

Prof. Krzysztof Szczypiorski, Ph.D., D.Sc.

CONTACT INFORMATION	Warsaw University of Technology (WUT) Faculty of Electronics and Information Technology (FEIT) Institute of Telecommunications, Cybersecurity Division ul. Nowowiejska 15/19 00-665 Warsaw, Poland	Voice: +48 22 234 7745 Fax: +48 22 234 7564 Skype: k.szczypiorski E-mail: ksz@tele.pw.edu.pl http://ksz.tele.pw.edu.pl
RESEARCH INTERESTS	New methods of phenomenon observation especially in communication and social networks, medicine, and stock exchange New algorithms in cybersecurity: network steganography and steganalysis, anomaly detection, and fraud management Exploring cyber crimes through digital forensics Design of advanced intelligence systems: open-source based and cyber threat oriented	
WORK EXPERIENCE	Cryptomage S.A. , Poland <i>Co-founder and Vice President, Research & Development</i> A cybersecurity start-up company (http://cryptomage.io)	June 2015 – present
	Cybersecurity Division , Institute of Telecommunications, FEIT, WUT, Poland <i>Head and Co-founder</i> A specialized research group at Warsaw University of Technology focused on cybersecurity	March 2015 – present
	Warsaw University of Technology , Poland <i>Professor</i> (in Polish: <i>profesor nadzwyczajny</i>) <i>Assistant Professor</i> (in Polish: <i>adiunkt</i>) <i>Senior Specialist</i> (in Polish: <i>starszy specjalista</i>) <i>Research Assistant</i> (in Polish: <i>asystent n-d</i>)	December 2012 – present February 2007 – November 2012 October 2006 – January 2007 January 1998 – September 2006
	Creative People Lab X-lab.PW , WUT, Poland <i>Head and Co-founder</i> Interdisciplinary lab at Warsaw University of Technology to ignite a passion, to inspire and stimulate creativity, motivation, curiosity and excitement	February 2015 – January 2017
	Cybersecurity Foundation , Poland <i>Member of the Board</i> Cybersecurity Foundation (https://www.cybsecurity.org) is learning people about cyber-threats, responding to incidents of violating cyberspace and providing R&D activities in area of ICT security	October 2012 – present
	ITU Internet Training Centre (ITU-ITC) at WUT , Poland <i>Head and Founder, certified Cisco Academy Instructor</i> ITU-ITC at WUT (http://itu-itc.pl) contains Cisco Academy Support Centre and Cisco Instructor Training Centre	October 2003 – present
	Various Companies , European Union and U.S.A. <i>Network Security and Telecommunication Consultant</i> Business and scientific consulting Major clients: Agora S.A., ATM S.A., Cisco Poland, Clearwire, ComCERT S.A., Dimension Data Poland – formerly NextiraOne, Electrolux Poland, EMAX S.A., Enigma, Exatel S.A. – formerly Tel-Energio S.A., Hewlett-Packard Poland, Lidl Poland, Maruta & Wachta Attorneys, Ministry of Energy (Poland), Ministry of Finance (Poland), National Institute of Telecommunications (Poland), National Security Bureau (Poland), Office of the Committee for European Integration (Poland), Optimus S.A., Oracle Poland, Orange Poland, Parliament of Republic of Poland, PhoneID, Polkomtel S.A. (the operator of Plus network), Polish Energy Group S.A., Polska Telefonia Cyfrowa S.A. (T-Mobile Poland), PriceWaterhouseCoopers Poland, Rodan Systems S.A., S&T Poland, Scientific and Acade-	June 1993 – present

my Computer Network – Naukowo-Akademicka Sieć Komputerowa NASK, UOP/ABW – Internal Security Agency (Poland), US Air Force, US Army, WB Electronics, White & Case.

EDUCATION

Warsaw University of Technology, Poland

Doctor of Science (Habilitation) in Telecommunications **February 2007 – April 2012**
In Polish: *doktor habilitowany nauk technicznych w zakresie telekomunikacji*

Warsaw University of Technology, Poland

Doctor of Philosophy in Telecommunications (with honours) **March 2002 – January 2007**
In Polish: *doktor nauk technicznych w zakresie telekomunikacji*

University of Social Sciences and Humanities, Poland

Postgraduate studies on Psychology of Motivation **October 2012 – September 2013**

Warsaw University of Technology, Poland

Master of Science in Telecommunications (with honours) **October 1992 – June 1997**
In Polish: *magister inżynier telekomunikacji*

SELECTED TRAININGS

MIT Enterprise Forum Poland (Poland)

The acceleration program for science-based projects focused on entrepreneurship **March 2016 – May 2016**

University of California, Berkeley (USA), Haas School of Business

Training on commercialisation of scientific research – Top 500 Innovators Program **October 2013 – December 2013**

Budapest Tech – now Óbuda University (Hungary), John von Neumann Faculty of Informatics

Instructor courses in advanced network technologies – Cisco Networking Academy Program **February 2003 – August 2003**

PERSONAL SKILLS AND COMPETENCES

Mother tongue: Polish

Other languages:

- English (Full professional proficiency)
- German (Limited working proficiency)
- Russian (Limited working proficiency)

European driving licence: B (since February 1992)

Security clearances (issued by Internal Security Agency (Poland)):

- NATO: *NATO Secret* (valid until January 2023) and *NATO Confidential* (valid until January 2026)
- EU: *Secret UE/EU Secret* (valid until January 2023) and *Confidentiel UE/EU Confidential* (valid until January 2026)
- Poland: *secret* (in Polish: *tajne* – valid until January 2023) and *confidential* (in Polish: *poufne* – valid until January 2026)

FELLOWSHIPS

Luxembourg Institute of Science & Technology,

Belval Innovation Campus, Esch-sur-Alzette (Luxembourg) – 2 weeks **August 2015**

George Mason University, Fairfax, VA (USA) – 2 months **August 2014 – November 2014**

University of California, Berkeley (USA) – 2 months **October 2013 – December 2013**

OTHER SCIENTIFIC VISITS

50+ short-term scientific visits in Bulgaria, Canada, China, Czech Republic, France, Germany, Japan, Luxembourg, Macedonia, Serbia, Sweden, UK, and USA:

- **Berkeley Lab: Molecular Foundry and Advanced Light Source**, Berkeley, CA, USA (2013)
- **California Institute of Technology – Caltech**, Pasadena, CA, USA (2013)

- **Constantine of Preslav University of Shumen** Shumen, Bulgaria (2016)
- **Czech Technical University in Prague**, Prague, Czech Republic (2007)
- **Darmstadt University of Technology**, Darmstadt, Germany (2009)
- **Lund University**, Lund, Sweden (2011)
- **Luxembourg Institute of Science & Technology**, Belval Innovation Campus, Esch-sur-Alzette (previously **CRP Henri Tudor**, Luxembourg City), Luxembourg – several times (2013-2015),
- **Nanjing University of Science and Technology**, Nanjing, China (2010)
- **NASA Jet Propulsion Laboratory**, Pasadena, CA, USA (2013)
- **Paul Sabatier University**, Toulouse, France (2015)
- **Rakovski Defence and Staff College**, Sophia, Bulgaria (2016)
- **Shanghai University**, Shanghai, China (2009)
- **Ss. Cyril and Methodius University in Skopje**, Skopje, Macedonia (2009)
- **Stanford University**, Stanford, CA, USA (2013)
- **Toyama University**, Toyama, Japan (2015)
- **Tsinghua University**, Beijing, China (2009)
- **University of Belgrade**, Belgrade, Serbia (2009)
- **University of Birmingham**, Birmingham, UK (2010)
- **University of Luxembourg**, Luxembourg – several times (2008-2015)
- **University of Ottawa**, Ottawa, Canada (2007)
- **University of Würzburg**, Würzburg, Germany (2009)
- **US Army RDECOM CERDEC**, Fort Monmouth, NJ, USA (2007)
- **Virginia Polytechnic Institute and State University in Blacksburg – Virginia Tech**, Blacksburg, VA, USA (2014)
- **Wuhan University of Technology**, Wuhan, China (2009)
- and the following companies (most of them are located in Silicon Valley, California): **Autodesk**, San Francisco, CA, USA (2013), **Cisco Systems**, San Jose, CA, USA (2013), **Ericsson AB**, Kista, Sweden (2008), **Google**, Mountain View, CA, USA (2013), **Institute of the Future**, Palo Alto, CA, USA (2013), **McKensson**, San Francisco, CA, USA (2013), **Piccaro**, Santa Clara, CA, USA (2013), **Plug and Play**, Sunnyvale, CA, USA (2013), **Splunk**, USA, San Francisco, CA, (2013), **UpWork** (formerly oDesk), Mountain View, CA, USA (2013), **YouTube**, Mountain View, CA, USA (2013), and **QB3**, San Francisco, CA, USA (2013).

RESEARCH
PROJECTS,
GRANTS, AND
REVIEWS

Since 2002 a research leader and a founder of Network Security Group at WUT (<http://secgroup.pl>) and stegano.net project (<http://stegano.net>).

Since 1996 he has been participating in various scientific projects as a **Principal Investigator and/or a senior researcher** among others:

- An Efficient Software Defined Network (SDN) – based Framework for Big Data Processing in Cloud Data Center (2017-2019) – funded by Department of Science & Technology (DST), Government of India and Polish Ministry of Science and Higher Education in Indo- Poland Joint Research Programme (call: 2016-2018) – together with Thapar University Patiala (Punjab, India) – role: Principal Investigator
- Statutory Grant of the Polish Ministry of Science and Higher Education, given to the Institute of Telecommunications, Warsaw University of Technology (2015-) – role: Principal Investigator at Cybersecurity Division
- Cryptomage Cyber Eye™ (<http://cryptomage.io/cybereye>) – The system for identification and monitoring of anomalies and risks in ICT networks (2015-2018) – funded by National Centre for Research (Poland) – POIR 2014-2020 programme – role: Principal Investigator
- Big Data analytics for information security – bigdaisy.net (2016-)
- new methods of detecting anomalies – anomalisa.net (2009-)
- advanced network steganographic systems – stegano.net (2002-)

Finished Grants and Projects:

- **MobiTraff: Cooperative Way to Mobility and Traffic Efficiency** (2013-2015) – funded by National Centre for Research (Poland) and Development and Fonds National de la Recherche (Luxembourg) – POLLUX programme– role: Principal Investigator
- **New Network Anomaly Detection Method** (2011-2014) – funded by National Science Centre (role: researcher)
- **Methods for Network Steganography Detection in IP Networks** (2012-2014) – funded by Polish Ministry of Science and Higher Education (role: researcher)

- Methods and Evaluation Environment of Network Steganography (2009-2011) – funded by Polish Ministry of Science and Higher Education (role: researcher)
- FP7 – ProSense: Promote, Mobilize, Reinforce and Integrate Wireless Sensor Networking Research and Researchers: Towards Pervasive Networking of WBC and the EU (2008-2010) – funded by EU (role: Principal Investigator)
- FP7 – EFIPSANS: Exposing the Features in IP version Six protocols that can be exploited/extended for the purposes of designing/building Autonomic Networks and Services (2008-2010) – funded by EU (role: security researcher in 2008-9)
- FP7 – Euro-NF: Anticipating the Network of the Future – From Theory to Design (2008-2010) – funded by EU (role: researcher)
- Wireless security including IEEE 802.11 (2005), 802.16 (2006), and sensor networks (2008-2010) – funded by Polish Government (role: Principal Investigator)
- Methods for Network Steganography Detection in IP Networks (2010-2011) – funded by Polish Ministry of Science and Higher Education (role: researcher)
- Detecting Frauds in 2G/3G Networks (2008-2009) – funded by Polska Telefonia Cyfrowa - PTC (role: Principal Investigator)
- Trusted Communication Platform for Multi-Agent Systems – a R&D project funded by US Army and US Air Force (2007-2008 - role: Principal Investigator)
- FP7 – Euro-FGI: Design and Engineering of the Future Generation Internet - Towards Convergent Multi-service Networks (2006-2008) – funded by EU (role: researcher)
- FP7 – Euro-NGI: Design and Engineering of the Next Generation Internet - Towards Convergent Multi-service Networks (2003-2006) – funded by EU (role: researcher)

Reviewer of grants and awards:

- Innovators Under 35, MIT Technology Review (2016-) – editions: Poland (2016), Spain (2016)
- member of Golden Cyborg competition jury (2016-)
- National Information Processing Institute (2016-)
- The National Science Centre, Poland (2014-)
- The National Centre for Research and Development, Poland (2013-)
- Ministry of Science and Higher Education, Poland (2007-)

Reviewer of 6 Ph.D. theses (3 Poland, 2 India, and Luxembourg) and **one D.Sc. thesis** (Poland).

ORGANIZATION
OF SCIENTIFIC
EVENTS

Key organizer and general chair of 4 cyclic workshops:

- **International Workshop on Cyber Crime (IWCC):**
 - 2016: Salzburg, Austria, August 29 – September 2, 2016 (co-located with ARES 2016 – 11th International Conference on Availability, Reliability and Security and TRUST 2016 – 9th International Conference on Trust & Trustworthy Computing)
 - 2015: Toulouse, France, August 24-25, 2015 (co-located with ARES 2015 – 10th International Conference on Availability, Reliability and Security)
 - 2014: San Jose, CA, USA, May 18, 2014 (co-located with IEEE S&P 2014 – The 35th IEEE Symposium on Security and Privacy)
 - 2013: San Francisco, CA, USA, May 24, 2013 (co-located with IEEE S&P 2014 – The 34th IEEE Symposium on Security and Privacy)
 - 2012: St. Petersburg, Russia, October 3-5, 2012 (co-located with ICUMT 2012 – International Congress on Ultra Modern Telecommunications and Control Systems)
- **International Workshop on Digital Forensics (IWDF):**
 - 2011: Shanghai, China, November 4-6, 2011 (co-located with MINES 2011 – The 2011 International Conference on Multimedia Information Networking and Security)
- **International Workshop on Network Steganography (IWNS):**
 - 2011: Prague, Czech Republic, May 26-28, 2011 (co-located with ICTSM 2011 – The 2011 International Conference on Telecommunication Systems, Modeling and Analysis)
 - 2010: Nanjing, China, November 4-6, 2010 (co-located with MINES 2010 – The 2010 International Conference on Multimedia Information Networking and Security)
 - 2009: Wuhan, China, 18-20 November, 2009 (co-located with MINES 2009 – The 2009 International Conference on Multimedia Information Networking and Security)
- **International Workshop on Secure Information Systems (SIS):** 2007, 2008, 2010 – Wisła, Poland

Since 2007 the TPC chair (or co-chair) of 10+ conferences, PC member and reviewer of papers submitted to 150+ conferences. The co-organizer of two summer schools.

AWARDS

1. The Best Presentation for "StegIbiza: a New Method for Information Hiding in Club Music" at 2nd International Conference on Frontiers of Signal Processing (ICFSP 2016), Warsaw, Poland, October 2016
2. Winner for a team project of first edition of the MIT Enterprise Forum Poland acceleration program, February 2016
3. Warsaw University of Technology Rector's Award (5 times)
 - First degree award for Scientific Achievements for Research Teams in 2014-2013, October 2016
 - First degree award for Scientific Achievements for Research Teams in 2012-2013, October 2014
 - Second degree award for Scientific Achievements for Individuals in 2012, October 2013
 - First degree award for Scientific Achievements for Research Teams in 2009-2010, October 2011
 - First degree award for Scientific Achievements for Research Teams in 2007-2008, October 2009
4. Travel Grant CAS/34/POKL — Warsaw University of Technology, December 2013 (2 month stay at George Mason University, Fairfax, VA)
5. Best Paper Award – 5th International Congress on Ultra Modern Telecommunications and Control Systems, Almaty (Kazakhstan), September 2013
6. Travel Grant — New America Foundation, May 2013 (visit to Hong Kong)
7. Winner of Third Edition of Top 500 Innovators Program, Ministry of Science and Higher Education, Poland, March 2013 (2 month stay at University of California, Berkeley)
8. Travel Grant R&D 1320-CE-06 — US Army, December 2008 (visit to the U.S.A.)
9. Best Paper Award – 12th IFIP International Conference on Personal Wireless Communications – PWC'07, Prague (Czech Republic), September 2007
10. Defended PhD thesis with honours, Warsaw University of Technology, January 2007

MEMBERSHIP

- Polish Chamber of Digital Economy, Poland – director of Cybersecurity Bureau (2016-)
- Polish Information Processing Society (2016-)
- ISSA Poland (2016-)
- Telecommunication Section, Electronics and Telecommunications Committee, Polish Academy of Sciences (PAS) – expert-member (2015-) and vice-chairman (2016-)
- The American Society for Research (ASR) (2015-) – grade: **Senior Member**
- The Institute of Electrical and Electronics Engineers (IEEE) (2013-) – grade: **Senior Member**
- IEEE Multimedia Communications Technical Committee (MMTC) (2009-)
- Polish Association of Telecommunication Engineers (2005-)

TEACHING

Involved in the following teaching activities at WUT:

- postgraduate studies: Postgraduate Studies in Network Security (2015-)
- undergraduate studies: Security in Cyberspace - lectures, projects (2017-), Security of Software and Penetration Tests – a coordinator (2016-), MSc Seminar in Telecommunications and (2015-), and BSc Seminar in Telecommunications (2015-)

Previous teaching activities at WUT:

- postgraduate studies: Postgraduate Studies in Telecommunications, Computer Science and Management – CITCOM-PW (1995-2008, 2012-2013)
- Cisco courses: ITU-ITC at WUT (2003-2011)
- undergraduate studies: Fundamentals of Electronic Commerce (2004-2006) – lectures, projects; Network Security – lectures, projects (1997-2007, 2010-2015); Local Area Networks – lectures, projects (1997-2016)

Visiting/guest teaching activities:

- George Mason University, Fairfax, VA (USA): ECE 646 Cryptography and Computer Network Security – lectures, projects (Fall 2014)

- Warsaw School of Computer Science, Poland – lectures in information security (2003-2004)

Since 1999, **79 theses (44 B.Sc., 34 M.Sc. and one Ph.D.)** were completed under Krzysztof Szczypiorski's supervision (more information at: <http://ksz.tele.pw.edu.pl/teaching.html>).

JOURNALS:
REVIEWING
AND EDITING

A member of International Editorial Review Boards of:

- Journal of Advances in Computer Networks (JACN), IACSIT Press (2015-)
- International Journal of Human and Smart Device Interaction (IJHSDI), SERSC (2015-)
- International Journal of Wireless Networks and Broadband Technologies (IJWNBT), IGI Global (2011-)

An Associate Editor of Transactions on Emerging Telecommunications Technologies (formerly known as European Transactions on Telecommunications), John Wiley & Sons (2011-2013).

A reviewer for several scientific journals, among others:

- ACM/Springer Multimedia Systems
- Annals of Telecommunications, Springer-Verlag GmbH
- Computer Communications, Elsevier
- Computer Journal, Oxford University Press
- Engineering Science and Technology, an International Journal (JESTECH), Elsevier
- EURASIP Journal on Advances in Signal Processing, Springer-Verlag GmbH
- EURASIP Journal on Information Security, Springer-Verlag GmbH
- Fundamenta Informaticae, Polskie Towarzystwo Matematyczne
- IEEE/ACM Transactions on Audio, Speech and Language Processing
- IEEE/ACM Transactions on Networking
- IEEE Journal on Selected Areas in Communications
- IEEE Transactions on Dependable and Secure Computing
- IEEE Transactions on Network and Service Management
- IEEE Transactions on Information Forensics & Security
- Informatica: International Journal of Computing and Informatics
- International Journal of Electronics and Telecommunications (JET)
- International Journal of Sensor Networks, Inderscience Publishers
- International Journal of Wireless Networks and Broadcasting Technologies (IJWNBT), IGI-Global
- Journal of Computer and System Sciences, Elsevier
- Journal of Information Assurance and Security (JIAS), Dynamic Publishers Inc.
- Journal of Information Security and Applications, Elsevier
- Journal of Network and Computer Applications, Elsevier
- Journal of Telecommunications and Information Technology (JTIT)
- Journal of Zhejiang University, Zhejiang University Press, co-published with Springer-Verlag GmbH
- Mobile Information Systems, Hindawi
- Multimedia Systems, Springer
- Neurocomputing, Elsevier
- Przegląd Elektrotechniczny, Wydawnictwo SIGMA-NOT
- Security and Communication Networks, John Wiley & Sons
- Telecommunication Systems: Modelling, Analysis, Design and Management, Springer-Verlag GmbH
- Transactions on Emerging Telecommunications Technologies, John Wiley & Sons
- Wireless Personal Communications, Springer-Verlag GmbH

A guest editor for special issues in the following journals:

- Annals of Telecommunications, Springer-Verlag GmbH
- Computer Journal, Oxford University Press
- EURASIP Journal on Information Security, Springer-Verlag GmbH (three issues)
- IEEE Transactions on Dependable and Secure Computing (IEEE TDSC), IEEE ComSoc
- Journal of Information Assurance and Security (JIAS), Dynamic Publishers Inc.
- Multimedia Systems, Springer
- Security and Communication Networks (SCN) John Wiley & Sons (two issues)
- Telecommunication Systems: Modelling, Analysis, Design and Management, Springer-Verlag GmbH (three issues)

PUBLICATIONS

Krzysztof Szczypiorski is **the author or the co-author of 180+ papers, 3 patent applications** (one is granted), and **60+ invited talks (in Bulgaria, China, Japan, Luxembourg, Poland, Russia, UK, and USA)**.

The full list of his publications is available at: <http://ksz.tele.pw.edu.pl/research.html#Publications>
 Google Scholar profile: <http://scholar.google.com/citations?user=YnOv0OMAAAAJ>
 (h-index=17, citations: 1050)

Scopus profile: ID 23013173400 (h-index=9, citations: 298)

Research ID profile: ID A-9664-2012 (h-index=8, citations: 201)

SELECTED
 PUBLICATIONS
 (2013-2016)

1. Wojciech Frączek and **Krzysztof Szczypiorski**: Perfect undetectability of network steganography. In: International Journal of Security and Communication Networks, John Wiley & Sons, 2016 (DOI: 10.1002/sec.1491)
2. Wojciech Mazurczyk, Steffen Wendzel, Sebastian Zander, Amir Houmansadr, and **Krzysztof Szczypiorski**: Information Hiding in Communication Networks: Fundamentals, Mechanisms, and Applications, ISBN-13: 978-1118861691, 296 pages, Wiley-IEEE Press, March 2016
3. **Krzysztof Szczypiorski**, Artur Janicki, and Steffen Wendzel: “The Good, The Bad And The Ugly”: Evaluation of Wi-Fi Steganography. In: Journal of Communications (JCM), ISSN: 1796-2021 (Online), ISSN: 2374-4367 (Print), Vol. 10, No. 10, October 2015, pp. 747-752, DOI: 10.12720/jcm.10.10.747-752
4. Wojciech Mazurczyk, Maciej Karaś, **Krzysztof Szczypiorski**, and Artur Janicki: YouSkyde: Information Hiding for Skype Video Traffic In: Multimedia Tools and Applications, ISSN: 1380-7501 (print version), ISSN: 1573-7721 (electronic version), Springer US, Journal no. 11042, 2005, DOI: 10.1007/s11042-015-2740-0
5. Artur Janicki, Wojciech Mazurczyk, and **Krzysztof Szczypiorski**: Influence of Speech Codecs Selection on Transcoding Steganography, In: Telecommunication Systems: Modelling, Analysis, Design and Management, to be published, ISSN: 1018-4864 (print version), ISSN: 1572-9451 (electronic version), Springer US, Journal no. 11235, Volume 59, Issue 3, July 2015, pp. 305-315
6. Józef Lubacz, Wojciech Mazurczyk, and **Krzysztof Szczypiorski**: Principles and Overview of Network Steganography. In: IEEE Communications Magazine, Volume 52, Issue 5, May 2014, pp. 225-229
7. Elżbieta Zielińska, Wojciech Mazurczyk, and **Krzysztof Szczypiorski**: Trends in steganography. In: Communications of the ACM, Volume 57, Issue 3, March 2014, pp. 86-95
8. Wojciech Mazurczyk, **Krzysztof Szczypiorski**, and Józef Lubacz: The Spy Who Skyped Me – Four New Ways to Smuggle Messages Across the Internet. In: IEEE Spectrum, Volume 50, Issue 11, November 2013, pp. 40-43
9. Wojciech Mazurczyk, Maciej Karaś, **Krzysztof Szczypiorski**: SkyDe: a Skype-based Steganographic Method. In: International Journal of Computers, Communications & Control, Vol. 8, No. 3, 2013
10. Bartosz Jankowski, Wojciech Mazurczyk, and **Krzysztof Szczypiorski**: PadSteg: introducing inter-protocol steganography. In: Telecommunication Systems: Modelling, Analysis, Design and Management, February 2013, Volume 52, Issue 2, pp. 1101-1111

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