Smartphones and Mobile Business Ecosystems
History and key events that have shaped the business landscape

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A Brief Biography ...

- Graduated from Helsinki University of Technology in 2005, focus in Telecommunications

- Worked in the wireless industry between 2004—2012, including 5 years in market analysis, strategic advisory & management roles

- Currently a doctoral student at Aalto SCI (School of Science) in the field of networking business, finalizing my Licentiate thesis

- Research interests include business ecosystems, two-sided markets, and product platforms in the context of the mobile smartphone business, as well as path dependence as it explains the strategic choices firms have made in the aforementioned areas
Contents of the Lecture

A Brief History of Smartphones
• How Smartphones Came to Be
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• Android's Rise and Symbian's Fall
• Crumbling Walled Gardens and the Reduced Role of Operators
• War of Ecosystems

Studying and explaining the success of mobile business ecosystems
• The angle of entry\(^1\) into the specific business domain of smartphones – a novel application of path dependency theory

How Smartphones Came to Be

• Origins in the mid-1990s
  – Cellular handsets with PDA functionality
  – PDAs with cellular functionality

• Communicator & cellular PDA functionality focused on personal information management with a graphical UI
  – Business and productivity oriented devices
  – QWERTY keyboard for convenient typing of notes and email
  – Basic web browser in the Nokia Communicator 9000 already in 1996!
  – Proprietary and closed operating systems – non-extensible

• First ‘real’ smartphones in 2001—2003 based on Symbian OS (Nokia, later Sony Ericsson & Motorola), Palm OS (Palm), and BlackBerry OS (RIM)
First Growth Wave and Consumerization

• Microsoft enters the smartphone OS arena in 2001
  – Added cellular capabilities and smartphone functionality to its 'Windows Pocket PC 2002', later renamed 'Windows Mobile' in 2003
  – Conservative, enterprise-oriented feature set failed to attract consumers
  – Global market share 12–18% during 2004—2008, more popular in N. America

• Transition from enterprise devices to more consumer-oriented devices by enabling multimedia functionality and 3rd party applications, 2003—2007
  – Especially Nokia’s Symbian-based S60 UI gained widespread popularity: 67% share of smartphones sold globally ran Symbian in 2006 (mostly Nokia devices)
  – Sony Ericsson and Motorola had only limited success with their UIQ smartphones

• RIM (BlackBerry) is the first handset manufacturer to succeed in solution sales and gains a large market share in the B2B market
  – Secure enterprise email, PIM, and device management solution
  – Sold directly to enterprise IT depts & operators with promises of security and a steady ARPU
  – Consumer pull through a more consumer-oriented (Curve, Pearl) portfolio and celebrity endorsements

Source for market share data: Canalys

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Apple’s Rise and the Paradigm Change

• Apple introduced the iPhone in Jan 2007
• Marked a fundamental change in the user input paradigm
  – A vastly different design from existing smartphones with a large, finger-touch friendly screen as the only input method
  – Nokia had experimented with stylus-based touch UIs in the Symbian S90 product, Nokia 7710, but abandoned its development in favor of S60
  – Google adopted the same paradigm in its Android OS platform
• Underlined end user experience (UX), not breadth of features
  – Viewed by industry incumbents as a niche product, not ‘real smartphone’, not regarded as a serious mainstream competitor – how wrong they were!
  – The UI smoothness, consistency, delightfulness, and general ease of use won over consumers from more complex smartphones
• Originally only limited geographical availability through exclusive carrier partners but gradually reached global distribution
App Store as a Platform for Complementary Innovation

- Apple announced the iPhone Software Development Kit (SDK) in Oct 2007 and launched it in March 2008
- iPhone SDK allowed individuals and companies to enroll in the iPhone Developer Program for a modest fee, and develop and publish free or commercial software applications for the iPhone
- A consumer-oriented application marketplace called the iPhone App Store, run and curated by Apple, opened in July 2008
- Business model based on simple revenue sharing scheme
  - The developer gets 70% of the revenue, and Apple gets the remaining 30%
  - Later Apple added support for in-app purchases, a type of micropayment accessible from within apps – the same revenue sharing scheme applies
- Not the first mobile application store or developer program, but the first with an attractive, working business model!
  - Convenience, discoverability, non-fragmentation, ease of development attracted consumers and developers alike, spurring complementary innovation on the platform
Android's Rise …

• Google and the newly formed ‘Open Handset Alliance’ announced a new smartphone software platform called Android in Nov 2007
  – Marketed as an ”open platform for developers, users, and industry” offering a ”cutting-edge user experience”
  – Backed by initially 34 firms and organizations from essentially all parts of the value network or ecosystem involved in mobile business

• Android offered a ”royalty-free” and ”open-source” alternative to Symbian/S60 and Windows Mobile and was perceived as superior in terms of its user experience, though not quite matching the iPhone
  – Intellectual property related to cellular technology and media formats/codecs was not included in Android, these had to be licensed separately
  – Still, Android considerably and permanently lowered the barriers to entry for prospective smartphone manufacturers, particularly in China

• First devices by HTC, followed by Samsung, LG, Motorola and S-E (2009)
  – Samsung Galaxy S and its successors helped Android gain market share rapidly

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... and Symbian’s Fall

- While Android was gaining momentum, Symbian/S60 was rapidly losing its competitiveness from consumer perception, UX, and technical perspectives
  - Despite the economic downturn, Nokia smartphone sales continued strong in 2008—2009
  - The cumbersome nature (~20 million lines of code!) and legacy of the Symbian software asset were slowing the much needed renewal of the platform
- Symbian was made open source and royalty free like Android, governed by the Symbian Foundation, but gained little traction
  - The lagging UX and other shortcomings were all too apparent
  - Perceived exclusively as a Nokia platform, limiting the willingness of existing and potential partners to invest in it
- App developers were migrating to iPhone and Android camps due to:
  - Better returns for their investments through lower development costs
  - Easier monetization and discovery
  - A wide audience of consumers that were willing to purchase applications
Crumbling Walled Gardens and the Reduced Role of Operators

• The iPhone forced mobile network operators around the world to adapt to new kinds of rules and dynamics
  – Even major incumbent operators holding strong bargaining power in large markets such as the US and Western Europe could no longer dictate the UX on smartphones
  – Apple categorically refused any attempts by operators to alter or customize the experience on its devices, but most Android manufacturers supported customization, co-branding, etc.

• Major shift in the digital content and services value chain, especially in terms of mobile applications and their distribution
  – Major incumbent operators offered 'walled gardens' for their subscribers: closed, operator-controlled pallets of restricted content and services
  – The content and services were offered through deals and partnerships between the operators and content/service providers, and the operators benefitted from the transactions made by their subscribers – not the case with Apple's App Store and iTunes!
  – Apple's revenue sharing scheme and own billing system effectively cut the operators out from the digital content value chain

• Over-the-top communications (OTT) eating into operators’ revenue streams
  – Key challenge: how to preserve margins and resist being just a dumb ‘bit pipe’?
War of Ecosystems (1/2)

• At least by 2007, most handset vendors had recognized that having good devices is not enough – they need to be complemented by services, content, and accessories that may together form integrated solutions to a particular user need
  – Apple launched the iPhone with iTunes media support, later adding the App Store
  – Android integrated deeply with Google's core consumer services (Search, Gmail, Maps)
  – Nokia promoted its Ovi Store and other services on its devices, though the integration was not very good, and the service offering suffered from a lack of vision and focus as well as technical woes, fragmentation and quality issues being prominent

• Thriving business ecosystems had formed around certain key smartphone products, their OS and developer platforms, and digital content stores

• Android overtook Symbian in quarterly sales in Q4 2010, followed by Apple; RIM, Microsoft were falling further behind

• Nokia’s in-house platform strategy, built around Symbian and MeeGo, was not coming to fruition – a strong ecosystem partner was needed
War of Ecosystems (2/2)

• The industry had entered an era where there was a war between ecosystems, not merely a battle between devices
  – The outcome was Nokia's new strategy, announced in Feb 2011
  – The company entered into a strategic alliance with Microsoft, focusing its smartphone efforts on the Windows Phone platform; both Symbian and MeeGo were to be ramped down

• Nokia joined forces with Microsoft to create a third ecosystem to compete with the ecosystems of Apple and Google (Android)

• The signs of increasingly intense rivalry between mobile business ecosystems are becoming more evident as of 2012 and beyond
  – E.g., Apple launched iOS 6, replacing Google Maps with its own mapping application – it wanted to rid its ecosystem of a control point occupied by Google
  – Owning the mapping platform gives Apple the opportunity to collect more data on user behavior which in turn can be leveraged to improve existing services and monetized via advertisers – Apple is increasingly fighting Google in its home arena of advertising
  – Google is also increasingly leveraging the popularity of its services as a weapon against rivaling ecosystems, e.g., by dropping push-Gmail support for non-Android devices
So much for history …

How does the legacy of a firm, including its history, assets, and capabilities, influence its strategic choices and inclinations today?

Is there a *path-dependent* relationship, and if so, what can we deduce about the firm’s *leverage* to successfully compete in a new business domain based on its legacy?
Path Dependence: A Very Brief Introduction

• Path dependency theory in economics
  – Originally conceived by economists, most notably Paul A. David\(^2\) as well as Stanley J. Liebowitz & Stephen E. Margolis\(^3\)
  – Aims to explain technology adoption processes such as why industries have sometimes settled on inferior technological standards, and also to understand industry evolution in general

• Economies and markets appear to make errors in the choice of products and standards
  – May even lock-in to these incorrect choices *despite* readily available information that points out better choices (in spite of voluntary decisions, individually maximizing behavior)
  – Even a minor advantage or a seemingly inconsequential lead for some technology, product, or standard can have significant and irreversible influences on the ultimate market structure

• Well known examples: QWERTY (from the 1870s!), Wintel (x86 and Windows), …

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Applying the theory of path dependence: Angle of entry into the smartphone business

- Also individual firms can exhibit path dependence, often visible in the evolution of their product/service offering

- Different history
- Different assets
- Different capabilities

→ Different angles of entry resulting in path-dependent leverage to compete in a new business domain?
Thank you!

Any questions? Thoughts?

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