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CSAM

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The New Generation ICT to serve Regional Agricultural Mechanization Development

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FORWARDS

- The former UNAPCAEM was established in 2002 in Beijing based on RNAM, Bangkok & renamed as APCSAM in 2013.
- I was as TC member between 2003-2008 and GC member between 2009-2012. It let me have opportunity to learn and share more knowledge and experience on Agricultural Engineering development strategy and technologies and created link with many regional experts & managers.
- Since 2013, the administrative affairs of APCSAM in China was transferred from CAE to MoA and I was relieved from GC & TC meetings.
- I am very happy to be invited to participate the workshop on Regional Workshop on Establishing a Regional Database of Agricultural Mechanization in Asia and pacific and the 10th Session of the TC of CSAM here & remember many old friends and regional experts on Agricultural Mechanization.
- Wish we will have a great success at the new gathering and innovative-driven our regional AM development.

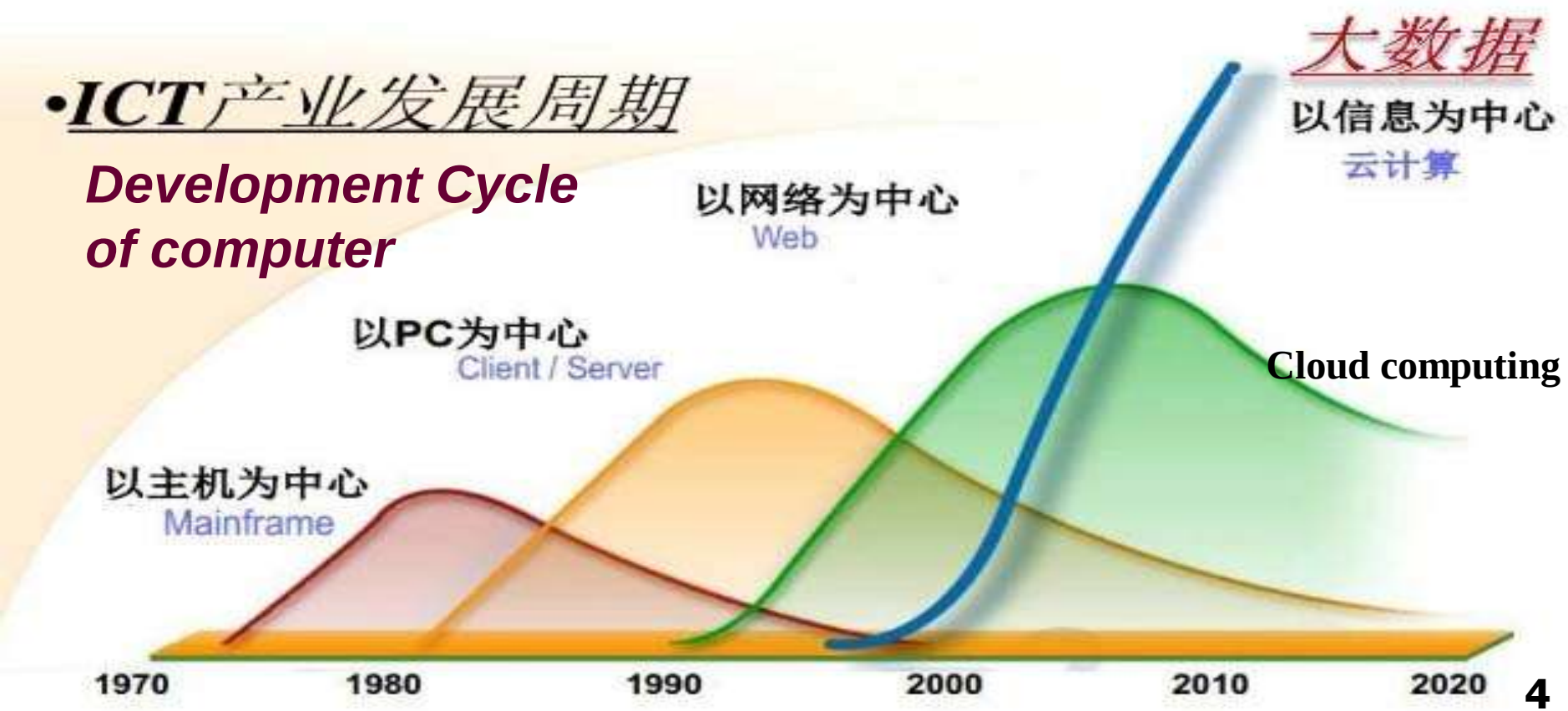
1. THE FAST ADVANCES OF ICT

1) Unlike Other Industrial Revolutions, ICT Revolution in the Recent 20 Years has been Unfolding with a Much Greater Pace…

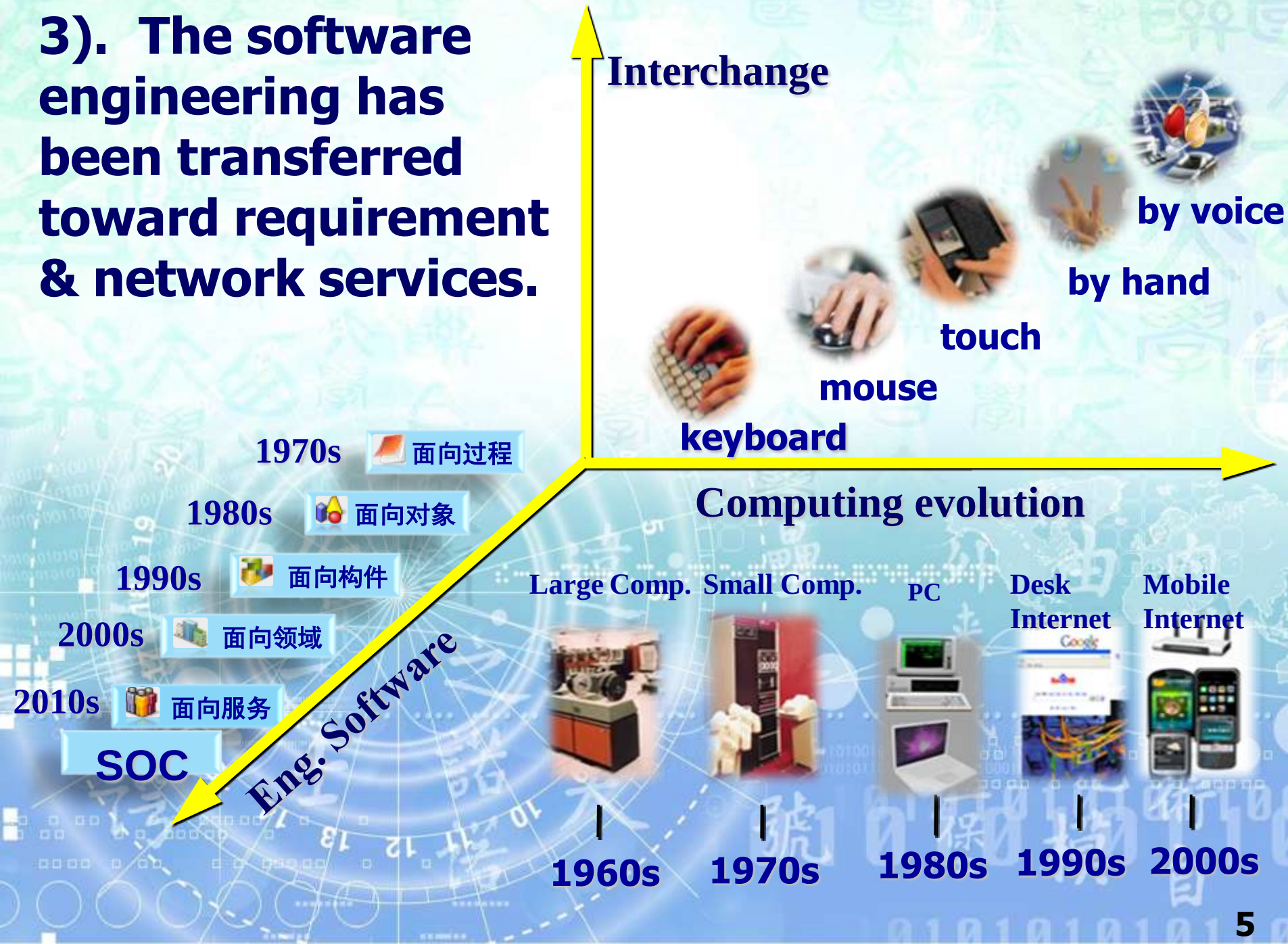
- In 50 years, telephone users reach its first 5 M users, while in only 5 years, Internet users reach its first 50 M users.
- Telephone modems ran at 56 Kb/s in 1995. Now the fiber cable systems with a rate of higher than 1Gb/s are available.
- The world has more 7 bil. cell phones & the Internet users will reach 3 bil. by the end of 2014.

2). Computer tech. has been experienced with a great change per each 15 yrs：

Large computer（1950）→ Smaller Compu.（1965）→PC（1980）→Internet（1995）→Mobile Internet (2010)



3). The software engineering has been transferred toward requirement & network services.



4). From Digital Earth to Smart Planet

- By now, the information technology applications start from digitizing objects toward networking and intelligent technology through three typical development stages.

- **Broadband and mobile communication, Cloud Computing, Wireless Sensor Networks, Internet of Things, Ubiquitous Computing, and Intelligent Physical Systems reflect the ICT advances and the applications are fast developing toward end-users after decades of development.**

1 Visualization

2 Ubiquitous

3 Intelligent

The ICT advances have been contributed to renew farming technologies and led to a great technological revolution in agro-industry.

5). The World is becoming instrumented & Interconnected

- A trillion networked things and the amount of information are becoming intelligent. Algorithms and powerful systems can analyze those mountains of data into actual decisions.
- A number of frontier tech. – cloud and stream computing, sensors capabilities, virtualization, visualization and algorithmic model are ready.
- R & D on WSN & Cyber Physical Systems (CPS) are becoming a driving force to build safe, reliable, intelligent industry system and support technologies development.

6). The New Generation ICT becomes a Leading Force to Promote a New Technologies Revolution

- Internet of Things (IoT)
- Mobile Internet and Inter-connection
- Cloud Computing, Storage & Services
- IPV6 and Broad Bandwidth
- Intelligent Mobile Terminals, etc.

7). From Digital Earth to Smart Planet

IBM - Smart Planet

Instrumented, Interconnected, Intelligent

Sensors Network Smart Tech.

The IoT, Mobile Internet, Cloud Computing , big data become a predominant & fast promoted Strategic Emerging Industries in China

The Investigation of IoT application needs to be considered as:

Demand - Oriented Develoment; Problems – oriented Solutions !

8). Key areas of the IoT investigation for agriculture

- **Resources** – Land、Water & biological Resources Management;
- **Environment** – Land, Soil, Water, Air, Light and Heat Resources Monitor & protection;
- **Production**–Precision Horticulture, Precision Livestock Farming, Precision Crop Cultivation
- **Food safety and supply Chain Traceability**
- **Intelligent Agricultural Equipment & Services**
- **Smart Countryside Management and services**

9). Challenges for ensuring sustainable grain security and food safety

- The world is facing a tight situation for grain supply. G8 warned a risk of grain security & estimated that the total grain output shall be doubled by 2050.
- Restrictions of farmland, water, land and energy resources have been challenging food security.
- More and more people wish to claim a higher consumption of more meat, milk and egg.
- Keeping agro-product and food safety is an even greater challenge & opportunity for technological innovation.

10). Information technologies will lead agro-technology Innovation

- **The next 20-year** is a critical stage for China. Agro- production growth, farmers' income increasing and rural flourishing are the fundamentals to guide the national economy and society sustainable steady and rapid development.
- **China will speed up the process of urbanization.** By **2030**, China will have nearly **20 %** of potential growth of urbanization, which may greatly improve domestic consumer demand & rural economic vitality growth. Agricultural labor will be replaced by large number of machine power. Intensification, standardization, facility-oriented, precision & intelligent technology will be gradually applied in agriculture.

2. THE NEW STAGE OF CHINA'S AGRICULTUARL DEVELOPMENT

1) Steady and faster economy advances of China over the past 33 years . The average annual GDP increase rate were:

1978 - 2010: ↑ 9.98 %; 2010 – ↑ 11.2 %;
2011 - ↑ 9.2 %; 2012 /2013- ↑ 7.7 %; 2014-7.5%

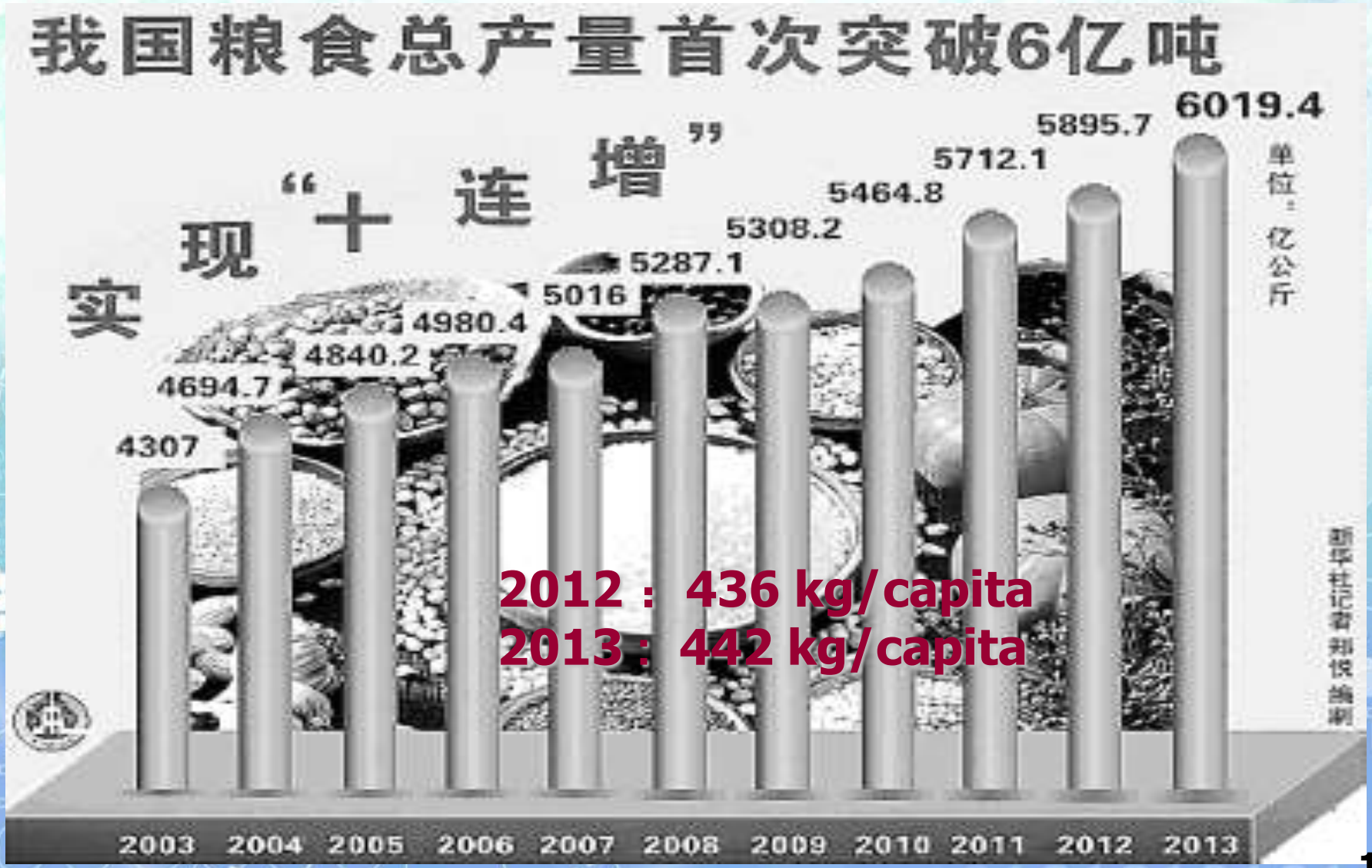
A new policy was adopted to make development more innovation-driven progress while ensuring stability was adopted to guide further sustainable development.

2) Economic development has enabled to implement a new policy featured with "*Industry to Support Agriculture & Urban to Support the Countryside*"

3). Great Attention to Improve Agro-Production Competitiveness.

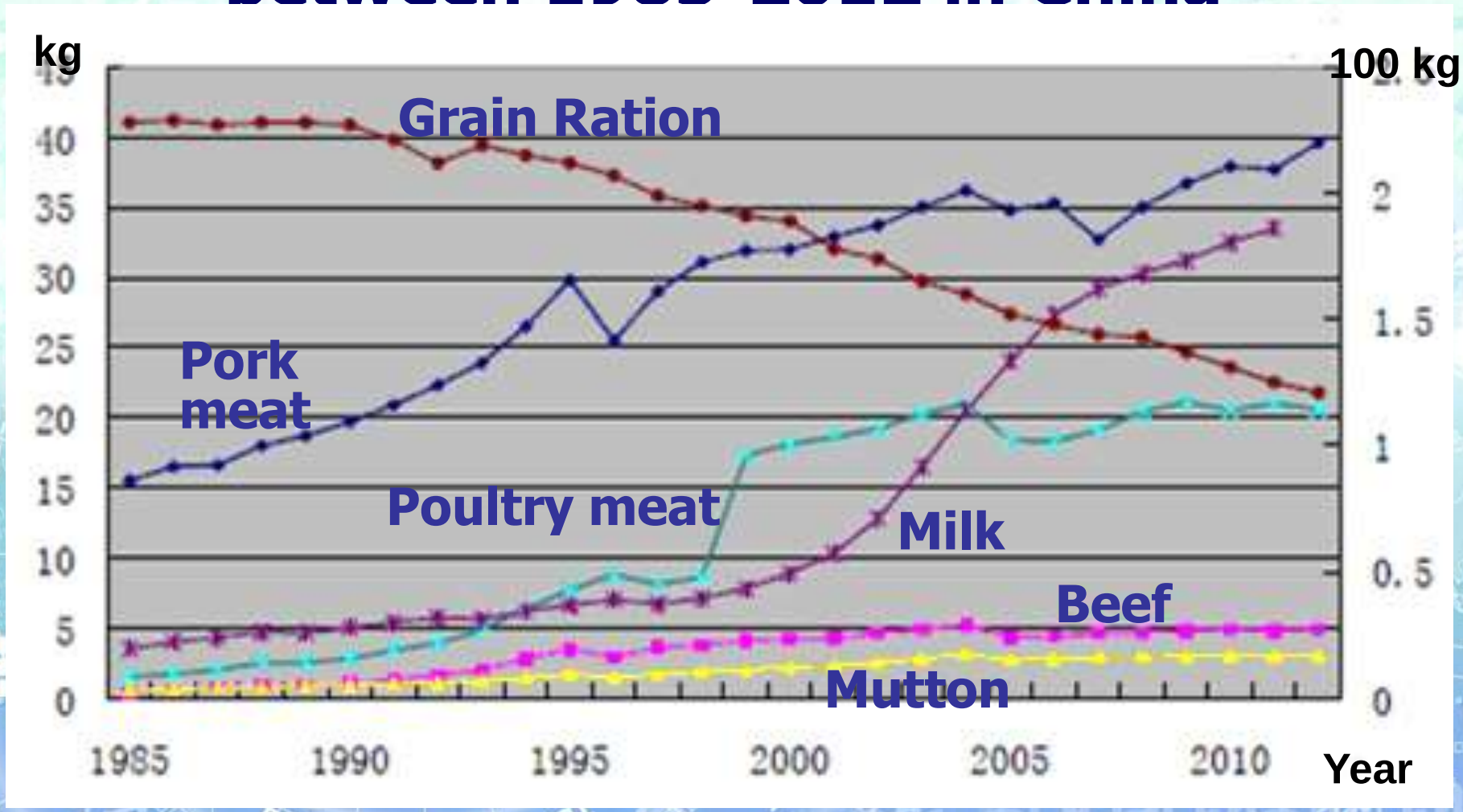
- Target High Yield, Good Quality, High Efficiency, Better Ecology and Safety;
- Promote Agricultural Technology Innovation and Agricultural Material & Technology Equipment Development;
- Improve Soil Fertility, Resource Utilization and Labor Productivity;
- Strengthen Agricultural Infrastructure Construction;
- Enhance Standardization and Quality Control of Agro-products.

4). Advances of grain output from 2004 -2013



2012： 436 kg/capita
2013： 442 kg/capita

5). The Trend of Meat Consumption between 1985-2012 in China



More & More People Wish to Claim a Higher Consumption of More Meat, Milk

6. Speeding up Advances of Agricultural Mechanization

1957-2003

0.7 %

35.5%
Crop Ag.Mech. level

2004

2.0 %

2005
37.2%

1.7 %

2006
39.3%

2.1 %

2020
>70%

2006 - 39.3 %, ↑ 2.1 %
2007 - 42.5 %, ↑ 3.2 %
2008 - 45.9 %, ↑ 3.4 %
2009 - 49.1 %, ↑ 3.2 %
2010 - 52.3%, ↑ 3.2 %
2011 - 54.5%, ↑ 2.2 %
2012 – 57.2%, ↑ 2.7 %
2013 - 59 % ↑ 1.8 %

The National Economic Fast Development has been Enabled to Provide Annual Increasing Subsidy for Farmers to Buy Agricultural Machinery:

From the Central government Finding subsidy :

2004 :	0.07	bil. RMB
2005:	0.3	bil. RMB
2006:	0.6	bil. RMB
2007:	2.0	bil. RMB
2008:	4.0	bil. RMB
2009:	13.	bil.RMB
2010:	15.5	bil. RMB
2011:	17.5	bil. RMB
2012:	21.5	bil. RMB
2013:	23.75	bil. RMB

It has been abstracted about two times of central finding subsidies from local government finding and farmers' investment.

3. On the Establishing Regional DB of AP CSAM

1). Improving and Establishing a specific Cloud Service Platform in CSAM headquarter to enhance interlink and inter-communication for information and knowledge exchange

2). Improving Management Information system in CSAM headquarter and establish regional agricultural mechanization development Database are quite important.

3). Data base of Agricultural Mechanization and agro-equipment industries on membership countries are required to be established on standard formation.

4). Create close Data link with FAO and ESCAP on the regional agricultural & agro-industries & mechanization

5). Creating Data link of regional experts on agricultural mechanization and agro-industries

6). Information system on the academic and technology events on Agricultural Engineering and mechanization.

The basic statistics on agricultural development, agro-equipment industry and agricultural mechanization data are annually officially published in Yearbook as above in China.

Each membership countries shall have the similar yearbook. It is required to create Standard format for establishing CSAM data base.

SUMMARY

- The fast advance of urbanization has freed up millions of workers from farms to manufacturing & service industries and fertilized the industrial revolution process in Asia-pacific Region.
- It will lead to required accelerating agricultural modernization, bringing to rural population with better working & living conditions, flourishing the rural economy, liberating drudgery of farmers and reducing poverty.
- Establishing Regional Database and cloud service Platform of AM will redouble efforts to forge a partnership of mutual trust, inclusiveness and cooperation and will be mutually beneficial to speeding up agricultural mechanization and promoting common development to face new challenges!

Thank You and Great Success of the workshop and TC Meeting !