

<i>Appendices</i>
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### Appendix I – Fromant’s grid on competitiveness

Fromant’s grids (Grid #1 Success Criteria; Grid #2 Internal Gain)

Success Criteria		Michelin Solutions <sup>32</sup>	Xerox <sup>33</sup>	SAFECHEM <sup>34</sup>
SC1	Offer coming from a life-cycle assessment	Yes: pilot project in France and UK since decades	Yes: intuitively done thanks to take-back linked to end of contract	No information a priori but confirmed a posteriori
SC2	True innovation since changing the customer behaviour	Yes: from tyres sale to invoicing per mileage	Yes: from product renting to invoicing per copy	Yes: from solvent sale to chemical leasing, invoicing per month or per part
SC3	Innovation combining new products and new services (product performance boosted by the service)	Yes: constant innovation on tyres coupled with full tyres fleet management	Yes: maintenance is now preventive	Yes: new containers, new delivery and take-back services as well as monitoring and coaching services
SC4	Decoupling between use of good and energy	Yes: drop in tyre use by around 70%	Yes: 24.000 tons of components yearly	Yes: drop in solvent use by 98%

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<sup>32</sup> Own case analysis

<sup>33</sup> Case analysis done by Fromant (Fromant, 2010)

<sup>34</sup> Own case analysis

	and raw material consumptions	for the same outcome	prevented from throwing	
SC5	Classic example of circular economy with production – utilisation – maintenance – repair – reuse – waste management	Yes: full life cycle programme and retained ownership	Yes: Xerox takes care of the full life cycle by assuming the photocopier management and keeping its ownership	Yes: full life cycle management and retained ownership
SC6	Increased customers mastery	Yes: customer loyalty, long term partnerships	Yes: the client stops to manage the product as long as it is well functioning	Yes: longer partnerships collaboration during seminar, etc.
SC7	Integration of the reseller's added value into manufacturer's one	Yes since the Michelin Solution's expertise is required for the maintenance	Xerox has already a direct contact	Yes: SAFECHEM is needed to deliver and take back safely the solvent
SC8	No investment needed on the client side	Yes	Yes	Yes
SC9	Result guarantee	Yes: contractually linked to performance	Yes	Yes

Internal Gains		Michelin Solutions <sup>35</sup>	Xerox <sup>36</sup>	SAFECHEM <sup>37</sup>
IG1	Quality improvement	Yes: high quality tyres represents an increased share of total sales	Yes: through a guarantee of maintenance	Yes: safer solution, higher quality cleaning
IG2	Cost reduction	Yes: obvious	Yes: decrease in costs through a controlled logistic	Yes
IG3	New market opening	Yes: premium product market, which raises the competitive gap	Yes: idem Michelin	Yes (potentially): spill-free solution so can be implemented in cleaner environment
IG4	Eco-efficiency strategies	Yes: resources and energy savings thanks to the expanded product life span	Yes: Spare part reused or recycled, spare part compatible with most of the models, positive carbon report	Yes: solvent reused and recycled
IG5	Improved labour productivity	Contribute to attract top workers to the firm	Yes: we can presume it since better mastery of work (not disturbed by client's calls)	No clear influence, possibly a better planning of client visits
IG6	Reputational capital	Yes: it is the N1 in French literature on FSE, organisational innovation in addition	Yes: it is the N2, organisational innovation in addition	Yes: organisational innovation in addition to technical

<sup>35</sup> Case analysis done by Fromant (2010), with the name *Michelin*, probably on *Michelin Fleet Solutions* rather than on *Michelin Solutions* (which is a newer appellation formally created in 2012). Nevertheless the analysis remains valid for Michelin Solutions.

<sup>36</sup> Case analysis done by Fromant (2010)

<sup>37</sup> Own case analysis

		to technical innovation	to technical innovation	innovation (but not as known as the two other firms)
IG7	Mastery of legal and institutional evolutions	Yes	Yes: specific dedicated entity	Yes: years ahead of legislation, pioneer
IG8	Influence on new regulation	Yes: Michelin has inspired the new EU norm	Yes	Yes
IG9	CO <sup>2</sup> quotas, energetic certificates, etc.	Yes, potential & Michelin is eligible for it	Potential for its clients to benefit for it	/

## Appendix II – Xerox tables and figures

The closed loop design and remanufacturing processes at Xerox:

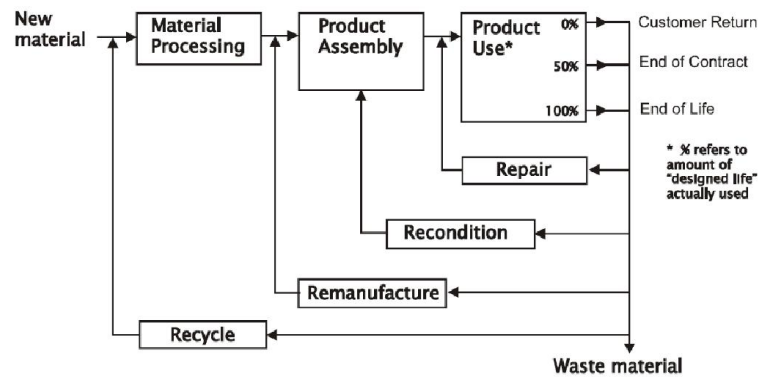


Figure 8 - The closed-loop process (from King et al. 2007)

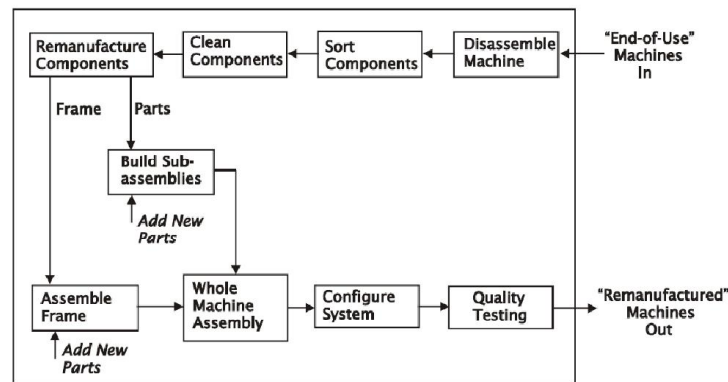


Figure 9 - Xerox Dundalk's remanufacturing process flow (from King et al. 2007)

(Dundalk is the remanufacturing facility in the UK)

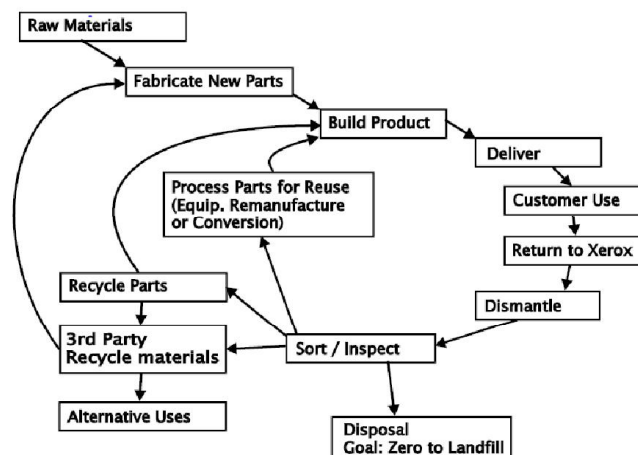


Figure 10 - Operations Management for Xerox Remanufacturing (from King et al. 2006)

The Integrated Recycling System at Fuji Xerox (a similar process applies at Xerox Corporation even though it is not clearly stated as is, like the closed-loop and remanufacturing systems show us):

## Integrated Recycling System

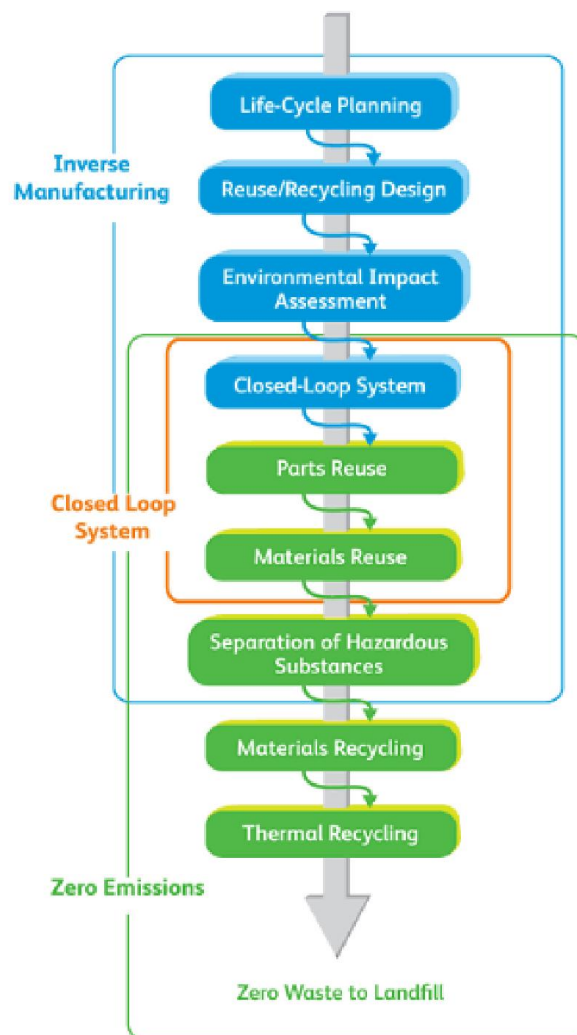


Figure 11 – Integrated Recycling System, from Fuji Xerox

(<http://www.fujixerox.com/eng/company/ecology/cycle/newstyle/>)

Graphics emphasising the impact<sup>38</sup>:

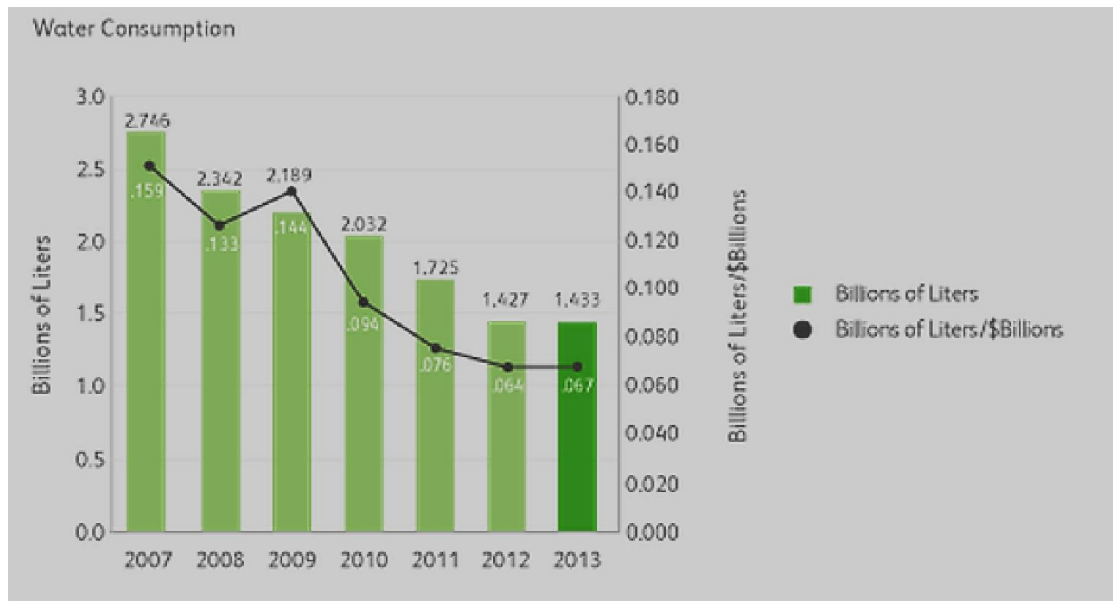


Figure 12 – Water consumption at Xerox Corporation

(from <http://www.xerox.com/corporate-citizenship/2014/sustainability/environmental-impact/enus.html>)

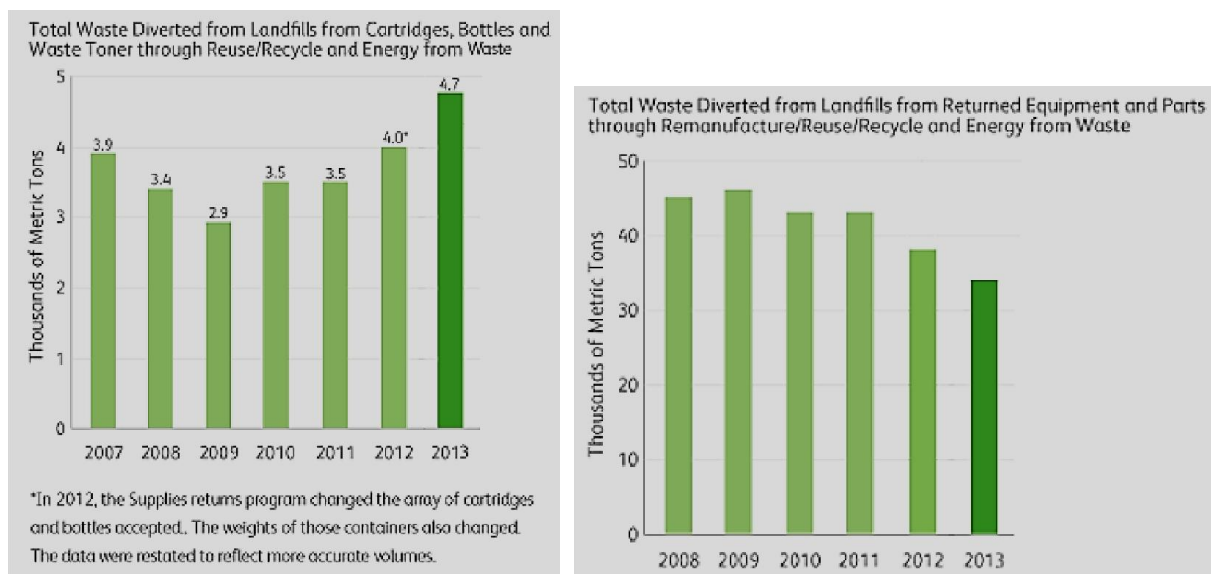


Figure 13 – Prevention of waste

(from the Xerox Report on Global Citizenship 2014 (Xerox Corporation, 2014, p.71-72)

<sup>38</sup> For more (sustainable) performance results at Xerox: <http://www.xerox.com/corporate-citizenship/2014/sustainability/environmental-goals/enus.html>

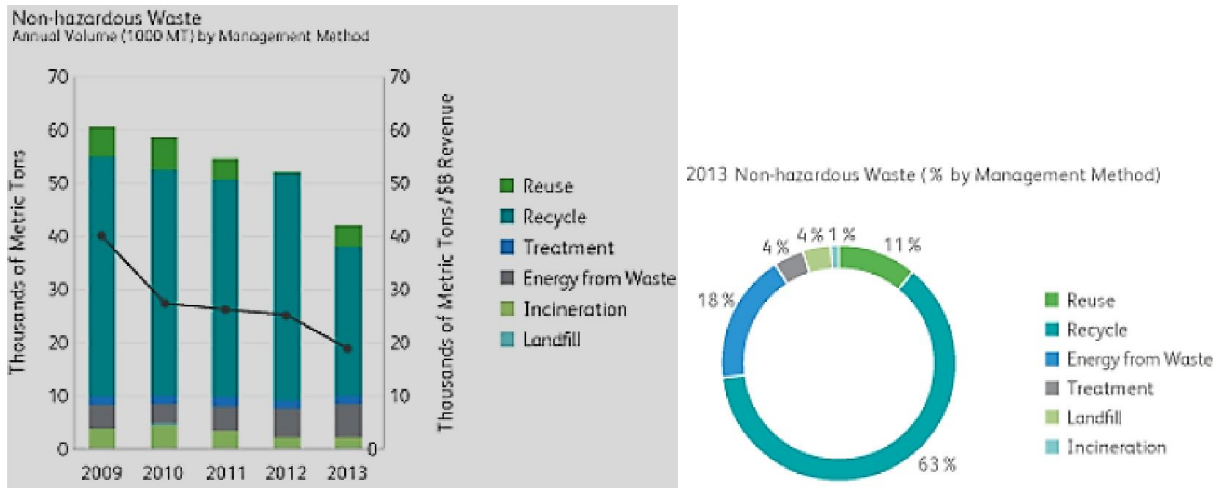
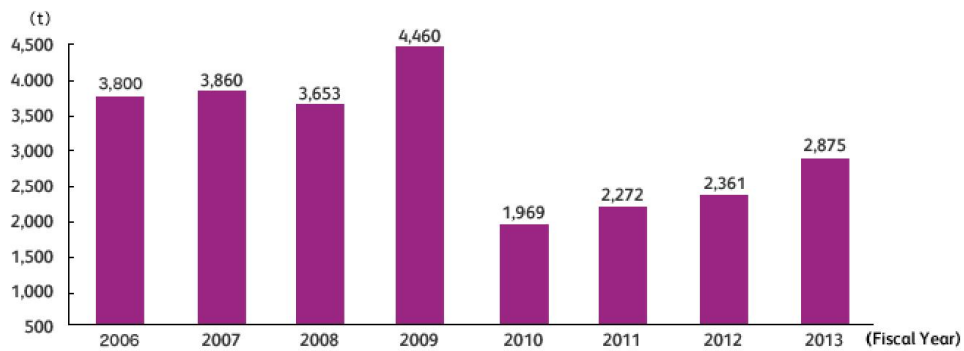


Figure 14 – Details on waste by resource management methods (Xerox Corporation, 2014, p.82)



Amount of saved resources at manufacturing stages where product parts were reused to suspend further production of new parts.

Figure 15 – Saved resources at Fuji Xerox

(<http://www.fujixerox.com/eng/company/ecology/cycle/history/result/index.html>)

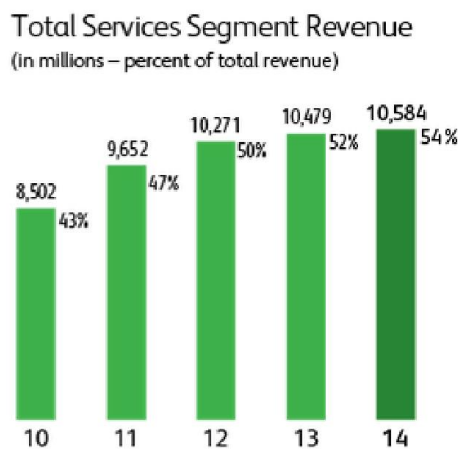


Figure 16 – Total Services Segment Revenue (in millions dollars) (from Xerox Corporation, 2015)

### Appendix III – Michelin Solutions tables and figures

SANS EFFITIRES™		AVEC EFFITIRES™	
<b>€</b> COÛT TOTAL DE POSSESSION	<b>252 000 €</b>	<b>230 000 €</b>	<b>soit - 22 000 € *</b>
	↑ ↑ ↑	↑ ↑ ↑	-110 € par camion *
Coût du caoutchouc et du service	220 000 €	245 000 €	payé à Michelin solutions
Coût de la gestion des pneus	15 000 €	-	coût inclus
Coût de l'approvisionnement et du stock	5 000 €	-	coût inclus
Assistance routière	12 000 €	5 000 €	coût inclus
Économies de carburant	-	-20 000 €	gain interne
			sérénité

WITHOUT EFFITIRES™		WITH EFFITIRES™	
<b>£</b> TOTAL COST OF OWNERSHIP	<b>£185 000</b>	<b>£160 000</b>	<b>or - £25 000 *</b>
	↑ ↑ ↑	↑ ↑ ↑	£125 per truck *
Tyres and services cost	£160 000	£172 000	paid to Michelin® solutions
Tyres management cost	£11 000	-	included
Supply chain cost	£5 500	-	included
Road assistance cost	£8 500	£3 000	
Fuel savings	-	-£15 000	savings
			peace of mind

Figure 17 - Test case showing savings with EFFITIRES™, for a fleet of 200 trucks (<https://www.michelin-solutions.com/en/effitires/>)



Figure 18 – The Michelin Solutions network (from [http://fr.slideshare.net/Michelin-solutions?utm\\_campaign=profiletracking&utm\\_medium=sssite&utm\\_source=ssslideview](http://fr.slideshare.net/Michelin-solutions?utm_campaign=profiletracking&utm_medium=sssite&utm_source=ssslideview))

## Appendix IV – SAFECHEM tables and figures

### Chemical Product Service increases solvent efficiency

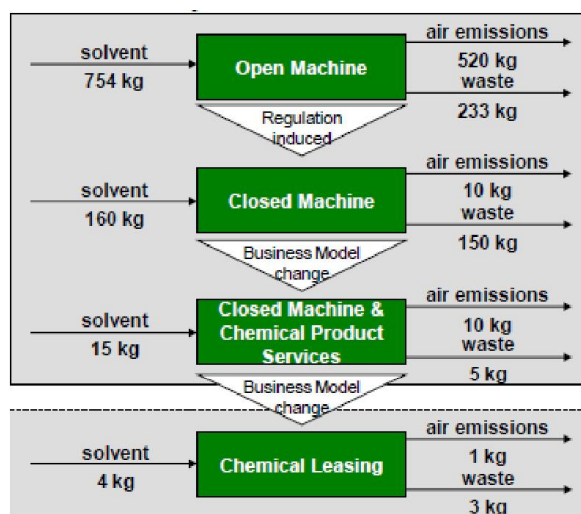
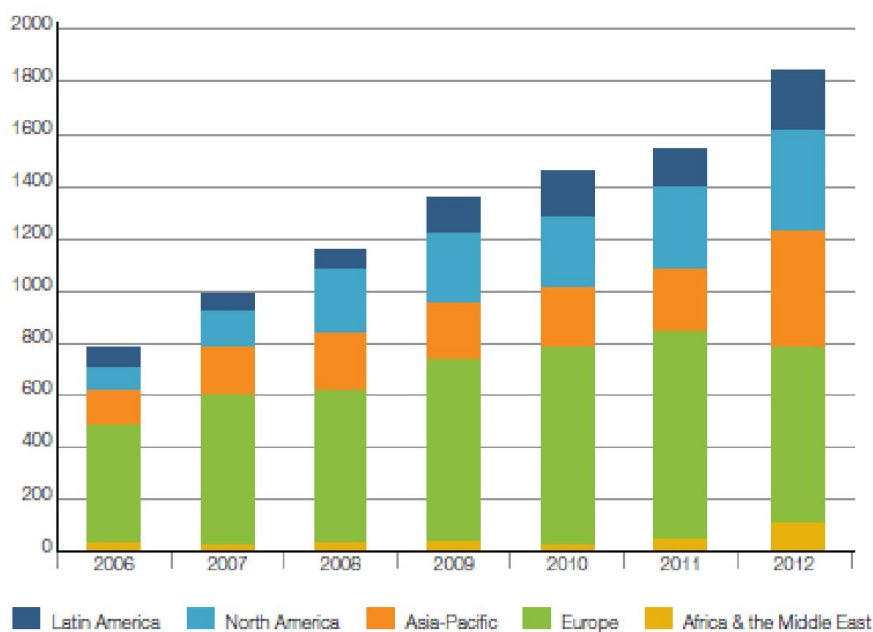


Figure 19 – Solvent efficiency in data (from SAFECHEM, 2011b)



Source: ENHESA 2013

Figure 20 – Growth in new environmental, health and safety regulations (from UNEP, 2014)

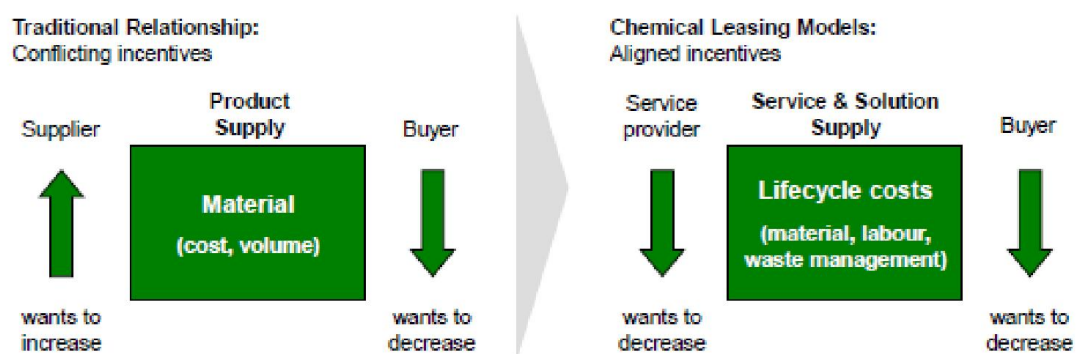


Figure 21 – Aligned incentives thanks to the new solution (From SAFECEM, 2011b)

## Appendix V – Additional FSE examples

### A. Integrated Pest Management

The Integrated Pest Management type is a solution optimising use of pesticides where the provider invoices at a *per protected hectare* fee. It is a performance contract and the pest management service provider guarantees a certain standard of pest control while trying to reduce pesticide consumption (which becomes a cost for him). (Fischer et al., 2012)

### B. Daimler's Car2Go

*“In 2009, Daimler started its Car2Go programme, making an innovative car-sharing system into a new business model. It works by offering customers flexible mobility options. Once registered, the use of the car is flexible regarding spatial, temporal and financial dimensions. It is based on GPS real-time information on the car availability that enables the customer to start and end the vehicle use at any point within a certain area. A radio frequency identification (RFID) chip serves as the car key. From the moment of unlocking the car, the user pays €0.29 per driven minute and €0.09 per minute when the car stands but without any other fixed costs (like e.g. a monthly contribution). Car2Go presents itself as the first public transportation offer as a free-floating fleet and has success with this concept: 9.8 % of the potential user population became registered within the first programme year—which corresponds to a market penetration that is 25 times higher than the weighted average market penetration of traditional German car-sharing companies.”* (Fischer et al., 2012, p.25)

### C. BT Industries

BT Industries, a forklifts manufacturer, has decided to provide *elevating* rather than to sell its forklifts (for a specific part of its business). The model is close to FSE since the user rents the equipment and BT Industries ensures its reliability and takes care of its maintenance and repair. Payment structure is defined according to *“the number of pallets, height of storage and storage capacity that have to be managed by the forklift”*. (Fischer et al., 2012, p.29)

#### **D. Resource Management**

The underlying idea of resource management is to reward resource-efficiency, contract being based on a *resource management performance payment* (Fischer et al., 2012).

*“The scheme of resource management contracting corresponds to energy performance contracting, which guarantees in its simple form the supply of hot water or electricity at reduced costs and in a more sophisticated form the provision of services such as lighting, room temperature or comfort.”* (Fischer et al., 2012, p.22)

Again there are aligned incentives since both user and provider are trying to minimise the total consumption (energy is a cost for the supplier).