

The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson

The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson The innovators how a group of hackers geniuses and geeks created digital revolution Walter Isaacson The story of the digital revolution is a testament to the extraordinary efforts of a diverse group of individuals—hackers, geniuses, and geeks—who challenged conventions, pushed technological boundaries, and ultimately transformed the way humanity communicates, works, and lives. Walter Isaacson's compelling narrative in his book The Innovators offers an in-depth look at these pioneers, highlighting how collaboration, ingenuity, and relentless curiosity fueled an unprecedented era of innovation. This article explores the key figures, ideas, and breakthroughs that collectively shaped the digital revolution, emphasizing how a community of brilliant minds changed the world forever.

The Birth of Digital Innovation: Early Pioneers and Foundations

The Dawn of Computer Science and the First Geniuses

The roots of the digital revolution trace back to early computer scientists and mathematicians whose groundbreaking ideas laid the groundwork for modern computing. Figures such as Alan Turing, often regarded as the father of computer science, envisioned machines capable of logical operations, setting the stage for future innovations.

Alan Turing: Developed the concept of the Turing machine, a theoretical model of computation that remains fundamental today. Turing's work during World War II on code-breaking machines like the Bombe was pivotal in advancing computer technology.

John von Neumann: Introduced the von Neumann architecture, a design model for stored-program computers that is still used in most computers today.

Grace Hopper: A pioneering computer scientist who developed the first compiler, enabling programmers to write code in human-readable language and paving the way for modern programming languages.

The Role of Hackers and Geeks in Early Innovation

Long before the term "hacker" acquired a sometimes negative connotation, early hackers were passionate tinkerers and problem-solvers who pushed the limits of existing systems.

MIT Tech Model Railroad Club: An early example of hacker culture, where 2 students experimented with electronics and computer programming, laying the groundwork for hacker ethics and community.

The Homebrew Computer

Club: A gathering of hobbyists and engineers that fostered collaboration, sharing ideas, and sparking innovations like the Altair 8800 microcomputer. The Rise of Personal Computing and Silicon Valley's Innovators Transformative Technologies and Entrepreneurial Spirit The 1970s and 1980s marked a period where individual geniuses and small startups revolutionized computing, making technology accessible to the masses. Steve Jobs and Steve Wozniak: Co-founders of Apple Inc., they developed the Apple I and Apple II, bringing personal computers into homes and classrooms. Bill Gates and Paul Allen: Founders of Microsoft, they created software that became the backbone of personal computing, including MS-DOS and Windows. Marc Andreessen: Co-creator of Mosaic, the first widely-used web browser, which revolutionized internet access and usability. The Hacker Ethic and the Open Source Movement The culture of sharing and collaborative development was instrumental in accelerating technological progress. Open Source Software: Projects like Linux, initiated by Linus Torvalds, exemplify how community-driven development can produce robust, free software. Hacker Ethic: Emphasized the free flow of information, decentralization, and the belief that barriers to knowledge should be broken down—principles that continue to underpin digital innovation. The Internet Boom: Connecting the World From ARPANET to the World Wide Web The creation of ARPANET in the late 1960s by researchers funded by the U.S. Department of Defense set the foundation for the internet. Tim Berners-Lee: Invented the World Wide Web in 1989, introducing HTTP, HTML, and web browsers, transforming the internet into a user-friendly platform. Vint Cerf and Bob Kahn: Developed TCP/IP protocols, enabling different networks to connect and communicate seamlessly.

3 The Innovators Behind the Digital Ecosystem A new generation of entrepreneurs and engineers emerged to harness the internet's potential. Jeff Bezos: Founded Amazon, revolutionizing e-commerce and cloud computing. Larry Page and Sergey Brin: Created Google, transforming information retrieval and online advertising. Mark Zuckerberg: Launched Facebook, redefining social connectivity and digital identity. The Smartphone Revolution and the Rise of Tech Giants From Computers to Mobile Devices The development of powerful, portable smartphones democratized access to digital tools, apps, and services. Apple's iPhone: Introduced in 2007, it integrated computing, communication, and entertainment into a single device, setting new standards. Android OS: Open-source platform that expanded smartphone accessibility globally. The Innovator Geniuses Behind the Mobile Era Key figures drove the smartphone revolution and the

expansion of the digital ecosystem. Steve Jobs: His vision for user-friendly interfaces and sleek hardware made the iPhone a cultural phenomenon. Andy Rubin: Led the development of Android, fostering a diverse ecosystem of devices and developers. Artificial Intelligence and the Future of Innovation The Geniuses Leading AI Advancements AI has become the next frontier, with researchers and entrepreneurs pushing the boundaries of machine learning, natural language processing, and robotics. Geoffrey Hinton: Known as the "Godfather of Deep Learning," his work revolutionized neural networks. Yoshua Bengio and Yann LeCun: Pioneered research in deep learning, enabling advances in speech recognition, image analysis, and autonomous systems. Elon Musk: Co-founded OpenAI and Tesla, integrating AI into transportation, energy, and automation. The Ethical and Societal Implications As innovators push AI forward, questions about ethics, privacy, and societal impact become increasingly critical. Ensuring AI transparency and fairness Addressing job displacement and economic shifts Developing regulations and responsible AI frameworks Conclusion: The Legacy of the Innovators The digital revolution, driven by a vibrant community of hackers, geeks, and geniuses, exemplifies how curiosity, collaboration, and bold experimentation can reshape the world. Walter Isaacson's *The Innovators* captures these stories, emphasizing that innovation is rarely the work of solitary geniuses but rather the result of collective effort and shared vision. From early computer pioneers to modern AI developers, each contributor has played a vital role in building an interconnected, digital world. Their legacy continues to inspire new generations of innovators who are poised to push the boundaries of what is possible, ensuring that the digital revolution remains an ongoing story of human ingenuity and collaboration.

Keywords: digital revolution, hackers, geeks, innovators, Walter Isaacson, computing history, internet development, tech pioneers, open source, AI, innovation, Silicon Valley

Question Answer

What is the main focus of Walter Isaacson's book 'The Innovators'? The book explores how a diverse group of hackers, geniuses, and geeks collaborated over decades to create the digital revolution, highlighting their innovations and collective efforts. Who are some key figures highlighted in 'The Innovators'? The book features pioneers like Alan Turing, Ada Lovelace, Bill Gates, Steve Jobs, Linus Torvalds, and many others who contributed to the development of computers, software, and digital technology. How does 'The Innovators' depict the collaborative nature of technological advancements? Isaacson emphasizes that the digital revolution was driven by teamwork, open collaboration, and the sharing of ideas among diverse individuals over

generations, rather than isolated genius alone. What role did early computer scientists and programmers play in the digital revolution according to the book? They laid the foundational concepts, developed programming languages, and created the first computers, enabling subsequent innovators to build upon their work and accelerate technological progress. 5 How does 'The Innovators' portray the impact of the internet and personal computing? The book illustrates how the development of personal computers and the internet transformed society, democratized information, and created new industries, all through the collaborative efforts of many innovators. What lessons about innovation and collaboration can readers learn from 'The Innovators'? Readers learn that innovation often results from diverse teams working together, sharing ideas openly, and building upon each other's work, rather than relying solely on individual brilliance. How does Walter Isaacson connect the stories of individual innovators to the broader digital revolution? He weaves personal biographies with technological milestones, showing how individual visions, persistence, and teamwork collectively shaped the digital age. Why is 'The Innovators' considered a relevant book for understanding current technological trends? Because it provides a comprehensive history of digital innovation, emphasizing collaboration and creativity, which are still central to today's fast-paced technological advancements.

Innovators: How a Group of Hackers, Geniuses, and Geeks Created the Digital Revolution — Walter Isaacson

The story of the digital revolution is a saga of human ingenuity, relentless curiosity, and collaborative spirit. At its core lie the remarkable individuals—hackers, scientists, entrepreneurs, and visionaries—whose combined efforts transformed society from a predominantly analog world into a hyper-connected digital age. Walter Isaacson, renowned biographer and chronicler of technological pioneers, masterfully captures this transformative epoch, illustrating how these innovators' collective genius catalyzed unprecedented change. In this article, we delve into the intricate tapestry of the digital revolution, exploring the key figures, pivotal inventions, and cultural shifts that marked this epoch. Drawing inspiration from Isaacson's narrative style, we examine how a community of brilliant minds—often outsiders and rebels—challenged conventions to redefine what technology could do for humanity. -

-- The Genesis of the Digital Revolution: From Hobbyists to Pioneers

The Early Days: The Birth of the Hacker Ethic

The roots of the digital revolution trace back to the 1960s and 1970s, a time when computer technology was still in its infancy. During this period, a unique culture emerged among a subset of enthusiasts—students, programmers, and engineers—who believed in the free

exchange of knowledge and the power of technology to democratize information. - The Hacker Ethic: Coined by Steven Levy in his seminal book *Hackers: Heroes of the Computer Revolution*, this ethos championed curiosity, hands-on tinkering, and the belief that information should be freely accessible. Hackers, in this context, were seen as *The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson* 6 innovators rather than malicious actors. - Key Figures: - Kevin Mitnick: Once considered the most-wanted hacker in the U.S., Mitnick's early exploits showcased the talent and audacity of these early hackers. - Richard Stallman: Founder of the Free Software Foundation and creator of the GNU Project, Stallman emphasized software freedom, laying the groundwork for open-source development. The hacker culture laid the foundation for collaborative innovation, emphasizing experimentation and shared knowledge—principles that would underpin later technological breakthroughs. The Development of Personal Computing: Making Technology Accessible The transition from centralized mainframe computers to personal devices was driven by a handful of visionaries who believed that computing should be democratized. - Key Innovators: - Steve Wozniak and Steve Jobs: Co-founders of Apple Inc., they pioneered the personal computer with the Apple I and II, making computing accessible to millions. - Bill Gates and Paul Allen: With Microsoft, they aimed to bring software to a broader audience, emphasizing compatibility and affordability. - Major Milestones: - The launch of the Altair 8800 in 1975, often considered the first microcomputer. - The development of the Apple Macintosh in 1984, which introduced a graphical user interface (GUI) to the masses. These advances made computing tools more user-friendly and accessible, setting the stage for widespread adoption and innovation. --- The Innovator Geniuses Behind the Digital Leap The Pioneers Who Shaped the Digital Landscape Several key individuals stand out as architects of the digital revolution. Their unique visions and relentless pursuit of innovation transformed theoretical concepts into everyday reality. 1. Tim Berners-Lee: Architect of the World Wide Web - Developed the World Wide Web in 1989 at CERN as a solution to share information across different systems. - Invented key technologies such as HTML, HTTP, and URLs, creating a seamless information-sharing platform. - Advocates for an open and accessible internet, emphasizing net neutrality and privacy. 2. Alan Turing: The Father of Computer Science - Laid the theoretical groundwork with his concept of a universal machine in the 1930s. - His work during WWII on code-breaking (notably the Enigma) demonstrated the practical power of computing. 3. Grace Hopper: The

Queen of Software - Pioneered the development of compilers, making programming more accessible. - Influenced the development of COBOL, a language still in use today. 4. Steve Jobs and Steve Wozniak: The Silicon Valley Innovators - Co-created Apple, transforming personal computing and later, mobile devices. - Pushed the boundaries of design, usability, and consumer electronics. 5. Mark Zuckerberg: The Social Media Trailblazer - Created Facebook in 2004, revolutionizing social interaction and information dissemination. - Sparked debates on The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson 7 privacy, data security, and digital community. The Geeks and Hackers Who Disrupted Industries Beyond these household names, countless lesser-known figures contributed to the revolution: - Linus Torvalds: Developed Linux, an open-source operating system that powers servers, smartphones, and supercomputers. - Ada Lovelace: Recognized as the first computer programmer, her work prefigured modern software development. - John Carmack: Pioneered 3D graphics in gaming, influencing virtual reality and simulation. --- The Critical Technologies and Inventions Fueling the Revolution Semiconductors and Microprocessors The invention of the semiconductor and the subsequent development of microprocessors (notably Intel's 4004 and 8080 chips) revolutionized computing power, enabling smaller, faster, and more affordable devices. - Enabled the proliferation of personal computers, smartphones, and embedded systems. - Sparked a global industry that continues to innovate at an exponential pace. Networking and the Internet - The development of ARPANET in the late 1960s laid the groundwork for the internet. - Key innovations included packet switching and TCP/IP protocols. - The commercialization of the internet in the 1990s transformed communication, commerce, and culture. Software and Open Source Movement - The rise of software development environments and open-source projects fostered collaboration. - Projects like Linux, Firefox, and Apache empowered users and developers, accelerating innovation. Mobile Technology and Smartphones - The advent of smartphones, epitomized by the iPhone (2007), combined computing, communication, and multimedia into a single device. - Enabled new business models (apps, mobile payments) and social behaviors. --- Societal Shifts and Cultural Changes Driven by the Digital Revolution The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson 8 Transforming Communication and Information Sharing - Social media platforms have created instant connectivity, enabling grassroots movements, activism, and global communities. -

Information is now democratized; anyone with internet access can publish and access knowledge.

Disrupting Traditional Industries - Music: Digital downloads and streaming services (Spotify, Apple Music) transformed music consumption. - Media: Online news, blogs, and social media challenged traditional journalism. - Retail: E-commerce giants like Amazon revolutionized shopping. Impact on Work and Economy - Rise of the gig economy, remote work, and digital entrepreneurship. - Automation and AI threaten traditional jobs but also create new opportunities.

Privacy and Ethical Challenges - Data privacy concerns, surveillance, and cybersecurity threats have become central issues. - The debate over net neutrality, intellectual property, and digital rights continues to shape policy. --- The Human Face of the Digital Revolution: Stories of Geniuses and Rebels Walter Isaacson's narratives illuminate not only the technological milestones but also the human stories behind them—stories of perseverance, rebellion, collaboration, and vision. - Steve Jobs: A visionary with a perfectionist streak, driven by a desire to create beautiful, intuitive technology. - Linus Torvalds: A passionate hacker who believed in open collaboration, challenging proprietary software models. - Ada Lovelace: A trailblazing mathematician whose theoretical insights prefigured modern programming. These stories underscore that innovation often arises from the fringes—rebellious outsiders and geeks who refuse to accept the status quo. --- The Legacy of the Digital Revolution and Future Horizons The innovators chronicled by Walter Isaacson have left an indelible mark on society, shaping our lives in profound ways. Their creations have fostered unprecedented connectivity, knowledge dissemination, and economic transformation. Looking ahead, the digital revolution is far from over. Emerging fields such as artificial intelligence, quantum computing, blockchain, and biotech integration promise to redefine what is possible. - AI and Machine Learning: Automating complex tasks and enabling personalized experiences. The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson 9 - Quantum Computing: Unlocking computational capabilities beyond classical limits. - Blockchain: Transforming trust, security, and decentralization. The ongoing evolution will require new generations of hackers, geeks, and visionaries—those willing to challenge conventions and harness technology for societal good. --- Conclusion The digital revolution, as narrated by Walter Isaacson, is a testament to the power of human ingenuity and collaborative innovation. From the early hackers who believed in free information to the tech giants who built the infrastructure of our digital lives, each contributed a vital piece to this complex

puzzle. Their stories remind us that progress often emerges from the fringes—rebellious minds and passionate geeks who dare to dream and defy. As we venture into digital revolution, hackers, geniuses, geeks, Walter Isaacson, technological innovation, Silicon Valley, computer programming, entrepreneurship, tech pioneers

Right here, we have countless books **The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson** and collections to check out. We additionally allow variant types and in addition to type of the books to browse. The adequate book, fiction, history, novel, scientific research, as competently as various supplementary sorts of books are readily handy here. As this **The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson**, it ends happening innate one of the favored ebook **The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson** collections that we have. This is why you

remain in the best website to see the amazing book to have.

1. What is a **The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson** PDF? A PDF (Portable Document Format) is a file format developed by Adobe that preserves the layout and formatting of a document, regardless of the software, hardware, or operating system used to view or print it.
2. How do I create a **The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson** PDF? There are several ways to create a PDF:
3. Use software like Adobe Acrobat, Microsoft Word, or Google Docs, which often have built-in PDF creation tools.
Print to PDF: Many applications and operating systems have a "Print to PDF"

- option that allows you to save a document as a PDF file instead of printing it on paper. Online converters: There are various online tools that can convert different file types to PDF.
4. How do I edit a **The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson** PDF? Editing a PDF can be done with software like Adobe Acrobat, which allows direct editing of text, images, and other elements within the PDF. Some free tools, like PDFescape or Smallpdf, also offer basic editing capabilities.
 5. How do I convert a **The Innovators How A Group Of Hackers Geniuses And Geeks Created Digital Revolution Walter Isaacson** PDF to another file format? There are multiple ways to convert a PDF to another format:
 6. Use online converters like Smallpdf, Zamzar, or Adobe

Acrobats export feature to convert PDFs to formats like Word, Excel, JPEG, etc. Software like Adobe Acrobat, Microsoft Word, or other PDF editors may have options to export or save PDFs in different formats.

7. How do I password-protect a PDF? Most PDF editing software allows you to add password protection. In Adobe Acrobat, for instance, you can go to "File" -> "Properties" -> "Security" to set a password to restrict access or editing capabilities.

8. Are there any free alternatives to Adobe Acrobat for working with PDFs? Yes, there are many free alternatives for working with PDFs, such as:

9. LibreOffice: Offers PDF editing features. PDFsam: Allows splitting, merging, and editing PDFs. Foxit Reader: Provides basic PDF viewing and editing capabilities.

10. How do I compress a PDF file? You can use online tools like

Smallpdf, ILovePDF, or desktop software like Adobe Acrobat to compress PDF files without significant quality loss. Compression reduces the file size, making it easier to share and download.

11. Can I fill out forms in a PDF file? Yes, most PDF viewers/editors like Adobe Acrobat, Preview (on Mac), or various online tools allow you to fill out forms in PDF files by selecting text fields and entering information.

12. Are there any restrictions when working with PDFs? Some PDFs might have restrictions set by their creator, such as password protection, editing restrictions, or print restrictions. Breaking these restrictions might require specific software or tools, which may or may not be legal depending on the circumstances and local laws.

Introduction

The digital age has revolutionized the way we read, making books more accessible than ever. With the rise of ebooks, readers can

now carry entire libraries in their pockets. Among the various sources for ebooks, free ebook sites have emerged as a popular choice. These sites offer a treasure trove of knowledge and entertainment without the cost. But what makes these sites so valuable, and where can you find the best ones? Let's dive into the world of free ebook sites.

Benefits of Free Ebook Sites

When it comes to reading, free ebook sites offer numerous advantages.

Cost Savings

First and foremost, they save you money. Buying books can be expensive, especially if you're an avid reader. Free ebook sites allow you to access a vast array of books without spending a dime.

Accessibility

These sites also enhance

accessibility. Whether you're at home, on the go, or halfway around the world, you can access your favorite titles anytime, anywhere, provided you have an internet connection.

Variety of Choices

Moreover, the variety of choices available is astounding. From classic literature to contemporary novels, academic texts to children's books, free ebook sites cover all genres and interests.

Top Free Ebook Sites

There are countless free ebook sites, but a few stand out for their quality and range of offerings.

Project Gutenberg

Project Gutenberg is a pioneer in offering free ebooks. With over 60,000 titles, this site provides a wealth of classic literature in the public domain.

Open Library

Open Library aims to have a webpage for every book ever published. It offers millions of free ebooks, making it a fantastic resource for readers.

Google Books

Google Books allows users to search and preview millions of books from libraries and publishers worldwide. While not all books are available for free, many are.

ManyBooks

ManyBooks offers a large selection of free ebooks in various genres. The site is user-friendly and offers books in multiple formats.

BookBoon

BookBoon specializes in free textbooks and business books, making it an excellent resource for students and professionals.

How to Download Ebooks

Safely

Downloading ebooks safely is crucial to avoid pirated content and protect your devices.

Avoiding Pirated Content

Stick to reputable sites to ensure you're not downloading pirated content. Pirated ebooks not only harm authors and publishers but can also pose security risks.

Ensuring Device Safety

Always use antivirus software and keep your devices updated to protect against malware that can be hidden in downloaded files.

Legal Considerations

Be aware of the legal considerations when downloading ebooks. Ensure the site has the right to distribute the book and that you're not violating copyright laws.

Using Free Ebook Sites for Education

Free ebook sites are invaluable for educational purposes.

Academic Resources

Sites like Project Gutenberg and Open Library offer numerous academic resources, including textbooks and scholarly articles.

Learning New Skills

You can also find books on various skills, from cooking to programming, making these sites great for personal development.

Supporting

Homeschooling

For homeschooling parents, free ebook sites provide a wealth of educational materials for different grade levels and subjects.

Genres Available on Free

Ebook Sites

The diversity of genres available on free ebook sites ensures there's something for everyone.

Fiction

From timeless classics to contemporary bestsellers, the fiction section is brimming with options.

Non-Fiction

Non-fiction enthusiasts can find biographies, self-help books, historical texts, and more.

Textbooks

Students can access textbooks on a wide range of subjects, helping reduce the financial burden of education.

Children's Books

Parents and teachers can find a plethora of children's books, from picture books to young adult novels.

Accessibility Features of Ebook Sites

Ebook sites often come with features that enhance accessibility.

Audiobook Options

Many sites offer audiobooks, which are great for those who prefer listening to reading.

Adjustable Font Sizes

You can adjust the font size to suit your reading comfort, making it easier for those with visual impairments.

Text-to-Speech

Capabilities

Text-to-speech features can convert written text into audio, providing an alternative way to enjoy books.

Tips for Maximizing Your

Ebook Experience

To make the most out of your ebook reading experience, consider these tips.

Choosing the Right

Device

Whether it's a tablet, an e-reader, or a smartphone, choose a device that offers a comfortable reading experience for you.

Organizing Your Ebook

Library

Use tools and apps to organize your ebook collection, making it easy to find and access your favorite titles.

Syncing Across Devices

Many ebook platforms allow you to sync your library across multiple devices, so you can pick up right where you left off, no matter which device you're using.

Challenges and

Limitations

Despite the benefits, free ebook sites come with challenges and limitations.

Quality and Availability

of Titles

Not all books are available for free, and sometimes the quality of the digital copy can be poor.

Digital Rights

Management (DRM)

DRM can restrict how you use the ebooks you download, limiting sharing and transferring between devices.

Internet Dependency

Accessing and downloading ebooks requires an internet connection, which can be a limitation in areas with poor connectivity.

Future of Free Ebook

Sites

The future looks promising for free ebook sites as technology continues to advance.

Technological Advances

Improvements in technology

will likely make accessing and reading ebooks even more seamless and enjoyable.

Expanding Access

Efforts to expand internet access globally will help more people benefit from free ebook sites.

Role in Education

As educational resources become more digitized, free ebook sites will play an increasingly vital role in learning.

Conclusion

In summary, free ebook sites offer an incredible opportunity to access a wide range of books without the financial burden. They are invaluable resources for readers of all ages and interests, providing educational materials, entertainment, and accessibility features. So why not explore these sites and discover the wealth of

knowledge they offer?

reputable sites like Project

ebook sites offer audiobooks?

FAQs

Gutenberg, Open Library, and

Many free ebook sites offer

Google Books. Check reviews

audiobooks, which are perfect

Are free ebook sites legal?

and ensure the site has proper

for those who prefer listening

Yes, most free ebook sites are

security measures. Can I

to their books. How can I

legal. They typically offer

download ebooks to any

support authors if I use free

books that are in the public

device? Most free ebook sites

ebook sites? You can support

domain or have the rights to

offer downloads in multiple

authors by purchasing their

distribute them. How do I

formats, making them

books when possible, leaving

know if an ebook site is safe?

compatible with various

reviews, and sharing their

Stick to well-known and

devices like e-readers, tablets,

work with others.

and smartphones. Do free

