

# **Realigning Development and Manufacturing Operations**

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1. 32-nanometer process technology
2. Strengthening operations in Yamagata
3. Realigning manufacturing facilities
4. Future direction

# **1. 32-nanometer Process Technology**

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## Extending collaboration to 32nm generation

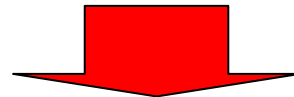
(Announced November 27, 2007)

### Details of Joint Development

- Joint development work conducted at Toshiba's Advanced Microelectronics Center in Yokohama
- Derivative and differentiated technologies to be discussed separately
- Decisions concerning 32nm manufacturing to be made next year, after careful consideration of necessary technologies and equipment

## Results of 45nm Joint Development

- Rapid development of high performance 45nm technology  
(Results presented at international symposiums such as IEDM and VLSI)
- Results of 45nm joint development applied to NEC Electronics' 40nm manufacturing at NEC Yamagata, utilizing 55nm equipment  
(Volume production to begin by March 2009)
- If demand for 40nm products grows, possible to outsource manufacturing to a reliable partner with a reputation for high performance and quality



**Expecting similar success for 32nm development**

## **2. Strengthening Operations in Yamagata**

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# 300mm Line at Sagamihara



Location:  
Sagamihara, Kanagawa prefecture

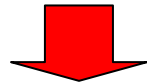
Floors:  
6

Building area:  
7,886 square meters

Total floor area:  
25,909 square meters

- Development, prototyping, and limited volume production for leading edge process technologies (Manufacturing capacity: approx. 2,000 wafers per month)
- Supported development of 180nm to 40nm generation technologies
- Built by National Institute of Advanced Industrial Science and Technology (AIST) in 2002; site for ASPLA (Advanced SoC Platform Corporation)
- Purchased 300mm equipment from AIST after the conclusion of ASPLA in 2005
- Closed 200mm line in 2006 and integrated development and prototyping functions with 300mm line.

- Transfer functions from Sagamihara to Yamagata to facilitate seamless flow from development, to prototyping, to production

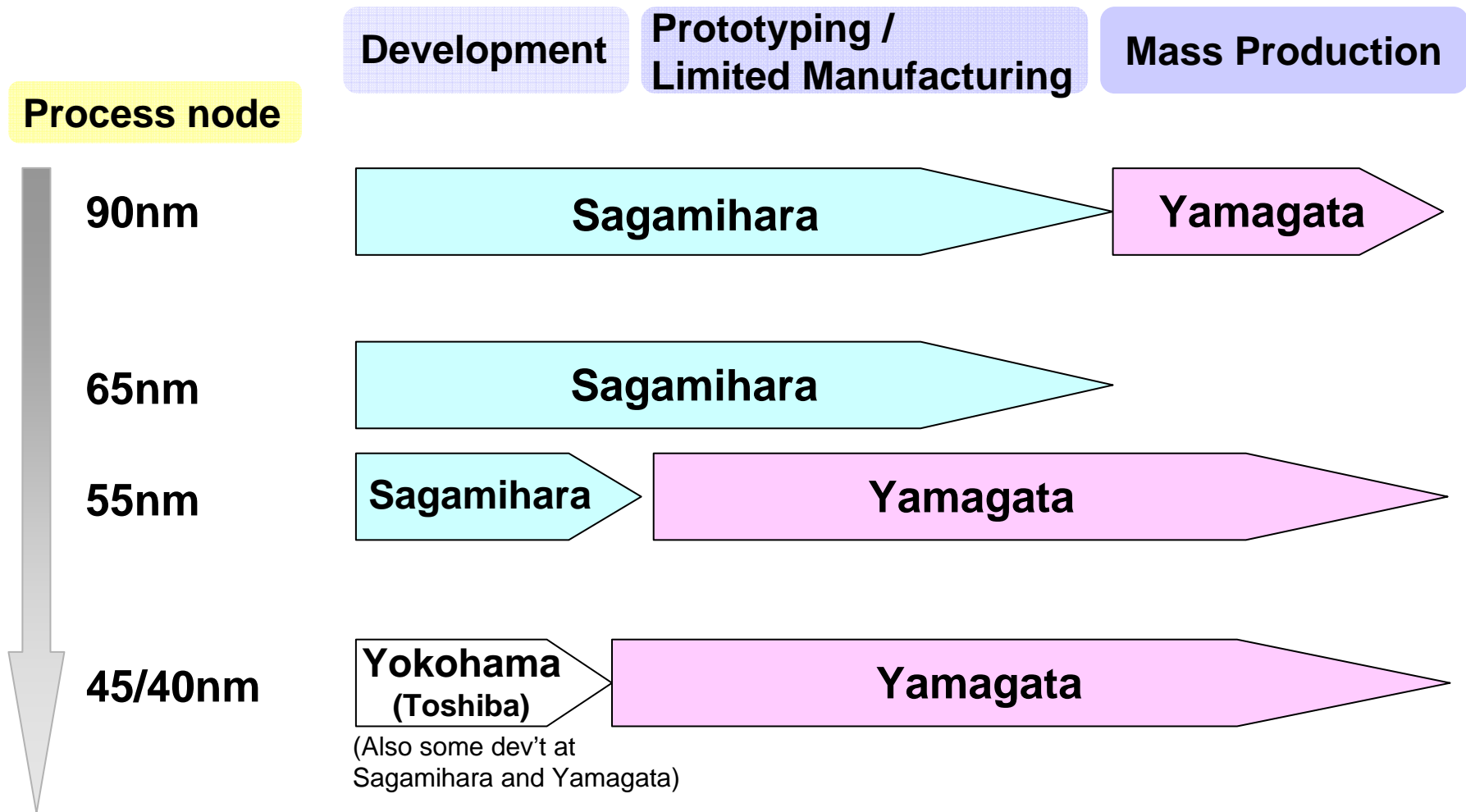


**Goal: reduce development times and costs**

- Stop manufacturing at Sagamihara 300mm line by March 2009, and transfer equipment to Yamagata
- Reallocate approx. 700 employees involved in development and manufacturing at Sagamihara 300mm line to sites in Yamagata, Yokohama, and Kawasaki



# New Roles in Dev't of Advanced Products

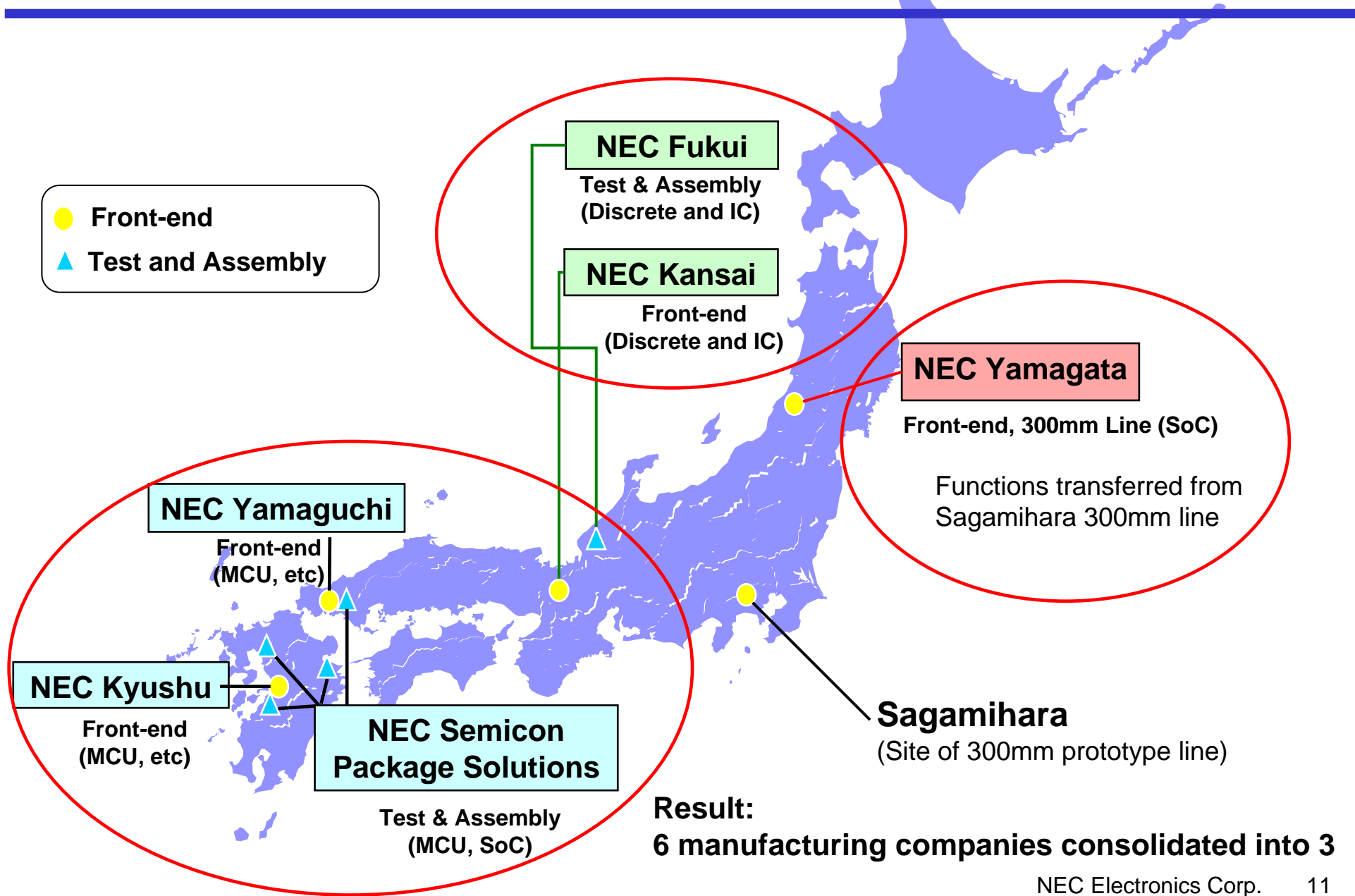


Beyond the 55nm node, the role of the Sagamihara line is gradually phased out and key functions are taken over by Yamagata

## **3. Realigning Manufacturing Facilities**

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# Realigning Manufacturing Facilities



## Leverage Strengths as an Integrated Device Manufacturer

1. Improve Quality, Cost, and Delivery (QCD) by integrating prototyping, wafer production, test and assembly

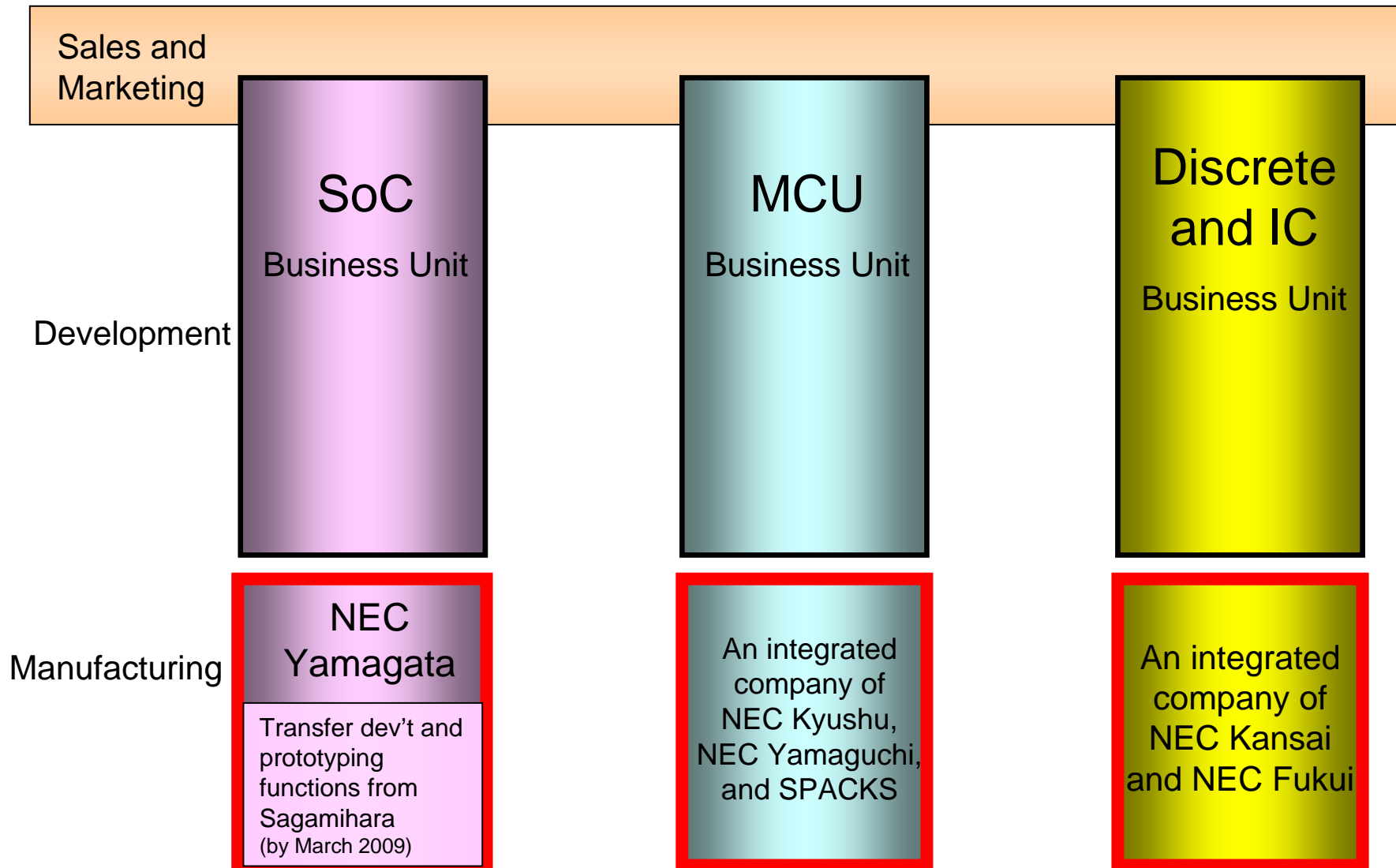
- Process optimization
- Cultivation of skills and technologies

2. Utilize resources (personnel, equipment etc) efficiently through regional distribution

- Simplify procedures for transfer of personnel and equipment
- Optimal allocation of technical specialists to support global mfg.

3. Improve governance and management costs for mfg. subsidiaries

# New Manufacturing Framework (From April 2008)



## **4. Future Direction**

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NEC Electronics will continue to draw upon the strengths of the IDM business model, optimizing processes and delivering seamless flow between development and manufacturing to achieve high performance, superior quality, short TAT and cost reductions, while actively developing partnerships with other companies.

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