



Opportunities and challenges of home robot

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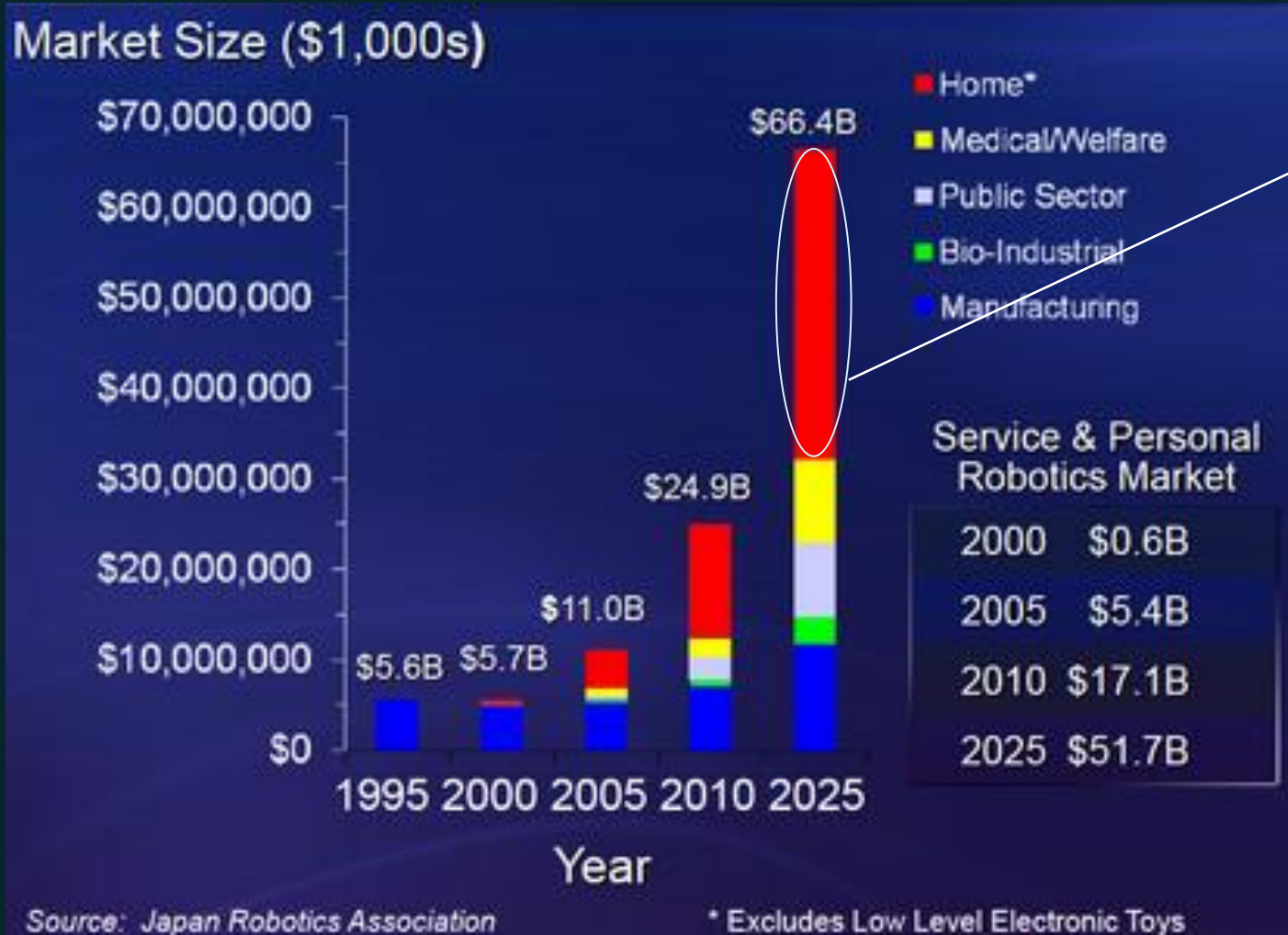


Big Market

- "One robot in Every Home"
-- Bill Gates, 2006
- "The question is no longer, Will you have a robot in your home in the future? But instead, How many?"
-- Helen Greiner, iRobot Chairman and Co-founder, 2005



Big Market



Forecast US\$51.7b market size for service & personal robotics



Features of home robots

- Always standby, always ready to take orders.
- More initiative.
- Autonomous movement.
- More depends voice interaction.



What's the work of home robots

- "Soft Work"
Needs powerful software.
- "Hard Work"
Needs powerful hardware.



Home robot's "Soft Work"

- Meet people's Information needs.
- Emotional comfort.
- Family connection.
- Kids education.
- ...



Home robot's "Hard Work"

- Mopping the floor
- Wipe kitchen
- Cleaning toilet
- Folding clothes
- ...



"Hard Work" is Hard work

If a robot wants to be good at doing "Hard Work", it needs:

- Very precise and powerful mechanical actuator;

Expensive & Complex

Especially in CHINA

Big & Heavy

- Powerful perception and feedback capability;

Good sensors & Data Processing technology

Too **EXPENSIVE** to meet the consumer market needs!



"Soft Work" is not very Hard

If a robot wants to be good at doing "Soft Work", it needs:

- Powerful perception and feedback capability;

Good sensors & Data Processing technology

- Good interaction with the people;

Voice process

Artificial intelligence

- Learning

Self growth

Adapt to environment

BOM cost is not high



"Soft" VS "Hard"

- In the past, due to the demand for technology and production, "Soft Work" of robot is ignored or underestimated.

Industry robots

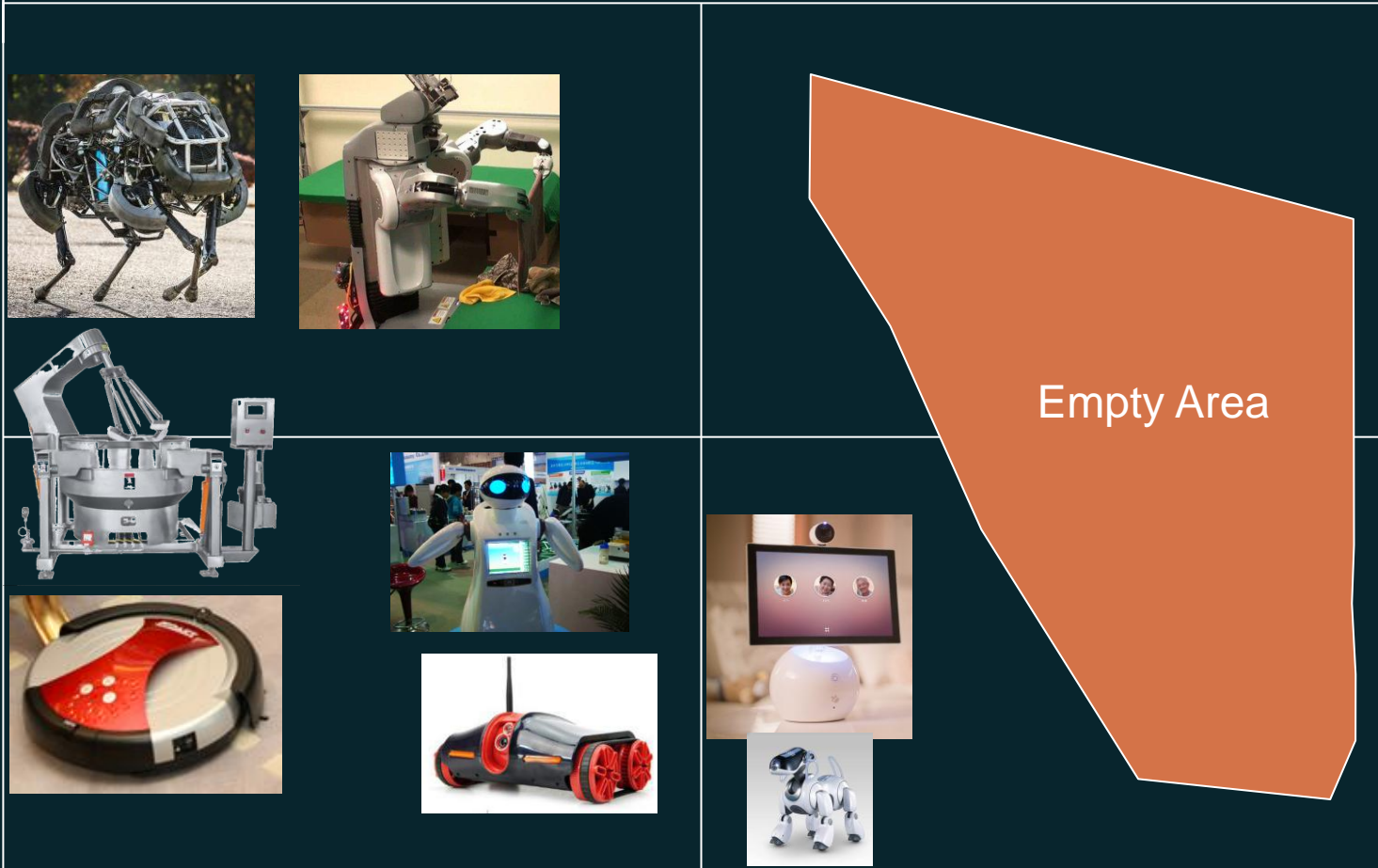
Cleaning robots

We need to put more focus on
Emotional and Information robots!



"Soft" VS "Hard"

Functional



Emotional



Do I forget Something?

- Software and algorithms are also very expensive!

YES!

Good software requires highly paid employees!

Buy a ready-made algorithm can often be expensive

- Do we need to use pirated software?

NO!

IP needs to be protected!

Use of pirated software is illegal

BUT, when the number of your robot becomes very **LARGE**

software cost will be **Negligible**



How to get the Large number?

- The cheaper the better.
*Cut the profit of agents, Sell your robot online.
Sell your robot with a price slightly larger than your BOM costs.
Do not make money through hardware.*
- Make money by the service of your robot.
Sold out is just the first step!

Internet Thinking



Important things inside robots

Robot Interaction System

- Make the robot more easily accepted by people and more easily integrate into human life;
- Can avoid the weaknesses of your robot;
- To define the character of the robot;



Important things inside robots

Robot Operation System

- What is the robot operation system?
- Many of the previous operating system, are made for human.
- But the operating system of the robot, is the robot self-use.

Robots have some autonomous decision-making capability;

Robots need to process commands from different members of the family;

Different commands may occupy the same sensor.



What's Inmotion doing?

- Family service robots

Intelligent moving platform.

Intelligent interaction with the perceptual system.

Robot operation system

Cloud

Some interesting typical applications



Intelligent moving platform

- Solve the problems from A to B inside a room.
- SLAM technology with 2D LIDAR.
- Obstacle detection with 3D depth sensor.



Intelligent interaction

- Machine Vision
 - Human Detect
 - Scene Recognition
- Sound localization
- Speech recognition
- Smart Display panel



ROS

- Robot interaction system
- Developer support



Cloud

- Storage
- Complex calculations
- Skill Store



Interesting applications

- A user not need a so-called platform, but the real deal of functionality.
- We'll find a few interesting skills, to get the first wave of users.



We believe that robots will enter every house in the future, like PC and cell phones.

We are changing people's family life



Thank you!



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Q&A