

MANAGEMENT SYSTEMS INTEGRATION: SHOULD "QUALITY" BE REDEFINED?

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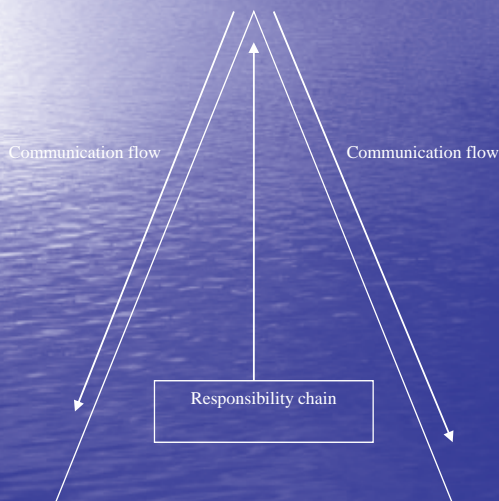
Quality: Definitions

Deming	Predictable degrees of uniformity and dependence at low cost and suitable to the market.
Juran	Suitability to performance.
Crosby	Conformity to requirements.
Ishikawa	Customer satisfaction.
Taguchi	Losses generated to Society, at the moment that a product is delivered when a discrepancy related to target value is detected.

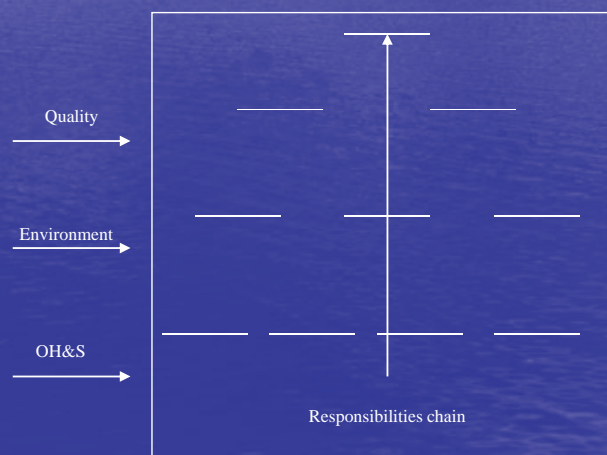
IMS: Definitions

Source	Year	Definition
Garvin	1991	"...measure of the alignment or harmony in an organization".
MacGregor Associates	1996	"...a single top level management "core" standard with optional modular supporting standards covering specific requirements".
Karapetrovic and Wilborn	1998	"...interrelated processes set sharing human and financial resources, information, materials and infrastructures aiming several objectives focus on stakeholders satisfaction".
Griffith	2000	"...blend together quality, environmental and health and safety procedures in order to demonstrate externally the company commitment to deliver a product or service, improved environmental performance and better health and safety management".
Suditu	2007	"...organisational structure, resources and procedures that support the planning, monitoring, quality control, safety and environmental activities of an organization".

Traditional organisational structures



Pyramidal



Matrix

QMS approaches facing IMS

- The *divide et impera* approach.
- The *concordia discors* approach.
- The *e pluribus unum* approach.

The *divide et impera* approach

- QMS act as a division promoter facing new stakeholders.
- Less resources availability.
- Lack of action from QMS.
- IMS lack of cohesion.
- Non integrated indicators.
- Lack of IMS responsible.
- Usually, SMEs are more prone to this approach.

The *concordia discors* approach

- QMS not stiff and/or massive.
- Ex: Nuclear organizations.
- Environmental and/or OHS issues are regarded as a part of QMS.
- Consequences from an environmental and/or OHS non conformity are catastrophic.
- System approach to management more than process approach.

The *e pluribus unum* approach

- Some features from management sub-systems are not suitable for integration.
- Question to be asked by IMS practitioners:
 - “Has our integrated management system reached its maturity level?” or “It is worthwhile to integrate more processes or organisational levels?”

ISO 14001/ ISO 9001 ratio

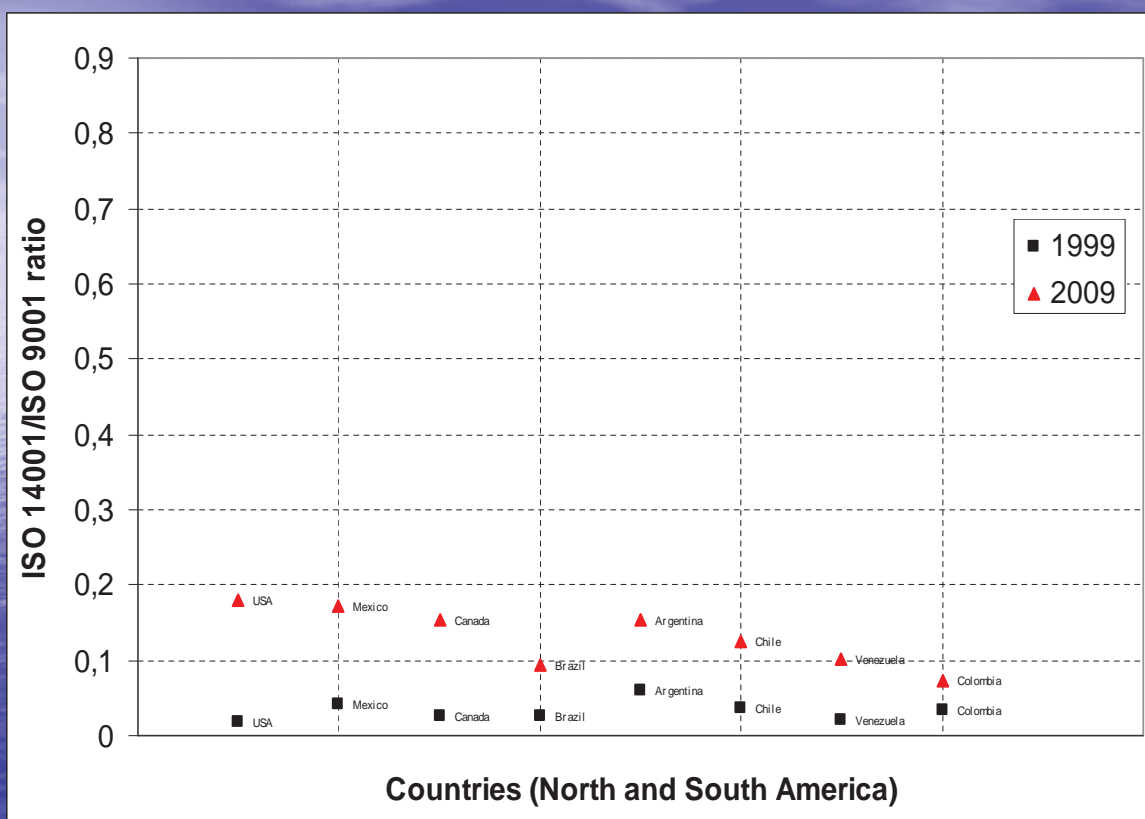
IMS indicator= $\frac{\text{ISO 14001 issued certificates}}{\text{ISO 9001 issued certificates}}$

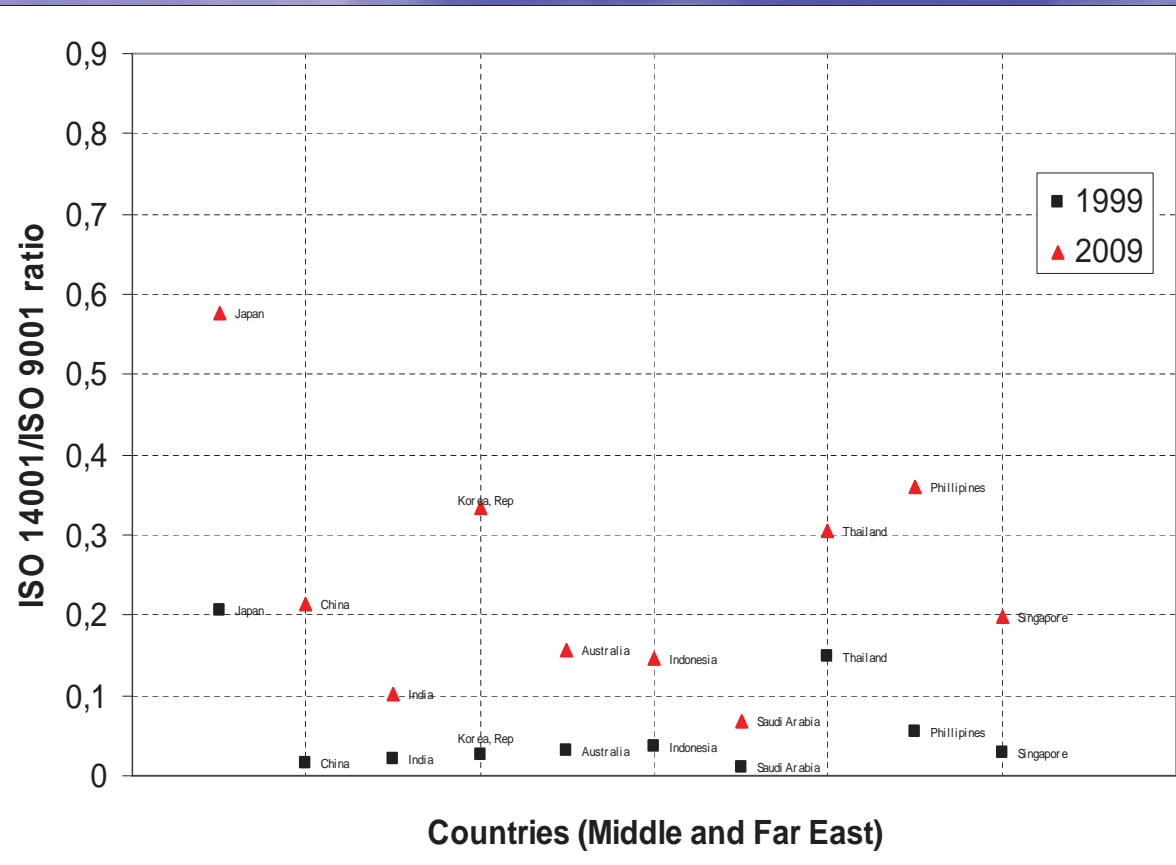
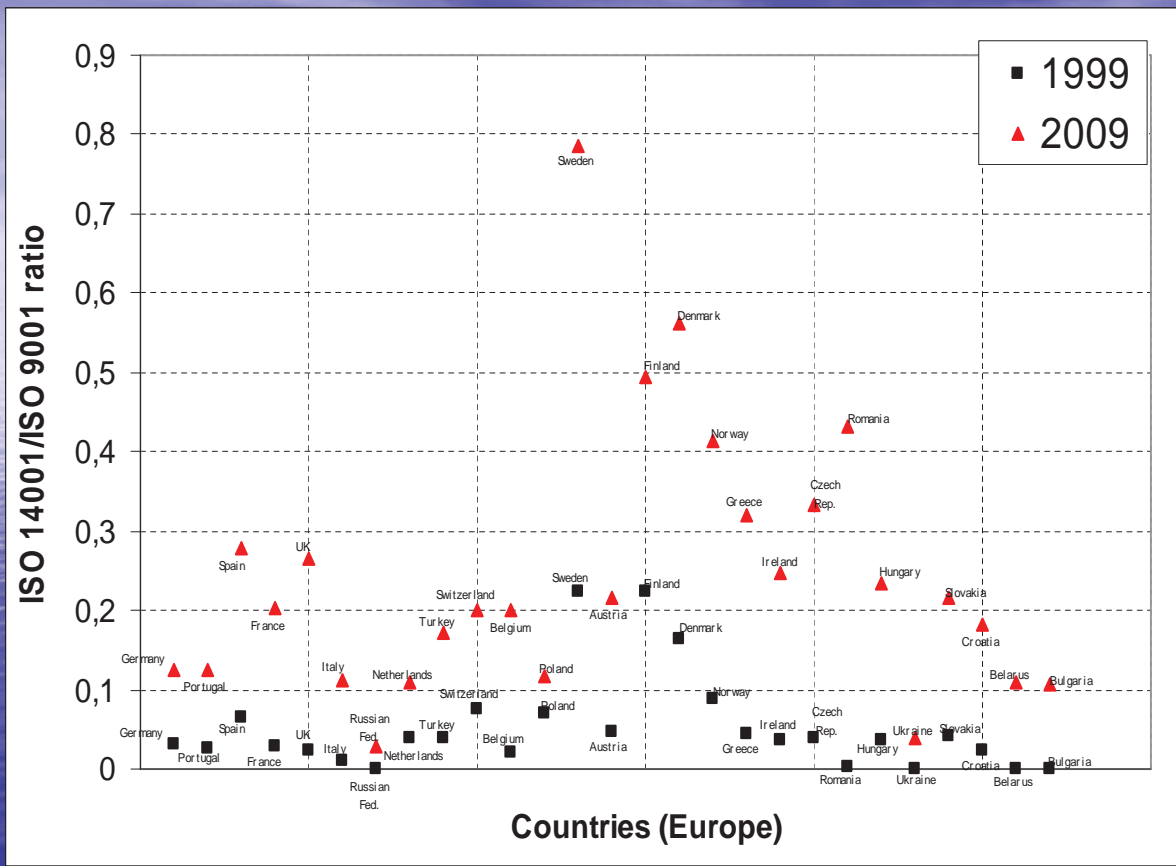
ISO 14001/ISO 9001 ratio Countries Top 10

#	Country	ISO 14001/ISO 9001 ratio
1	Sweden	0,78
2	Japan	0,58
3	Denmark	0,56
4	Finland	0,49
5	Romania	0,43
6	Norway	0,41
7	Philippines	0,36
8	Czech Republic	0,34
9	Korea Republic	0,33
10	Greece	0,32

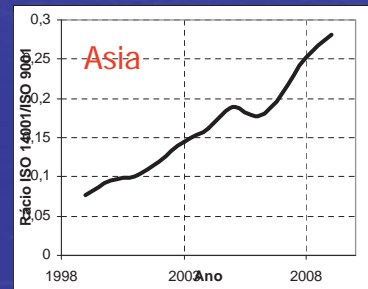
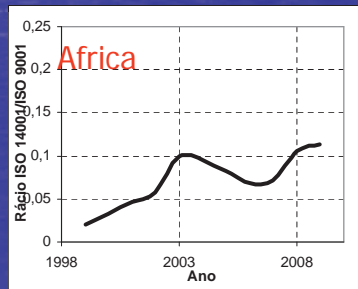
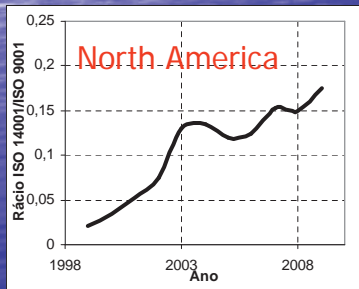
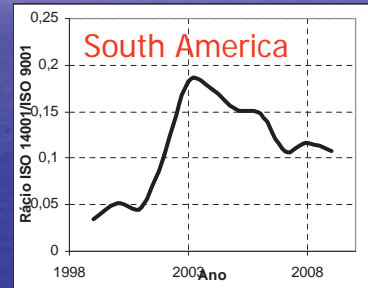
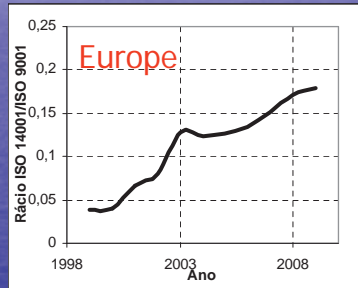
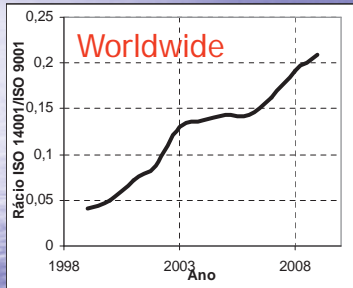
ISO 14001/ISO 9001 growth ratio Countries Top 10

#	Country	ISO 14001/ISO 9001 ratio growth (%)
1	Romania	20159
2	China	1464
3	Korea Republic	1250
4	UK	1130
5	Italy	969
6	Belgium	951
7	USA	938
8	Czech Republic	834
9	Greece	732
10	Saudi Arabia	723

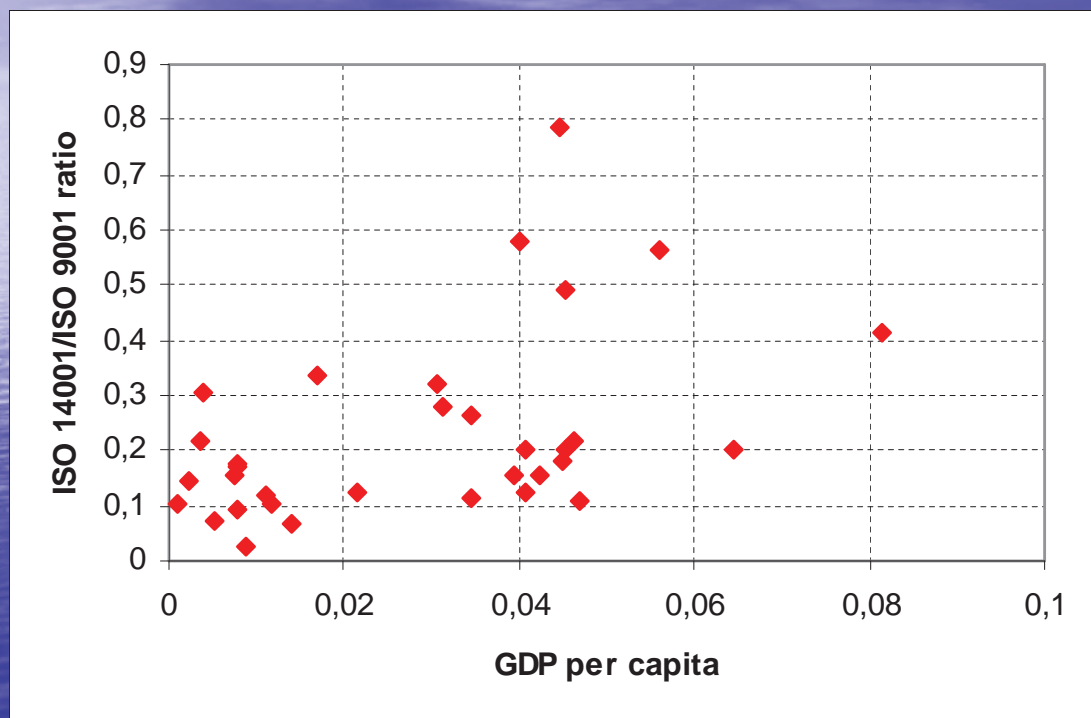




Data- Time Evolution



IMS indicator versus macro-economical data



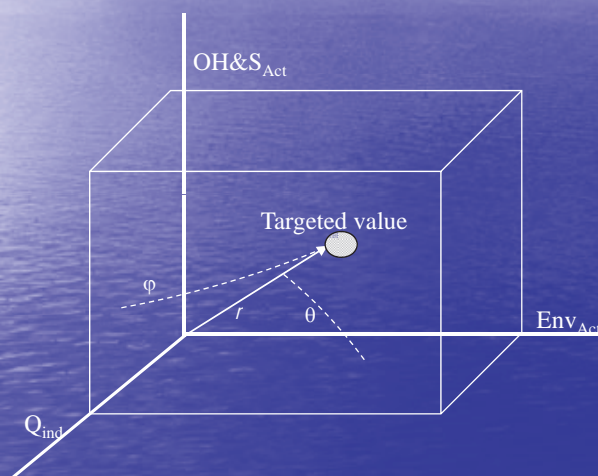
Organizational Interactions: "Organizational volume" concept

$$Q_{ind} = f((OH \& S)_{Act}, (Env)_{Act})$$

$$\partial Q_{ind} = f((OH \& S)_{Act}, (Env)_{Act}) \Rightarrow \int \partial Q_{ind} = \iint f((OH \& S)_{Act}, (Env)_{Act}) \cdot \partial(OH \& S)_{Act} \cdot \partial(Env)_{Act}$$

(Domingues, Sampaio and Arezes, 2011a)

Organizational Interactions: "Vectorial approach" concept



$$r = \sqrt{x^2 + y^2 + z^2}$$

$$\theta = \cos^{-1}\left(\frac{z}{r}\right)$$

$$\varphi = \tan^{-1}\left(\frac{y}{x}\right)$$

(Domingues, Sampaio and Arezes, 2011b)

Quality Redefinition?

- A conceptual redefinition of the Taguchi “Quality” concept is not so critical than the QMS purpose redefinition in an IMS.
- The following characteristics should be embraced by QMS:
 - Symbiotic relationship with EMS and OHSMS more than a competitive approach.
 - Organisational verticality more than a transversal approach to internal company processes, promotes the integration of new concepts introduced by the new management sub-systems.
 - Action approach as a benchmark to be achieved by other management sub-systems (Domingues, Sampaio and Arezes, 2011c).
 - Embrace the *concordia discors* approach as the more suitable for the integration process.

Final Remarks

- Management Systems Integration could lead to scarce resources availability for QMS.
- Three different approaches were identified regarding positioning of QMS in IMS:
 - *Divide et impera*.
 - *Concordia discors*.
 - *E pluribus unum*.
- Dimension of the organizations (and related resources availability) and QMS “weight” prior to integration, regulates the above mentioned option approach.
- Organizational “interactions” assessment may be performed by a vectorial approach on management.
- A quality redefinition of the QMS purpose in the IMS should be putted in the agenda.

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Thank You!