



Swedish Civil
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Agency

Industrial Information and Control Systems Security

A Government Perspective

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The task of the MSB is to enhance and support societal capacities for preparedness for and prevention of emergencies and crises. When one does occur, we support the stakeholders involved by taking the right measures to control the situation.





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Overall governmental responsibility for
society's information assurance in Sweden





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Sweden is a big country with few people and has a proud tradition in ICT



Swedish ICT Inventions

AXE: An automatic telephone switchboard, a cornerstone in Ericsson's growth

Color graphics: The basics of the Graphics Processing Unit, or GPU, established by Swedish inventor Håkan Lans

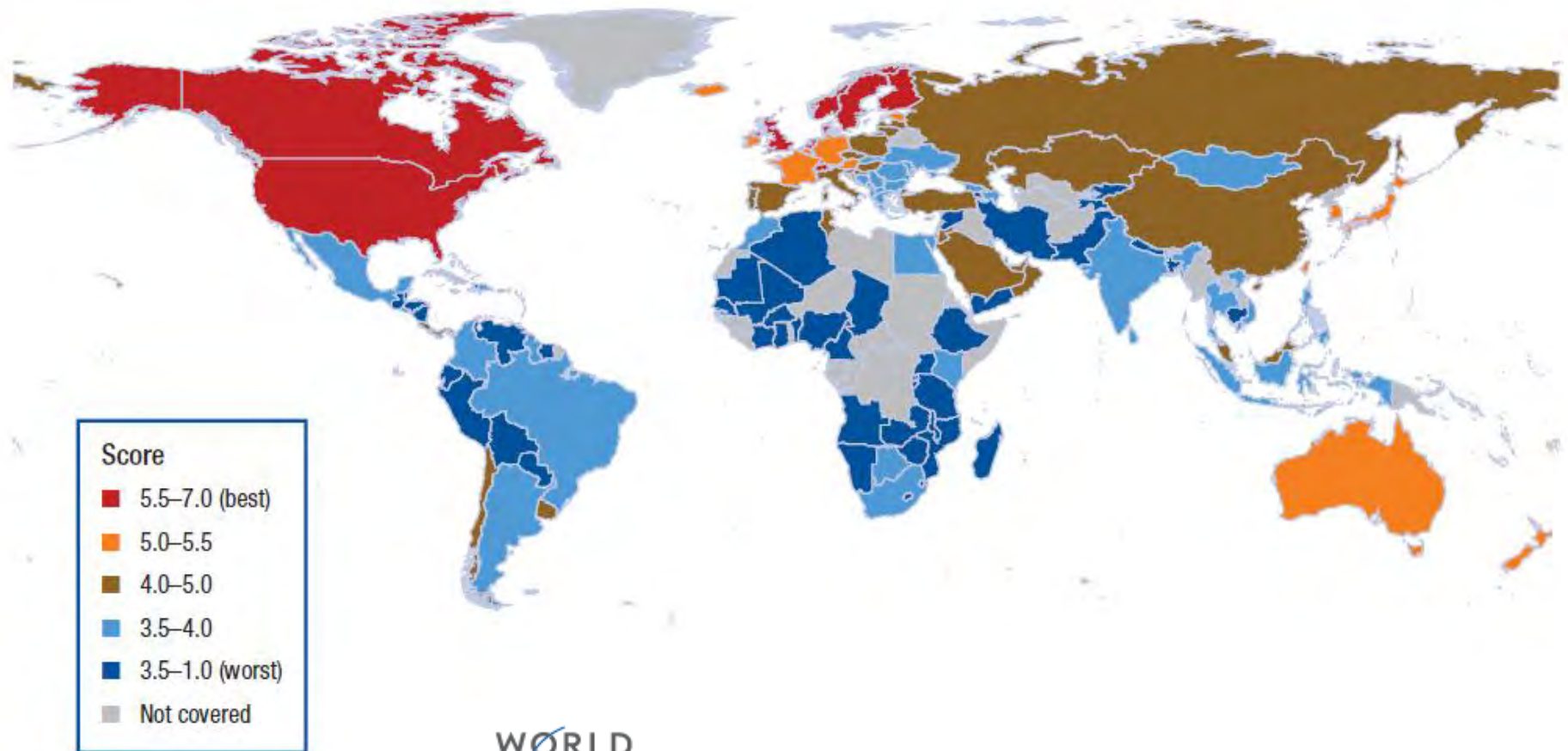
NMT and GSM: Two parts of the basic technology behind cell phones are both Swedish.

Kazaa, Skype and Joost: The file-sharing program Kazaa and the internet calling service Skype revolutionized their respective markets.



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Network Readiness Index



Source: The Global Information Technology Report 2012
World Economic Forum



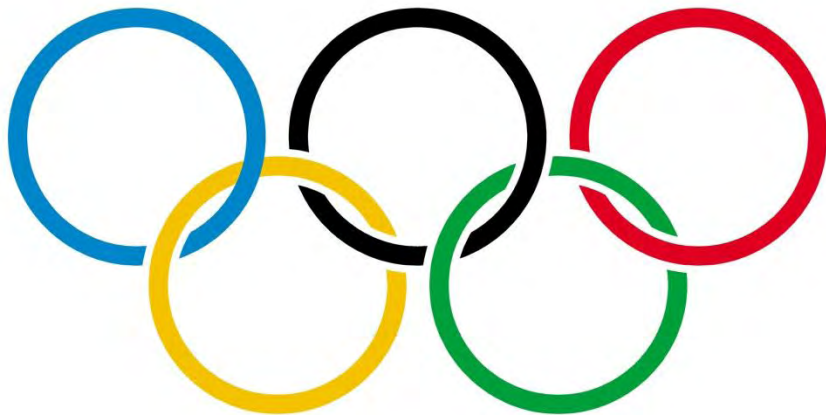
Countries ranked for cyber-readiness

Country	Rating
(None)	★★★★★
Finland, Israel, Sweden	★★★★☆
Denmark, Estonia, France, Germany, Netherlands, Spain, UK, USA	★★★★
Australia, Austria, Canada, Japan	★★★★
China, Italy, Poland, Russia	★★★
Brazil, India, Romania	★★★
Mexico	★★
(None)	★

SOURCE: MCAFEE



Myndigheten för
samhällsskydd
och beredskap



Rank by Gold	Country	Gold	Silver	Bronze	Total
1	United States of America	48	29	29	104
2	People's Republic of China	38	27	23	88
3	Great Britain	29	17	19	65
4	Russian Federation	24	26	32	82
5	Republic of Korea	13	8	7	28
6	Germany	11	19	14	44
7	France	11	11	12	34
8	Italy	8	9	11	28
9	Hungary	8	4	5	17
10	Australia	7	16	12	35
11	Japan	7	14	17	38
12	Kazakhstan	7	1	5	13
13	Netherlands	6	6	8	20
14	Ukraine	6	5	9	20
15	New Zealand	6	2	5	13
16	Cuba	5	3	6	14
17	Islamic Republic of Iran	4	5	3	12
18	Jamaica	4	4	4	12
19	Czech Republic	4	3	3	10
20	Democratic People's Republic of Korea	4	0	2	6
21	Spain	3	10	4	17
22	Brazil	3	5	9	17
23	South Africa	3	2	1	6
24	Ethiopia	3	1	3	7
25	Croatia	3	1	2	6
26	Belarus	2	5	5	12
27	Romania	2	5	2	9
28	Kenya	2	4	5	11
29	Denmark	2	4	3	9
30	Azerbaijan	2	2	6	10
30	Poland	2	2	6	10
32	Turkey	2	2	1	5
33	Switzerland	2	2	0	4
34	Lithuania	2	1	2	5
35	Norway	2	1	1	4
36	Canada	1	5	12	18
37	Sweden	1	4	3	8
38	Colombia	1	3	4	8



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MSB is running a national program called *"Security in industrial information- and control systems"*





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Technical
Platform for
Collaboration



Awareness
Raising



Information
Sharing &
Cooperation



Planning &
Program
Development



Critical infrastructures are dependent on control systems

→ Government must play an active role

Critical infrastructures are operated by private actors

→ Private public partnerships

Multinational control systems vendors

→ International coordination and collaboration – a challenge and a solution



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**International collaboration is
crucial for us to stay in the elite
league**





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Workshop outcome of interesting areas



ICT-platform security

Computing-platform security

Software security

Socio-technical security aspects

Security metrics and assessment

Privacy enhancing technologies

Advanced security functions-
and countermeasures



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Success

**Traditional open
source intelligence**

**Evaluate and adapt
information**

**Generate unique
knowledge**





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**Technical platform for collaboration
is used primarily for technical
studies, but has also hosted
academic researchers**





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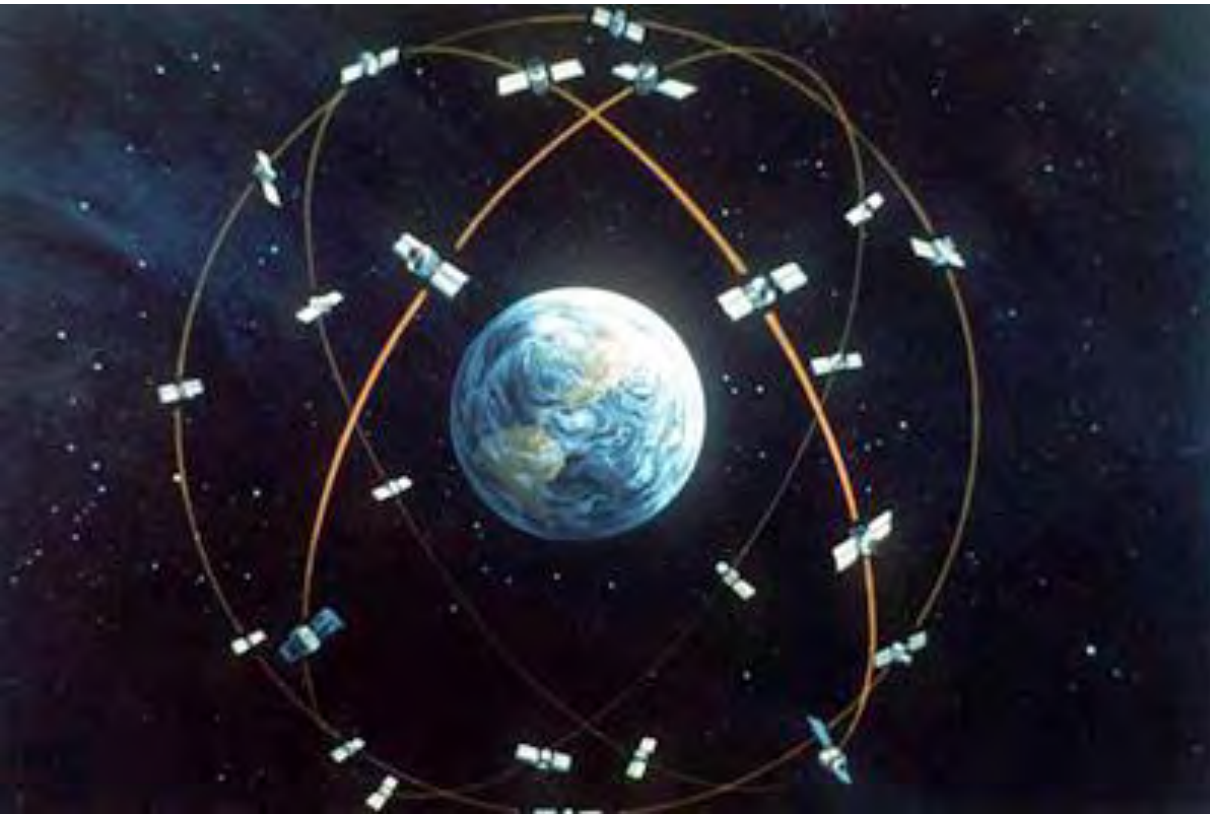
Swedish government has recently formed a *coordination council* for smartgrids





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Critical infrastructure often depend on correct time. Thus, there is a strong dependency on GNSS





Evolution of Security: IT vs. Control Systems

TOPIC	IT	CONTROL SYSTEMS
<i>Anti-virus & Mobile Code Countermeasures</i>	Common & widely used	Uncommon and difficult to deploy
<i>Support Technology Lifetime</i>	3-5 years	Up to 20 years
<i>Outsourcing</i>	Common/widely used	Rarely used
<i>Application of Patches</i>	Regular/scheduled	Slow (vendor specific)
<i>Change Management</i>	Regular/scheduled	Legacy based – unsuitable for modern security
<i>Time Critical Content</i>	Delays are generally accepted	Critical due to safety
<i>Availability</i>	Delays are generally accepted	24 x 7 x 365 x forever
<i>Security Awareness</i>	Good in both private and public sector	Generally poor regarding cyber security
<i>Security Testing/Audit</i>	Scheduled and mandated	Occasional testing for outages
<i>Physical Security</i>	Secure	Very good but often remote and unmanned



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