

The Evolution of the Propellerhead

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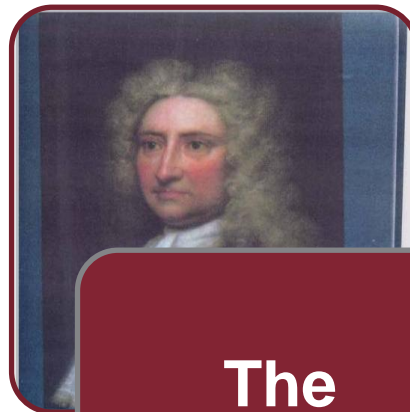
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Agenda



**A Brief
History of
Insurance**



**The
Actuarial
Profession**



**Current
Challenges
and the
Future**



A Brief History of Insurance:

* From The Chinese to Benjamin Franklin

Evolution of (General) Insurance

Early methods of transferring or distributing risk were practised by Chinese and Babylonian traders:

- 3rd millenia BC: Chinese
- c. 1750 BC: The Babylonians developed a system which was recorded in the famous Code of Hammurabi, and practised by early Mediterranean sailing merchants.
- c. 300 BC: Marine Insurance may have been the first insurance, practised by Ancient Greeks

Evolution of (General) Insurance

- ~1300AD: Separation of Protection and Financing
- First Policy 1350 for a cargo of wheat from Tunis to Italy
- Lloyd's of London
- Great Fire of London
- Benjamin Franklin

Actuaries and Non-Life Insurance

- Despite long history, actuarial contributions were minimal
- Life was the main focus for the profession up 'til 1890
- Growing appreciation for improvement in statistical and financial functions of insurance operations

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A Table of the Annual Premiums payable for insur-
 ing 100 £ during the whole continuance of a single life of
 any of the following Ages according to the foregoing principles

Age	Annual Premium	Age	Annual Premium	Age	Annual Premium	Age	Annual Premium
15	2,358	28	3,404	42	4,858	56	7,438
16	2,427	29	3,501	43	4,988	57	7,295
17	2,500	30	3,612	44	5,122	58	7,556
18							
19							
20							
21							
22							

The Actuarial Profession:

- * Creation of Actuarial Science
- * The Impact of Religion
- * Application

Creation of Actuarial Science

- The creation of actuarial science dates to 1693
- Edmond Halley, the famous mathematician, published a paper on the subject in the Royal Society's *Philosophical Transactions* which included a life table
- Having produced his life table, Halley used it in the same way as an actuary would do today, to estimate the present value of a payment in a future year which depended upon survival to that year.

The Impact of Religion

- Perhaps it was God that held up the development of the profession!
- Widespread religious conviction, based on the Bible, was that every event occurred as a result of God's providence.
- It would have been regarded as blasphemous to develop a theory about the probability of occurrence.
- Moreover, the study of how often particular outcomes occurred in the past might well not be a reliable guide to God's decisions in future.

Application of Actuarial Science

- Commercial world was slow to take advantage of actuarial science
- 1710 – 1720 South Sea Bubble
- Earliest practical application of Halley’s method was in the valuation of leases based on lives
- Probability theory continued to be developed during the 18th century
- 1747: Risk of Ruin (Corbyn Morris)
- 1762: The formation of The Equitable (which first applied the term “Actuary” to its CEO)– the first actuarial valuation was then carried out in 1776

Application of Actuarial Science

- 1800+: an immense growth in life assurance and the twentieth century a proliferation and growth of pension schemes, based on the solid actuarial foundations
- 1843: various life offices published the results of a collaborative mortality investigation in which they pooled their policy data. The success of this venture was probably one of the factors which led to the formation of the Institute of Actuaries in 1848
- 1952: Frank Redington's Theory of Immunisation
- Late 20th Century: computing power leads to complex financial products and distinct effort for actuaries to combine financial theory and stochastic methods into established methodology



Current Challenges and the Future:

- * Adding Value to our Clients
- * Factors Influencing the Future
- * Future Challenges
- * The “Wider Field”

What is an Actuary?

- Actuaries are multi-skilled strategic thinkers, trained in the theory and application of:
 - mathematics,
 - statistics,
 - economics,
 - probability, and
 - finance.

- They have been called financial architects and social mathematicians, because their unique combination of analytical and business skills are used to address a growing variety of financial and social challenges worldwide.

Source: International Actuarial Association

Adding Value to our “Clients”

➤ Adding value to our clients:

- Ensuring we provide our “clients” with what they want, rather than what “we” think they want

➤ Required skills:

- Communication
- Listening
- Negotiation
- Presentation
- Management
- Innovation

➤ The importance of being commercial and acknowledging the limitations of the Profession

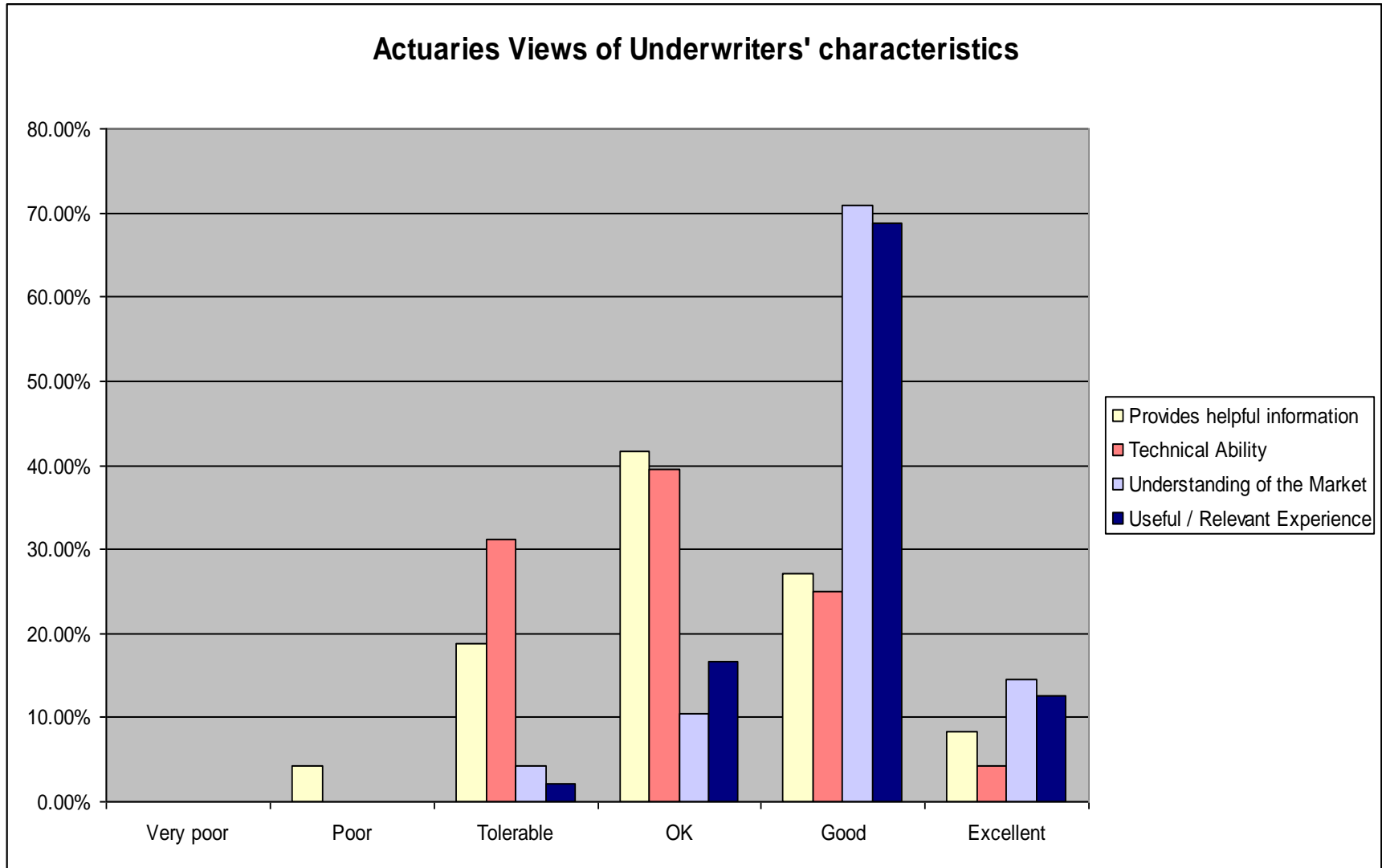
Communication – Internal and External

- Every cliché has an element of truth....
- “...On the other hand, the actuary who has come in contact with the practical side of the business and who has been graced with what we call "horse sense", will know where to draw the line between theory and practice. The practical actuary and the logically minded underwriter should have no trouble getting along together but the theoretical actuary and the illogically minded underwriter had better keep away from each other.”

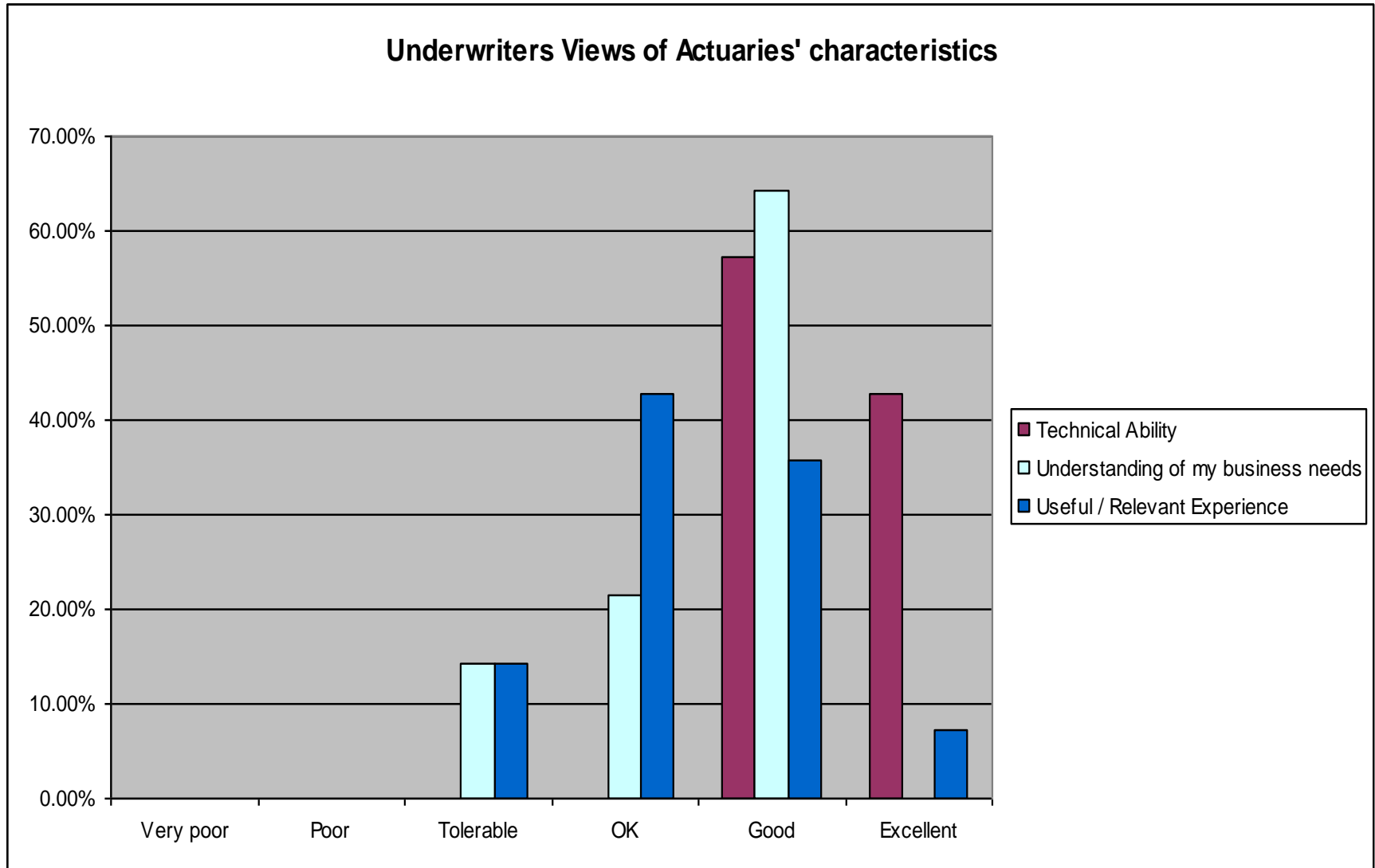
W Leslie CAS Presidential Address 1924

- The following four slides are taken from a presentation at the 2003 GIRO Conference: “Developing relationships with underwriters”

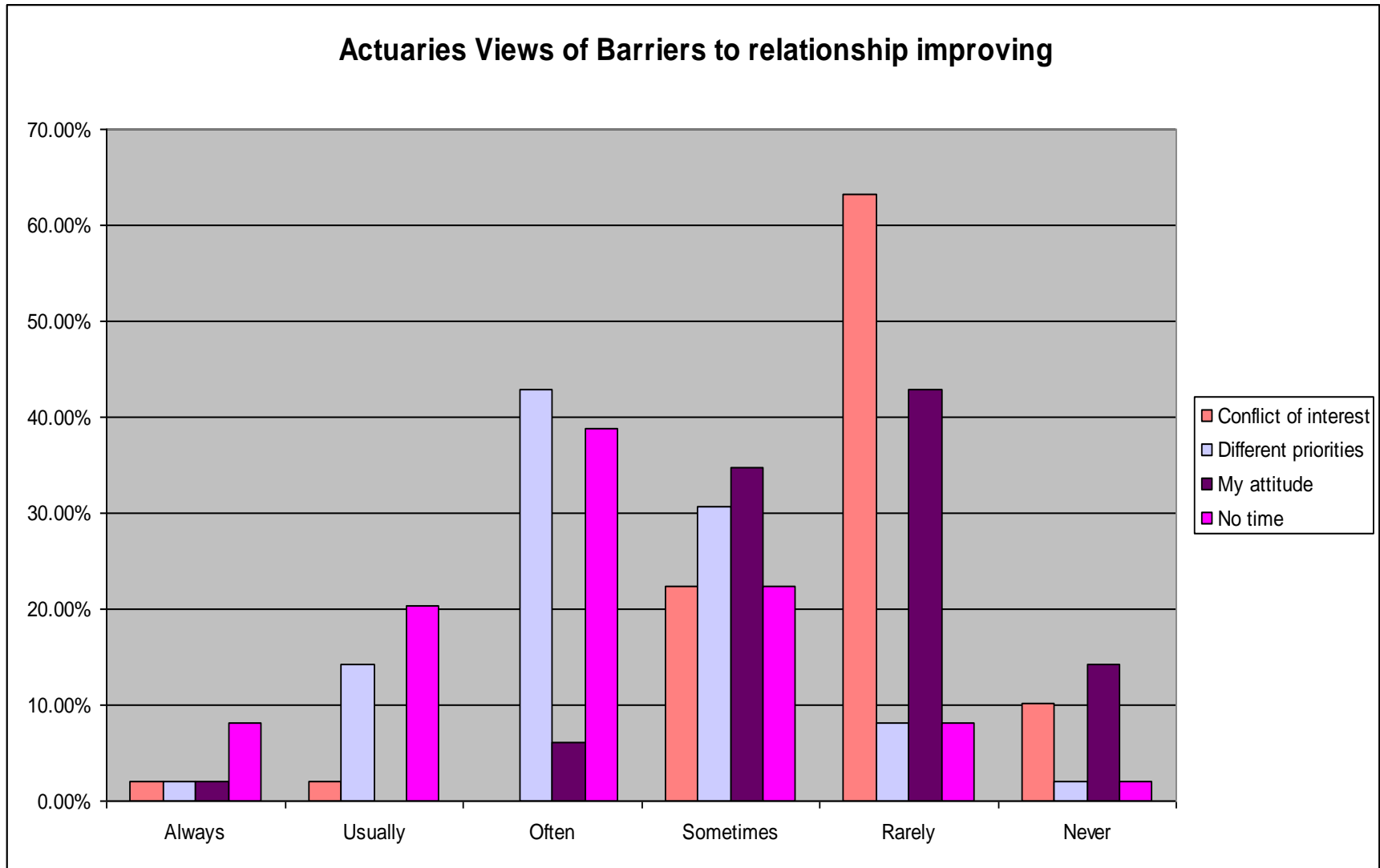
Communication – Internal and External



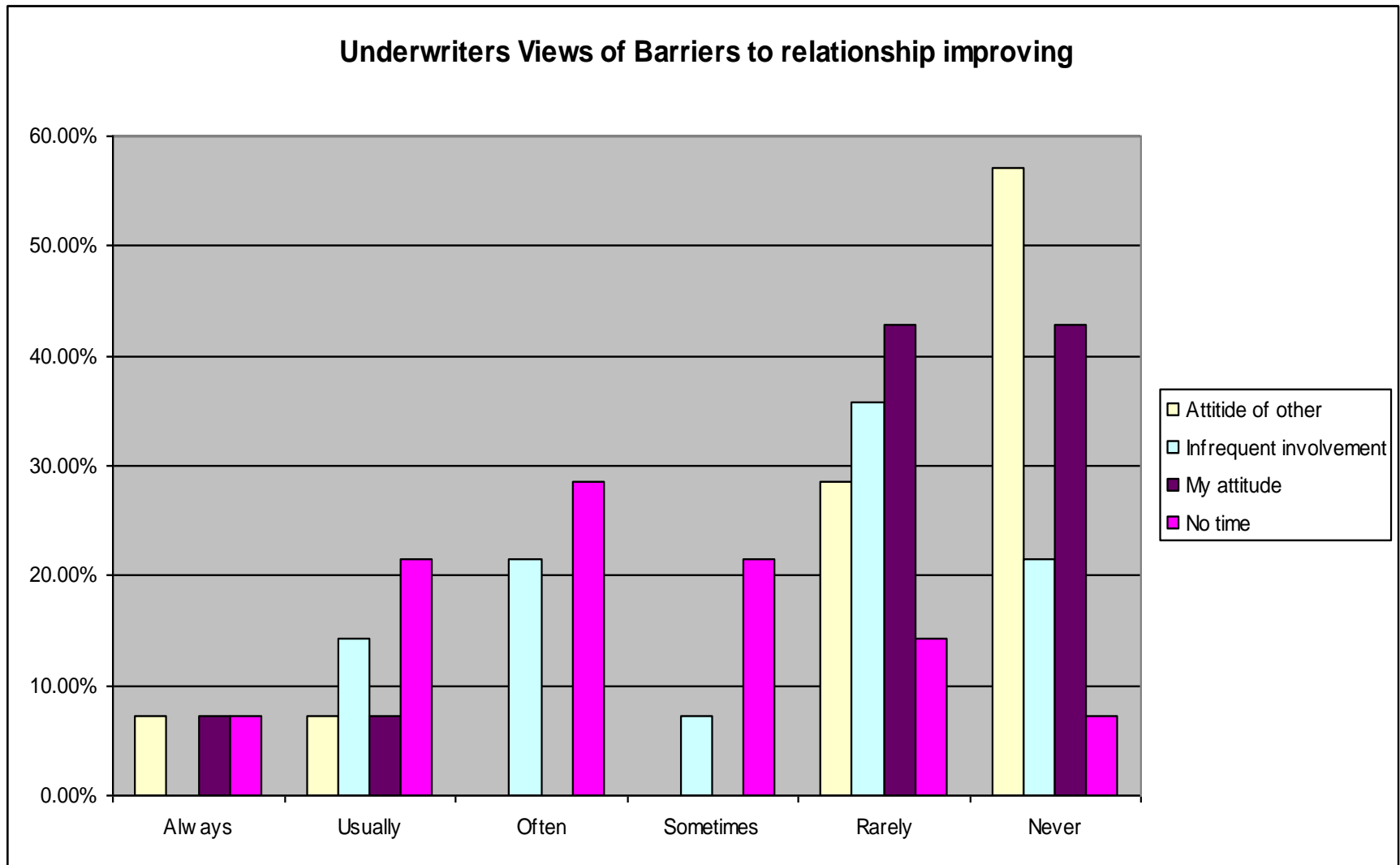
Communication – Internal and External



Communication – Internal and External



Communication – Internal and External



Factors Influencing the Future

- Globalisation of Business
- Expanding the Body of Knowledge (eg “ERM”)
- Continuing Education
- Private and Public Responsibilities

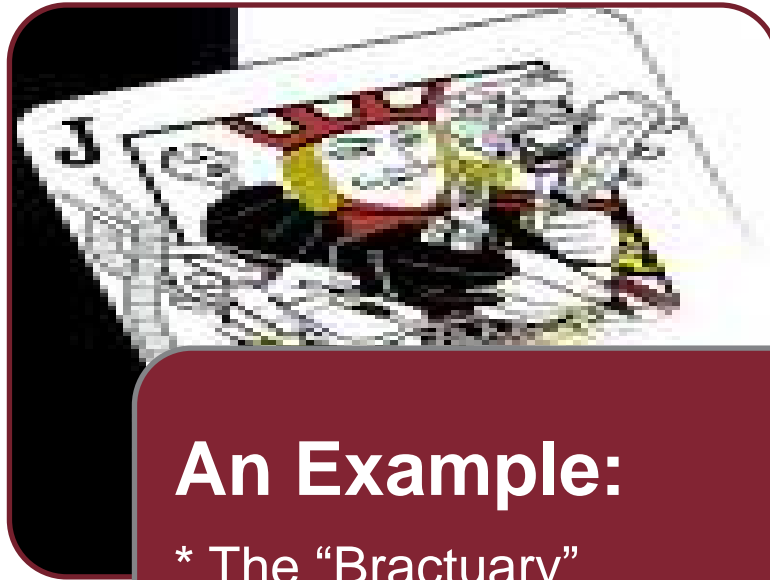
Future Challenges

➤ Specific challenges in the region:

- Data
- Communication
- Customs
- Language
- Face
- Work ethic

➤ Science vs Art

➤ The “Wider Field” – identifying new opportunities



An Example:

* The "Bractuary"

The Evolution of the Reinsurance Broker

- Originally, a pure intermediary responsible for access to suitable reinsurance partners, structuring, placement and administrative services
- Evolved into a sophisticated capital management service provider encompassing the traditional reinsurance role as well as access to analytical services and capital markets via investment banking capabilities

Analytical Capabilities



Actuarial/ERM

- Reinsurance programme design and evaluation
- In-depth parameterization
- ERM/Capital Management advice
- Proprietary tools which provide risk management capabilities in asset risk, credit risk and reserve risk



Catastrophe Management

- Catastrophe Risk evaluation and modelling
- 24/7 access to client exposure and modelled loss information through proprietary tools
- Understanding vendor models and output
- Developing custom models



Rating Agency Advisory

- Providing ratings advice for new and existing ratings
- Peer group analysis of key financials
- Scenario testing to assess likely impact on rating



Capital Markets

- Capital market and financial advisory including structuring, distribution, secondary trading, M&A, capital raising and recapitalisation
- Sources of capital:
 - Insurance Linked Securities
 - ILW's
 - Private Equity

Client Challenges

Operating Challenges	Capabilities
Profitable Growth	Dynamic Financial Analysis (DFA); Primary Pricing Support; Reinsurance Strategy Modelling
Concentrated Catastrophe Exposure	Assessing the impact of Catastrophes, Building Catastrophe Models
Enterprise Risk Evaluation	Enterprise Risk Management (ERM)
Constrained Capital Base	Capital Markets
Impact of Regulatory Framework	Regulatory Analysis
Asset / Liability Risk Correlation	Dynamic Financial Analysis (DFA)
Compliance / Risk Mitigation	Risk Management Capabilities
Improved Risk Selection / Pricing	Local Analytical Skills
Education and Training	Training Programmes

Designing Optimal Programme and Placement

➤ Data Analysis

- Historical experience: Loss Ratios, Expenses, Volatility, Correlations
- Risk and Loss Profiles

➤ Peer Comparisons, Benchmarking and Analysis of main structural features:

➤ DFA simulation of current and alternative structures to assess optimal structure taking into account a number of relevant and client-specific metrics

To Summarise

➤ Our aim is to provide our clients with:

“A Firm Foundation for Taking Risk”