

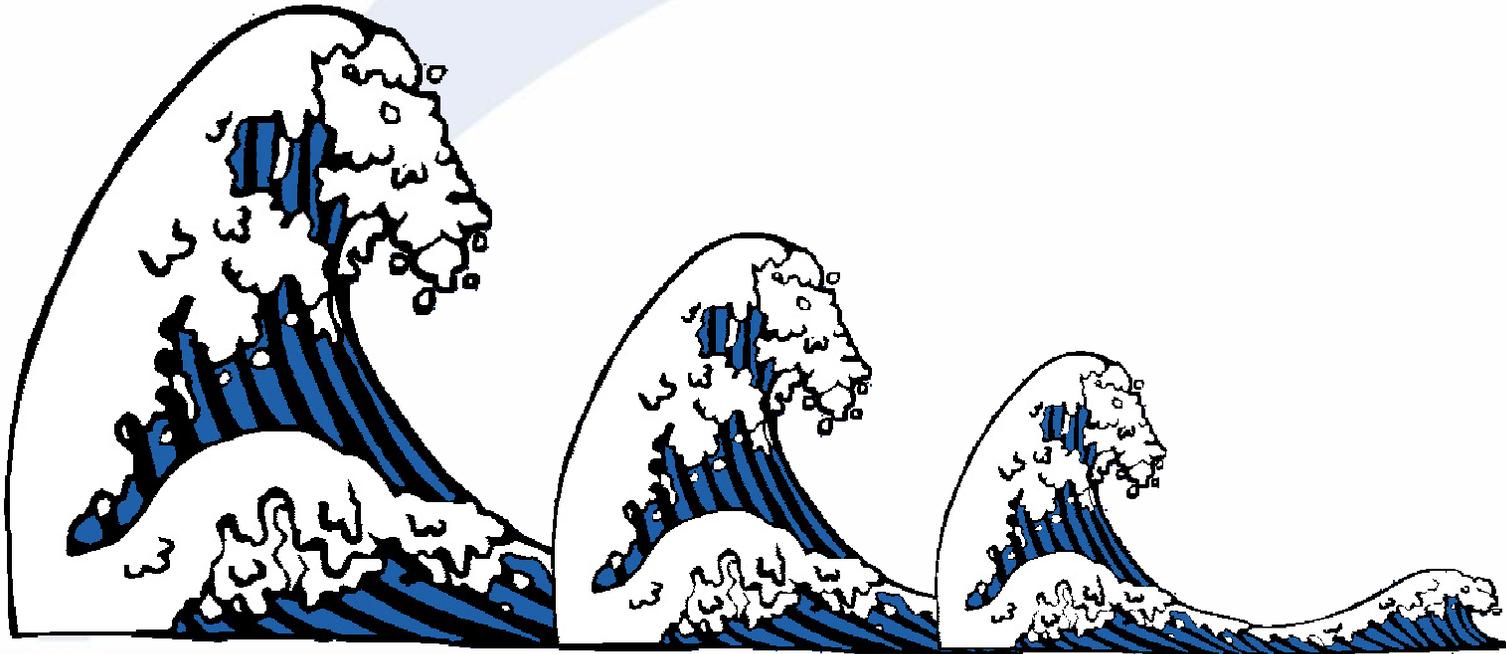
The Impact of Emerging Substance Regulations

Strategies for product environmental compliance.

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Compliance is a market changing event

- **Y2K was over on Jan 1, 2000.
Compliance is Y2K, every day... forever.**
- **B-school 101: Market disruption = Opportunity**
- **Technology is an enabler to capture opportunity**



EU is driving environmental compliance

- **RoHS:**

- Restriction on Use of Certain Hazardous Substances
- Relevant date: July 1, 2006
- Electrical and electronic equipment do not contain lead, mercury, cadmium, hex chromium, PBBs, PDBEs
- **This is a data collection and component replacement issue**

- **WEEE:**

- Waste Electrical and Electronic Equipment
- Relevant dates: ~8/13/05 , 12/31/06
- Companies must finance collection, treatment , recycling and recovery of all electronic waste
- **This is a product tracking and reverse supply chain issue**

Penalties...

- **Sony**
 - Christmas season, 2001
 - Cadmium found in Sony Playstation cables
 - 1.3 million units, 800,000 accessory packs
 - \$160 million lost opportunity
- **Distributor Abacus**
 - Write-off over \$6M in non-compliant goods
- **SMB component manufacturers**
 - Losing accounts due to non-compliance
- **10-Ks**
 - “rohs-related costs”



Ignorance: A bad career move



Fastow indicted on 78 counts
Obstruction charge among allegations against ex-Enron CFO
By Carrie Johnson and Peter Behr, Washington Post, 11/1/2002

WorldCom ex-CFO surrenders
Scott Sullivan and ex-controller turn themselves in to Feds; Ashcroft hints more charges may follow.
August 2, 2002: 3:07 PM EDT



"Enforcement of the regulations...provides for penalties of up to €15m (£10m) or 10 years' imprisonment or both."

Dick Roche, Ireland's Minister for the Environment talking about WEEE

Cost of compliance

- **Penalties**
- **REVENUE RISK**
- **BRAND EROSION**

vs:

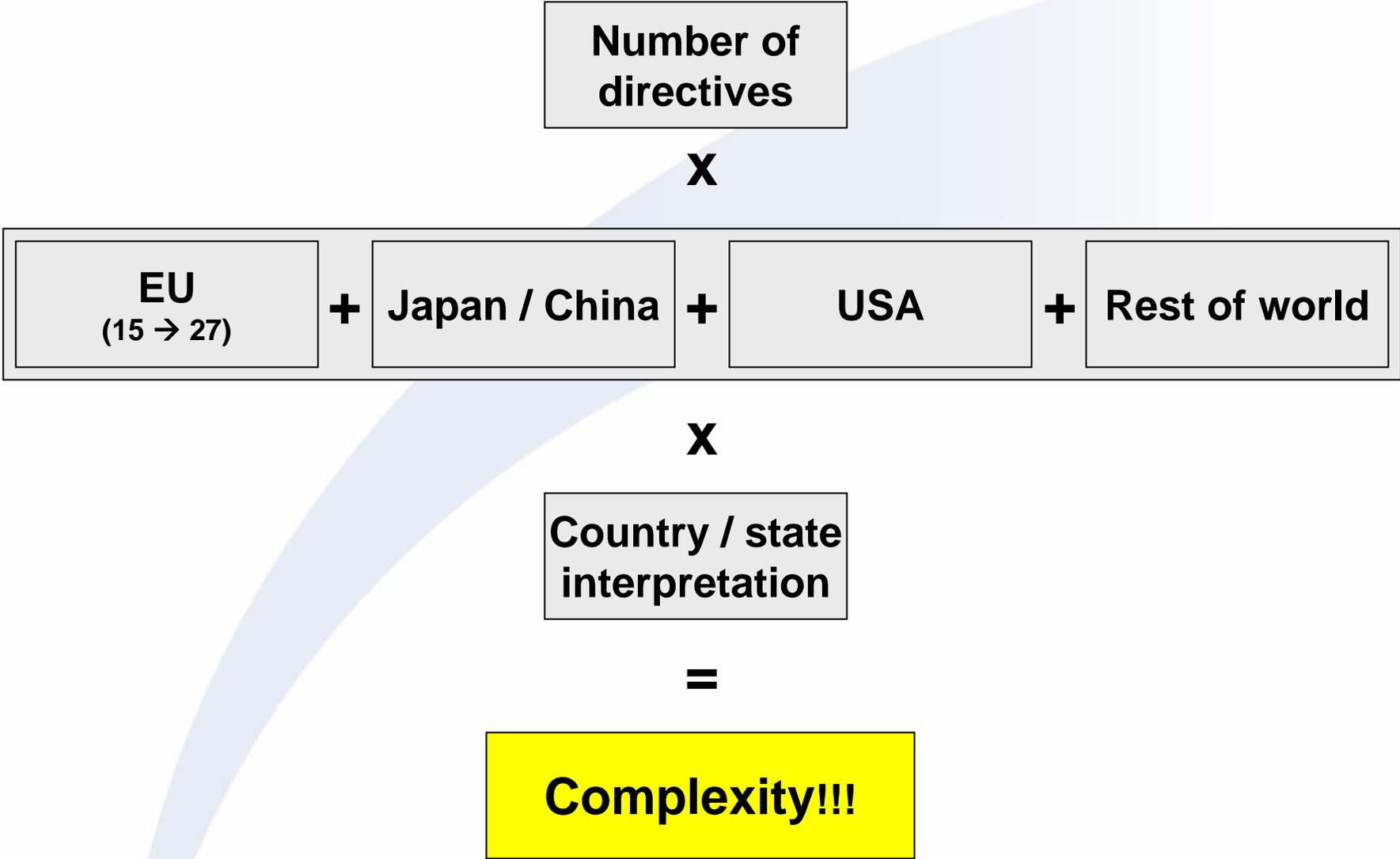
- **Cost of compliance**
 - Multiple product lines
 - Excess and obsolete inventory
 - Return funds
 - R&D
- **Competitive advantage**

- **1B consumer electronics company**
 - 10K parts from 500 global suppliers
 - 10M in design and documentation
 - 3M in equipment upgrades
 - 1M for soldering equipment
 - 2M in test equipment
 - Full time staff of 10 dedicated to directives
 - ½ time from additional 50 people
 - They do not think they will be complaint and will sacrifice markets if necessary

EU Directives

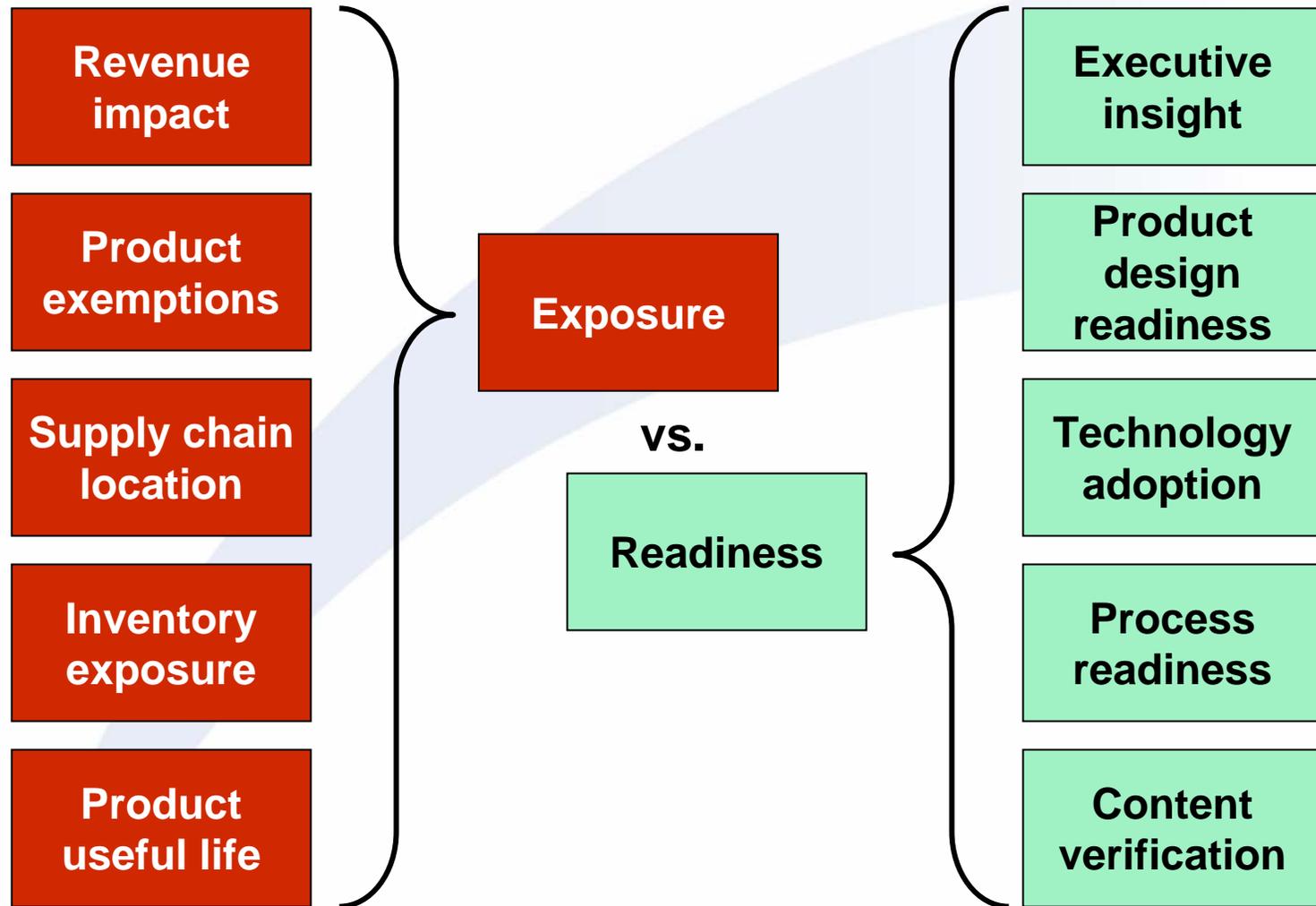


Regulation complexity



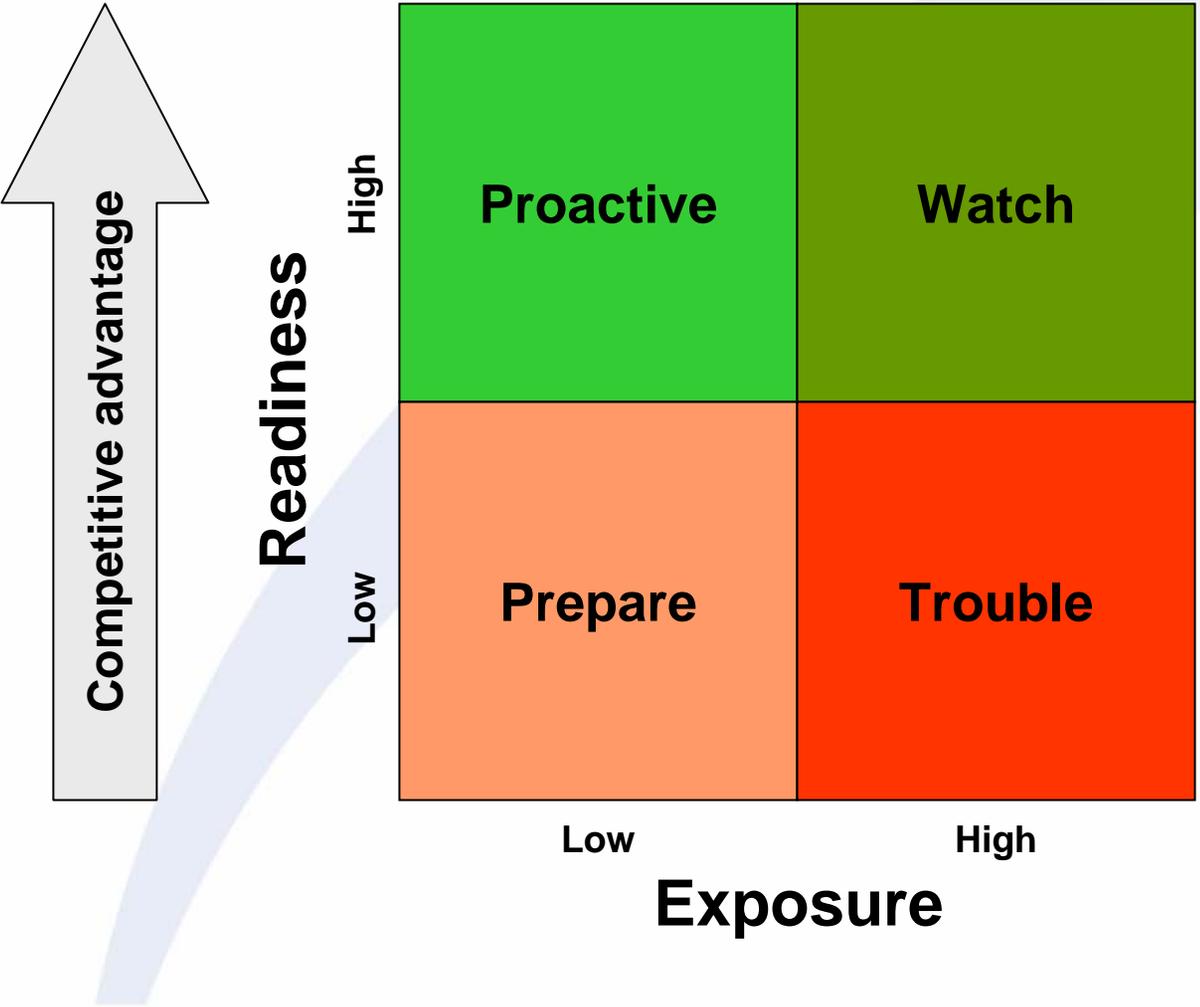
Assessing compliance

Assess environmental product compliance



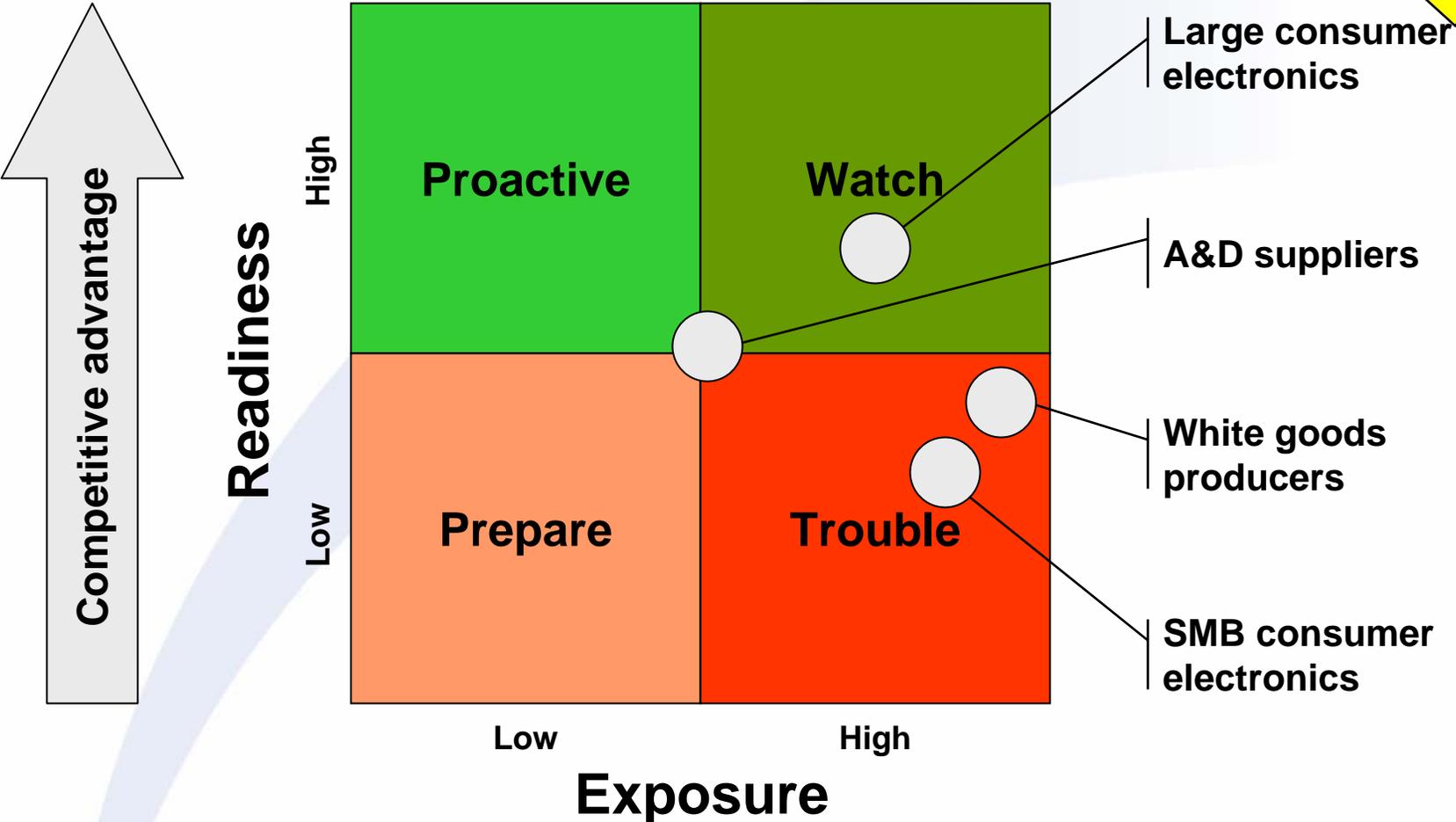
Source: AMR Research

Environmental preparedness quadrants



Environmental preparedness quadrant

RoHS Example



Adopt an active compliance strategy

- **General compliance goals:**
 - Repeatable
 - Sustainable
 - Cost effective
- **Additional goals for environmental compliance:**
 - Brand preservation
 - Reliability
 - No penalties or market lock-out



Source: AMR Research

...we have a problem

Standards and technologies are not in sync

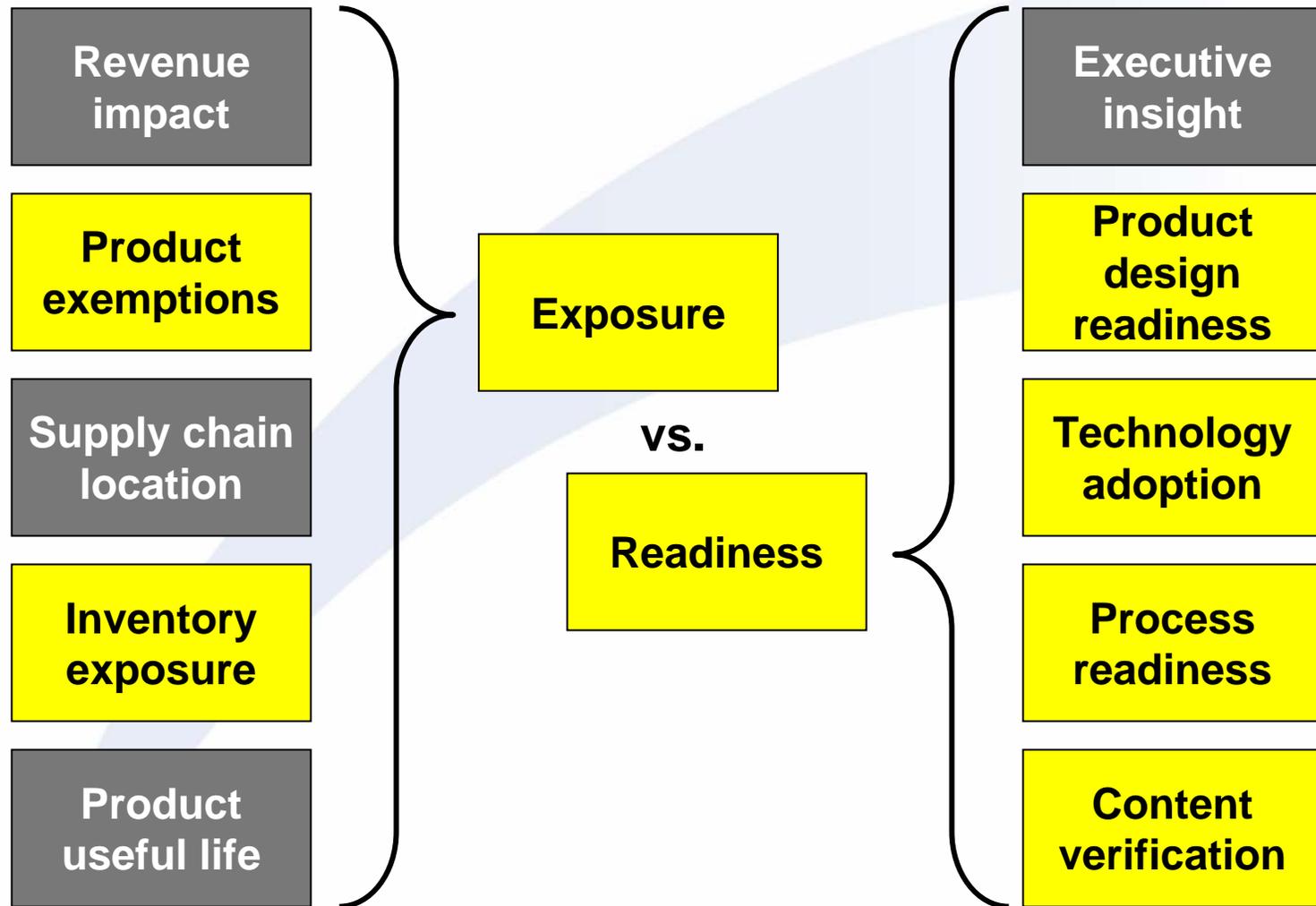
Companies need standards to drive strategies

- **Difficult to communicate with suppliers**
- **Can not manage diverse global regulations**
- **Face legal exposure**

Over 50% of supplier responses have inaccurate information.

**It is difficult to obtain electronic compliance info...
and impossible to get mechanical info.**

Material declarations are core to strategy!!!



Source: AMR Research

Material declaration - technology hurdles

- **Part numbering**
- **Homogeneous information**
- **Tracking current product information**
- **Reporting**
- **Reverse supply chain**

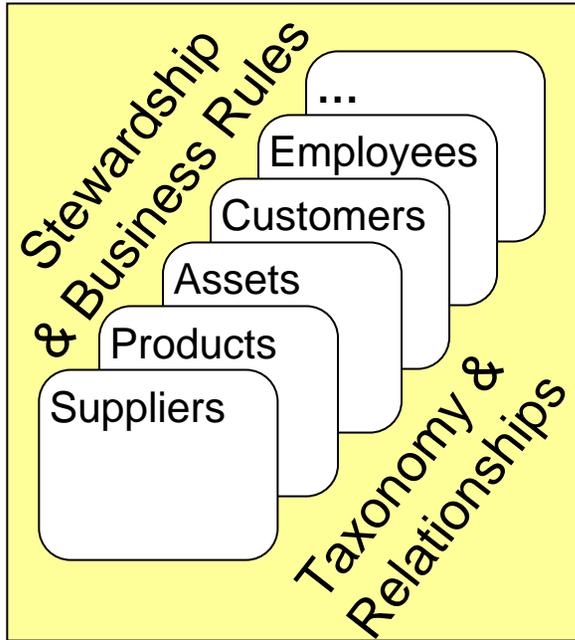
Current solutions

- **PLM solutions**
- **Specialty apps**
- **Content providers**
- **Professional services**

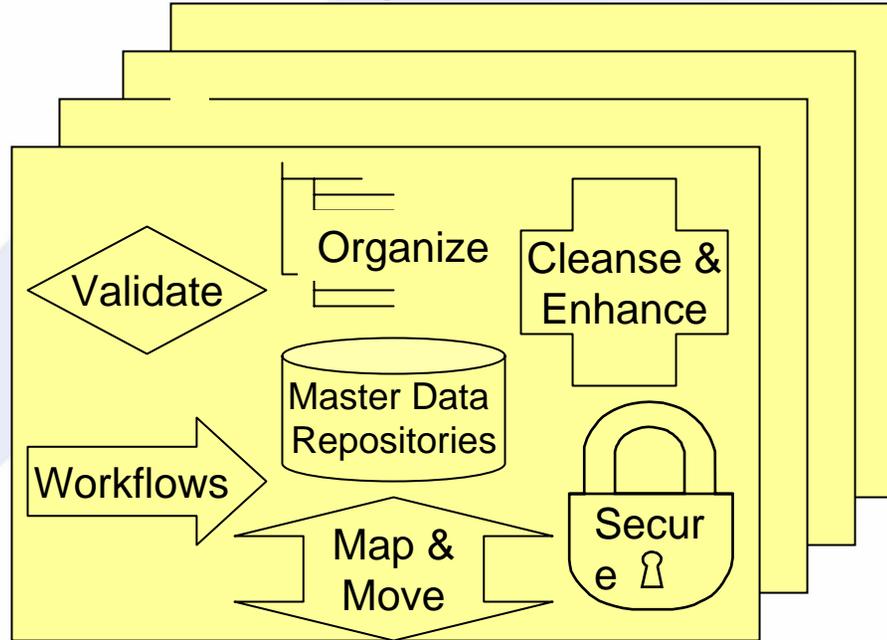
The Future: Master Data Management

Master Data Governance

Master Data Architecture



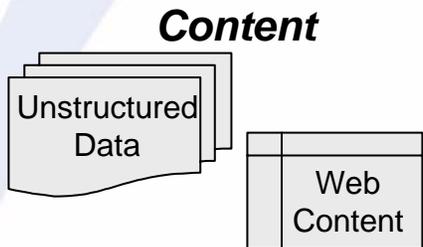
MDM Components & Services



External Sources & Destinations

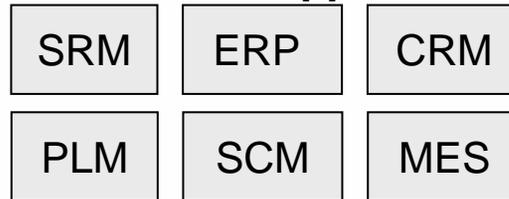


Internal Sources & Destinations



Content

Transactional Applications



Analytics



Companies are struggling to comply.

Assess exposure and readiness

Develop strategies for compliance

Exercise competitive advantage

Thank you.