

A COLLECTIVE AWARENESS PLATFORM FOR PRIVACY CONCERNS AND EXPECTATIONS: **CAPRICE** IN THE MAKING

July 2018

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Privacy and new technologies

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- New “smart” devices
 - ▣ IoT, connected cars, smart phones, smart watches, smart TVs, baby monitors, ...
- Consumers generally **unaware** of the data being accessed and/or transmitted by their devices

The Wall Street Journal: the examination of 101 popular smartphone apps revealed that:

- 56 apps transmitted the phone's unique device ID to other companies without users' awareness or consent
- 47 apps transmitted the phone's location in some way
- 5 sent age, gender and other personal details to outsiders



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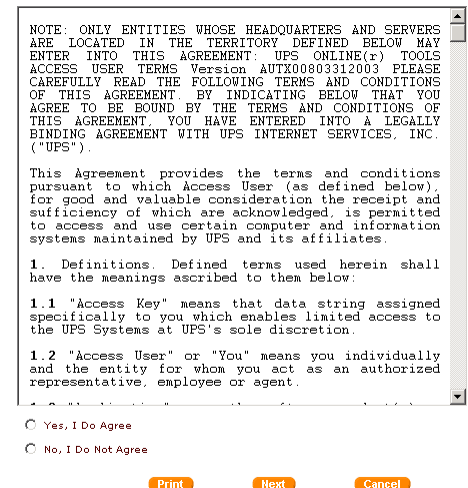


Terms of Service (ToS)

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- ToS documents
 - ▣ Lengthy
 - ▣ Hard to read/understand
 - ▣ Change often
- Real versus digital world
 - ▣ Different behaviour with regards to privacy
 - <https://www.youtube.com/watch?v=xYZtHIPktQg>

FoxNews: 7.500 online shoppers sold their souls to an online game company on April fool's day 2010
Purple: 22.000 users agreed to 1.000 hours of community service (including cleaning animal waste and relieving sewer blockages) in exchange for free wifi
NCC: reading ToS for an average Norwegian would take 32 hours (250.000 words)



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The power of data

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- The “big data” era
 - ▣ Lots of data, and the ability to process them
 - Machine learning, deep learning, data science
 - ▣ Hidden correlations
 - Predict epidemics, personalized medicine, ...
 - But also personality identification, identifying habits and personal preferences, vote manipulation, ...

Bloomberg: smart meters can profile homes and habits, including what you watch on TV (via device profiling of energy consumption)

Personality identification: online services can analyze your personality based on authored text

ApplyMagicSauce: can tell your personality from facebook/twitter posts

Vote manipulation: allegations that Cambridge Analytica and other big data companies used targeted micro-advertising and personalized emotional triggers to help in the success of the Brexit and Trump campaigns



The role of legislation

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- Legal frameworks exist (GDPR included)
 - ▣ Limiting what can be collected and for what purpose
- Top-down versus bottom-up
 - ▣ Fast technological evolution
 - Moving target, too fast for legislators
 - Policy making is a few steps behind technology
 - ▣ For a lasting effect, people's attitude has to change through awareness



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Data-centric business model

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- Many companies earn money out of users' data
 - ▣ Personal data: **currency** for “free” products/services
 - ▣ A novel, lucrative and very successful business model



CAPrice: motivation, hypothesis

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- Non-awareness leads to carelessness
 - Awareness can prevent or mitigate privacy threats
- Leverage the forces of the market
 - Awareness can lead the public to more privacy-respecting products or services
 - Or maybe not, in which case we are fighting the wrong cause
 - Respect for privacy can be a **competitive advantage**



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CAPrice: plan

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- The plan for our **socio-technical** solution
 1. Build a community of privacy-sensitive individuals
 - Social networking, web site, promotional video, ...
 2. ICT tools to support collaboration and awareness
 3. Awareness will lead to change in consuming habits
 4. The market will adapt
 5. Legislators and policy-makers will follow

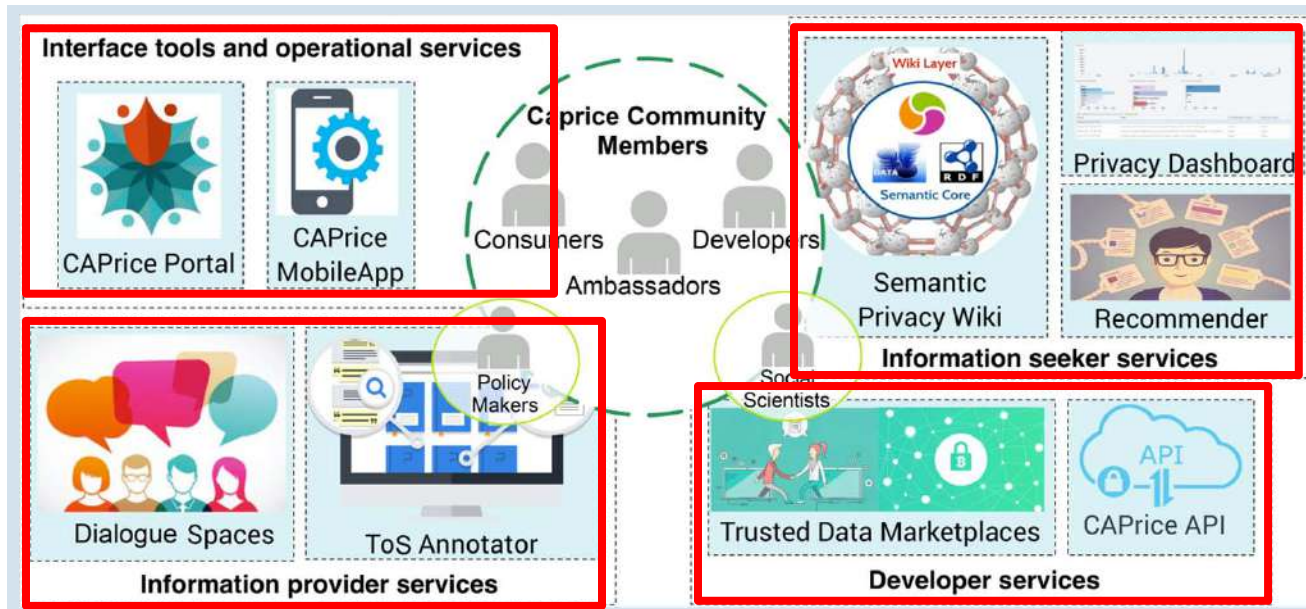


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CAPrice: solution architecture

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ToS Annotator

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The screenshot displays the CAPrice ToS Annotator interface. At the top, there is a search bar and a 'Login' button. The main content area shows a document titled 'Privacy Policy v1' with a 'View Mode' dropdown set to 'Review'. A sidebar on the left contains a list of filters, each with a colored indicator: First Party Collection/Use (orange), Third Party Sharing/Collection (red), User Choice/Control (green), Data Retention (teal), Data Security (purple), User Access, Edit and Deletion (blue), Other (yellow), International and Specific Audiences (light blue), Policy Change (dark blue), and Do Not Track (grey). The main text area contains the privacy policy content, with several lines highlighted in blue. At the bottom, there is a 'Filters: Inactive' button, 'Total Results: 2 / 2', and a 'Sort By: Created Date' dropdown. The footer includes the text: 'Giorgos Floridis - g.floridis@cs.uoi.gr, g.floridis@ics.forth.gr - M.Sc. Thesis © 2018, Computer Science Department - University of Oporto'.



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Understanding apps' behaviour

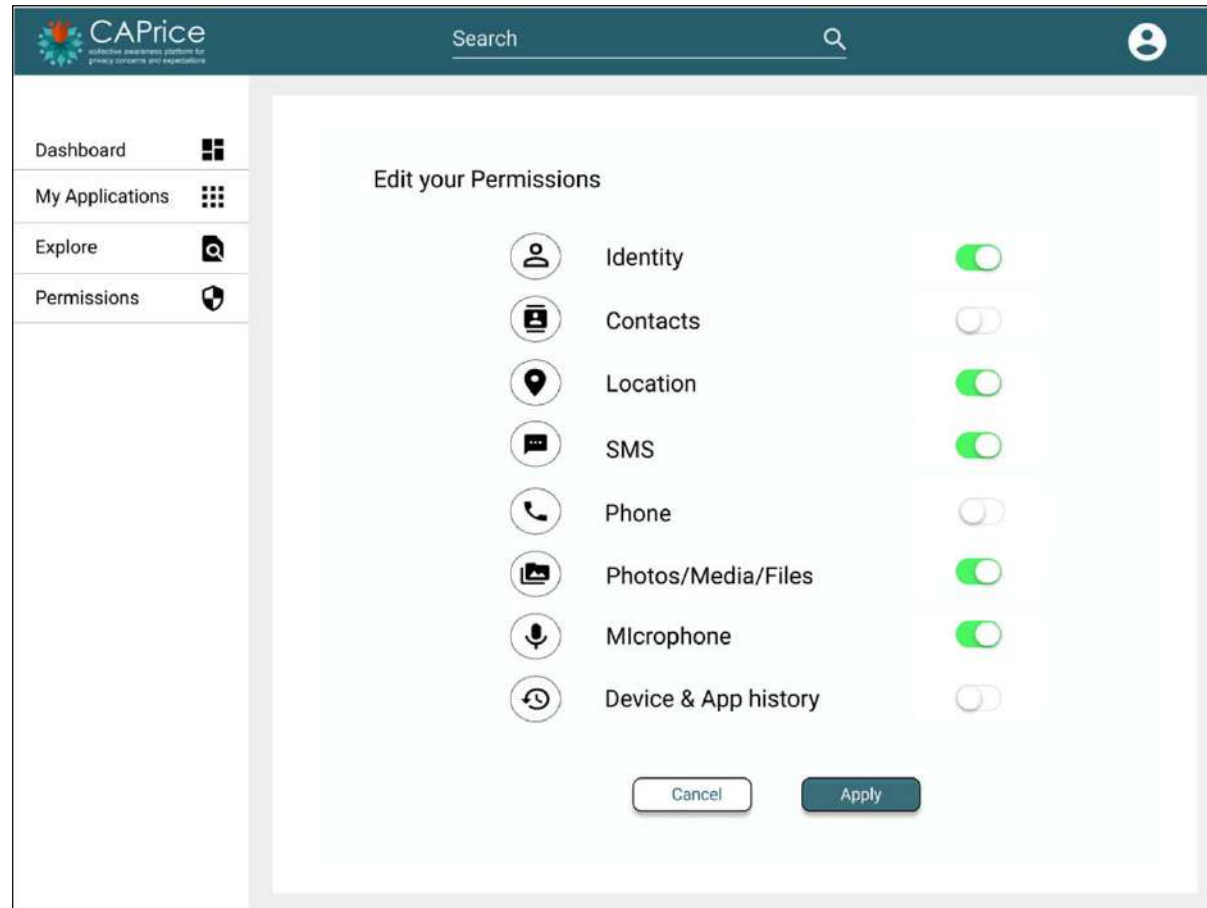
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The screenshot displays the CAPrice application interface. At the top, there is a search bar and a user profile icon. The left sidebar contains navigation options: Dashboard, My Applications, Explore, and Permissions. The main content area is titled 'Application Details' and shows information for 'WhatsApp Messenger' by 'WhatsApp Inc.', categorized as 'Communication'. It includes a 'Play Store Rating' of 4.4 stars and a 'Privacy Conscious Behaviour' indicator showing 'Trusted 85%'. Below this, there are tabs for 'Details', 'Permissions', 'Suggested Applications', and 'Community Review'. The 'Community Review' tab is active, showing a table with columns: 'Application has access to', 'Purpose (Developer)', 'Mockery Evidence', 'All User's Opinion', and 'Statistics'. The table lists three categories: 'Device and History' (mandatory), 'Contacts' (-), and 'Location' (quality services). The 'All User's Opinion' column shows percentages and user feedback icons: 89% choose (accept), 67% choose (only if), and 90% choose (block). A 'What's your opinion?' button is located at the bottom of the table.

Application has access to	Purpose (Developer)	Mockery Evidence	All User's Opinion	Statistics
Device and History	mandatory		89% choose	
Contacts	-		67% choose	
Location	quality services	The Evidence Link...	90% choose	

Privacy preferences

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Dashboard

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The screenshot displays the CAPrice dashboard interface. At the top, there is a dark blue header with the CAPrice logo on the left, a search bar in the center, and a user profile icon on the right. Below the header is a navigation menu with four items: 'Dashboard' (grid icon), 'My Applications' (grid icon), 'Explore' (magnifying glass icon), and 'Permissions' (shield icon). The main content area is titled 'Application Details' and features a large green WhatsApp icon. To the right of the icon, the text reads 'WhatsApp Messenger', 'WhatsApp Inc.', and 'Communication'. Further right, it shows 'Play Store Rating' with four stars and a value of '4.4'. Below this, it indicates 'Privacy Conscious Behaviour' and 'Trusted 85%' with a shield icon. At the bottom of the application details, there are four tabs: 'Details', 'Permissions' (which is underlined), 'Suggested Applications', and 'Community Review'. Below the tabs, there is a link that says 'Edit Your Permissions'. A red rectangular box highlights a grid of nine permission categories: Identity, Phone, Microphone, Contacts, SMS, Device & app history, Location, Location, and Photos/Media/Files.

Thank you for your attention

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- CAPrice website
 - <https://www.caprice-community.net/>
- CAPrice promotional video
 - <https://www.caprice-community.net/idea/>
- Digital versus physical world video (Norwegian Consumer Council)
 - <https://www.youtube.com/watch?v=xYZtHIPktQg>

Theodore
Patkos



Ioannis
Chrysakis



Konstantinos
Kreatsoulas



Giorgos
Hompis

