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Fernando van der Vlist · Esther Weltevrede
(Editors)

The Nationality of Apps

Exploring National App Cultures and Economies

ASI Sprint Report

May 2024



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The [App Studies Initiative](#) (ASI) is an international research network comprising academic experts in app-related media research who contribute to the study of apps and platforms. The research network involves researchers and faculty from the University of Amsterdam and Utrecht University (The Netherlands), the University of Warwick and Goldsmiths, University of London (United Kingdom), Concordia University and the University of Toronto (Canada), amongst others. Its directors are Anne Helmond, David Nieborg, Fernando van der Vlist, and Esther Weltevrede.

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1 Editorial Introduction

The Nationality of Apps?

Fernando van der Vlist · Esther Weltevrede

Abstract

As Apple's App Store approaches its 16th anniversary, regulations, markets, and services have evolved into local offerings of what was once a unified marketplace, resulting in distinct app experiences worldwide. In the context of ongoing efforts to regulate the app ecosystem, dominant app stores like Apple's App Store and the Google Play Store play a pivotal role in delineating and controlling boundaries between countries or regions within it. This report explores the implications of this trend for country-specific offerings and regional cultures and economies of apps, as well as the diverse manifestations of 'appification' on a global scale. Through a series of diverse case studies conducted together with our Master's students, adopting a 'multi-situated' approach to app studies, it highlights the multifaceted impact of apps on everyday life, cultural and economic dynamics, and geopolitical events. Ultimately, the report underscores the importance of critical app studies and its ongoing relevance in comprehending the cultural, economic, and political dimensions of mobile apps and appification across countries and regions worldwide.

Keywords: appification · app studies · app stores · mobile apps · national app cultures · data-sprinting

Referenced Actors: AltStore PAL · Android · App Studies Initiative · Apple · App Store · Bridgefy · Data.ai · Douyin · Digital Methods Summer and Winter Schools · Facebook · Google · Google Play Store · Google Search · mobivention App marketplace · Sensor Tower · Signal · SpaceX · Starlink · Telegram · TikTok · University of Amsterdam · WeChat · Zello

Introduction: Fragmenting Cultures and Economies of Apps

In July 2024, [Apple's App Store](#) will celebrate its 16th anniversary—a significant milestone in the political economy of software cultures ([Dieter et al., 2019](#)). Since its inception, the App Store has not only housed official or 'first-party' applications developed by Apple but also apps created by third-party developers. Following suit, [Google](#) launched the Android Market, later rebranded as the [Google Play Store](#), on October 22, 2008, offering a platform for apps compatible with the [Android](#) operating system. Unlike the Web, initially conceived as a shared information space before being commodified, apps were conceptualised as informational commodities right from the start ([Dieter et al., 2019](#); [Morris and Elkins, 2015](#)).

Today, apps are the dominant media form. Mobile apps have emerged as cultural and economic entities, deeply embedded in our everyday lives. This is recognised in the critical literature discussing apps, their infrastructures, and the 'appification' of everyday life. These studies underscore how apps fundamentally transform how we communicate, access information, make payments, and use digital services ([Dieter et al., 2019](#); [Gerlitz et al., 2019](#); [Goggin, 2021](#); [Miller and Matviyenko, 2014](#); [Pybus and Coté, 2021](#); [Morris and Murray, 2018](#); [Steinberg et al., 2022](#)). In 2022, global app downloads reached 255 billion, as reported by the app analytics company [Data.ai](#), with users spending an average of 5 hours on their mobile devices daily. Furthermore, consumers spent a staggering \$167 billion in app stores. These statistics similarly underscore the profound integration of mobile devices into our daily lives, routines, and various industries, indicating a significant shift in media production and consumption towards mobile platforms. Industries such as finance, health and fitness, dating, sports, media, and food and restaurants are undergoing a transformation, increasingly becoming 'appified' ([Morris and Murray, 2018](#)).

Since its launch in 2008, Apple has upheld the App Store's operations uniformly across 175 countries, which includes its imposition of a 30 percent commission on each app sold. Apple touts this strategy as an economic success story, citing the store's contribution to generating over \$1 trillion in sales, facilitating the creation of more than seven million jobs, and yielding billions of dollars in annual profits for the company. Nonetheless, as the App Store approaches its 16th anniversary, the implementation of divergent regulations has fragmented what was once a unified marketplace, resulting in distinct regulatory environments across numerous countries and regions worldwide ([Mickle, 2024](#)).

Amid ongoing efforts to regulate the digital environment, exemplified by recent initiatives such as the European Union's Digital Services Act (DSA) and Digital Markets Act (DMA), dominant app stores have taken on a crucial role in delineating and controlling boundaries

between countries and regions with regards to apps. In April 2024, one month after Apple's 'begrudging capitulation' to the DMA, there was one alternative, third-party iOS app store available in Europe, with several other alternative stores announced. These include stores such as Epic's Games Store, MacPaw's Setapp iOS store ([Booth, 2024](#); [Roth, 2024a](#); [Roth, 2024b](#)), the [AltStore PAL](#) ('Sideloaded for Everyone—Discover apps that push the boundaries of iOS'), exclusively available in the EU at €1.50 per year, and the B2B-focused [mobivention App marketplace](#).

Regarding compliance with another European Union regulation, the EU General Data Protection Regulation (GDPR), [Krämer \(2024\)](#) finds that Apple's App Store and the Google Play Store 'distort the compliance of apps with data protection laws' through their implementation of privacy labels alongside privacy policies. According to Krämer, 'The design of the labels favours disclosures of developers that offer a variety of apps that can process data across different services and contradictory disclosures do not get flagged nor verified by app stores'.

Driven by these developments, the influence of dominant app stores extends to shaping the global cultures and economies of apps, acting as the primary 'entry point' for app distribution, monetisation, and exploration by users ([Dieter et al., 2019](#)). Consequently, this ASI report explores the implications for country-specific, or regional, cultures and economies of apps, as well as the diverse manifestations of apps and appification worldwide, and examines how critical app studies research can enrich our understanding of these geographic and regulatory dynamics.

On the Nationalities of Issues and Apps

These dynamics echo trends observed on the Web and in the field of Internet studies, where the term 'national web' encapsulates the shift of the Internet from the concept of 'cyberspace,' which evokes a placeless realm of email and data packets, to a web characterised by distinct national domains (.de, .fr, .gr, etc.) and websites tailored to a user's location through their content, advertisements, and language ([Rogers et al., 2012](#)). Moreover, [Google Search](#) began providing localised user experiences and interfaces for specific countries or regions in the mid-2000s and [Facebook](#) offered hyperlocal online targeting capabilities through its array of digital marketing and advertising tools, products, and services in the 2010s ([Helmond et al., 2019](#)). As such, the introduction of local Google Search brought to fruition 'search as research' ([Rogers, 2013](#)), a technique employed for comparative online issue analysis. This approach allowed for the examination of the 'nationality of issues', such as the study of hierarchies of rights-types per country using local Google Search results pages ([DMI, 2016](#)). Similarly, the

widespread use of online advertising and targeting capabilities has enabled new forms of online ‘controversy mapping’ ([Coromina et al., 2023](#)), as well as critical analysis of (country-specific) online tracking technologies ([Helmond et al., 2013](#); [Helmond et al., 2015](#)), cross-border data ‘flows’ ([Van der Vlist and Helmond, 2021](#)), and data-sharing regimes ([Van der Vlist et al., 2022](#)).

Due to their influence in the mobile ecosystem, app stores have become powerful cultural and economic *shapers* ([Dieter et al., 2019](#); [Van der Vlist, 2022](#)). At present, the app stores are driving a new wave of ‘nationalisation’ within the mobile ecosystem, which includes apps and platforms designed for smartphones, tablets, wearables, cars, and other mobile devices ([Van der Vlist et al., forthcoming](#)). Taking cue from a rich tradition of ‘digital methods’-style research originating at the [University of Amsterdam](#) ([Rogers, 2013](#)), these developments should not solely be viewed as challenges but also explored as potential avenues for exploring what may be termed the ‘nationality of apps’, alongside their global cultural and economic dimensions.

Existing ASI research has engaged in comparative analysis of app ecosystems, rankings across countries or regions within the store, or comparisons across multiple stores ([Dieter et al., 2019](#); [Van der Vlist et al., forthcoming](#)). In the early months following the outbreak of the global coronavirus (COVID-19) pandemic in 2020, Apple and Google emerged as central ‘gatekeepers’ in the discussion regarding the role of apps in (sovereign) countries’ responses to the pandemic. Depending on their country of residence, users would be presented with a different selection of app search results that were editorially curated by Apple and Google, together with local governments, health authorities, and other organisations. Using a methodological workaround, ASI researchers managed to survey the global landscape of COVID-19 apps, representing the first global analysis of its kind ([Dieter et al., 2021](#)). They analysed the functionality of individual apps, examined the organisations responsible for them, and examined their infrastructural features. This highlighted the diverse responses observed worldwide, ranging from countries like Germany and the Netherlands providing only a few government-made apps (e.g., for digital contact-tracing and proof of vaccination) to others, such as India, offering dozens of apps developed by various organisations. Moreover, they critically analysed the roles of Apple and Google in governing their COVID-19 app ecosystems during the pandemic.

Another ASI landscape study examined the global presence of ‘super apps’. These apps, exemplified by [WeChat](#), are ‘characterised by a wide range of seemingly unrelated services built onto a core functionality, creating an immersive and unified experience for everyday activities that resembles both an operating system and brand’ ([Van der Vlist et al., 2024: 2](#); cf. [Steinberg, et al., 2022](#)). In addition to categorising various types of super apps, the authors

conducted an in-depth analysis of individual app functionalities, their diverse target markets or industries, the companies responsible for their development, their historical trajectories, and their geographic attributes. This includes strategies for international expansion and cross-border operations. As super apps expand or operate across borders, 'they must navigate diverse cultural norms, local regulations and infrastructural variances, leading to distinct geographic profiles and tailored corporate strategies' ([Van der Vlist et al., 2024: 16](#)). Once again, the authors underscore the roles of Apple and Google in shaping the ascent of super apps and governing access to them through local availability restrictions imposed in various countries and regions worldwide.

Moreover, related studies have emphasised that the evolution of (super) apps is significantly influenced by regional contexts ([Jia and Kenney, 2022](#); [Jia and Ruan, 2020](#); [Kaye et al., 2021](#); [Pitre, 2022](#); [Steinberg et al., 2022](#)). To comply with local regulations and meet infrastructure requirements for their operations across countries or regions, app developers and development companies employ various strategies. These include implementing geoblocking to restrict the app's distribution through app stores, 'muting' or adjusting certain functionalities, and distributing parallel local app versions (as with [Douyin/TikTok's](#) parallel app versions for Chinese and international users, for instance).

Additionally, global dynamics are often reflected in the app store. The Russian invasion of Ukraine on February 24, 2022, sparked an immediate surge in the popularity of VPNs and light US social media apps in Russia. This surge is evident from the increased download counts and the subsequent prominence of these apps in the national app store top charts. Additionally, Ukrainians turned to offline mapping and encrypted communication apps, such as [Signal](#), [Telegram](#), and offline messengers [Zello](#) and [Bridgefy](#) ([Perez, 2022a](#)). Downloads of Elon Musk's ([SpaceX](#)) [Starlink](#) app surged in Ukraine, making it the most-downloaded free app on certain days ([Tan, 2022](#)).

Meanwhile, the Russian app stores experienced a significant loss of thousands of apps following the invasion, although several Big Tech apps remained and maintained high rankings ([Perez, 2022b](#)). Notably, these shifts were not only observed through app market data from companies like [Sensor Tower](#) but also reflected in the national app store top charts. This trend was not confined to Ukraine alone but also extended to neighbouring countries affected by the conflict or with a significant Ukrainian diaspora.

Once again, these shifts in app usage underscore the integral role that apps play in everyday life around the globe. This highlights the importance of research into the cultures and economies of apps, as well as the use of apps and app stores, within this research, employing their 'native' affordances and material traces ([Dieter et al., 2019](#); [Helmond and Van](#)

[der Vlist, 2021](#)).

Practical Context and Setting: ‘Appification’, ‘Data-Sprinting’, and the App Studies Initiative

As apps increasingly embed themselves into the fabric of everyday life across the globe, it’s imperative to grasp and tackle the unique challenges they present. Achieving this demands methodical and empirical exploration, involving a multitude of perspectives and diverse contributions. Recognising this need, the [App Studies Initiative](#) (ASI) urges its members, students, and researchers within the broader fields of app and platform studies to expand their horizons beyond conventional disciplinary boundaries and research methodologies. Instead, we advocate for the formation of collaborative teams dedicated to methodological and empirical exploration.

Since around 2015, ASI researchers have fostered collaborations with numerous colleagues and students across universities in the Netherlands, the United Kingdom, Germany, and beyond. This collaboration has been facilitated through various on-site workshops and ‘data sprints’, which are a collaborative, interdisciplinary format commonly used in ‘digital methods’ research (e.g., [Berry et al., 2015](#)) and ‘digital controversy mapping’ ([Munk et al., 2019](#)). This includes numerous sprint projects that we organised within the annual [Digital Methods Summer and Winter Schools](#) at the University of Amsterdam, Department of Media Studies.

The Master’s elective course, ‘[Appification: The Cultures and Economies of Apps](#)’, examines probing questions surrounding the culture and economies of apps and app stores. How do apps mediate and shape cultural practices? How are social norms and values embedded into apps? And, how do app stores reflect our cultural and social landscape? In parallel, the course critically investigates the political economy of apps and app stores. How do app stores organise and govern app ecosystems? Who are the key stakeholders in the commodification of app-based data? What kinds of data markets and infrastructures have emerged around apps?

In a relatively short 6-week period, students were introduced to the methodological and theoretical foundations of ‘multi-situated app studies’ ([Dieter et al., 2019](#)), equipping them with approaches, concepts, methods, and tools that leverage the different ‘entry points’ and empirical research materials available for critical app studies research to tackle these types of questions. Throughout the course weeks, they were introduced to relevant tools for collecting, analysing, and visualising app and app store data, providing them with the skills needed to navigate this complex landscape effectively. At the end of this period, they participated in a

one-week data sprint, organised within the Department of Media Studies on March 25–28, 2024. The insights gained during this week form the basis of the contributions collected in this report, rooted in the research conducted during this intensive collaborative endeavour.



Figure 1.1. Spring Data Sprint and Festive Poster Presentations, ‘Appification: The Cultures and Economies of Apps’, held at the [Humanities Labs](#), Amsterdam Institute for Humanities Research (AIHR), University of Amsterdam, Netherlands, from March 25–28, 2024. Photos by the authors.

Despite their diverse methodologies and perspectives, the contributors—our students—share a common interest in apps and are committed to addressing issues and concerns related to the ongoing process of appification, which unfolds in various ways across the globe. Moreover, engaging in app studies research transcends mere critical conceptual exploration; it necessitates collaboration and a sincere interest in and engagement with the distinct materialities, infrastructures, and relationalities of apps and platforms (Gerlitz et al., 2019; Van der Vlist, 2022). This is crucial for critically assessing the material politics and political economy of apps and platforms, including beyond the mobile ecosystem. Our objects

of study, along with their 'native' techniques and materials, are in a constant state of flux, impacting and at times significantly limiting our research opportunities without announcement. Staying closely attuned to and critically monitoring these changes is imperative for effective critical inquiry in this dynamic and complex field.

Overview of the Chapters

This report comprises three original research contributions, each exploring national or fragmenting app cultures and economies. The chapters are organised from broader, general themes to more specific, focused studies to provide a coherent narrative. This structure allows readers to first grasp overarching trends and cultural dynamics before examining specific app categories. Note that these contributions are part of a larger collection of research reports originating from the Spring Data Sprint, not all of which were included in this publication.

In [Chapter 2](#), 'Transnational Gaming Flows: A Study of Mobile Game Import/Export Patterns and Genre Preferences Across Asian and Western Markets', **Shiyun Qian**, **Lingyun Yue**, and **Yuhe Ma** examine the cultural dynamics and globalisation of digital entertainment through mobile gaming. This study analyses the top-100 downloaded mobile games in ten Western and Asian countries, revealing each nation's gaming preferences and the cultural motivations behind them. The authors explore how the COVID-19 pandemic has accelerated mobile gaming's rise, surpassing music and films as a central aspect of youth culture. The research fills a gap in mobile gaming studies by critically discussing traditional views on cultural invasion and highlighting how mobile games reflect and influence cultural exchange and globalisation trends.

In [Chapter 3](#), 'Exploring Cross-National Work Cultures: A Study of Job Apps Across Six National App Stores', **Federico Lavatori** analyses the differences in job-related apps across six national app stores. The study focuses on apps linked to the workplace, aiming to understand the heterogeneous landscape through the lens of cultural norms and socioeconomic issues. Lavatori's findings indicate that domestic App Stores in countries like China, Japan, and Russia feature numerous work-related apps tailored to regional needs, while in the US, globally-scaled job-centric platforms dominate. By combining app descriptions with qualitative coding and cultural dimensions, the research uncovers cross-national differences and similarities in communication styles, data privacy, security, and employment flexibility, providing a comprehensive view of the app-based work environment.

In [Chapter 4](#), 'National Health and Fitness App Cultures: An Analysis Across American, Asian, and European App Stores', **Winnie Lee**, **Laura Dea Vamper**, and **Cong Hung Đinh** investigate the reflection of local health cultures in national health and fitness apps. The research focuses on the top health and fitness apps in eleven countries, analysing their content, functions, and services. By investigating how these apps are tailored to align with local health needs and practices, the study underscores the regional disparities in health focus areas across Asia, America, and Europe. The authors also investigate the revenue models of these apps, highlighting how developers generate income through subscriptions and in-app purchases, which offer exclusive benefits to local users. This research underscores the importance of cultural adaptation in app development, illustrating how national factors influence the operation and success of health and fitness apps in various regions.

Overall, these contributions document the national specificity and cultural differences in app cultures and economies as reflected in dominant app stores. They provide evidence of how apps are influenced by and adapt to local cultural norms, socioeconomic conditions, and user preferences. This collection of studies highlights the importance of considering national contexts in the development and deployment of digital platforms.

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