World Electronic Industries

2008 - 2013

Executive summary

April 2009

DECISION
Etudes & Conseil

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DECISION has specialised for over 15 years in the electronics, components, aerospace and electrical engineering industries in Europe and around the world. DECISION provides economic surveys as well as strategic consulting services for decision-makers in private business or public administrations.

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1 Executive summary

1. The electronics industry perimeter: a single industry with multiple faces

- The electronics industry scope cannot be restricted to mass-market products that are produced in millions and even billions of pieces a year (mobile phones, TVs, PCs, etc.). Mass-market products 'only' represented 53% of the electronics industry in 2008.

- The electronics scope also encompasses embedded electronics in transport (cars, planes, trains, etc.), in defence equipment, in IT infrastructures as well as electronics used in manufacturing process or professional services in order to boost productivity. In other words, professional electronic equipment.

Figure 1, Word Electronic Equipment production per application sector 2008

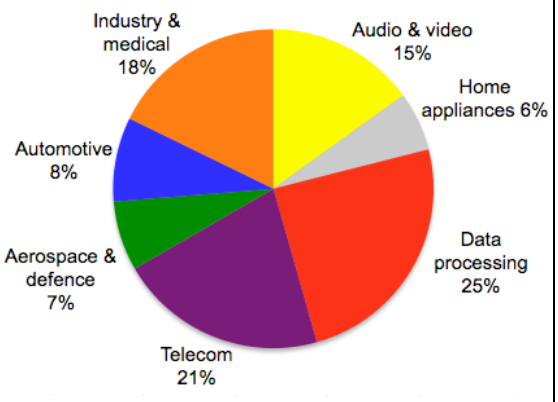
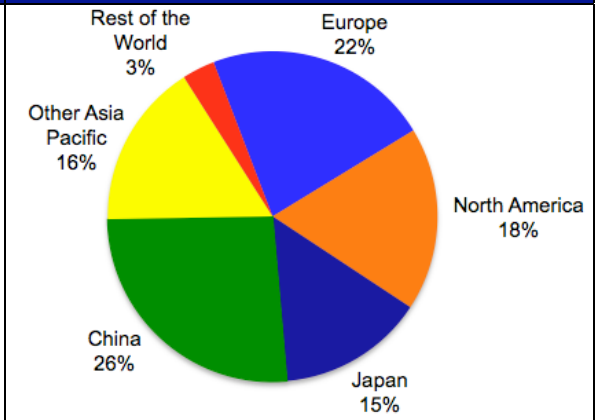


Figure 2, World Electronic Equipment production per region 2008



Source: DECISION – April 2009

- Contrary to mass-market products, professional electronic equipment is characterized by lower quantities from single units to hundreds of thousands units. They do not address individual clients but private companies or organizations such as governments.

- Obviously in order to compete in these respective domains, players need to comply with rather different industrial paradigms. The structure of the electronics equipment industry is reflecting this dichotomy

- While approximately half of the industry is concentrated in IT sectors (Data Processing + Telecommunications), half of the industry is localized in Asia including China, the N°1 production centre for electronic equipment worldwide since 2005.

- Developed economies have not disappeared from the electronics industrial landscape. Europe and North America still hold respectively the 2nd and 3rd positions for electronics equipment production, together representing up to 40% of the World in 2008.

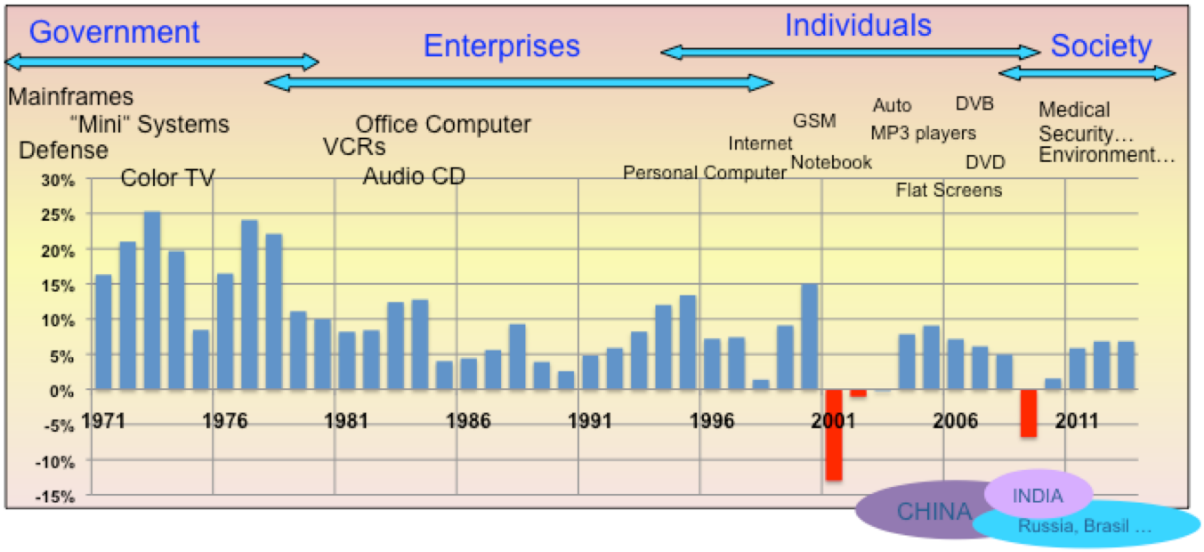
2. The innovation engine and the electronics industry value chain

- The electronics industry represented 1140 billion Euros in 2008 and is today comparable in size to other important industrial branches such as the Car industry (1800 billion Euros in 2008). A rather impressive figure for such a recent industry whose origins go back only half a century

- Growth cycles and electronics pervasion are the roots of such a rapid development. First driven by government applications in the 60s and 70s, enterprises in the 80s and finally individuals since the 90s, the electronics industry is re-inventing itself since its origin thanks to massive R&D investment, which translates into permanent new product introduction.

- Today, new societal needs in energy, security or health are relying on electronic solutions that are still to be developed, providing long-term growth perspectives for the overall industry for the next decades. Although the electronics industry demonstrates more mature growth profiles, it is still a young industry with major growth perspectives ahead.

Figure 3, Long term cycles, 1970-2013



Source: DECISION – April 2009

- The electronics industry value chain is basically organized around component manufacturers (30% of the equipment value in average) and equipment manufacturers being either Original Equipment Manufacturers (OEM) or dedicated sub-contractors providing manufacturing services (EMS) or also design services (ODM) to their OEM clients

- Sub-contractors revenues represent approximately 20% of the electronic equipment industry in 2008. The share of sub-contracting in total equipment production has increased steadily since the 1990s and the emergence of mass-market products and globalization. Sub-contractors provide to OEMs increased flexibility in order to meet Time to Volume and Time to Market constraints.

Table 1, Total electronics, production by region, 2008-2013, million euros

	Mass markets requirements	Professional markets requirements
Component suppliers	Economies of scale and CAPEX to face price pressure and increased volumes	Focus on differentiating technos, process and integration to deliver complete « functions »
EMS/ODM	Global scale and focus on low cost areas	Proximity and flexibility on low and medium volumes
OEMs	Get closer to end demand by increasing industrial footprint in emerging regions	Investigate new markets and service creation opportunities to answer societal needs

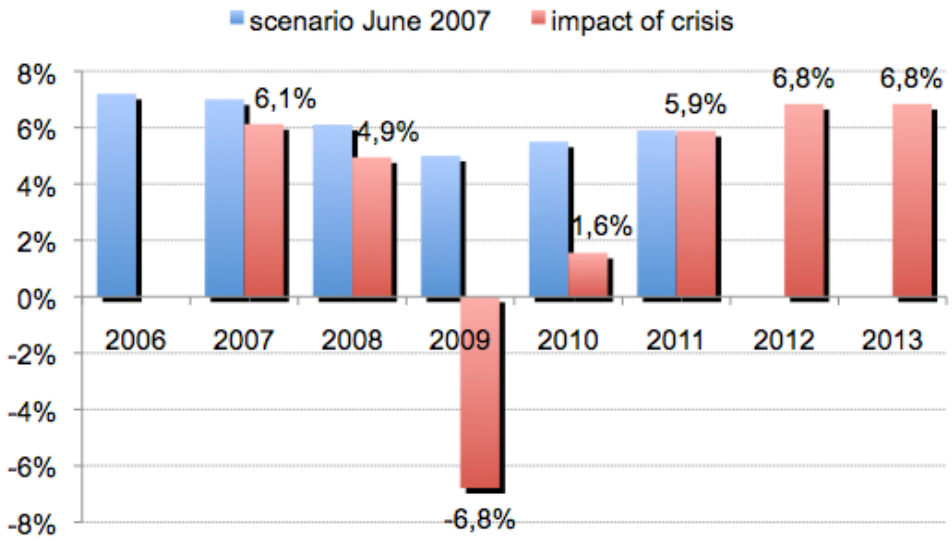
Source: DECISION – April 2009

- Of course, the choice of players targeting either mass-markets or professional end application sectors has a profound influence on market drivers, industrial strategies and key factors of success.

3. Crisis impact and medium term growth perspectives

- The 2008 financial crisis and its subsequent impact on global economy have a profound impact on the electronics industry. In 2009, the electronics is expected to decline by up to 6,8% in 2009 for the first time since the 2001 telecom crisis

Figure 4, Annual growth rates: the crisis impact on forecast



Source: DECISION – April 2009

- In the medium term, the average growth trend (estimated at 6% in July 2007) will be reduced by more than half to 2,7% between 2008 and 2013, due the crisis impact on global investment and consumption patterns

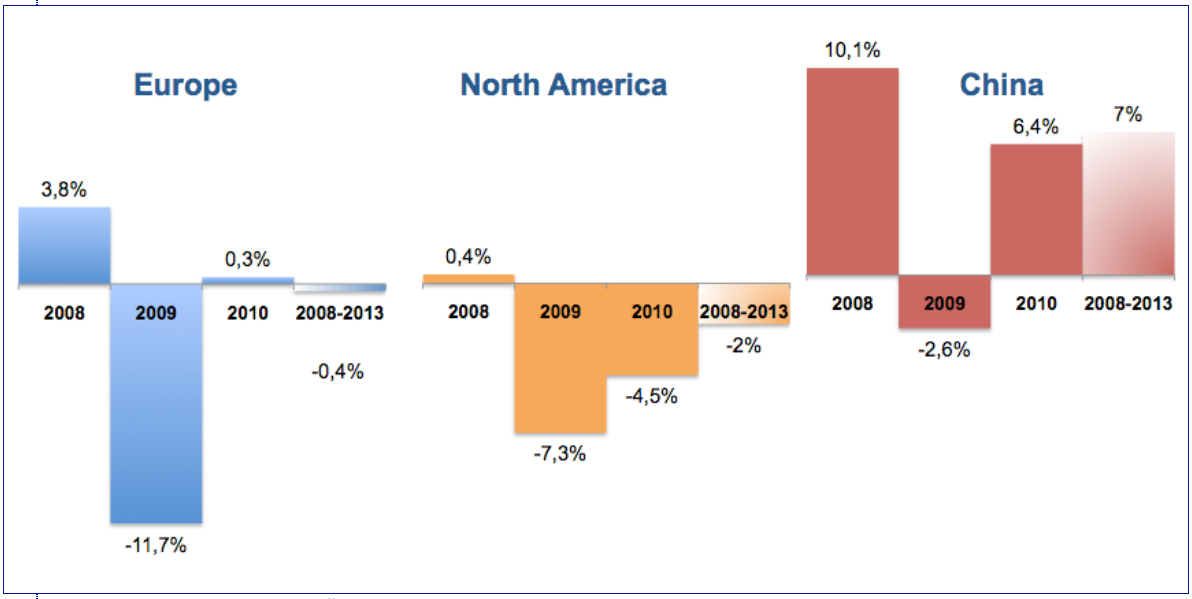
- DECISION growth scenario remains however optimistic on the medium term as the market is expected to stabilize in 2010 before recovering its 2008 level as soon as 2011. Contrary to the last telecom crisis, the electronics industry is not at the origin of the current economic slowdown and should therefore recover much more rapidly than it did back in 2001

- Sub-contractors like EMS and ODM will be more severely impacted by the industry downturn than OEMs who may either seize their activities (Nortel) or

decide to relocate some of the production to their own plants (Nokia). If short-term impacts may be strong, sub-contractors should however be the first players to benefit from the market recovery. First signs have already been sent to the market by Foxconn (#1 EMS worldwide) who has announced in Q1 2009 a +30% growth target for 2009.

- Every region will experience a decline in 2009 as far as electronic equipment production is concerned. The major difference between geographical areas will be their capacity to recover from the current market downturn. To this respect, China is expected to outperform other regions.

Figure 5, Annual growth rates by regions



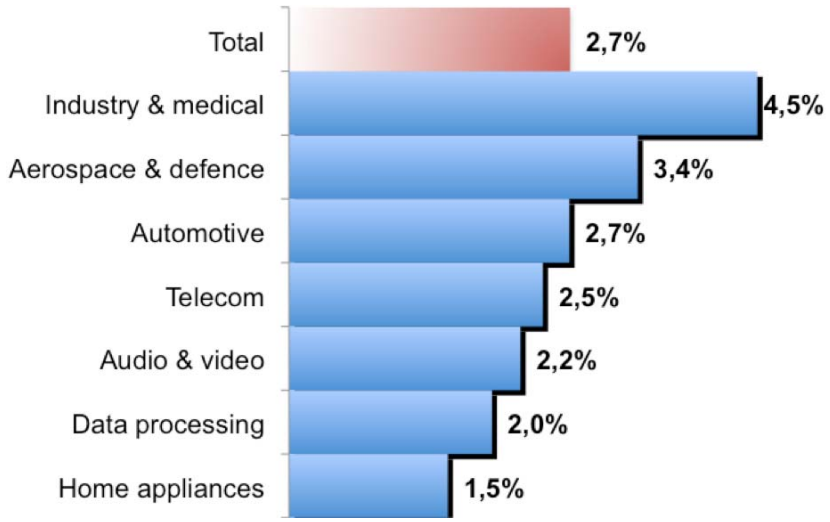
Source: DECISION – April 2009

- Regional production specialization set off by the telecom crisis has now been achieved for the most part and explains most of the divergence between regional growth patterns. Whereas mass-market equipment production is now essentially localized in Asia (up to 75% of Chinese electronics equipment production), professional and automotive electronic equipment represent in 2008 the majority of the production output in the more developed countries (up to 70% in Europe).

4. Mass-market vs. professional electronics growth perspective

- Production growth per end application sector tells a rather exciting story: professional equipment will drive the overall electronics industry, growing above the average trend between 2008 and 2013.

Figure 6, Compound annual growth rates by main sectors



Source: DECISION – April 2009

- Industrial & Medical electronics will contribute alone to as much as 25% of the overall electronics industry growth between 2008 and 2013 while Aerospace & Defence electronics will grow above the average trend, as usual in downturn cycles

- On the contrary, consumer products in the Telecommunication, Audio & Video and Data Processing industries will suffer during the forecasted period due to even more intense competition between major players leading to further price cuts and consolidation among the supply chain.

Table 2, European share of World production (2008)

Application sector	European share of World production
Industrial	**39%**
Aerospace and Defense	**34%**
Automotive	**33%**
Medical	**25%**
Telecoms	**21%**

Source: DECISION – April 2009

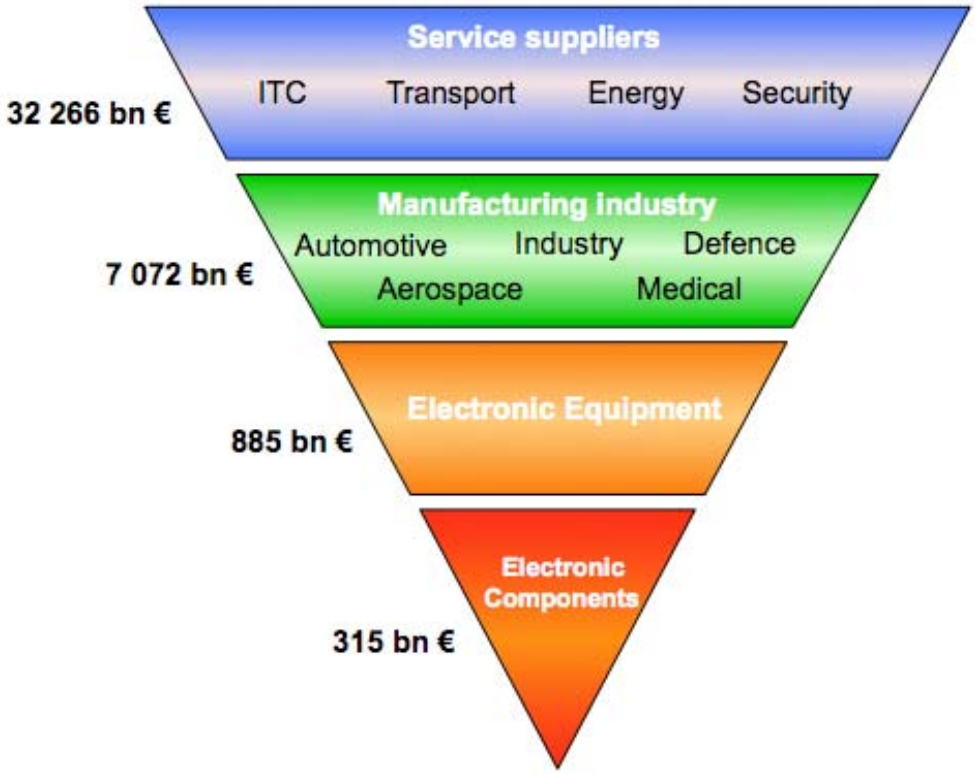
- This general picture is a rather good opportunity for developed economies that are now more specialized towards professional end application sectors of the electronics industry and more specifically for Europe which enjoys a better positioning in terms of electronics production compared to North America

Crisis opportunity: Back to innovation

- The current economical crisis should not be seen as a threat for the electronics industry food chain, but as an opportunity to 'exit through the roof' thanks to innovation, and reactivate the innovation engine which has been put on hold since the invention of mobile telecommunication in the 90s
- Societal needs and Machine 2 Machine communication in professional application segments as well as converged devices mixing Consumer – Communication and Computing features in mass market segments, demonstrate the largest growth perspectives and rely on intensive R&D efforts. These markets could rapidly develop in the medium term and represent huge potential in the range of hundreds of millions and even billions of units per year, providing to the electronics industry food chain new killer applications.

- Integration will be the electronics industry's motto in the years to come, from the component industry where suppliers will develop systems and solutions rather than single components (More than Moore vs. More Moore, functional modules) to the equipment industry as electronic devices and systems will integrate other substrates and applications pushing further the limits of pervasion (mechatronics, biotech)

Figure 7, Distribution of economic added value Worldwide



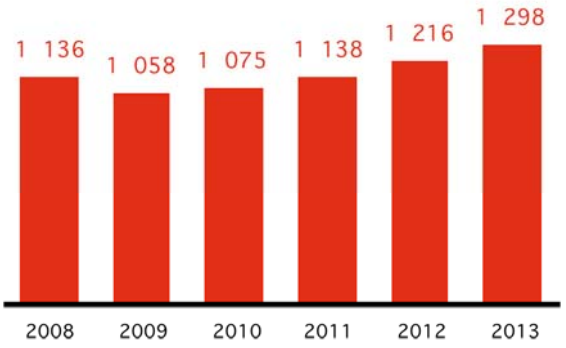
Source: DECISION – April 2009

- This integration process will increasingly mean that players will be able to work in clusters and innovative ecosystems in order to meet new technological challenges but also to create and experiment new business models that will support product introduction and market acceptance in new application fields such as energy, security and health

- The electronics industry represented 10% of global manufacturing added value in 2008 but its impact on the overall economy is much larger thanks to the key role it plays for industry productivity and new services development

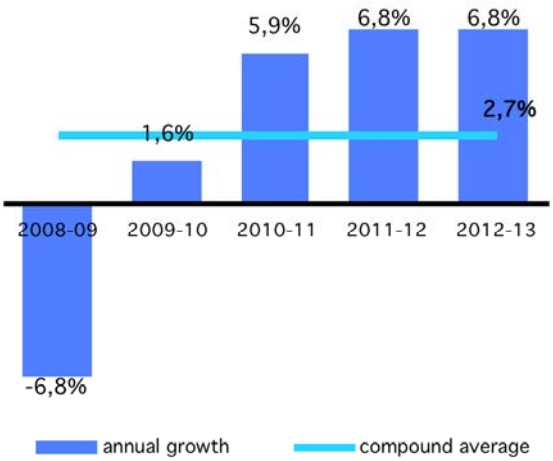
- As new societal markets with tremendous market potential will develop, electronics contribution to the global wealth creation will grow further. It is therefore a strategic industry, which should benefit from at least part of the massive recovery plans put in place in 2009 by major economies worldwide.

Figure 8, Total electronics, world market (billion euros)



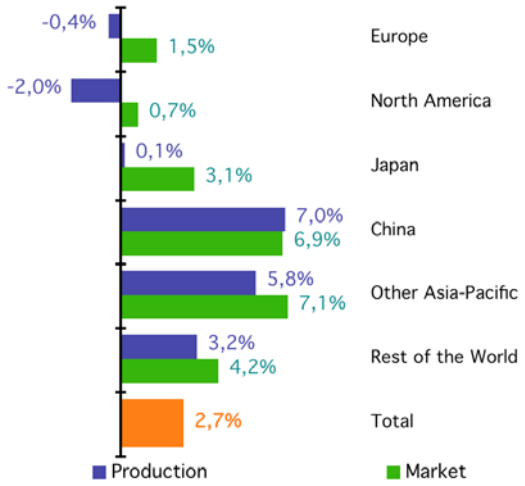
Source: DECISION – April 2009

Figure 9, Total electronics, market growth (%)



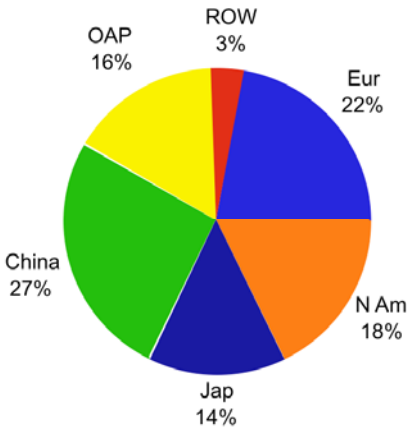
Source: DECISION – April 2009

Figure 10, Total electronics, market and production 2008-13 compound growth by region (%)



Source: DECISION – April 2009

Figure 11, Total electronics, production by region (2008 %)

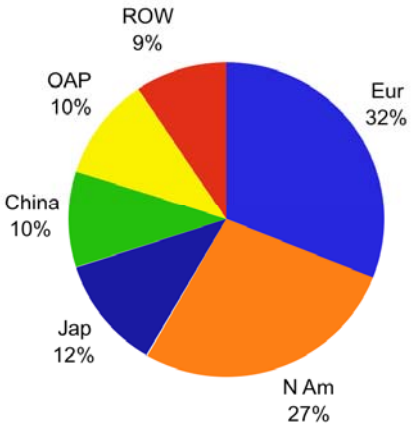


Legend:

- *Eur: Europe*
- *N Am: North America (USA, Canada, Mexico)*
- *Jap: Japan*
- *China: (Continental, HK)*
- *OAP: Other Asia-Pacific countries (Taiwan, Korea, India, …)*
- *ROW: Rest of the world (Russia, South America, Africa, …)*

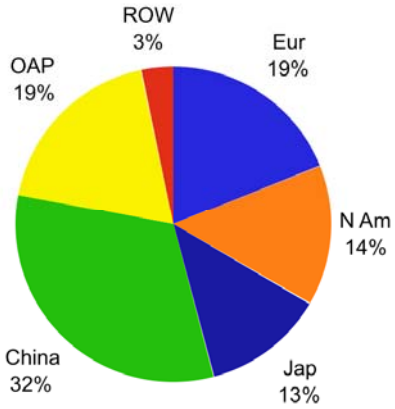
Source: DECISION – April 2009

Figure 12, Total electronics, market by region (2008 %)



Source: DECISION – April 2009

Figure 13, Total electronics, production by region (2013 %)



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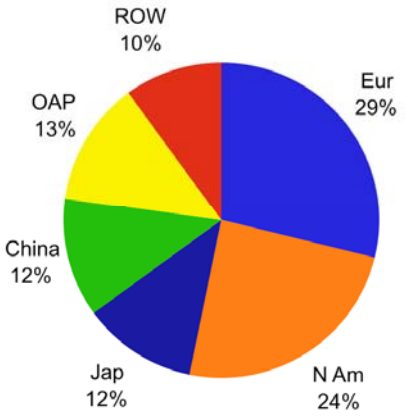
Source: DECISION – April 2009

Figure 14, Total electronics, market by region (2013 %)



Source: DECISION – April 2009

Table 3, Total electronics, market by region, 2008-2013, million euros

Region	Million euros 2008	2013	Growth (1) 2008-13
Total world	**1 135 548**	**1 298 226**	**2.7%**
Europe	241 229	260 489	1.5%
North America	210 349	217 986	0.7%
Japan	90 419	105 399	3.1%
China	78 821	110 244	6.9%
Other Asia-Pacific	81 192	114 248	7.1%
Rest of the world	73 347	90 207	4.2%

Source: DECISION – April 2009
(1) Compound annual growth rate

Table 4, Total electronics, production by region, 2008-2013, million euros

Region	Million euros 2008	2013	Growth (1) 2008-13
Total world	**1 135 548**	**1 298 226**	**2.7%**
Europe	251 124	246 724	-0.4%
North America	204 317	184 900	-2.0%
Japan	162 760	163 970	0.1%
China	296 607	416 070	7.0%
Other Asia-Pacific	184 383	244 075	5.8%
Rest of the world	36 356	42 487	3.2%

Source: DECISION – April 2009
(1) Compound annual growth rate