



## Van risico analyse naar security plan.



*Small step (for man)  
or  
Giant leap (for mankind)*

Aart Bitter  
9 september 2009

[Aart.Bitter@planet.nl](mailto:Aart.Bitter@planet.nl)

## About me...



**Technische Informatica & Computerkunde**

1991

**ITIL Service Management, incl. Capacity & Performance Management**

**Postdoctoraal EDP Audit - RE**

**Postdoctoraal Electronic Business**

**ISO/IEC 27001 - Lead Auditor**

**ISO-27001**

[www.information-security-governance.com](http://www.information-security-governance.com)

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# Agenda





- Risks: terms & definitions
- Meet the family
- ISMS
- Risk analysis
- Security Plan
- Beer Trial



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# Van Risico Analyse ...



## Risk Analysis

Systematic use of information to identify sources and to estimate the **risk**

*Note 1: Risk analysis provides a basis for risk evaluation, risk treatment and risk acceptance.*

*Note 2: Information can include historical data, theoretical analysis, informed opinions, the concerns of stakeholders, and so on.*

## Risk

Combination of the probability (*KANS*) of an event and its consequence (*IMPACT*)

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## ...naar Security plan

**Security plan**  
 Generic term representing various plans relating to information security.

*Note: A security plan may include but not limited to **risk treatment plan**, resource management plan, and so on.*

**Risk Treatment plan**  
 A plan that identifies the appropriate management action, resources, responsibilities and priorities for managing information security **risks**.

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## Risk (terms)

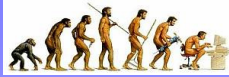

<ul style="list-style-type: none"> <li>• Risk Criteria</li> <li>• Risk Management</li> <li>• Risk Communication</li> <li>• <b>Risk Analysis</b></li> <li>• Risk Estimation</li> <li>• Risk Evaluation</li> <li>• Risk Assessment</li> <li>• Risk Identification</li> </ul>	<ul style="list-style-type: none"> <li>• Risk Level</li> <li>• <b>Risk Treatment Plan</b></li> <li>• Risk Avoidance</li> <li>• Risk reduction</li> <li>• Risk Transfer</li> <li>• Risk Retention</li> <li>• Risk Acceptance</li> <li>• Residual Risk</li> </ul>
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**Information Security**  
 preservation of **confidentiality, integrity and availability of information**; in addition, other properties, such as **authenticity, accountability, nonrepudiation, and reliability can also be involved.**

*NOTE: The aim of **information security** is to assure that information and information processes are free from unacceptable **risks**. **As in ISO-27000 (draft)***

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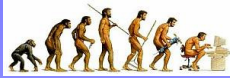

## Meet the family ...

<p>ISO/IEC 27000</p> <p>ISO/IEC 27001</p> <p>ISO/IEC 27002</p> <p>ISO/IEC 27003</p> <p>ISO/IEC 27004</p> <p>ISO/IEC 27005</p> <p>ISO/IEC 27006</p> <p>ISO/IEC 27007</p> <p>ISO/IEC 27011</p> <p>ISO/IEC 27031</p> <p>ISO/IEC 27032</p> <p>ISO/IEC 27033</p> <p>ISO/IEC 27034</p> <p>ISO/IEC 27799</p> <p>Up to ISO 27059</p>	<p>Fundamentals and vocabulary</p> <p>Information Security Management Systems Requirements</p> <p>Code of Practice for information security management (<b>ISO-17799</b>)</p> <p>Implementation Guidance</p> <p>Information security management measurements</p> <p>Information security risk management</p> <p>Requirements for certification bodies</p> <p>Guidelines for Information security management systems auditing</p> <p>Information security management guidelines for telecommunications</p> <p>Business Continuity</p> <p>Guidelines for cybersecurity</p> <p>IT network security</p> <p>Guidelines for application security</p> <p>Security Management in Health</p> <p>Reserved for future standards</p>
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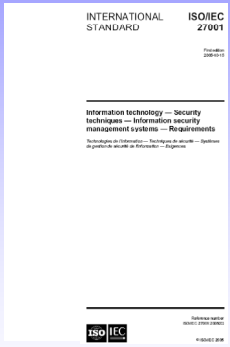
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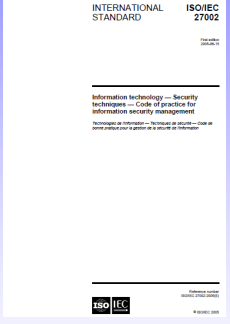
## ISO/IEC 27001 & ISO/IEC 27002

**ISO/IEC 27001**

**Requirements for “Information Security Management Systems”**





**ISO/IEC 27002**

**Code of Practice for Information Security Management**

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## Evolution of Standards

1993	Code of practice	
1995	British Standard BS 7799-1	
1998		BS 7799-2
1999	BS 7799-1 revised	BS 7799-2 revised
2000	ISO 17799	
2002		BS 7799-2:2002
2005	ISO/IEC 17799:2005	
2005/11		<b>ISO/IEC 27001</b>
2007/07	<b>ISO/IEC 27002</b>	

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**ORGANISATION INTERNATIONALE DE NORMALISATION**



**INTERNATIONAL ORGANIZATION FOR STANDARDIZATION**



INTERNATIONAL STANDARD **ISO/IEC 27001**

Information technology — Security techniques — Information security management systems — Requirements



INTERNATIONAL STANDARD **ISO/IEC 27002**

Information technology — Security techniques — Code of practice for information security management




**NEN 7510 (nl)**

Medische informatica - Informatiebeveiliging in de zorg - Algemeen



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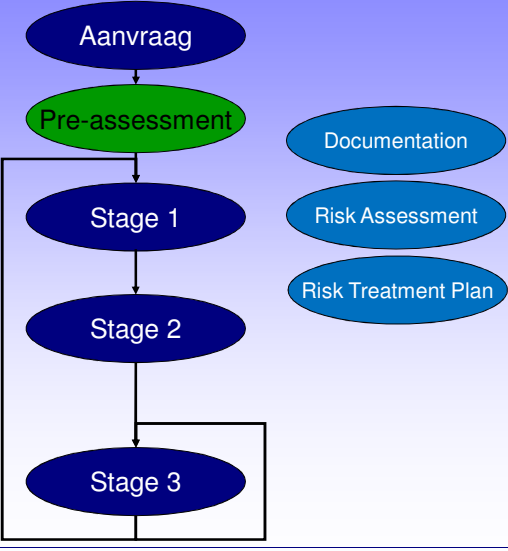
## ISO-27001 certificering



“desktop review“ of the existence and completeness of key documentation such as the organization's security policy, Statement of Applicability (SoA) and Risk Treatment Plan (RTP).

in-depth audit involving testing the existence and effectiveness of the ISMS and information security controls stated in the SoA and RTP, as well as their supporting documentation.

is a reassessment audit to confirm that a previously-certified organization remains in compliance with the standard.



```

graph TD
    A([Aanvraag]) --> B([Pre-assessment])
    B --> C([Stage 1])
    C --> D([Stage 2])
    D --> E([Stage 3])
    E --> A
    
```

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### Certificate of Registration



**INFORMATION SECURITY MANAGEMENT SYSTEM - ISO/IEC 27001:2005**

This is to certify that:

**Datasec**  
Patria 716, Montevideo 11300  
Montevideo  
Uruguay

**BSI** <sup>TM</sup>

Holds Certificate No: IS 543115 and operates an Information Security Management System which complies with the requirements of ISO/IEC 27001:2005 for the following scope:

The management of information security in the following process: abarca las actividades del negocio, en la oficina ubicada en Patria 716, Montevideo-Uruguay, o en clientes en Uruguay, en lo que refiere específicamente a los activos de información de las actividades de Consultoría, en especial a la información obtenida o generada a partir de nuestros clientes, in accordance with "Enunciado de Aplicabilidad de Controles PL 4.2.1 v.2" de fecha 08-03-09.

The management of information security in the following process: covers the activities of business, the office located in Patria 716, Montevideo, Uruguay, or customers in Uruguay, in what relates specifically to the information assets of consulting activities, in particular to information obtained or generated from our clients, in accordance with "Enunciado de Aplicabilidad de Controles PL 4.2.1 v.2" de fecha 08-03-09.

For and on behalf of BSI:  
  
 President, BSI America, Inc.

Originally Registered: 07/17/2009    Latest Issue: 07/17/2009    Expiry Date: 07/17/2012



 Page: 1 of 2

This certificate remains the property of BSI and shall be returned immediately upon request. An electronic certificate can be downloaded online. These copies can be validated at www.bsigroup.com/ClientDirectory. To be read in conjunction with the scope above or the attached appendix. Americas Headquarters: 12110 Sunset Hills Road, Suite 200, Reston, VA 20190, USA.



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## ISMS Definition





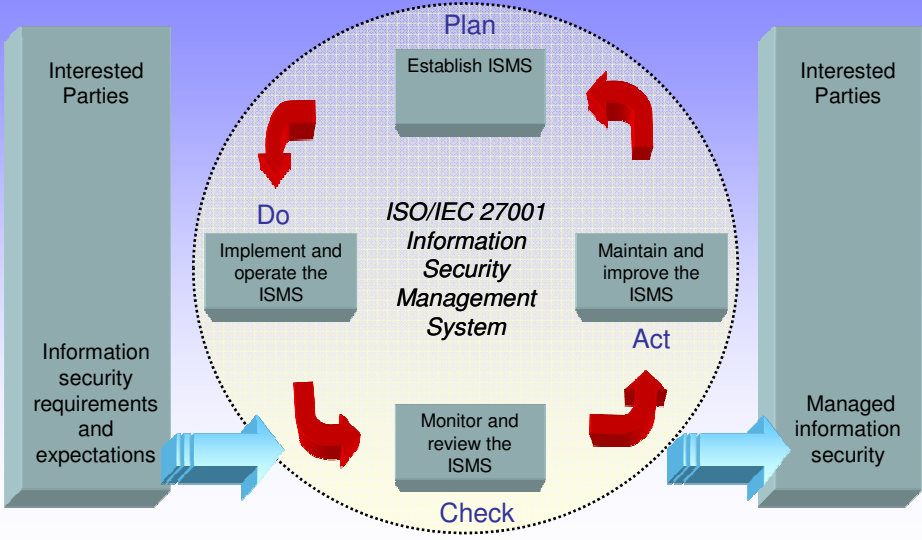
An  
**Information Security Management System**  
 is the part of the overall management system that,  
 based on a **business risk approach**,  
 is intended to **ensure** the  
**availability, confidentiality & integrity**  
 of **information** and **associated assets**.

**Management system:** a system to establish and achieve policy and objectives.  
**System:** a set of interrelated or interacting elements.

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## The Quest





**ISO/IEC 27001  
Information Security Management System**

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## Deming Cycle voor InfoSecurity



**Plan (Establish the ISMS):**  
Policies & Objectives - **Risk Assessment** – Controls


**Do (Implement & Operate):**  
**Risk Treatment Plan** – Training & Awareness - Security Incident Procedure

**Check (Monitor & Review):**  
Measure effectiveness - Review Risk Assessments – Conduct ISMS audits – Undertake Management Reviews

**Act (Maintain & Improve):**  
Improvements – Implement & Verify Corrective & Preventive Actions

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## 4.2.1 Establish the ISMS




- c) Define a systematic approach to **risk assessment**  
Identify method of risk assessment and acceptable risk levels
- d) Identify the risks  
Identify assets, threats, vulnerabilities, impact
- e) Assess the risks  
Assess the business harm, likelihood, levels of risk
- f) Identify and evaluate options for the treatment of risks  
...
- g) Select control objectives and controls for the treatment of risks  
...from Annex A...

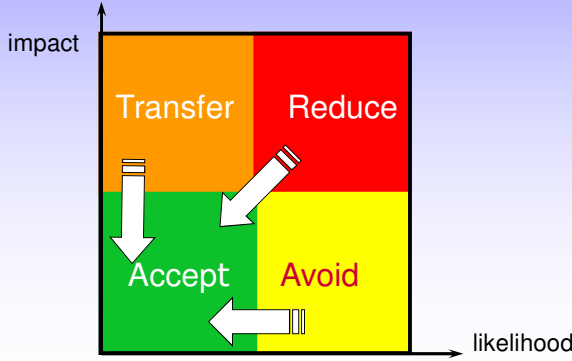
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## Risk treatment



- Identify risk treatment options:
  - risk avoidance: remove threat or vulnerability
  - risk transfer: third party (insurance, outsourcing, managed services)
  - risk **reduction** (apply appropriate controls)
  - risk acceptance: make decisions concerning all risks remained



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## ISO/IEC 27002 controls





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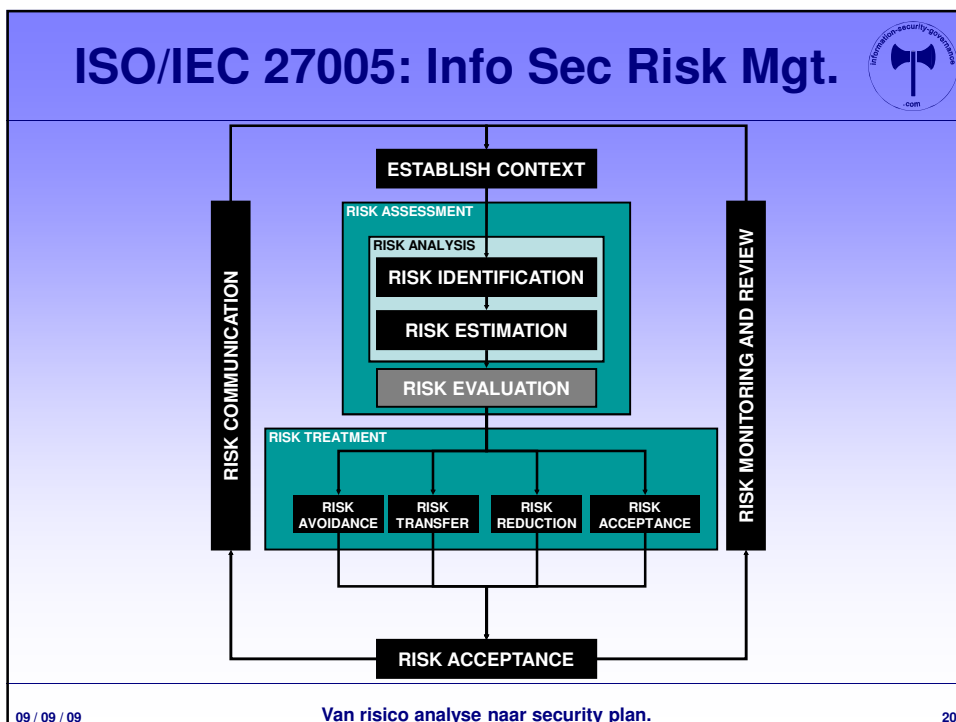
## Risico Analyse


- How to conduct a good risk assessment?

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## Risk estimation = calculation



- **Risk = f(A,L,I)**
  - Asset Value
  - Threat
  - Vulnerability
  - Existing Controls
  - Likelihood
  - Impact

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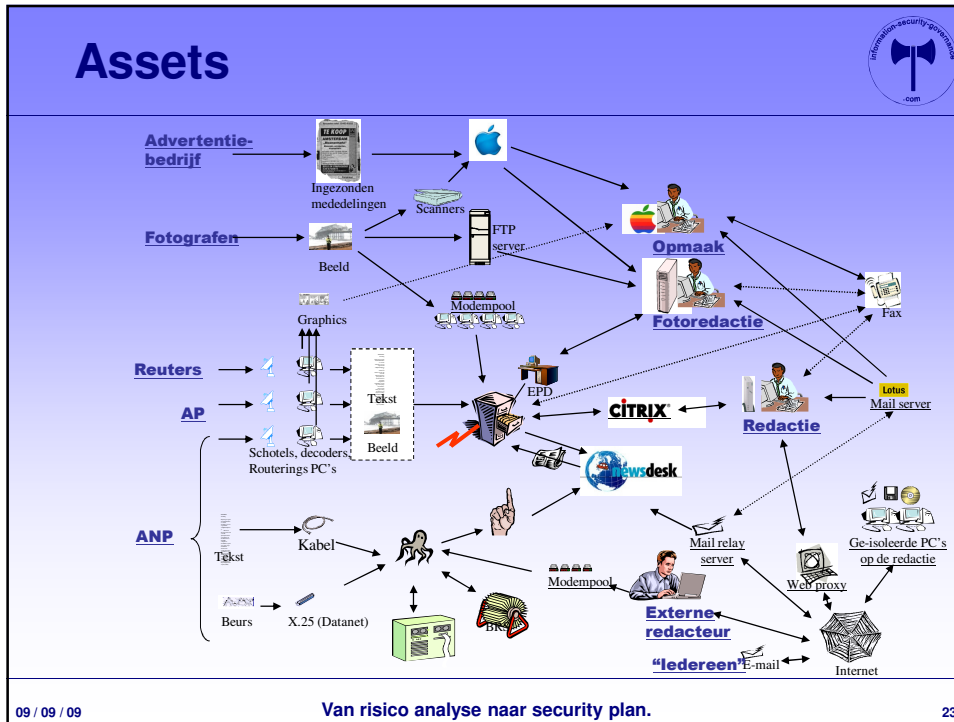
## Asset valuation example



**Impact Criteria**  
 Financial loss, cost of disruption, legal cost, corporate embarrassment, customer satisfaction

Value	Financial Loss	Cost of Disruption	Legal Costs	Corporate Embarrassment	Customer Satisfaction (# of complaints per day)
1	Less than £10,000	Less than £100,000	Less than £10,000	Workgroup	Less than 10
2	£10,000 to £100,000	£100,000 to £1,000,000	£10,000 to £1,000,000	Departmental	11-20
3	£100,000 to £1,000,000	£1,000,000 to £10,000,000	£1,000,000 to £10,000,000	Borough	21-30
4	£1,000,000 to £10,000,000	£10,000,000 to £100,000,000	£10,000,000 to £100,000,000 (inc. Possible Prosecution of CISO)	National	31-40
5	More than £10,000,000	More than £100,000,000	More than £100,000,000 (inc. Possible Prosecution of Directors)	International	41-50

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## Asset valuation example


Owner	Asset type	Make	Model	Serial No	Location	Cost	Valuation			Calculation Methods			
							C	I	A	Highest	Sum	Multiply	Average
IT	Server	Sun	Sparc III Blade	26950	IT Office	£84.000,00	5	5	5	5	15	125	5,00
IT	Server	Sun	X86 Blade	26951	IT Office	£84.000,00	5	5	5	5	15	125	5,00
IT	Server	Sun	Sun Fire III	26342	IT Office	£17.000,00	5	5	5	5	15	125	5,00
IT	Server	Sun	Sun Fire x4500	26343	IT Office	£17.000,00	5	5	5	5	15	125	5,00
IT	Workstation	Dell	P860	100052	IT Office	£740,00	4	4	4	4	12	64	4,00
Board	Laptop	Dell	LI420	100053	Directors	£680,00	4	4	4	4	12	64	4,00
HR	Workstation	Dell	P460	100065	HR Office	£680,00	4	4	4	4	12	64	4,00
Admin	Workstation	Dell	P390	100072	Front Office	£560,00	3	4	3	4	10	36	3,33

Valuation provided by **owners** and **users** of assets **Consistency** required across organisation

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## Impact & Likelihood




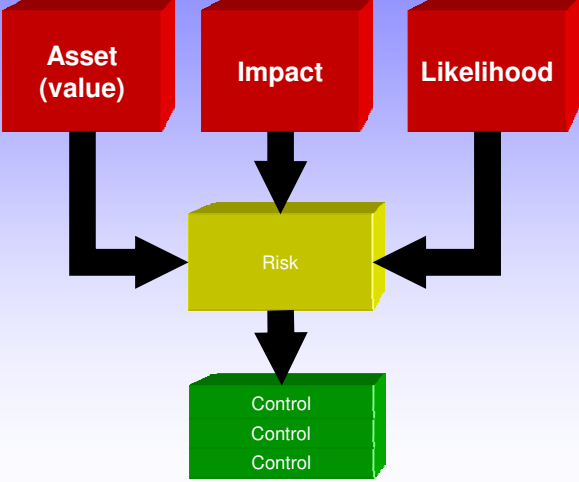
Likelihood	Definition
1	Less than twice a year
2	Between 3-5 times a year
3	Over 5 times a year

Impact	Definition
1	If the vulnerability is exploited, up to 33% of the asset will be lost
2	If the vulnerability is exploited, up to 66% of the asset will be lost
3	If the vulnerability is exploited, the asset will be completely lost

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## RA Methode

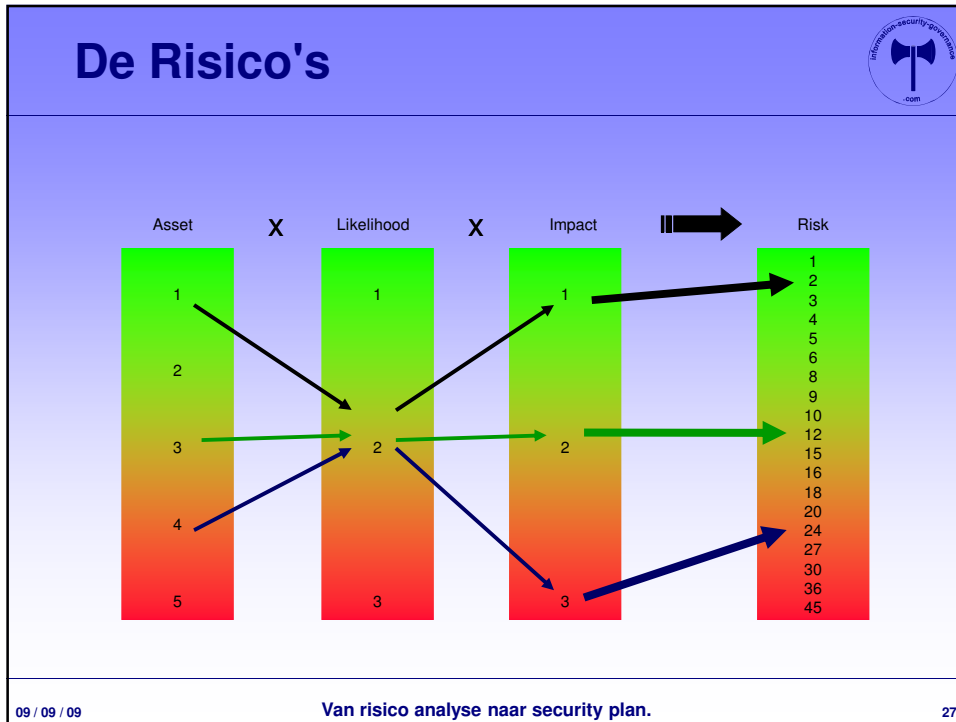




```

graph TD
    A[Asset (value)] --> R[Risk]
    I[Impact] --> R
    L[Likelihood] --> R
    R --> C[Control  
Control  
Control]
    
```


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### The (Risk) Matrix

		Threat			L			M			H			ZH		
		ZL	ZL	ZL	L	M	H	L	M	H	L	M	H	ZH	ZH	ZH
Asset Value	Vulnerability	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3
	2	1	1	2	2	2	2	2	3	3	3	3	3	3	3	3
	3	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4
	4	2	2	3	4	4	4	4	4	4	4	4	4	4	4	4
	5	3	3	3	4	4	4	4	5	5	5	5	5	5	5	5
	6	3	4	4	4	5	5	5	5	5	5	5	5	5	5	5
	7	4	4	4	4	5	5	5	6	6	6	6	6	6	6	6
	8	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6
	9	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7
10	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	

## Risk Assessment / Mgt methods



- AUSTRIAN IT SECURITY HANDBOOK
- CRAMM
- DUTCH A&K ANALYSIS
- EBIOS
- ISF METHODS FOR RISK ASSESSMENT AND RISK MANAGEMENT
- ISO/IEC IS 13335-2 (ISO/IEC IS 27005)
- ISO/IEC IS 17799:2005
- ISO/IEC IS 27001 (BS7799-2:2002)
- IT-GRUNDSCHUTZ (IT BASELINE PROTECTION MANUAL)
- MARION
- MEHARI
- OCTAVE V2.0 (AND OCTAVE-S V1.0 FOR SMALL AND MEDIUM BUSINESSES)
- SP800-30 (NIST)

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## Risk management Tools

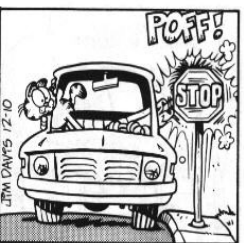
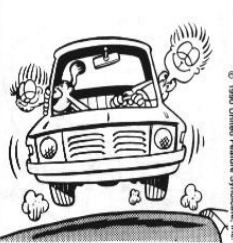
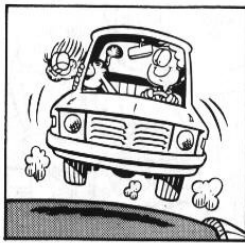


- CALLIO
- CASIS
- COBRA
- COUNTERMEASURES
- CRAMM
- EBIOS
- GSTOOL
- ISAMM
- OCTAVE
- PROTEUS
- RA2
- RISKWATCH


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## Risk Assessment






Risico's verschillen per situatie


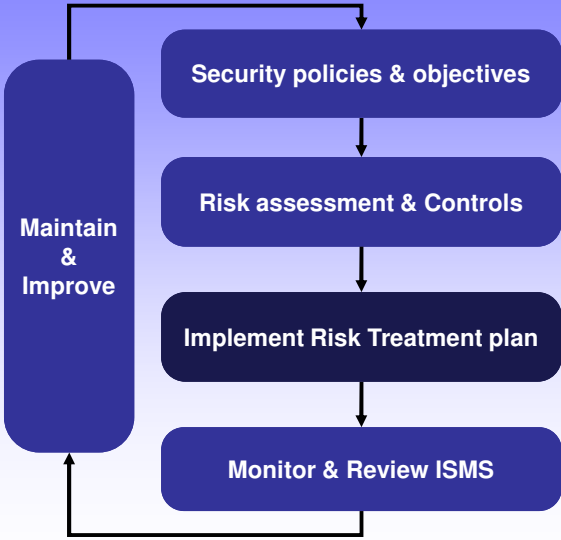


Zorg voor eenduidige criteria en termen

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## Security Plan



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## Implement = Changing Behaviour


**Cultuur in de organisatie (onzichtbaar)**

- IT - processen
- Functieprofielen
- Organisatie-structuur
- Planning & Control
- Kennis in de organisatie (zichtbaar)
- Kennis & Vaardigheden
- Houding
- Normen en Waarden
- Motieven
- Politiek
- Persoonlijke voorkeuren
- Drijfveren
- Gedrag
- Energie
- Angst

## En dan is er... Beer Trial

- Volume Indicator:** Shows how much beer is left in the keg
- Freshness Indicator:** Beer stays fresh 30 days from tapping
- Temperature Indicator:** Shows actual Beer temperature
- Temperature Control:** choose from 3 temperature settings.

## Asset valuation



Assumptions for the valuation of CIA:

**C:** the amount of tapped beer could be revealed  
**I:** the indicators for beer temperature and freshness can be manipulated  
**A:** someone steals the beertender display


Value	Financial Loss	Embarrassment	Disruption of business activities	Public Order
1	< € 1.000	Department	< 10%	Shrug shoulders
2	€ 1.000 - € 10.000	Corporate	10 % - 50 %	Grumble
3	> € 10.000	CNN	> 50 %	Strike

		Valuation		
Owner	Asset type	C	I	A
IT	Beertender	1	3	2

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## Threats and vulnerabilities



- Amount of BEER revealed
- Network Intrusion – Insecure Network Architecture
  
- Wrong BEER (Overdue/Warm)
- Unauthorised System Access – Use of weak passwords
  
- No BEER
- Theft of the Beertender display - Inadequate use of physical access controls

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## Impact & Likelihood




Likelihood	Definition
1	Less than twice a year
2	Between 3-5 times a year
3	Over 5 times a year

Impact	Definition
1	If the vulnerability is exploited, up to 33% of the asset will be lost
2	If the vulnerability is exploited, up to 66% of the asset will be lost
3	If the vulnerability is exploited, the asset will be completely lost

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## Threat - Vulnerabilities



- **Amount of BEER revealed**
- (Asset Value C=1)
- Threat: Network Intrusion
- Vulnerability: Insecure Network Architecture (routers, firewalls, etc.)
  
- Likelihood: 1
- Impact: 2
- Risk = 1x1x2=2
- Possible control:
  - 11.4.7 Network Routing Control

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## Threat - Vulnerabilities



- **Wrong BEER (Overdue/Warm)**
- (Asset Value I=3)
- Threat: Unauthorised System Access
- Vulnerability: Use of weak passwords
  
- Likelihood: 2
- Impact: 3
- Risk =  $3 \times 2 \times 3 = 18$
- Possible control:
  - 11.3.1 Password Use

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## Threat - Vulnerabilities



- **No BEER**
- (Asset Value A=2)
- Threat: Theft of the Beertender:
- Vulnerability: Inadequate use of physical access controls
  
- Likelihood: 2
- Impact: 3
- Risk =  $2 \times 2 \times 3 = 12$
- Possible control:
  - 8.2.2 Security Awareness, education & training

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## Security Plan



- Risk=18:
  - 11.3.1 Password Use
- Risk=12:
  - 8.2.2 Security Awareness, Education & Training
- Risk=2:
  - 11.4.7 Network Routing Control

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## Conclusies




- De Iso-27k standaarden geven voldoende richting aan Informatie Security, risico analyse, en certificering.
- De aanpak uit ISO-27005 zorgt voor een herhaalbare risico analyse methode.
- Met het ISMS kunnen we Information Security in een organisatie continu onderhouden en verbeteren.

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# ISO-27000 Information Security






**“That's one small step for a man, a giant leap for mankind.”**  
*Neil Armstrong, Apollo 11, 21 July 1969*

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# Readings



**6.3 Invoering van ISO 17799: een succesvolle aanpak**

We kent de norm ISO 17799 niet? Het succes van deze bekende leidraad voor invoering van informatiebeveiliging is de afgelopen jaren sterk toegenomen. De vernieuwde versie van de 'Code of Practice for Information Security Management', ook bekend als de BS17799 en in het Nederlands vernoemd naar de Code voor Informatiebeveiliging, is in 2000 uitgekomen als ISO-standaard onder de naam ISO/IEC 17799-1:2000. Dit feit is voor nog meer organisaties een aanleiding geweest om informatiebeveiliging op basis van deze standaard te willen implementeren binnen hun organisatie. Dit artikel beschrijft ervaringen van een internationaal inkooptraject van deze ISO-standaard. Het geeft inzicht in een aantal factoren die het succes van een implementatie bepalen.


**8.5 Information security governance**  
Cusus bij financiële instellingen


Na 'corporate governance' en IT-governance' duikt binnen (Nederlandse) organisaties het begrip 'information security governance' op. Iedereen 'moet aan de governance'. Maar wat is governance, en wat is dan de betekenis van information security governance? En onherroepelijk rijst de vraag: hoe implementeren we information security governance? De auteur geeft een inleiding in het begrip 'information security governance', een uitleg van een information security governance-model en een beschrijving van een aanpak om information security governance werkend te maken en te houden.

Auteur: Aart Bitter is auteur op het gebied van informatiebeveiliging

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## Further reference






The screenshot shows the website [Information Security Governance.com](http://www.information-security-governance.com). The page title is "Information-Security-Governance.com" with the subtitle "IT Audits - Security Consulting - Training". The main content area is titled "Presentaties en artikelen" and lists several resources:

- Van Risico-analyse naar Security plan
- Seriously Seeking Security (SR3 I congres 2007)
- ISO 17799 & Risicoanalyse: Vrienden of Vijanden?
- Information Security Governance
- Information Security Governance, casus bij financiële instellingen
- Invoering van ISO 17799: een succesvolle aanpak
- ISO2700x Implementation & Audit Summary
- SANS ISO27002 Checklist (PDF)
- NIST 800-12 An Introduction to Computer Security: The NIST Handbook (PDF)
- NIST 800-16 IT Security Training requirements (PDF)
- NIST 800-50 Risk Management Guide for IT systems (PDF)
- NIST 800-50 Building an IT Security Awareness and Training Program (PDF)
- ENISA Information Security Certifications (PDF)
- GOA Information Security Management: Learning from Leading Organizations (PDF)


At the bottom of the screenshot, there is a footer with "Website" (with a small flag icon), "e-mail: [info@information-security-governance.com](mailto:info@information-security-governance.com)", and "Dochter" (with a small flag icon).

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## Dank voor uw aandacht !




Vragen



Opmerkingen



Suggesties



[www.information-security-governance.com](http://www.information-security-governance.com)

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