N2O
Automated Change Management

Fact Sheet

Applications may consist of hundreds of objects which may be changed by many programmers. Managing the development and maintenance of applications involves tasks such as:

- Controlling migrations into production environments
- Avoiding object overwrites
- Tracking the location of an object
- Verifying object changes
- Changing all related objects
- Archiving and recovery
- Maintaining complete audit trails

N_2O was developed to provide automated change management for NATURAL objects, SYSERR messages, and PREDICT objects. The separately priced N_2O/3GL feature extends N_2O to support change management for 3GL objects stored in ENDEVOR, PANVALET, LIBRARIAN, or MVS PDSs.

Comprehensive Features

N_2O offers many features which automate change management tasks, such as:

- On-line Request System to select objects for migration
- Batch or On-line migration of objects
- Checkout/Checkin to control and monitor changes to objects
- Cross-reference support to show all related objects affected by, or invoked by specific objects
- Autocompile to ensure that all NATURAL programs and 3GL members are properly compiled after migration
- Archiving/Recovery to guard against the loss of objects
- Project Tracking Feature to maintain information about organizational activities
- Audit Trails and Reporting to provide information about program migrations, Checkout/Checkin, directory lists, archiving and recovery, status of projects being tracked, source comparisons, N2OSCAN processing and results, and user and approval profiles
- Documentation Toolbox to print NATURAL objects, file layouts, Descriptor X-Ref (cross-reference) information, object flow analysis, and Object X-Ref in local N_2O environments
- Emergency Recovery to allow recovery from Archive when N_2O is not available
- Static SQL Support for DB2
- Compare Utilities to identify differences between two NATURAL programs

```
+------------------------------------------------------------------+
| Type  Date      Time     User-ID   Terminal Ver    OS    TP Mon  Trans  |
| ----  --------  -------  -------  -------- ------ -------- -------- ------- |
| Src: 99-12-31 11:38:00 TSI0373  TSI01D  2.1.6  CMS     VM/CMS   NT216  |
| Obj: 99-12-31 11:38:00 TSI0373  TSI01D  2.1.6  CMS     VM/CMS   NT216  |
|                                                                  |
|   Source Size        : 452  Bytes                                |
|   User Area  (USIZE) : 370  Bytes   Buffer Pool Size  : 1148  Bytes  |
|   Source Area (ESIZE) : 10   Bytes   Number Subroutines : 1        |
+------------------------------------------------------------------+
0010 * TAX PROGRAM FEDTAXP
0020 DEFINE DATA
0030   GLOBAL USING PAYROLLG
>   1 #TOTAL
0040 *
0050   LOCAL USING FEDTAXL
>   1 #SALARY
>   1 #TAX-RATE
>   1 #LAST-NAME
>   1 #FIRST-NAME
>   1 #MIDDLE-I
>   1 #SS
>   1 #DECISION
0060 END-DEFINE
0070 *
0080 REPEAT
0090 INPUT USING MAP 'FEDTAXM'
0100 WRITE 'TOTAL TAXES DUE FOR SOCIAL
0110 WRITE / 'FIRST NAME -' #FIRST-NAM
0120 WRITE  'MIDDLE  -' #MIDDLE-I
0130 WRITE  'LAST-NAME -' #LAST-NAME
0140 INCLUDE FEDTAXC
> 0010 *
> 0020 * WILL CALCULATE THE TOTAL TAXES
> 0030 *
> 0040 COMPUTE #TOTAL = #TAX-RATE * #SALA
0150 PERFORM FEDTAXS
0160 *
0170 IF #DECISION = 'N'
```

N_2O Documentation Toolbox

The NATURAL Object Listing utiltity within the Documentation Toolbox displays/prints NATURAL source code. A number of options are provided, including the ability to explode copycode and data areas in the listing of the source member, the ability to exclude specific object types in the printing of ranges, and the ability to display/print XREF data after the source listing.

- N2OSCAN to process the source of NATURAL objects, scanning for strings over the object/library range specified by the user, and report on (or record for future lookup) all matches
- User-Exits to provide flexibility for tailoring N_2O to site-specific needs, such as interfacing with e-mail
- Security and Authorization to control access to N_2O functions and enforce migration authorization requirements (optionally through RACF, ACF2, or TOP SECRET, using SECURITRE, a product of Treehouse Software)

Flexibility

Flexibility is the greatest benefit of N_2O. N_2O adapts to a site's environment and change management needs. Sites determine which N_2O features will be used and the level of control those features will provide, which ensures that a site's desired development procedures are enforced.

System Requirements

N_2O operates under Z/OS, DOS/VSE, VM/CMS, and BS2000.

Treehouse
S O F T W A R E