Impacts of Information and Communication Technology on Urban Logistics System

Ryuichi Yoshimoto

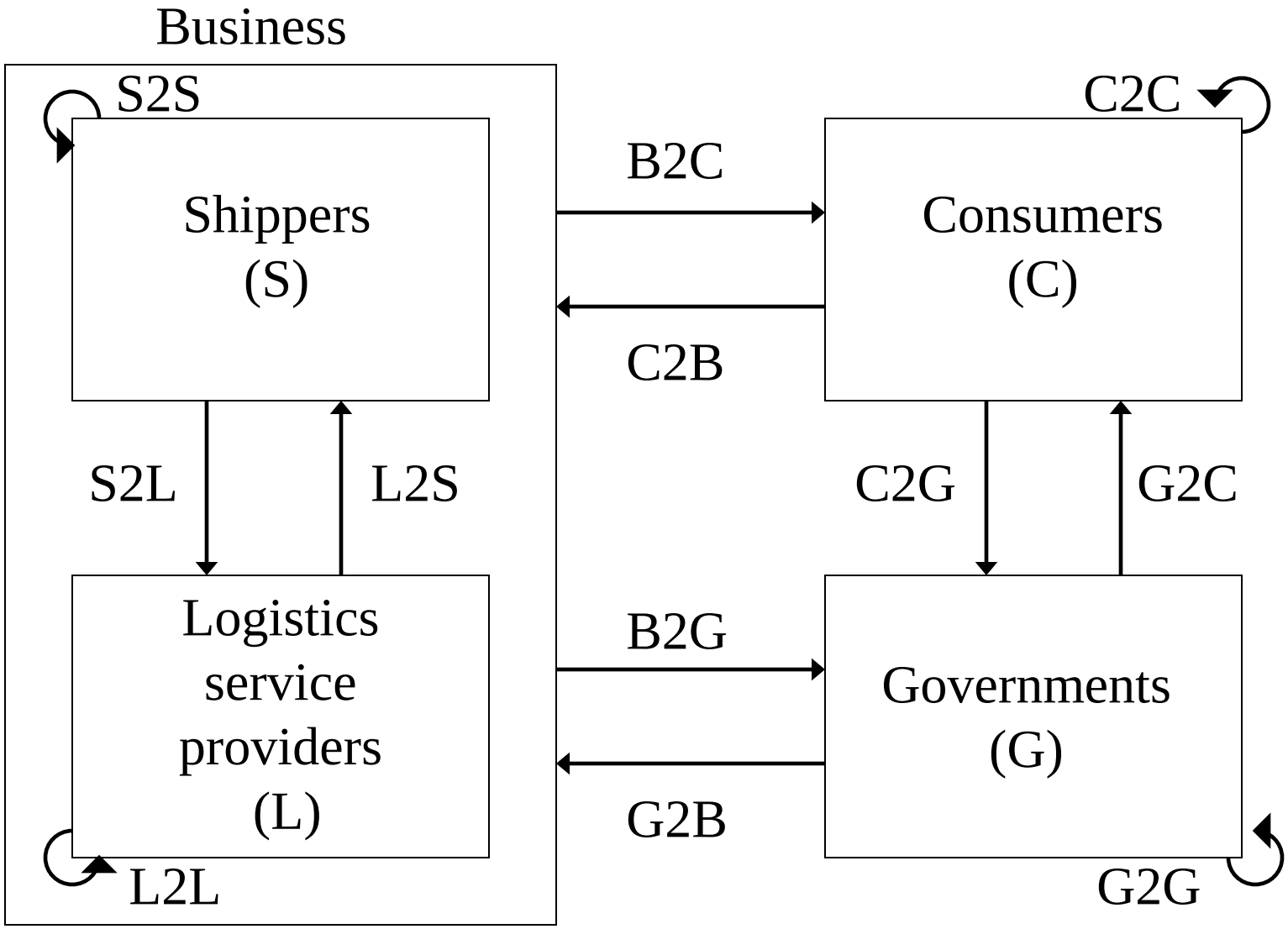


Fig.1 Stakeholders in logistics system

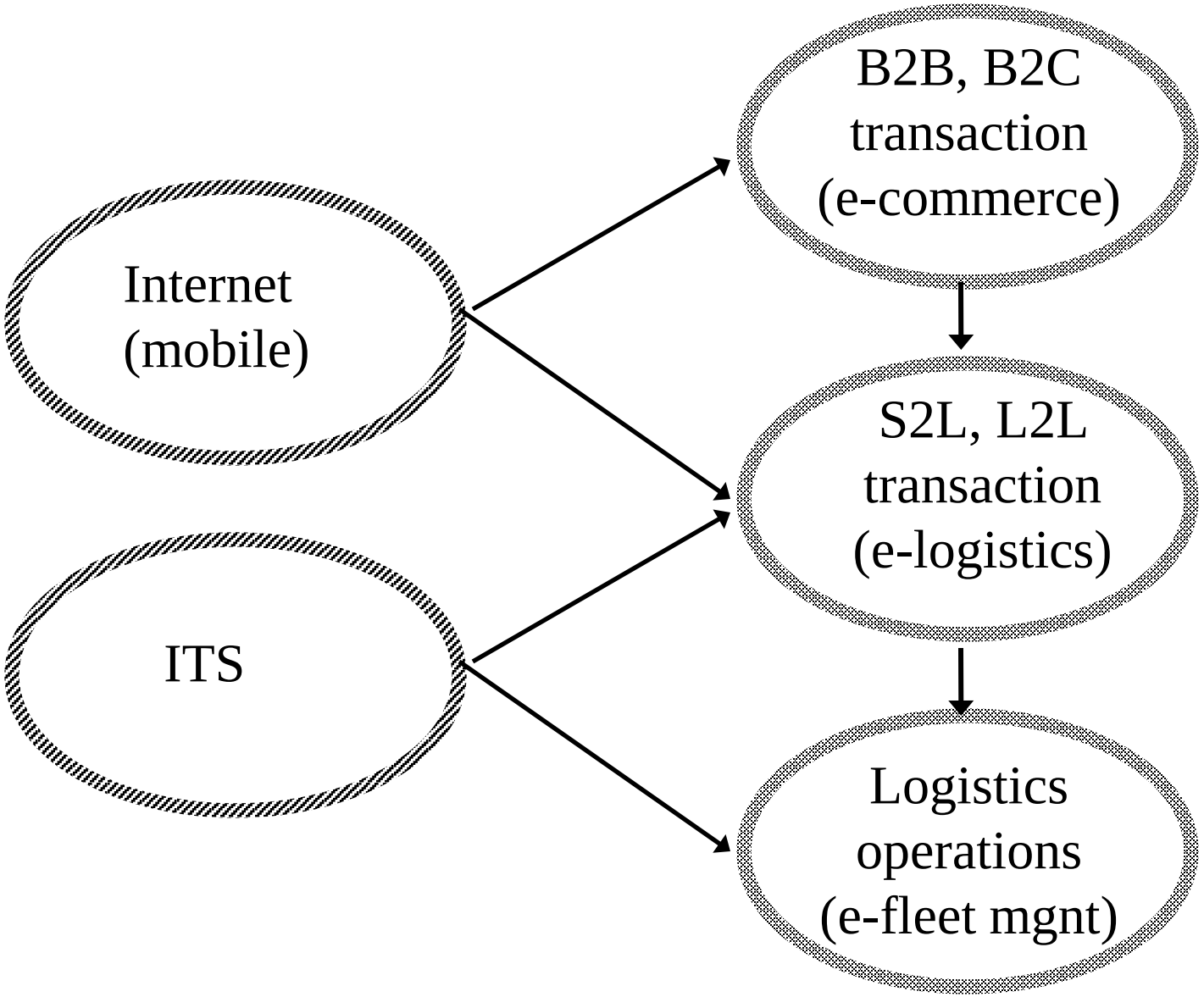


Fig. 2 ICT and urban logistics system

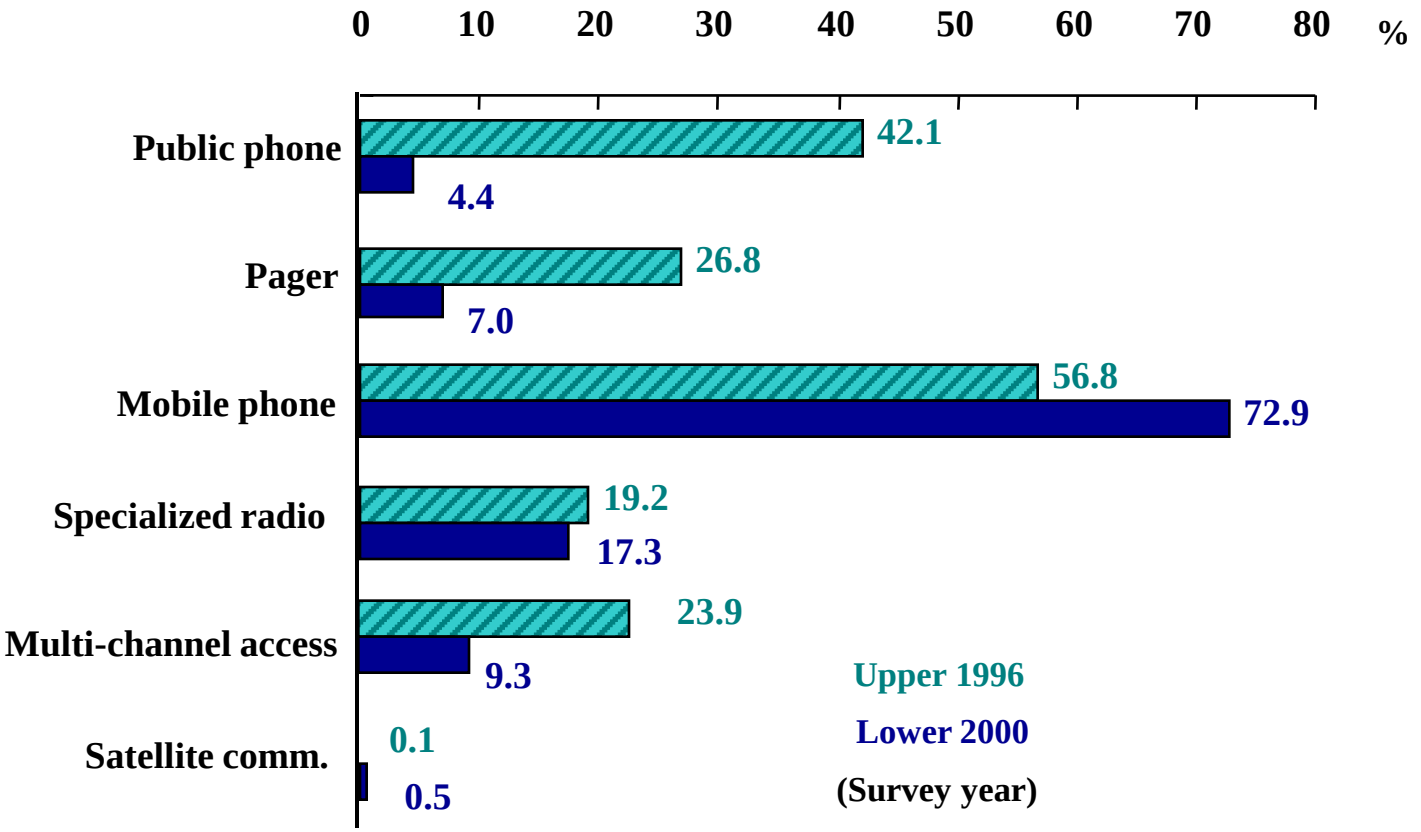


Fig. 3 Mobile communication media between drivers and dispatchers in Trucking Carriers

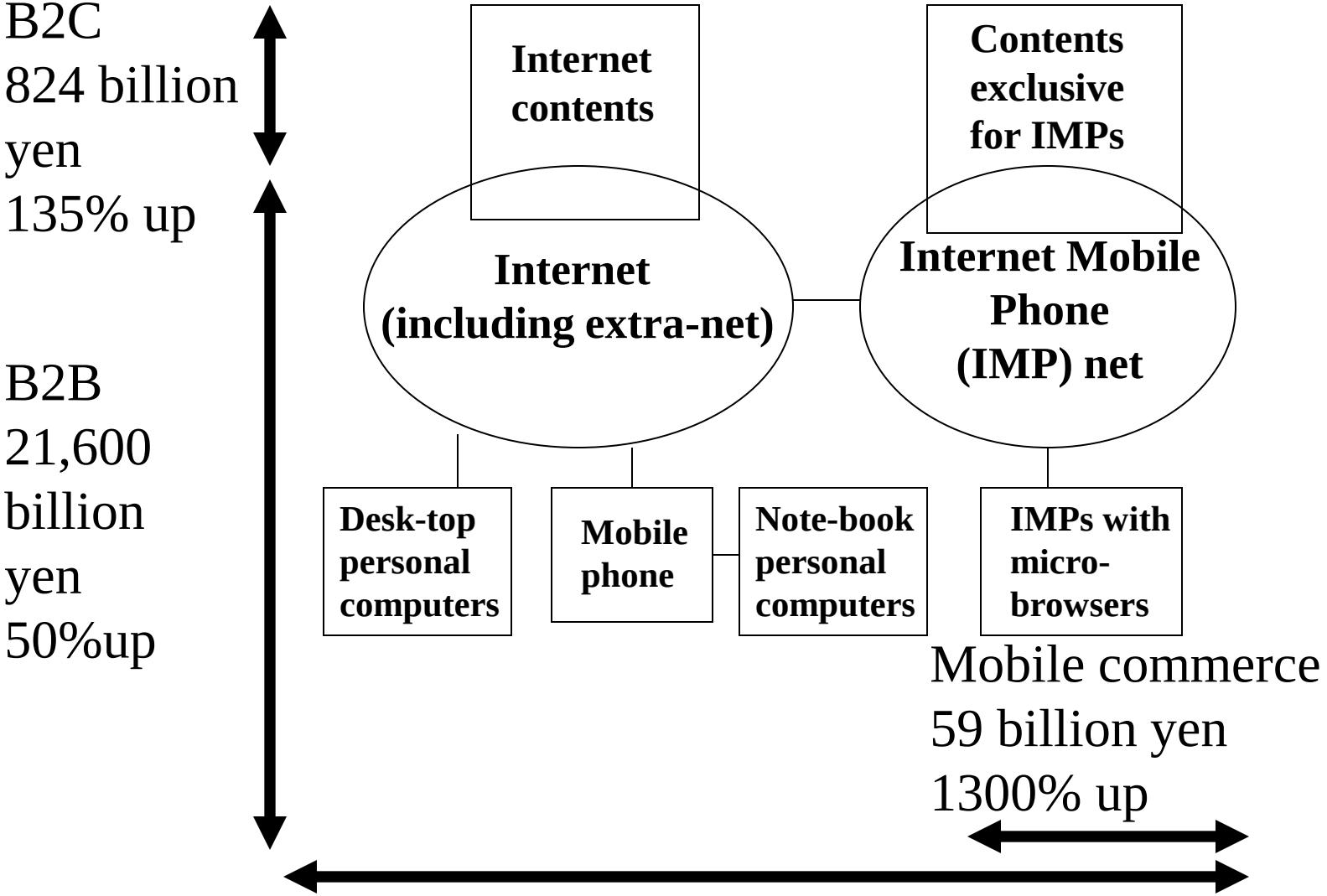
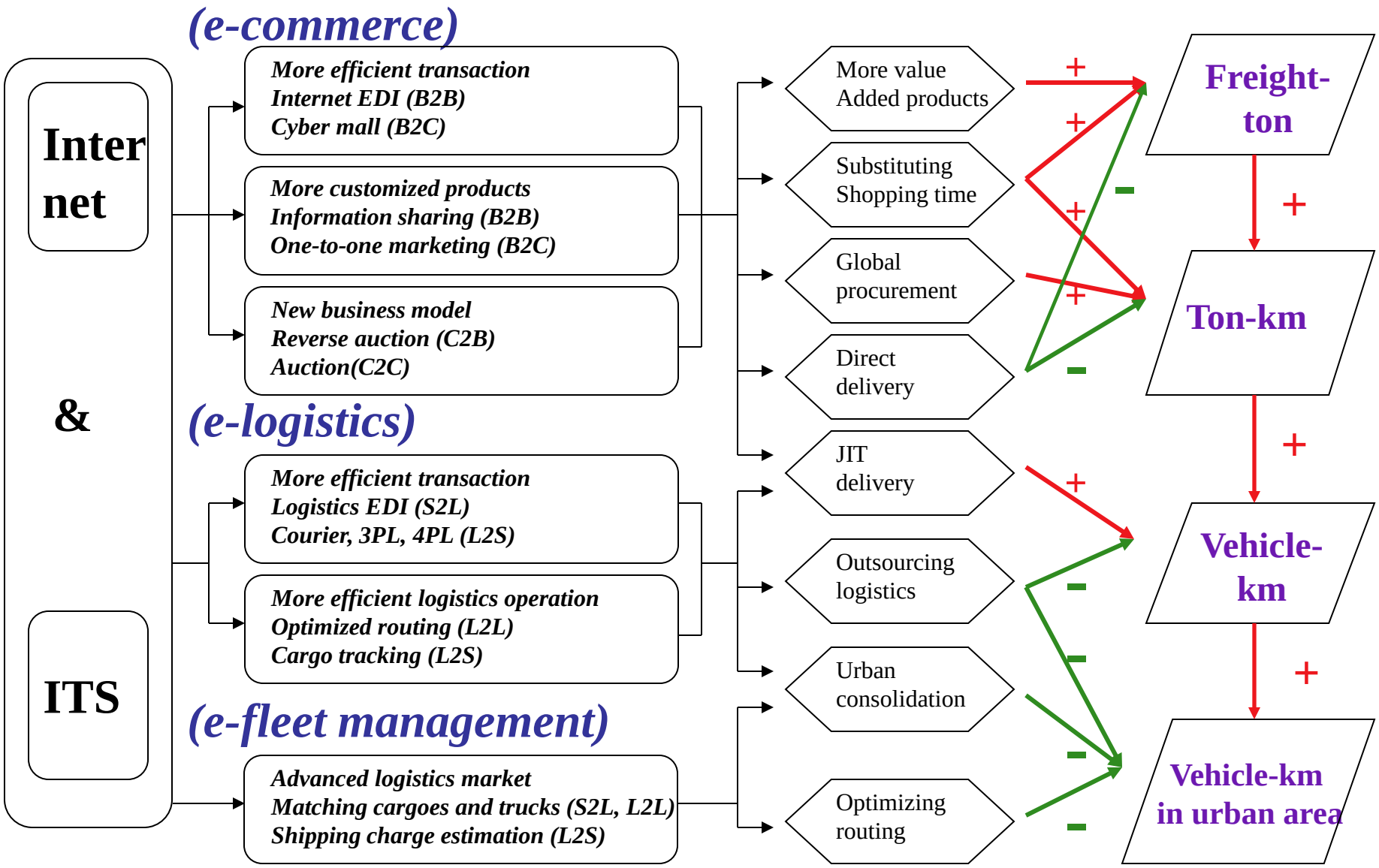


Fig. 4 E-commerce in Japan in 2000

Tracking
i-mode

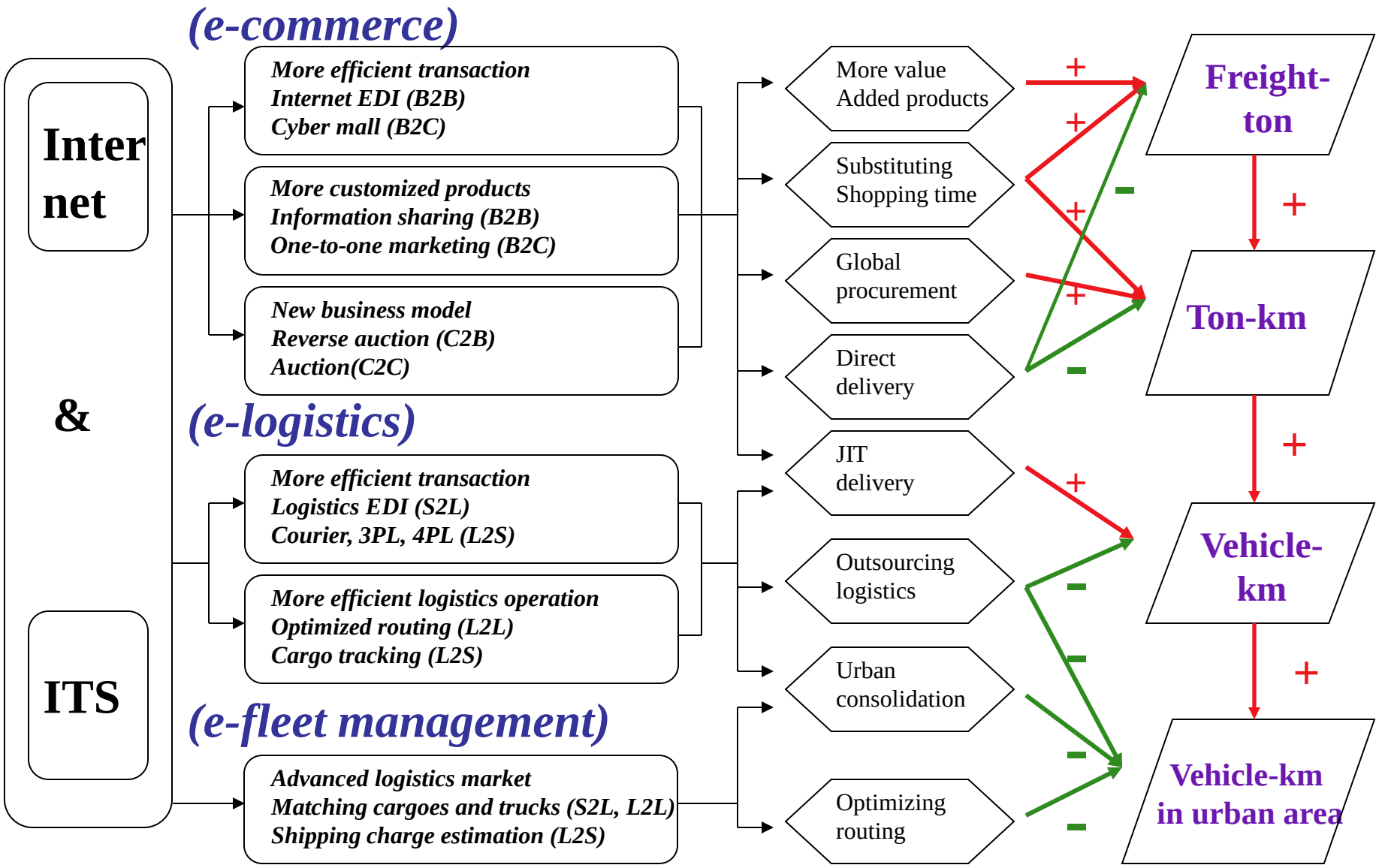
Shipping
charge
estimation



2001 **Fig.9 Impacts of ICT on urban logistics system**

Table 2 Modal shares by trip purpose in Tokyo in 1998

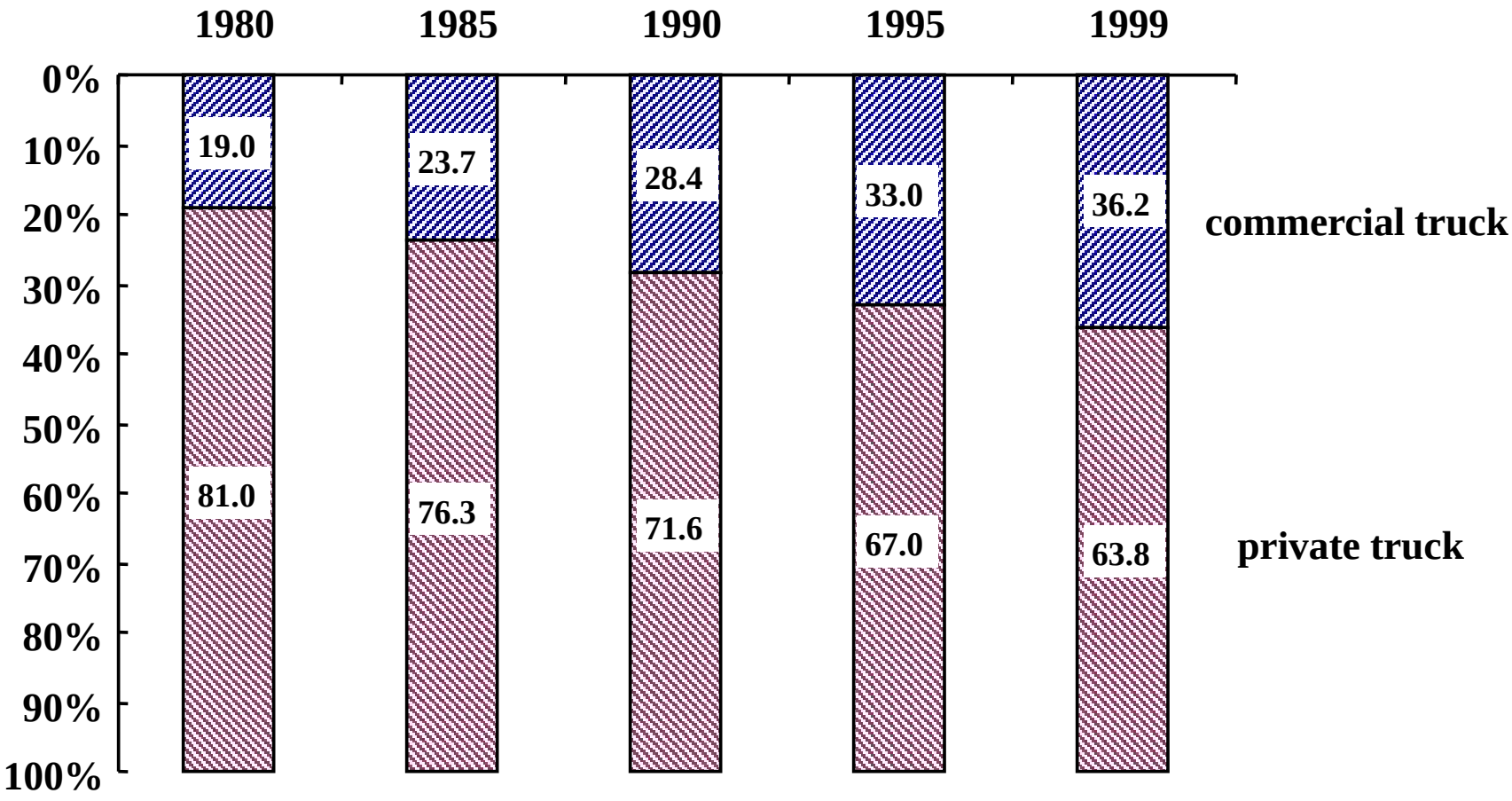
	trip purpose	modal share (%)				
		rail	bus	car	two-wheeler	foot
Tokyo Metropolitan Area (34 million pop)	commuting	46	2	32	13	7
	shopping, leisure	13	3	34	21	29
Central Tokyo (8 million pop)	commuting	73	2	9	10	6
	shopping, leisure	23	3	12	23	39



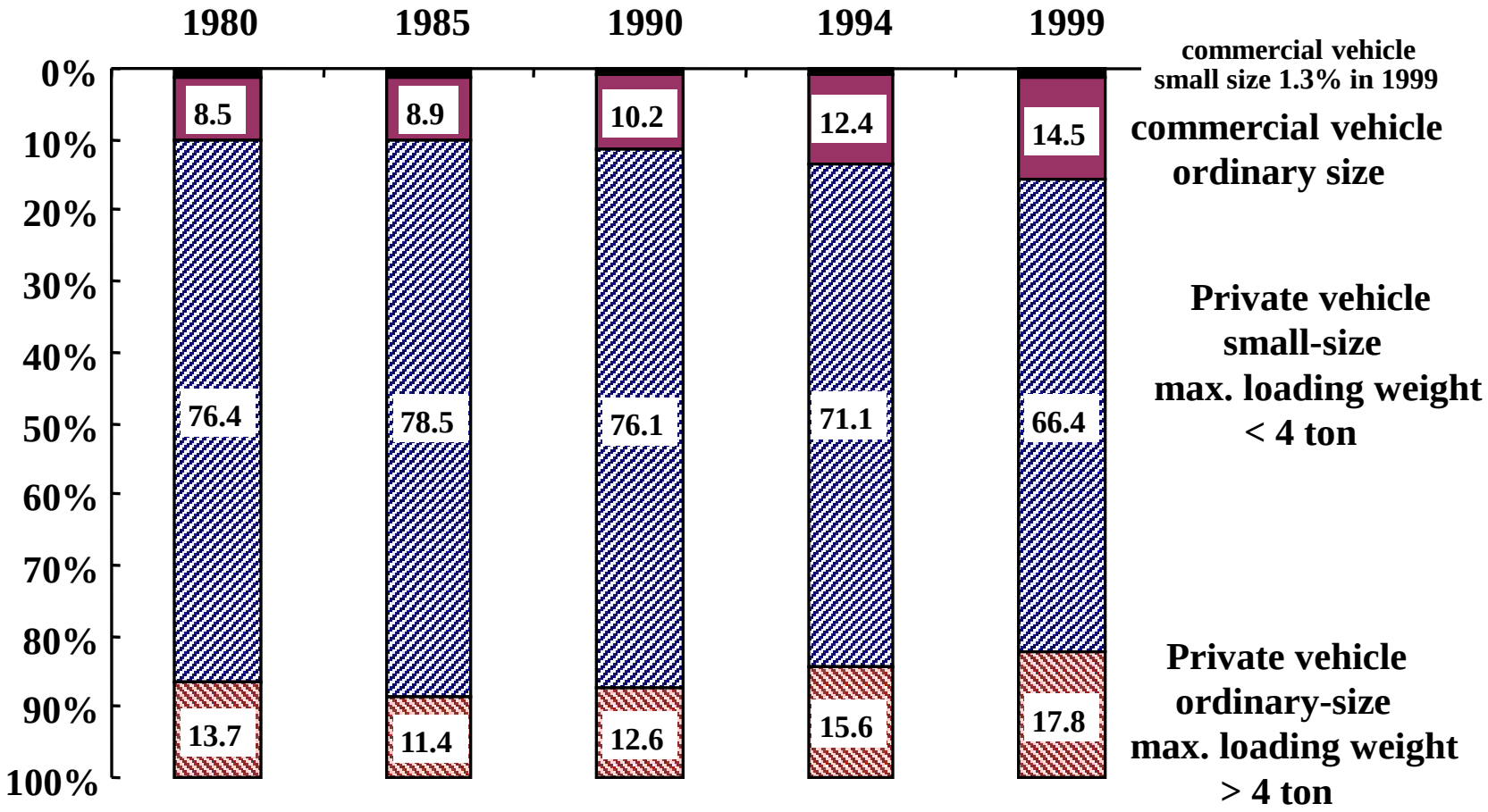
2001 **Fig.9 Impacts of ICT on urban logistics system**

Table 3 Freight traffic in terms of vehicle-km, ton-km and ton in Japan

	freight traffic in vehicle-km			freight traffic in ton-km (billion t-km)	freight traffic in ton (million ton)
	(billion v-km)	share of commercial trucks (%)	share of private trucks (%)		
1980	141	19.0	81.0	178	5,317
1985	146	23.7	76.3	205	5,048
1990	170	28.4	71.6	274	6,113
1995	182	33.0	67.0	294	6,016
1998	179	35.2	64.8	300	5,819
1999	181	36.2	63.8	307	5,863

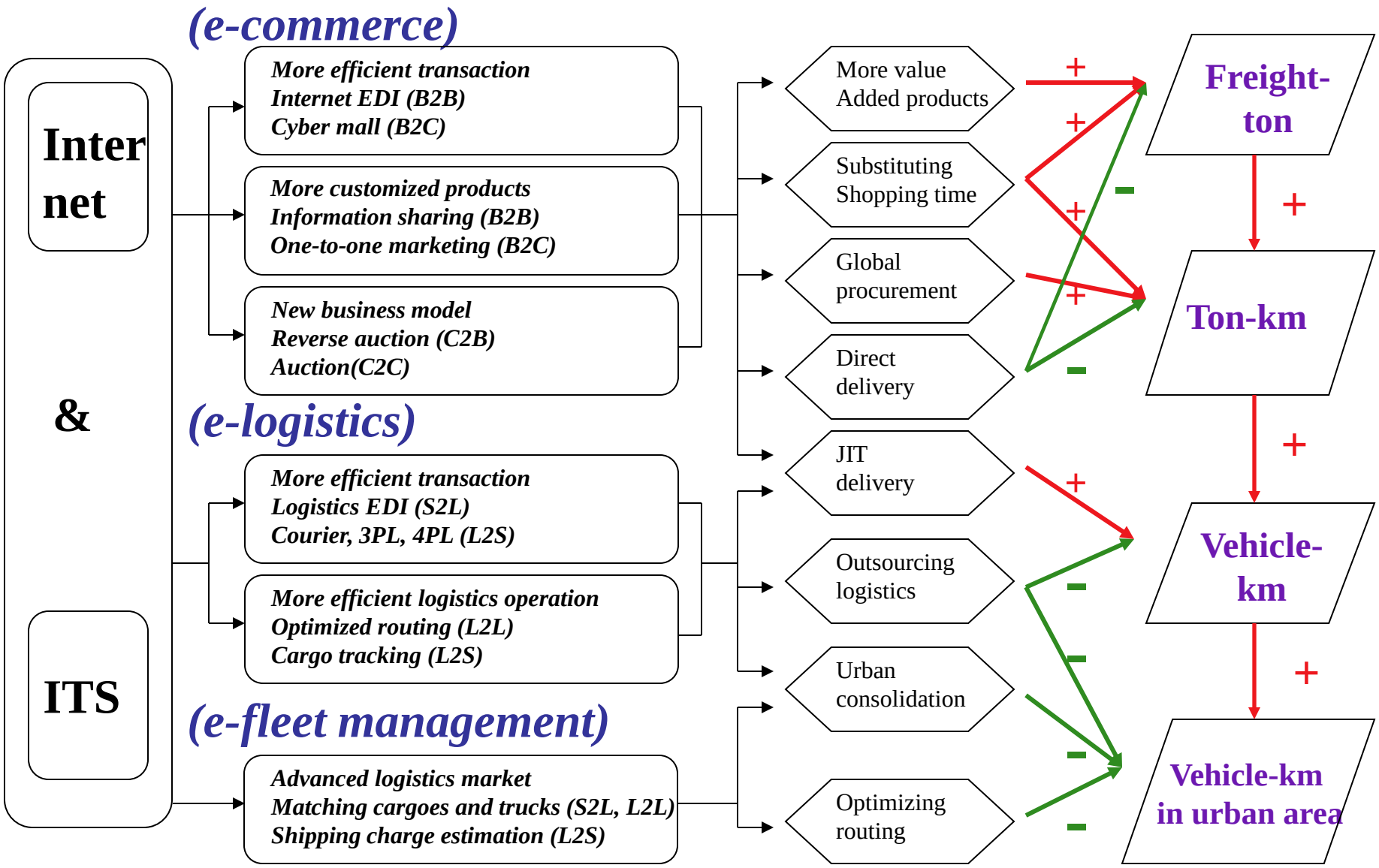


Share of freight transport vehicle-km by commercial and private



Share of intra-prefecture* freight transport vehicle-km by commercial and private, small and ordinary

***Note: there are 47 prefectures in Japan.**



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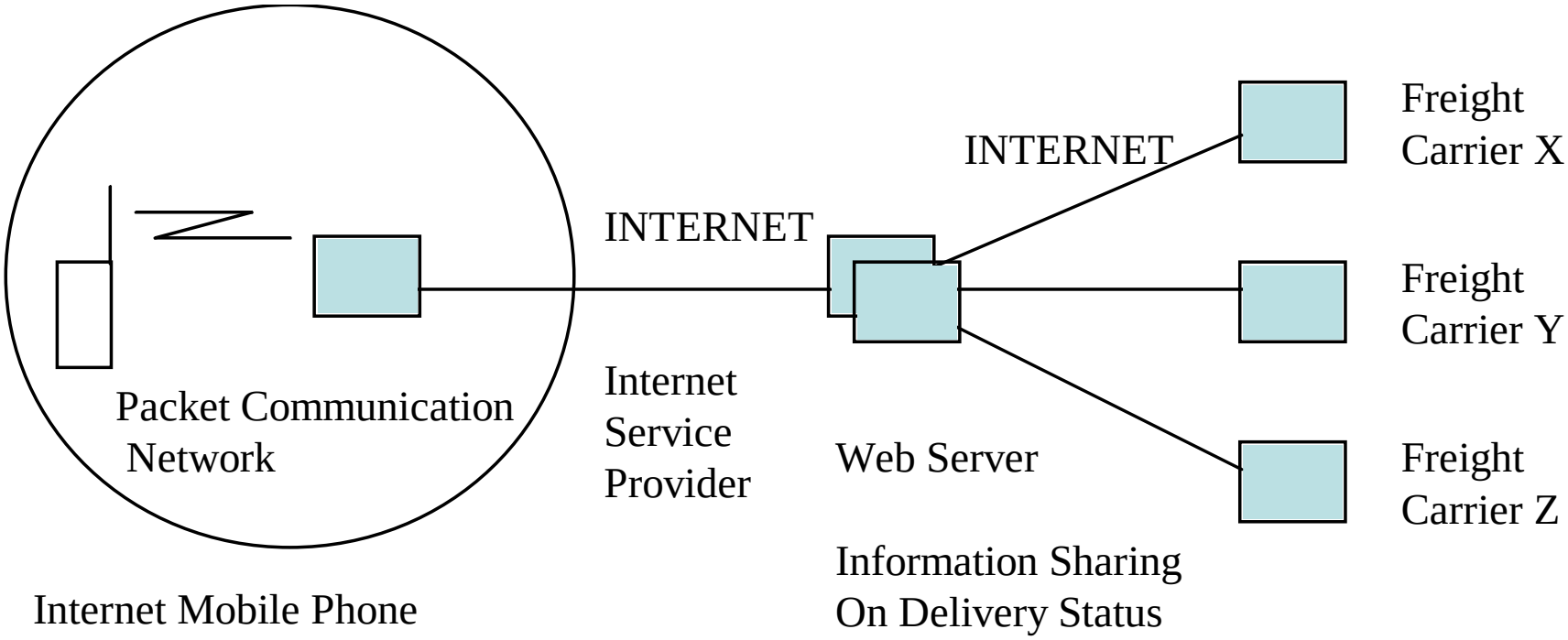


Fig. 6 Sharing information on delivery status with Internet Mobile Phones

Access to the Web server

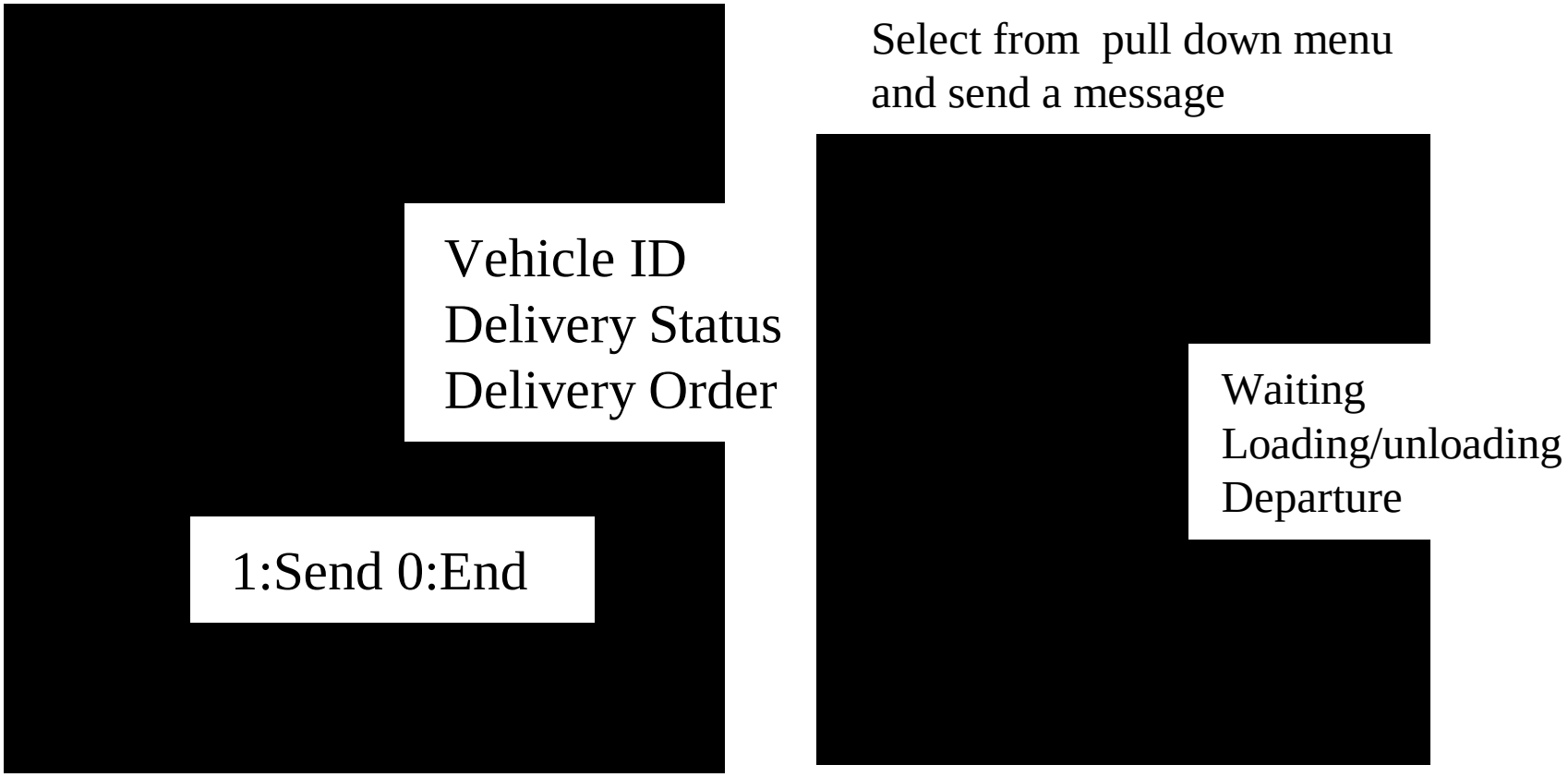
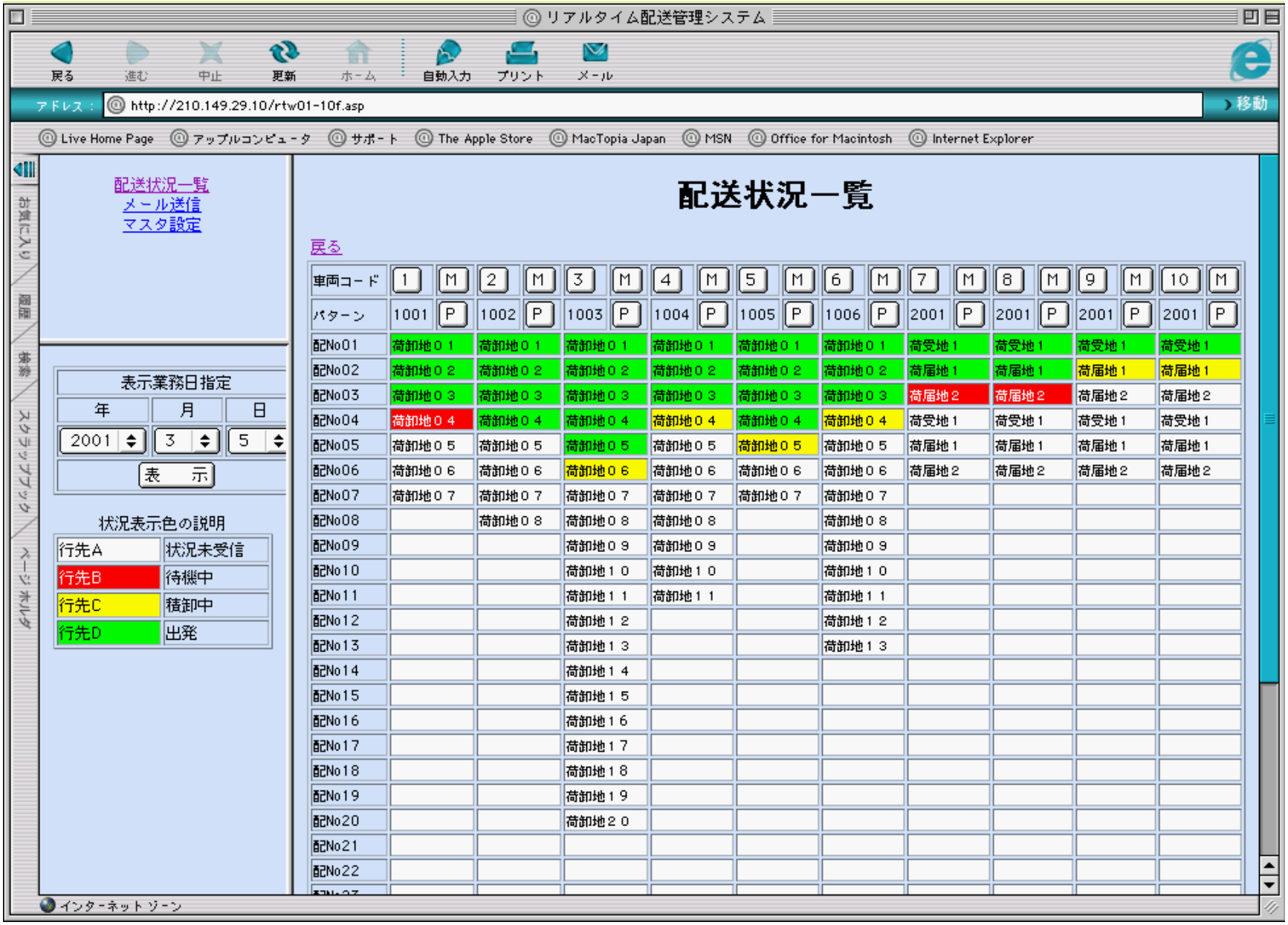


Fig. 7 Interface of i-mode phone


リアルタイム配送管理システム
戻る
進む
中止
更新
ホーム
自動入力
プリント
メール
アドレス：
http://210.149.29.10/rtw01-10f.asp
移動
Live Home Page
アップルコンピュータ
サポート
The Apple Store
MacTopia Japan
MSN
Office for Macintosh
Internet Explorer
お気に入り
履歴
検索
スクラップブック
ページ ホルダ
配送状況一覧
メール送信
マスタ設定
表示業務日指定
年
月
日
2001
3
5
表　示
状況表示色の説明
行先A
状況未受信
行先B
待機中
行先C
積卸中
行先D
出発
配送状況一覧
戻る
車両コード
パターン
配No01
配No02
配No03
配No04
配No05
配No06
配No07
配No08
配No09
配No10
配No11
配No12
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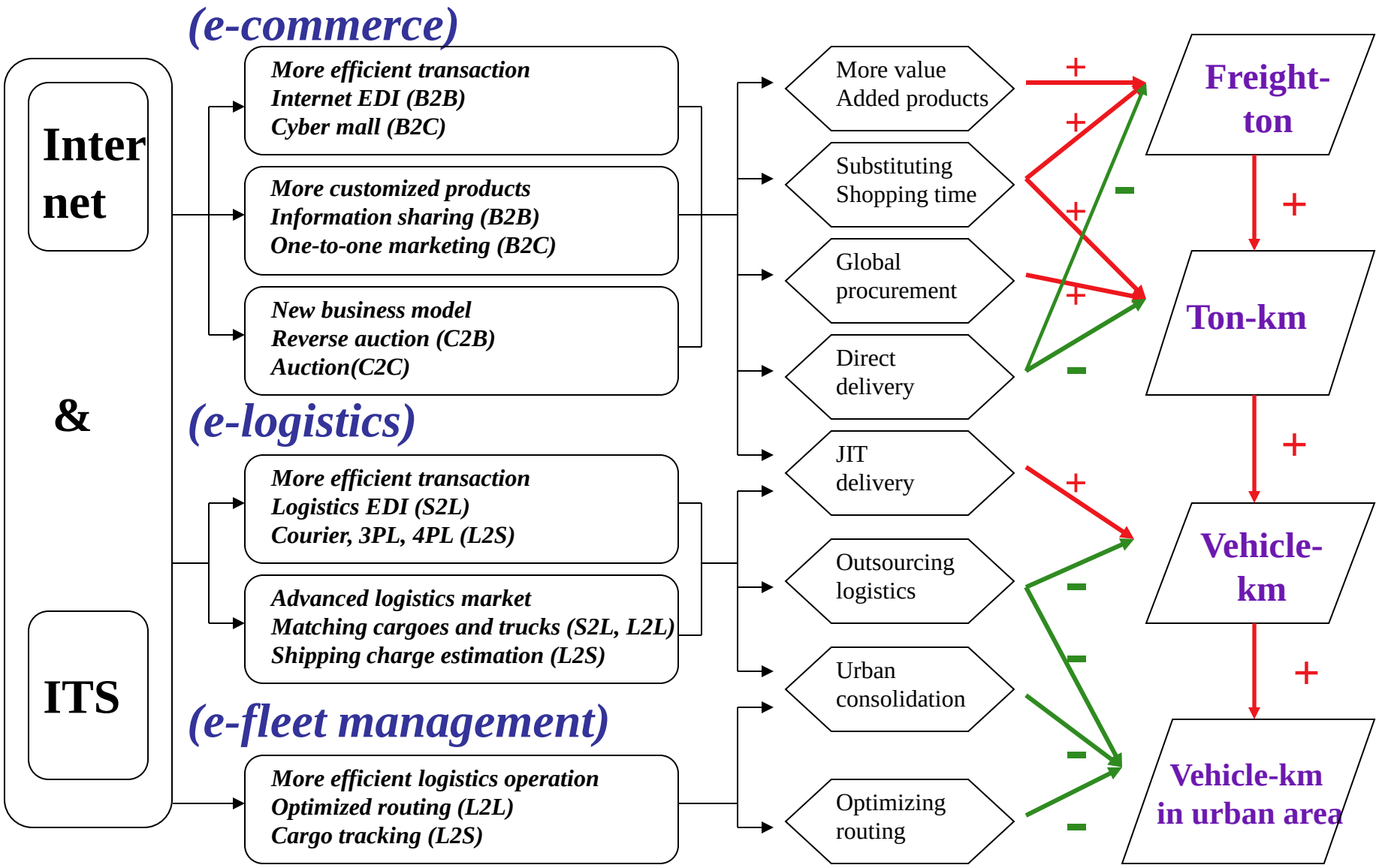
配No22
インターネット ゾーン



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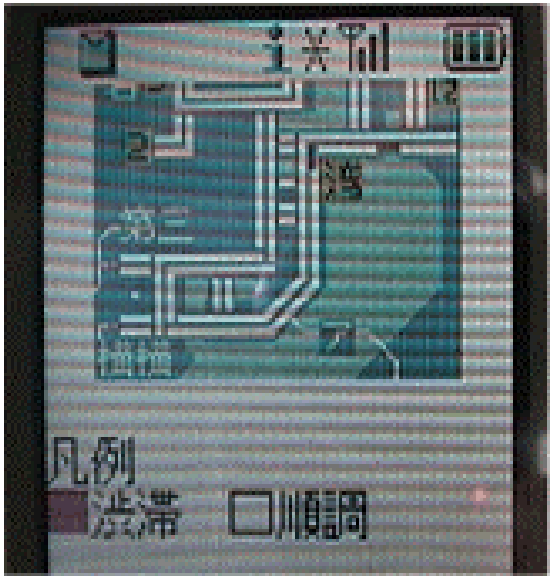

Congestion Normal

Figure 8 Traffic Information on Tokyo Metropolitan Expressway (Source: ATIS, i-mode, 2001)

Table 5 Policies on City Logistics

	Infrastructure provision		Regulations/guidelines		Economic instruments	
	Transportation	*Information*	*Regulations*	*Standardization*	*Pricing*	*Subsidies*
Land use		Digital map, GPS	Zoning for logistics activities		Property tax	
Transport networks	Ring roads, Direct links to ports & airports, Underground freight system	Road traffic information system, Electronic toll collection	Truck route control, Vehicle and time restriction		Road pricing	Subsidies for intermodal transport
Terminals	(Urban logistics platform)	(Berth guidance system)		Standards for intermodal terminals		Subsidies for cooperative facilities
Loading/ unloading	On-road parking space, (Off-road parking space)	(Reservation on parking space)	Compulsory loading spaces, Loading time		Parking charge differentiation	Subsidies for off-road parking facilities
Vehicles/ containers	(Electric vehicles, Vehicles with handling equipments)	(Fleet management system, Matching system between cargoes and vehicles)	Emission control, Loading ratio control, Compulsory use of low emission vehicles	Standardized containers, pallets, electronic tags, in-vehicle units	Vehicle weight tax, Fuel tax, Environmental tax	Subsidies for low emission vehicles Vehicle sharing
Cargoes		(Cargo tracking, Order entry system)		(EDI, AIDC)		Subsidies for cooperative delivery

Note: ( ) expected to be introduced by the private sector

Conclusions

1. **Increase of e-commerce and mobile-commerce**
2. **Direct home delivery increases vehicle-km**
3. **Vehicle-km reduced by e-logistics and e-fleet management**
4. **Internet Mobile Phones and Intelligent Transport Systems work**
5. **Information infrastructure by the governments**