4th Asian Automotive Environmental Forum
Getting Highland in Malaysia

Recycling Activities of

TOYOTA MOTOR CORPORATION

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Outline of Presentation

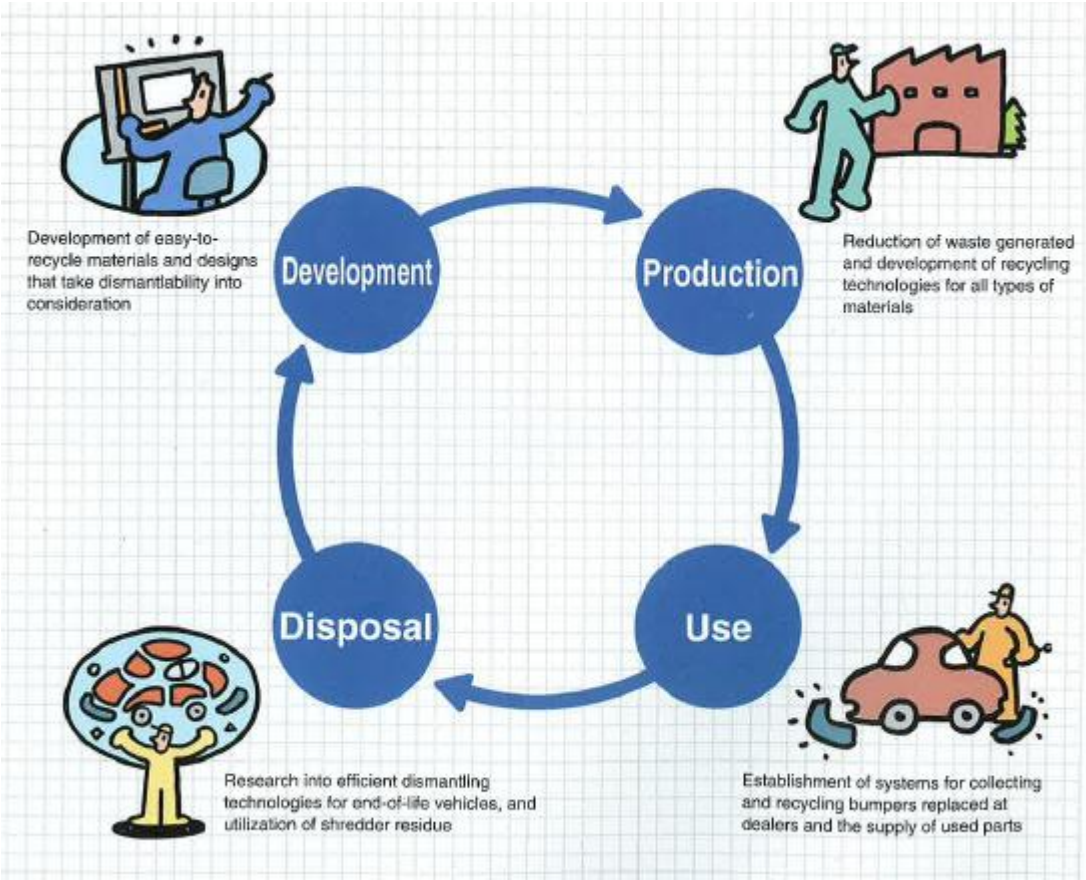
① Recyling/Recovery Route for ELSs(Japan)
② Toyota's Approach of Recycling
③ Design for Recyling Based on Eco-VAS*
④ Development of Dismantling Technologies
⑤ Establishing a Recycling System
⑥ Responses to Automobile Recycling Laws in Japan
⑦ Expanding the Reuse of Parts and Promoting their Recycling

* Eco-VAS:Eco-Vehicle Assessment System

Vehicle-development processes through to production、use,and disposal

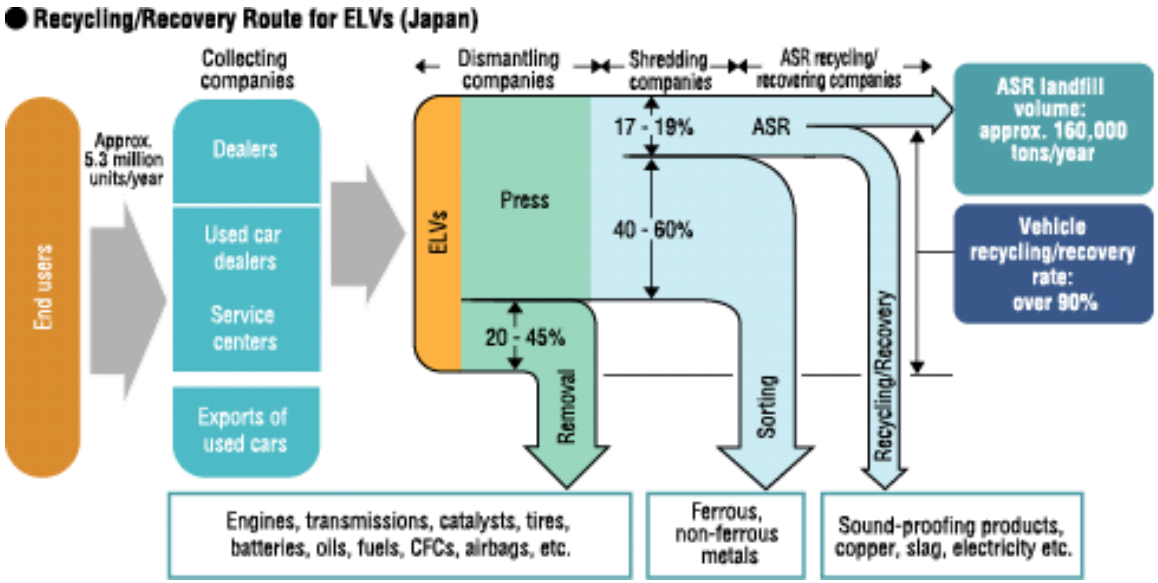
I : Introduction

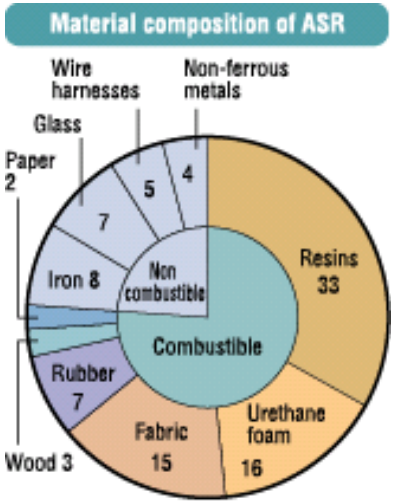
Recycling Activities that Take into Consideration the Entire Lifecyle of a Vehicle



Ⅱ: Recyclig of End-of-Life Vehicles

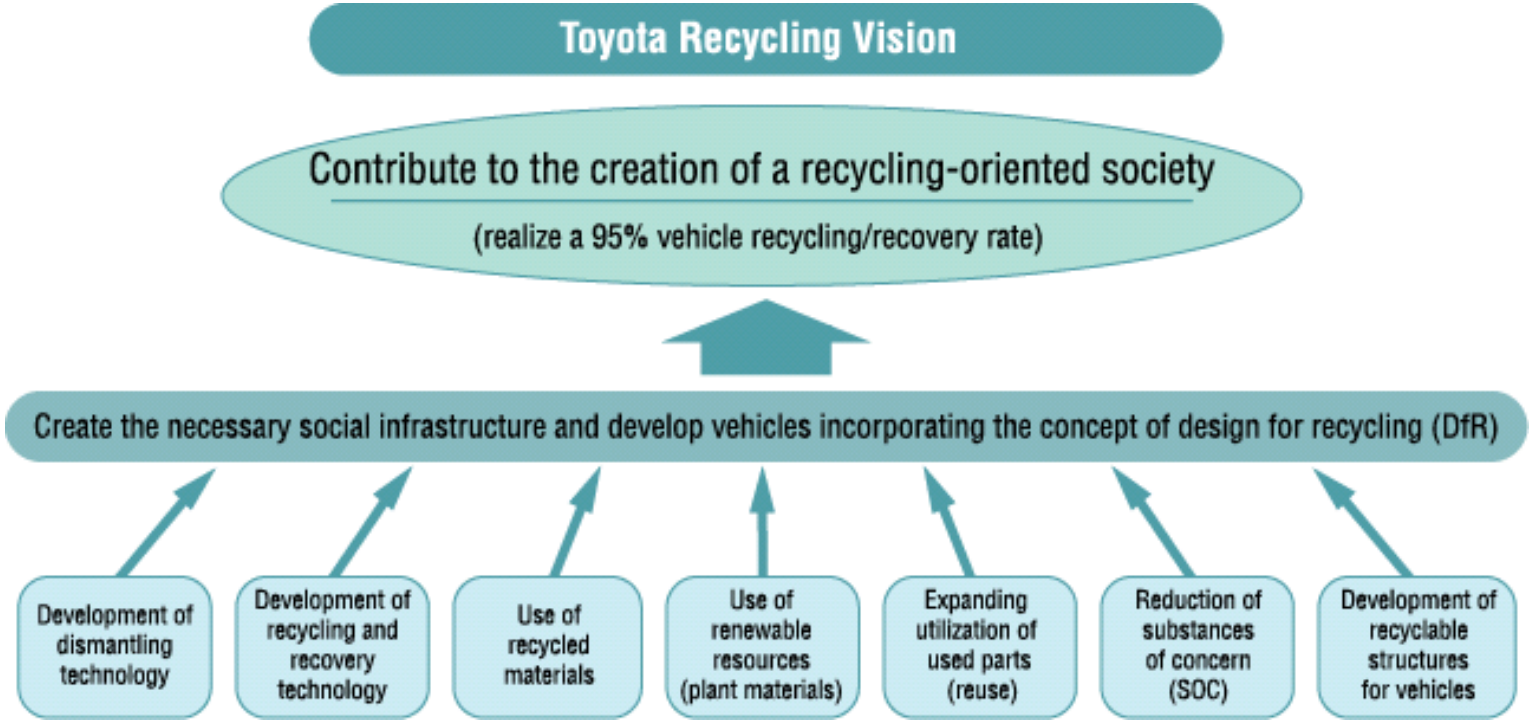
①Recyling/Recovery Route for ELVs(Japan)





②Toyota's Approach to Recycling

≪Thinking Behind the Toyota Recyling Vision('03)≫



②Toyota's Approach to Recycling

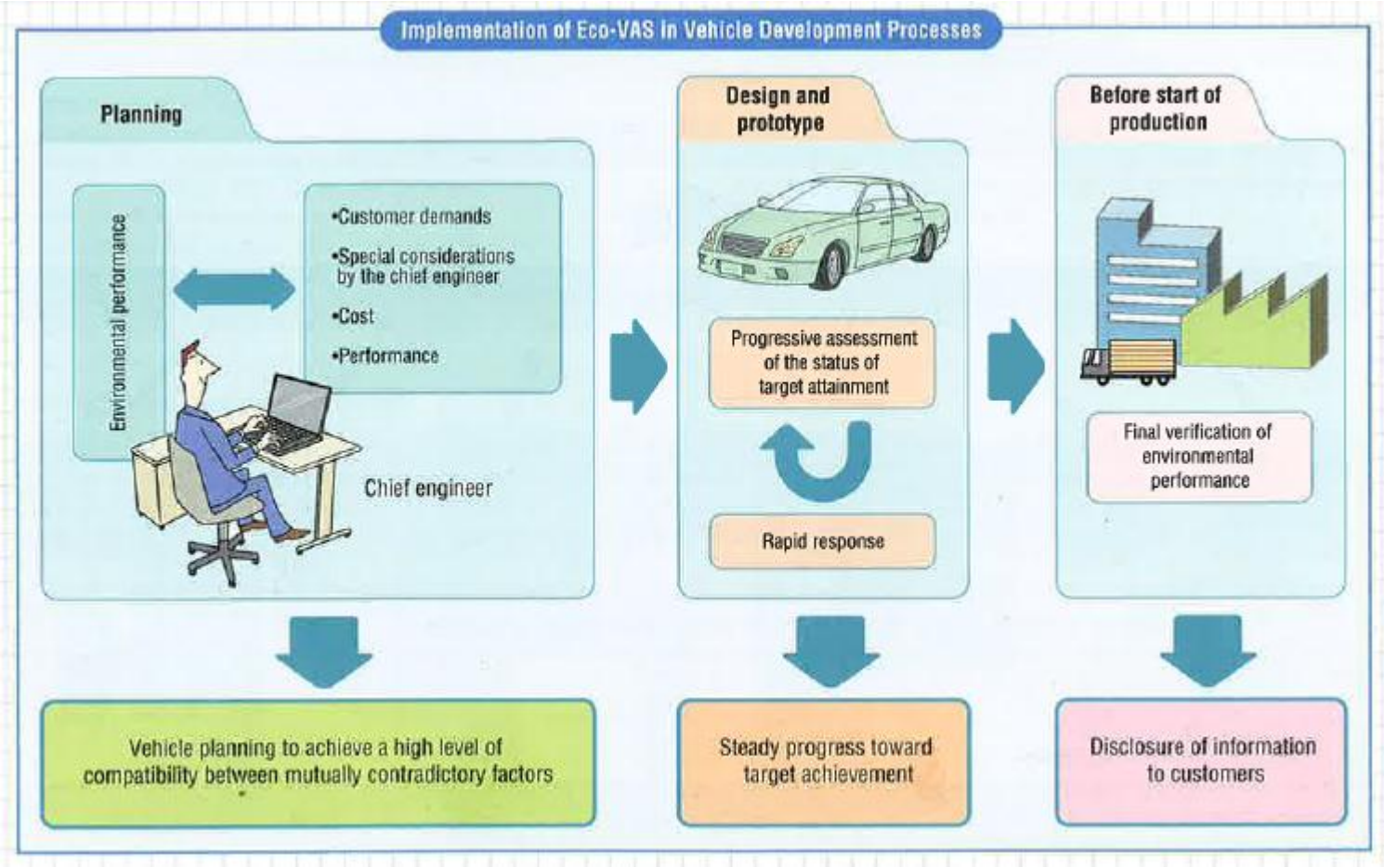
≪Details of the Toyota Recycling Vision('03)≫

Area	Goals	Present status (in Japan)
• Steady improvement in vehicle recovery rates in Japan and Europe	Japan: Early achievement of regulation target[1] Europe: Steady achievement of regulation target[2]	Vehicle recycling/recovery rate of over 90%
• Increased use of renewable resources and recycled materials	Development of technologies allowing 20% use of resin parts by 2015 (Total for Toyota Eco-Plastic and recycled materials)	Began use of Toyota Eco-Plastic with the new Raum in May 2003
• Increased utilization of used parts	Tenfold increase in sales of used parts by 2010 (compared to 2002)	Quantity sold in 2006: 72,000 pieces (23,000 pieces in 2002)
• Reduction of substances of concern	Establish Toyota Global Standards by 2003	Toyota Global Standards established
	Introduction in Japan and Europe from 2006 of vehicles with zero amounts of the 4 banned substances[3] (Some parts exempted)	The Lexus LS460 launched in Japan in September 2006 and the Corolla launched the following month mark the first two vehicles that completely eliminate the usage of the four substances of concern

1. ASR recycling/recovery rate of 30% (equivalent to a vehicle recycling/recovery rate of 88%) in FY2005, 50% (92%) in FY2010, and 70% (95%) in FY2015
2. Vehicle recycling/recovery rate of 85% in 2006 and 95% in 2015
3. Lead, mercury, cadmium, and hexavalent chromium; regulation level for lead in Japan is one-tenth or less of the 1996 level (similar values as for the EU)

③Design for Recycling Based on Eco-VAS

・Overview of Eco-VAS



③Design for Recycling Based on Eco-VAS

- Development of Recyclable Vehicle Structures

  1)Development of Recyclable Vehicle Structures

  2)Improving Dismantlability

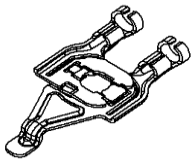
  3)Material Identification

- Manegment and Further Reductions in the Use of Substances of Concern (SOC)

  1)Introduction of Vehicles that Completely in the Use of SOC
  2006MY～

  2)Development of Airbags with Consideration to Disposal

Example of Easy-to-Dismantle Structure

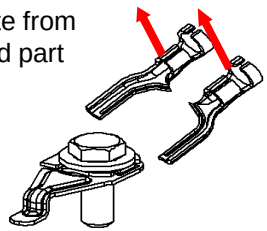


Terminals in dowel

[Pull-tab terminals]
Easier to recover copper parts.
* Wire harnesses

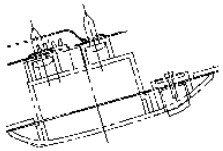
Direction of separation

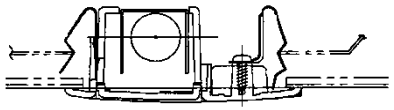
Separate from tapered part



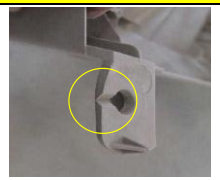
Released earth terminal

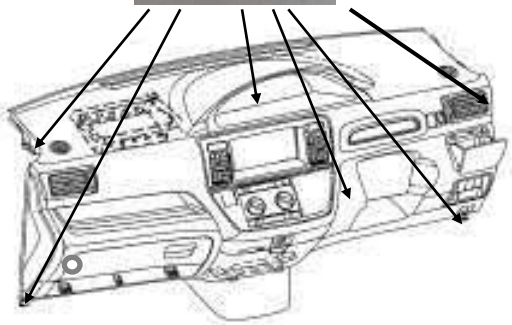
[Elimination of screws]
The use of screws ended.
* Map lamp, visor, etc.



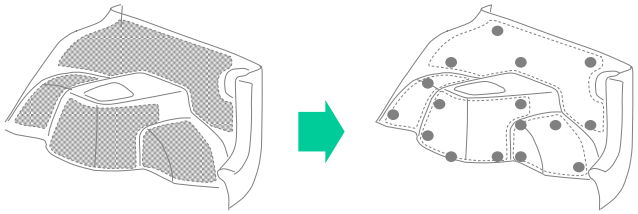


[Fixing points]
V-grooves are introduced near the fixing points on the body to facilitate stripping work.

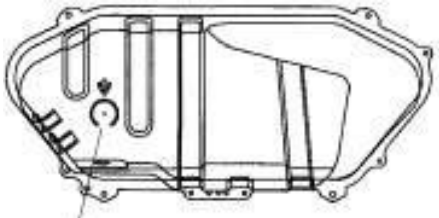




[Point-bonding of sound absorbers]
Sound-absorbing sheets are point-bonded on side trims, etc. to make stripping work easier.



[Best-dismantling marks]
Indicating the most efficient dismantling points
* Fuel tank, door trims, etc.



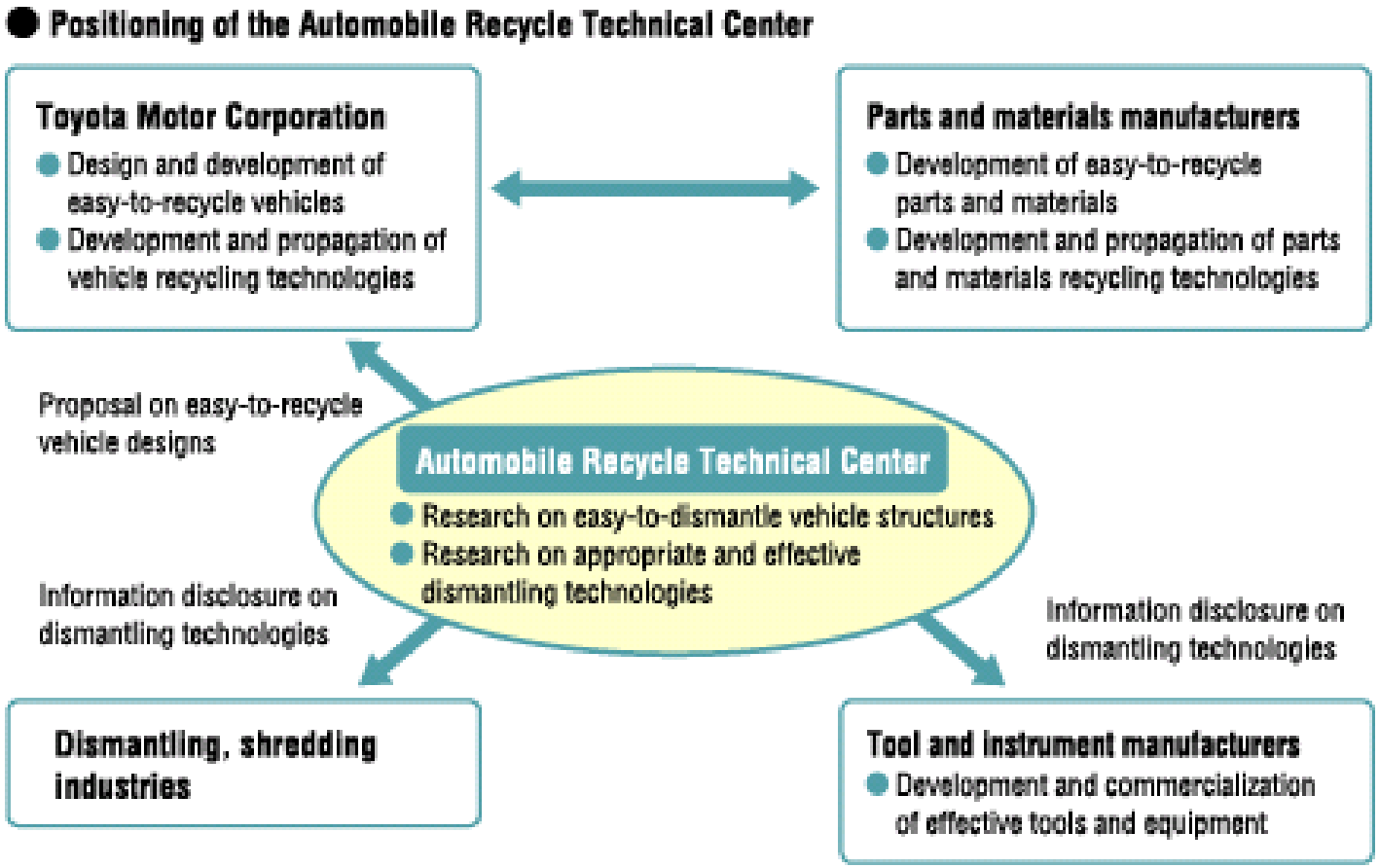
Blow-up

Arrowhead mark indicating the fuel drain position

Point to put a fuel drain device

④Development of Dismantling Technologies

・Automobile Recycle Technical Center



Effective Dismantling Technologies

Air drive saw which quickly cuts through windshield

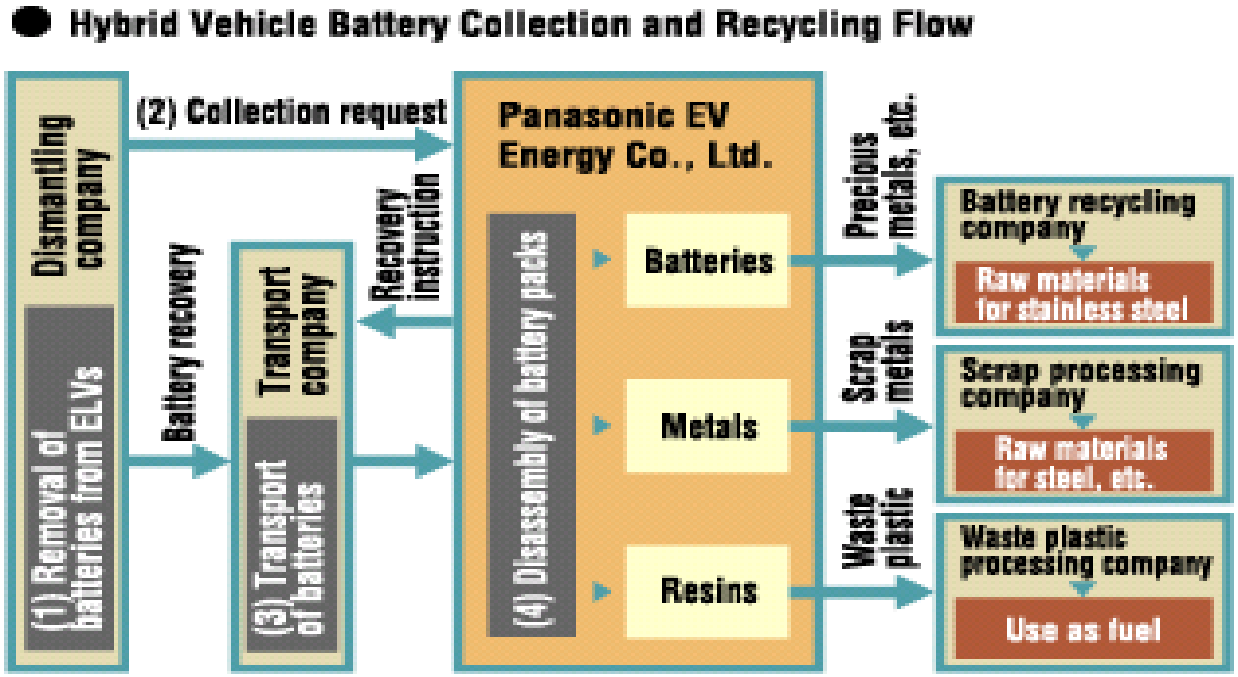
The development wire harness removal tool

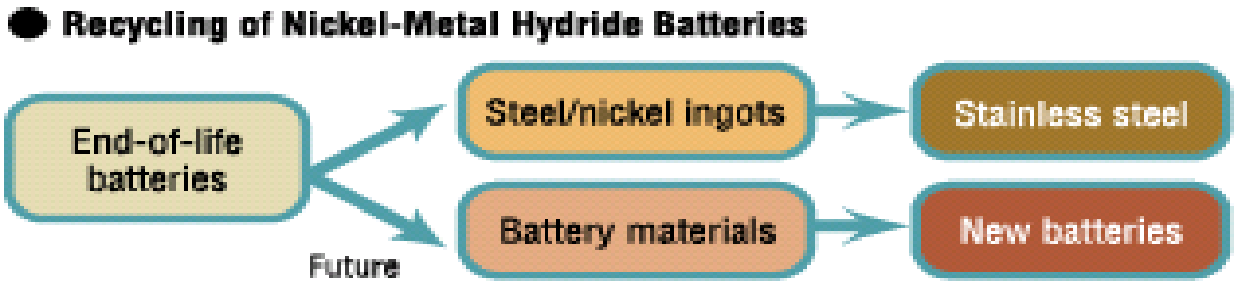
Removal tool a power winder motor

Foot-operated fuel-draining device

⑤Establishing a Recycling System

・Nickel–Metal Hydride Battery Recycling System





⑤Establishing a Recycling System

・Nickel-Metal Hydride Battery Recycling System
(2010～)

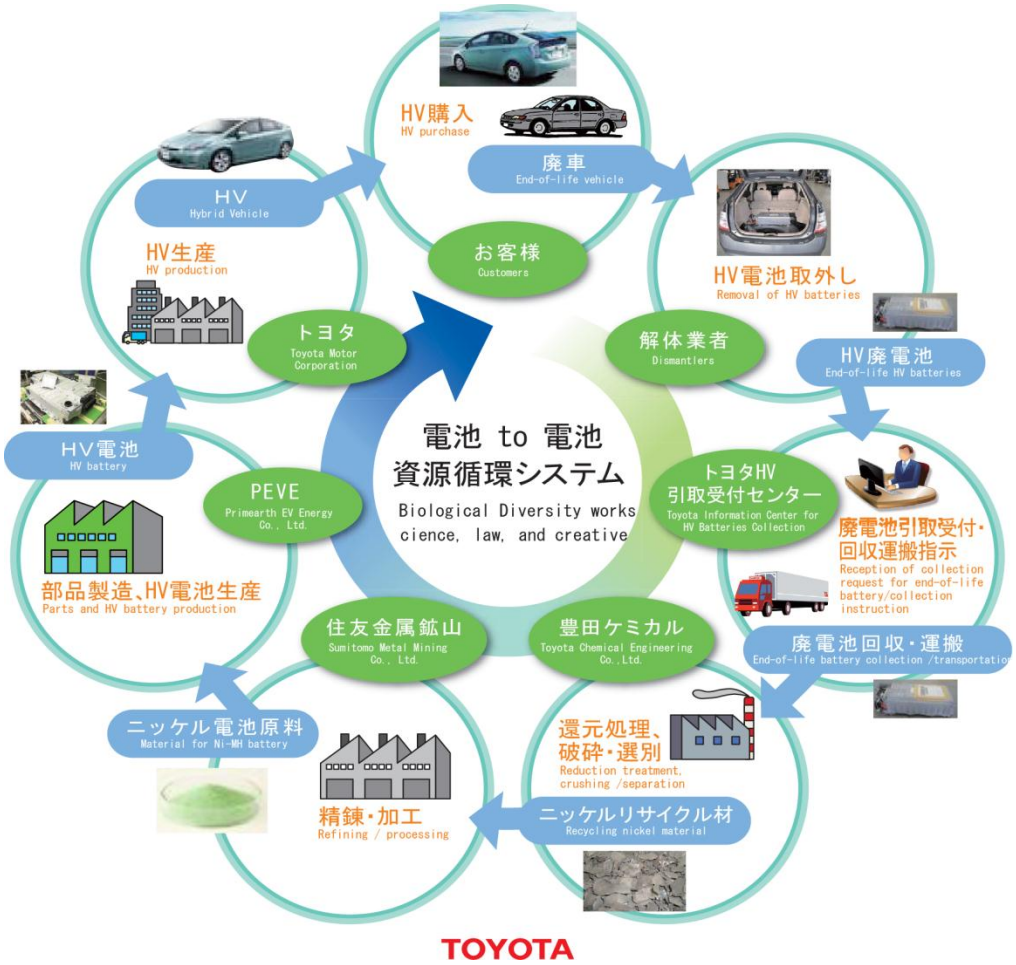
End of life batteries

⇩

Battery materials

⇩

New batteries



⑥Responses to Automobile Recycling Laws in Japan

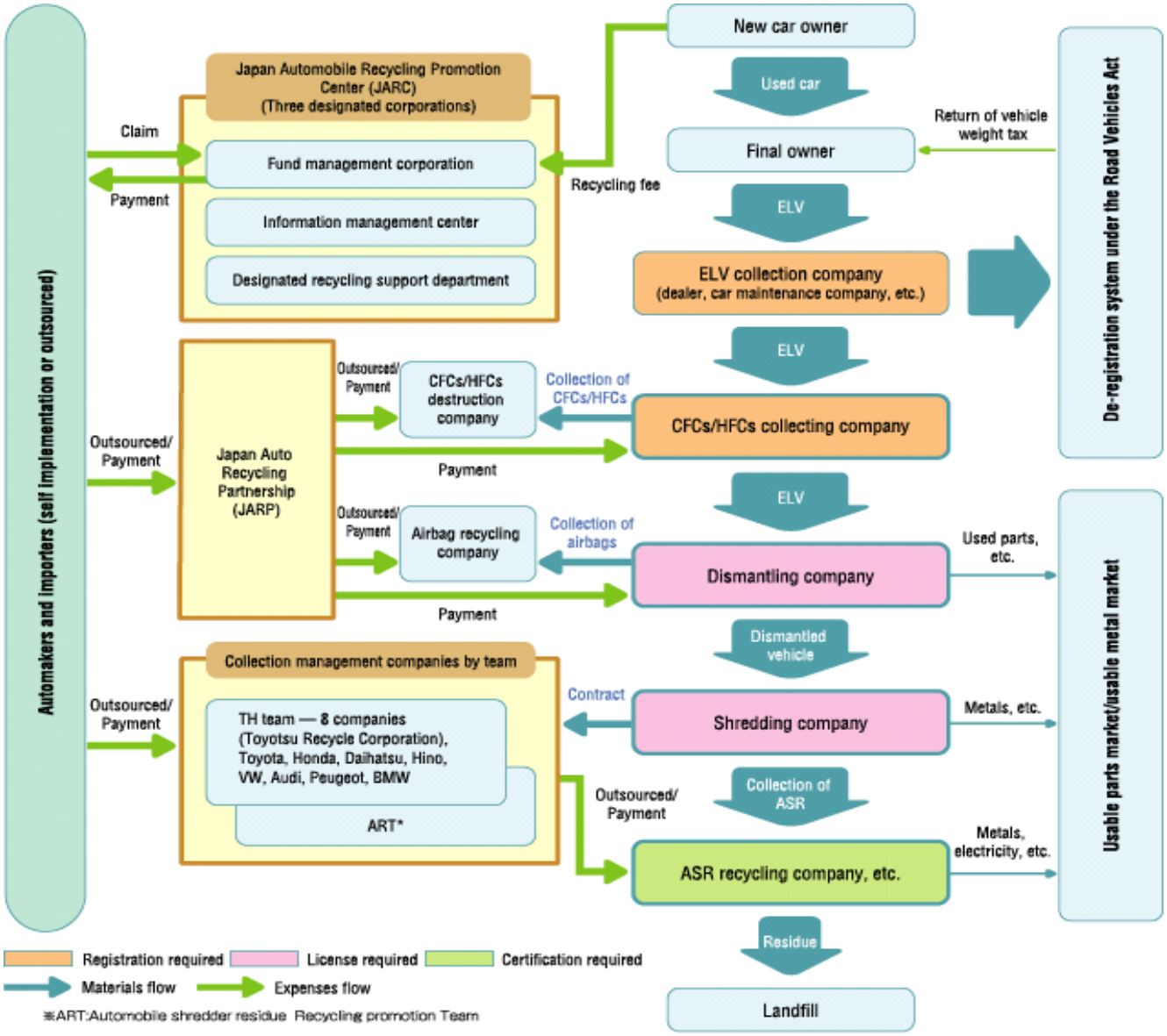
・Responses to the Autobile Recycling Law

・Recyling/Recovery of The Three Specified Items

(FY2007 results)

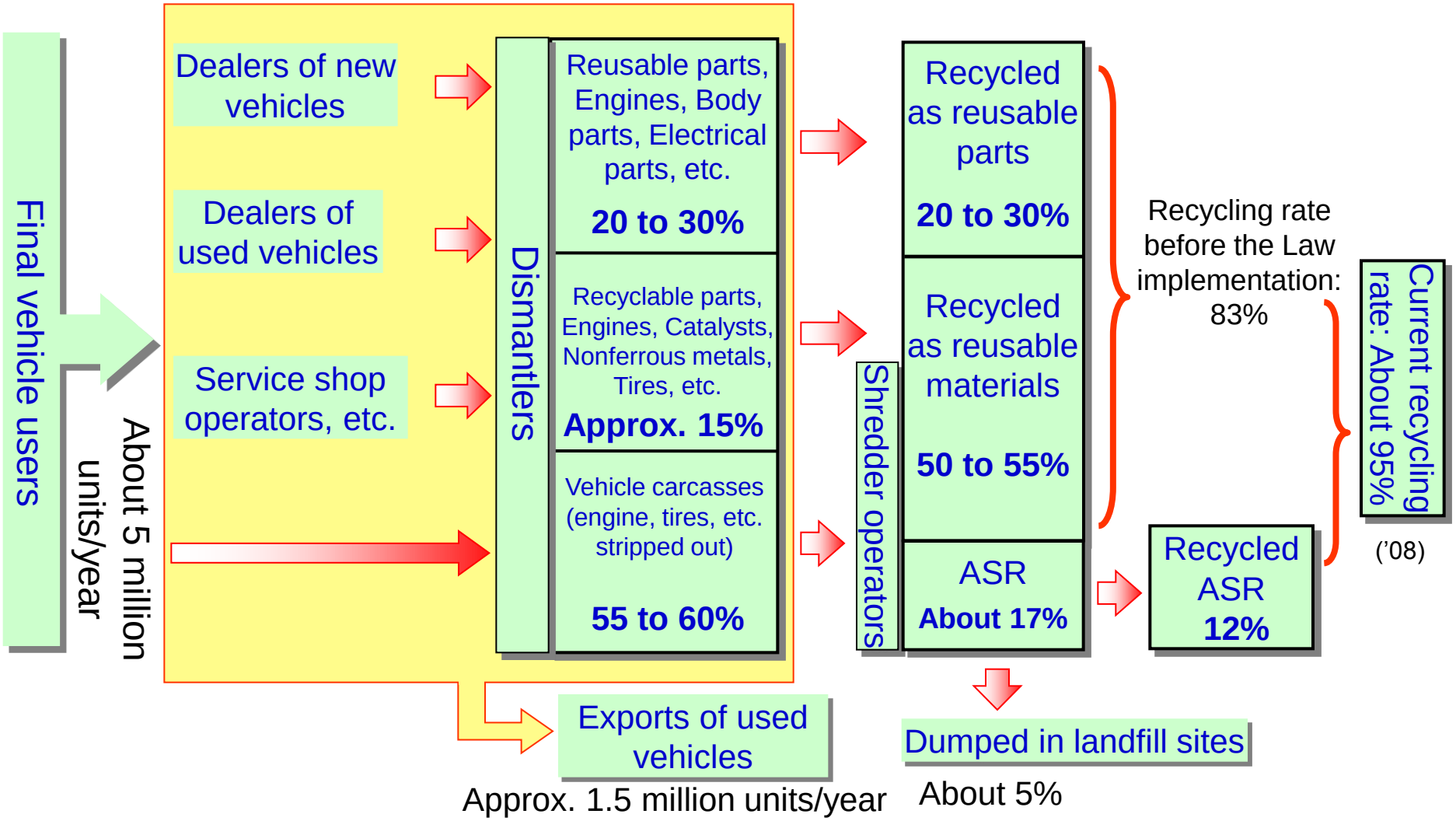
		Results		Results
No. of vehicles collected for ASR		961,000	Funds paid from JARC*	8,430 million yen
No. of vehicles collected for airbag recovery		245,000		
No. of vehicles collected for CFC/HFC recovery		705,000	Expense for recycling/recovery and treatment	8,768 million yen
Recycling/ recovery rate	ASR	76%		
	Airbags	94%	Balance	-338 million yen

Outline of the Law for Recycling of End-of-life Vehicles(Automobile Recycling Law) that Went into Effect on January 1,2005



After Implementation of the Automobile Recycling Law

- **The ELV recycling rate has climbed to 95% since the Automobile Recycling Law was entered into force.**

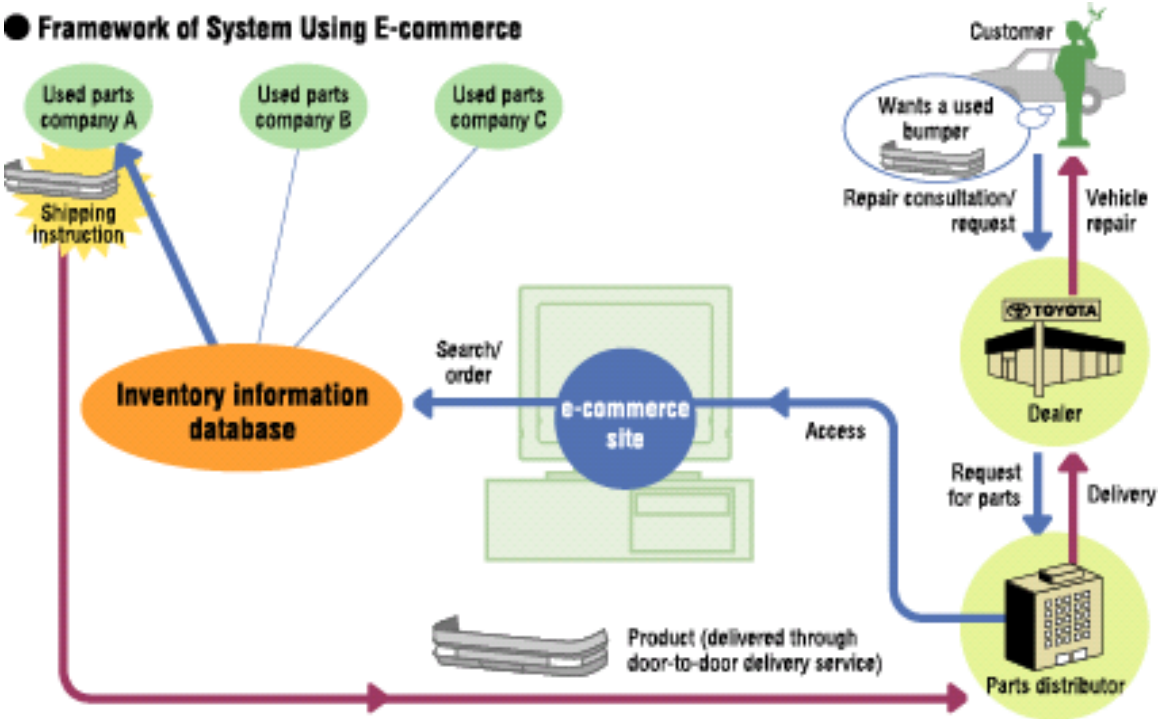


Source: Automobile Recycling Law background documents prepared by the Ministry of Economy, Trade & Industry and the Ministry of the Environment. "83% before the Law" was taken from data distributed at the Joint Council Meeting in May 2003.

Ⅲ: Recyclig at Dealers

⑦Expanding the Reuse of Parts and Promoting their Recycling

(1)Establishing a Supply System for Used Parts



⑦Expanding the Reuse of Parts and Promoting their Recycling

(2) Supplying Rebuilt Parts

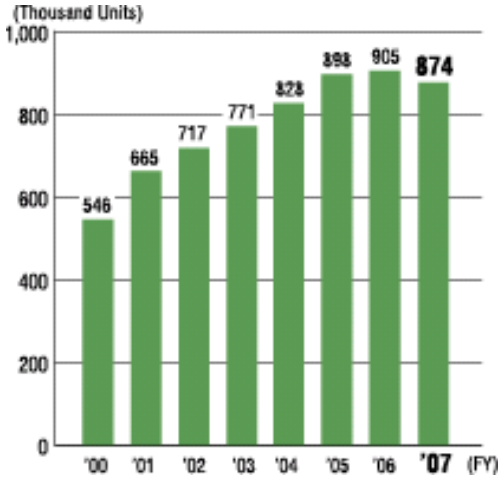
・Supply of Rebuilt and New Parts in FY2007

Rebuilt parts	Number supplied
Automatic transmission	9,220 (160)
Power steering	15,830 (17,565)
Torque converter	3,513 (3,426)

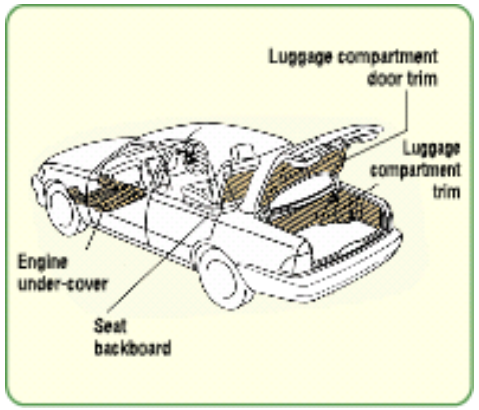
( ) indicated supply of new part

(3) Collecting and Recycling of Bumpers

・Number of Bumpers Collected and Recycled



・Examples of Parts Using Recycled Material



Thank you!

ありがとう ございます!

謝謝!

Terima Kashi!

Баярлалаа!

감사합니다!