Dimension 1: Online profiling

Aspect 1: Commercial profiling

Aspect 2: Web tracking types Aspect
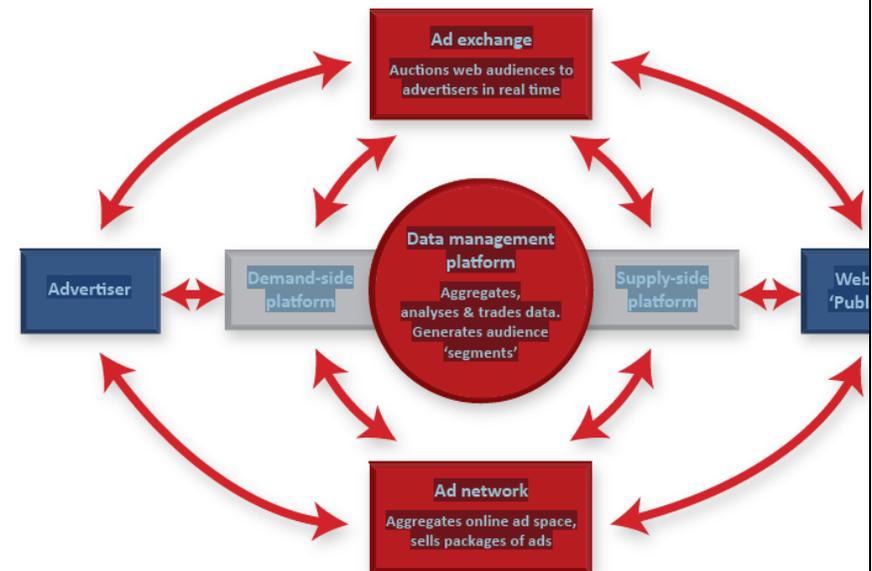
Aspect 1: Commercial profiling

Savirimuthu J. Networked children, commercial profiling and the European Union data protection reform agenda: in the child's best interests? In: Iusmen I, Stalford H, editors. The European Union as a global children's rights actor. Law, policy and structural dimensions. Leverkusen Opladen: Barbara Budrich Publishers; 2015.	Scholars also convincingly argue that children are in fact exploited in digital networked environments, as digital platforms (e.g. search engines, social media) Commercial profiling is an activity an organisation engages in to facilitate an exchange between itself and its customers to **extract personal information from users, viewing it "as a commodity to be exploited … to gain competitive advantage"**

World Health Organisation (Regional Office for Europe) (2016). *Tackling food marketing to children in a digital world: trans-disciplinary perspectives*.

Fig. 1. Network map of advertising platforms in the online advertising ecosystem

Ad networks aggregate the online ad space of websites and sell it in packaged format to advertisers. Ad exchanges are auction based "real-time-bidding" services, to which websites make their defined audiences available: advertisers can bid for access to these specific audiences. To facilitate ad space sales and audience bidding, new platforms have emerged. Some manage available ad space on the seller's side (i.e. the websites or "publishers") and are known as supply-side platforms. On the ad buyer's side (i.e. the advertiser), demand-side platforms provide the interface for buying ad space. The interaction of demands ide platforms, ad exchanges and supply-side platforms means that advertising space online can be bid for, valued and sold in milliseconds. As advertisers now buy access to media through many different platforms and intermediaries, data management platforms have evolved to interact with all the buying and selling platforms. These data management platforms aggregate, analyse and trade data on Internet users (audiences), store "cookie IDs" and generate ad audience segments for advertisers (73–76).

	Data management platforms "can help tie all that activity and resulting campaign and audience data together in one, centralized location and use it to help optimize future media buys and ad creative" (75). The entire system is predicated on the collection and analysis of ever-greater volumes of highly detailed user data. This "personal data tsunami" enables marketers to "target and market to specific people… foster(ing) a more catered, lasting relationship than ever before … in ways previously unforeseen (that) will only advance as we go forward" (77, p. 136).
Kot, V. (2013). The evolution of online display advertising. Knowledge bridge. (http://www.kbridge.org/en/the-evolutionof-online-display-advertising/ Ju R. (2013). Online advertising explained: DMPs, SSPs, DSPs and RTB. Herndon, VA: Knowledge bridge; 2013 (http://www.kbridge.org/en/online-advertising-explained-dmps-ssps-dsps-and-rtb/).	Ad networks aggregate the online ad space of websites and sell it in packaged format to advertisers. Ad exchanges are auction based "real-time-bidding" services, to which websites make their defined audiences available: advertisers can bid for access to these specific audiences. To facilitate ad space sales and audience bidding, new platforms have emerged. Some manage available ad space on the seller's side (i.e. the websites or "publishers") and are known as supply-side platforms. On the ad buyer's side (i.e. the advertiser), demand-side platforms provide the interface for buying ad space. The interaction of demands ide platforms, ad exchanges and supply-side platforms means that advertising space online can be bid for, valued and sold in milliseconds. As advertisers now buy access to media through many different platforms and intermediaries, data management platforms have evolved to interact with all the buying and selling platforms. These data management platforms aggregate, analyse and trade data on Internet users (audiences), store "cookie IDs" and generate ad audience segments for advertisers. Data management platforms "can help tie all that activity and resulting campaign and audience data together in one, centralized location and use it to help optimize future media buys and ad creative" (75). The entire system is predicated on the collection and analysis of ever-greater volumes of highly detailed user data. This "personal data tsunami" enables marketers to "target and market to specific people… foster(ing) a more catered, lasting relationship than ever before … in ways previously unforeseen (that) will only advance as we go forward".
Children's Online Privacy Protection Rule ("COPPA"). 16 CFR Part 312. Washington DC: Federal Trade Commission	Advertising delivered to users on the Internet is tailored either to the content that a user is viewing on a site (contextual advertising) or to

(www.ftc.gov/enforcement/rules/rulemaking-regulatory-reform-proceedings/childrens-online-privacy-protectionrule).   Arnold R, Hillebrand A, Waldburger M. (2015). *Personal data and privacy*. London: Ofcom; (http://stakeholders.ofcom. org.uk/binaries/internet/personal-data-and-privacy/Personal_Data_and_Privacy.pdf, accessed 16 April 2016). Policy position on online behavioural advertising (2011). Ottawa: Office of the Privacy Commissioner, modified 2015 (https://www.priv.gc.ca/information/guide/2012/bg_ba_1206_e. asp). Cross-device tracking workshop (November 16, 2015). Part 1, Transcript and Part 2, Transcript. Washington DC: Federal Trade Commission (https://www.ftc.gov/news-events/audio-video/video/cross-device-tracking-part-1; https://www.ftc.gov/news-events/audio-video/video/cross-device-tracking-part-2). Pasquale F. Black box society. Boston, MA: Harvard University Press; 2015. Eranti V, Lonkila M. (2015). The social significance of the Facebook Like button. First Monday 6 (http://www.firstmonday. dk/ojs/index.php/fm/article/view/5505/4581#author) Hoofnagle CJ, Soltani A, Good N, Wambach DJ, Ayrenson MD. (2012). Behavioral advertising: the offer you cannot refuse. Harvard Law Policy Rev;6:273.

characteristics and preferences of each individual user (online behavioural advertising). To deliver contextual advertising, information on users is collected within the website, app or platform itself To deliver online behavioural advertising, all participants in the advertising ecosystem collect and sell extensive information on users, drawn from dozens or more trackers on any one site or platform. Information on users is merged from multiple Internet locations and devices to create deep individual profiles that go far beyond basic demographics. User profiles include detailed data on online browsing activity, devices and networks used, geo-locations, personal preferences and "likes" and social activities in digital social networks.The use of tactics such as "zombie" cookies, device fingerprinting and geo-location allow digital platforms and brands to build extensive, detailed profiles of all who use the Internet, including children from 13 years of age (see Box 1). As a result, individuals' "likes", comments and other activities and preferences in social media have become a valuable commodity. The extent of the application of these tracking methods is such that researchers have concluded that "advertisers are making it impossible to avoid online tracking".

Gerlitz C, Helmond A. (2013). The Like economy: social buttons and the data-intensive web. New Media Soc, http://dx.doi.org/10.1177/1461444812472322

Facebook's ambition is to extend into the entire web by focusing on social buttons and developing a medium-specific platform critique. It contextualises the rise of buttons and counters as metrics for user engagement and links them to different web economies. Facebook's Like buttons enable multiple data flows between various actors, contributing to a simultaneous de- and re-centralisation of the web. They allow **the instant transformation of user engagement into numbers on button counters, which can be traded and multiplied but also function as tracking devices**. The increasing presence of buttons and associated social plugins on the web creates new forms of connectivity between websites, introducing an alternative fabric of the web. Contrary to Facebook's claim to promote a more social experience of the web, this paper explores the

	implementation and technical infrastructure of such buttons to conceptualise them as part of a so-called **'Like economy'.**
Marshall J. (2014). WTF is a data management platform? New York, NY: Digiday. (http://digiday.com/platforms/what-is-admp-data-management-platform/)	Brands that feature HFSS items are found to use specific targeting and marketing approaches. One example is advertising for a top global Unilever ice-cream brand that used **detailed analytics of Internet users' engagement with ice cream advertising online to tailor their ads for the weekly thought and purchase patterns of consumers.** Use of this technique showed them that they should advertise differently in hot or rainy weather, and they planned shifts in advertising on the basis of weather forecasts. They were also able to **prepare specifically targeted advertising in digital media from consumers' purchase history and flavour preferences**.
Blank C. Mobile marketing use increases as quick serves try to attract on-the-go customers. QSR Magazine, 2013 (https://www.qsrmagazine.com/exclusives/mobile-makeover).	For fast-food brands, geo-location data from mobile devices enable marketers to deliver ads and special offers in real time when users are in the area in which they are sold, encouraging them to "walk in and buy".
Abrams A. (2016). McDonald's just became the first major company to partner with Pokémon Go. Time Magazine, (http://time.com/4417311/mcdonalds-pokemon-go-partership). Mosendz P, Kawa L. (2016) Pokémon Go brings real money to random bars and pizzerias. Bloomberg 11 July 2016 (http://www.bloomberg.com/news/articles/2016-07-11/pok-mon-go-brings-real-money-to-random-bars-and-pizzerias)	McDonald's in Japan partnered with the Pokémon Go game app, making the chain's restaurants important game locations; and local pizzerias in the USA have acquired Pokémon "lures" for as little as US$ 10 to attract customers with an interest in the game. **Such combinations of geo-location data, game apps and real-time targeting are particularly potent.**
Miller S. (2015). Social media marketing, the Five Guys way. Blogpost, 18 February 2015, http://blog.hootsuite.com/successstory- five-guys-geolocation/	**How to find out what your customers REALLY think** As the Five Guys franchise has expanded across continents, their menu and services have—at times—evolved to cater to their customers' needs on a local level. **Hootsuite's geo-targeting functionality has allowed Five Guys Pizza restaurant to monitor specific conversation topics as they happen, in specific areas of interest.** By first setting up **a good listening strategy**, and **then breaking it down by location**, the Five Guys team has been able to gain deeper understanding into what is working and what's missing the mark across their global markets, as well as sentiment around individual campaigns or initiatives.
	Digital marketing analytics' techniques to optimize creative strategies and marketing "reach"

Affectiva. Emotion-aware AI platform built on deep learning. Waltham, Massachusetts, (http://www.affectiva. com/). Satel S, Lilienfeld SO (2013). Brainwashed: the seductive appeal of mindless neuroscience. New York, NY: Basic Books.	Marketers use digital analytics not only to optimize targeted ad reach but also to maximize **the effectiveness of creative marketing content**. The data are used to understand individual consumer variation and "create new approaches for marketing researchers to segment their target markets" This involves use of **neuroscience techniques**, such as **functional magnetic resonance imaging or facial emotion analysis** (108). Although now described as "neuromarketing", these methods are in fact largely an extension of the **bio-neuro-sensory methods that have been used by marketers since the 1960s**. The digital age facilitates the gathering and analysis of these data, for example, with **in-device cameras to record facial responses to marketing content and software for immediate, millisecond-by-millisecond analysis**, to better understand how to trigger consumers' emotional responses, to identify "micro-emotions" and to specify by the millisecond how users respond to ad content.
emarketer, 29 April 2016. Breaking into the brain: how mobile brings brands closer to consumers. (http://www. emarketer.com/Article/Breaking-Brain-How-Mobile-Brings-Brands-Closer-Consumers/1013894?ecid=NL1010). Murgia M. (2016). Affective computing: how "emotional machines" are about to take over our lives. The Daily Telegraph, 15 January 2016, (http://www.telegraph.co.uk/technology/news/12100629/Affect ive-computing-how-emotionalmachines-are-about-to-take-over-our-lives.html).	Marketers are currently using and further developing **emotion analysis** methods. Individuals' emotions can be identified through, for example, **motion sensors in game consoles such as Xbox**, **sentiment analysis of social media comments**. Marketing in the new digital media landscape 9 keyword analysis of social media posts and even analysis of users' keystroke patterns (79, 111–113). Companies have used such methods to measure and inform marketers about the level and nature of attention that viewers give to an ad, combined with extensive demographic and activity data on users derived from their game-console activity.They have also used it to deliver "right-time targeting" in social media, i.e. ads that are applicable to users' thoughts or feelings at the moment, which has evident application for HFSS foods. Marketers are encouraged to position themselves and the products they are marketing as the "solution" to consumers' "pain": for example, within video games, ad timing can be optimized for moments of heightened emotion, such as when a user experiences frustration at not reaching another level. As **emotion-sensing chips in phones and wearable devices are predicted for the near future** the number of techniques for exploiting moment-by-moment emotions and vulnerability is likely to increase.

Aspect 2: Methods used to track users online and beyond

World Health Organisation (Regional Office for Europe) (2016). *Tackling food marketing to children in a digital world: trans-disciplinary perspectives*.	1. **Cookies** are small files placed on a user's computer system that track and record users' activities. Some cookies are used only for internal analytics or functionality (e.g. language preference, payment options), but many sites and platforms allow third parties such as advertising networks to place tracking cookies to collect information on users, to facilitate targeted marketing. **Flash cookies** are more durable and persist after a browser has been cleared, thus allowing tracking after users believe they have been deleted. **Zombie cookies** are even more durable than flash cookies, as they are re-created after a user has deleted them, allowing continued tracking. **Device fingerprinting** track users across the devices they use (e.g. smartphone, tablet, laptop) to integrate marketing appeals and offers. **"Canvas"-based fingerprinting** operates with no indication that a user's system is being fingerprinted. Device graphs or social graphs identify individuals' (and families') linked devices or a user's personal digital connections. **Geo-location** maps users' exact location to deliver location-specific ads and promotions. On-boarding combines online with offline data to generate even richer consumer profiles.

Liza Ramrayka: *Brands continue to target fast food marketing at kids*	http://www.theguardian.com/sustainable-business/brands-increase-fast-food-marketing-kids
BBC News: *Ban TV junk food ads until 21.00, say campaigners.*	http://www.bbc.co.uk/news/health-26665952
BBC News: *Obesity crisis: future projections 'underestimated'.*	http://www.bbc.co.uk/news/health-25708278
NHS: *Report warns of a looming UK obesity crisis*	http://www.nhs.uk/news/2014/01January/Pages/Report-warns-of-a-looming-UK-obesity-crisis.aspx
Marketing Week: *Anti-obesity campaigns should be as hard-hitting as smoking ads*	http://www.marketingweek.co.uk/sectors/food-and-drink/news/anti-obesity-campaigns-should-be-as-hard-hitting-as-smoking-ads/4009081.article
BBC News: *Obesity: Shock tactics used in Australian campaign*	http://www.bbc.co.uk/news/health-25720618
NCCOR: *Childhood Obesity in the United States*	http://www.nccor.org/downloads/ChildhoodObesity_020509.pdf
Cecelia Kang: *Parents resume privacy fight vs. Facebook over use of children's images in ads.*	http://www.washingtonpost.com/business/technology/parents-resume-privacy-fight-vs-facebook-over-use-of-childrens-images-in-ads/2014/02/12/5ceb9f82-9430-11e3-b46a-5a3d0d2130da_story.html
Richard Byrne-Reilly: *Fed to mobile marketers: Stop targeting kids, or else*	http://venturebeat.com/2014/03/27/feds-to-mobile-marketers-stop-targeting-kids-or-else-exclusive/
Cecilia Kang: *Preteens' use of Instagram creates privacy issue, child advocates say*	http://www.washingtonpost.com/business/technology/preteens-use-of-instagram-creates-privacy-issue-child-advocates-say/2013/05/15/9c09d68c-b1a2-11e2-baf7-5bc2a9dc6f44_story.html
Grant McArthur: *Fast food firms on social media to exploit advertising standards loopholes.*	http://www.heraldsun.com.au/news/fastfood-firms-on-facebook-and-social-media-to-exploit-advertising-standards-loopholes/story-fni0fiyv-1226740537320
Cambridge University Press: *Underage youth exposed to alcohol advertising through social media.*	http://www.cam.ac.uk/research/news/underage-youth-exposed-to-alcohol-advertising-through-social-media
The Economist: *Cookie Monster Crumbles*	http://www.economist.com/news/international/21590489-are-children-fair-game-sophisticated-and-relentless-marketing-techniques-many

Betsy McKay: *U.S. Childhood Obesity Rates Fall 40% in Decade*	http://online.wsj.com/news/articles/SB10001424052702 304834704579405393034903418

Press / Grey Literature Profile Targeted online advertising

World Health Organisation (Regional Office for Europe) (2016). Tackling food marketing to children in a digital world: trans-disciplinary perspectives