

**Can your analytics handle
this verbose presentation
to extract out the
important concepts and
determine if it is more or
less likely to make you
sleep than any other
presentation?**

Health User Group, 2010
Tim Trussell, SAS Solution Specialist



**THE
POWER
TO KNOW.**

Objectives

- What is Text Analytics?
- SAS Text Analytics
- Natural Language Processing
- Business Cases
- Available resources

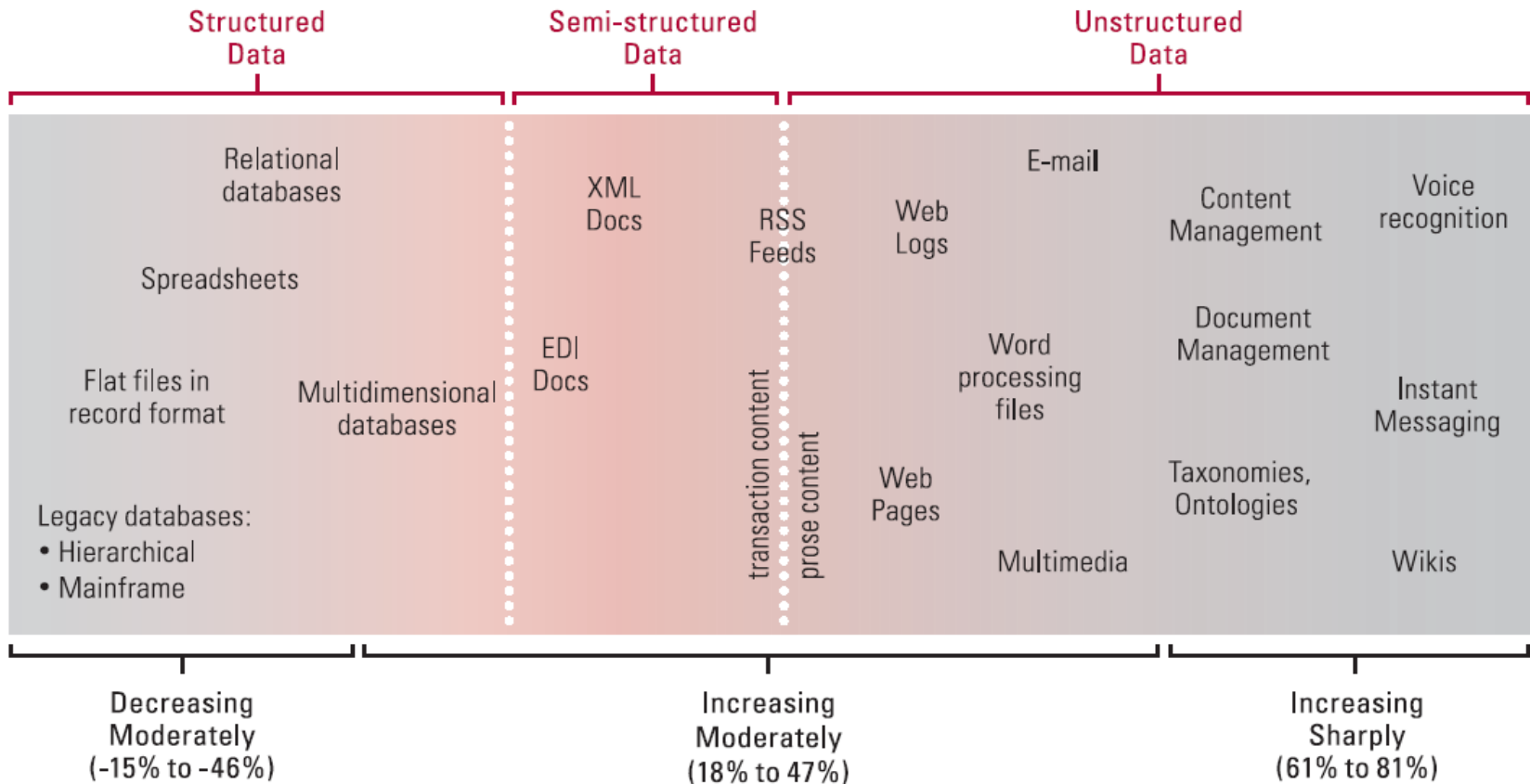
Text Analytics: What is it and why now?

- Using statistical methods to analyze and interpret the meaning of textual data.
- Visionary paper written by Hans Peter Luhn titled “*The Automatic Creation of Literature Abstracts*” for the 1958 IBM Journal marks birth of computational text analytics
- Automated solutions go mainstream in early 2000’s by visionary companies such as SAS and Teragram
- Web 2.0 has kicked off an arms race to capture the broad and vast content now being exposed by the web.

Information Variety Will Shift Dramatically

Data and source types plotted on the data continuum

Three Major Areas within Data Continuum



Source: TDWI: BI Search and Text Analytics, Phillip Russom, 2Q 2007

Two Part Market

- **Information Organization and Access**

- Improving the “findability” and “aboutness”
- Derives “meaning or subject” of document
 - » Media
 - » Document and record Management
 - » Governance and Compliance
 - » Forensics

...

- **Predictive Modeling and Discovery**

- Traditional Market
- Discovering and identifying trends
 - » Research (product, market, brand awareness)
 - » Product or Clinical Trials
 - » Product Defect analysis

...

SAS[®] Text Analytics

Information
Organization and
Access

Predictive
Modeling, Discover
Trends and
Patterns

SAS
Enterprise
Content
Categorization

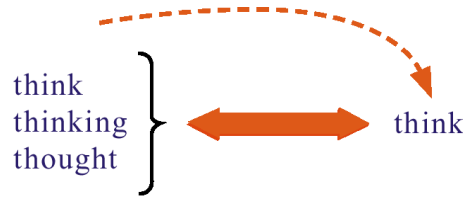
SAS
Ontology
Management

SAS
Text Miner

SAS
Sentiment
Analysis

Natural Language Processing

- Stemming
- Part of Speech
 - Determines if the word is a common noun, verb, adjective, proper noun, adverb, etc.
 - Disambiguate parts of speech when a word is used in a different context,
 - » *I wish that my **bank** did not have a service charge for using other vendor ATM's.*
 - » *You can **bank** on either Germany or England winning the world cup next year.*
- Entity Extraction



Places

White House



People's Names

James A. Goodnight



Dates



Natural Language Processing Continued

- Specify Start/Stop/Synonym Lists
 - Filtering out low information words such as
 - » articles (e.g. the, a, this)
 - » prepositions (e.g. of, from, by)
 - » conjunctions (e.g. and, but, or)
 - Consider document subject matter
- Vertical dictionaries
 - Automatically generate synonyms appropriate to your data

Natural Language Processing Continued

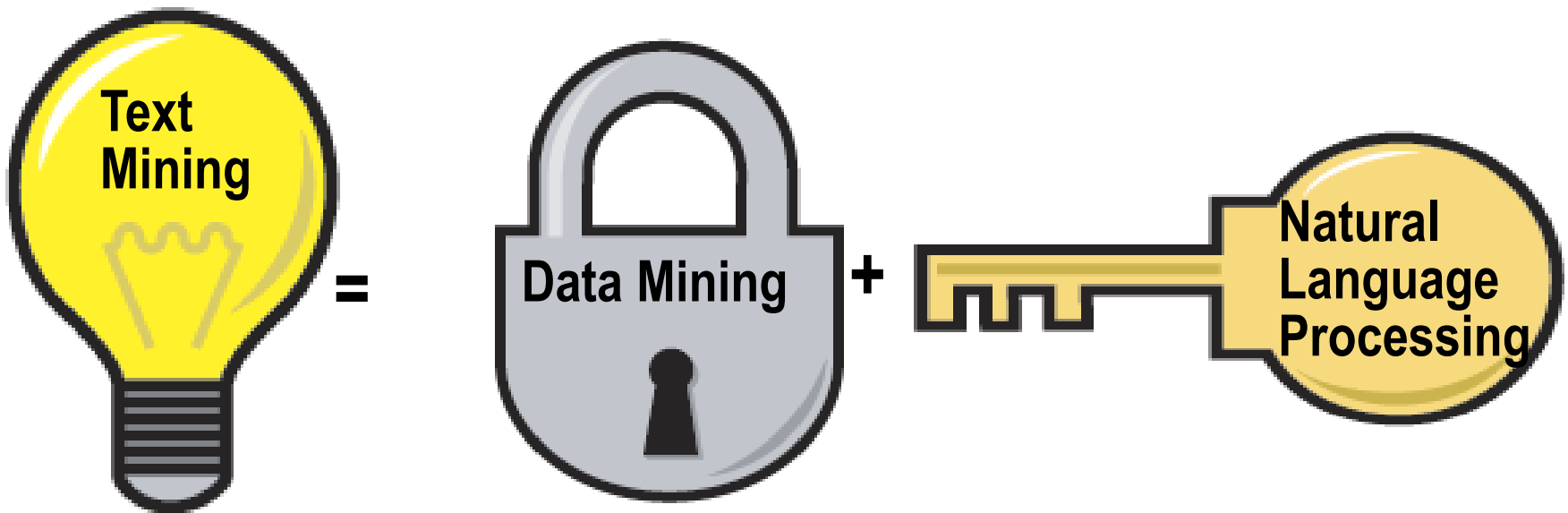
- UPPERCASE
- Miss-spelings
- A.C.R.O.N.Y.M.S
- Shrt-hnd
- Prof@nity
- *Punctuation*

Text Mining in Healthcare

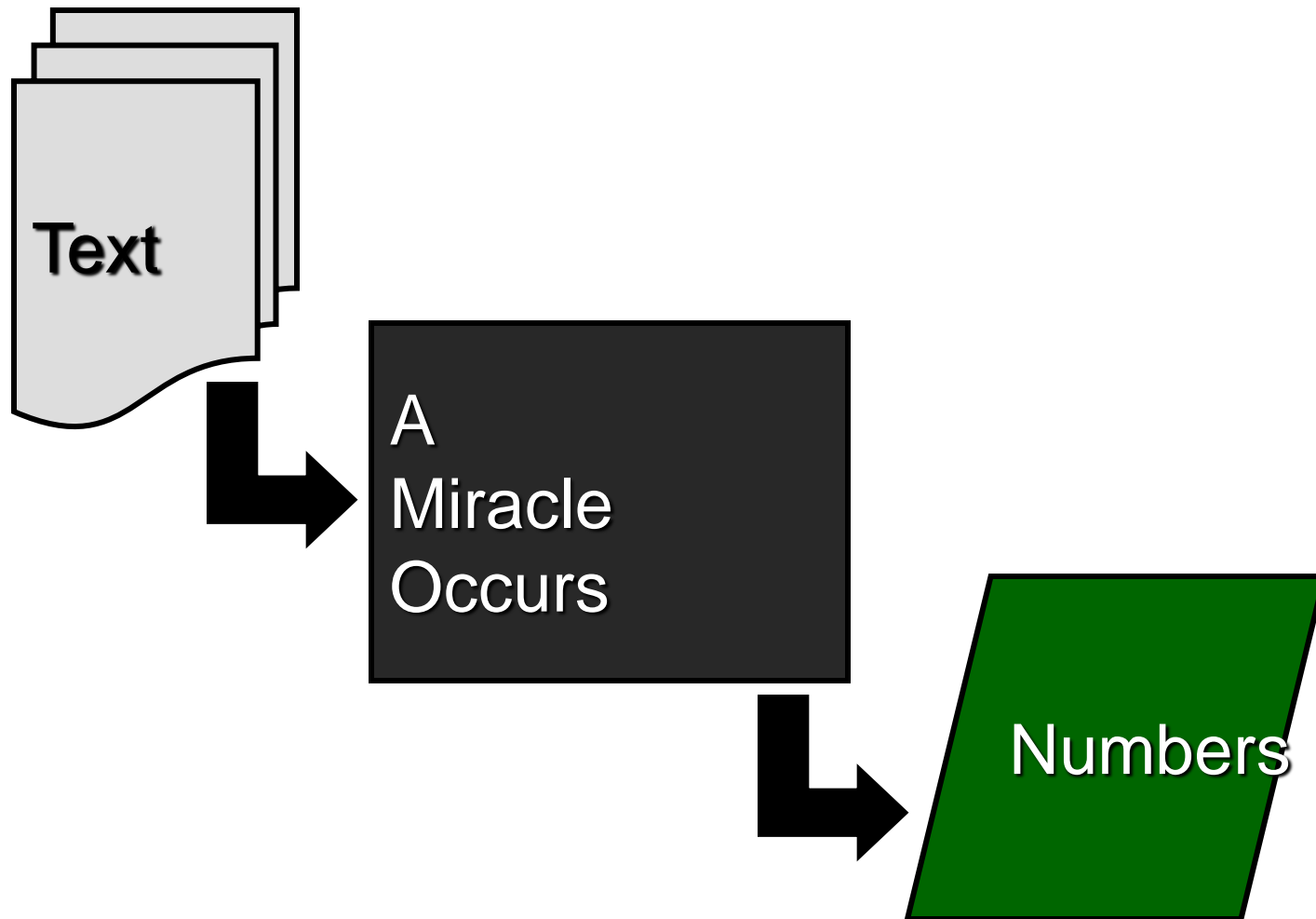
- Large amounts of unstructured data
 - Doctors and nurses notes
 - Triage data from emergency
 - Call centre and claim information for Workers Compensation boards
 - Patient surveys
 - Billing submissions

Text Mining

The process of discovering and extracting meaningful patterns and relationships from text collections

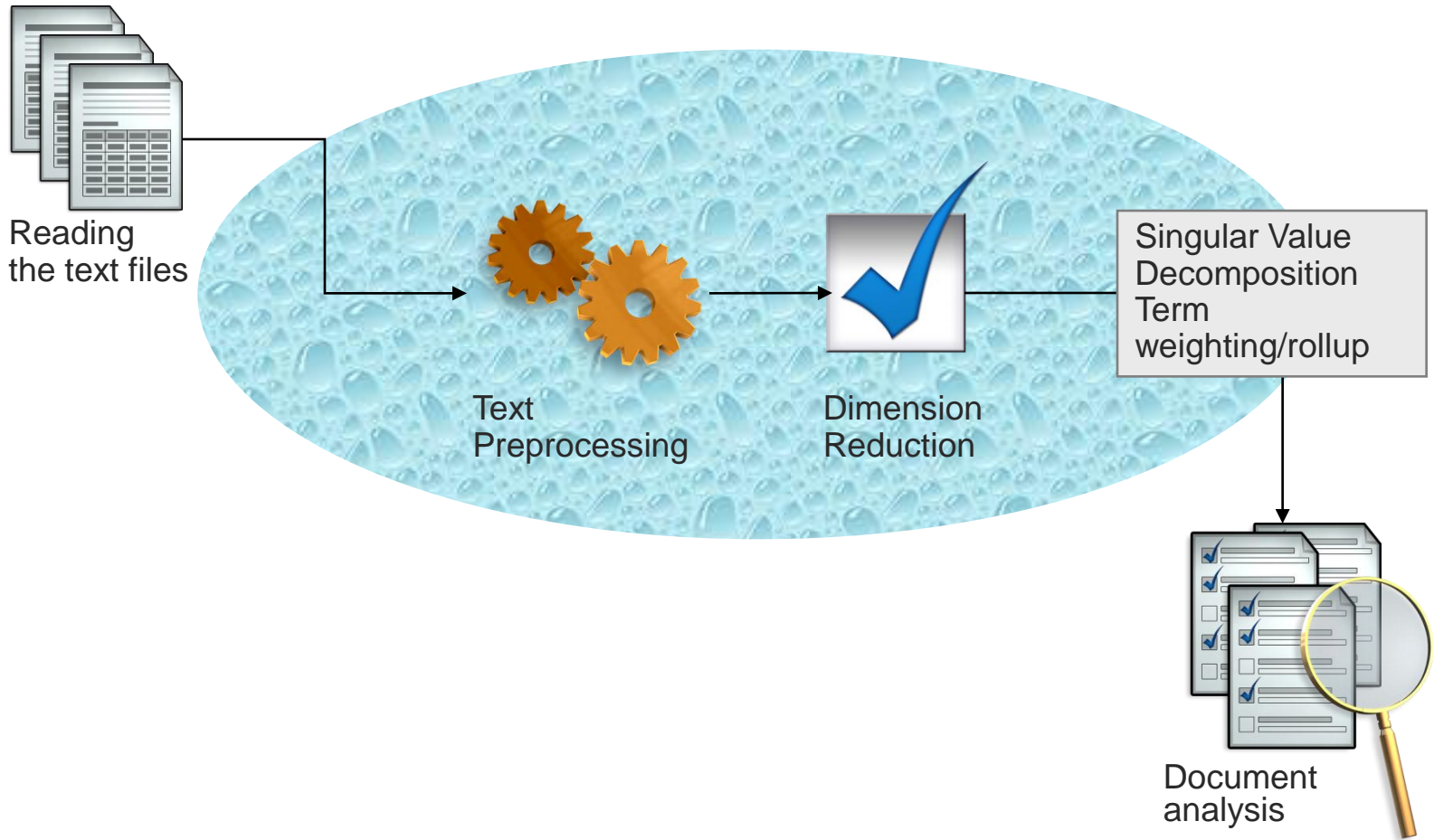


Text Mining



Text Mining Process

S
E
M
M
A



Demo



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Where Is SAS Text Mining in Healthcare Today?

University of Louisville, Kentucky

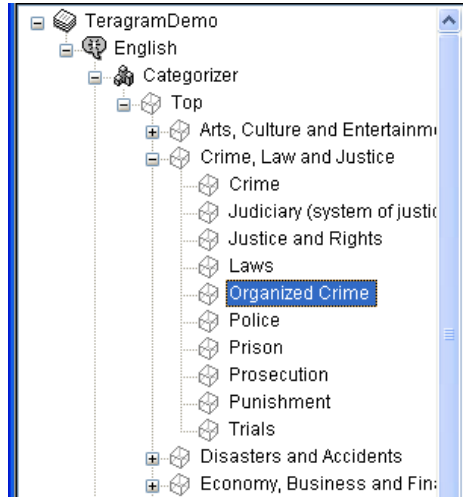
- Understanding effectiveness of medical treatments
- Understanding causal factors in re-admissions and length of stay
- Was used by the lead researcher to recommend treatment for her husband

Walter Reed Medical Center (US Army)

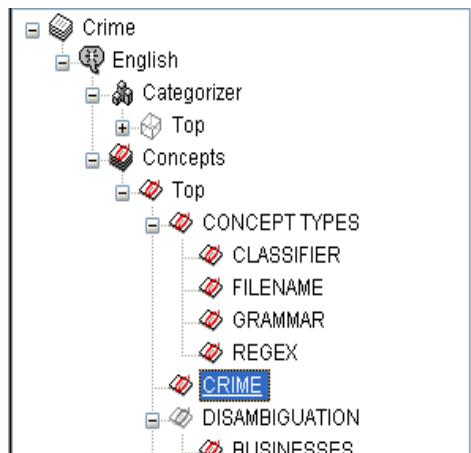
- Predicting adverse vaccine reactions in soldiers

SAS® Enterprise Content Categorization

Content Categorization



Topic
Organized Crime



Concepts

- Crimes
- Locations
- Persons
- Dates
- Weapons



Example Content Categorization

Metabolic Syndrome after **Bariatric Surgery**. Results Depending on the Technique Performed.

[Gracia-Solanas JA](#), [Elia M](#), [Aguilella V](#), [Ramirez JM](#), [Martínez J](#), [Bielsa MA](#), [Martínez M](#).

Department of Surgery, Hospital Clínico Universitario, 50009, Zaragoza, Spain, josegraciasolanas@hotmail.com.

Abstract

BACKGROUND: There is a lack of long-term studies for **metabolic syndrome** after **bariatric surgery**. Our aim is to show the evolution of the parameters that define the **metabolic syndrome** after **bariatric surgery**, up to 10 years of follow-up, in order to clarify what technique gets better results with fewer complications.

METHODS: The IDF definition of the **metabolic syndrome** was used for this study. One hundred twenty-five morbid obese and superobese patients underwent **vertical banded gastroplasty**. Two hundred sixty-five morbid obese and superobese patients had **biliopancreatic diversion** (Scopinaro and modified biliopancreatic diversions), and 152 morbid obese patients underwent **laparoscopic gastric bypass**. A mean follow-up of up to 7 years was done in all groups.

CONCLUSION: According to our results, the best technique to resolve **metabolic syndrome** is the modified **biliopancreatic diversion**. Due to its high morbidity, it only must be considered in superobese patients. In obese patients, the **laparoscopic gastric bypass** may be a less aggressive choice, but it should be coupled with lifestyle changes to keep away from the weight gain in the long run. Restrictive procedures may be indicated only in a few well-selected cases.

Categories

- *Metabolic Syndrome*
- *Bariatric Surgery*
- *Gastric Bypass*

Example Content Categorization

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Concepts

- *Procedures*
- *Obesity*
- *Diabetes*

Available Resources

- [SAS Text Analytics](#) site
- Webcast: [Text Analytics 101](#)
- Tune into the Voice of Your Customer: [Whitepaper](#)



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