



ORACLE®

The Evolution Of Coding Technology

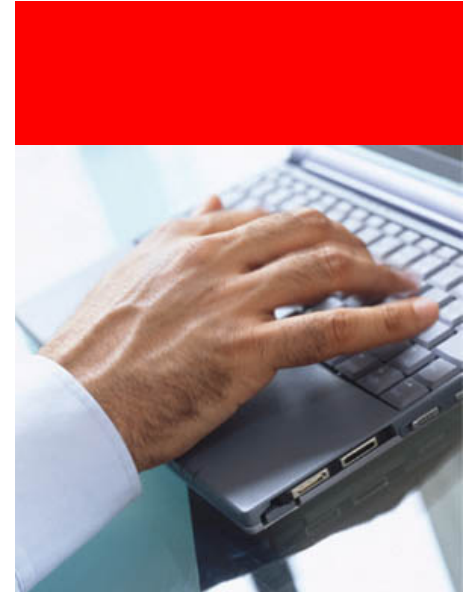
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Technical Solutions Consultant

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HEALTH SCIENCES

Agenda

- Why do we code ?
- Coding Requirements
- A journey through coding (1993-present)
- The future
- Questions



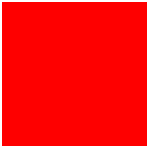
Why do we code clinical data.....

Adverse Events	
Has the patient experienced an	
AE no.	Adverse Event (diagnosis (if known) or signs/symptoms)
1	Headache

Adverse Events	
Has the patient experienced an	
AE no.	Adverse Event (diagnosis (if known) or signs/symptoms)
1	Head Pain

Adverse Events	
Has the patient experienced	
AE no.	Adverse Event (diagnosis (if known) or signs/symptoms)
1	Pain In Head

Adverse Events		
Has the patient experienced any Adverse E		
AE no.	Adverse Event (diagnosis (if known) or signs/symptoms)	Start date and end date (24 hr)
1	頭痛の種	25/12/09

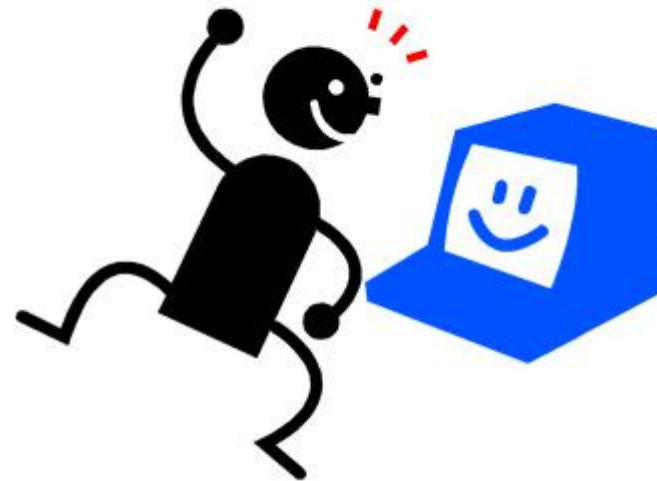


Why do we code clinical data.....

- Validate/clean the source data
- Understand our safety profile
- Identify/understand interactions
- Report our data
- Secure approval
- Detect potential Signals and manage risk

Coding requirements

- Timely
 - Consistent
 - Controlled
 - Automated
 - Manageable
 - Not a burden on our business
- How has technology helped ?

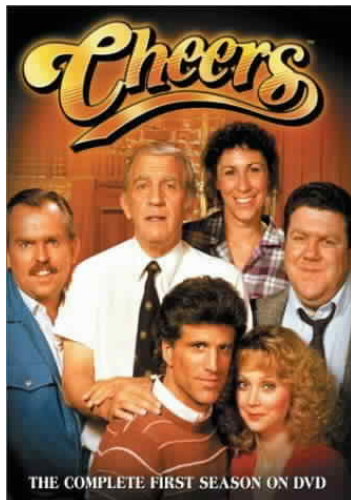




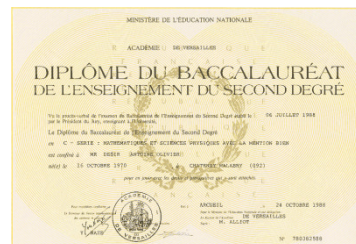
Arthur C. Clarke (1917–2008)
"Profiles of The Future", 1961
(Clarke's third law)

“Any sufficiently advanced technology is
indistinguishable from magic.”

1993



FISONS



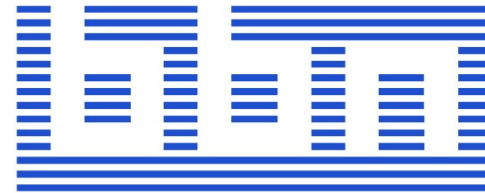
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1993

- A Manual Job
 - Data Managers
 - Working from data listings
 - Using published encyclopaedias
- The first hint of sophistication
 - SAS Programs
 - Lookup against internal dictionary
 - Fisons Adverse Reaction Terminology



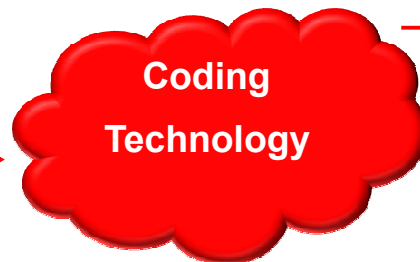
1996



1996

- Arrival of the Coding technology
- Autoencoders & Interface for searching electronic thesauri

Adverse Events		
Has the patient experienced any Adverse		
AE no.	Adverse Event (diagnosis (if known) or signs/symptoms)	Standard
1	Headache	



Headache = 0001 HEADACHE

Code	Term
0001	HEADACHE
0002	NAUSEA

Code	Synonym
0001	HEAD PAIN

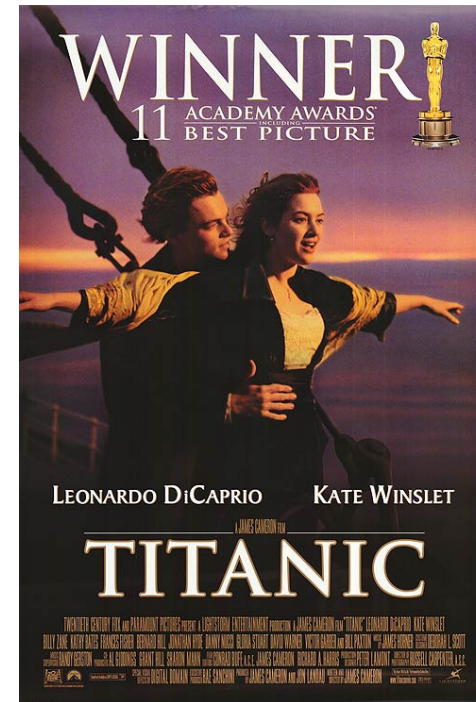
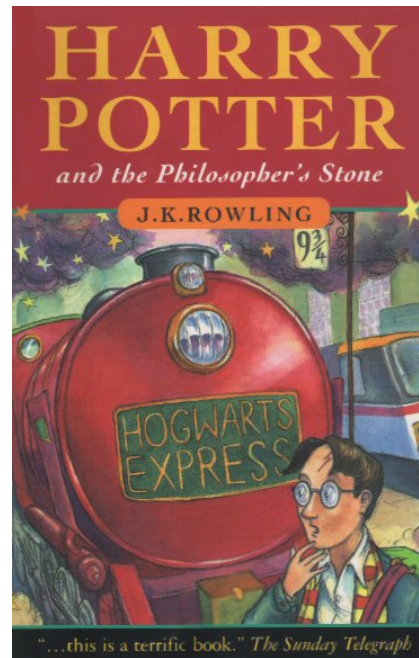
Stopword	
THE	
PATIENT	
HAD	



1996 – Progress (of sorts)

- Ability to use electronic thesauri such as WHO-DD & ICD-9
- Application focused, not role focused
 - Clinical Data Management Systems
 - Drug Safety Systems
- Data coded by different departments using different technologies
 - Reconciliation requirement
- How to provide for a Central Coding department ?

1998



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1998 – Getting sophisticated

- Tools for Central Coding
 - Allowing coding across Clinical Trials
 - Providing data query facilities
 - Support for new hierarchical dictionaries such as MedDRA
 - Tuneable autoencoding algorithms
 - Word Stemming
 - Punctuation removal

Adverse Events		
Has the patient experienced any Adverse Event?		
AE no.	Adverse Event (diagnosis (if known) or signs/symptoms)	Start date and T (24 h clock)
	Neoplasm of skin of upper limb, includes shoulder	/ :

=

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2006

PHASE•FORWARD.





2006 – Crossing Business Boundaries

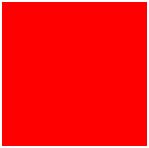
- Technology Change
 - Web-based
 - Supporting multiple stake-holders
 - Crossing Business Boundaries
 - Fully flexible searching mechanism (LLT-SOC)
 - Contextual information to assist the coder
 - Route Of Administration
 - Indication
 - Multiple concurrent thesauri support
 - Designed for more complex business requirements, such as a CRO

2008



PHASE•FORWARD™

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2008 – Dealing with diversity & change

- Global Trial Support
 - アデノウイルス結膜炎
 - アデノウイルス結膜炎

= Adenoviral conjunctivitis

- Impact Analysis & Up-versioning
 - Comparing Thesauri
 - Detecting changed codes in historical data
 - Interface for managing and auditing changes



Soren Kierkegaard
Danish philosopher (1813 - 1855)

**“Life can only be understood backwards; but it
must be lived forwards.”**



The Future

- Timely ✓ Yes
- Consistent ✗ Not necessarily
- Controlled ✓ Yes
- Automated ✓ Yes
- Manageable ✗ Partially
- Not a burden on our business ✗ Work to do

The Future

- Single technology providing all users with consistent, real-time coding capabilities across **ALL** data sources.



Questions ?

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