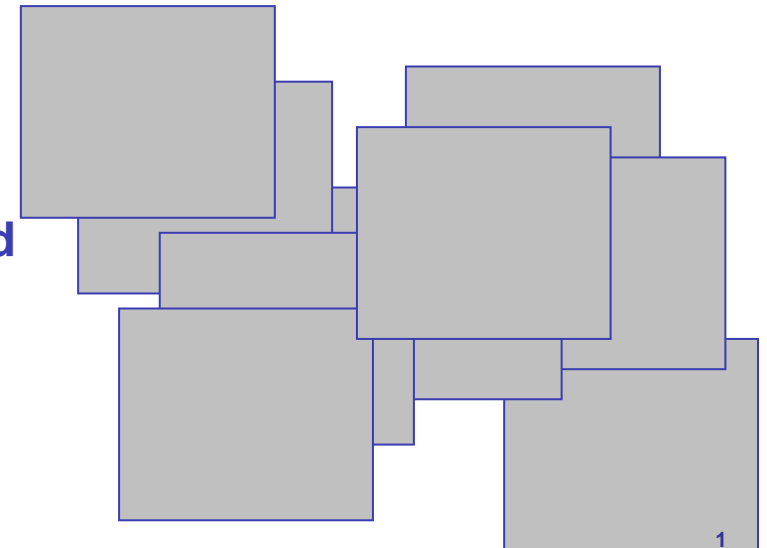


A Strategic Risk Based Approach to Regulating Technologies and Vulnerabilities

Pat Byrne and Graham Durant-Law

2007 International Symposium on Technology and
Society: Risk, Uncertainty, Vulnerability,
Technology and Society

Las Vegas USA Saturday 2 June 2007



Introduction

Genesis

- Royal Australian Navy (RAN)
- HMAS Westralia Accident – indicated systemic failure
- Contracted to develop regulatory framework:
 - Best Practice
 - Defendable
 - Robust
- Added at least two new concepts to the body of knowledge
- Strategic Regulatory Framework = Strategic Risk Management Framework

Organisations Involved

- the Royal Australian Navy;
- the Australian Antarctic Division;
- the Australian Customs Service;
- the Australian Council on Healthcare Standards;
- the Australian Maritime Safety Authority;
- the Civil Aviation Safety Authority;
- the Department of Industry, Tourism and Resources;
- the Det Norske Veritas; and
- the National Occupational Health and Safety Commission.

Any Context

- Regulating vulnerabilities of infrastructure to terrorist attack.
- Regulating opportunities for corruption in policing organisations such as law enforcement, customs, quarantine, and sports drug testing.
- Regulating research institution compliance to standards and laws (for example the biotech industry).
- Regulating pollution outputs and compliance to environmental requirements by industrial processes and organisations.
- Regulating water flows and restrictions in drought prone areas.

The Risk Context



Hazard Likelihood

X

Hi

Increasing Risk to Outcomes / Public / Property / Environment



Increasing Rules



Increasing Regulation

System Being Regulated Risk Factor

Z

Lo/Hi

Increasing Risk to Outcomes / Public / Property / Environment

Lo

Hi/Lo

Lo

Hi

Y

Hazard Severity / Impact

The Z Axis

- Regulate infrastructure vulnerability to terrorist attack being = z axis *low to high*
- Regulating opportunities for corruption = z axis *low to high*
- Regulating corporate behaviour need the maturity of an industry in terms of industry bodies and industry standards = z axis *high to low* implying less regulation is required when industry maturity is high

Hazard Likelihood

Hi

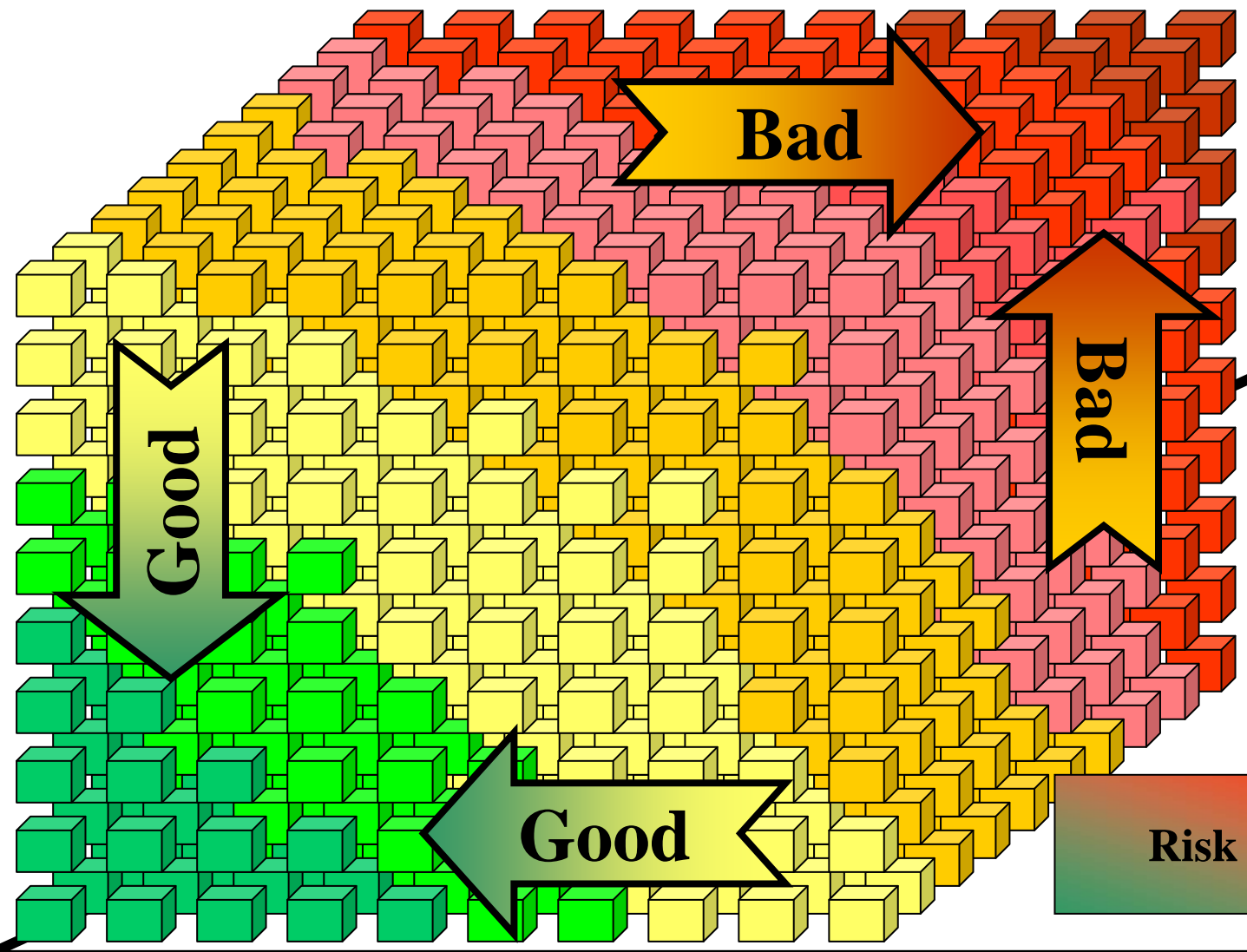
Lo

Hi/Lo

Lo

Hi

Hazard Severity / Impact



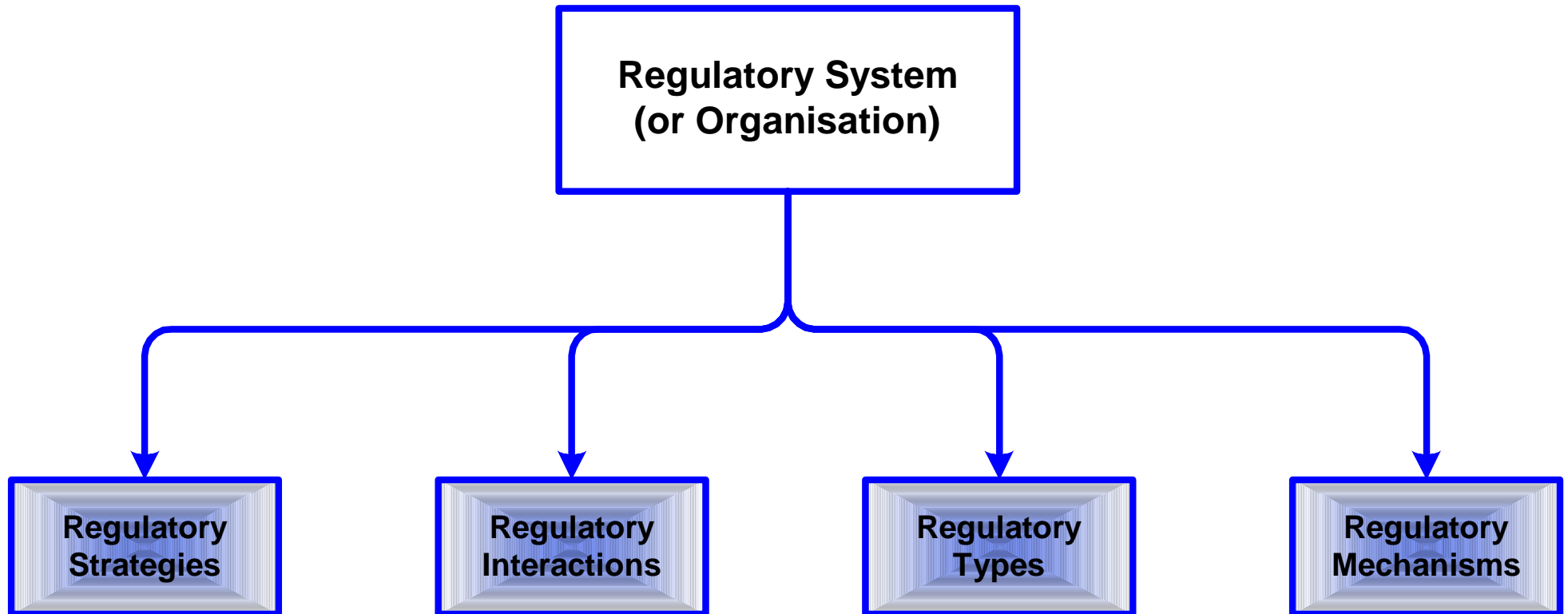
System Being Regulated Risk Factor Considered

Lo/Hi

Risk Profile

The Regulatory Framework





Regulatory Strategies



Hazard Likelihood

Hi

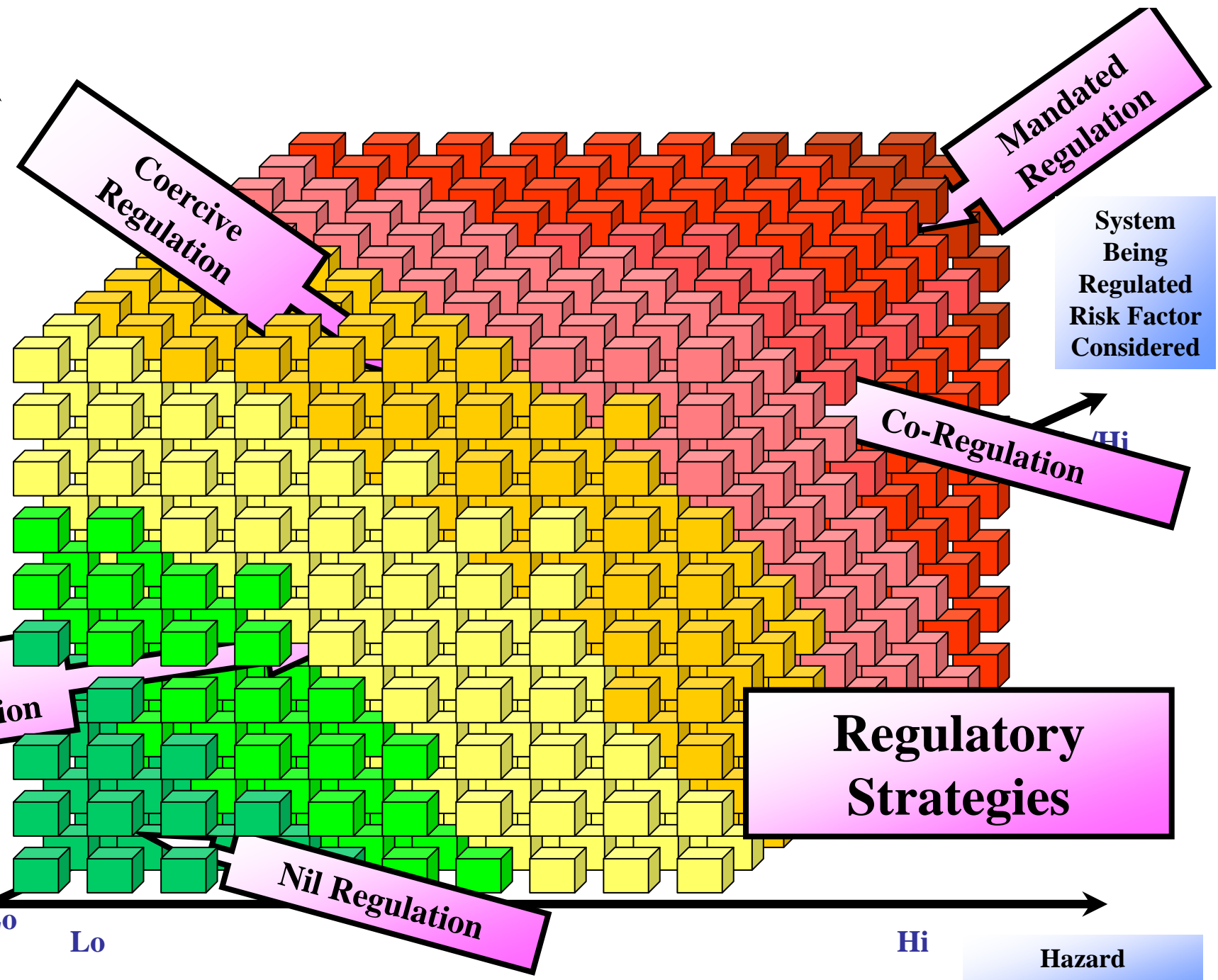
Lo

Hi/Lo

Lo

Hi

Hazard Severity / Impact



Regulatory Interactions



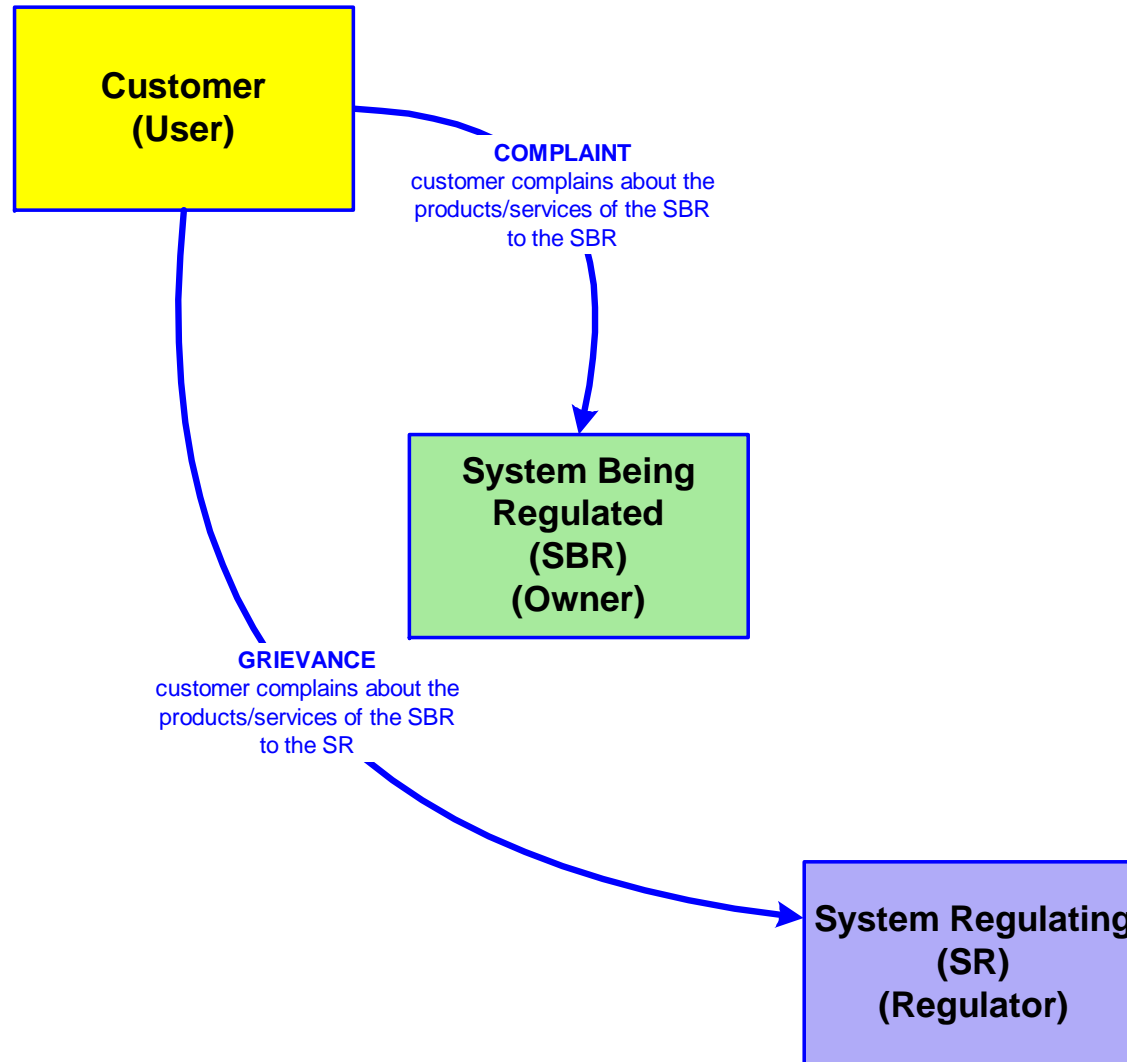
3 x Players in Regulatory System

**Customer
(User)**

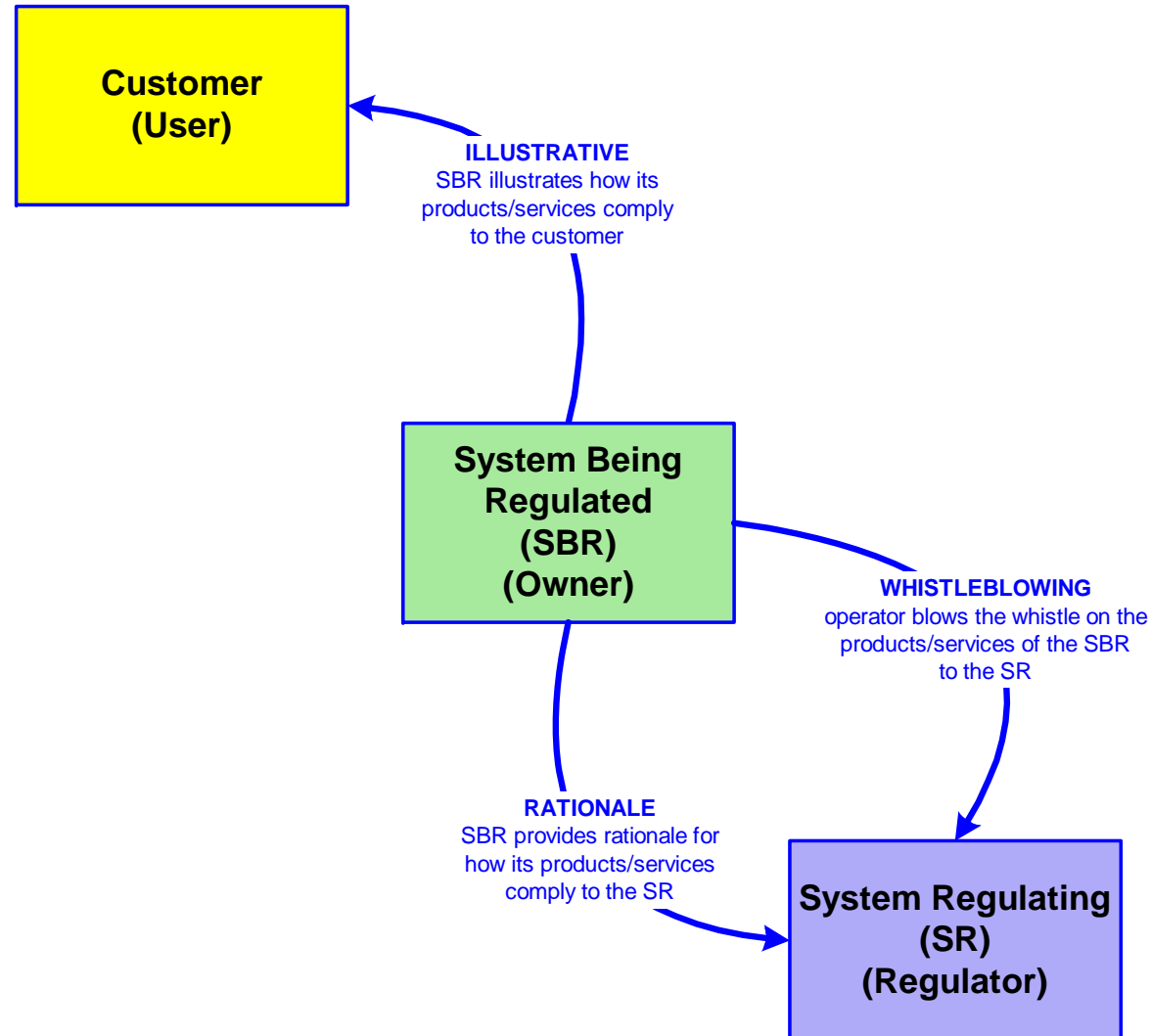
**System Being
Regulated
(SBR)
(Owner)**

**System Regulating
(SR)
(Regulator)**

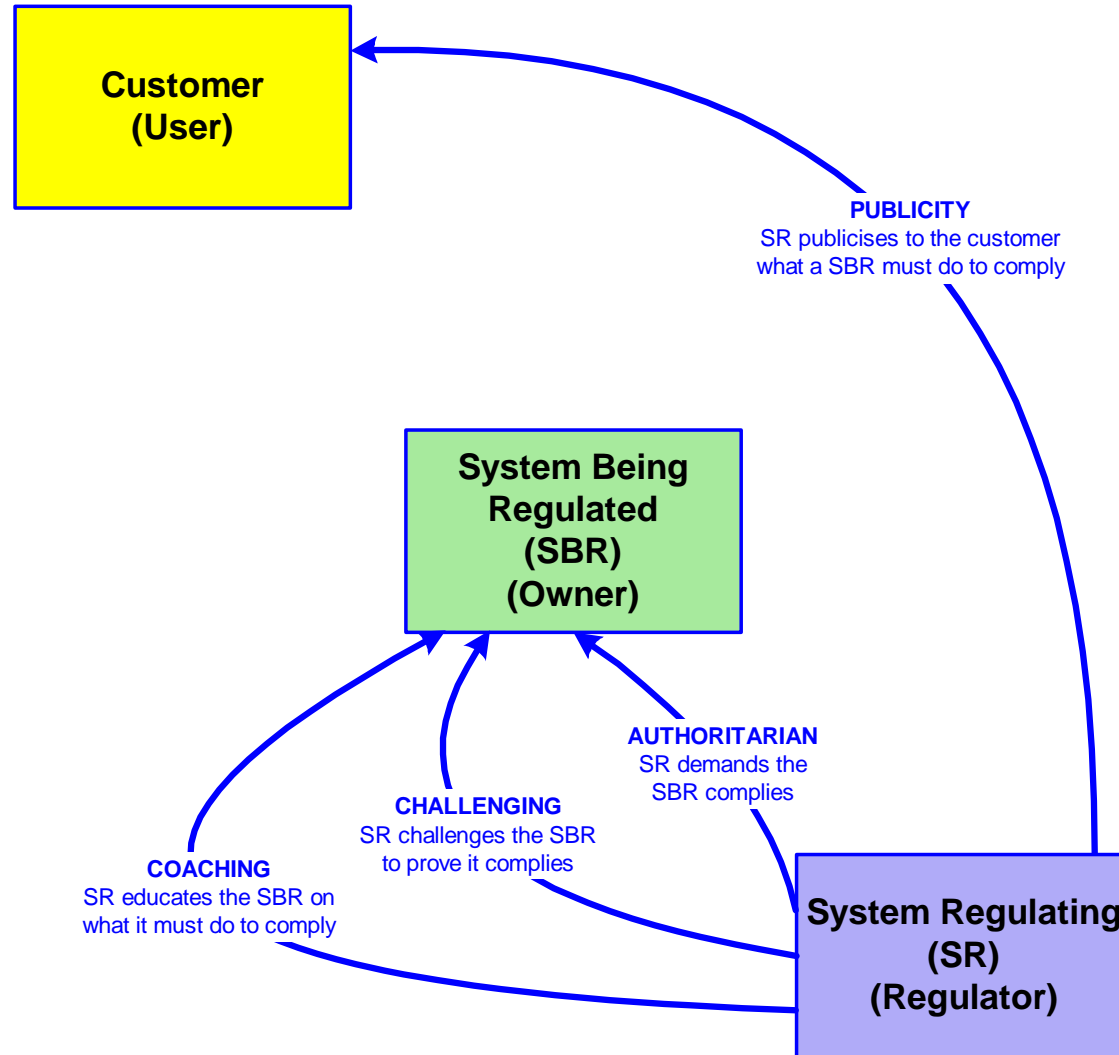
Customer (User) Primacy

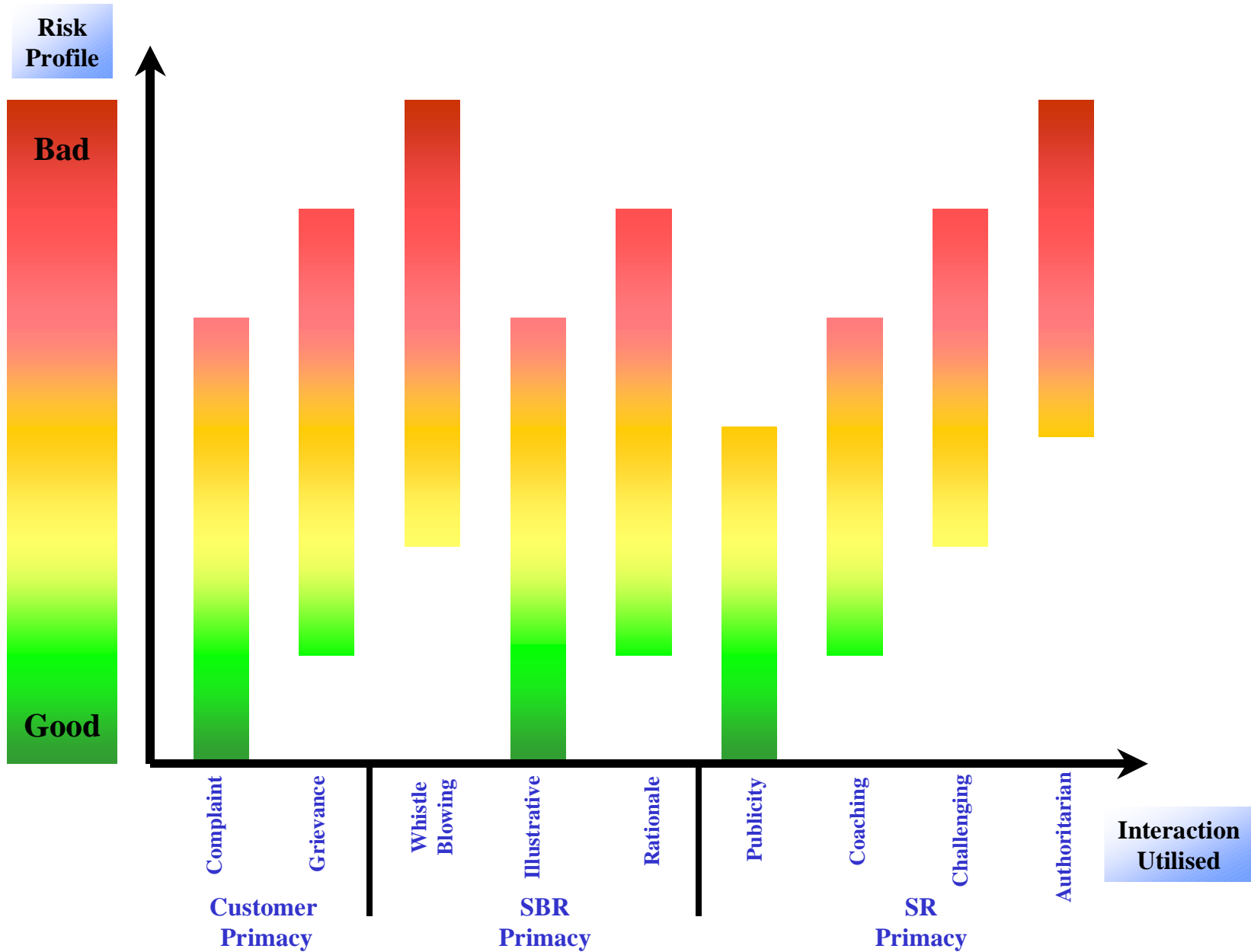


System Being Regulated (SBR) (Owner) Primacy



System Regulating (SR) (Regulator) Primacy



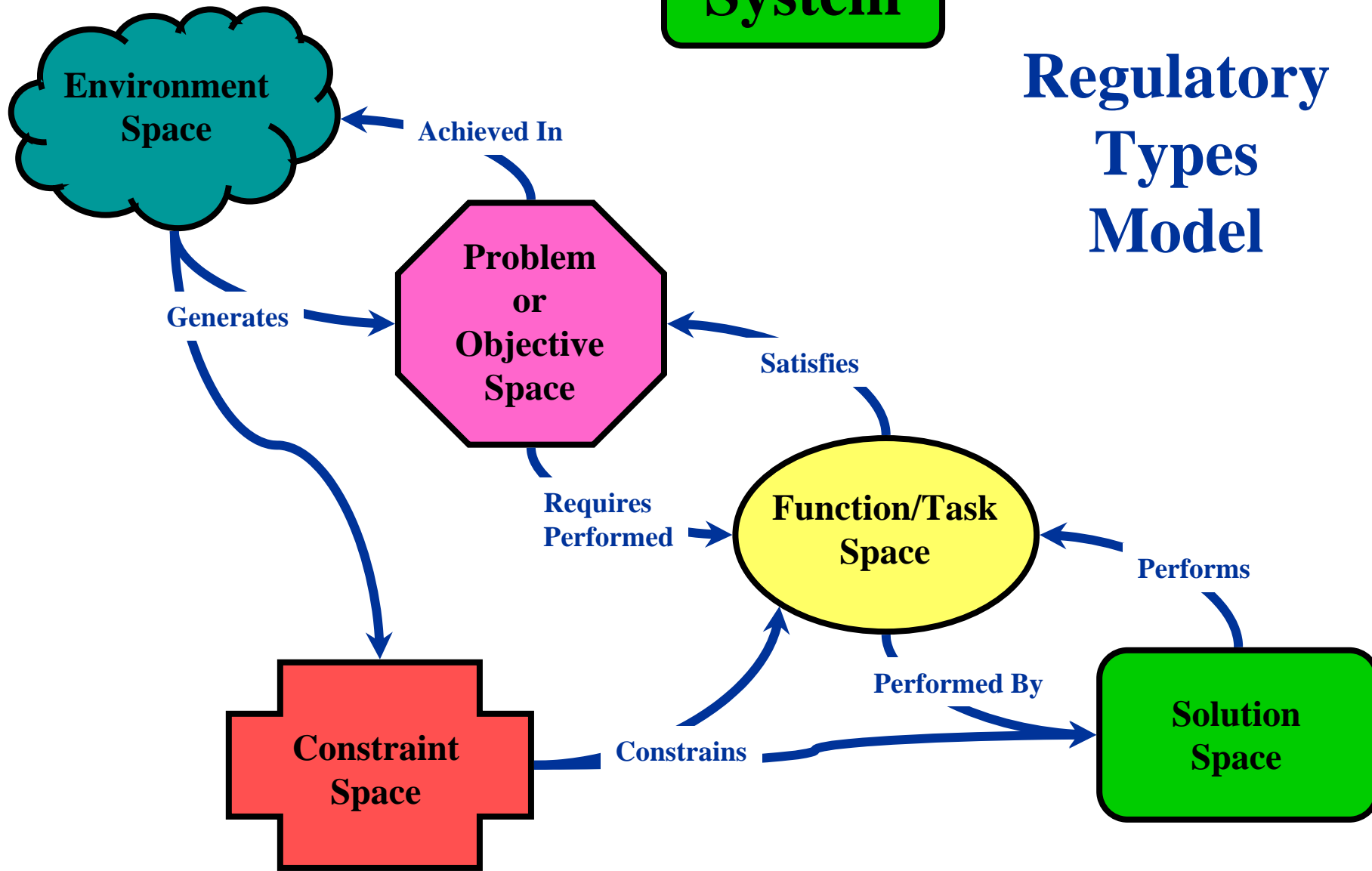


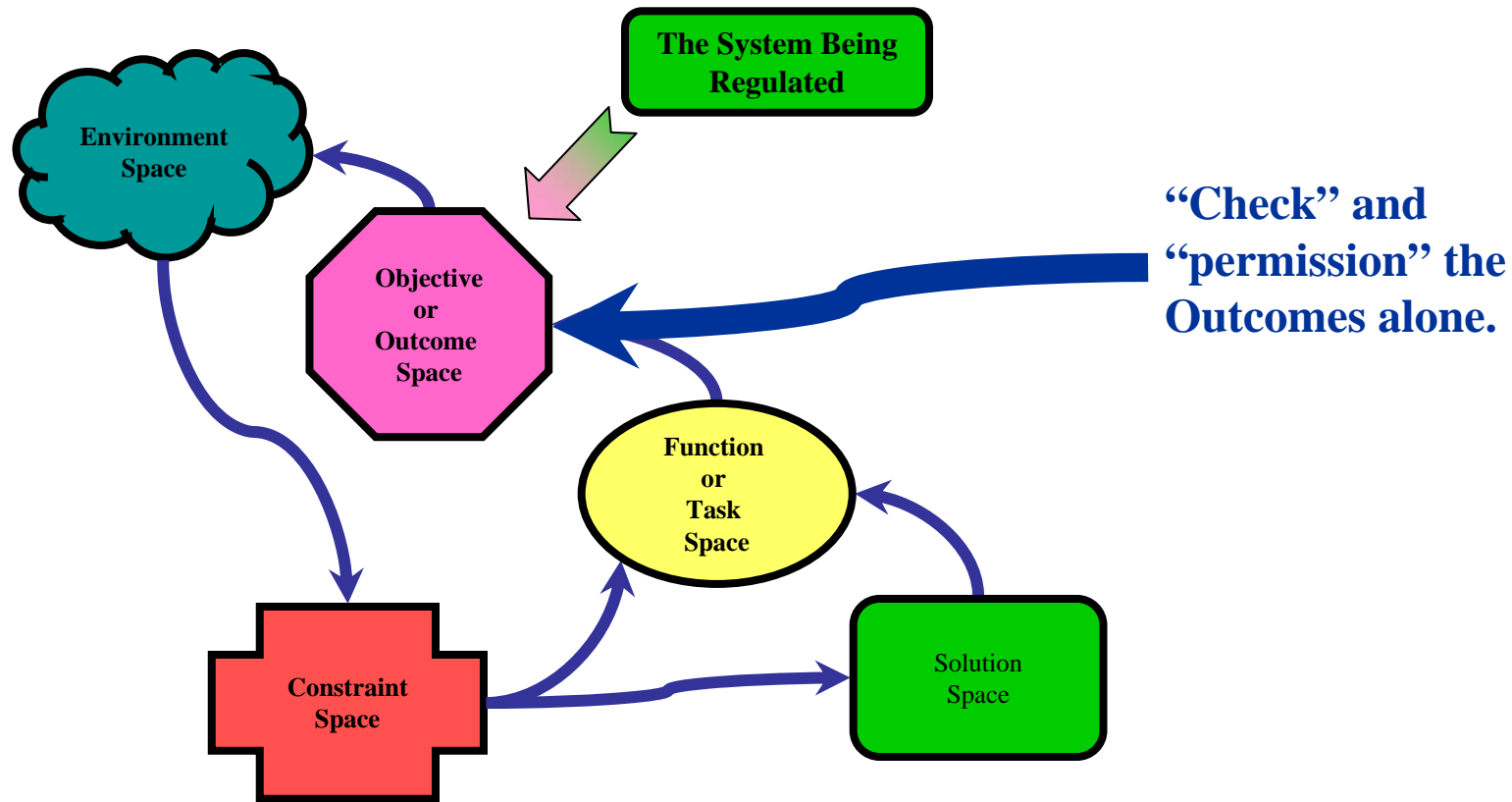
Regulatory Types



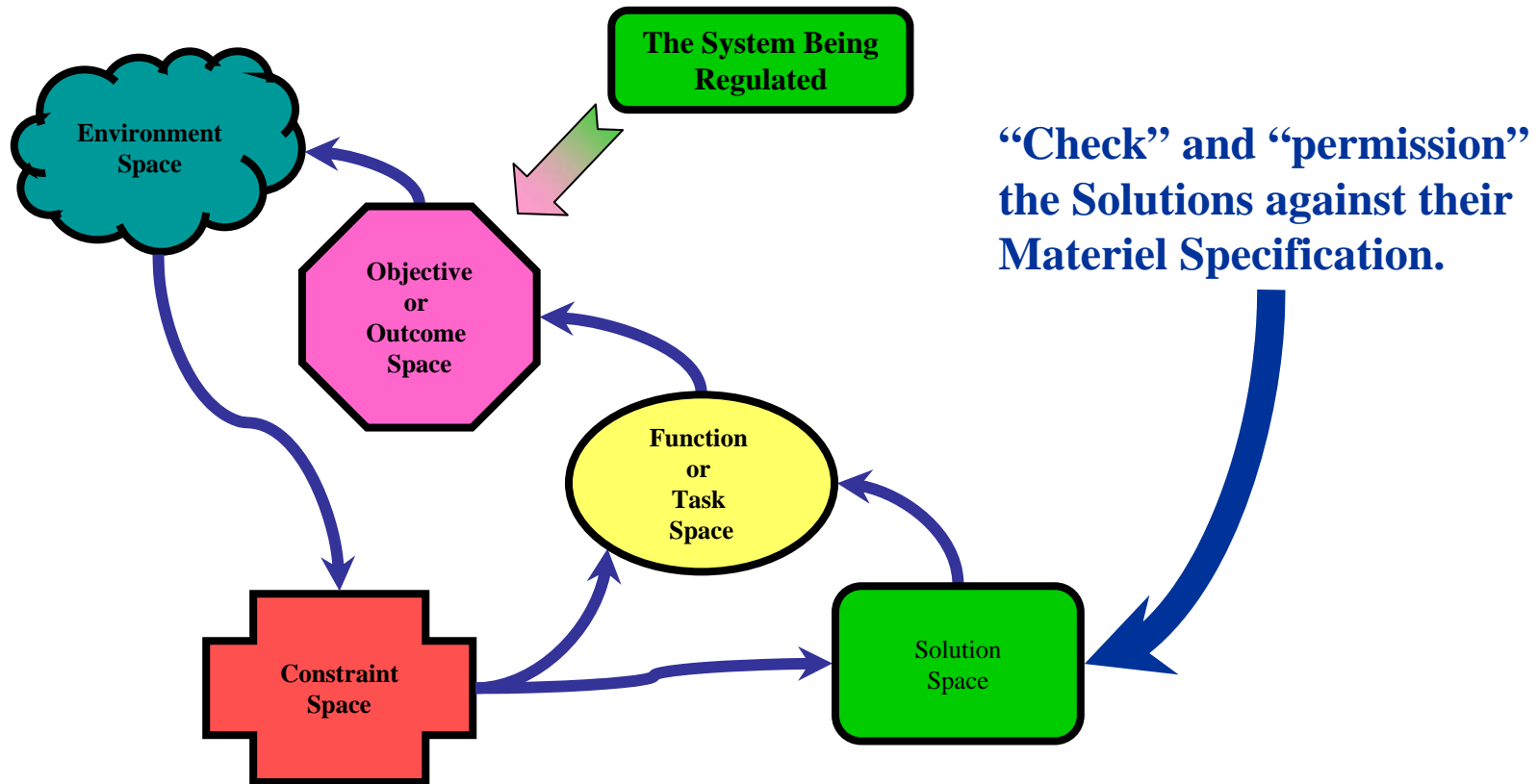
System

Regulatory Types Model

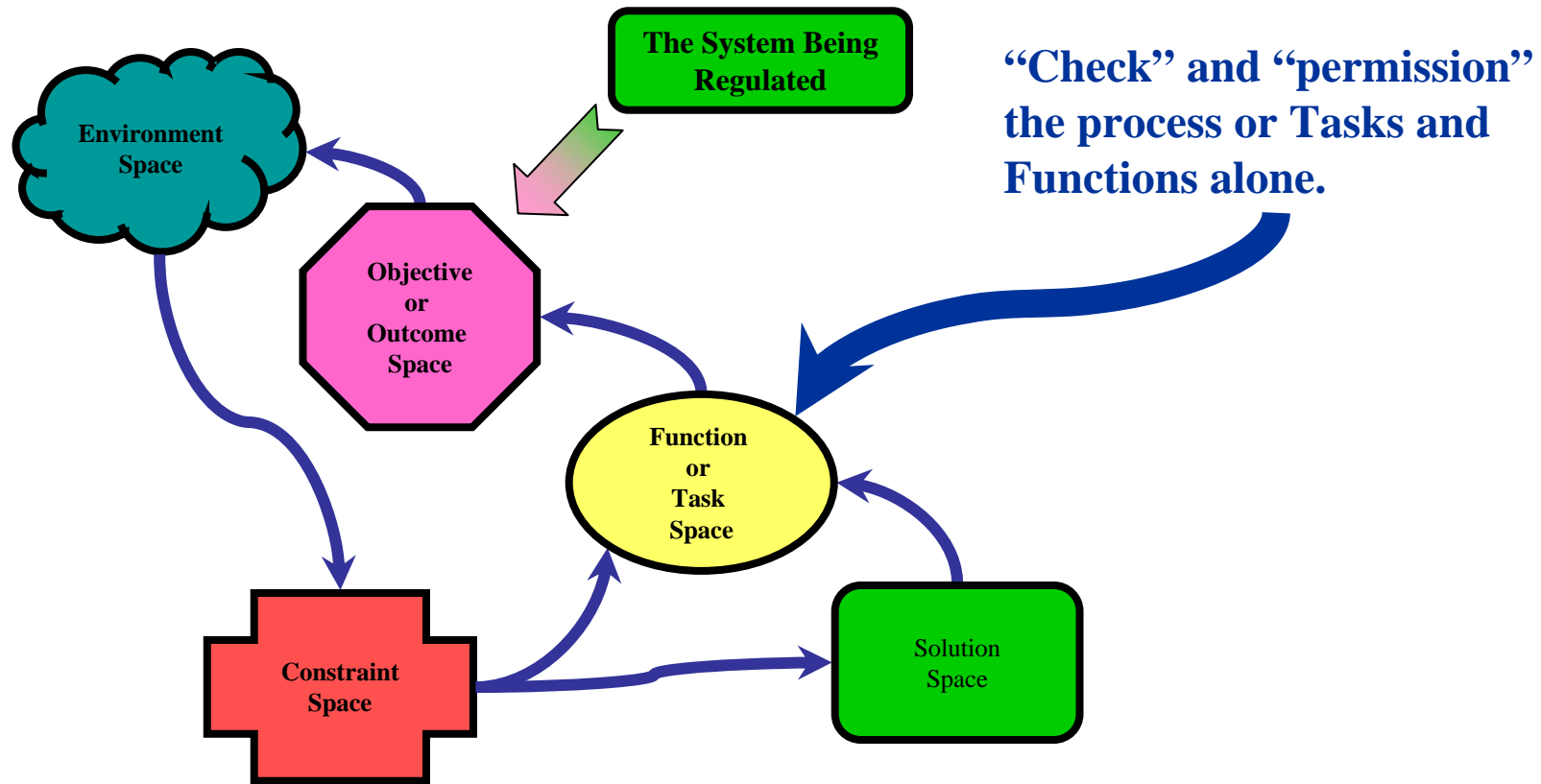




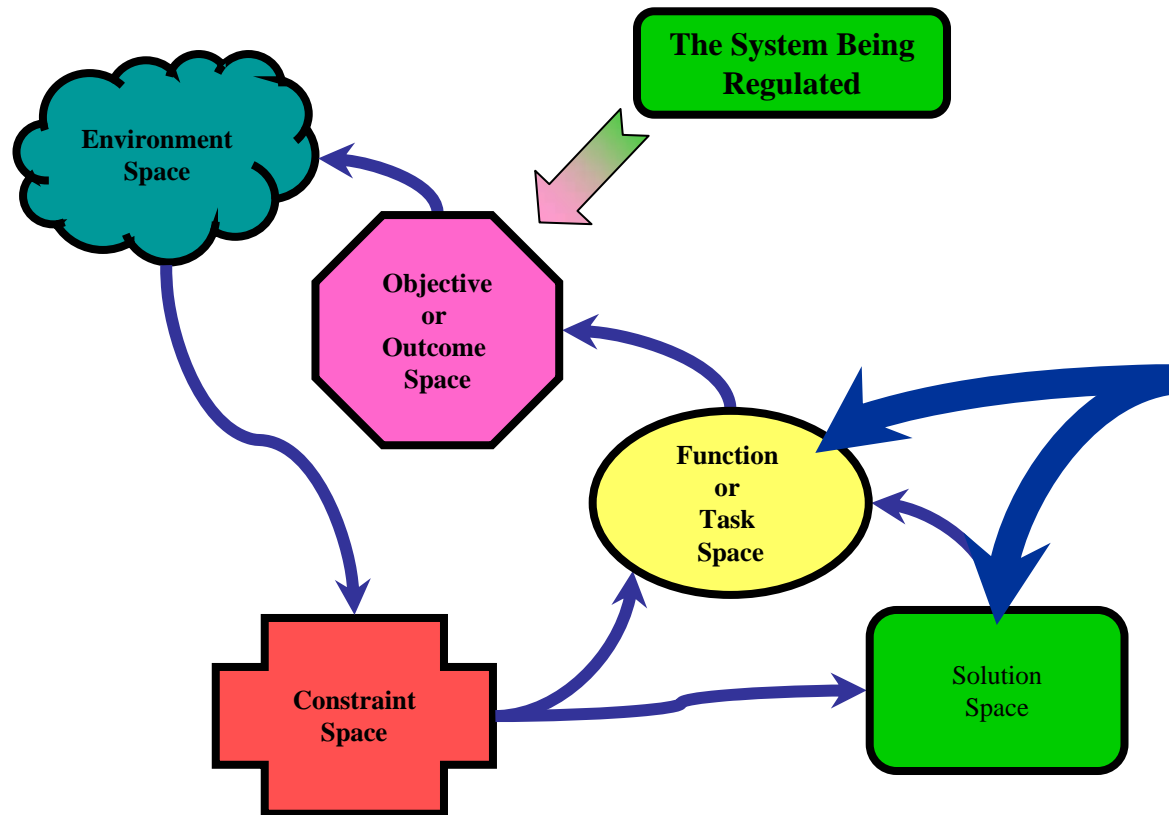
Outcome Regulating



Technical (or Materiel) Regulating



Functional Regulating



“Check” and “permission” the Solutions against what they are doing or what Functions and Tasks they are performing and whether the Technical Performance Measure of the Solution matches or exceeds the Measure of Performance of the required Functions.

This is “doing it right”.

Operational Functional and Performance Regulating

Regulatory Mechanisms



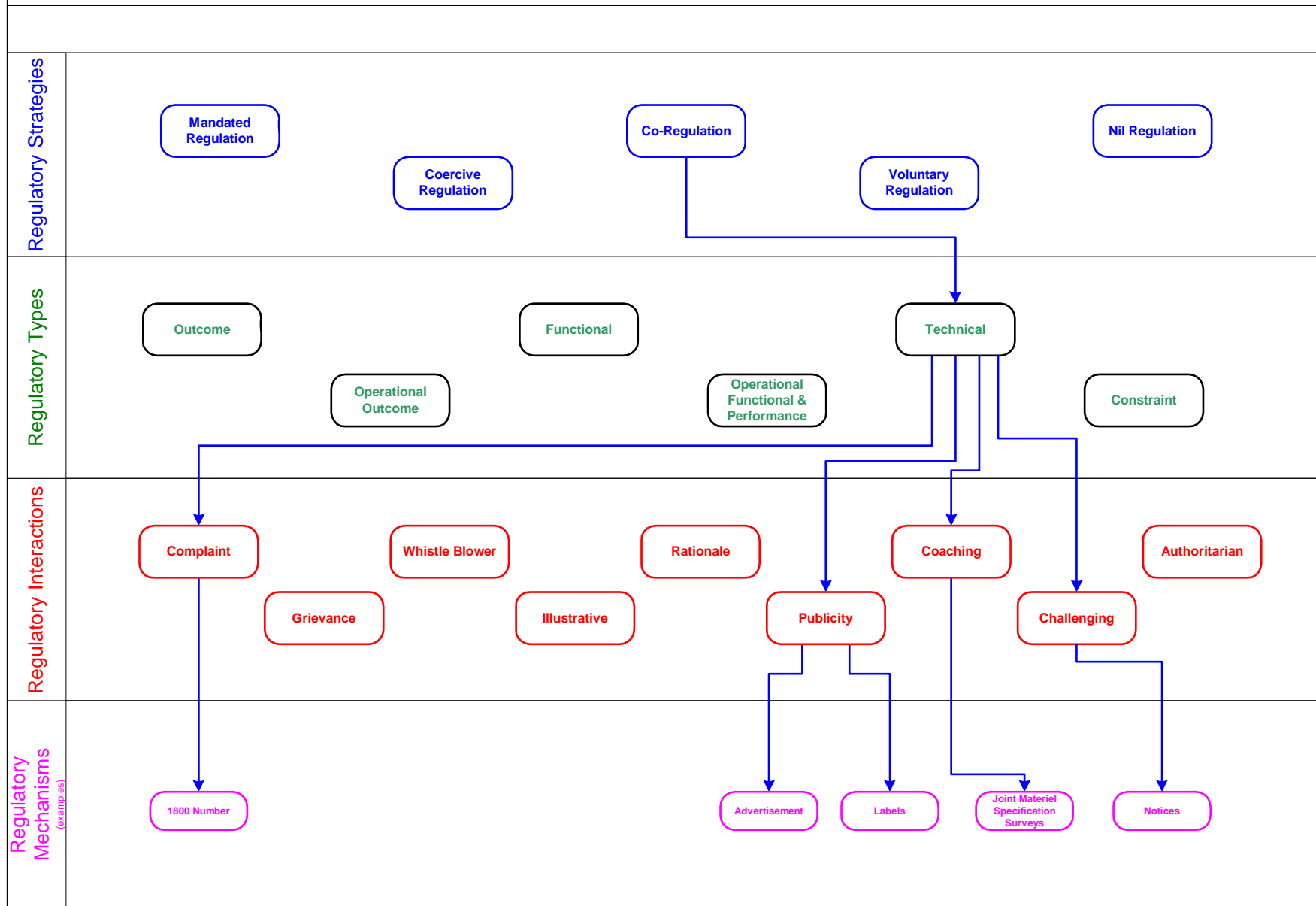
Regulatory Mechanisms

- **Demonstrative devices** like, labels, advertisements, notices, annual reports, and safety cases.
- **Licensing methods** like, permits, orders, and certificates.
- **Policing tools** like, investigations, surveys, audits and warrants.
- **Monetary inducements** like, tax incentives, compliance subsidies, fines, entry fees, and taxes.
- **Disincentives** like market quotas.
- **Grey letter law** like codes and standards.

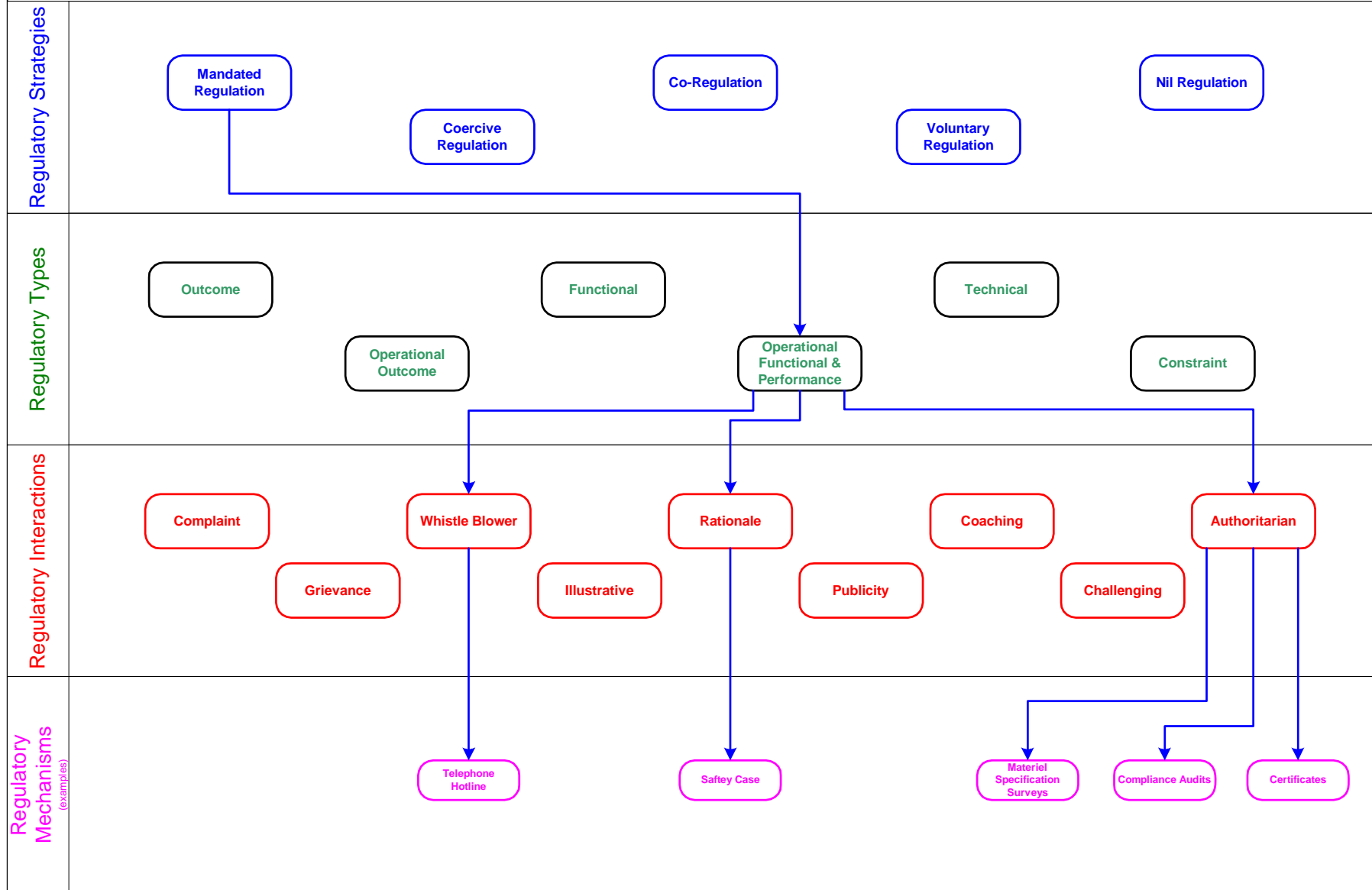
Bringing It Together



Co-Regulation



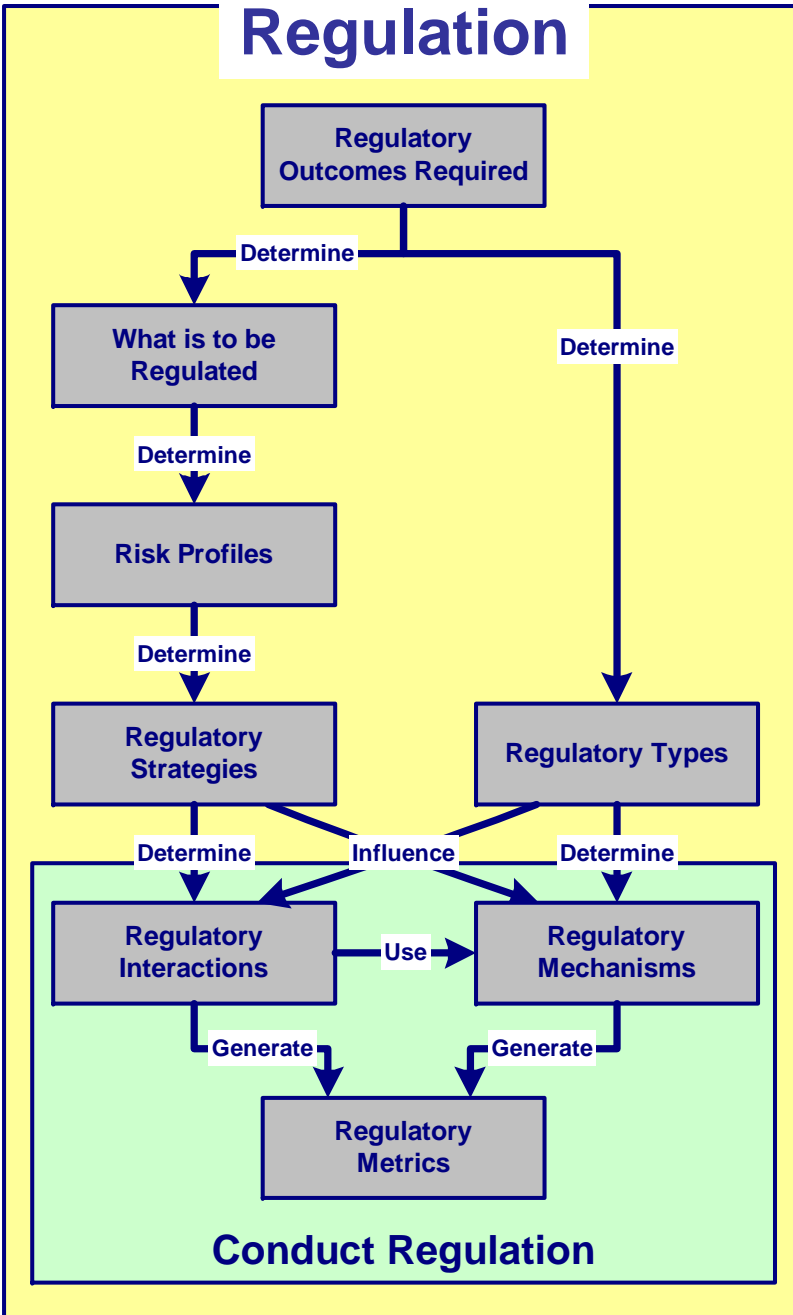
Mandated Regulation



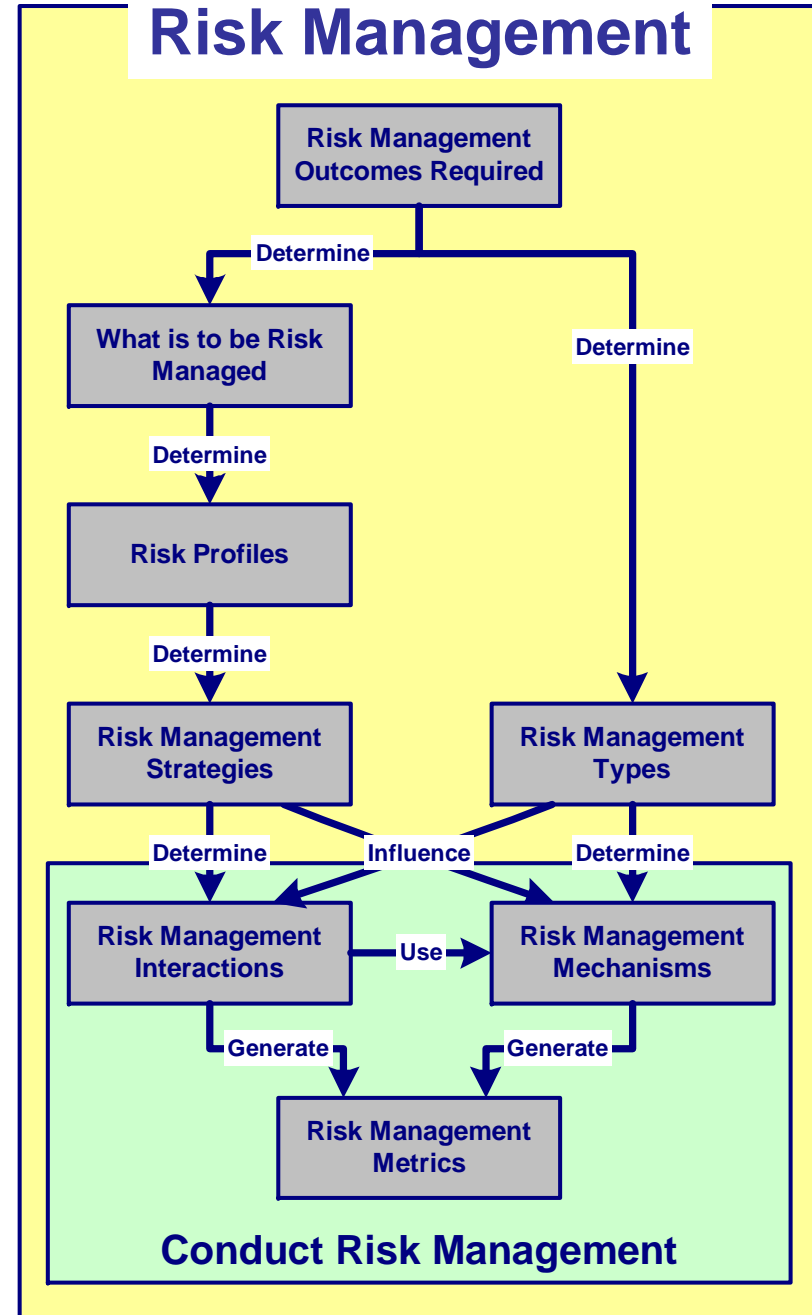
Framework Development Process



Regulation



Risk Management





HolisTech® Pty Ltd

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Discussion

Questions