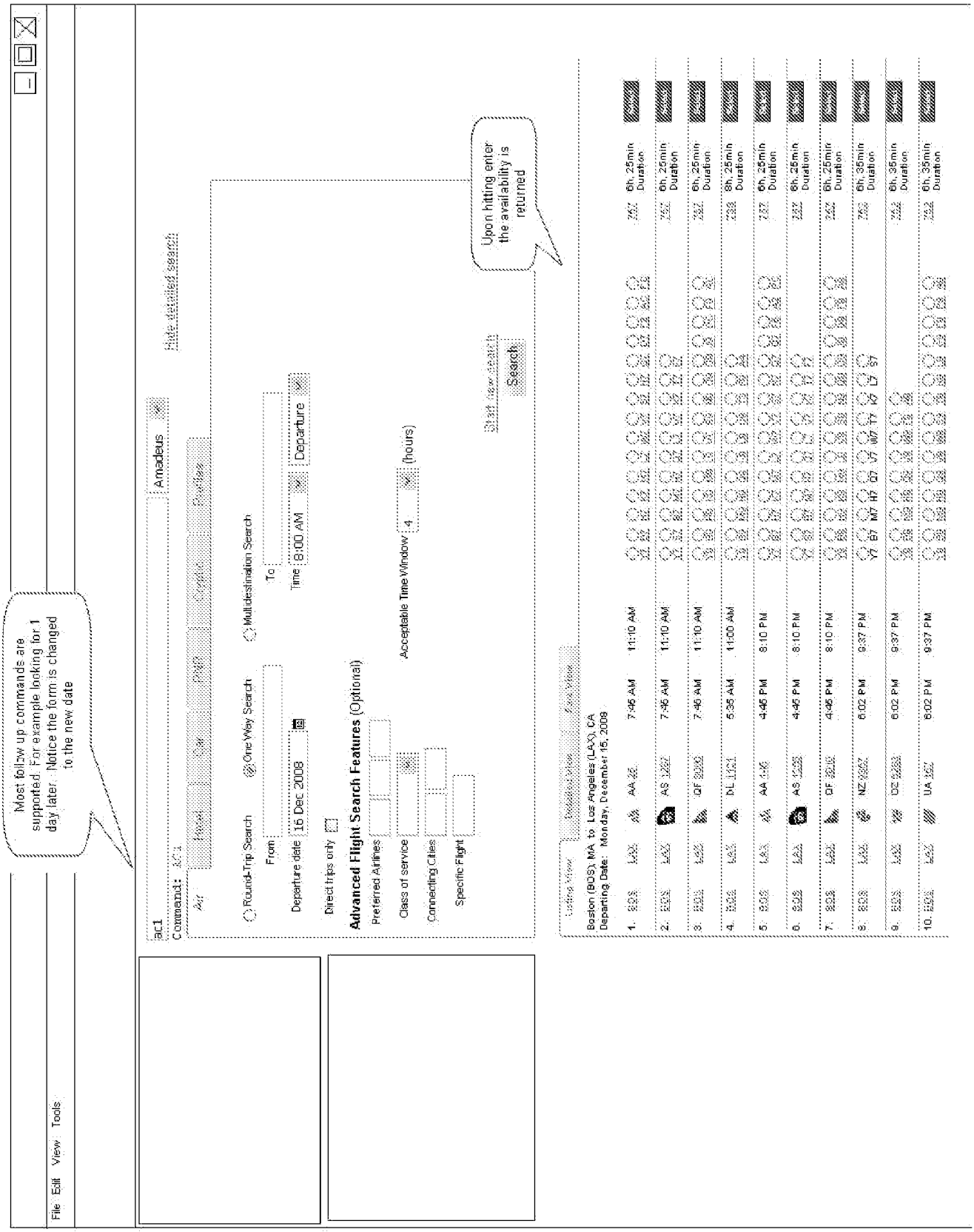

Most follow up commands are supported. For example looking for 1 day later. Notice the form is changed to the new date
File Edit View Tools
Command:
Amadeus
Hide detailed search
Round-Trip Search
One Way Search
Multidestination Search
From
To
Departure date 16 Dec 2008
Time 8:00 AM
Departure
Direct trips only
Advanced Flight Search Features (Optional)
Preferred Airlines
Class of service
Acceptable Time Window: 4 (hours)
Connecting Cities
Specific Flight
Start new search
Search
Upon hitting enter the availability is returned
Listing View
Detailed View
Fare View
Boston (BOS), MA to Los Angeles (LAX), CA
Departing Date: Monday, December 15, 2008

FIG.11

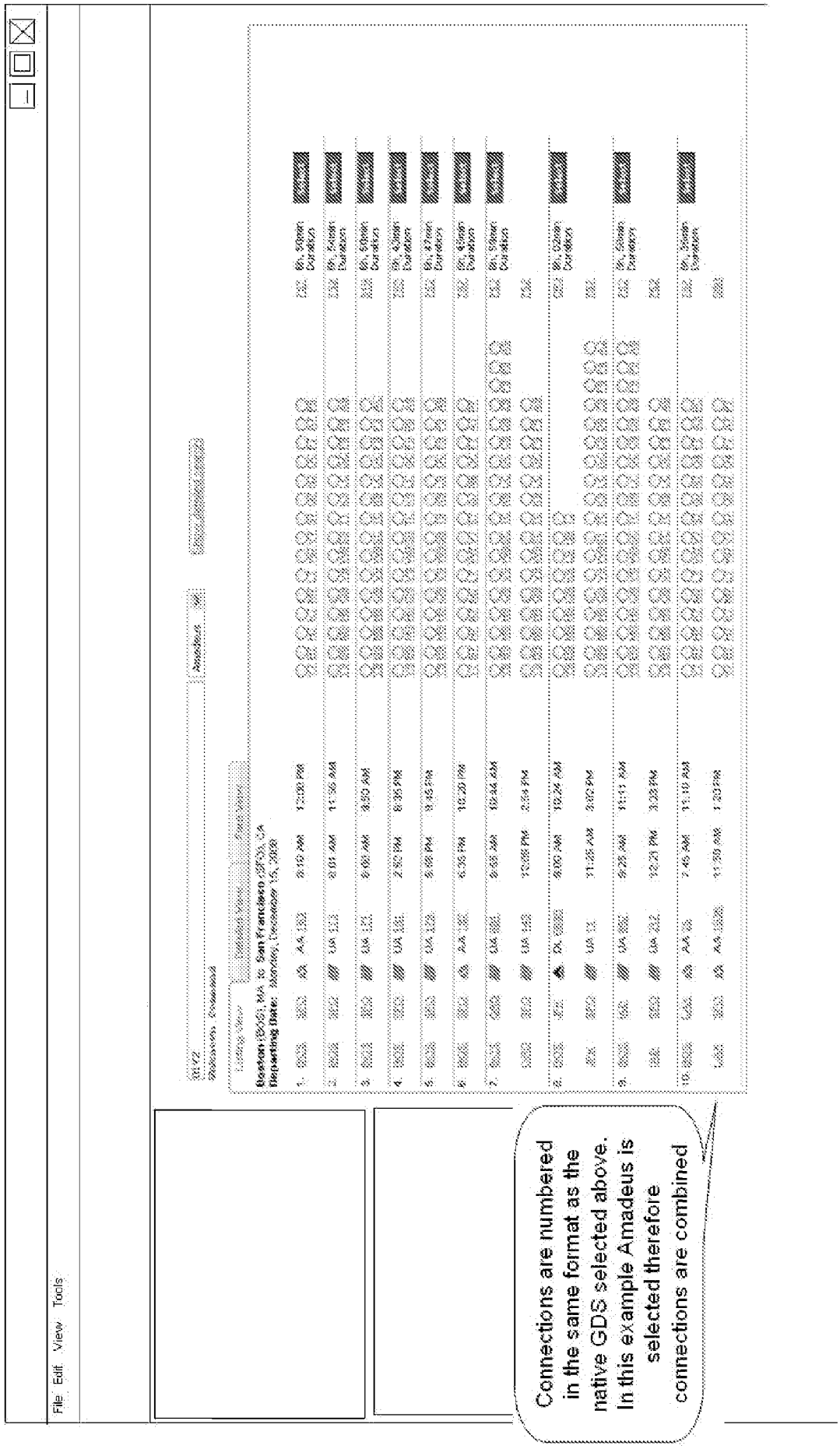

File Edit View Tools
Connections are numbered in the same format as the native GDS selected above. In this example Amadeus is selected therefore connections are combined

FIG.12

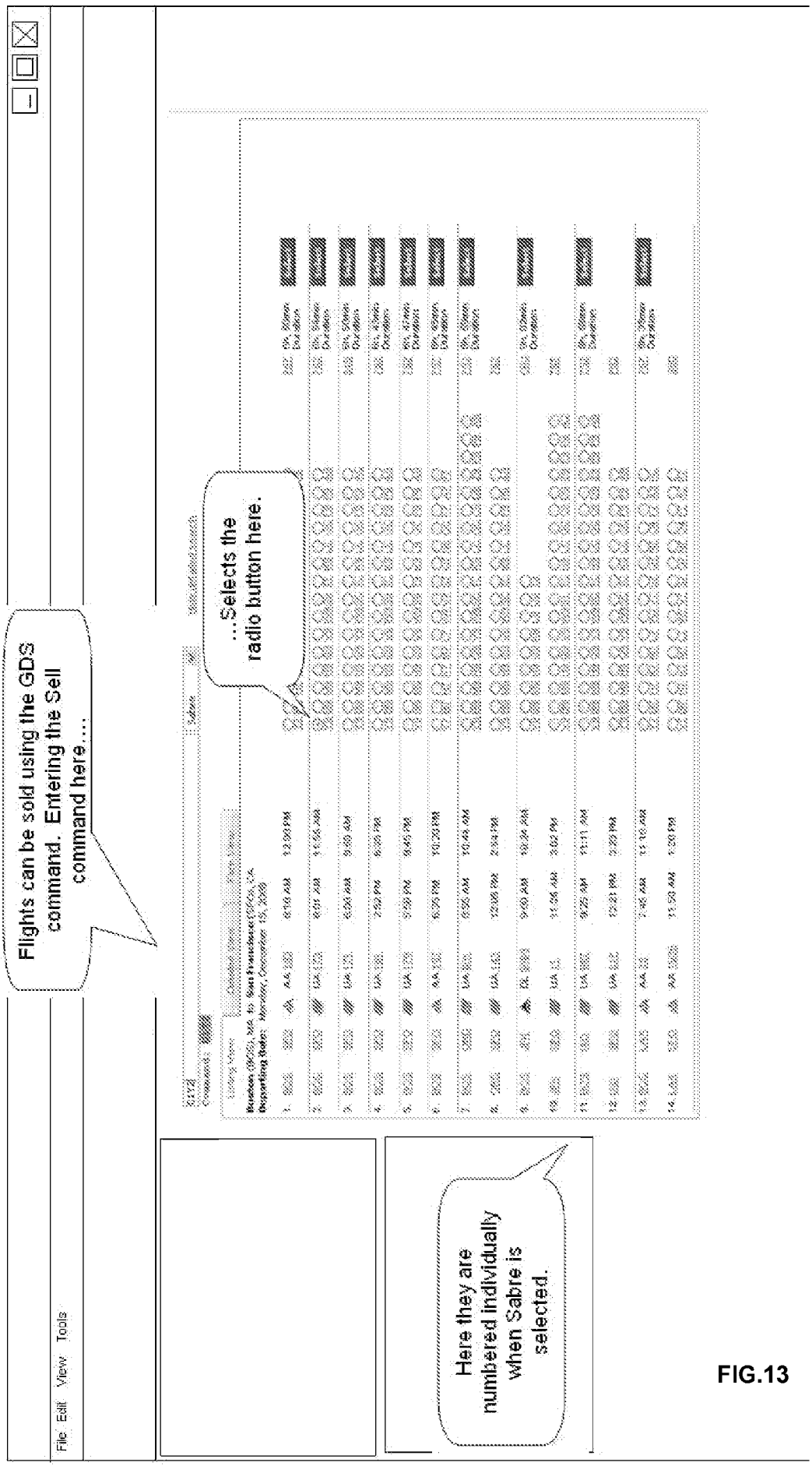

Flights can be sold using the GDS command. Entering the Sell command here....
...Selects the radio button here.
Here they are numbered individually when Sabre is selected.
File Edit View Tools

FIG.13

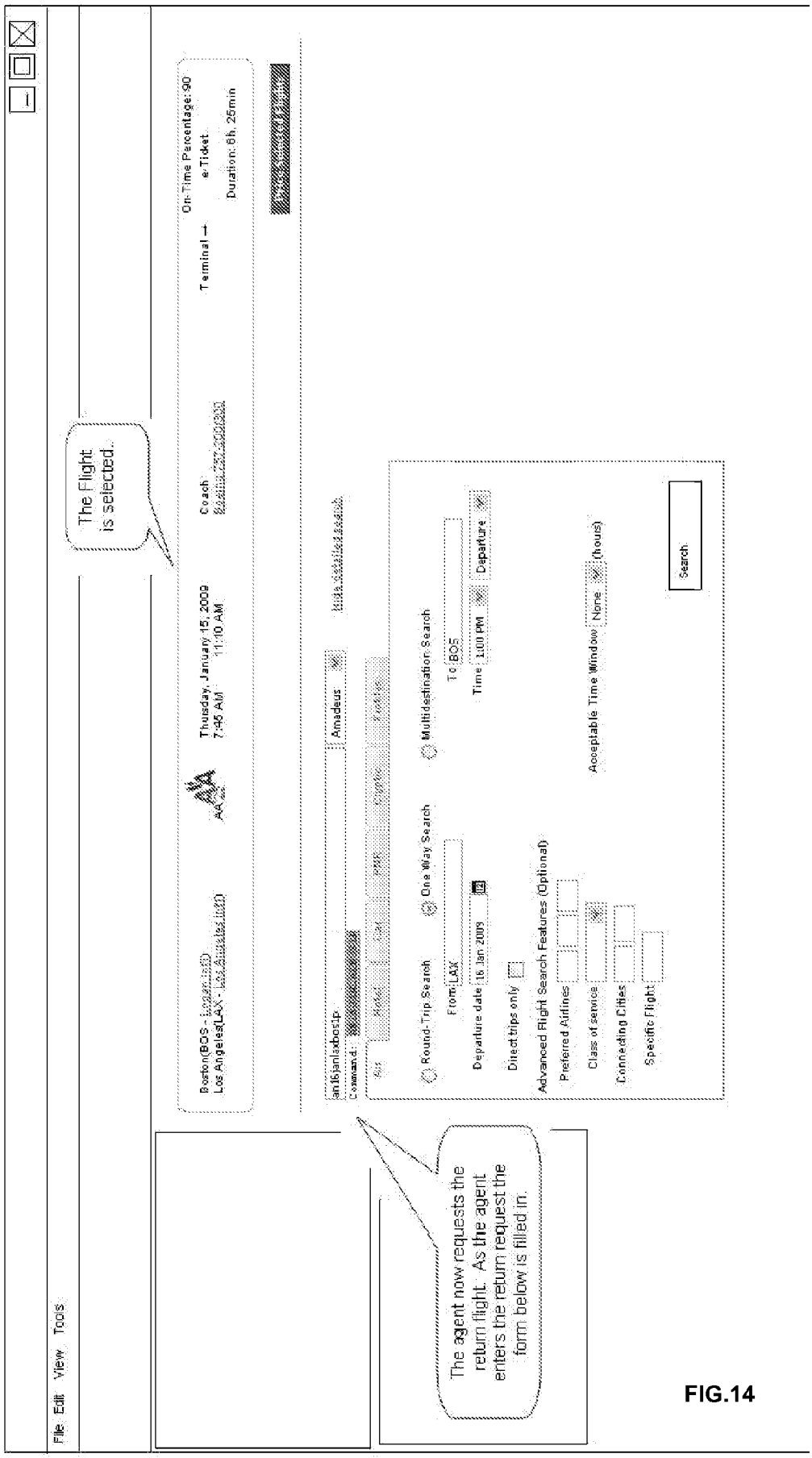

File Edit View Tools
The Flight is selected.
Boston(BOS - Logan Intl)
Los Angeles(LAX - Los Angeles Intl)
Thursday, January 15, 2009
7:45 AM 11:10 AM
Coach
On-Time Percentage: 90
e-Ticket
Terminal
Duration: 6h, 25min
an16janlaxbos1p
Command:
Amadeus
Round-Trip Search
One Way Search
Multidestination Search
From: LAX
To: BOS
Departure date: 16 Jan 2009
Time: 1:00 PM
Departure
Direct trips only
Advanced Flight Search Features (Optional)
Preferred Airlines
Class of service
Connecting Cities
Specific Flight:
Acceptable Time Window: None (hours)
Search
The agent now requests the return flight. As the agent enters the return request the form below is filled in.

FIG.14

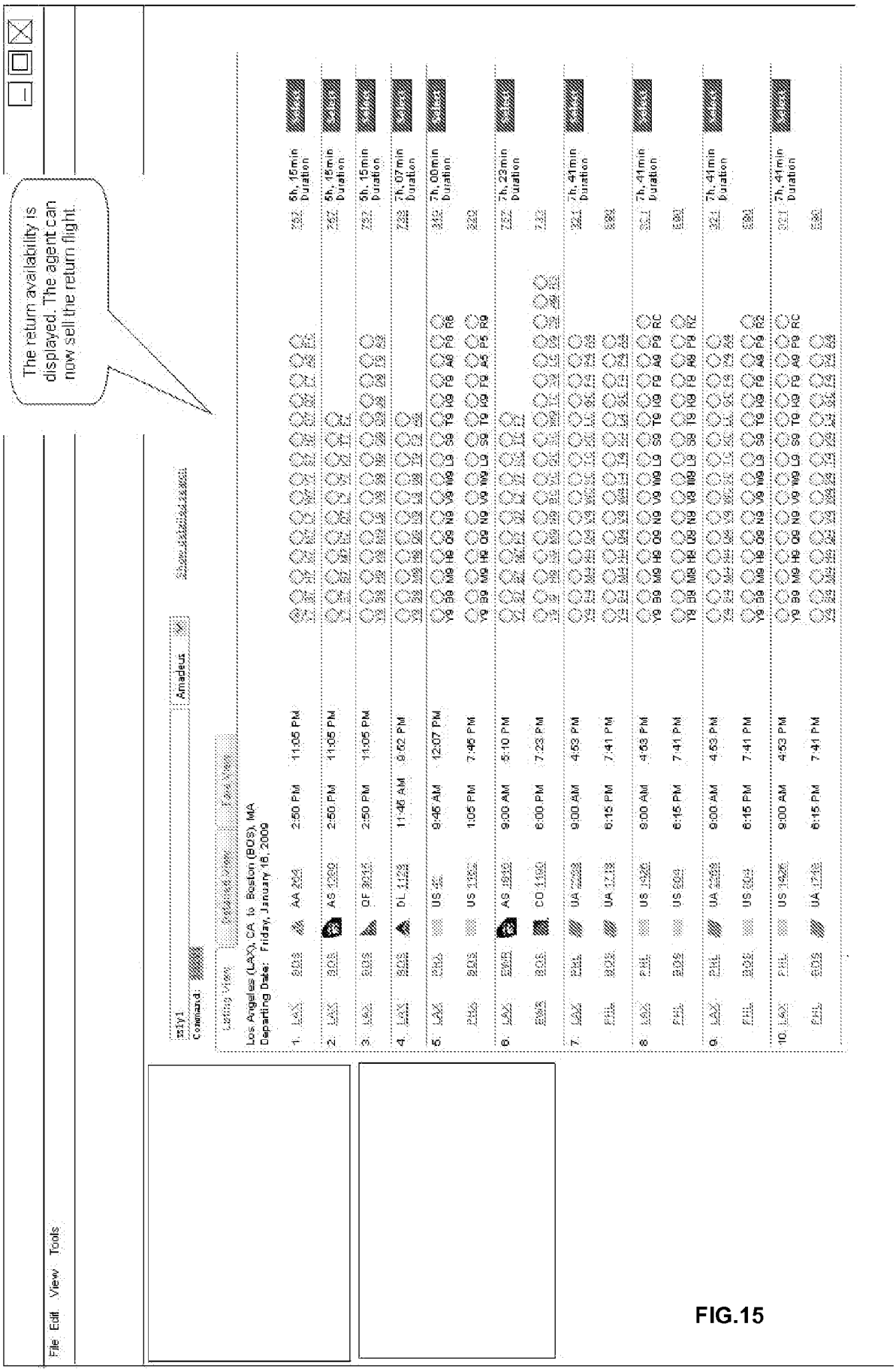

The return availability is displayed. The agent can now sell the return flight.
File Edit View Tools
Amadeus
Command:
Los Angeles (LAX), CA to Boston (BOS), MA
Departing Date: Friday, January 16, 2009

FIG.15

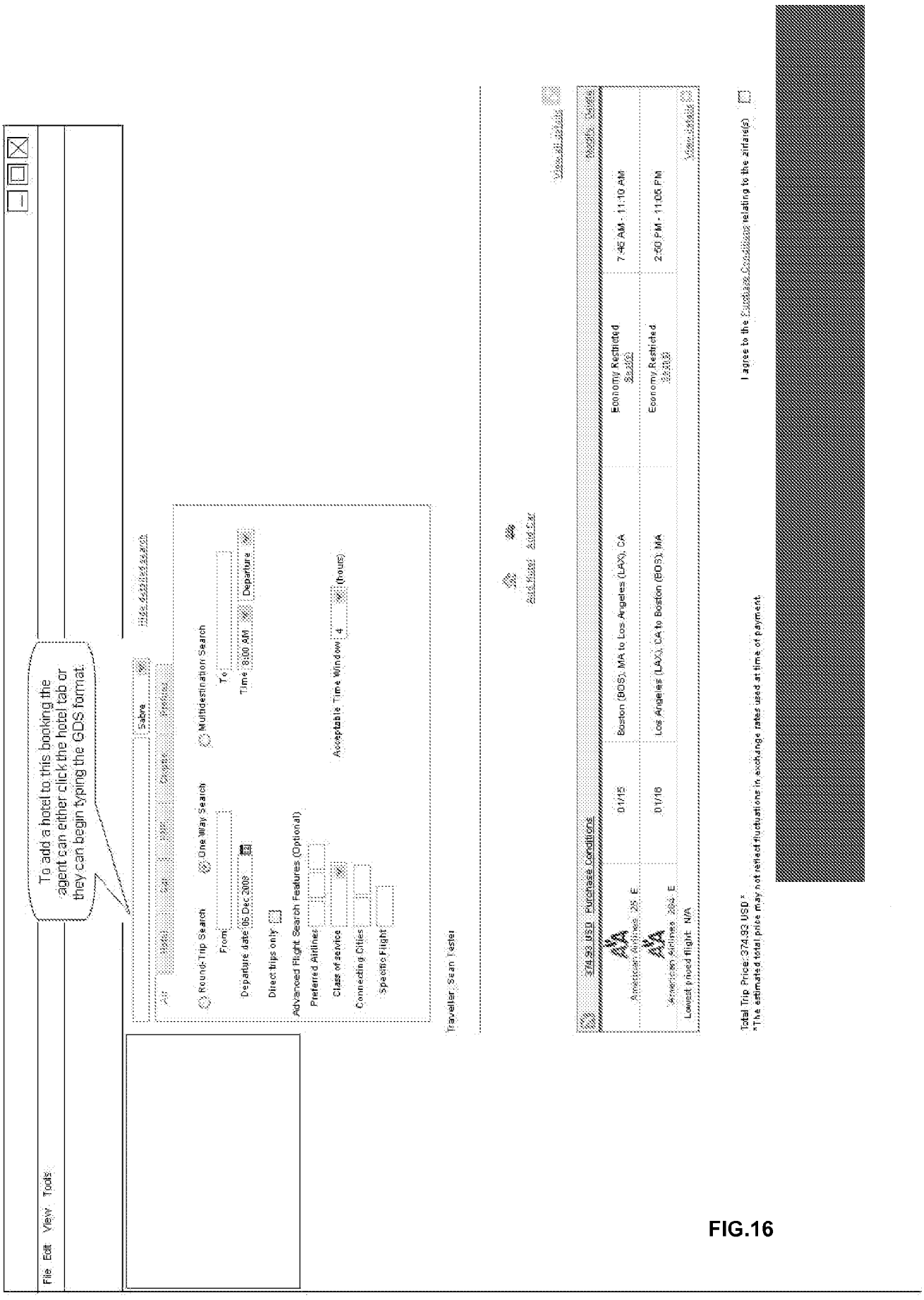

File Edit View Tools
To add a hotel to this booking the agent can either click the hotel tab or they can begin typing the GDS format.
Sabre
Hide Additional Search
Air
Hotel
Car
Rail
Cruise
Preview
Round-Trip Search
One Way Search
Multidestination Search
From:
To:
Departure date: 05 Dec 2008
Time: 8:00 AM
Departure
Direct trips only
Advanced Flight Search Features (Optional)
Preferred Airlines:
Class of service:
Acceptable Time Window: 4 (hours)
Connecting Cities:
Specific Flight:
Traveller: Sean Tester
Add Hotel
Add Car
View all details
Price
Details
374.93 USD
Purchase Conditions
American Airlines 25 E
01/15
Boston (BOS), MA to Los Angeles (LAX), CA
Economy Restricted
7:46 AM - 11:10 AM
American Airlines 2664 E
01/16
Los Angeles (LAX), CA to Boston (BOS), MA
Economy Restricted
2:50 PM - 11:05 PM
Lowest priced flight: N/A
View Details
Total Trip Price: 374.93 USD *
*The estimated total price may not reflect fluctuations in exchange rates used at time of payment.
I agree to the Purchase Conditions relating to the airfare(s)

FIG.16

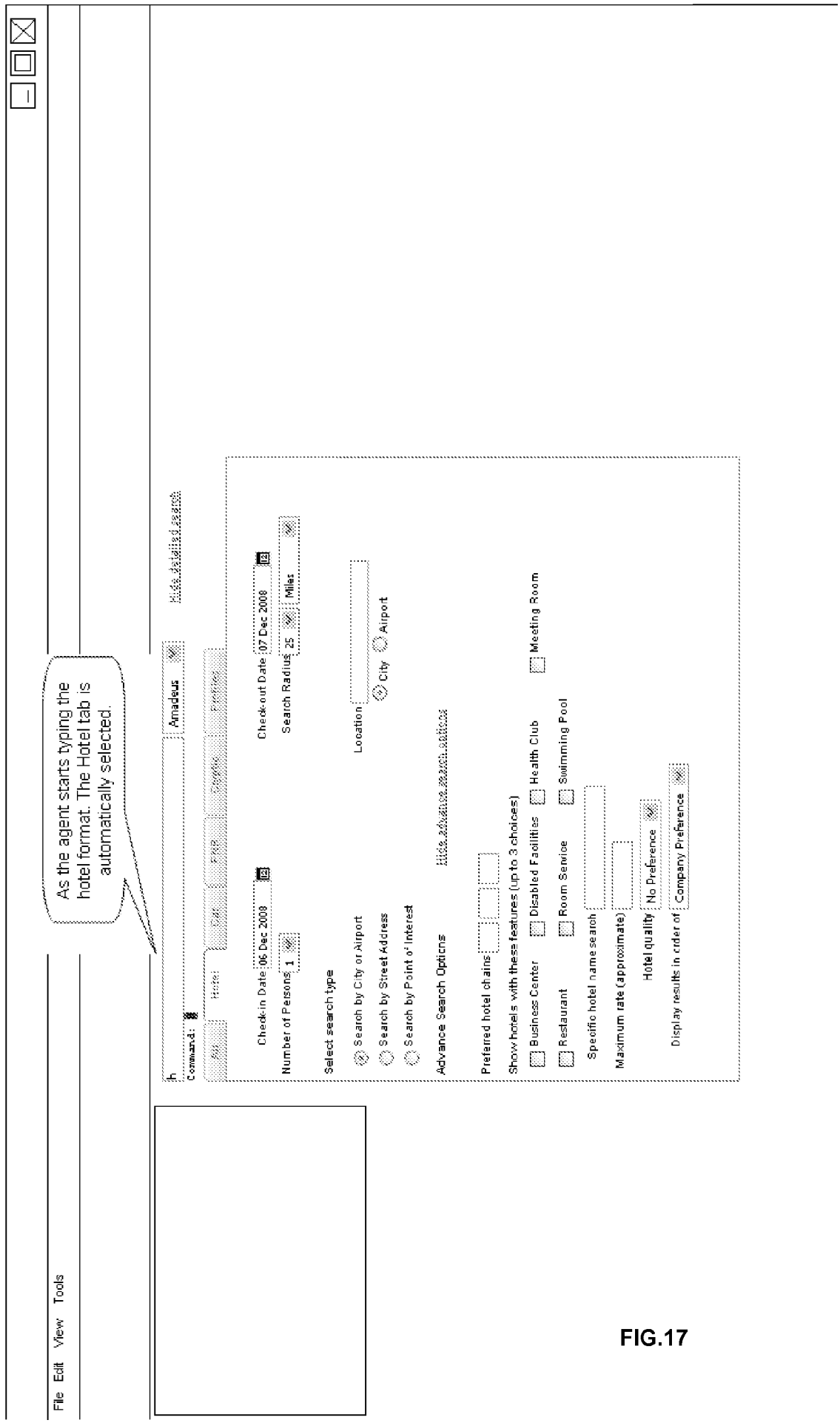

File Edit View Tools
As the agent starts typing the hotel format. The Hotel tab is automatically selected.
Amadeus
Command:
Air
Hotel
Car
Rail
Cruise
Entree
Check-in Date 06 Dec 2008
Check-out Date 07 Dec 2008
Number of Persons 1
Search Radius 25 Miles
Select search type
Search by City or Airport
Search by Street Address
Search by Point of Interest
Location
City
Airport
Advance Search Options
Preferred hotel chains
Show hotels with these features (up to 3 choices)
Business Center
Disabled Facilities
Health Club
Meeting Room
Restaurant
Room Service
Swimming Pool
Specific hotel name search
Maximum rate (approximate)
Hotel quality No Preference
Display results in order of Company Preference

FIG.17

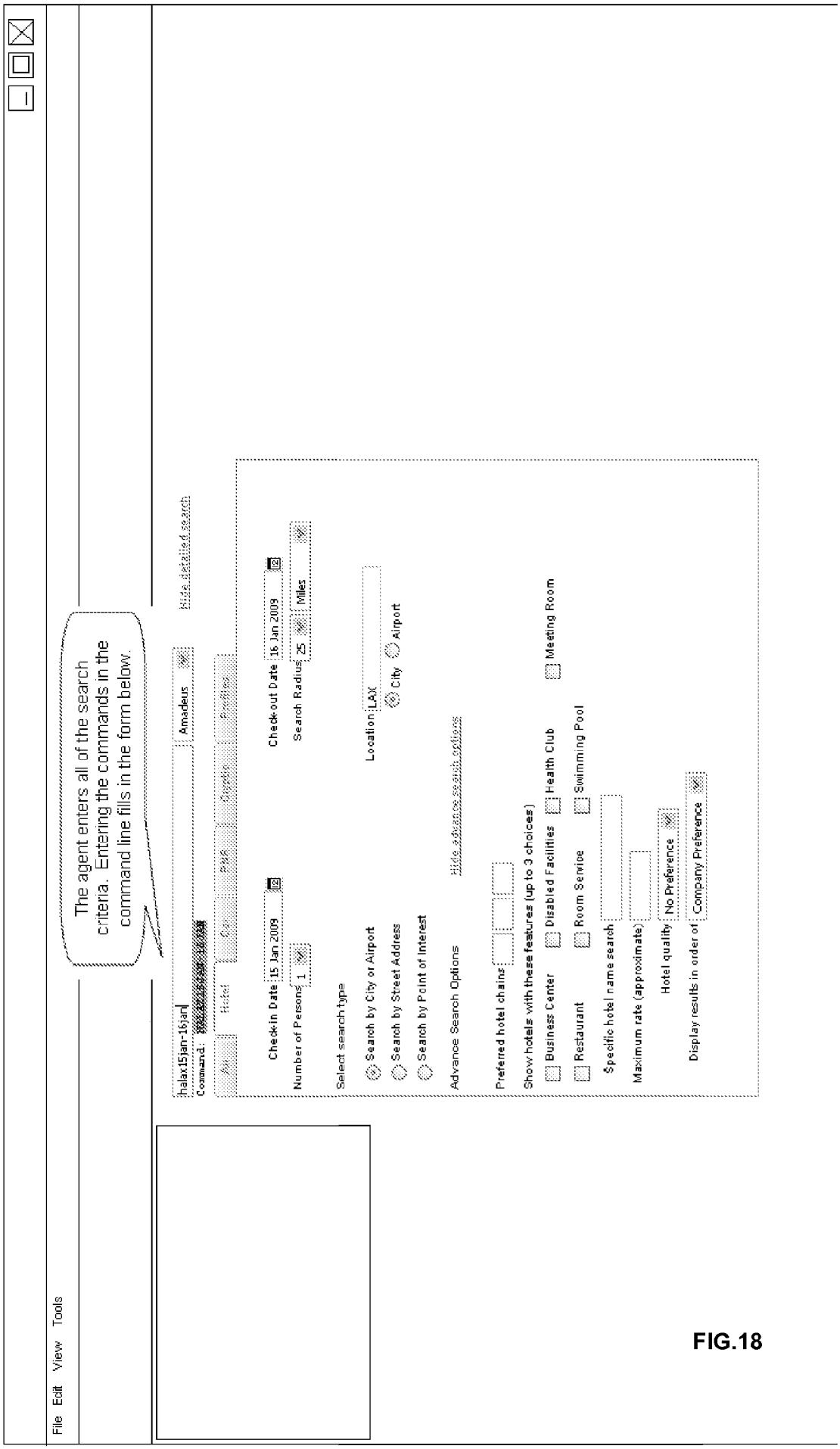

File Edit View Tools
The agent enters all of the search criteria. Entering the commands in the command line fills in the form below.
halax15jan-16jan
Amadeus
Hide detailed search
Command:
Air
Hotel
Car
PNR
Queue
Profile
Check-in Date: 15 Jan 2009
Check-out Date: 16 Jan 2009
Number of Persons: 1
Search Radius: 25 Miles
Select search type
Search by City or Airport
Search by Street Address
Search by Point of Interest
Location: LAX
City
Airport
Advance Search Options
Hide advance search options
Preferred hotel chains:
Show hotels with these features (up to 3 choices)
Business Center
Disabled Facilities
Health Club
Meeting Room
Restaurant
Room Service
Swimming Pool
Specific hotel name search:
Maximum rate (approximate):
Hotel quality: No Preference
Display results in order of: Company Preference

FIG.18

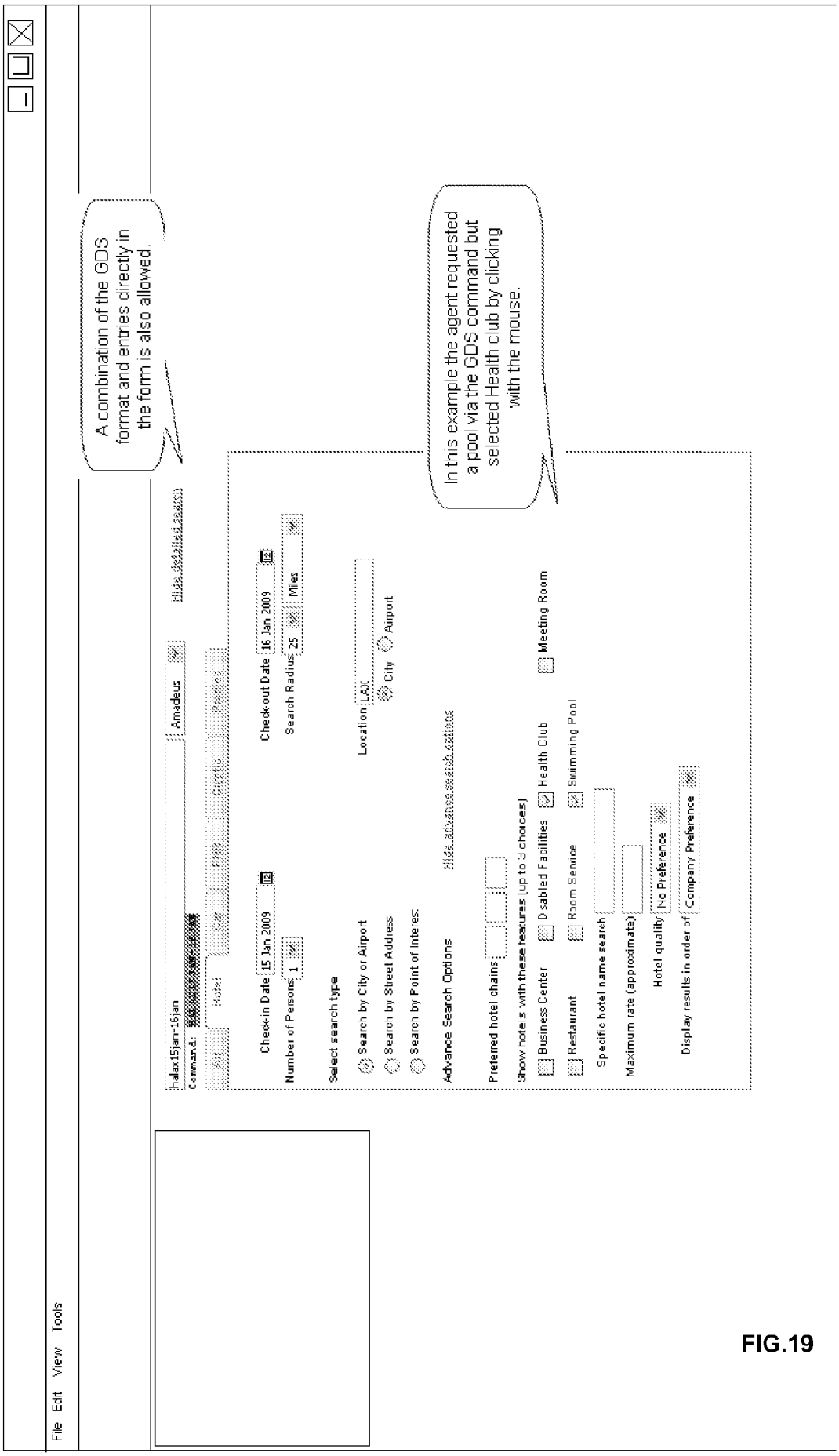

File Edit View Tools
halax15jan-16jan
Amadeus
Command:
Air
Hotel
Car
Rail
Cruise
Preview
Hide details of search
A combination of the GDS format and entries directly in the form is also allowed.
Check-in Date: 15 Jan 2009
Check-out Date: 16 Jan 2009
Number of Persons: 1
Search Radius: 25 Miles
Select search type
Search by City or Airport
Search by Street Address
Search by Point of Interest
Location: LAX
City
Airport
Advance Search Options
Hide advance search options
In this example the agent requested a pool via the GDS command but selected Health club by clicking with the mouse.
Preferred hotel chains:
Show hotels with these features (up to 3 choices)
Business Center
Disabled Facilities
Health Club
Meeting Room
Restaurant
Room Service
Swimming Pool
Specific hotel name search
Maximum rate (approximate)
Hotel quality: No Preference
Display results in order of: Company Preference

FIG.19

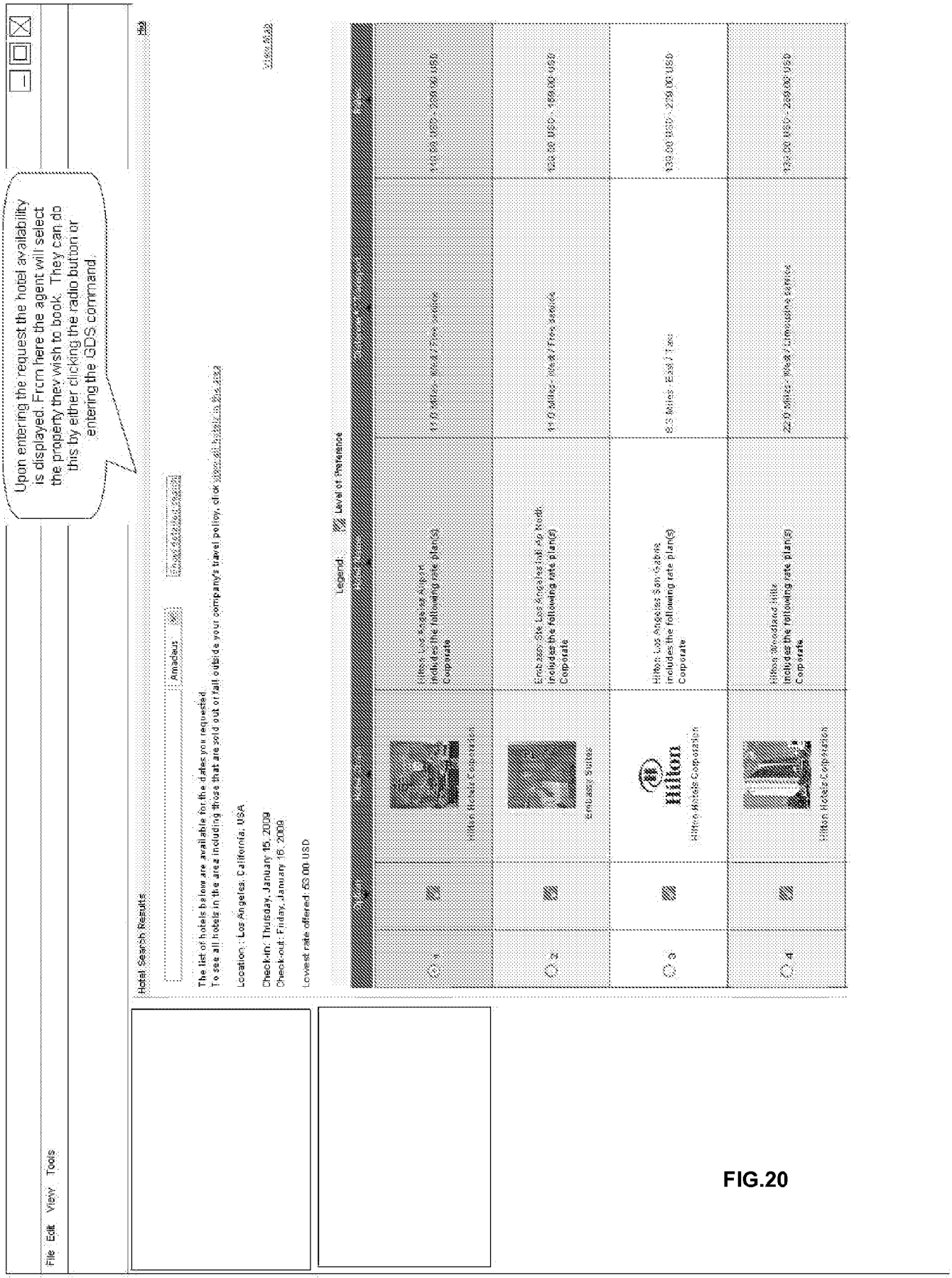

Upon entering the request the hotel availability is displayed. From here the agent will select the property they wish to book. They can do this by either clicking the radio button or entering the GDS command.
File Edit View Tools
Hotel Search Results
Amadeus
The list of hotels below are available for the dates you requested
To see all hotels in the area including those that are sold out or fall outside your company's travel policy, click
Location : Los Angeles, California, USA
Check-in: Thursday, January 15, 2009
Check-out: Friday, January 16, 2009
Lowest rate offered: 63.00 USD
Legend:
Level of Preference
Hilton Hotels Corporation
Embassy Suites
Hilton Hotels Corporation
Hilton Hotels Corporation

FIG.20

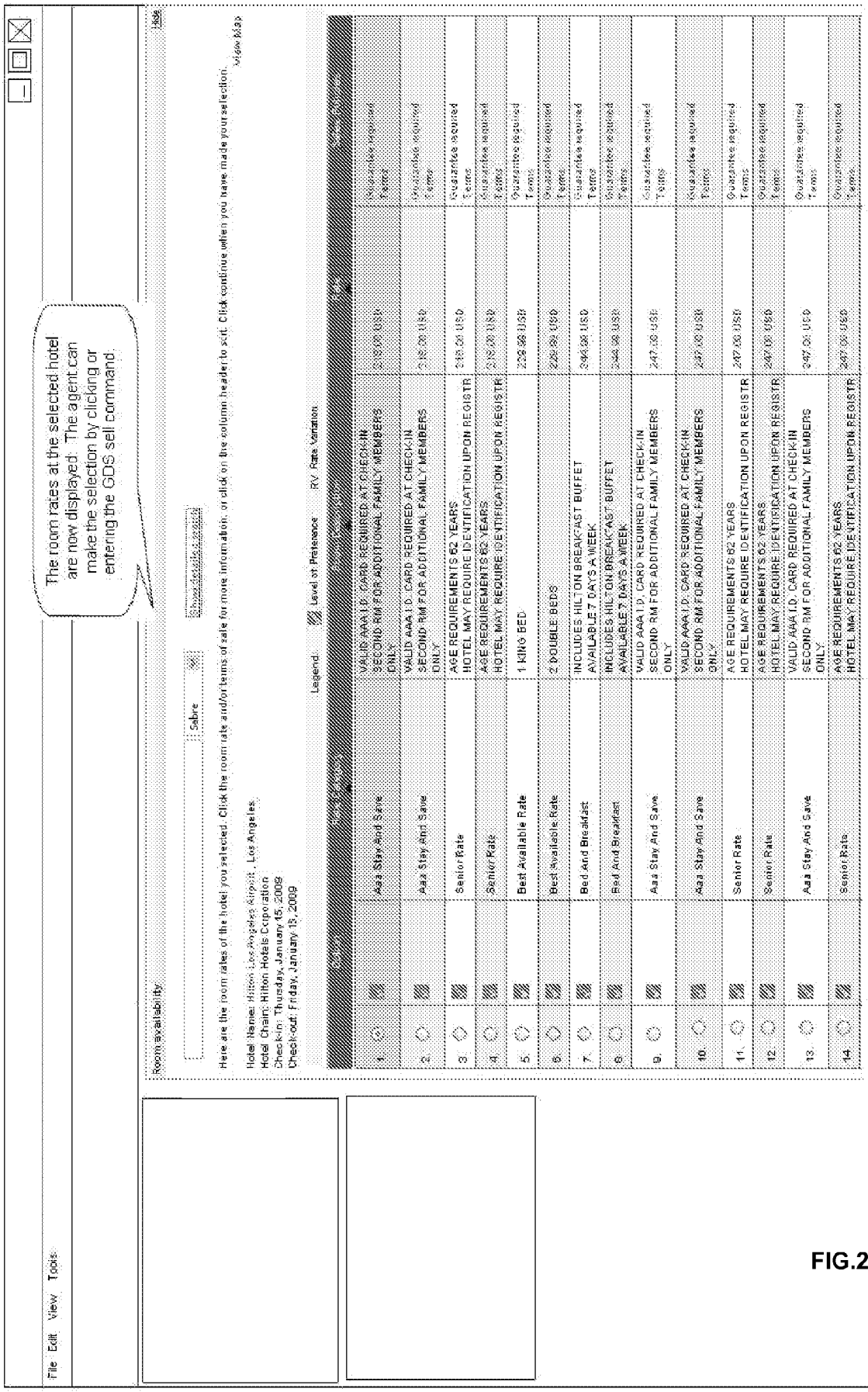

File Edit View Tools
Room availability
Sabre
Hide
Here are the room rates of the hotel you selected. Click the room rate and/or terms of sale for more information, or click on the column header to sort. Click continue when you have made your selection.
Hotel Name: Hilton Los Angeles Airport , Los Angeles
Hotel Chain: Hilton Hotels Corporation
Check-in: Thursday, January 15, 2009
Check-out: Friday, January 16, 2009
Legend:
Level of Preference
RV: Rate Variation
The room rates at the selected hotel are now displayed. The agent can make the selection by clicking or entering the GDS sell command.

FIG.21

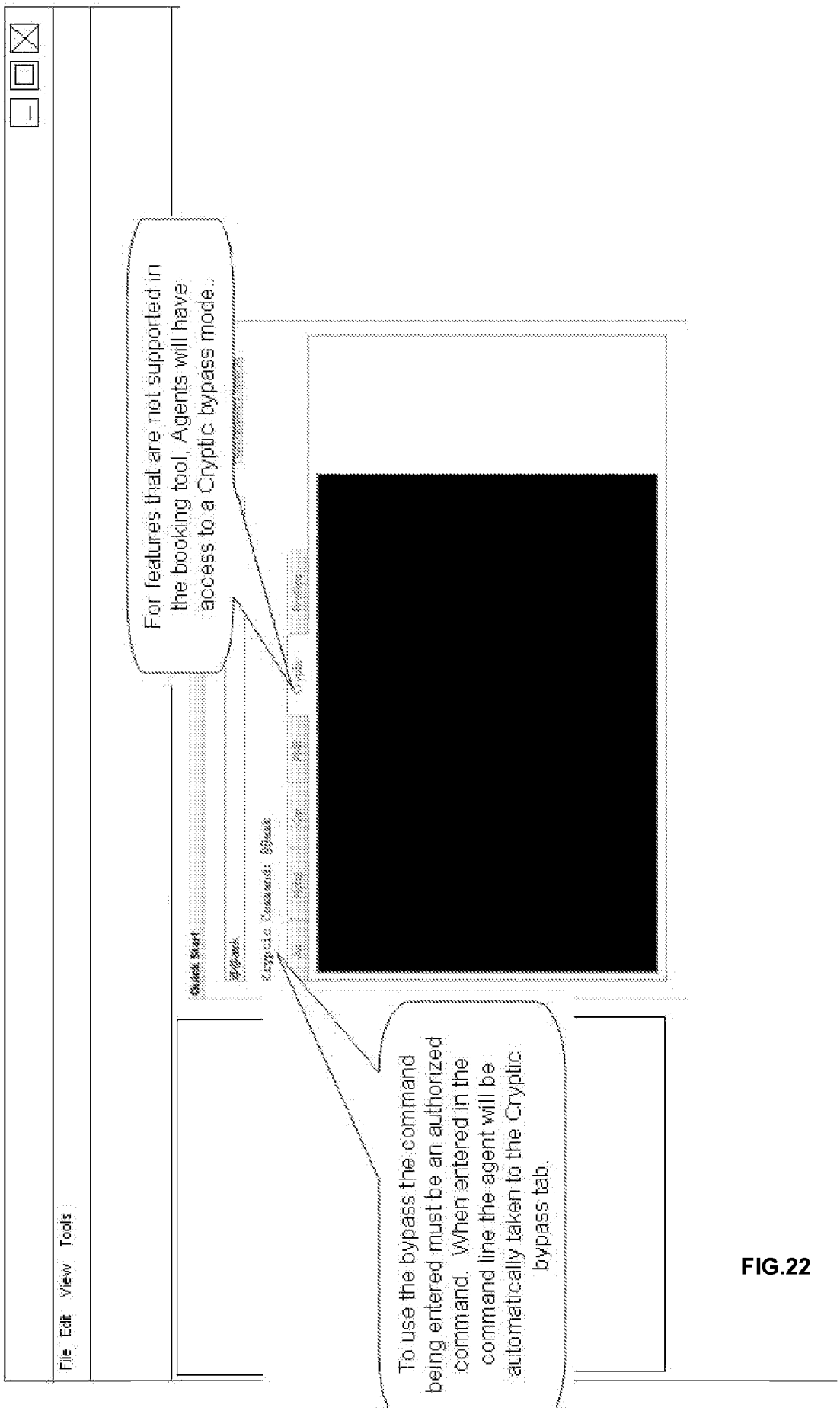

File Edit View Tools
Quick Start
Bypass
Cryptic Command: Bypass
For features that are not supported in the booking tool, Agents will have access to a Cryptic bypass mode.
To use the bypass the command being entered must be an authorized command. When entered in the command line the agent will be automatically taken to the Cryptic bypass tab.

FIG.22

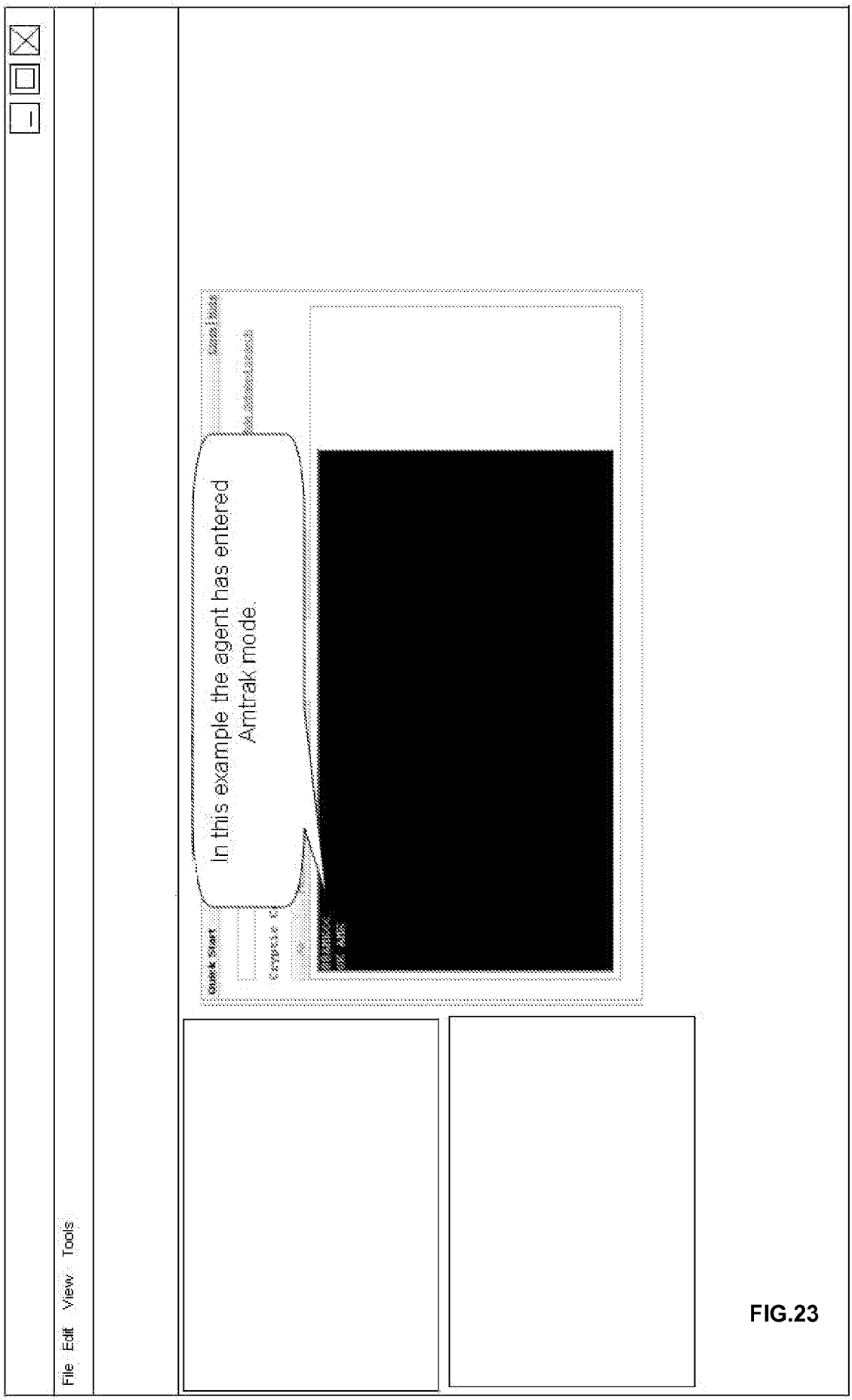

File Edit View Tools
In this example the agent has entered
Amtrak mode.

FIG.23

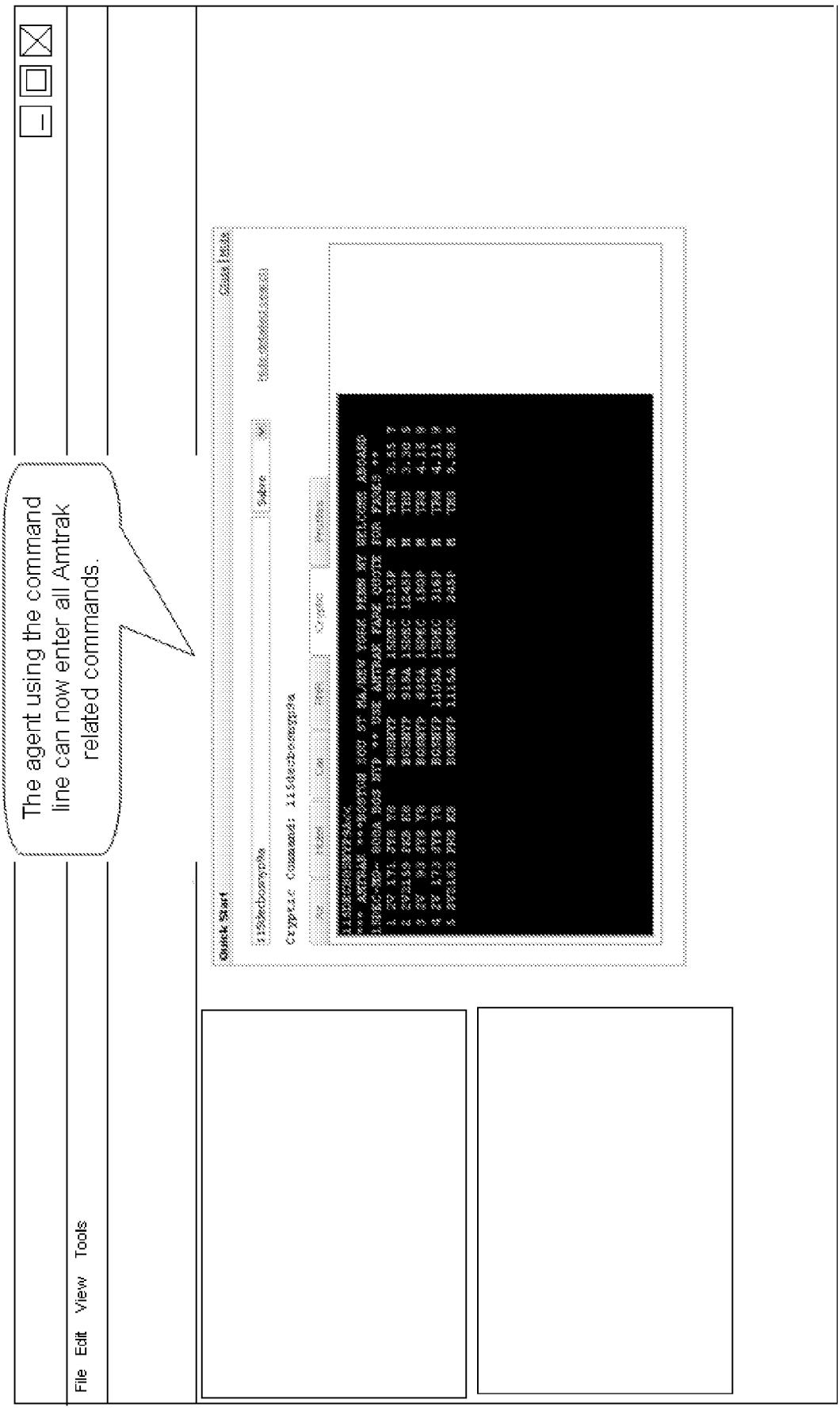

The agent using the command line can now enter all Amtrak related commands.
File Edit View Tools

FIG.24

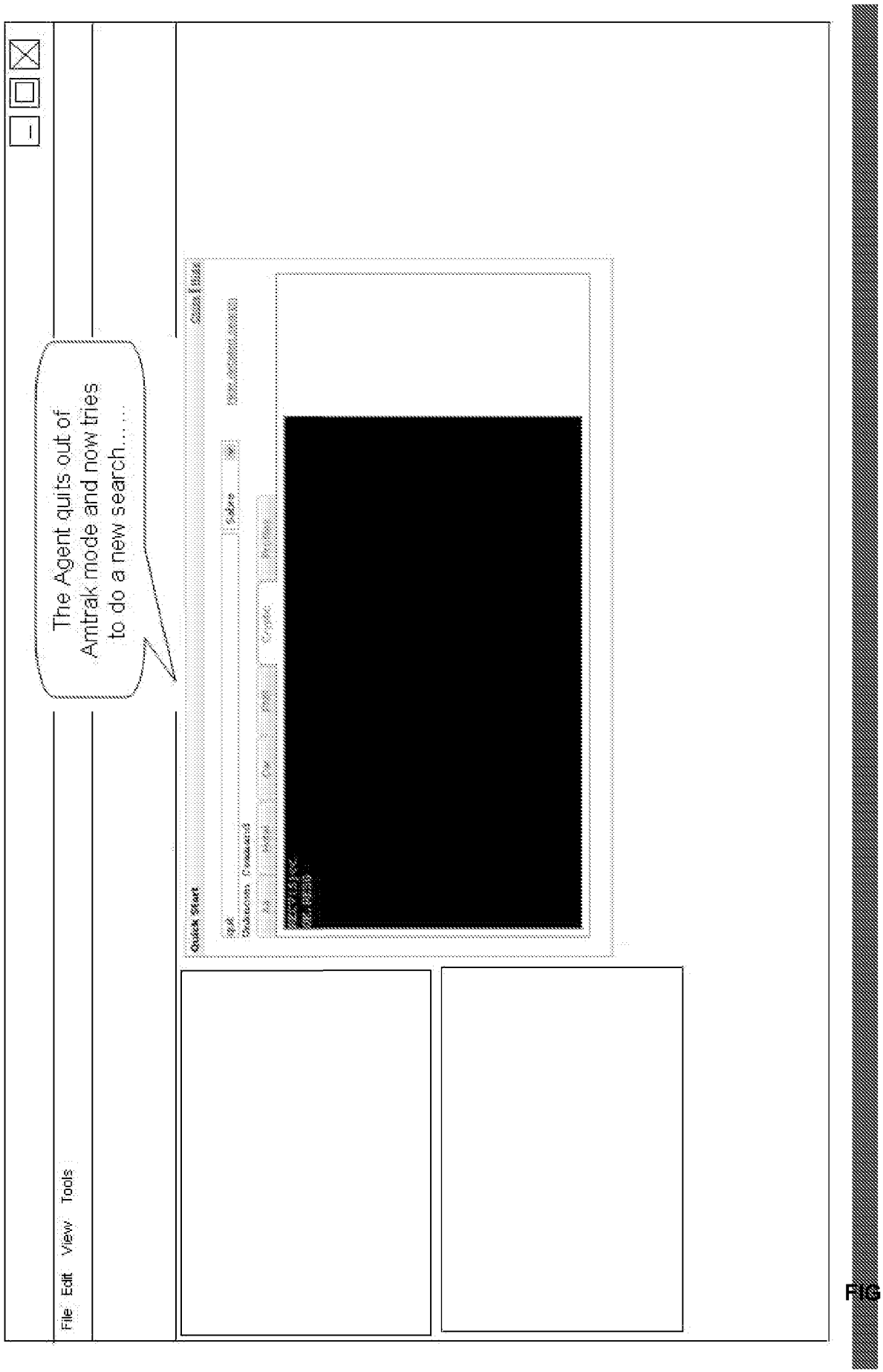

The Agent quits out of Amtrak mode and now tries to do a new search.....
File Edit View Tools
Quick Start

FIG.25

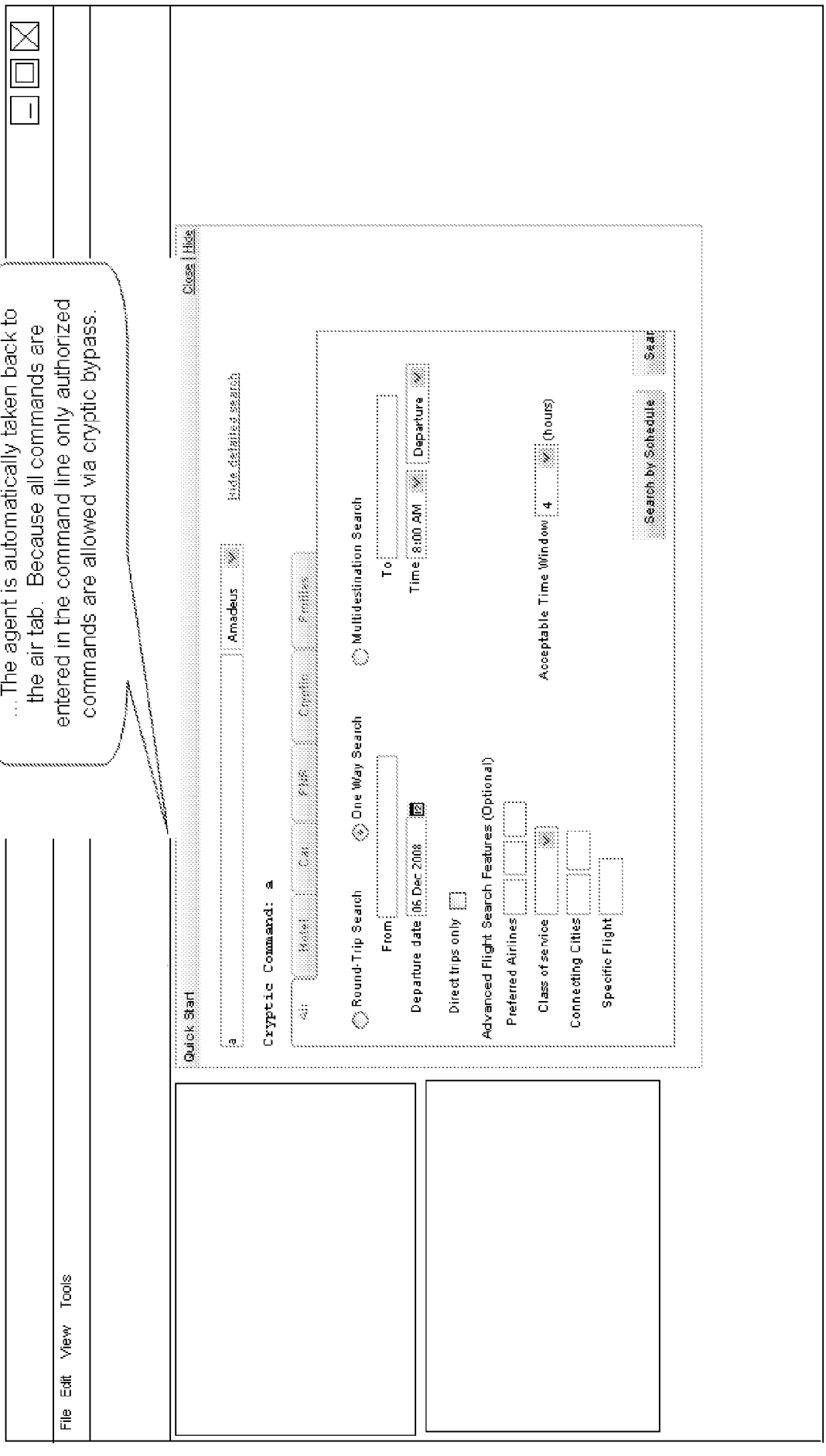

...The agent is automatically taken back to the air tab. Because all commands are entered in the command line only authorized commands are allowed via cryptic bypass.
File Edit View Tools
Quick Start
Close Hide
a
Amadeus
Hide detailed search
Cryptic Command: a
Air
Hotel
Car
Rail
Cruise
Profiles
Round-Trip Search
One Way Search
Multidestination Search
From:
To:
Departure date :06 Dec 2008
Time : 8:00 AM
Departure
Direct trips only
Advanced Flight Search Features (Optional)
Preferred Airlines
Class of service
Acceptable Time Window
4
(hours)
Connecting Cities
Specific Flight
Search by Schedule
Sear

FIG.26

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/051983

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F17/30 G06Q50/00 G06F9/44 G06F9/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 1 672 539 A (MICROSOFT CORP [US]) 21 June 2006 (2006-06-21) paragraphs [0025] - [0031]; figure 3	1-16
Y	US 5 634 053 A (NOBLE WILLIAM B [US] ET AL) 27 May 1997 (1997-05-27) column 4, line 23 - column 15; claim 43	1-16
A	US 7 007 275 B1 (HANSON CHARLES ALBIN [US] ET AL) 28 February 2006 (2006-02-28) abstract	1-16
A	US 2008/077560 A1 (COMI GABRIEL D [US] ET AL) 27 March 2008 (2008-03-27) abstract	1-16

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 March 2010	22/03/2010

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Bowler, Alyssa

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/051983

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007/168854 A1 (DE MARCKEN CARL G [US] ET AL) 19 July 2007 (2007-07-19) abstract	1-16
A	US 6 233 586 B1 (CHANG DANIEL T [US] ET AL) 15 May 2001 (2001-05-15) abstract	1-16

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2010/051983

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1672539 A	21-06-2006	CN 1790326 A	21-06-2006
		JP 2006172435 A	29-06-2006
		KR 20060067136 A	19-06-2006
		US 2006129379 A1	15-06-2006
		US 2007174350 A1	26-07-2007
US 5634053 A	27-05-1997	NONE	
US 7007275 B1	28-02-2006	NONE	
US 2008077560 A1	27-03-2008	WO 2008039311 A2	03-04-2008
US 2007168854 A1	19-07-2007	EP 2016506 A2	21-01-2009
		WO 2007084575 A2	26-07-2007
US 6233586 B1	15-05-2001	NONE	