

# In-App AdPay: A Framework for the Mobile Monetization Ecosystem

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## 1 Motivation

- In-App Advertising is prevalent for mobile apps, but:
  - Users get nothing from viewing or clicking ads
  - Users must passively receive all mobile ads
  - Ad networks overtly send user privacy w/o consent
  - Advertisers may get negative impressions from users
- In-App Billing is still not a popular monetization service
- In-App AdPay is a proposed monetization service
  - Ensures user privacy and augments user experience w/o interfering with existing models
  - Reveals how tracked-by-consent users value the permissions used in ad libraries

Table 1: Users' choices on in-app advertising

mobile ads in general	Feel	very comfortable	1
		somewhat comfortable	1
	neutral	15	
	somewhat uncomfortable	18	
	very uncomfortable	8	
Click	yes (intentional)	6	
	yes (accidental)	14	
	no	24	
See	yes	13	
	no	29	
	unanswered	1	
Feel	very comfortable	1	
	somewhat comfortable	8	
	neutral	11	
	somewhat uncomfortable	14	
	very comfortable	8	
	circled both somewhat's	1	
Click	yes	17	
	no	25	
	circled both	1	
Collect Info	neutral	7	
	somewhat uncomfortable	12	
	very uncomfortable	24	

Table 2: Users' choices on in-app billing

Overall	very comfortable	6	
	somewhat comfortable	6	
	neutral	16	
	somewhat uncomfortable	11	
	very uncomfortable	4	
Ever Used (14)	Single Transaction	<\$1	2
		\$1-\$5	8
		\$5-\$10	2
		>\$10	1
	Total Spending	<\$20	9
	\$20-\$50	4	
	>\$100	2	
Never Used (29)	will consider	9	
	won't consider	20	

## 4 Usability Testing

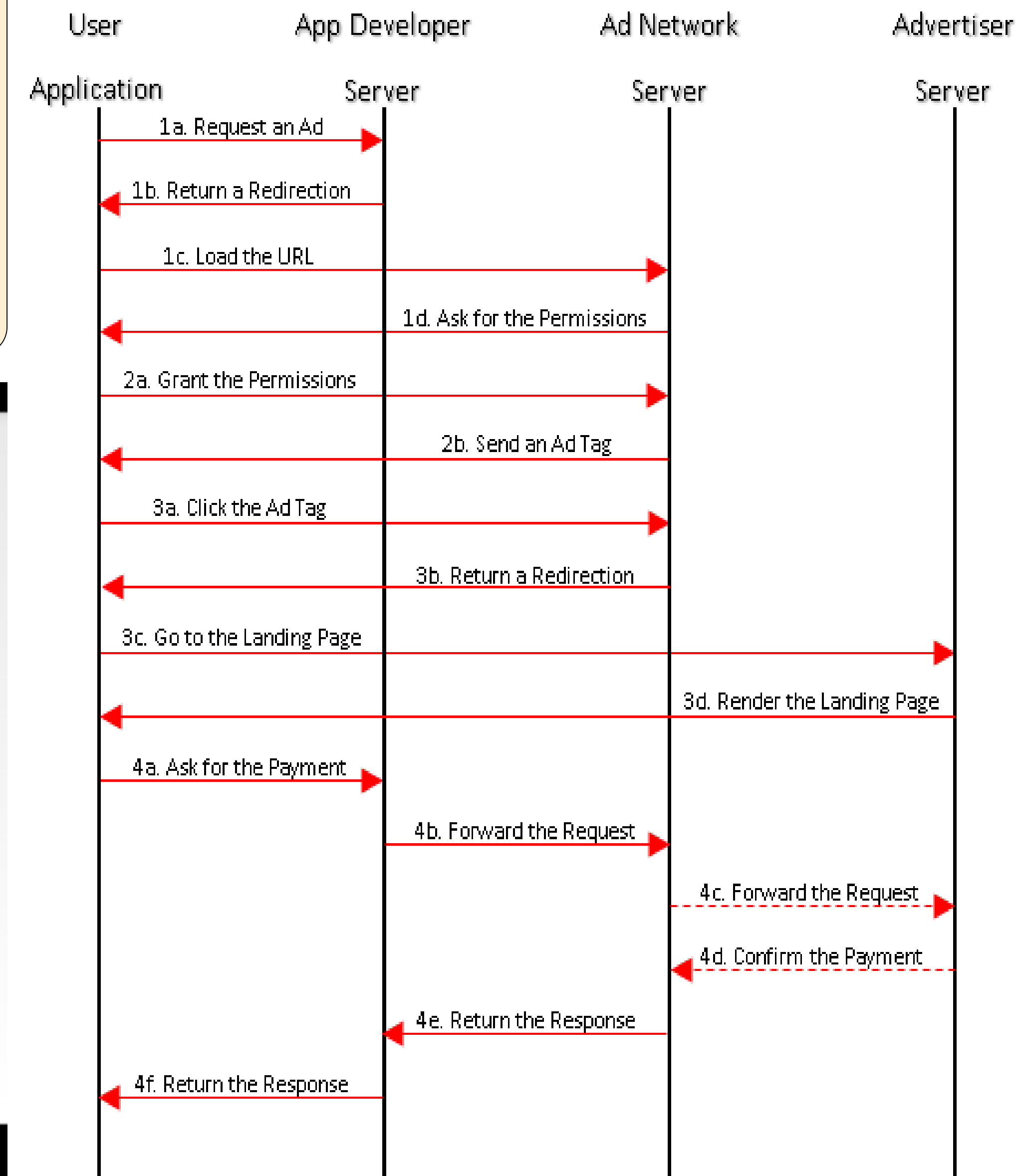
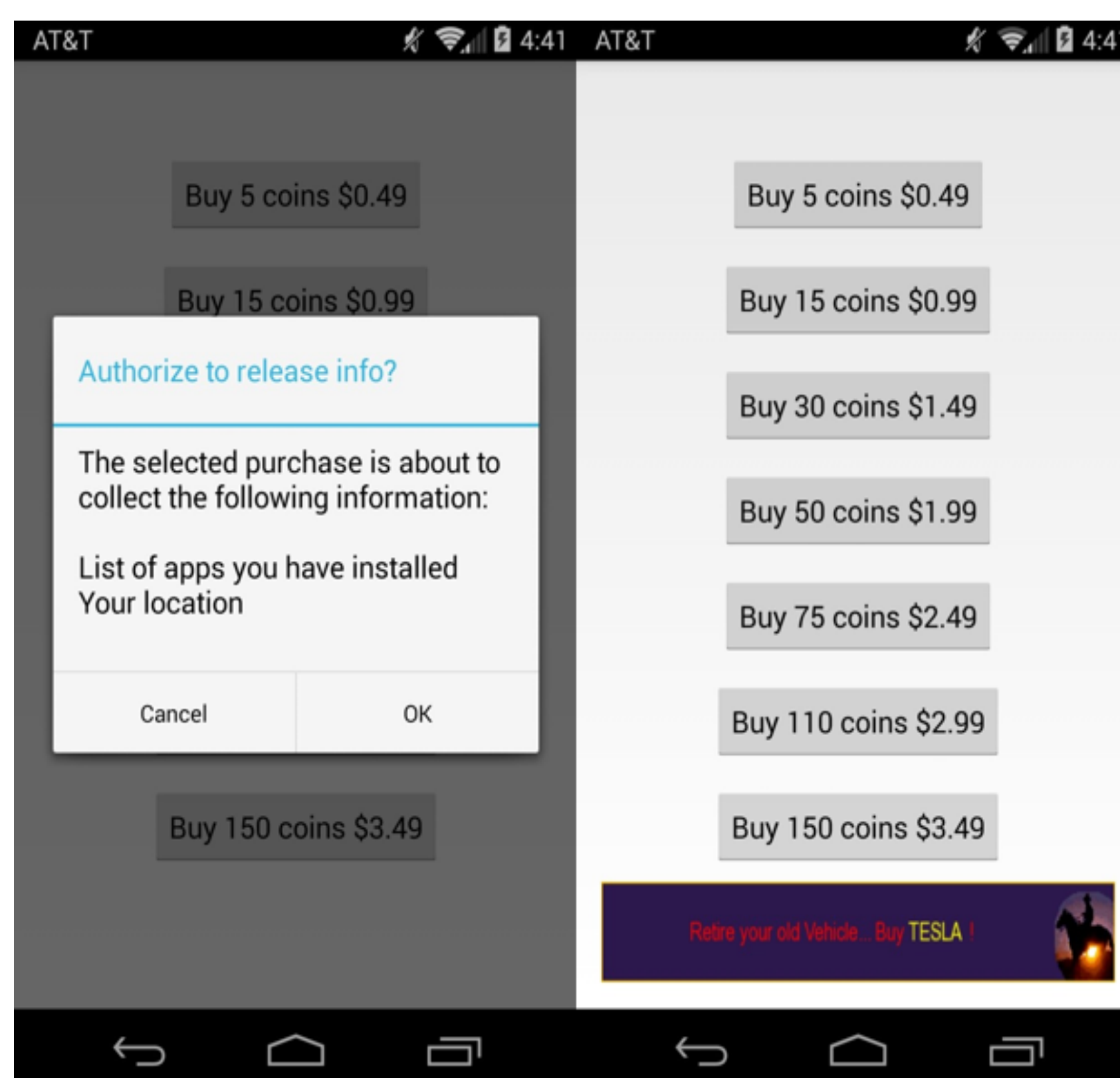
- Demographics:
  - Both genders (age 18-45) from 10 countries
  - Includes both tech-savvy and lay people
  - Tested with 42 out of the 43 surveyed volunteers
- 6 people in each group, 7 scenarios
- User perceptions:
  - In-App AdPay (54.76% comfortable, 19.05% neutral)
  - Advertisers (83.34% comfortable, 9.5% neutral)
  - Ads (59.52% memorable)
  - Permissions (80.95% memorable)
- User expectations:
  - Still uncomfortable with info collection (Yes: 73.81%)
  - Will use In-App AdPay if deployed (Yes: 47.62%)

## 2 Prospect

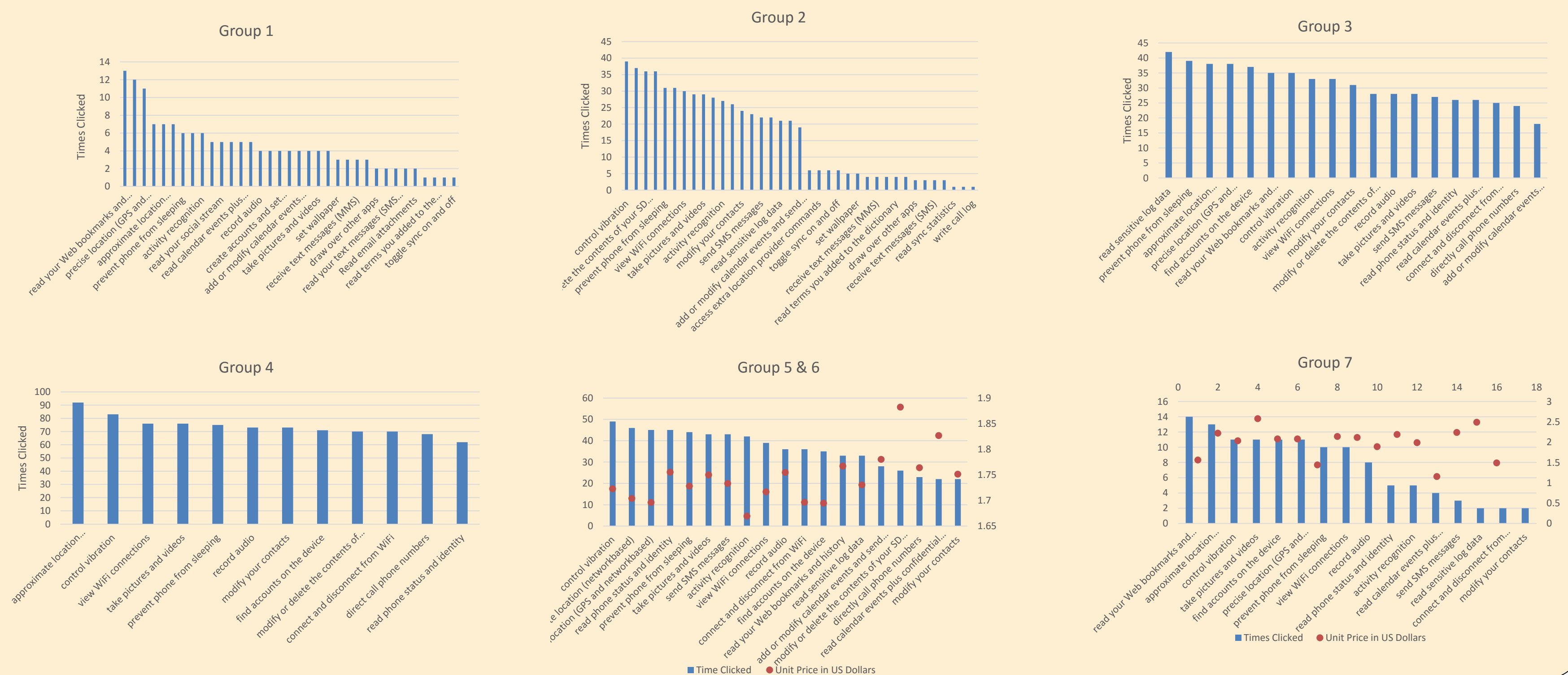
- Basic idea is to let advertisers pay targeted users for their virtual transactions
- What will happen in the new ecosystem:
  - No change is necessary for **advertisers** (Use the same console & Pay the same amount)
  - Only changes are made by **ad network** (Combine roles of ad network and payment agent)
  - Financial incentives motivate **app developers** to work with ad networks to secure connections
  - Users** are allowed to actively trade their private info and get more tailored ads

## 3 Implementation

- User interface (as below):
  - An Android app
- Workflow (as right):
  - A local network with three servers
  - Over 20 ad related permissions



## 5 Results



## 6 Conclusions & Future Work

- What we have done:
  - Construction of a new in-app monetization framework that leverages all participants
  - Demonstration of the relationship between privacy and price
  - Influence of Android permission request on users' ad selection
- To-dos:
  - More analyses on factors (i.e., time and ads) that affect user decisions
  - Case studies on user test consistency

## References

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