National Program for Intelligent Electronics (NPIE)

Better Life Better Environment
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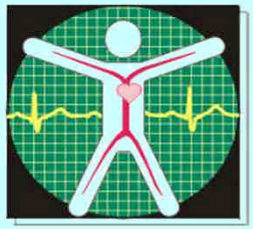
Main Objectives

- The main goals of NPIE are to develop technologies for Medical, Green (energy saving), automotive (Car), and 3C electronics (MG+4C).
- Based on the previous two terms of national programs on SOC and integrating resources from ministries, academics, and industries, NPIE will develop innovative technologies, explore related fundamental research and expand emerging markets in MG+4C
- To cultivate talents on system, software and hardware integration, interdisciplinary, and innovative applications.

Structure of NPIE

Core Technologies of Intelligent Electronics
(Sensor, service, software, etc.)

Industrial Promotion



Bio-medical Electronics

Green Electronics

4C Electronics

Supply Chain Vertical Integration

Talent Cultivation & Infrastructure

Advanced Research

ISSCC Paper Growth

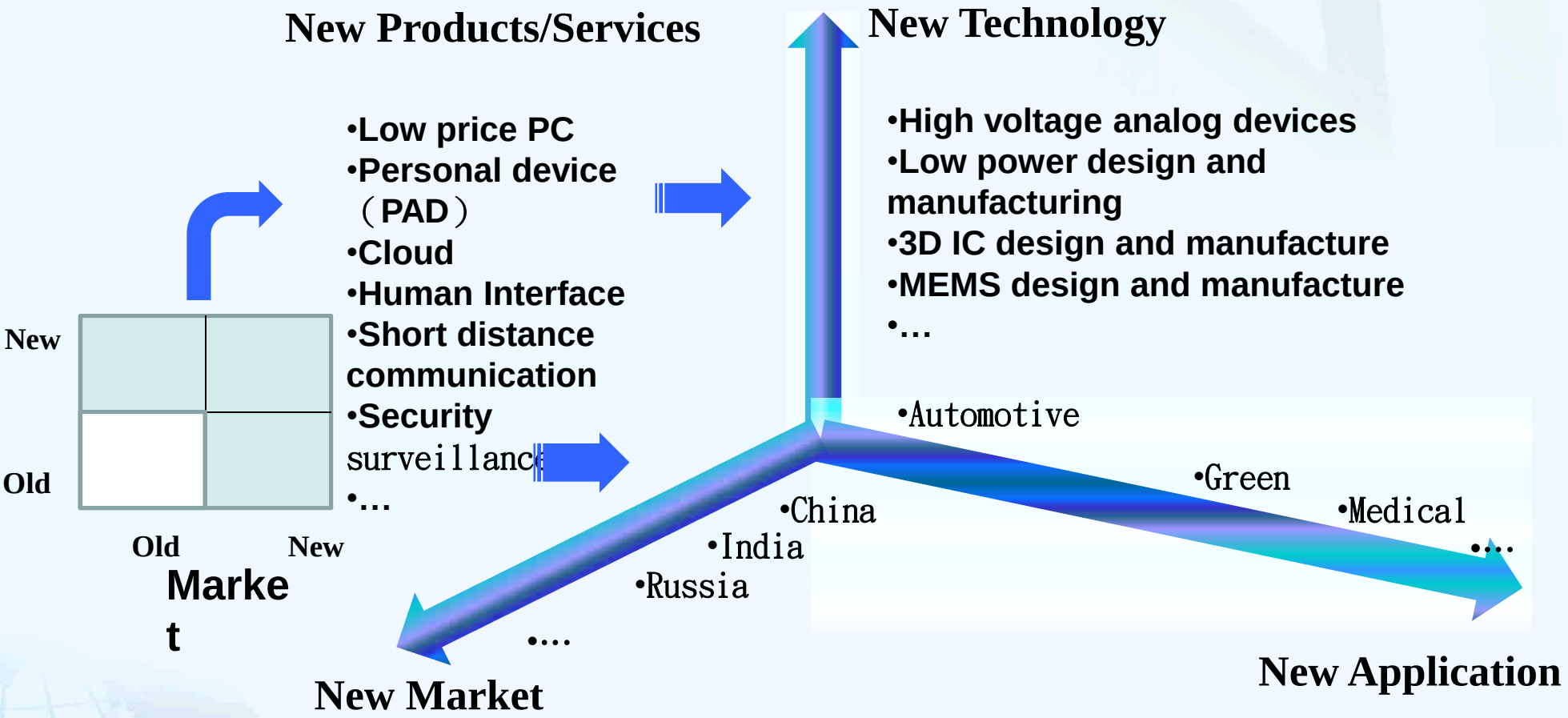
2002		2003		2004		2005		2006		2007		2008		2009		2010		2011	
Country	#	Country	#	Country	#	Country	#	Country	#	Country	#	Country	#	Country	#	Country	#	Country	#
USA	84	USA	80	USA	82	USA	93	USA	117	USA	88	USA	95	USA	72	USA	81	USA	77
Japan	30	Japan	37	Japan	44	Japan	45	Japan	43	Japan	27	Japan	35	Japan	33	Japan	32	Japan	24
Korea	12	Korea	19	Korea	17	Korea	17	Taiwan	17	Korea	25	Korea	14	Taiwan	18	Korea	19	Korea	22
Netherlands	8	Netherlands	13	Netherlands	11	Taiwan	15	Korea	16	Taiwan	20	Taiwan	13	Korea	15	Netherland	13	Netherland	17
Germany	6	Germany	10	Germany	8	Netherlands	10	Germany	13	Germany	12	Belgium	12	Holland	14	Italy	12	Taiwan	14
Belgium	4	Italy	5	Belgium	7	Switzerland	10	Netherlands	8	Italy	10	Netherland	12	Belgium	9	Taiwan	9	German	11
Finland	4	Canada	4	Taiwan	6	Italy	8	Italy	7	Netherlands	10	Italy	11	Italy	8	Belgium	9	France	7
Italy	3	Switzerland	4	Switzerland	5	Canada	7	Austria	6	Switzerland	9	France	8	Germany	7	Switzerland	8	Belgium	7
Canada	2	France	4	Italy	4	France	6	Switzerland	5	Belgium	7	Germany	8	Swiss	4	Canada	5	UK	5
China	2	Belgium	3	France	3	Germany	4	Belgium	4	Austria	6	Canada	6	France	3	UK	4	Italy	5
Ireland	1	Taiwan	3	Canada	2	Belgium	4	Canada	4	France	5	Switzerland	6	Austria	3	Germany	4	Canada	4
Taiwan	0	China	2	Ireland	2	China	4	China	3	Canada	3	England	5	Sweden	2	France	4	Switzerland	3
Switzerland	0	Ireland	1	Finland	1	Ireland	4	France	3	Finland	3	Austria	3	Canada	2	Hong Kong	2	India	3
France	0	Finland	0	China	0	Finland	1	Sweden	3	England	3	Hong Kong	2	Finland	2	Singapore	2	China	3

EDA Paper Growth

Year #	2002 (147)	2003 (152)	2004 (163)	2005 (154)	2006 (201)	2007 (153)	2008 (147)	2009 (148)
1st	USA (103)	USA (116)	USA (120)	USA (114)	USA (125)	USA (98)	USA (94)	USA (80)
2nd	Korea Germany (6)	Canada (7)	Korea (6)	Canada (10)	Taiwan (8)	Taiwan (12)	Taiwan (12)	Taiwan (15)
3rd		Italy (5)	Germany (5)	Germany (5)	China (5)	Canada (8)	Germany (8)	China (10)
4th	Belgium (5)	Korea Germany Israel India (3)	Japan Canada Italy (4)	Taiwan Korea France (4)	Korea Canada Germany Spain (4)	China (7)	China (6)	Germany (9)
5th	Switzerland (4)					Germany (5)	Canada (5)	Korea (4)
6th	Canada France (3)					Netherlands (4)	Singapore (4)	Singapore (4)
7th			Taiwan (3)	Japan (3)		Israel (3)	Korea (3)	Switzerland (3)

papers at DAC; Consider 1st authors only

New Technology, New Application

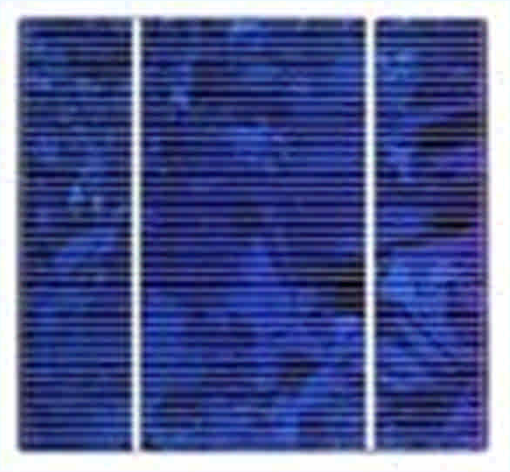


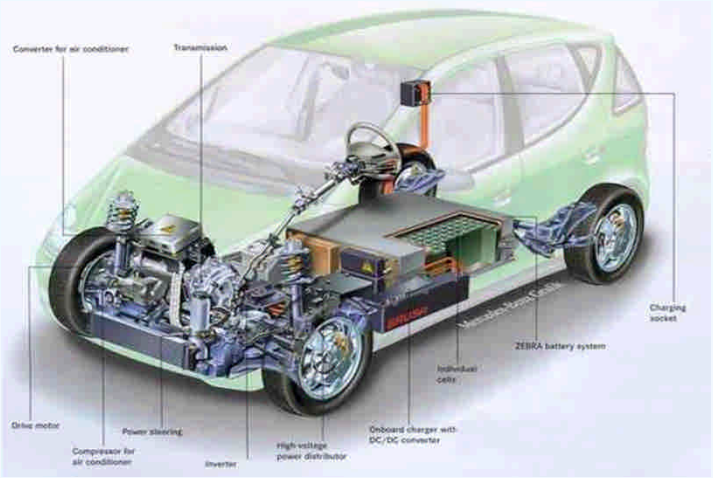
5-year Plan for Bio-medical Electronics

- Develop high-end/proactive medical electronic products with advanced technologies.
- Establsh common platforms (intennet of medical devices) for medical electronics
- Develop fast prototype for bio-medical electronics and related verification system.
- Construct independent industrial chain for bio-medical electronics.
- Cultivate inter-disciplined talents required by marketing and R&D in the bio-medical electronics industry.

Vision of Green Electronics (GE)

- **The vision of GE program in NPIE is to develop key high-efficiency energy conversion such that Taiwan will possess the edge of power system design, integration and manufacturing in the decades to come.**





5-Year Plan for Green Electronics

- Establish proactive green energy electronic technologies and gain leading and predominant position in the world.
- Construct independent industrial supply chain for green energy electronics and develop green energy electronics with high values in applications.
- Enhance the electronics industry in Taiwan to meet the environmental protection requirements and create innovative industries and business models.
- Cultivate inter-disciplined talents for the green energy electronics industry.

5-Year Plan for 3C Electronics

- **The development of SoC platform and system can effectively activate manufactures of various ICTs in Taiwan.**
- **Hardware and software co-Design and system integration**
- **The technological integration and applications of 3C, sensor and.**
- **3D IC technology will be treated as the main target.**
  - Help the local companies establish 3D ICs technologies
  - Development of front end to back end of 3DIC technologies

Talent Cultivation Background and Objectives

- **Background**
  - Human resource is the key to the success of NPIE
  - Creativity and heterogeneous integration capabilities are two major weaknesses in Taiwan
  - Need strategic programs to cultivate high-quality engineers with multidisciplinary training

- **Objectives**
  - Cultivate a sufficiently large number of high-quality human resources (at least 2000 persons per year) for the targeted fields

Conclusion

- NPIE will integrate the R&D resources and capabilities of industry, government, and academia to develop advanced MG+4C electronics, cultivate cross-disciplinary talents, and explore new market opportunities.
- These achievements will strengthen Taiwan's IC manufacturing industry by producing high value-added IC products and promote the second leap of Taiwan technology industry.

Thank you !

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