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The
Tangible Benefits
of a
Data Dictionary

Data Management
Centre

September 1987

THE TANGIBLE BENEFITS OF A DATA DICTIONARY

1. INTRODUCTION	15 MIN.
2. BENEFITS INTRO	60 MIN.
3. WRAPUP	10 MIN.
4. QUESTIONS	5 MIN.
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	90 MIN.

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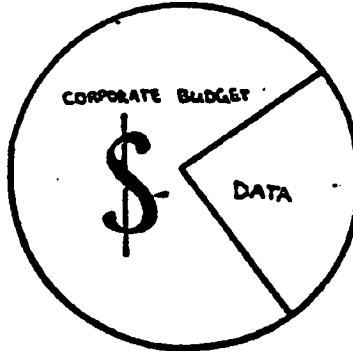
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**THE TANGIBLE BENEFITS OF A
DATA DICTIONARY**

-
- Tangible benefits are benefits which are real, able to be bought, sold, used
 - Demonstratable in terms of
 - \$ savings
 - time savings
 - resource savings
 - personnel savings
 - Most of the benefits I will present result in time savings, which in turn result in dollar savings
 - In most environments it is difficult to attach an actual dollar amount and even a literature search did not turn up tangible dollar figures
 - The time savings are more easily ascertained and verified, hence that is what is presented

2. DATA AS A CORPORATE RESOURCE

DATA IS A CORPORATE RESOURCE



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- Just like furniture, people and money, data costs
 - Therefore it must be efficiently and properly
 - managed
 - maintained
 - utilized
 - Efficient management requires knowledge of:
 - what the data is (definition)
 - what form the data is in (attributes)
 - where the data is (location)
 - where the data is used (relationships)
 - what the data is used for (usage)
 - No person would question the need to know this information about an expensive piece of machinery in a small firm
 - It makes sense to know this information about data when it represents a sizeable portion of a corporation's budget

DATA DICTIONARY

- What is it ?
- What does it do ?
- What are the contents ?

1. What is it?

- i) - a common, everyday dictionary contains definitions of words or phrases;
usage notes
 - a Data Dictionary contains definitions and usage notes
 - on data (elements, forms, files, organizations)
- ii) - some word dictionaries contain notes on - synonyms, abbreviations, cross-references to other entries, origin notes
 - a Data Dictionary also contains this information - especially well developed cross-referencing, linkage/associations between entries
 - an automated Data Dictionary permits retrieval of dictionary information along the linkage/relationship paths
- iii) - a common dictionary stores information about the English language
 - a DD stores information about organizations data
- iv) - a common dictionary stores information in a book
 - a DD stores information on a database
 - like any other DB you can have many different userviews/way of looking at the stored information
 - the multiplicity of userviews will be elaborated on later in this talk
- v) - for the remainder of this talk, remind yourself the DRIE's DD is a collection of knowledge and intelligence about DRIE's data
 - i.e. What the data is (definition)
 - What form the data is in (attributes)
 - Where the data is (location)
 - Where the data is used (relationships)
 - What the data is used for (usage)

DATA DICTIONARY

- What is it?
- What does it do?
- What are the contents?

2. What does it do?

For the Corporation

- Controls redundancy
- Generates consistency and accuracy
- Enforces standards and control
- Shortens application development and maintenance

For the Individual

- Increases data availability
- Clarifies data definitions
- Assesses the impact of change
- Increases data accessibility
- Identifies what the data looks like

DATA DICTIONARY

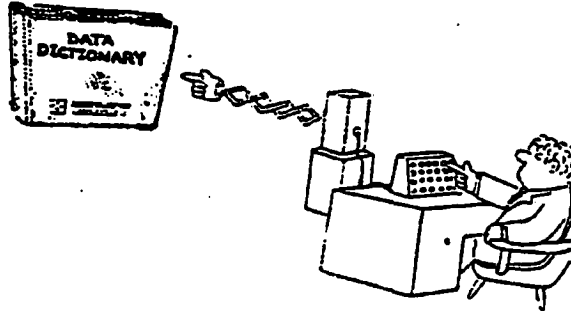
- What is it ?
- What does it do ?
- What are the contents ?

3. What are the Contents?

- Vary depending upon the use
- Minimum set
 - data element definitions
 - validation rules, calculation rules
 - sources of data
 - inter-relationships
 - responsibility
 - attributes - integer, decimal
 - alpha, numeric
 - size
 - left justified, right justified

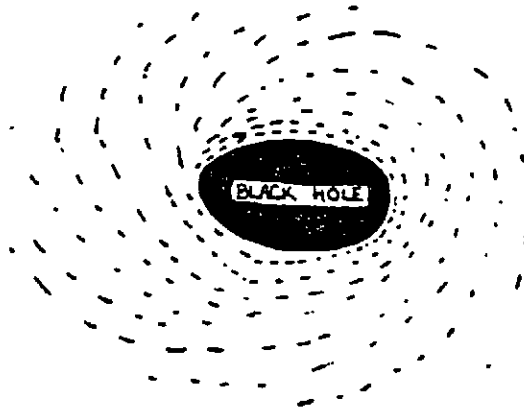
- files
- programs
- screens
- reports
- systems
- applications

4 . TANGIBLE BENEFITS INTRO



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- Many people at DRIE would like to do this to the Data Dictionary
 - They use it, curse it and swear at it daily
 - Many people are aware of the motherhood statements, the theoretical benefits
 - Most people are skeptical as to the value of the Data Dictionary to them, or to people like them, in doing their job
 - Some may even believe in the benefits to DRIE as a corporation but are skeptical of the benefits to the individual

5. TANGIBLE BENEFITS INTRO



Many people see the Data Dictionary as a black hole

Lots of information goes in but nothing comes out

People spend hours filling in the forms but they don't know how to get the information out

They are neither aware of the tangible benefits nor of how to achieve them

GOALS

- Awareness of tangible benefits
- Awareness of how to achieve the tangible benefits

Awareness of tangible benefits

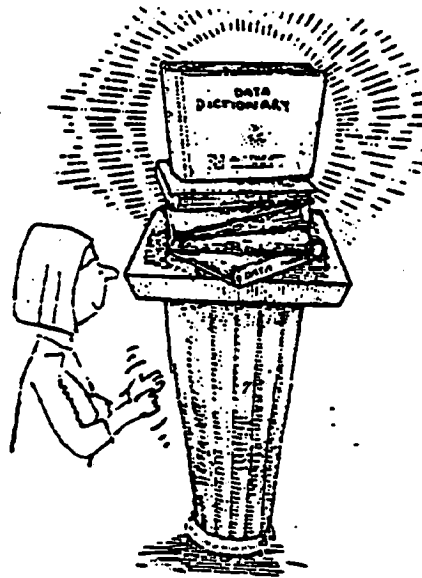
- The major goal of this presentation is to create an awareness of the tangible benefits of the dictionary to you in your job

- Also to create an awareness of the benefits to
 - users
 - systems analysts
 - system developers and system maintainers
 - management

Awareness of how to achieve the benefits

- This will be covered in subsequent presentations

7. TANGIBLE BENEFITS INTRO

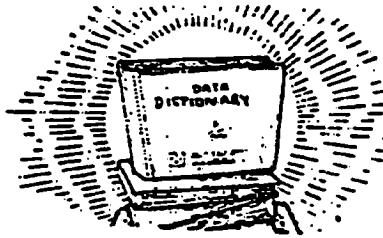


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- I am personally convinced of the benefits of a Data Dictionary

 - I hope you will be convinced at the end of this talk

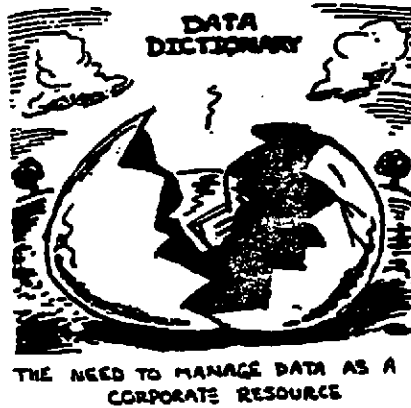
 - Some of you may have some legitimate concerns about the value of the dictionary; hopefully this presentation will alleviate those concerns

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- In general the DD has a negative image
 - It is associated with
 - undesirable clerical activity
 - filling in forms
 - People are not measured by how well they do these activities
 - People resist the standards and the data sharing that a DD imposes
 - Users
 - have difficulty in locating what they are looking for
 - definitions not clear enough
 - Hard to see benefits
 - When the DD is used properly all the benefits are obvious
 - But everyone has to believe in the benefits, understand them and become dependent on the Data Dictionary
 - Then the benefits will be easily obtained

9. TANGIBLE BENEFITS INTRO



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- The need for a Data Dictionary is born (or hatches) out of the need to manage data as a corporate resource
 - A Data Dictionary will permit the corporation to manage and utilize data effectively
 - A DD tracks and records the required information about the corporation's data
 - A corporate Data Dictionary
 - increases productivity
 - eliminates redundancy
 - controls the resource
 - DRIE has a corporate Data Dictionary which is the only way to obtain all the benefits of a Data Dictionary

10. TANGIBLE BENEFITS INTRO



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- The Data Dictionary is here to stay!
 - There are 2 categories of benefits to be achieved
 - benefits to the individual
 - benefits to the corporation
 - The benefits to the corporation taken in isolation are of sufficient magnitude to guarantee that the Data Dictionary is here to stay
 - Therefore, you as an individual might as well learn how to achieve the benefits to the individual and understand the benefits to the corporation

BENEFITS OF A DATA DICTIONARY

TIME

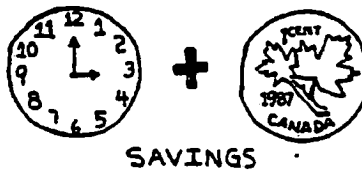
	USERS	EDP PERSONNEL
1. PERSONAL EXPERIENCE - slides 1-6	5	5
2. BENEFITS INTRO - slides 7-9	5	5
3. BENEFITS TO USERS	30	10
User Environment - slides 1-3		
User Benefits Outlined - slides 4-8		
Extensive User DD involvement - slides 9-16		
4. BENEFITS TO EDP DEVELOPMENT AND MAINTENANCE PERSONNEL	10	30
Benefits Outlined - slides 1-17		
EDP Benefit Summation - slide 18		
5. BENEFITS TO MANAGEMENT	10	10
Benefits Outlined - slides 1-5		
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1. PERSONAL EXPERIENCE

**DATA DICTIONARY
PERSONAL EXPERIENCE**

- In system design
 - In system development
 - In system maintenance
 - For impact analysis
 - For estimating costs of enhancements
 - In training users
 - In training EDP personnel
-
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2. PERSONAL EXPERIENCE



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- A Data Dictionary has saved me time and money everytime I used it

Bottom line

- I would not run a development project without one
- I would not run an information centre without one, regardless of whether it is for micros, minis or mainframes
- When I was at Laurentian there was no automated dictionary
- I chose to institute a manual Data Dictionary

3. PERSONAL EXPERIENCE

**DATA DICTIONARY
INCREASES
QUALITY**

-
-
- Whenever I have used a Data Dictionary it has increased the quality of the end product
 - I believe it is an absolute necessity on projects involving 3 or more people if a stable, high quality system is desired
 - The communication between team members necessitates a Data Dictionary

4. PERSONAL EXPERIENCE

QUALITY

II

COMMUNICATION

- Quality and communication are integrally connected

Communication

- During development, things change
- New fields get added
- Attributes, lengths, files get changed
- Edits, inter-relationships between elements change
- If no Data Dictionary, you must:
 - remember all the changes
 - remember to tell everyone of the changes
 - verify that the changes have been implemented
- Problems
 - you tell 3 people but the 4th was in the washroom
 - you remember 3 inter-relationships but forget the fourth

Quality

- With a Data Dictionary no one has any excuses
- The onus is on the programmer to check the Data Dictionary
- Everyone is accountable
- quality more easily attained with reliable info in the DD and easy access

5. PERSONAL EXPERIENCE

**A DATA DICTIONARY
INCREASES THE
QUALITY OF COMMUNICATION**

-
-
- Responsibility and information is usually spread over several people, different areas and different people
 - One area calls something client #, another area calls it applicant # and still another calls it establishment #
 - Without a Data Dictionary it has taken me months to discover that, what I thought was 2 different elements, were actually the same
 - A Data Dictionary helps ensure that the users from different areas of responsibilities don't add apples and oranges
 - A Data Dictionary helps the data entry clerk communicate with the project offices to ensure that the correct data is captured in the correct spot

CATEGORIES OF DATA DICTIONARY USE

- All environments - micro, mini, mainframe
- Strategic Information System Planning
- Data resource modelling
- System development life cycle (feasibility, analysis, design, development, maintenance)
- Training
- Data base administration
- Prototyping

- I believe the Data Dictionary is of benefit in these areas and in many others

BENEFITS OF A DATA DICTIONARY TO

- Users
- EDP development personnel and
EDP maintenance personnel
- Management

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- The tangible benefits have been grouped by 3 general job categories or responsibility categories
 - To make this presentation have more impact for you personally, the presentation will provide more detail in the areas which are most likely to be of interest to the audience here today

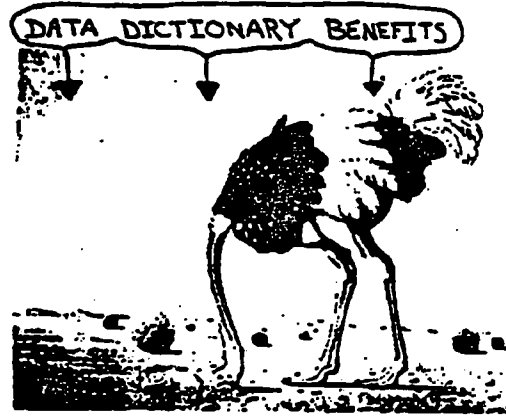
USER AND MANAGMENT

OR

EDP PERSONNEL

- It is important that each group has a basic understanding of how the other group can benefit from the DD
- This is primarily because the users pay for the DD processing costs and the EDP community must advise on its use

8. BENEFITS INTRO



IS THIS YOU ? .

-
-
- Ask yourself, if this is you?
 - Are you closing your mind to the benefits?
 - For the rest of this presentation ask yourself these questions

Questions

- Are you receiving these benefits?
- Why not?
- Why shouldn't you get these benefits?
- Are you incurring the overhead without getting the benefits?

Perhaps These Are The Answers

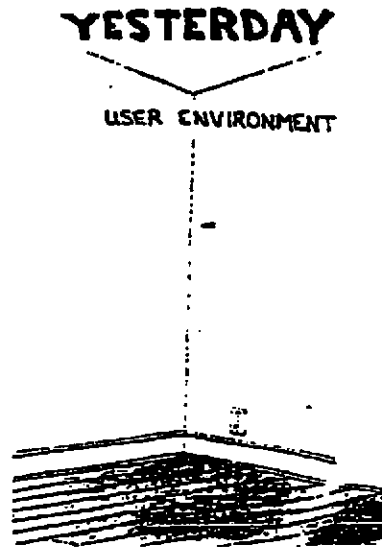
- Lack of knowledge of how to put information in
- Lack of knowledge of how to get the information out

9. BENEFITS INTRO

GO FOR IT NOW!

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- You can get these benefits now
 - The knowledge is available
 - The facilities are available
 - You must learn to make the dictionary work for you
 - The Data Dictionary will not go away
 - Now is the time to get out what you are putting in

1. USER ENVIRONMENT



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- Yesterday, the user environment with respect to computer equipment and knowledge was essentially a vacuum

2. USER ENVIRONMENT



- Today's user environment is dramatically changed from that of 5 years ago. This trend will continue in the future

Now

- Powerful, high capacity work stations are tailored to the functional needs of the users
- Distributed databases with distributed processing are widespread
- Users are merging data with video, graphics, etc.
- Users have increased access to external data sources

3. USER ENVIRONMENT



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- Users are no longer sheltered from information and data requests
 - The burden of extracting information from systems is shifting from dp personnel to users
 - Users are reprocessing data on their own micros
 - Users are spending time
 - developing unique extract programs
 - First they must determine
 - where the data is
 - what form it is in
 - how is the data processed

Corporate Data Dictionary

- Only hope
- Only way to achieve consistency of data rolled up at the National level
- Help users become more self sufficient
- Help users become more productive
- Help users to share responsibility for maintaining their own data

**THE TANGIBLE BENEFITS OF
A DATA DICTIONARY
TO THE USERS**

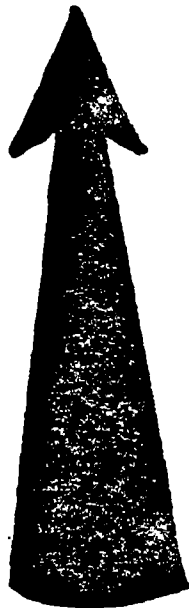
-
-
- The users need to achieve a greater understanding of the benefits of a DD

and

how to use the DD

 - as the user community achieves more and more responsibility for their own data, they will need to use a Data Dictionary extensively

5a. USER BENEFITS OUTLINED



USER BENEFITS OF A DATA DICTIONARY

1. Increases consistency and integrity
2. Increases quality of communication
3. Increases accuracy of impact analysis
4. Increases control of data

1. Increases Consistency and Integrity

- Users are on the hot seat to provide accurate corporate statistics

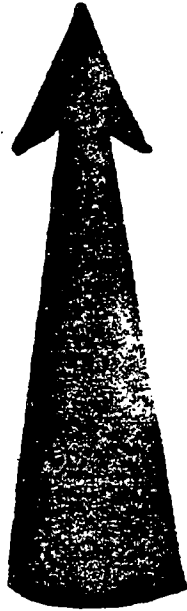
Standard Data collection

- Consistency of data rolled up at a national level is increased if people across Canada are entering the data in the same way, in some fields

Standard Data dissemination, Standard Usage

- Agreement about data definitions increases integrity in usage of data
- Reports provided to the users clients are better understood with a DD to support them, and therefore the use will be more accurate

5b. USER BENEFITS OUTLINED



USER BENEFITS OF A DATA DICTIONARY

1. Increases consistency and integrity
2. Increases quality of communication
3. Increases accuracy of impact analysis
4. Increases control of data

2. Increases Quality of Communication

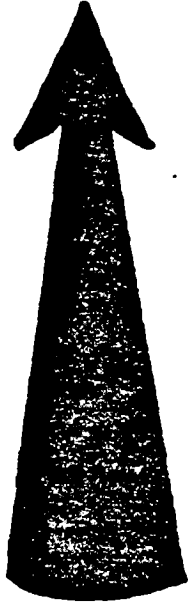
Clarification

- Different people have different ideas about the meaning of the data
- The dictionary provides a focal point for discussions
- The dictionary provides the basis with which to obtain resolution and standardization

Easily referenced

- Stored centrally, people are more likely to reference the central authority

5c. USER BENEFITS OUTLINED



USER BENEFITS OF A DATA DICTIONARY

1. Increases consistency and integrity
2. Increases quality of communication
3. Increases accuracy of impact analysis
4. Increases control of data

3. Increases Accuracy of Impact Analysis

- Users must frequently do their own impact analysis, from their specific perspective
- The Data Dictionary makes it easier to determine the impact of a change
e.g. if a key field is to be changed in size or an additional key field added

Question is - how many screens and reports will have to be changed?

- how many applications/forms will have to be changed?

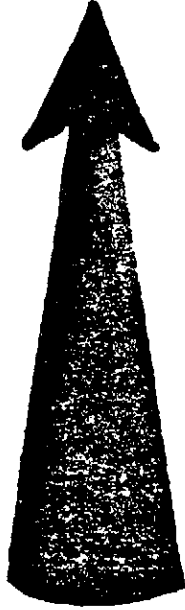
Answer is - instantly available with a Data Dictionary, you don't have to search manuals or forms

- The accuracy of the analysis increases

Other Uses of Impact Analysis

- You can use the Data Dictionary to determine how many forms, applications or source documents must be changed

5d. USER BENEFITS OUTLINED



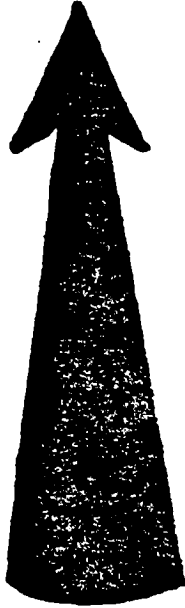
USER BENEFITS OF A DATA DICTIONARY

1. Increases consistency and integrity
2. Increases quality of communication
3. Increases accuracy of impact analysis
4. Increases control of data

4. Increases Control of Data

- Users must manage their data and therefore must know:
 - where the data resides (location)
 - where the data is used (relationship)
 - what the data is used for (usage)
 - what the data is (definition)
 - what form the data is in (attribute)

6a. USER BENEFITS OUTLINED



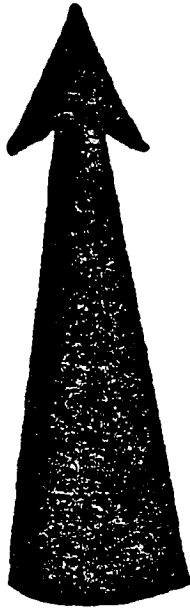
USER BENEFITS OF A DATA DICTIONARY (cont'd)

5. Increases knowledge about data
6. Increases performance improvement
7. Increases data security

5. Increases Knowledge About Data

- Users need to know a lot of details about the data they work with
 - Documents all the names for a DD element in one place
 - end user names
 - corporate name
 - abbreviations
 - NATURAL alias for adhoc
 - Documents where the data is used
- Users can determine if a report already exists to satisfy needs
- Users can readily determine who is responsible for maintaining the data, inputting it
- Users can determine if the element can be used for their specific purposes

6b. USER BENEFITS OUTLINED



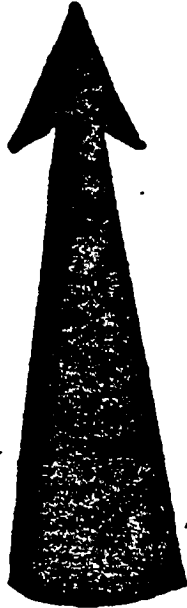
USER BENEFITS OF A DATA DICTIONARY (cont'd)

5. Increases knowledge about data
6. Increases performance improvement
7. Increases data security

6. Increases Performance Improvement

- Users need to know how to interpret information from the system and how to obtain it quickly
 - A DD increases the knowledge people have about the data they are working with
 - A DD helps people interpret the information on the report they have received
 - When people know what they are working with they are better able to perform their jobs

6c. USER BENEFITS OUTLINED



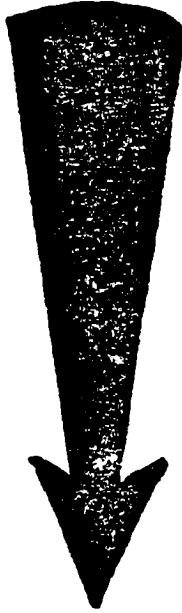
USER BENEFITS OF A DATA DICTIONARY (cont'd)

5. Increases knowledge about data
6. Increases performance improvement
7. Increases data security

7. Increases Data Security

- Users need to ensure that certain information has restricted access, other information needs to have broad access
 - A DD can enforce and define security
 - It can determine who is authorized to change the field definition and determine the valid values
 - It can determine who has access to its contents
 - It can be used in conjunction with the DBMS to define the userviews

7a. USER BENEFITS OUTLINED



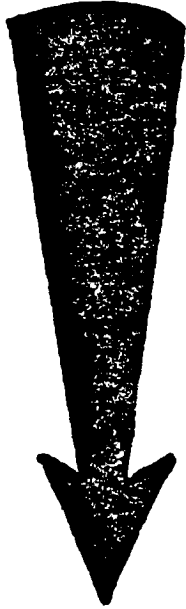
USER BENEFITS OF A DATA DICTIONARY (cont'd)

8. Decreases cost of system enhancements and development
9. Reduces learning curve
10. Reduces data redundancy
11. Reduces time to produce ad hoc reports

8. Decreases Cost of System Enhancements and Development

- This is the most tangible benefit to users; easiest place to see the benefits
 - A DD decreases analysis effort by providing a reliable source of information at the detail level
 - A DD reduces the time to develop a system by
 - enforcing standards
 - decreasing the need for team interaction
 - A DD increases the quality of the initial system installation which decreases the cost of the implementation phase

7b. USER BENEFITS OUTLINED



USER BENEFITS OF A DATA DICTIONARY (cont'd)

8. Decreases cost of system enhancements and development
9. Reduces learning curve
10. Reduces data redundancy
11. Reduces time to produce ad hoc reports

9. Reduces Learning Curve

- The user needs to bring new employees up to peak productivity as quickly as possible
 - DD aids in training new employees and reduces the learning curve
 - Provides a reliable source of information at the detail level of the business
 - This information is often difficult to pick up because it is usually spread around the organization
 - The corporate and business models let you understand the organization from the top down
 - DD can be used in training to provide top down and bottom up views

7c. USER BENEFITS OUTLINED



USER BENEFITS OF A DATA DICTIONARY (cont'd)

8. Decreases cost of system enhancements and development
9. Reduces learning curve
10. Reduces data redundancy
11. Reduces time to produce ad hoc reports

10. Reduces Data Redundancy

- Data redundancy can cause User Management to release inaccurate statistics
 - Data redundancy occurs when people start storing the same information in 2 or more different places
 - The result of having the data stored in 2 different places is inaccurate reports and inquiries, sequence and timing
 - People don't know where to look to find the information
 - A DD clarifies what an element is and how it is calculated (or otherwise obtained)
 - Thus it is easier to control how the data gets into the system

7d. USER BENEFITS OUTLINED



USER BENEFITS OF A DATA DICTIONARY (cont'd)

- 8. Decreases cost of system enhancements and development
- 9. Reduces learning curve
- 10. Reduces data redundancy
- 11. Reduces time to produce ad hoc reports

11. Reduces Time to Produce Adhoc Reports

- Users are increasingly responsible for producing their own adhoc
 - A DD can identify report programs which already exist
 - when the number of reports gets large it is hard to ascertain which elements appear on which reports
 - a DD can find this out in minutes
 - A DD can reduce the time required to produce new ad hocs by quickly identifying information needed by the programmer; such as: the size, natural alias and usage of the elements,
 - i.e. - does RAMS use this field?
 - how does CIRB or AEP use this field?
 - what are the logical relationships?

8. USER BENEFITS OUTLINED

SUMMARY OF USER BENEFITS OF A DATA DICTIONARY

1. ↑ consistency and integrity
2. ↑ quality of communication
3. ↑ accuracy of impact analysis
4. ↑ control of data
5. ↑ knowledge about data
6. ↑ performance improvement
7. ↑ data security
8. ↓ cost of development and system enhancements
9. ↓ learning curve
10. ↓ data redundancy
11. ↓ time to produce ad hoc reports

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-
- understanding these benefits should help ensure that the users will:
 - actively promote the use of DD
 - have a greater willingness to pay for the DD processing and data entry costs
 - take more interest when DD issues surface

 - the DD does affect the users

 - the DD is useful to users and EDP people

 - just how useful the DD can be to a user is shown in the case history which follows

9. EXTENSIVE USER DD INVOLVEMENT

**A CASE HISTORY
OF EXTENSIVE USER
DATA DICTIONARY INVOLVEMENT
"TRANE DEALER PRODUCTS GROUP"**

-
- "TRANE DEALER PRODUCTS GROUP" took over G.E.'s - Central Air Conditioning
 - They had 18 months to wean themselves completely from General Electric's Information System Support
 - No programs or systems could be transferred from G.E.

10. EXTENSIVE USER DD INVOLVEMENT

TIME

- 18 months

ENVIRONMENT

- 700 programs
- 80 IMS databases
- 750,000 transactions / day
- 5 - 10 million record / database

PERSONNEL

- 7 analysts
 - 17 programmers
 - 1 IMS manager
-
-

- as you can see

- the environment is big system
- the time parameters are short

11. EXTENSIVE USER DD INVOLVEMENT



IMS MANAGER

- Under the circumstances this is probably a reasonable response

12. EXTENSIVE USER DD INVOLVEMENT

APPROACH CHOSEN

- Use DATA MANAGER for data dictionary
- Use top down design
- Get the user to review the design document online

13. EXTENSIVE USER DD INVOLVEMENT

DATA MANAGER

- Project definitions, phases, task
 - Feasibility study, functional specs
 - Data flow diagrams, process descriptions
 - Detail specifications
 - screens, reports program specs, data definitions
 - Glossary of terms, operator procedures
-
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14. EXTENSIVE USER DD INVOLVEMENT

USER RESPONSIBILITY

- Review all entries
- Received electronic mail
- Areas for comments
- Easy access routes

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- Review design, dictionary, etc., were all online
 - User periodically received electronic mail notification
 - Notification of what needs had to be reviewed
 - Comment area for each entry (to type in comments)
 - User listed the data elements to be put on screen, and reports

15. EXTENSIVE USER DD INVOLVEMENT

BENEFITS

- Users had more control
- Users understood design better
- Early partitioning of applications
- User pre - trained on system

Control

- Users felt that they had more control over the whole process
- Users could add comments throughout the process
- Users could directly observe the progress on the project

Understood design

- Users became more aware of the overall picture
- Users better understood how pieces fit together

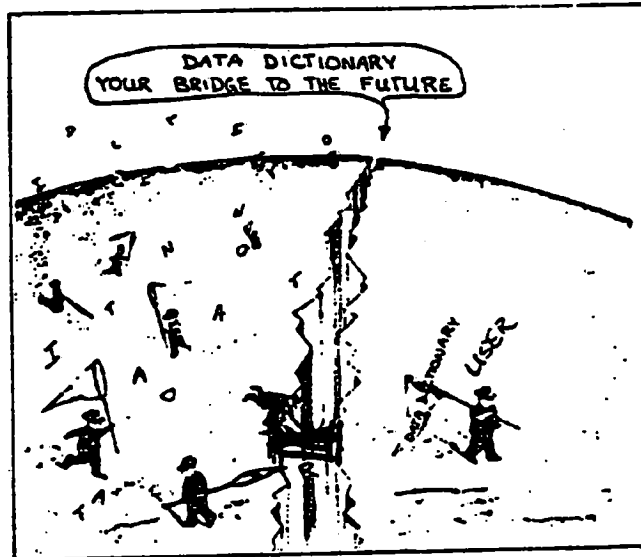
Early partitioning of applications

- Users could focus on their area of interest
- Developers understood the business processes more quickly
- Users designed initial screens and reports

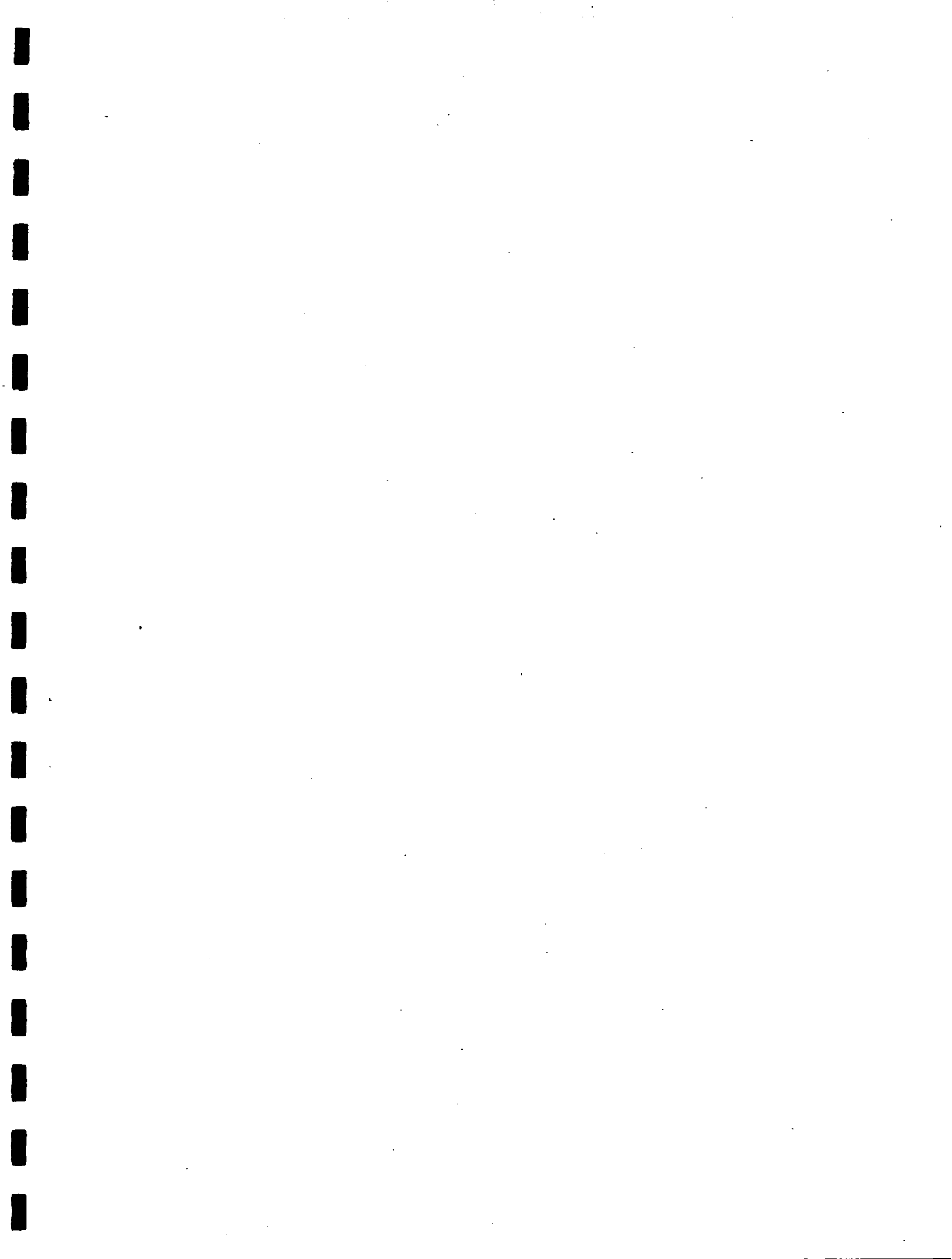
Users pre-trained on system

- Users were familiar with the system before it came up

16. EXTENSIVE USER DD INVOLVEMENT



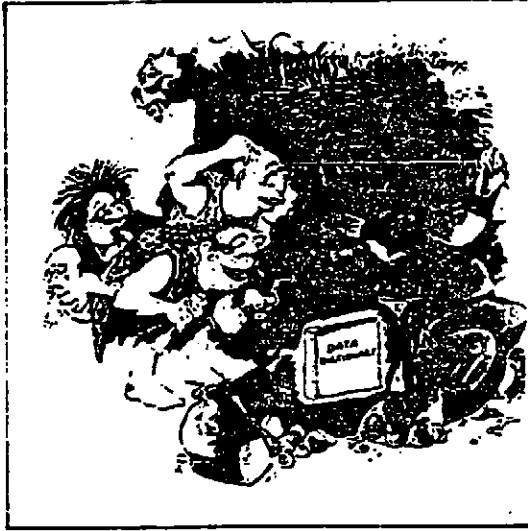
The Data Dictionary is the bridge that the user community will need in order to have more control over their own data



1. EDP BENEFITS OUTLINED

**THE TANGIBLE BENEFITS OF A
DATA DICTIONARY TO
EDP PERSONNEL**

2. EDP BRNEFITS OUTLINED



A DATA DICTIONARY DOESN'T MEAN
MUCH IF YOU DON'T KNOW HOW TO USE IT!

-
- To a large extent the EDP community does not know how to use the DD effectively
 - The automated DD technology has advanced a great deal in the last 5 years
 - These two factors combined with the fact that there has not been a determined effort to educate the EDP community on DD use means that there is a lot of new information which must be assimilated

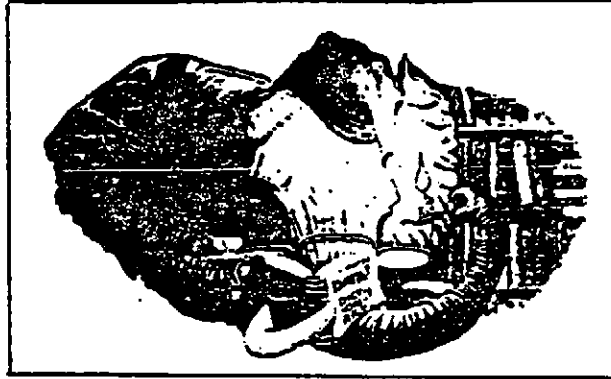
3. EDP BENEFITS OUTLINED

BENEFITS TO EDP PERSONNEL

- **Benefits to system analysts**
- **Benefits to system developers**
- **Benefits to system maintenance personnel**

-
-
- **Everyone needs to develop a better understanding of the benefits of a Data Dictionary to EDP personnel**
 - **The Users need to understand how and why the EDP personnel depend on it**
 - **The EDP personnel need to become more dependent upon the dictionary in order to get more benefits from it**

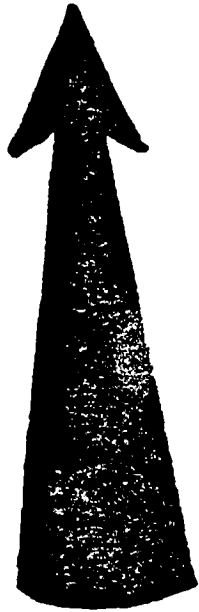
4. EDP BENEFITS OUTLINED



THE BENEFITS OF A DATA DICTIONARY TO
SYSTEM ANALYSTS

-
- The analysts and system designers work with the dictionary in a different manner than the system developers and maintenance personnel do.
 - Thus, it is necessary to focus on the benefits which are applicable to systems analysis/design.

5a. BENEFITS OUTLINED



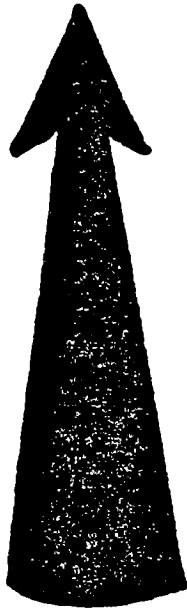
SYSTEM ANALYSTS BENEFITS OF A DATA DICTIONARY

1. Increases quality of analysis/design specifications
2. Increases quality of communication
3. Increases accuracy and consistency of analysis/design specifications

1. Increases Quality of Analysis/Design Specifications

- The EDP professional's reputation depends upon the quality of the design specifications
 - The DD forces discipline and guides the analyst in structuring the design tasks
 - The DD forms and procedures forces the analysts to put the information into the DD in a structured manner
 - This ensures that standards are maintained which increases quality
 - The DD forms, forces questions to be answered at appropriate times and people don't have to rely on memory
 - The DD has internal quality checks to make sure that
 - synonyms identified
 - homonyms identified
 - elements are not left unreferenced
 - cross-references are checked

5b. BENEFITS OUTLINED



SYSTEM ANALYSTS BENEFITS OF A DATA DICTIONARY

1. Increases quality of analysis/design specifications
2. Increases quality of communication
3. Increases accuracy and consistency of analysis/design specifications

2. Increases Quality of Communication

- The second biggest benefit is communication; and effective communication is the key to a good design

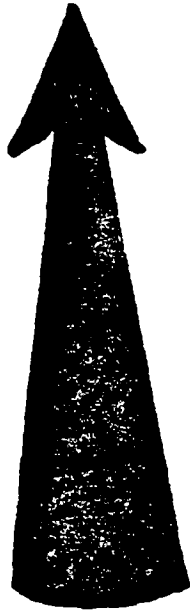
Communication Between Analysts

- The Data Element definitions and analyst text identify (in one central location) the
 - definition
 - edit and validation rules
 - source documents
 - inter-relationships, etc.
- Analysts can easily reference the definitive source
- Changes are easily communicated
- Discussions are clearly focused on existing definitions

Communication Between Analysts and Users

- Dictionary can serve as a focal point for discussions between analysts and users

5c. BENEFITS OUTLINED



SYSTEM ANALYSTS BENEFITS OF A DATA DICTIONARY

1. Increases quality of analysis/design specifications
2. Increases quality of communication
3. Increases accuracy and consistency of analysis/design specifications

3. Increases Accuracy and Consistency of Analysis/Design Specifications

- The third benefit arises from the first two

Automated DD

- Automatically verifies the usage of data
- Automatically indicates
 - elements not used
 - programs with no files, etc.
- Cross-checks all references

All DD's

- Avoid redundancy
- Redundancy is deadly to impact analysis
- If there is more than 1 place to store the same information
 - data rollups will be inaccurate
 - file design will be inconsistent
 - numerous serious problems will result

5d. BENEFITS OUTLINED



SYSTEM ANALYSTS BENEFITS OF A DATA DICTIONARY

4. Reduces analysis effort

4. Reduces Analysis Effort

- A DD does reduce the analysis effort, but the manner in which it does this is not immediately obvious

Existing DD

- A DD provides a reliable source of information as a starting point for analysis
- AEP analysis was expedited because existing data elements were clearly defined
- In the DESA analysis considerable time had to be expended to clean up the DD, that time paid off for AEP

New DD

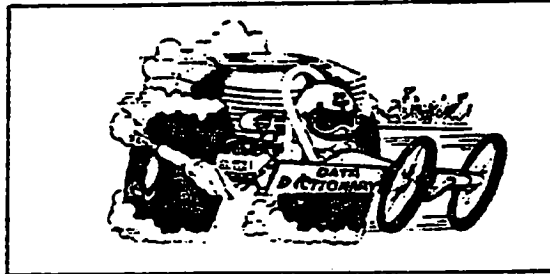
- The DD can be used to document the business model, the data flow diagrams and all other stages of the SDLC
- The Analyst Text specifies edit rules, source documents and inter-relationships
- Time and effort is saved by having 1 central location for this information

6. BENEFITS OUTLINED

**SUMMARY OF BENEFITS OF A
DATA DICTIONARY TO
SYSTEM ANALYSTS**

1. ↑ Quality of analysis and design specifications
 2. ↑ Quality of communication
 3. ↑ Accuracy and consistency of analysts and design specifications
 4. ↓ Analysis effort
-
-

7. BENEFITS OUTLINED



THE BENEFITS OF A DATA DICTIONARY TO
SYSTEM DEVELOPERS

-
-
- The system developers are usually the people who benefit the most from the information which has been put into the dictionary by the analysts and designers
 - The system developers have the task of picking up a lot of information quickly

8a. BENEFITS OUTLINED



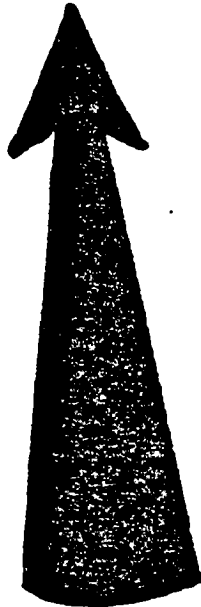
**SYSTEM DEVELOPER BENEFITS
OF A DATA DICTIONARY**

1. Increases quality of provided system documentation
2. Increases programmer productivity
3. Increases quality of system produced

1. **Increases Quality of Provided System Documentation**

- If a DD is used advantageously in design, it ...
 - ensures the quality, accuracy, consistency of the specifications
 - standardizes the specifications. This further guarantees quality and makes it easier for the programmer to assimilate the design specifications
 - makes the development phase easier and results in fewer last minute changes

8b. BENEFITS OUTLINED



SYSTEM DEVELOPER BENEFITS
OF A DATA DICTIONARY

1. Increases quality of provided system documentation
2. Increases programmer productivity
3. Increases quality of system produced

2. Increases Programmer Productivity

- Every system development team is rushed for time and a DD increases programmer productivity
 - A DD provides a central authority on detailed information
 - A DD provides easy access to information about data
 - size, attributes
 - definition
 - names, NATURAL ALIAS
 - edit rules
 - source documentation
- Easy access to this information in DRIE by Keyword searches, online access and cross-reference lists
- All of the above increases the productivity of the programmers by making information readily available

8c. BENEFITS OUTLINED



SYSTEM DEVELOPER BENEFITS OF A DATA DICTIONARY

1. Increases quality of provided system documentation
2. Increases programmer productivity
3. Increases quality of system produced

3. Increases Quality of System Produced

- It has been clearly demonstrated that a DD will increase the quality of the system produced
 - A DD provides the central reference point between the analysts and the programmers
 - The analysts ensure that the DD contains all the necessary information
 - edit rules, standard names
 - NATURAL ALIAS, source documentation
 - interrelationship edits
 - The programmers have only one place to look for this information
 - Changes - automatically get to all team members
 - Programmers can reference the required information as frequently as needed and develop an understanding of the broader picture
 - Interfaces and inter-connecting modules fit together better because the components are better defined

9a. BENEFITS OUTLINED



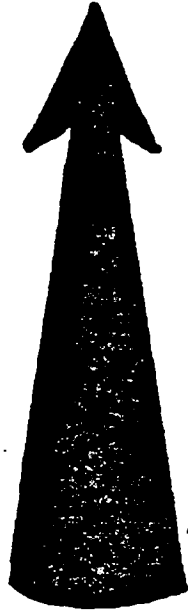
**SYSTEM DEVELOPER BENEFITS
OF A DATA DICTIONARY**

4. Increases ease of producing system documentation
5. Increases quality of system documentation
6. Increases the ability of system developers to react to design changes

4. Increases Ease of Producing System Documentation

- All EDP personnel dislike doing documentation
- A DD makes it easier to produce the required system documentation
- Program descriptions, file descriptions, screens and reports, come from the DD in the design phase. Only modifications have to be inputted during development
- Training manuals, user manuals, and operations manuals can be produced almost entirely from the DD

9b. BENEFITS OUTLINED



**SYSTEM DEVELOPER BENEFITS
OF A DATA DICTIONARY**

4. Increases ease of producing system documentation
5. Increases quality of system documentation
6. Increases the ability of system developers to react to design changes

5. Increases Quality of System Documentation

- The quality of system documentation is critical to the future maintenance of the system
- It makes the documentation more standard
- Because it is easier to change the documentation with a DD, the system development people are more likely to make the changes on a timely basis

Chicken and Egg Situation

- As more people depend on the DD, the importance of the accuracy of the information increases. The quality and consistency of the info in the DD also go up in direct proportion to its accuracy.

9c. BENEFITS OUTLINED



**SYSTEM DEVELOPER BENEFITS
OF A DATA DICTIONARY**

4. Increases ease of producing system documentation
5. Increases quality of system documentation
6. Increases the ability of system developers to react to design changes

6. Increases the Ability of System Developers to React to Design Changes

- All system designs undergo some changes during development
 - A DD permits the developers to determine the impact of a design change
 - identify which programs, files, screens, reports, etc., will have to be changed
 - A DD helps put a design into a global perspective as well as indicating the changes needed at a detailed level

10. BENEFITS OUTLINED



SYSTEM DEVELOPER BENEFITS
OF A DATA DICTIONARY

7. Decreases program coding required

7. Decreases Program Coding Required

- Many people don't realize that the DD actually produces code

Interactive DD

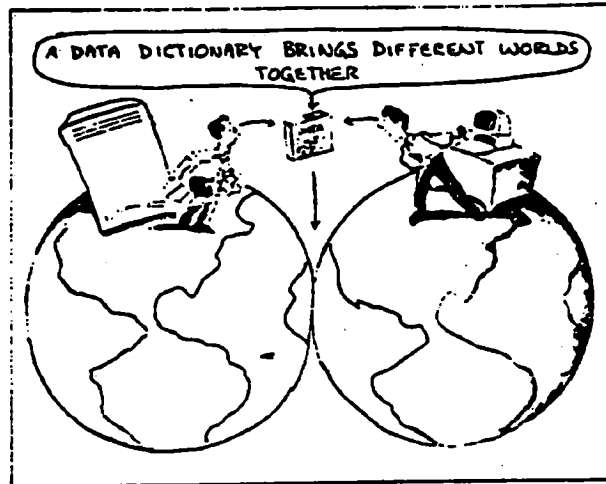
- Produces loader definitions for the DBMS, ADABAS
- Produces copy libraries and file definitions for COBOL, PL/I and other high level languages
- Some of the newer packages produce edit routines in 4th and 5th generation languages

11. BENEFITS OUTLINED

**SUMMARY OF BENEFITS OF A
DATA DICTIONARY TO
SYSTEM DEVELOPERS**

1. ↑ Quality of provided system documentation
 2. ↑ Programmer productivity
 3. ↑ Quality of system
 4. ↑ Ease of producing system documentation
 5. ↑ Quality of system documentation
 6. ↑ The ability of system developers to react to design changes
 7. ↓ Program coding required
-
-

12. BENEFITS OUTLINED



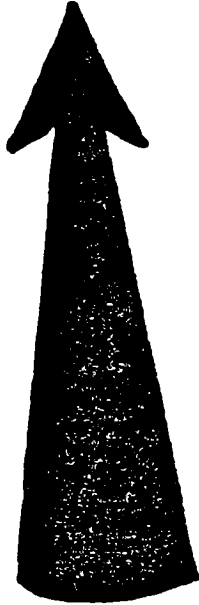
THE BENEFITS OF A DATA DICTIONARY TO
SYSTEM MAINTENANCE PERSONNEL

-
-
- Maintenance personnel must bring many different worlds together - user's world and EDP world;
 - system designers and system maintainers

 - The maintenance personnel are doing many of the same tasks which comprise the analysis, design and development of a new system, but in many cases the original design and development team are long gone

 - The dictionary can help find a common ground for communication

13a. BENEFITS OUTLINED



**SYSTEM MAINTENANCE PERSONNEL
BENEFITS OF A DATA DICTIONARY**

1. Increases quality of system documentation
2. Increases the accuracy of impact analysis
3. Increases the quality of communication

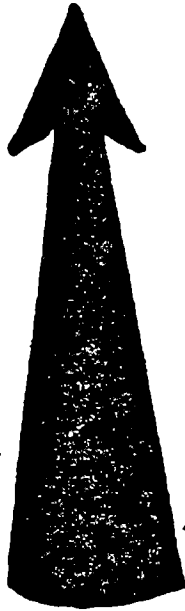
1. Increases the Quality of System Documentation

- A DD used in the system development improves the quality of system documentation
- standardizes it
- makes it easier to keep the documentation up to date
- as more people depend upon it, the quality improves

NOTE - When system documentation is high quality

- time and money are saved when enhancements are made
- when new people join the maintenance team, it takes less time to bring them up to peak productivity

13b. BENEFITS OUTLINED

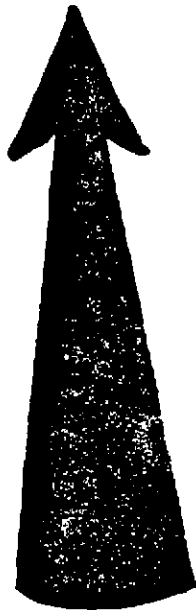
**SYSTEM MAINTENANCE PERSONNEL
BENEFITS OF A DATA DICTIONARY**

1. Increases quality of system documentation
2. Increases the accuracy of impact analysis
3. Increases the quality of communication

2. Increases the Accuracy of Impact Analysis

- The second big, big benefit of the DD to maintenance personnel is in impact analysis
 - A DD makes it easier to determine the impact of a change e.g., if a key field is to be changed in size or an additional field added
 - Can use online DD and get the answer in minutes as to how many programs, files, source documents must be changed
 - When the system involves 20 or more programs, the amount of time available to do a manual impact analysis severely limits the accuracy of the results

13c. BENEFITS OUTLINED



SYSTEM MAINTENANCE PERSONNEL
BENEFITS OF A DATA DICTIONARY

1. Increases quality of system documentation
2. Increases the accuracy of impact analysis
3. Increases the quality of communication

3. Increases the Quality of Communication

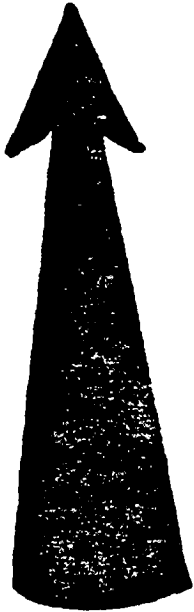
Communication Between EDP Personnel

- The Data Element definitions and the analyst text focuses discussion and provides a starting point for discussion
- Information can be easily referred to such as:
 - edit rules
 - definition
 - source documents
 - inter-relationships, etc.
- This is critical to maintenance teams
- With no DD, this information must be gathered through many time consuming conversations and from many other sources

Communication Between EDP Personnel and End Users

- Serves as a focal point for discussion on
 - usage
 - source
 - responsibility

14a. BENEFITS OUTLINED



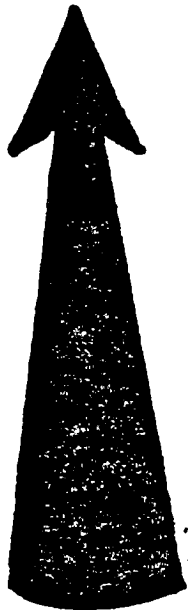
SYSTEM MAINTENANCE PERSONNEL
BENEFITS OF A DATA DICTIONARY

4. Increase programmer productivity
5. Increases the quality of the maintenance activity

4. Increases the Programmer Productivity

- Less coding required because of the file definitions, standard copy libs, etc.
- A DD provides easy access to information the programmer needs such as:
 - size
 - attributes
 - NATURAL ALIAS
 - edit rules
- Increases programmer productivity because less time is spent searching for the information

14b. BENEFITS OUTLINED



SYSTEM MAINTENANCE PERSONNEL
BENEFITS OF A DATA DICTIONARY

4. Increase programmer productivity
5. Increases the quality of the maintenance activity

5. Increases the Quality of the Maintenance Activity

- Maintenance teams must be able to put their fingers on a large body of system knowledge quickly
 - A DD provides the maintenance personnel with a solid basis of reliable documentation
 - A programmer is far more likely to obtain all the information required for a job and to quality assure the output of that job if the information is
 - centrally located
 - easily obtained

15. **BENEFITS OUTLINED**



SYSTEM MAINTENANCE PERSONNEL
BENEFITS OF A DATA DICTIONARY

6. Reduces the training time for new EDP personnel

6. Reduces the Training Time for New EDP Personnel

- New EDP Personnel require less time to become familiar with the system when the information is
 - concentrated
 - trustworthy
 - easily accessed.

- Less time is spent in communicating and more time is spent in productive work

16. BENEFITS OUTLINED

**SUMMARY OF BENEFITS OF A
DATA DICTIONARY TO
SYSTEM MAINTENANCE PERSONNEL**

1. ↑ Quality of system documentation
 2. ↑ Accuracy of impact analysis
 3. ↑ Quality of communication
 4. ↑ Programmer productivity
 5. ↑ Quality of maintenance activities
 6. ↓ Training time for new EDP personnel
-
-

17. BENEFITS OUTLINED

SUMMARY OF BENEFITS TO EDP PERSONNEL

SYSTEM ANALYSTS BENEFITS

1. ↑ Quality of analysis and design specifications
2. ↑ Quality of communication
3. ↑ Accuracy and consistency of analysts and design specifications
4. ↓ Analysis effort

SYSTEM DEVELOPERS BENEFITS

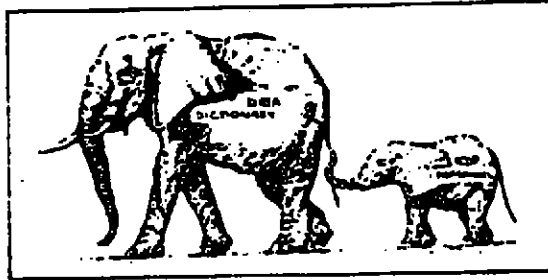
1. ↑ Quality of provided system documentation
2. ↑ Programmer productivity
3. ↑ Quality of system
4. ↑ Ease of producing system documentation
5. ↑ Quality of system documentation
6. ↑ The ability of system developers to react to design changes
7. ↓ Program coding required

SYSTEM MAINTENANCE PERSONNEL BENEFITS

1. ↑ Quality of system documentation
2. ↑ Accuracy of impact analysis
3. ↑ Quality of communication
4. ↑ Programmer productivity
5. ↑ Quality of maintenance activities
6. ↓ Training time for new EDP personnel

-
-
- These benefits are all fully achievable
 - They require a collective belief and dependency before they are all attained
 - The DRIE environment is currently reaping most of these benefits
 - To date, the individual has not fully seen the collective picture and so has remained largely unaware of the magnitude of the benefits

18. BENEFITS OUTLINED



EDP PERSONNEL NEED A DATA DICTIONARY

In Summary:

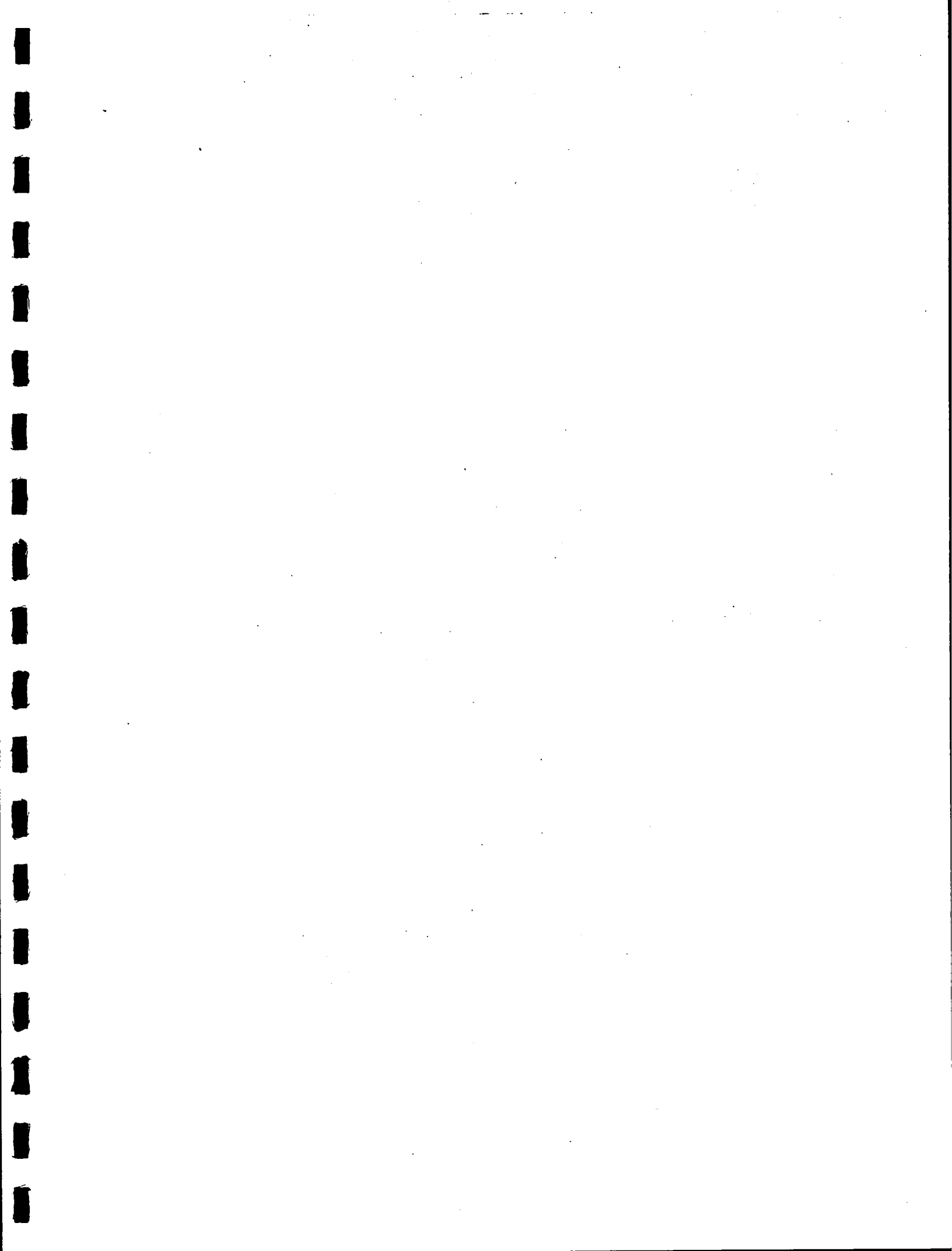
- The bigger the system, the more advantageous a Data Dictionary is
- Anyone who has used the Data Dictionary fully knows how beneficial it is
- It is a truism that "you get value out of the dictionary directly proportional to the value put into it"
- If you know how to use the Data Dictionary, you exercise more thought and control over the information that goes into it
- Even a manual Data Dictionary will yield most of the benefits mentioned here

Future

- Place more and more emphasis on increased productivity and quality of systems
- Fewer person years available

Bottom Line

- The Data Dictionary saves you time and money, you can't do without it



1. BENEFITS OUTLINED

**THE TANGIBLE BENEFITS OF A
DATA DICTIONARY TO
MANAGEMENT**

-
-
- **DRIE Corporate Management**
 - **User Management**
 - **EDP Management**
 - **Top Management**

2. BENEFITS OUTLINED



-
- Because data consumes a large portion of the corporate budget, Management is being forced more and more to manage data like any other resource. (e.g. furniture or people or money.)
 - To the Manager, this presents a unique set of problems
 - there is a bewildering array of equipment and hardware
 - micro, mini and mainframe environments each pose unique problems
 - To effectively manage an intangible resource like data, a tool which has the capability of "pinning the data down" is required.
 - A Data Dictionary can do this by providing the necessary information about the data. (e.g. a data base about data).

3a. BENEFITS OUTLINED



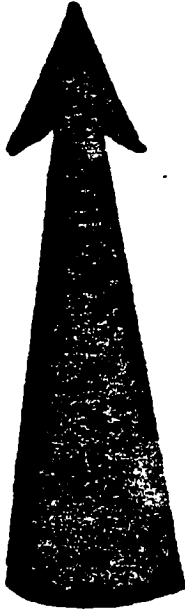
**MANAGEMENT BENEFITS OF A
DATA DICTIONARY**

1. Increases manageability of data
2. Increases accountability
3. Increases security and control over data
4. Increases quality of data supplied

1. Increases Manageability of Data

- Manageability is the most important benefit to management
 - A DD increases management's ability to actively manage the data
 - DD identifies
 - where the data is
 - what data is available
 - what format the data is in, etc.
- All this is necessary to control costs and manage data as a corporate resource

3b. BENEFITS OUTLINED



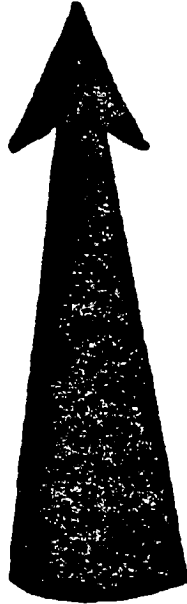
MANAGEMENT BENEFITS OF A DATA DICTIONARY

1. Increases manageability of data
2. Increases accountability
3. Increases security and control over data
4. Increases quality of data supplied

2. Increases Accountability

- Management is being required to justify the cost of data by identifying the users and use of the data
 - A DD provides an audit trail
 - A DD
 - describes where and how the data is used
 - identifies what program uses the data
 - contains information about the users of the data, the transformations performed on the data, etc.
- All this information is important in maintaining operational control over the database environment

3c. BENEFITS OUTLINED



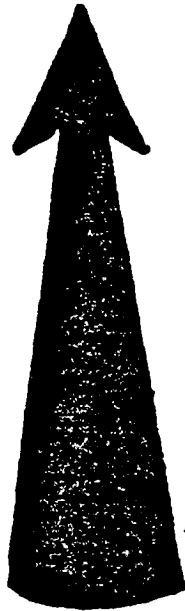
**MANAGEMENT BENEFITS OF A
DATA DICTIONARY**

1. Increases manageability of data
2. Increases accountability
3. Increases security and control over data
4. Increases quality of data supplied

3. Increases Security and Control Over Data

- Who has access to which information is becoming a hotter and hotter issue to management
 - A DD can help define and control data access by identifying
 - userviews
 - update responsibility
- and coordinating this information with the DBMS

3d. BENEFITS OUTLINED



**MANAGEMENT BENEFITS OF A
DATA DICTIONARY**

1. Increases manageability of data
2. Increases accountability
3. Increases security and control over data
4. Increases quality of data supplied

4. Increases Quality of Data Supplied

- Management must be able to supply accurate national statistics or risk acute embarrassment
- A DD increases the quality of data supplied to management by
 - increasing the accuracy and consistency of data usage
 - increasing the quality and level of communication between branches
 - increasing the accountability of the people supplying the data
 - increasing the ability of people to locate the desired information quickly

4a. BENEFITS OUTLINED



**MANAGEMENT BENEFITS OF A
DATA DICTIONARY**

- 5. Decreases administrative effort
- 6. Reduces the cost of system development and maintenance

5. Decreases Administrative Effort

- With the current shortage of person years, management must take all possible steps to reduce administrative effort
 - A DD reduces the administrative effort of the Data Base Administration Area and the Data Administration Area by providing
 - automated tools
 - controls and standards
 - redundancy identification

4b. BENEFITS OUTLINED



**MANAGEMENT BENEFITS OF A
DATA DICTIONARY**

5. Decreases administrative effort
6. Reduces the cost of system development and maintenance

6. Reduces the Cost of System Development and Maintenance

- There are fewer and fewer dollars being set aside for system development
 - A DD saves time and money in the EDP environment in
 - analysis
 - development
 - maintenance
- and in the end user environment
 - end user's time spent in communicating

5. BENEFITS OUTLINED

SUMMARY OF BENEFITS OF A DATA DICTIONARY TO MANAGEMENT

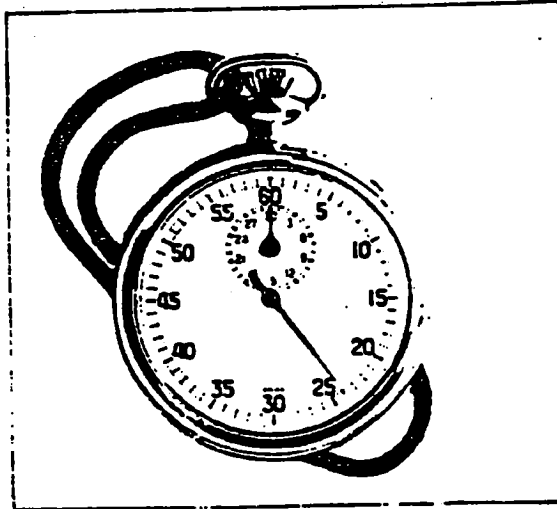
1. ↑ The manageability of data
2. ↑ Accountability
3. ↑ Security and control over data
4. ↑ Quality of data supplied to management
5. ↓ Administrative effort
6. ↓ Cost of system development and maintenance

-
-
- Management is being held accountable at all levels
 - The cost and use of data is being audited more and more closely
 - Today the Data Dictionary is an important management tool

**THE FINITE COST SAVINGS OF A
DATA DICTIONARY**

2. COST SAVINGS

TIME SAVINGS



- The biggest finite savings are in time

3. COST SAVINGS



-
- The time to do impact analysis
 - Example
 - a system containing 300 programs
 - assess the impact of changing the length of a key field
 - if no DD - you must scan all 300 programs individually
 - you may have to reconcile synonyms, homonyms

4. COST SAVINGS

TIME SAVINGS IMPACT ANALYSIS

EXAMPLE 1

Problem: Assess impact of changing the length of a key field

- **No data dictionary**
 - Scan 300 programs individually
 - Assume 15 min / program (15 x 300 = 75 hours)
 - Approximately 10 days

- **Automated data dictionary**
 - Extract in 15 min. all the programs which use the element

- **Savings**
 - 10 days

- The biggest finite savings are in time

5. COST SAVINGS

**TIME SAVINGS
IMPACT ANALYSIS**

EXAMPLE 2

Problem: Assess impact of adding 2 new fields to a source document, i.e., the application form

- **No data dictionary**
 - Manually determine what systems use form
 - How many screens use elements from the form
 - How many programs reference those screens
 - For 300 programs
 - Approximately 15 days
 - **Automated data dictionary**
 - Extract information in 1 hour
 - **Savings**
 - 15 days
-
-

6. COST SAVINGS



-
- The next biggest time saver is in the area of communication
 - A Data Dictionary saves a lot of time spent in communicating
 - If No Data Dictionary
 - Time is lost in miscommunication when desired information is not written down
 - Time spent contacting several sources instead of one
 - Time is spent pursuing information from the wrong source
 - Time is lost using incorrect information

7. COST SAVINGS

TIME SAVINGS COMMUNICATION SAVINGS

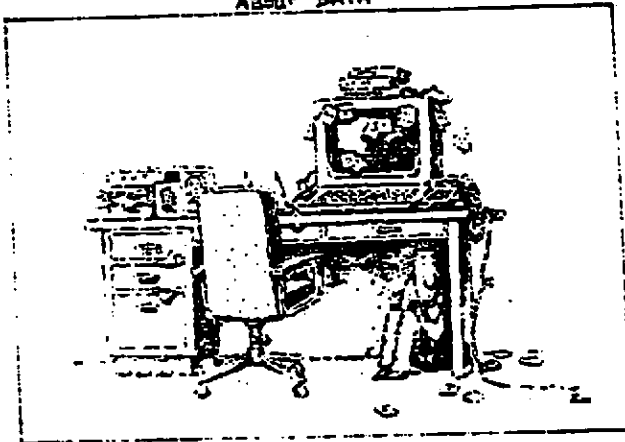
EXAMPLE

Problem: A new analyst must grasp the meaning of 20 data elements

- No data dictionary
 - With discussion of 1/2 day per element
 - Approximately 10 days
 - Automated data dictionary
 - The information is easily retrieved, reliable, up to standards and quality assured
 - Extract the information in 15 min.
 - Savings
 - 10 days
-
-

8. COST SAVINGS

HELP FOR THOSE INUNDED BY REQUESTS FOR INFORMATION
ABOUT DATA



-
- A DD helps those of us who are inundated by information requests about the data of a corporation
 - A Data Dictionary saves a time when responding to requests for information about data (e.g. A.T.I.P. enquiries)
 - Treasury Board and senior management frequently request information which is difficult to obtain without a DD

9. COST SAVINGS

TIME SAVINGS
INFORMATION ABOUT DATA TIME SAVINGS

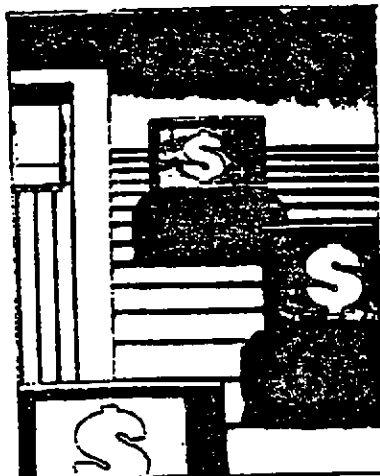
Problem : Treasury Board requests :

- How many programs in each system ?
 - How many programs in COBOL ?
 - How many programs in NATURAL ?
 - How many batch ?
 - How many online ?
- No data dictionary
 - Someone must take 7 days to collect the information
 - With data dictionary
 - Retrieve the information in 15 min.
 - Savings
 - 7 days

- This is a typical example

- The added benefit with a DD is that this information can be kept current with very little effort

10. COST SAVINGS



DOLLAR SAVINGS

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- Dollar savings are much harder to ascertain in this environment
 - Time savings can be translated to dollar savings, but the dollars will differ depending on the resources
 - internal vs. external
 - job classification
 - One senior VP, in the private sector, indicated that before the Data Dictionary, their Information Centre spent 25% of their time just trying to locate the data the users were looking for

SUMMATION

- All of the benefits mentioned can be translated into dollar savings if someone cares to take the time to do it
- This seems unnecessary because, once the Data Dictionary is used to its full potential, the savings are OBVIOUS

1. STEPS TO ACHIEVE BENEFITS

**THE STEPS REQUIRED TO ACHIEVE
THESE TANGIBLE BENEFITS**

- Understand the full scope of what can be put into a data dictionary
- Understand how to retrieve information from the data dictionary
- Understand how to make the dictionary adapt to your needs
- Understand what DMC can do for you

- There are only 4 steps required to achieve these tangible benefits

2. STEPS TO ACHIEVE BENEFITS

STEP 1

**Understand the full scope of what
can be put into a data dictionary**

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1. The Data Dictionary models can provide a broader vision of what can be put into the DD

- this is covered in the next few slides

3. STEPS TO ACHIEVE BENEFITS

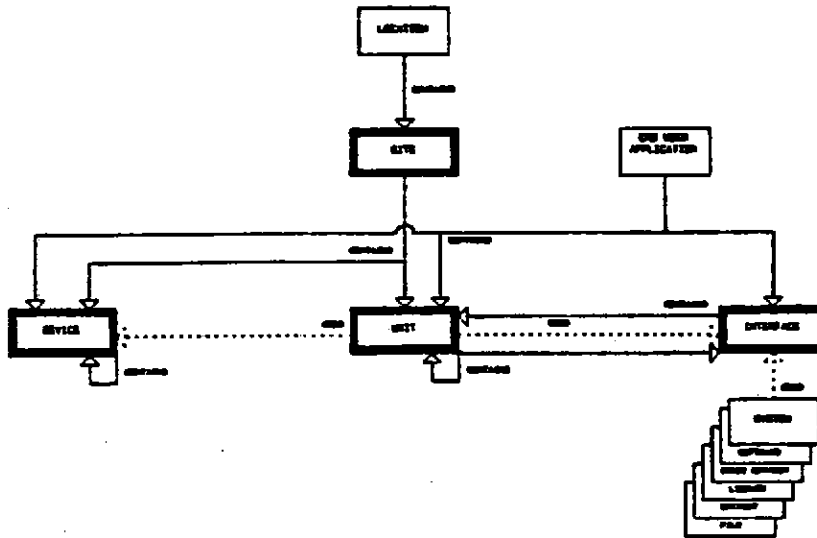
DATA DICTIONARY MODELS

- Business Environment
- Instructional Environment
- Data Modelling Environment
- Structured Analysis and Design Environment
- Hardware Environment
- Computer Systems Environment (data elements, files, etc.)

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- This is what can be put into the Data Dictionary now
 - Each model has its own logical set of information associated with it
 - Remember that the DD, like any other data base, can have many application
 - Each dictionary model is effectively an application with its own userview
 - The Data Management Centre can add new attributes and new entities, new models when the need arises
 - Most of you are only familiar with the Computer System Environment model

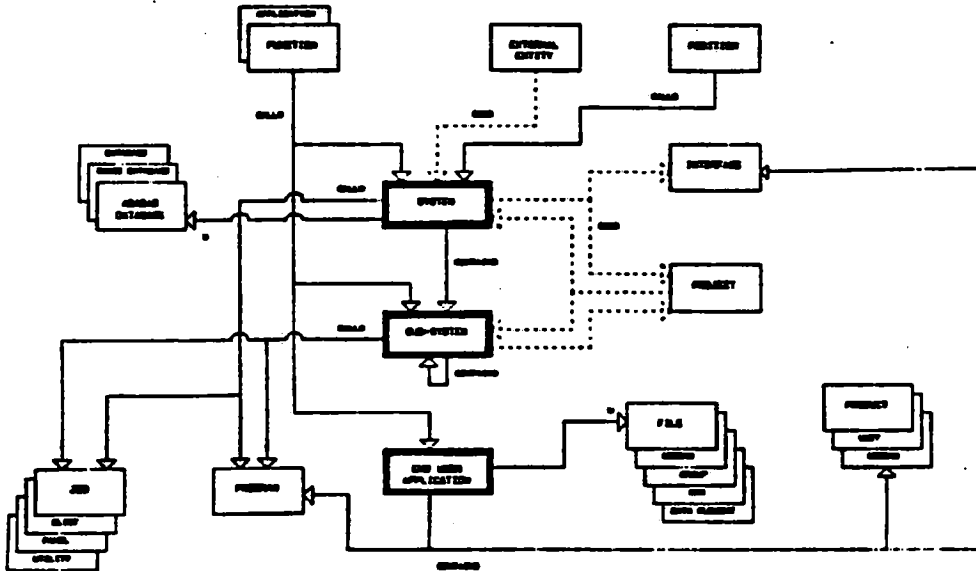
8. STEPS TO ACHIEVE BENEFITS

HARDWARE ENVIRONMENT



9. STEPS TO ACHIEVE BENEFITS

COMPUTER SYSTEMS ENVIRONMENT - SYSTEM • SUB-SYSTEM • END USER APPLICATION



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- This is only a portion of the entire Computer Systems Model which is quite complex
 - Bear in mind that if you don't see the particular model you are looking for, DMC can assist you later
 - Presentation 2 will explain in more detail how some of these models can be used to facilitate each phase of the SDLC

10. STEPS TO ACHIEVE BENEFITS

STEP 2

**Understand how to retrieve
information from the data dictionary**

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- Once you put the information into the DD, you need to know the full flexibility available to retrieve it
 - Presentation 3 will detail some of the broad range of reporting capabilities available

12. STEPS TO ACHIEVE BENEFITS

STEP 3

**Understand how to make the
dictionary adapt to your needs**

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- Develop an understanding of the Data Dictionary's capabilities

 - Develop an understanding of the flexibility of the Data Dictionary

 - Understand what you want it to accomplish and define this to the Data Management Centre people

 - The next 3 presentations will serve to create a better understanding of how to make the dictionary work for you

13. STEPS TO ACHIEVE BENEFITS

STEP 4

Understand what DMC can do for you

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- The 4th presentation on DMC DD concepts, services and facilities (#4) will explain this in detail

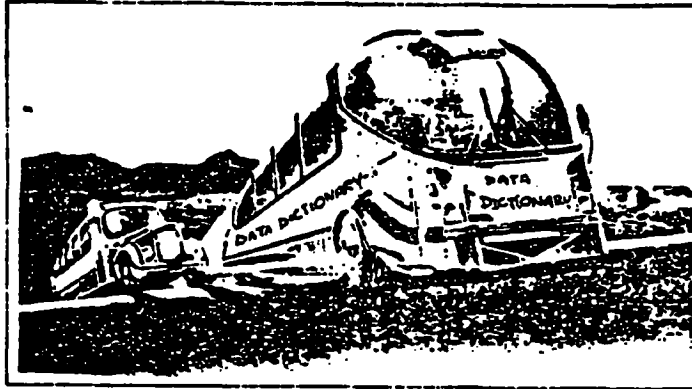
14. STEPS TO ACHIEVE BENEFITS

DMC PERTINENT SERVICES

- **User support**
 - **Develop standards and procedures**
 - **Administration**
 - **Quality assurance**
 - **Education and training**
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1. SUMMATION

A DATA DICTIONARY IMPROVES PERFORMANCE



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- In summary, I hope you will now agree with me, that when you work with the Data Dictionary, it can help improve your performance regardless of your area of responsibility

2. SUMMATION

FUTURE PRESENTATIONS

- How to use the data dictionary in the System Development Life Cycle
- How to use the data dictionary in production, maintenance, operations and estimating enhancements (reporting)
- DMC data dictionary concepts, services and facilities

3rd - This presentation will be accompanied with a reporting handbook, a guide to DD reporting at DRIE

4th - This presentation will demonstrate online IRMIS and provide background on DD concepts

