Session 2A: Assoc. Prof. Dr. Viroat Srisurapanon

Presentation entitled:
Bangkok Taxi: Managing Behavior of Cabbies and Their Customers

Biographic Data of Speaker

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Education:

- Ph.D. in Human-Social Information Sciences, Tohoku University, 1996
- M.Eng. in Transportation Engineering, Asian Institute of Technology, 1992
- B.Eng. (First Class Honors) in Civil Engineering, King Mongkut's Institute of Technology Thonburi, 1989

Awards:

2000	:	Hitachi Research Fellowship, The University of Tokyo
1992-1996	:	Japanese Government Scholarship (Monbusho)
1990-1992	:	Australian Government Scholarship
1989	:	Outstanding Medal, one of the best engineering graduates of the year, The engineering Science Education and Research Fund Under The Patronage of Crowd Prince Vachiralongkorn

Research Fields:

- Transportation Planning
- Logistics and Freight Transportation
- Non-motorized Transportation, Bicycle Planning

Publications:

- Wongnoppadoldechoa, S. and Srisurapanon, V. Interregional freight demand model by transport mode. The fourth South East Asian Technical University Consortium Symposium, Tokyo, Feb.25-26, 2010. (English)
- Wongnoppadoldecha, S. and Srisurapanon, V. Thailand's interregional freight flow estimation. Journal of Society for Transportation and Traffic Studies, Vol.1, March 2010. (English)
- Khanisarn, S. and Srisurapanon, V. Mode choice model for export of agricultural products. Proceedings of the Sixth National Transport Conference, Phitsanulok, Oct. 28-30, 2009. (Thai)

- Piyaeisarakul, N. and Srisurapanon, V. Study of speeder behaviors on traffic flow. Proceedings of the Sixth National Transport Conference, Phitsanulok, Oct. 28-30, 2009. (Thai)
- Soulignavongsa, N. and Srisurapanon, V. Improvement of the efficiency for cross-border freight transport in Savannakhet, Lao P.D.R. Proceedings of the Fourteenth National Convention on Civil Engineering, Nakhon Ratchasima, May 13-15, 2009, TRP50335. (English)
- Wongnoppadoldecha, S. and Srisurapanon, V. Logistics cost of industry sectors in Thailand. Proceedings of the Thirteenth National Convention on Civil Engineering, Pattaya, May 14-16, 2008, TRP069-076. (Thai)
- Suwannarat, T. and Srisurapanon, V. Economics of petroleum pipeline for transporting oil products in Thailand. Proceedings of the Fifth National Transport Conference, Bangkok, Dec. 19, 2008, TE-02, pp. 106-117. (Thai)
- Kamolachot, M. and Srisurapanon, V. Impacts of the GPS application for managing the taxi system in Bangkok. Proceedings of the 12th National Convention on Civil Engineering, Phitsanulok, May 2-4, 2007, TRP050. (Thai)
- Poobanchao, K. and Srisurapanon, V. Hub freight consolidation and distribution for agricultural commodities: a case study of the northeastern region. Proceedings of the Twelfth National Convention on Civil Engineering, Phitsanulok, May 2-4, 2007, TRP051, pp.157-162. (Thai)

BANGKOK TAXI: MANAGING BEHAVIOR OF CABBIES AND THEIR CUSTOMERS

In Bangkok, a great number of commuters, 57.6 percent, leave homes daily by private cars even though many organizations have tried to campaign for people to change from driving a private car to using public transport. It sounds like a dream that cannot come true immediately due to the limitations of network services. 'Taxi' is an alternative to overcome this limitation. Taxis can serve passengers directly from their homes to the destination. In addition, it can save people from having to buy a car.

Statistics of registered taxi services in Bangkok and its vicinity inform us that the number of taxis has gradually increased in the last three years. At present, the number of taxis is at about 100,000 and around one million passengers use the service each day. Within one shift of 12 hours, a taxi runs an average distance of 247.5 km, about one-third of which, 82 km, is an empty cruise for searching passengers. The energy lost due to the empty cruise costs approximately 3 billion baht per year. This not only wastes a great deal of energy but also causes more traffic congestion and air pollution problems, especially, when people flag down the taxis along the road that is already jam. **How can we solve these problems?**

From the data analysis of the behaviors of taxi drivers and their passengers, it was found that 80 percent of the taxi drivers can get passengers by cruising while 82 percent of the passengers call for a taxi by flagging down along the road. The rest of the passengers call for a taxi from the taxi radio center by phone.

The biggest obstacle for passengers who use phone calls is the long waiting time. They have to wait for a long time because there is not a lot of a taxi available at the taxi stands. To wait at the stand is not a common practice for taxi drivers either as they may have to spend for a long time for dispatches. **So how can we convince the drivers to wait for passengers at the taxi stands instead of searching passengers by cruising?**

One approach that can help to change the behaviors of both parties is to develop a quality taxi-stand system. A good taxi stand should be located at the place that has around 15 minute travel times to pick up passengers and be operated in a user-friendly way when the passenger calls. The taxi-stand system should have the ability to forecast the taxi-demand in advance to be able to allocate taxis to wait at the appropriate stands. When the passenger makes a phone call, the driver promptly goes to pick them up. This system can shorten the drivers and passengers' waiting times since it matches both parties faster. After both parties join this approach; they will start to appreciate the system and then change their behaviors. This system not only saves the empty cruise time but also allows more convenience to passengers to call for a taxi.

Bangkok Taxi :
Managing Behaviors of Cabbies and their Customers

By
Viroat Srisurapanon
Project Leader

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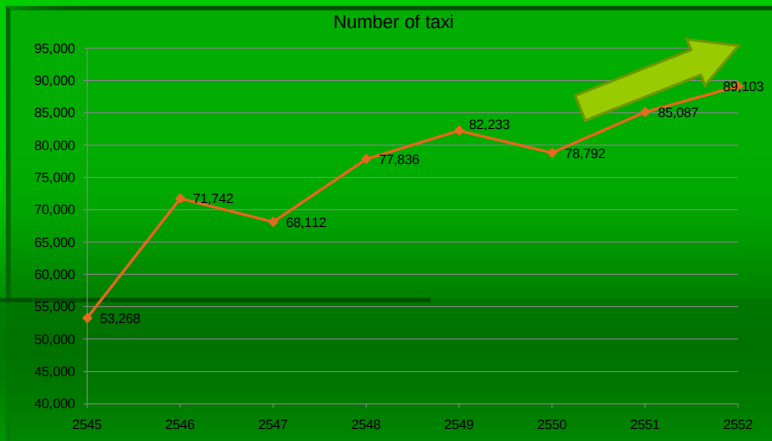
State of problem

Under no restriction on entry, the number of taxis gradually increases in the last three years in Bangkok.



Source: Department of Land Transport, 2009

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Passengers

There are three ways to catch a taxi in Bangkok.

1. Passengers can wait for cruising taxis along the streets and flag down the favorite ones.
2. They can ride on the taxis that queue at taxi stands along the streets nearby business areas.
3. They can call a taxi radio center and just wait at any places, normally their home or office, with 20 baht surcharge.



Taxi drivers

Four types for searching a passenger

Type 1 : Empty Cruising
Type 2 : Empty cruising with radio-based
Type 3 : Standing with radio-based
Type 4 : Standing with non radio-based



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Taxi drivers

At present

Type of service	Number of trips	%
Empty Cruising	507	75
Empty cruising with radio-based	31	4.5
Standing with radio-based	94	14
Standing with non radio-based	45	6.5
Total	**677**	**100**

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Objectives

1. Understand the current behaviors of taxi passengers and drivers in Bangkok.
2. Analyze the factors influencing the radio-based call for taxi service.
3. Predict the radio-based customer demands.
4. Propose a concept of the taxi-stand network configuration and its operation.

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Study Area

Urban Sprawl Problem

Within 5 yrs
There are 11 housing development groups, about 1,000 households.

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Urban Sprawl Problem

- No public transport connected
- Inefficient use of taxi

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Mode	%
Private car	57.5
Motorcycle	5.6
Bus	13.6
Taxi	8.0
Motorcycle Taxi	0.7
Non-motorized	10.1
Not travel	4.5

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Ways of calling a taxi

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www.themegallery.com

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Ways of calling
Flag down along the street
Call from the taxi center
Ask a guard man for help
Direct call
Total

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Reasons of calling a taxi from the taxi radio center

- Far from the street to hail
- Security
- Be able to reserve
- Baggage & luggage
- Weather
- Only the way he/she can

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Barriers of calling a taxi from the taxi radio center

- Long waiting time
- Surcharge 20 Baht
- Fee of calling

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Ways of calling	%
Flag down along the street	61
Call from the taxi center	22
Ask a guard man for help	11
Direct call	6
Total	100

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The Community Taxi Research Project

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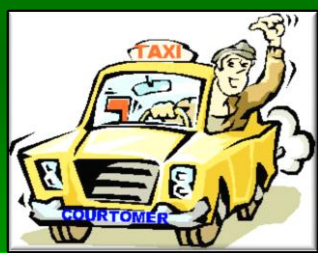
The Community Taxi Center

- Soi Puttabucha 36

Period of Operation: 22 May – 21 July 2011
Operation Time: 6:00 – 11:00 on weekday
6:00 – 15:00 on weekend
Surcharge 20 Baht: free
All qualified taxicabs can join.



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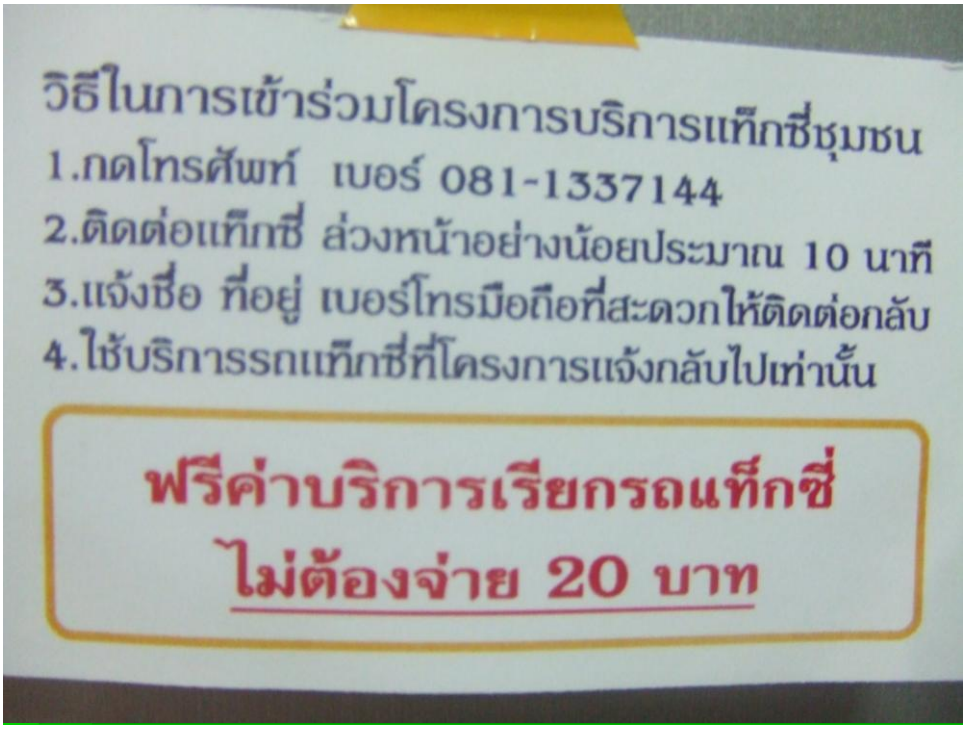
โครงการวิจัยแท็กซี่ชุมชน
มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าธนบุรี
KMUTT
081-1337144
บริการเรียกแท็กซี่ฟรี ค่ะ
เปิดให้บริการตั้งแต่วันที่ 22 พ.ค. จนถึง 21 ก.ค. 2554
เวลา 6.00 น. ถึง 11.00 น.
โครงการทดลองเพื่องานวิจัย ส่งเสริมการเรียกใช้แท็กซี่ในชุมชน
เฉพาะผู้อาศัยในหมู่บ้านในซอยพุทธบูชา 36


วิธีในการเข้าร่วมโครงการบริการแท็กซี่ชุมชน
1.กดโทรศัพท์ เบอร์ 081-1337144
2.ติดต่อแท็กซี่ ล่วงหน้าอย่างน้อยประมาณ 10 นาที
3.แจ้งชื่อ ที่อยู่ เบอร์โทรมือถือที่สะดวกให้ติดต่อกลับ
4.ใช้บริการรถแท็กซี่ที่โครงการแจ้งกลับไปเท่านั้น
ฟรีค่าบริการเรียกรถแท็กซี่
ไม่ต้องจ่าย 20 บาท

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The Community Taxi Research Project

- Total Number of Calls: 598
- Total Number of Customers: 174
- Total Number of Taxi Drivers: 405
- Average Waiting Time: 11 min 42 sec
- Coverage area: within 2.5 km

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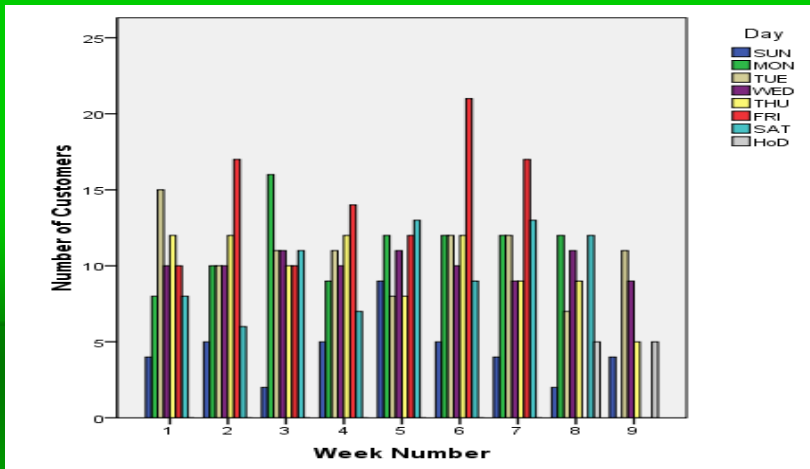
Daily Number of Customers



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Characteristics of Community Taxi Passengers

- Total number of calls: 598
- 17 out of 174 customers
- VIP – Each called more than 8 times
- VIP called 310 out of 598, more than 50 % of total calls
- Max. 38 times , by Mr.Daniel

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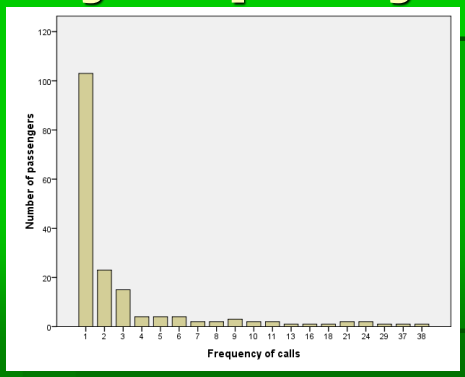
Classification of customers by frequency of calls



Frequency of calls	Number of customers	Percent	Cumulative Percent
1	103	59.2	59.2
2	23	13.2	72.4
3	15	8.6	81.0
4	4	2.3	83.3
5	4	2.3	85.6
6	4	2.3	87.9
7	2	1.1	89.1
8	2	1.1	90.2
9+	17	9.8	100.0
Total	174	100.0	

17 out of 174 customers
310 out of 598 trips, 50 % of total calls

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Characteristics of Community Taxi Drivers

- Total number of calls: 598
- 15 out of 405 taxi drivers
- VIP – Each came more than 3 times
- VIP served 129 out of 598, more than 20 % of total calls
- Max. 19 times by taxi no. 9772

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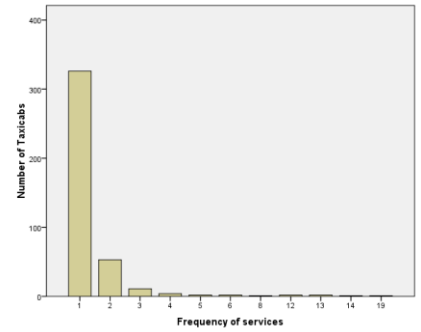
Classification of taxi drivers by frequency of services



15 out of 405 drivers
129 out of 598 trips,
20 % of total calls

Frequency of services	Number of taxi drivers	Percent	Cumulative Percent
1	326	80.5	80.5
2	53	13.1	93.6
3	11	2.7	96.3
4	4	1.0	97.3
5	2	.5	97.8
6	2	.5	98.3
8	1	.2	98.5
12	2	.5	99.0
13	2	.5	99.5
14	1	.2	99.8
19	1	.2	100.0
Total	405	100.0	

Home Interview

Customers: 139 out of 174
non-customers: 302 passengers
Total number of samples: 441

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Mode	%
Private car	72.3
Bus	11.5
Taxi	9.2
Tuk-Tuk	1.8
Motorcycle	3.5
Bicycle	0.5
Motorcycle Taxi	1.2

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Ways of calling taxi	%
Street hail	64.1
Guard call	9.6
Radio center	24.2
Direct call	2.1
Total	100

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Mode Shifts of the community taxi customers?

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Shift from	%
Private car	75.9
Bus	6.9
Taxi	12.1
Tuk-Tuk	1.7
Motorcycle	3.4
Motorcycle Taxi	0

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Mode Shifts after closing the community taxi project

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Unit: percent

Mode shift	Before	After
Private car	75.9	65.5
Bus	6.9	6.9
Taxi	12.1	23.3
Tuk-Tuk	1.7	0.9
Motorcycle	3.4	2.6
Motorcycle Taxi	0	0.9
Total	100	100

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Sensitivity of calling a taxi

Unit: percent

Surcharge (Baht)	Waiting Time (Minute)		
	Within 15	30	45
Free	100	62	12
20	84	18	1
30	6	0	0

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Conclusions

- Waiting time is more sensitive than surcharge.
- Most of the community taxi customers, 76%, were from private car users.
- Not only private car companions but also private car drivers would join the community taxi research project.
- About 10 % of private car users changed to use taxis after they already tried.
- A lot of people including passengers and taxi drivers would like to extend this research project.

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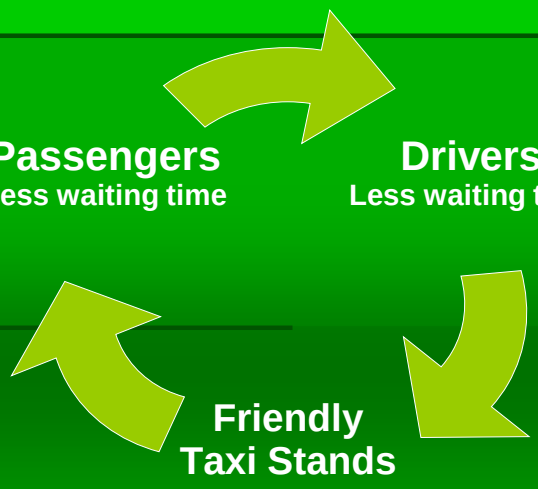
New Vision



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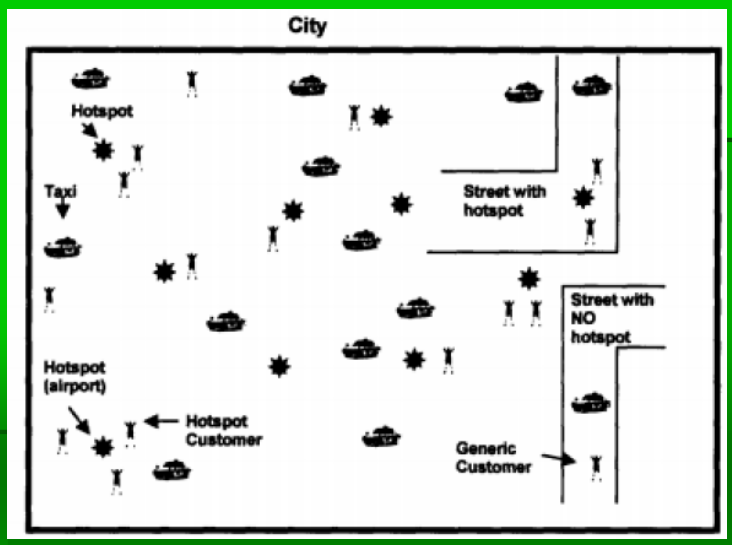

Example of Taxi Stand Configuration Network (Li, 2006)

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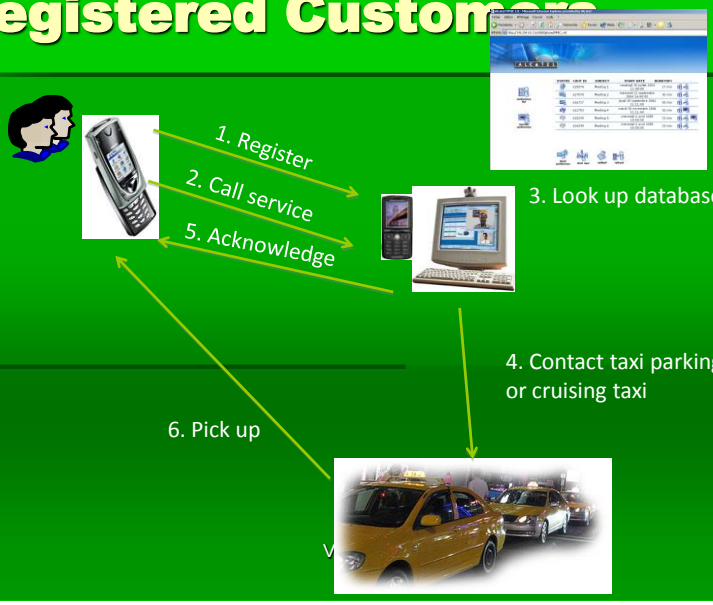
Proposed Model for Registered Customers



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Thank you for calling a taxi.

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Change from	Type of travel	Change to			Total
		Private car	Bus	Taxi	
Private car	Unusual	73		10	83
	Usual	3		2	5
Bus	Unusual		0		0
	Usual		8		8
Taxi	Unusual			2	2
	Usual			11	11

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Change from	Type	Change to		Total
		Private car	Taxi	
Private car	Driver	39	7	46
	Companion	32	4	36
Total		71	11	82

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