

The Future of Security

David Lacey



Understanding the changing business and technology landscape



Be prepared for a different future

“We know only one thing about the future or,
rather, the futures:

it will not look like the present”

Jorge Luis Borges

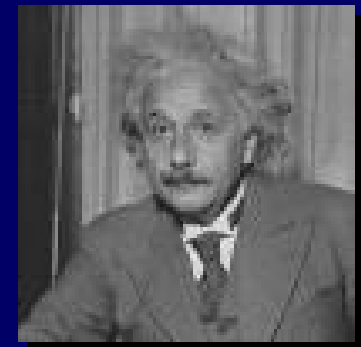
Author



Think beyond Einstein

“I never think about the future. It comes soon enough”

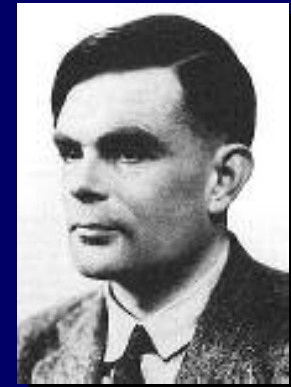
Einstein



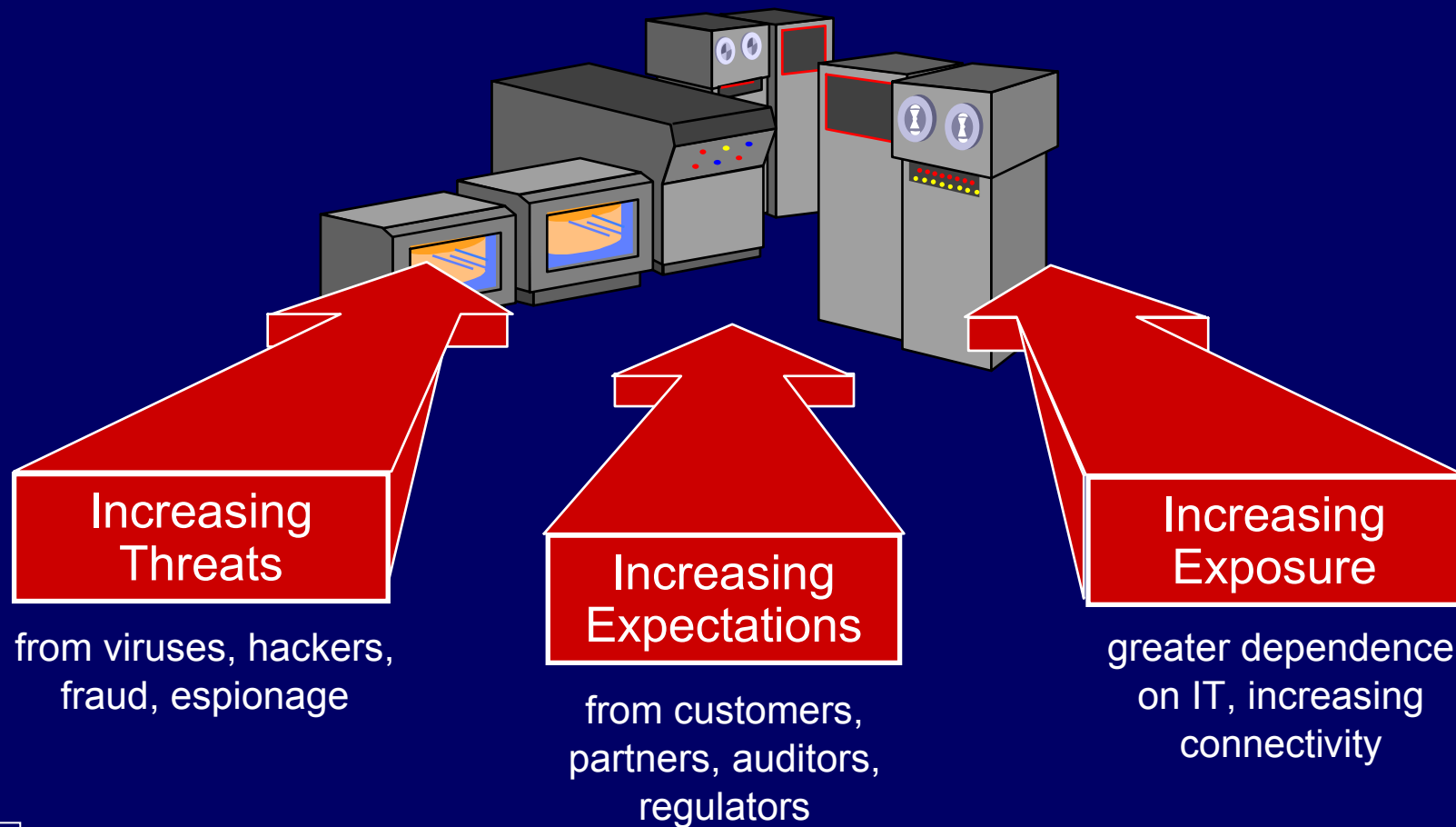
We know there's a lot to be done

“We can only see a short distance ahead, but we can see plenty there that has to be done”

Alan Turing
Cryptologist



Security risks are increasing



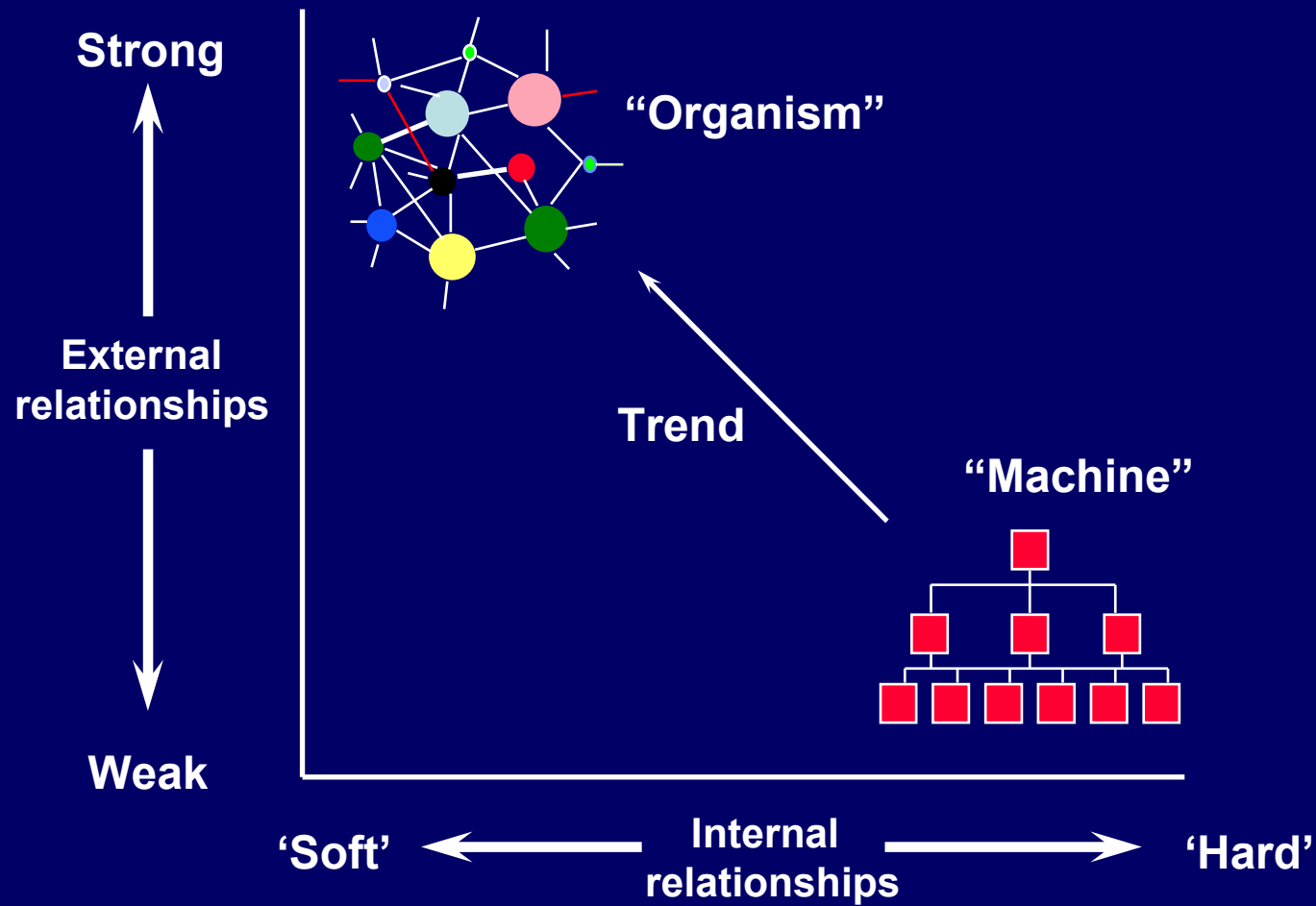
A long term trend

“The 21st Century will be dominated by information wars and increased economic and financial espionage”

Alvin Toffler



Organisations are changing



Everything is becoming connected



Information management has collapsed



Power is shifting to individuals

“Customer trust in institutions and brand loyalty is falling. C2C activities are taking off. Social computing is shifting power from institutions to individuals”

Brian Kardon
Chief Strategy Officer, Forrester Research



The political landscape is changing

“Disruption of both international security and trust in the marketplace highlight the importance of the role of the state”

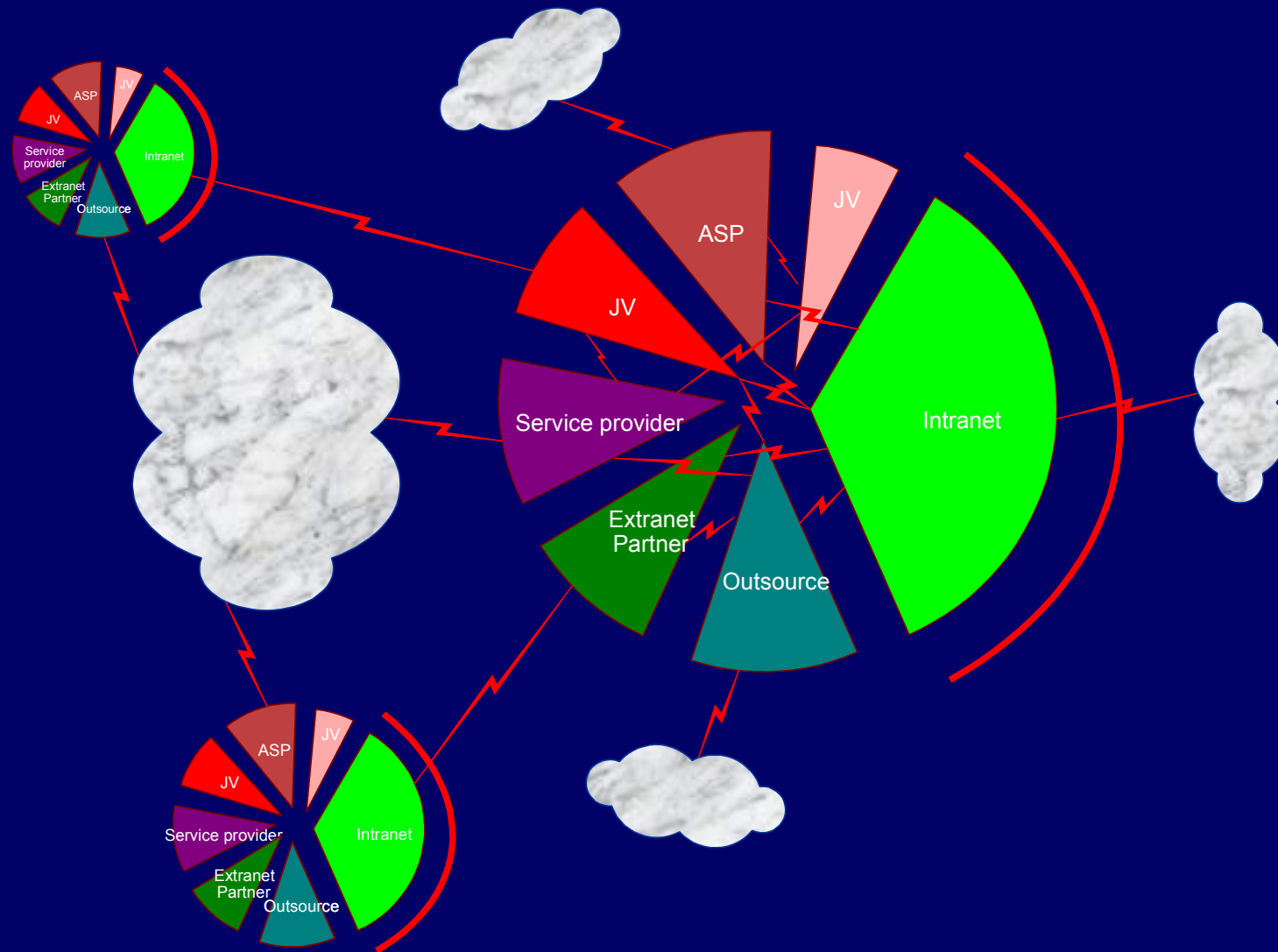
Shell Global Scenarios 2025



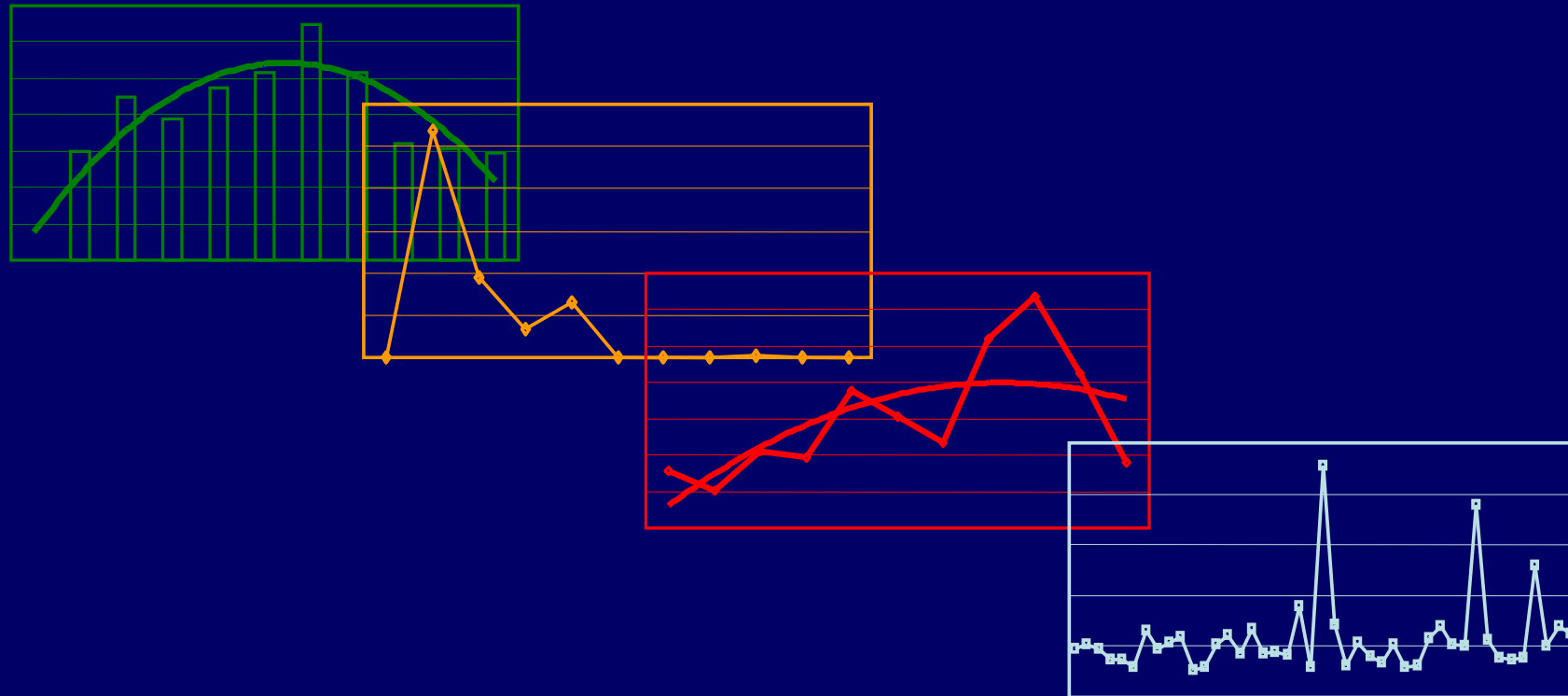
“At no time since the formation of the Western Alliance system in 1949 have the shape and nature of international alignments been in such a state of flux”

US National Intelligence Council “Mapping the Global Future”

Existing solutions are not sustainable



Incident levels are more volatile



Compliance demands are increasing



Networks change everything

“The business environment of the future is likely to be very different from today’s, where boundaries between personal and business computing will blur and everyone and everything will be linked to the Internet. In order to survive, firms must embrace the new risks this environment creates”

David Lacey

Risk Management Bulletin, June 2001



Flows of information are the new focus of security

“As time goes on the most important thing about a scientific and technological base may not be what information is in it at any given moment, but the speed with which it is continually renewed and the richness of communication carrying specialized know-how to those who need it and acquiring knowledge swiftly from all over the world.

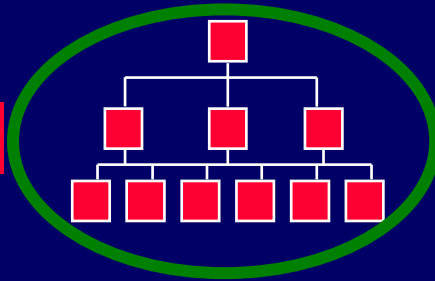
It is not the stocks but the flows that will matter.”

Alvin Toffler



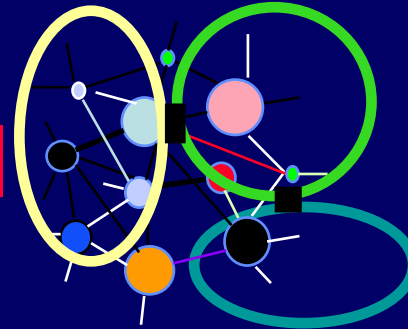
Security emphasis is changing

Secure buildings



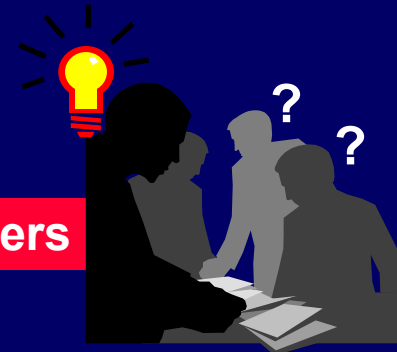
1980s
Glasshouse
data centres

Managed networks



1990s
Network
firewalls

Streetwise users



21st Century
cyberspace
road warriors



Welcome to the Information Age

- Knowledge is power
- The death of distance (but “place” still matters)
- Globalisation, de-regulation, de-massification
- Speed, flexibility and agility are pivotal
- Openness, trust and risk-taking beats secrecy, suspicion and caution
- Partnerships leverage global opportunities
- Trust and reliability underpin business



A new role for security

- Personal, pervasive and powerful
- Enables rather than inhibits business changes and new ways of working
- Focus on safeguarding “flows” rather than “stocks” of information
- An integral part of licence-to-operate
- Enhances reputation and brand value
- Security technologies transform business



Can we predict the future?



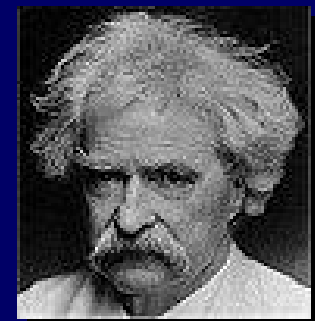
Wrong assumptions are more dangerous than ignorance

“It ain't what you don't know that gets you into trouble:

it's what you know for sure that just ain't so”

Mark Twain

Author



Some aspects of the future are predictable

- The impact of the Information Age has been extensively researched
- We can learn from previous infrastructure changes (water, electricity, railways)
- Long range scenarios have been developed (DTI, Shell, NIC)
- Technology Road Mapping and Scenario Planning can be used to explore the impact of key drivers, trends and events
- Products emerging in the next 5-10 years are likely to be in today's research labs



Trends take longer to emerge than you think

“People often overestimate what will happen in the next two years and underestimate what will happen in ten. I’m guilty of this myself.”

Bill Gates, *The Road Ahead*, 1995



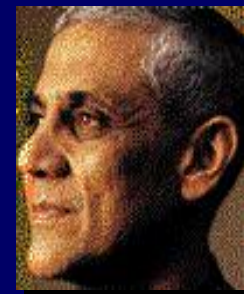
Avoid straight line thinking

"Most of our predictions are based on very linear thinking. That's why they will likely be wrong:

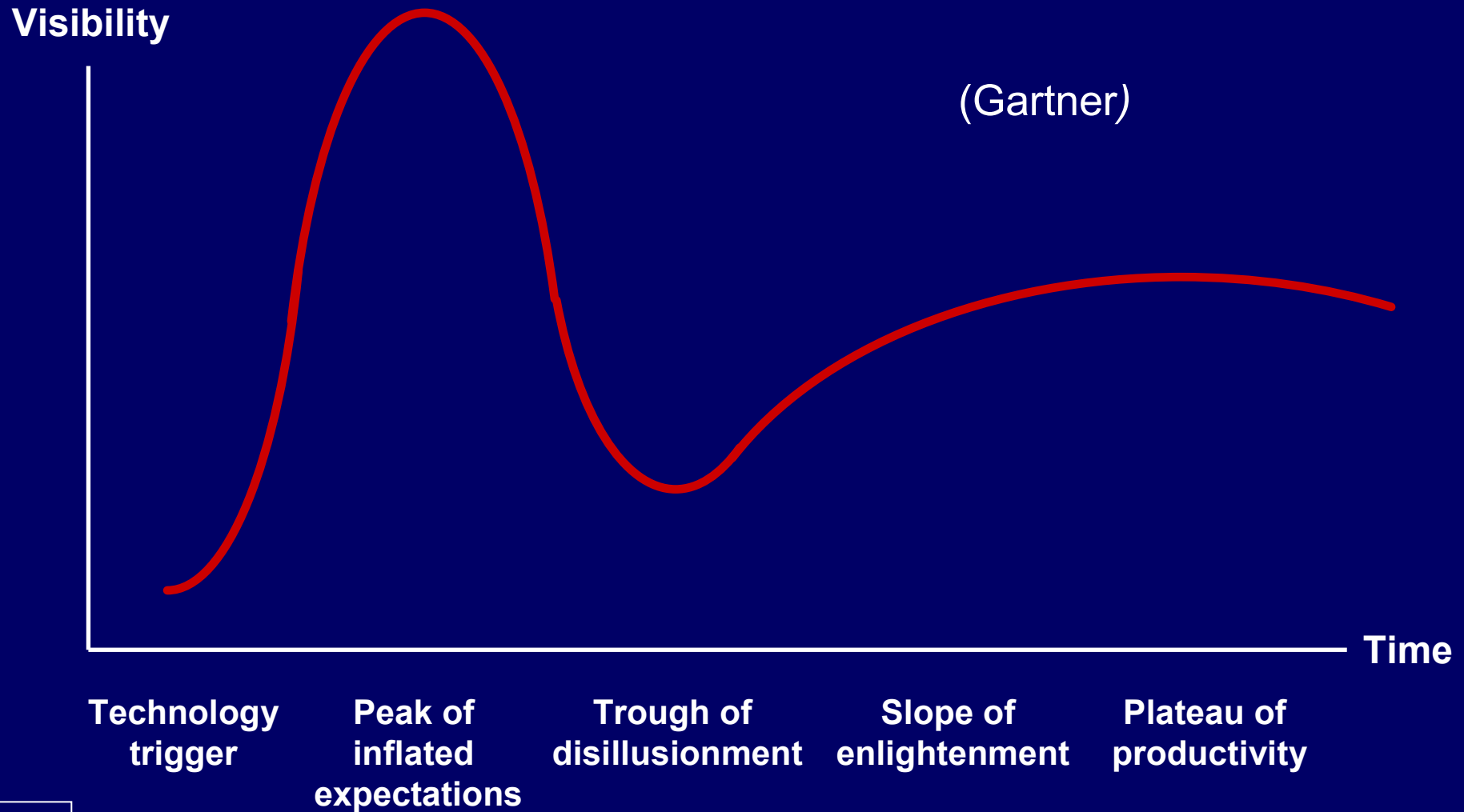
Technology follows exponential curves"

Vinod Khosla

Kleiner Perkins Caufield & Byers



Compensate for “hype curves”



Be aware of potential “network effects”

- The network is the first emergent structure of the new economy
- Some new economy markets might operate under “increasing returns”
- Winner-takes-most is a likely outcome of competition in collaborative networks

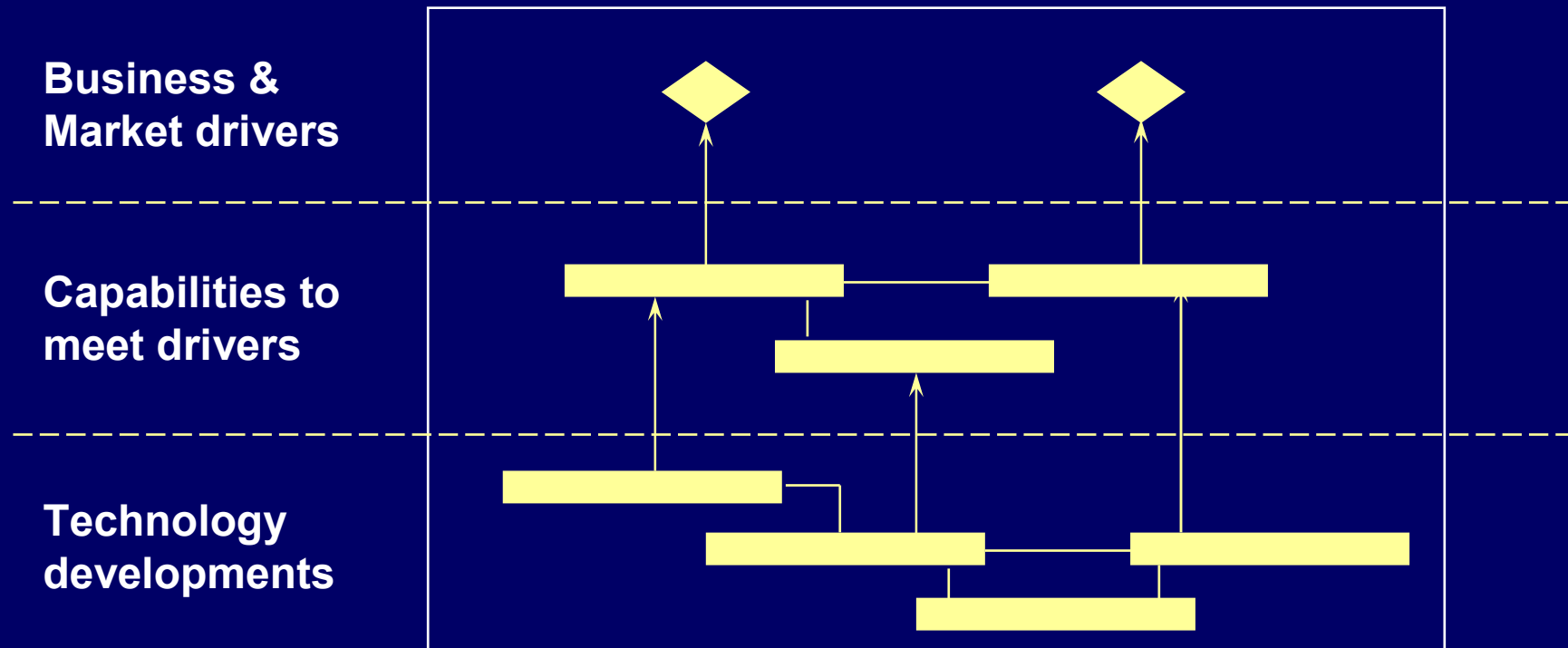
“Of networks, there will be few”

Professor Brian Arthur
Economist



Technology road mapping helps connect drivers, impacts and responses

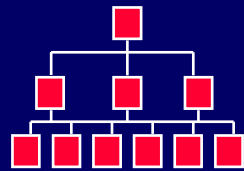
Generic road map - time 0-10 years →



Scenario planning helps you to explore alternative futures

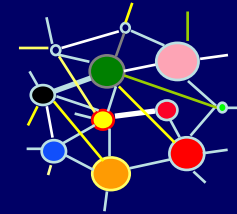
Order

An orderly international hierarchy of CAs will emerge to provide a Global PKI service



Silver bullet

A new security technology will emerge that rapidly become a de facto standard



Chaos

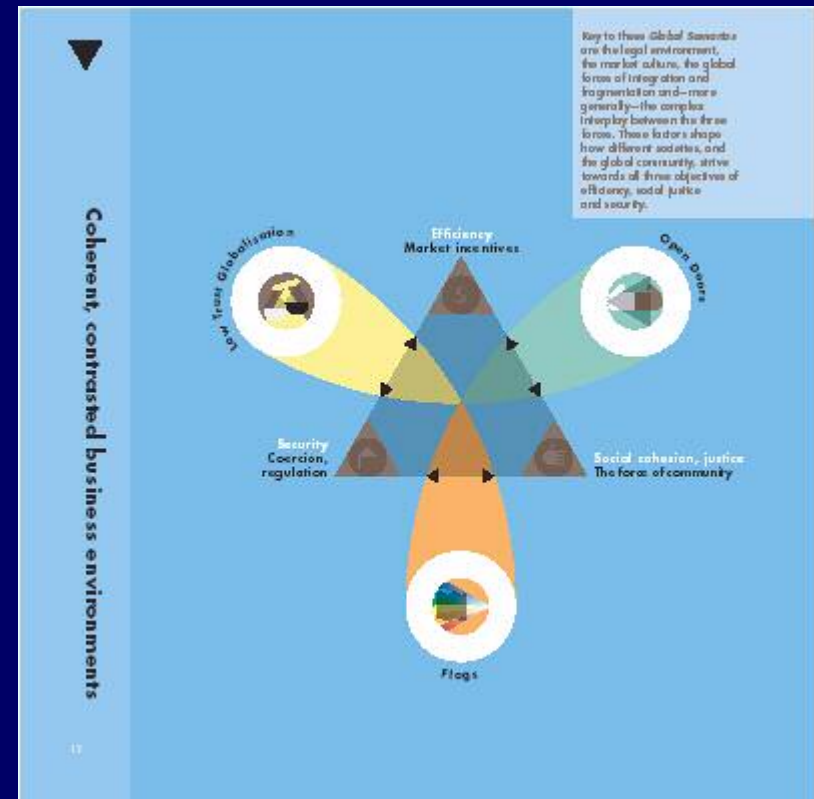
There will be chaos in the marketplace with numerous proprietary, tactical solutions that are not inter-operable (Gartner)



Shell Global Scenarios to 2025

Three Global Scenarios:

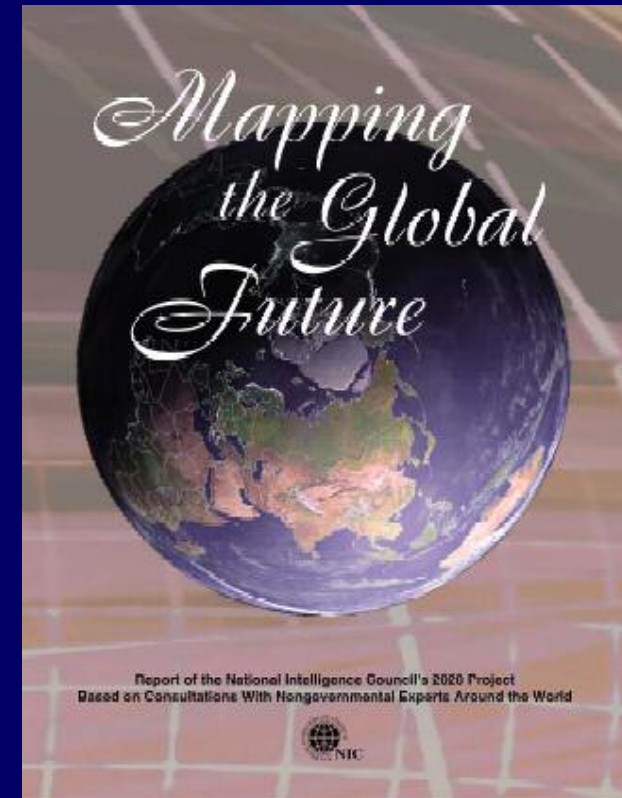
- **Low Trust Globalisation**
A legalistic “prove it to me” world
- **Open Doors**
A pragmatic “know me” world
- **Flags**
A dogmatic “follow me” world



US NIC Global Scenarios 2020

Four Fictional Scenarios:

- **Davos World**
China growth reshapes world
- **Pax Americana**
US predominance continues
- **A New Caliphate**
New global movement emerges
- **Cycle of Fear**
Pervasive insecurity creates potential Orwellian world



Relative certainties for next 10-15 years

- Globalization largely irreversible
- World Economy substantially larger
- Rise of Asia, especially China, but US dominates
- Arc of instability covering Middle East, Asia, Africa
- Political Islam still a major force
- Environmental & ethical issues more to the fore
- Sufficient energy supplies in ground
- Improved WMD in some states
- Aging population in West



From "Mapping the Global Future" US NIC



Why not design our own future?

“The best way to predict the future is to invent it”

Alan Kay

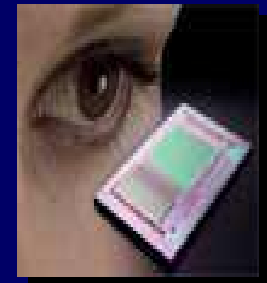


The Jericho Forum



Emerging trends in technology

- Exploding connectivity & complexity
- Machine-understandable information
- De-fragmentation of computers into networks of smaller devices
- From deterministic to probabilistic computing
- Quantum computing
- Wireless, wearable computing
- Peer-to-peer grid computing
- Ubiquitous digital rights management
- Biometrics and novel user interfaces



Emerging trends in the Marketplace

- Consumerisation
 - Proliferation of new types of client device designed for the consumer (not the business) market
- Social Computing
 - Pervasive citizen communications will transfer the balance of power from organizations to individuals
- Convergence
 - Converged data & voice communications products, services and applications will increase corporate risk profiles



Virtual worlds, real business

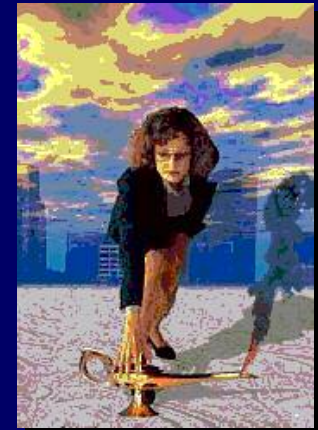


A new dimension for acceptable use policy



The impact on security

- Slow death of network perimeters
- Overlap of business and personal lifestyles
- Security moves to the data level
- Quantum-immune cryptography
- New languages, models and tools to express, negotiate and implement security policies
- Intelligent monitoring systems to control complex networked systems and user behaviour
- Uncertain security - no guarantees
- Manage incidents as opportunities



We are now experiencing the first security
paradigm shift of the 21st Century

De-Perimeterisation



As we look ahead to the second security
paradigm shift of the 21st Century

Spy vs spy



A world of increasing openness & complexity

- Exploding surveillance opportunities
- Limited opportunities for privacy-enhancing technologies
- Proliferating data wakes and pervasive circumstantial data about personal behaviour
- Intelligent monitoring software to highlight unusual behaviour
- Data fusion, mining and visualisation software to extract intelligence out of noise
- Exploitable for business, security, fraud or espionage



Questions?

David Lacey

