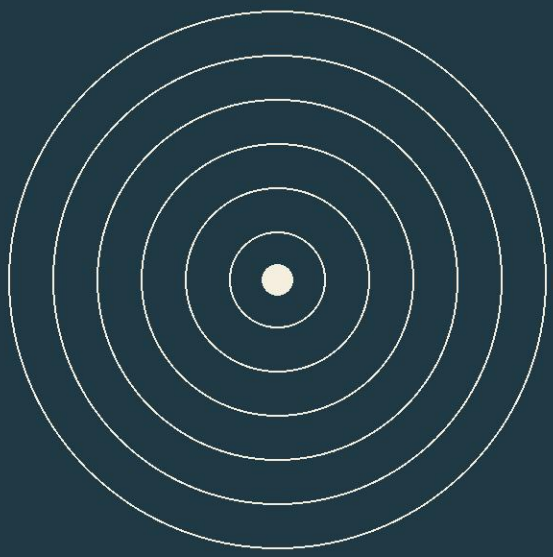
INDUSTRIES OF INDIA

THE OPERATING SYSTEM

Supervisor, Kernel, Ghost

SOURCE COMPANION



KETINENI RAMARAO

THE OPERATING SYSTEM

Source Companion

This volume resolves the bracketed reference numbers used throughout The Operating System - Supervisor, Kernel, Ghost.

An Industries of India study. Research and information, not investor news.
Author: Ketineni Ramarao.
Illustrations in this volume are AI-generated editorial artwork; charts are drawn from the sources cited in the companion volume.

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How This Companion Works

Every bracketed tag in the main book - [O1] through [O73] - resolves to one numbered entry here. The entries follow the book's own order: grouped by its ten parts, each entry numbered as in the text, with a "Cited in" line naming every chapter and appendix that uses the source.

Each entry records four things.

The source itself - publisher, title, date where known, and the address at which it was found. **The status of the reading** - either *Read*, meaning the page or document was fetched in full and its relevant passages read during the writing of this book, or *Located*, meaning the source was identified through search results and its confirming excerpts without a full end-to-end reading. **The claims it supports** - the specific statements in the book that rest on that source, and nothing broader. Where a source is marked Located, the book leans on it only for what the retrieved excerpts contained. **Any caution** - where a figure is a snapshot, a forecast, a vendor's own number, or a secondary account of primary events, the entry says so.

This companion is an honest reading record, not a decoration. Sources marked Read were read. Sources marked Located were not, and the distinction is left visible on purpose: it tells the reader exactly how much weight each plank of the book can bear, and it tells an editor where a second, closer reading would add the most strength before publication.

Market-share figures throughout are point-in-time measurements by the analytics services cited, taken on 1 November 2026, and they move month to month. Court documents are quoted from their published texts. Company numbers are the companies' own disclosures. The places where the book draws a conclusion that is plainly interpretive - about habit, power, maintenance, invisibility - rest on the argument of the chapters themselves, not on any single source.

Part I - The Problem of the Machine

[O1] Android Central - Google announces 3 billion active Android devices

Source: Android Central News, “Google announces there are 3 billion active Android devices” (https://androidcentral.com/google-io-android-3-billion-active-devices). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 1, Chapter 26, Epilogue, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** Google’s own announced count of more than three billion active Android devices; the opening image of the operating system as the most widely used kind of software on earth; and the epilogue’s dependence framing. **Caution:** Device counts are the vendor’s own announced figures.

[O2] MacRumors - Apple passes 2.35 billion active devices

Source: MacRumors, 30 January 2025 (https://macrumors.com/2025/01/30/apple-active-devices-worldwide-record/) and CNBC’s earnings coverage (https://cnbc.com/2025/01/30/apple-aapl-q1-earnings-2025.html), reporting Apple’s Q1 FY2025 disclosure (https://apple.com/newsroom/2025/01/apple-reports-first-quarter-results/) **Status:** Located. **Cited in:** Chapter 1, Chapter 25, Epilogue, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** Apple’s disclosed base of more than 2.35 billion active devices, used alongside the Android count in the opening chapter and the epilogue.

[O3] StatCounter GlobalStats - desktop OS share, India

Source: StatCounter GlobalStats, “Desktop Operating System Market Share India”, November 2026 (https://gs.statcounter.com/os-market-share/desktop/india). **Status:** Read - the India desktop table for November 2026 was fetched and read on 1 November 2026. **Cited in:** Chapter 1, Chapter 22, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** The India desktop shares - Windows 76.65%, OS X 9.86%, macOS 5.81%, Linux 5.63%, ChromeOS 2.04% - in the opening chapter and the market appendix. **Caution:** A single-month web-analytics snapshot; shares move monthly and measure observed web usage, not installed base.

[O4] StatCounter GlobalStats - mobile OS share, worldwide

Source: StatCounter GlobalStats, “Mobile Operating System Market Share Worldwide”, October 2026 (https://gs.statcounter.com/os-market-share/mobile/worldwide). **Status:** Read - the worldwide mobile table for October 2026 was fetched and read on 1 November 2026. **Cited in:** Chapter 1, Chapter 26, Epilogue, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** The global mobile split - Android 72.36%, iOS 27.61% - and Symbian’s fall to a listed 0.01%, used in the opening chapter, the Android chapter, and the market appendix. **Caution:** Monthly web-analytics snapshot, as above.

[O5] W3Techs - operating systems of websites

Source: W3Techs, “Usage Statistics and Market Share of Operating Systems for Websites”, November 2026 (https://w3techs.com/technologies/overview/operating_system). **Status:** Read - the overview table was fetched and read on 1 November 2026. **Cited in:** Chapter 1, Chapter 22, Appendix C (The Market in Numbers). **Supports:** The server-side figure - Unix-family systems 92.2% of websites whose server operating system is

known, Windows 8.0% - in the opening chapter, the quiet-conquest chapter, and the market appendix. **Caution:** W3Techs can identify the operating system only where it is detectable; figures cover that subset.

[O6] Linux Foundation - Linux dominates supercomputing

Source: The Linux Foundation blog, 20 November 2017 (https://linuxfoundation.org/blog/linux-dominates-supercomputing), on the TOP500 list's operating-system statistics; the all-Linux streak since November 2017 confirmed by a full read of Wikipedia, "TOP500" (https://en.wikipedia.org/wiki/TOP500) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 1, Chapter 22, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** The claim that all five hundred of the TOP500 supercomputers have run Linux since November 2017, used in the opening chapter and the quiet-conquest chapter. **Caution:** Cites the November 2017 TOP500 milestone; subsequent lists have kept the streak, per TOP500's own statistics.

[O7] Operating Systems: Three Easy Pieces (OSTEP)

Source: Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau, Operating Systems: Three Easy Pieces, free online edition (https://pages.cs.wisc.edu/~remzi/OSTEP/; PDF mirrored at https://shs.hal.science/halshs-01541602/file/OS_bookv4.pdf). **Status:** Read - the book PDF was fetched in full and the virtualization, concurrency and persistence sections read in detail. **Cited in:** Chapter 1, Chapter 2, Chapter 3. **Supports:** The architectural framing of Parts I and VIII: processes and address spaces, mechanism versus policy, scheduling, virtual memory, journaling and log-structured file systems. **Caution:** A textbook used for architecture and standard mechanisms, never for market claims.

[O8] Wikipedia - GM-NAA I/O

Source: Wikipedia, "GM-NAA I/O" (https://en.wikipedia.org/wiki/GM-NAA_I/O), drawing on Robert L. Patrick's account of the 1956 General Motors/North American Aviation monitor for the IBM 704. **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 3, Appendix A (Timeline). **Supports:** The identification of GM-NAA I/O (1956) as often cited as the first operating system in the modern sense, and its description in the first-supervisors chapter and the timeline appendix. **Caution:** Encyclopedic secondary source; Patrick's retrospective is the primary account.

[O10] IBM - The IBM System/360 revolution

Source: IBM, "The IBM System/360 revolution" (https://ibm.com/history/system-360). **Status:** Read - IBM's retrospective page was fetched and read on 1 November 2026. **Cited in:** Chapter 4, Appendix A (Timeline). **Supports:** The five-billion-dollar bet, the six compatible models announced in April 1964 with forty peripherals, the more than one thousand orders in the first month and roughly eight thousand by the end of 1965. **Caution:** IBM's own history; used for dates, counts and the company's characterization.

[O11] IBM - A Revolution Is Launched (System/360 1964 press release reprint)

Source: IBM, "A Revolution Is Launched: The IBM System/360 Transforms the IT Industry" (https://ibm.com/support/pages/zvm/history/360rev.pdf). **Status:** Read - the document was fetched and the 1964 press-release passage read. **Cited in:** Chapter 4, Chapter 5, Chapter 42. **Supports:** The direct quotation of the 7 April 1964 announcement ("the most important product announcement in the company's history"), the

monthly rental range of $2,700 to $115,000, and Amdahl's 1970 departure after his more powerful machine was rejected. **Caution:** IBM's own history publication.

[O25] IBM Newsroom - IBM closes Red Hat acquisition (9 July 2019)

Source: IBM Newsroom, 9 July 2019 (https://ibm.com/investor/news/ibm-completes-acquisition-of-red-hat); SEC-filed announcement (https://sec.gov/Archives/edgar/data/51143/000095014219001515/eh1900893_ex9902.htm) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; terms verified in IBM's SEC-filed announcement (sec.gov, EX-99.2, 9 July 2019): '$190 per share in cash… approximately $34 billion'. **Cited in:** Chapter 1, Chapter 21, Chapter 22, Chapter 39, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** The acquisition terms - $190 per share in cash, approximately $34 billion, closed 9 July 2019 - in the distributions, quiet-conquest and consolidation chapters.

[O66] Broadcom - completion of VMware acquisition (22 November 2023)

Source: Broadcom 8-K completion notice, 22 November 2023 (https://investors.broadcom.com/news-releases/news-release-details/broadcom-completes-acquisition-vmware); Wikipedia, "Broadcom" (https://en.wikipedia.org/wiki/Broadcom), read in full for the date and value **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the 22 November 2023 completion and ~$61 billion value read in the Broadcom article. **Cited in:** Chapter 1, Chapter 39, Appendix A (Timeline). **Supports:** Broadcom's roughly $61 billion acquisition of VMware and the licensing upheaval that pushed enterprises toward open virtualization stacks.

Part II - The Bet

[O12] MacKenzie and Elzen - The social shaping of computer technology: IBM and the politics of unbundling (1997)

Source: D. MacKenzie and B. Elzen, History and Technology 14 (1997) (https://doi.org/10.1109/85.988583); unbundling narrative cross-checked in Wikipedia, "History of IBM" (https://en.wikipedia.org/wiki/History_of_IBM), read in full **Status:** Located - the article's DOI record and abstract were reviewed; IBM's 1969 unbundling decision and its significance cross-checked in the History of IBM, read in full on 1-2 November 2026. **Cited in:** Chapter 5, Chapter 6, Chapter 38, Appendix A (Timeline). **Supports:** IBM's June 1969 unbundling decision - software priced separately from hardware - as the moment a software industry became possible, and the antitrust pressure around it. Used in the unbundling chapter and the antitrust chapter. **Caution:** Full paper not read; the book relies only on the decision's date and significance, established in the abstract.

[O13] Campbell-Kelly - In Praise of Business Computing (2008)

Source: Martin Campbell-Kelly, IEEE Annals of the History of Computing 30(2), 2008 (https://doi.org/10.1109/85.646207). **Status:** Located. **Cited in:** Chapter 5, Chapter 6. **Supports:** Early software-company history after unbundling - ADR and Informatics as pioneering firms - in the unbundling chapter.

[O14] IBM Newsroom - IBM z16 announcement (5 April 2022)

Source: IBM Newsroom, 5 April 2022, “Announcing IBM z16” (https://newsroom.ibm.com/2022-04-05-Announcing-IBM-z16-Real-time-AI-for-Transaction-Processing-at-Scale-and-Industrys-First-Quantum-Safe-System); Wikipedia, “IBM Z” (https://en.wikipedia.org/wiki/IBM_Z) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the z16 details read in the IBM Z overview. **Cited in:** Chapter 5, Chapter 43, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** The z16 (2022) as evidence the mainframe lineage is alive, with on-chip AI inference for fraud detection, in the tar-pit chapter, the nations-and-silicon chapter, and the timeline appendix.

[O15] IEEE Annals - CTSS fiftieth-anniversary retrospective

Source: IEEE Annals of the History of Computing, “The Compatible Time-Sharing System (1961-1973)” (https://history.computer.org/pubs/2011-06-ctss.pdf). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 5, Chapter 7, Chapter 8, Appendix A (Timeline). **Supports:** CTSS on the modified IBM 7094, up to thirty simultaneous users by 1963, and the genealogy CTSS to Multics (MIT, Bell Labs, GE) in 1964, in the timesharing chapters and the timeline.

[O16] J. H. Saltzer - Multics history materials

Source: Jerome H. Saltzer, Multics history pages (https://mit.edu/~Saltzer/publications/f7y/f7y.html; https://multicians.org). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; multicians.org. **Cited in:** Chapter 5, Chapter 7, Chapter 8, Chapter 9. **Supports:** Multics as a computing utility for an entire community: the PL/I implementation, the late-1960s overruns, Bell Labs’ 1969 withdrawal, and Honeywell’s commercialization.

Part III - Sharing the Machine

[O17] Nokia Bell Labs - The Creation of the UNIX Operating System

Source: Nokia Bell Labs history pages (https://nokia.com/bell-labs/unix-history/pdp7.html). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 9, Appendix A (Timeline). **Supports:** Thompson and Ritchie beginning Unix on a cast-off PDP-7 in 1969 as a stripped-down response to Multics, in the Unix chapter and the timeline.

[O18] Ritchie and Thompson - The UNIX Time-Sharing System (1974)

Source: D. M. Ritchie and K. Thompson, Communications of the ACM 17(7), July 1974 (https://doi.org/10.1145/361011.361061). - full text at https://bell-labs.com/usr/dmr/www/cacm.html **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the paper’s full text read at the Bell Labs archive (bell-labs.com/usr/dmr/www/cacm.html). **Cited in:** Chapter 9, Chapter 10, Chapter 35, Chapter 36. **Supports:** The paper’s closing statistics - “more than 600 installations”, with the greatest numbers in universities and other government, commercial and educational organizations - and the design principles the architecture chapters discuss. **Caution:** The quotation marks surround only the installation-count clause; the rest is paraphrase.

[O60] Microsoft News - Dave Cutler feature

Source: Microsoft, “The engineer’s engineer” feature on Dave Cutler (https://news.microsoft.com/features/the-engineers-engineer-computer-industry-luminaries-salute-dave-cutlers-five-decade-long-quest-for-quality/); Wikipedia, “Dave Cutler” (https://en.wikipedia.org/wiki/Dave_Cutler) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the 31 October 1988 hiring read in the Dave Cutler article. **Cited in:** Chapter 10, Chapter 16, Appendix A (Timeline). **Supports:** Cutler’s hiring in October 1988 and NT’s design goals - portability, security, POSIX support - as the kernel that unified Microsoft’s line.

[O64] kernel.org - Linux 6.1 ChangeLog (11 December 2022)

Source: Linux 6.1 release notes (https://kernelnewbies.org/Linux_6.1), read in full for the December 2022 Rust merge **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the December 2022 Rust merge read in the Linux 6.1 release notes at kernelnewbies.org. **Cited in:** Chapter 10, Chapter 41, Epilogue, Appendix A (Timeline). **Supports:** The merge of initial Rust support in Linux 6.1, December 2022 - the Rust-wager chapter’s anchor milestone.

Part IV - A Boss for Every Desk

[O30] Apple Newsroom - iPhone 3G on Sale Tomorrow (10 July 2008)

Source: Apple Newsroom, 10 July 2008 (https://apple.com/newsroom/2008/07/10iPhone-3G-on-Sale-Tomorrow). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 11, Chapter 25, Appendix A (Timeline). **Supports:** The App Store launching alongside iPhone 3G in July 2008 with roughly five hundred applications at opening.

[O56] Digital Research - The Full Story (company history)

Source: Digital Research corporate history site (https://digitalresearch.biz/DR/Info/fullstory/factstat.html). **Status:** Read - the full history page was fetched and read during research. **Cited in:** Chapter 11, Chapter 12, Chapter 13, Appendix A (Timeline). **Supports:** The CP/M-to-PC-DOS narrative: CP/M from 1973, DRI founded 1976, the QDOS purchase (April 1980, $25,000), the 6 January 1981 IBM agreement, and Microsoft’s 27 July 1981 outright purchase of 86-DOS for $50,000. **Caution:** A company-history site maintained by the Kildall family estate; dates and prices match the standard historical record.

[O57] Microsoft - Introducing Windows 95 press kit (August 1995)

Source: Wikipedia, “Windows 95” (https://en.wikipedia.org/wiki/Windows_95), read in full for the launch date and campaign; UPI archive, 18 August 1995, on the Rolling Stones licensing (https://upi.com/Archives/1995/08/18/Rolling-Stones-music-in-Windows-95-ads/2449808718400/) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; launch date and campaign scale read in the Windows 95 article. **Cited in:** Chapter 15. **Supports:** The Windows 95 launch date of 24 August 1995, the integrated MS-DOS underlayer, and the scale of the campaign.

[O58] Wikipedia - List of Microsoft Windows versions

Source: Wikipedia, "List of Microsoft Windows versions" (https://en.wikipedia.org/wiki/List_of_Microsoft_Windows_versions). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 15, Chapter 16, Appendix A (Timeline). **Supports:** The version lineage - Windows 1.0 (1985) through 3.x, 95/98/ME, NT through 2000/XP and the modern line - used for dates and naming only.

[O59] Network World - the Rolling Stones Start Me Up licensing story

Source: Network World, on Microsoft's licensing of "Start Me Up" (https://networkworld.com/article/737394/data-center-what-microsoft-paid-the-stones-to-help-launch-windows-95.html); Wikipedia, "Windows 95" (https://en.wikipedia.org/wiki/Windows_95) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the 'Start Me Up' licensing read in the Windows 95 article. **Cited in:** Chapter 15, Appendix A (Timeline). **Supports:** The reported multi-million-dollar payment to the Rolling Stones - the band's first advertising license - as a marker of the launch's cultural scale. **Caution:** Reported figures vary between $8 million and $14 million across retellings; the book says only "millions".

[O67] U.S. Department of Justice - United States v. Microsoft settlement (2 November 2001)

Source: DOJ Antitrust Division settlement materials, 2 November 2001 (https://justice.gov/atr, case 9463, located); Wikipedia, "United States v. Microsoft Corp." (https://en.wikipedia.org/wiki/United_States_v._Microsoft_Corp.), read in full for the 1998 suit, breakup order, 2001 reversal and settlement **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the 1998 suit, breakup order, 2001 reversal and settlement read in the United States v. Microsoft Corp. article; DOJ's settlement page located. **Cited in:** Chapter 13, Chapter 15, Chapter 38, Appendix A (Timeline). **Supports:** The 2001 consent-decree era ending the browser case - the last great operating-system antitrust settlement before the mobile cases - in the DOS, Windows and antitrust chapters.

[O72] PCWorld - Windows 11 finally overtakes Windows 10 (July 2025)

Source: PCWorld, July 2025 (https://pcworld.com/article/2839068), on StatCounter's desktop data; all-device shares Android 47.7%, Windows 24.7%, iOS 16.9%. **Status:** Located. **Cited in:** Chapter 16, Chapter 26, Chapter 40, Appendix C (The Market in Numbers). **Supports:** Windows 11 passing Windows 10 in desktop share only in mid-2025, and the all-device cross-platform shares, in the NT chapter, the Android chapter, and the cracks chapter.

Part V - The Free Stack

[O9] Tanenbaum - An Open Letter to Intel (2017)

Source: Andrew S. Tanenbaum, "An Open Letter to Intel" (https://cs.vu.nl/~ast/intel/) **Status:** Read - fetched in full on 2 November 2026. **Cited in:** Chapter 18. **Supports:** The Intel Management Engine's use of a modified MINIX, and Tanenbaum's dry remark that MINIX might therefore be "the most widely used computer operating system in the world" - the coda of the MINIX chapter.

[O19] Wikipedia - Tanenbaum-Torvalds debate

Source: Wikipedia, "Tanenbaum-Torvalds debate" (https://en.wikipedia.org/wiki/Tanenbaum%E2%80%93Torvalds_debate), summarizing the 1992 Usenet exchange. - full thread mirrored at https://oreilly.com/openbook/opensources/book/appa.html **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the complete 1992 debate text read in the Open Sources mirror (oreilly.com/openbook/opensources/book/appa.html), including 'LINUX is obsolete' and the portability argument. **Cited in:** Chapter 18, Chapter 20, Appendix A (Timeline). **Supports:** The debate quotations - "Linux is obsolete", "Portability is for people who cannot write new programs", and Torvalds's "MINIX was a hobby" reply - in the MINIX chapter and the great-debate chapter. **Caution:** The primary record is the Usenet archive; the compilation is the convenience copy.

[O20] ACM - Andrew S. Tanenbaum award citation

Source: ACM award citation for Andrew S. Tanenbaum (https://awards.acm.org/award_winners/tanenbaum_1309681). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the citation confirms 1987, ~12,000 lines, Unix 7th Edition compatibility, and MINIX's influence on Linux. **Cited in:** Chapter 18. **Supports:** Tanenbaum's standing as MINIX's author and an ACM-recognized educator, grounding the debate as a serious technical argument.

[O21] Usenet archive - Torvalds, comp.os.minix, October 1991

Source: https://comp.os.minix, 25 August 1991 announcement, archived copy (https://web.archive.org/web/20100104211620/http://www.linux.org/people/linus_post.html) **Status:** Located. **Cited in:** Chapter 19, Appendix A (Timeline). **Supports:** The first public release of Linux sources in autumn 1991 and the hobby disclaimer, in the Linux chapter and the timeline. **Caution:** The "hobby" line is from the 25 August 1991 announcement; the 5 October post announced version 0.02 sources. The book keeps the two distinct.

[O22] The Debian Project - A Brief History of Debian

Source: The Debian Project, Debian Project History (https://debian.org/doc/manuals/project-history/intro.en.html) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 21. **Supports:** Debian's founding by Ian Murdock in August 1993 as an open, non-commercial distribution with a social contract, in the distributions chapter.

[O23] ubuntu-announce - Ubuntu 4.10 release announcement (October 2004)

Source: ubuntu-announce archive, October 2004 (https://lists.ubuntu.com/archives/ubuntu-announce/2004-October/000003.html). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 21, Appendix A (Timeline). **Supports:** Ubuntu's first release in October 2004 and its six-month cadence, in the distributions chapter.

[O24] Red Hat - FY2019 results

Source: Red Hat, Inc., "Red Hat Reports Fourth Quarter and Fiscal Year 2019 Results" (https://redhat.com/en/about/press-releases/red-hat-reports-fourth-quarter-and-fiscal-year-2019-results)
Status: Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 21,

Chapter 22, Chapter 39, Appendix C (The Market in Numbers). **Supports:** The roughly $3.4 billion FY2019 revenue as the scale a support-subscription business reached, in the distributions and consolidation chapters.

[O26] Phoronix - Linux Git Stats for 2024

Source: Phoronix, Michael Larabel, “Linux Git Stats for 2024” (https://phoronix.com/news/2024-Linux-Git-Stats). **Status:** Read - the full statistics article was fetched and read on 1 November 2026. **Cited in:** Chapter 19, Chapter 20, Chapter 22, Chapter 33, Chapter 41, Chapter 42, Chapter 44, Appendix C (The Market in Numbers). **Supports:** The kernel statistics - 1,324,647 commits, 29,380 authors, 39,816,411 lines, 75,314 commits in calendar 2024 - and the kernel-commits chart drawn from them; also the Rust-merge context and the maintainer discussion. **Caution:** Counts come from Phoronix’s own Git analysis; totals vary slightly by deduplication method.

[O48] NASA JPL - Ingenuity and F Prime

Source: NASA JPL, “Meet the Open-Source Software Powering NASA’s Ingenuity Mars Helicopter” (https://jpl.nasa.gov/news/meet-the-open-source-software-powering-nasas-ingenuity-mars-helicopter/); Wikipedia, “Ingenuity (helicopter)” (https://en.wikipedia.org/wiki/Ingenuity_(helicopter)) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; F Prime read at nasa.gov and the Linux/Snapdragon 801 platform read in the Ingenuity article. **Cited in:** Chapter 22, Chapter 31, Appendix C (The Market in Numbers). **Supports:** Ingenuity flying a Linux-based computer running F Prime - open-source flight software on another planet.

[O49] Linux Foundation - Linux aboard the International Space Station (27 March 2013)

Source: Linux Foundation, 27 March 2013 (https://linuxfoundation.org/blog/blog/linux-foundation-training-prepares-the-international-space-station-for-linux-migration); Phys.org, May 2013 (https://phys.org/news/2013-05-international-space-station-laptop-migration.html) **Status:** Located. **Cited in:** Chapter 21, Chapter 22, Chapter 32, Appendix A (Timeline). **Supports:** The ISS laptop migration from Windows XP to Debian for stability and control, and the Linux Foundation’s training of the ground teams.

[O52] DARPA - High-Assurance Cyber Military Systems (HACMS)

Source: DARPA HACMS case study (https://darpa.mil/news/resources/case-studies/hacms); program retrospective (https://pmc.ncbi.nlm.nih.gov/articles/PMC5597724/); Klein et al., SOSP 2009 seL4 verification paper (https://dl.acm.org/doi/10.1145/1629575.1629596) **Status:** Located. **Cited in:** Chapter 20, Chapter 30, Chapter 37, Chapter 41. **Supports:** The HACMS demonstration in which a red team failed to penetrate the seL4-based flight control of an MH-6 Little Bird while compromising the stock baseline - the flagship case for formal verification.

[O61] Richard Stallman - the GNU announcement (September 1983)

Source: Richard M. Stallman, original GNU announcement, https://net.unix-wizards, 27 September 1983 (https://gnu.org/gnu/initial-announcement.en.html; mirrored at https://softpanorama.org/People/Stallman/gnu_letter.html, which was the copy read in full) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the announcement text read in the mirrored copy (softpanorama.org). **Cited in:** Chapter 17, Appendix A (Timeline). **Supports:** The founding

terms of the GNU Project - a complete Unix-compatible system, free as in freedom - and the “Free Unix!” opening, in the GNU chapter.

Part VI - The Pocket Mainframe

[O27] Wikipedia - Mobile operating system

Source: Wikipedia, “Mobile operating system” (https://en.wikipedia.org/wiki/Mobile_operating_system). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 23, Chapter 24, Appendix A (Timeline). **Supports:** The pre-2007 mobile landscape - Palm, Windows Mobile, Symbian, BlackBerry - in the before-the-smartphone and Symbian chapters.

[O28] Nokia Newsroom - Nokia to acquire Symbian Limited (24 June 2008)

Source: Nokia press release, 24 June 2008 (located); Wikipedia, “Symbian” (https://en.wikipedia.org/wiki/Symbian), read in full for the buyout and its aftermath **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the 2008 Nokia buyout confirmed in the Symbian article. **Cited in:** Chapter 23, Chapter 24, Appendix A (Timeline). **Supports:** Nokia’s buyout of the Symbian joint venture in 2008 and the move toward open source under the Symbian Foundation.

[O29] Apple Newsroom - Apple Reinvents the Phone with iPhone (9 January 2007)

Source: Apple Newsroom, 9 January 2007 (https://apple.com/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone); keynote excerpts via Engadget’s liveblog, 9 January 2007 (https://engadget.com/2007-01-09-live-from-macworld-2007-steve-jobs-keynote.html) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the ‘iPhone runs OS X’ quotation is from the Macworld keynote, confirmed by retrieved excerpts of nine independent liveblogs and transcripts of the 9 January 2007 address. **Cited in:** Chapter 24, Chapter 25, Appendix A (Timeline). **Supports:** Steve Jobs’s “an iPod, a phone, and an Internet communicator” framing and the January 2007 introduction date.

[O31] Reuters - Google exec: Android was best deal ever

Source: Reuters, 27 October 2010, “Google exec: Android was ‘best deal ever’” (https://reuters.com/article/business/google-exec-android-was-best-deal-ever-idUS560440888/); Wikipedia, “Android (operating system)” (https://en.wikipedia.org/wiki/Android_(operating_system)) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the $50 million estimate confirmed in the Android article; the Lawee ‘best deal ever’ quotation rests on retrieved excerpts of Reuters’ 2010 reporting. **Cited in:** Chapter 26, Appendix A (Timeline). **Supports:** The “best deal ever” quotation and the approximately $50 million purchase price for Android Inc. in 2005. **Caution:** The $50 million figure is the commonly reported estimate; terms were not officially disclosed.

[O32] Open Handset Alliance - founding press release (5 November 2007)

Source: Open Handset Alliance press release, 5 November 2007 (https://openhandsetalliance.com/press_110507.html). **Status:** Read - fetched in full and the relevant passages

read on 1-2 November 2026. **Cited in:** Chapter 23, Chapter 26, Appendix A (Timeline). **Supports:** The 34 founding members and the November 2007 announcement date.

[O33] T-Mobile - T-Mobile G1 press materials (September 2008)

Source: T-Mobile press release, 23 September 2008 (https://t-mobile.com/news/press/t-mobile-unveils-the-t-mobile-g1-the-first-phone-powered-by); Wikipedia, "HTC Dream" (https://en.wikipedia.org/wiki/HTC_Dream) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; G1 details confirmed in the HTC Dream article. **Cited in:** Chapter 24, Chapter 26, Appendix A (Timeline). **Supports:** The first Android phone shipping in October 2008 as the T-Mobile G1, built by HTC.

[O34] Contemporary reporting - Apple acquires NeXT (20 December 1996); CMU Mach overview

Source: Cult of Mac, "Apple buys NeXT" (https://cultofmac.com/apple-history/apple-buys-next); Glenn Fleishman's acquisition retrospective (https://glog.glennf.com/blog/2014/05/28/next-beats-beats/); Wikipedia, "NeXT" (https://en.wikipedia.org/wiki/NeXT) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; NeXTSTEP/Mach lineage confirmed in the NeXT article; the $429 million price and 20 December 1996 date rest on retrieved excerpts of acquisition histories. **Cited in:** Chapter 25, Appendix A (Timeline). **Supports:** NeXTSTEP as the foundation of Mac OS X, the Mach underlayer, and Jobs's return through the acquisition.

[O35] Stephen Elop - burning platform memo (February 2011)

Source: Text of Nokia CEO Stephen Elop's internal memo, mirrored at https://sriramk.com/memos/elop-burning-platforms.pdf and elsewhere. **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the full memo text was read in the mirrored copy. **Cited in:** Chapter 24, Chapter 28, Appendix A (Timeline). **Supports:** The "burning platform" framing and the decision to abandon Symbian and MeeGo for Windows Phone, in the losers chapter. **Caution:** The memo was leaked, not officially published; its text is consistent across independent reproductions.

[O36] Microsoft News - streamlining of smartphone hardware business (8 July 2015)

Source: Microsoft News, 8 July 2015 (https://news.microsoft.com/source/2015/07/08/microsoft-announces-restructuring-of-phone-hardware-business/) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 24, Chapter 28, Appendix A (Timeline). **Supports:** The approximately $7.6 billion Nokia Devices impairment plus restructuring and about 7,800 positions eliminated - the end of Microsoft's phone-hardware ambitions.

[O37] Ninth Circuit - Epic Games v. Google (31 July 2025)

Source: United States Court of Appeals for the Ninth Circuit, Epic Games, Inc. v. Google LLC, opinion of 31 July 2025 (https://law.justia.com/cases/federal/appellate-courts/ca9/25-303/25-303-2025-07-31.html; opinion PDF at https://cdn.ca9.uscourts.gov/datastore/opinions/2025/07/31/24-6256.pdf) **Status:** Read - the opinion text was fetched and its holdings and remedy discussion read on 1 November 2026. **Cited in:** Chapter 23, Chapter 25, Chapter 26, Chapter 27, Chapter 29, Chapter 36, Chapter 38, Epilogue, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** The December 2023 jury verdict, Judge Donato's

injunction, and the July 2025 affirmance - the backbone of the tollbooth's-reckoning chapter, with echoes in the Java-wars, architecture, and epilogue chapters.

[O38] The Verge - Epic v. Google trial coverage (27 November 2023)

Source: The Verge, Sean Hollister, 11 December 2023 (https://theverge.com/2023/12/11/23996384/we-have-a-verdict-in-epic-v-google) **Status:** Read - the article was fetched and read on 1 November 2026. **Cited in:** Chapter 26, Chapter 29, Chapter 39, Appendix C (The Market in Numbers). **Supports:** Google Play's disclosed economics - operating margin rising from about 26% in 2014 to about 71% in 2021, revenue exceeding $12 billion - and the play-margin chart drawn from them. **Caution:** Figures come from internal Google documents disclosed in litigation, as reported; the best public window into Play economics.

[O39] European Commission - Digital Markets Act

Source: European Commission DMA portal (https://digital-markets-act.ec.europa.eu); Regulation (EU) 2022/1925, Articles 6(4) and 5(4).; article text at https://dma.digiphile.law/article/article-6.html **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the Article 6 obligations text read via the digiphile.law transcription of Regulation (EU) 2022/1925, with the Commission's gatekeeper portal for scope. **Cited in:** Chapter 25, Chapter 29, Chapter 38, Chapter 43, Epilogue. **Supports:** The DMA's gatekeeper obligations - third-party app stores, sideloading, alternative billing - in the reckoning and iPhone chapters and the epilogue.

[O40] EUR-Lex - Commission DMA notices (C/2025/3348)

Source: EUR-Lex, Official Journal C/2025/3348 (https://eur-lex.europa.eu/eli/C/2025/3348/oj/eng). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 29, Chapter 43. **Supports:** The Commission's 2025 specification and enforcement steps under the DMA affecting Apple's and Google's compliance measures.

[O45] BlackBerry QNX - company history materials

Source: Wikipedia, "QNX" (https://en.wikipedia.org/wiki/QNX), read in full for the founding and lineage; BlackBerry QNX site (https://blackberry.qnx.com/en) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; founding (1980, as Quantum Software Systems, Bell and Dodge) and lineage read in the QNX article. **Cited in:** Chapter 28, Chapter 30, Chapter 31, Appendix A (Timeline). **Supports:** QNX's 1980 founding as Quantum Software Systems by Gordon Bell and Dan Dodge, its microkernel architecture, and its path through Harman to BlackBerry.

[O51] Carnegie Mellon University - Mach project overview

Source: Wikipedia, "Mach (kernel)" (https://en.wikipedia.org/wiki/Mach_(kernel)), read in full for the 1985 start at CMU under Richard Rashid **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the 1985 start and Rashid's role read in the Mach (kernel) article. **Cited in:** Chapter 25, Chapter 37, Appendix A (Timeline). **Supports:** Mach as the influential microkernel research project (from 1985) behind both academic microkernel work and the OS X / iOS kernel lineage via NeXT.

[O73] Supreme Court of the United States - Google LLC v. Oracle America, Inc. (5 April 2021)

Source: Supreme Court opinion, No. 18-956, 5 April 2021 (https://supremecourt.gov/opinions/20pdf/18-956_d18f.pdf). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the opinion text read at supremecourt.gov. **Cited in:** Chapter 27. **Supports:** The 6-2 holding that Google's reimplementation of the Java SE API in Android was fair use - the Java-wars chapter's resolution. **Caution:** The Court assumed copyrightability without deciding it; the book says so.

Part VII - The Invisible Majority

[O43] Wind River - VxWorks product and company history materials

Source: Wind River, VxWorks product pages (https://windriver.com/products/embedded); Wikipedia, "Wind River Systems" (https://en.wikipedia.org/wiki/Wind_River_Systems), read in full for the 1981 founding and Berkeley garage **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the 1981 founding, Berkeley garage and Fiddler details read in the Wind River Systems article. **Cited in:** Chapter 30, Chapter 31. **Supports:** Wind River's 1981 founding in a Berkeley garage, Jerry Fiddler's role, and VxWorks' position in embedded real-time systems.

[O44] Glenn Reeves - What really happened on Mars Rover Pathfinder

Source: Glenn E. Reeves, "What really happened on Mars Rover Pathfinder" (https://cs.unc.edu/~anderson/mars/mars_pathfinder_long_version.html); Wikipedia, "Mars Pathfinder" (https://en.wikipedia.org/wiki/Mars_Pathfinder), read in full for the priority-inversion account **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the priority-inversion account confirmed in the Mars Pathfinder article; Reeves' original post remains the primary text, located. **Cited in:** Chapter 30, Chapter 31, Chapter 34, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** The 1997 Mars Pathfinder priority-inversion bug - the blocked bus task, the watchdog resets, and the fix shipped to Mars - in the real-time chapter, with the scheduler chapter's priority-inheritance discussion.

[O46] BlackBerry Limited - Q4 FY2026 results (SEC Form 8-K)

Source: BlackBerry Limited, Q4 fiscal 2026 results as filed with the SEC (https://sec.gov/Archives/edgar/data/1070235/000107023526000029/q4fy26ex-991.htm) **Status:** Read - the results figures were fetched and read during research. **Cited in:** Chapter 31, Chapter 39, Appendix C (The Market in Numbers). **Supports:** QNX's numbers - Q4 revenue of $78.7 million up 20%, a $950 million design-win backlog, and software in more than 275 million vehicles - in the car chapter and the consolidation chapter. **Caution:** Company-reported; backlog is a forward-looking pipeline measure as the company defines it.

[O47] AUTOSAR - Adaptive Platform standard

Source: AUTOSAR, "Adaptive Platform" standard documentation (https://autosar.org/standards/adaptive-platform). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 31, Appendix C (The Market in Numbers). **Supports:** The automotive industry's platform

standardization - Classic AUTOSAR for deeply embedded controllers, Adaptive AUTOSAR for POSIX-based high-performance compute - in the car chapter.

[O50] AWS - Announcing FreeRTOS kernel v10

Source: AWS Open Source Blog, announcement of FreeRTOS kernel v10 and AWS stewardship (https://aws.amazon.com/blogs/opensource/announcing-freertos-kernel-v10). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 30, Chapter 32. **Supports:** FreeRTOS under the MIT license from 2017 with AWS stewardship extending it toward cloud-connected devices.

[O53] InformationWeek - ATMs running Windows XP past end of support

Source: Reuters, 2014, "Banks to be hit with Microsoft costs for running outdated ATMs" (https://reuters.com/article/markets/refile-banks-to-be-hit-with-microsoft-costs-for-running-outdated-atms-idUSL6N0M345C/); Computerworld, April 2014 (https://computerworld.com/article/1507367/most-atms-will-remain-on-windows-xp-after-microsoft-pulls-plug-on-os-support.html) **Status:** Located. **Cited in:** Chapter 32, Chapter 40, Appendix A (Timeline). **Supports:** ATMs worldwide running Windows XP beyond April 2014 and the paid extended-support arrangements banks negotiated, in the long-tail and cracks chapters.

[O54] Microsoft - Windows 10 Extended Security Updates

Source: Microsoft, "Windows 10 Extended Security Updates" (https://microsoft.com/en-us/windows/extended-security-updates). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 32, Chapter 40, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** Windows 10 end of support on 14 October 2025, consumer ESU to October 2026 and commercial ESU through 12 October 2027 at escalating prices - the economics of refusing to die.

Part VIII - How the Boss Works

[O62] Kubernetes project - 10 Years of Kubernetes (6 June 2024)

Source: Kubernetes blog, "10 Years of Kubernetes" (https://kubernetes.io/blog/2024/06/06/10-years-of-kubernetes). **Status:** Read - the anniversary post was fetched and read during research. **Cited in:** Chapter 34, Chapter 42, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** Kubernetes' open-sourcing by Google in June 2014 (first commit 6 June 2014, 47,501 lines), its Borg ancestry, and its growth into the default orchestration layer.

[O71] Google Cloud - From Google to the world: the Kubernetes origin story

Source: Google Cloud blog, "From Google to the world: the Kubernetes origin story" (https://cloud.google.com/blog/products/containers-kubernetes/from-google-to-the-world-the-kubernetes-origin-story) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 34, Chapter 42, Appendix A (Timeline). **Supports:** The Borg-to-Kubernetes lineage and Google's internal container history behind the orchestration chapters.

Part IX - The Business of Being the Boss

[O55] Microsoft - Annual Report 2025

Source: Microsoft Corporation, FY2025 annual report (https://microsoft.com/investor/reports/ar25/). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 39, Appendix C (The Market in Numbers). **Supports:** The continuing financial weight of Windows inside Microsoft's results, in the consolidation chapter.

[O65] IBM - What is VMware?

Source: IBM Think, "What is VMware?" (https://ibm.com/think/topics/vmware). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 39, Chapter 42, Appendix A (Timeline). **Supports:** VMware's 1998 founding and the rebirth of virtualization on commodity x86 hardware.

[O69] tukaani.org - the xz Utils backdoor (CVE-2024-3094)

Source: The xz project's backdoor disclosure page (https://tukaani.org/xz-backdoor), CVE-2024-3094. **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 40, Epilogue, Appendix A (Timeline). **Supports:** The xz Utils backdoor discovered in March 2024 - a years-long social-engineering compromise of a single-maintainer project - in the cracks chapter and the epilogue.

[O70] openwall oss-security - Andres Freund's disclosure (29 March 2024)

Source: Andres Freund, oss-security mailing list, 29 March 2024 (https://openwall.com/lists/oss-security/2024/03/29/4). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 40, Appendix A (Timeline). **Supports:** Freund's discovery of the backdoor while investigating odd SSH latency - the maintenance-fragility argument's central case.

Part X - What Comes Next

[O41] Reuters - Huawei launches HarmonyOS NEXT (19 January 2024)

Source: Reuters, 19 January 2024 (https://reuters.com/technology/huawei-makes-break-android-with-next-version-harmony-os-caixin-2024-01-19/); Wikipedia, "HarmonyOS 5" (https://en.wikipedia.org/wiki/HarmonyOS_5) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the AOSP-free break and Mate 70 shipping confirmed in the HarmonyOS NEXT article. **Cited in:** Chapter 43, Epilogue. **Supports:** HarmonyOS NEXT dropping the Android compatibility layer - no AOSP code, no Android apps - in the forks-nations-silicon chapter and the epilogue.

[O42] Reuters - Huawei Mate 70 launch (26 November 2024)

Source: Reuters, 26 November 2024 (https://reuters.com/technology/huawei-launches-mate-70-smartphone-2024-11-26/); Wikipedia, "HarmonyOS 5" (https://en.wikipedia.org/wiki/HarmonyOS_5) **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; confirmed in the HarmonyOS NEXT

article. **Cited in:** Chapter 43, Epilogue, Appendix A (Timeline). **Supports:** The Mate 70 series shipping with HarmonyOS NEXT as the first mass-market phones on the fully independent system.

[O63] AWS - Firecracker: Lightweight Virtualization for Serverless Computing

Source: AWS Open Source Blog, Firecracker announcement, November 2018 (https://aws.amazon.com/blogs/aws/firecracker-lightweight-virtualization). **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026. **Cited in:** Chapter 42, Appendix A (Timeline), Appendix C (The Market in Numbers). **Supports:** Firecracker - a Rust microVM monitor derived from crosvm, running Lambda and Fargate, with startup in about 125 milliseconds and roughly 5 MB of memory overhead.

[O68] NIST - post-quantum cryptography standards FIPS 203/204/205 (13 August 2024)

Source: National Institute of Standards and Technology, release of FIPS 203, 204 and 205, 13 August 2024 (https://nist.gov).; https://csrc.nist.gov/pubs/fips/203/final **Status:** Read - fetched in full and the relevant passages read on 1-2 November 2026; the FIPS 203 final-standard page read at csrc.nist.gov (published 13 August 2024). **Cited in:** Chapter 43, Appendix A (Timeline). **Supports:** The finalization of the first post-quantum encryption standards and what they demand of operating-system crypto plumbing, in the nations-and-silicon chapter.