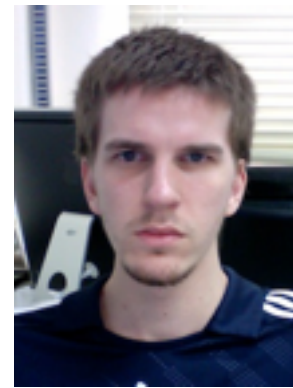


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**GLOBAL PROBLEMS, GLOBAL SOLUTIONS:
PROSPECTING OPPORTUNITIES FOR JOINT
RESEARCH ON COMPUTER SECURITY**

ACKNOWLEDGEMENTS

- ▶ Thanks to Daniel, Miguel, Rodrigo & Matheus



- ▶ INF/UFRGS, Institute of Informatics, Federal University of Rio Grande do Sul

ACKNOWLEDGEMENTS

Thanks very much Priscila & Daniela



OUTLINE

- ▶ disclaimers
- ▶ on groups and security research communities
- ▶ global problems
- ▶ selected global problems
- ▶ matchmaking

DISCLAIMERS

- ▶ assume that same security problems affect us all
- ▶ let *community* be much larger than *group* (of attendees)
- ▶ this keynote to highlight opportunities for joint research...
- ▶ it is no presumptuous attempt to be visionary or point out directions
- ▶ represents my own (limited and biased) view
- ▶ very hard (shy) to describe B to A in front of B and vice-versa :)
- ▶ inaccuracies due to ever-changing participant list
- ▶ please intervene, correct me and contribute as desired

OUTLINE

- ▶ disclaimers
- ▶ on groups and security research communities
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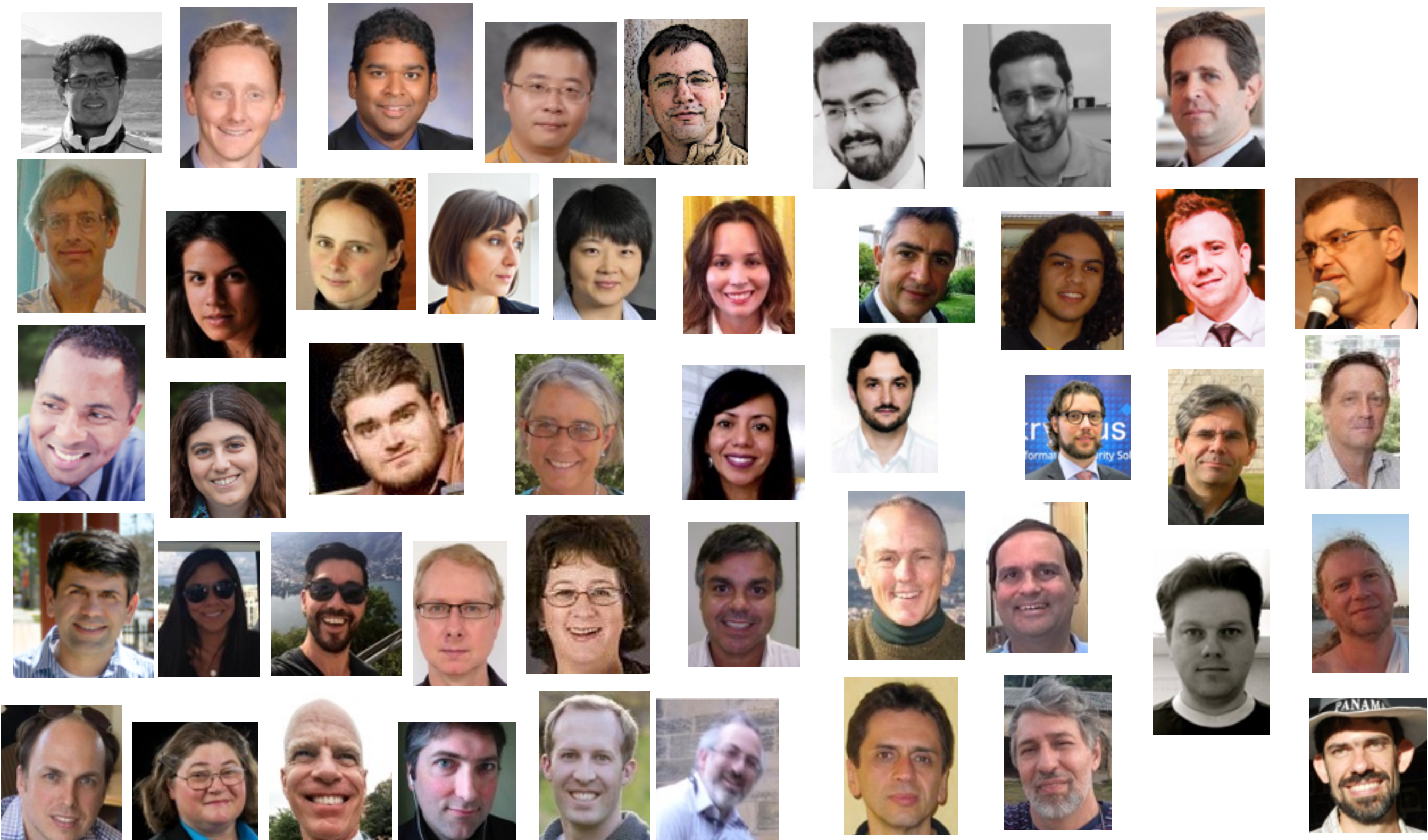
WORKSHOP (ACADEMIC) PARTICIPANTS

1. Kevin Butler, Un of Florida
2. Mark Tehranipoor, Un of Florida
3. Patrick Traynor, Un of Florida
4. Daniel J. Ragsdale, Texas A&M
5. Guofei Gu, Texas A&M Un
6. Dave Dittrich, Un of Washington
7. Anna Squicciarini, Penn State Un
8. Nadia Heninger, UPenn
9. Michelle Mazurek, Un of Maryland
10. Micah Sherr, Georgetown Un
11. Matt Bishop, UC Davis
12. William Robertson, Northeastern Un
13. Bradley Huffaker, UCSD/CAIDA
14. Manuel Egele, Boston Un
15. Fabian Monroe, Un North Carolina
16. Stephanie Forrest, Un of New Mexico
17. Jedidiah Crandall, Un of New Mexico
18. Terry Benzel, USC
19. Scott Condie, Brigham Young Un
20. Marco Carvalho, Florida Institute of Technology
21. Daniela Oliveira, Un of Florida



1. Altair Santin, PUC/PR
2. Mario S. Alvim, UFMG
3. Wagner Meira, UFMG
4. Marinho Barcellos, UFRGS
5. Luiz Rust, INMETRO/UFRJ
6. Edmundo Sousa e Silva, UFRJ
7. Daniel Figueiredo, UFRJ
8. Jean Martina, UFSC
9. Joao Gondim, UNB
10. Jorge H C Fernandes, UNB
11. Adriano Mauro Cansian, UNESP
12. Andre Gregio, UNICAMP
13. Paulo Licio de Geus, UNICAMP
14. Diego Aranha, UNICAMP
15. Roberto Gallo, Kryptus/UNICAMP
16. Marcos Simplício Jr., USP
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18. Ricardo Custodio, UFSC
19. Raimundo Macedo, UFBA
20. Jeroen van de Graaf, UFMG
21. Priscila Solis, UnB

ACADEMIC PARTICIPANTS: FACES TO NAMES

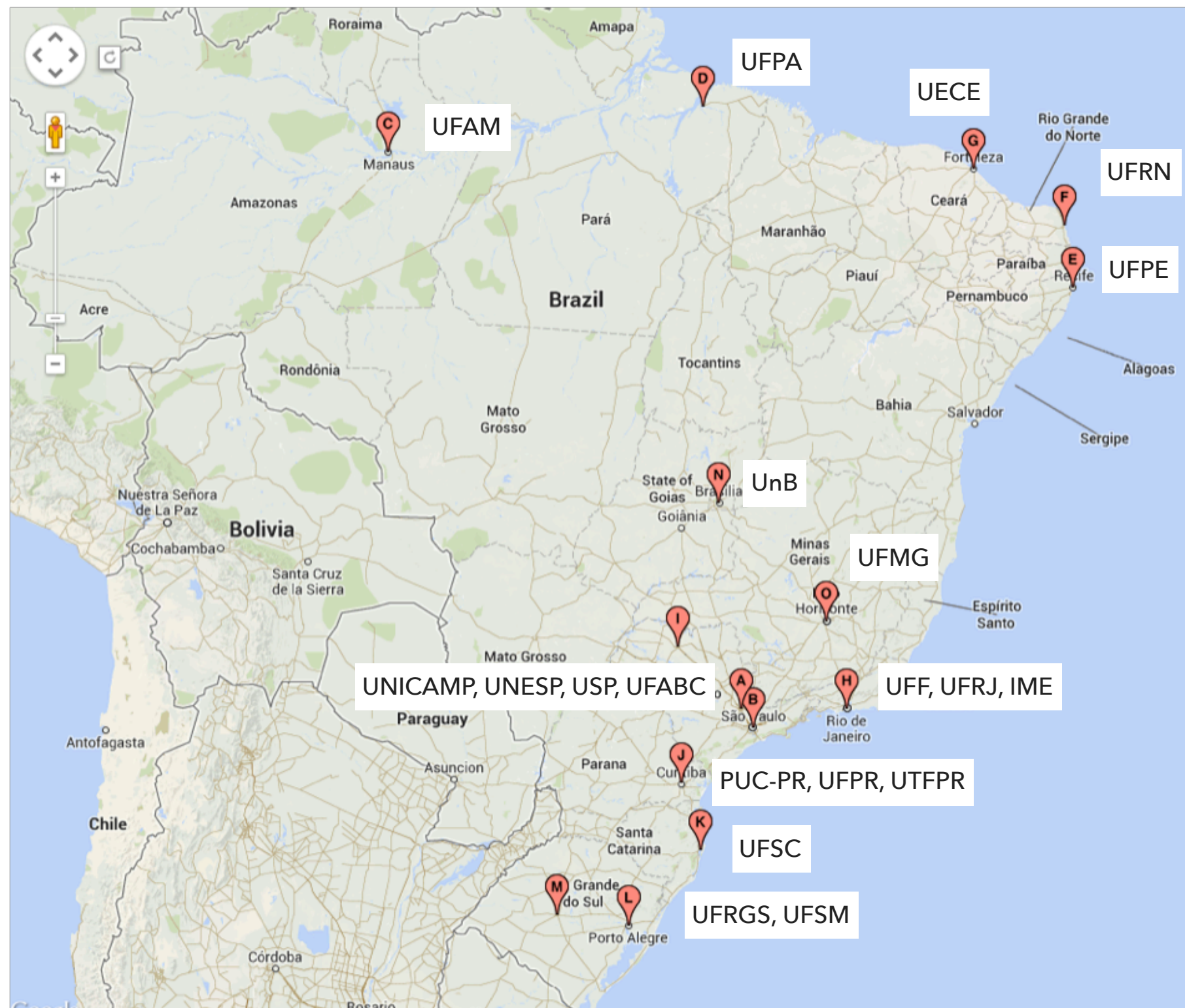


BRAZILIAN RESEARCH COMMUNITY: BEYOND WORKSHOP

- ▶ Alberto Schaeffer-Filho, UFRGS
- ▶ Aldri dos Santos, UFPR
- ▶ **Altair Olivo Santin, PUCPR**
- ▶ Anderson Nascimento, UW-Tacoma
- ▶ **André Grégio, CTI**
- ▶ André Luiz dos Santos, UECE
- ▶ Carla Westphall, UFSC
- ▶ Carlos Maziero, UTFPR/UFPR (Coordinator)
- ▶ Carlos Westphall, UFSC
- ▶ Célio Vinicius Neves de Albuquerque, UFF
- ▶ Davidson Boccardo, INMETRO
- ▶ Denise Goya, UFABC
- ▶ **Diego Aranha, UNICAMP**
- ▶ Eduardo Alchieri, UnB
- ▶ Eduardo Feitosa, UFAM
- ▶ Eduardo Souto, UFAM
- ▶ Emerson Ribeiro de Mello, IFSC
- ▶ Hao Chi Wong, Intel
- ▶ **Jean Martina, UFSC**
- ▶ **Jeroen Graaf, UFMG**
- ▶ Joaquim Celestino Jr, UECE
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- ▶ Julio Hernandez, UNICAMP
- ▶ Lau Cheuk Lung, UFSC
- ▶ Leonardo Oliveira, UFMG
- ▶ Lisandro Granville, UFRGS
- ▶ Luciano P Gaspar, UFRGS
- ▶ Luiz Carlos Albini, UFPR
- ▶ **Luiz Rust Carmo, INMETRO**
- ▶ Marco Henriques, UNICAMP
- ▶ **Marcos Simplicio Jr, Poli-USP**
- ▶ **Marinho Barcellos, UFRGS**
- ▶ **Mário Sérgio Alvim, UFMG**
- ▶ Michele Nogueira, UFPR
- ▶ Michelle Wingham, UNIVALI
- ▶ Paulo André Gonçalves, UFPE
- ▶ **Paulo Lício de Geus, UNICAMP**
- ▶ Pedro Braconnot Velloso, UFRJ
- ▶ Rafael Misoczki, Intel Labs, USA
- ▶ Raphael Machado, INMETRO
- ▶ Raul Ceretta Nunes, UFSM
- ▶ Raul Weber, UFRGS
- ▶ Ricardo Dahab, UNICAMP
- ▶ **Roberto Gallo, KRYPTUS**
- ▶ Rossana Andrade, UFC
- ▶ Routo Terada, IME-USP (Coordinator)
- ▶ Ruy José Guerra de Queiroz, UFPE
- ▶ Sergio de Oliveira, UFSJ

using the TPC of security scientific event in Brazil as a reference

BRAZILIAN RESEARCH COMMUNITY: GROUPS GEO-DISTRIBUTION



BRAZILIAN RESEARCH COMMUNITY

- ▶ brazilian university ecosystem (public/state/federal vs. private)
- ▶ relatively young research groups (crypto vs. network security)
- ▶ people (professors, tenure, researchers, postgrads, undergrads)
- ▶ funding bodies: capes, cnpq, state agencies (eg fapesp)
- ▶ context of resource scarcity
- ▶ objective quality assessment (qualis, postgraduate ranking)
- ▶ industry not so altruist, requires incentives and controls
- ▶ virtually no access to data, traces, observation points in br

CONTRASTING WITH US RESEARCH COMMUNITY (*)

- ▶ probably world-largest research community, and well-established
- ▶ covers all topics on security (and the ones we're yet to find out :)
- ▶ high quality scientific output delivered by top groups
- ▶ more resources available from funding bodies & industry
- ▶ flexibility to spend (researcher assumed non-malicious)
- ▶ subjective quality assessment
- ▶ less bureaucracy, lower teaching load with supportive TAs
- ▶ more access to data from Industry

(*) my personal opinion , not ground truth

OUTLINE

- ▶ disclaimers
- ▶ on groups and security research communities
- ▶ global problems
- ▶ selected global problems
- ▶ matchmaking

GLOBAL PROBLEMS: BASED ON AN ARBITRARY CALENDAR (*)

- ▶ Feb: Network and Distributed System Security Symposium ([NDSS](#))
- ▶ May: IEEE Symposium on Security and Privacy ([Oakland](#))
- ▶ Aug: Usenix Security ([SEC](#))
- ▶ Aug: International Cryptology Conference ([CRYPTO](#))
- ▶ Oct: ACM Conference on Computer and Communications Security ([CCS](#))
- ▶ Oct: ACM Internet Measurement Conference ([IMC](#))
- ▶ Nov: SBC Brazilian Symposium on Information & Systems Security ([SBSeg](#))

(*) biased list, including ACM IMC, but omitting important crypto events

GLOBAL PROBLEMS OR AREAS

1. software security
2. malware
3. cloud security
4. web security
5. network security
6. wireless security
7. mobile device security
8. intrusion detection
9. digital forensics
10. privacy
11. anonymity
12. cryptography
13. authentication
14. digital signature and certification
15. e-voting security
16. digital currency
17. trust
18. hardware security, hardware-based security
19. information flow security
20. social engineering/usable security
21. protecting intellectual property
22. insider threat
23. online social networks
24. cybercrime
25. telecommunication infrastructure

GLOBAL PROBLEMS OR AREAS



GLOBAL PROBLEMS OR AREAS

- ▶ it would be interesting to hear from the expert attendees what is their view on the relevance of each area...
- ▶ ...and on security grand challenges
- ▶ are those 5 grand challenges envisaged by CESeg correct?

OUTLINE

- ▶ disclaimers
- ▶ on groups and security research communities
- ▶ global problems
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- ▶ matchmaking

SELECTED GLOBAL PROBLEMS, US GROUP (*)

- | | | |
|------------------------------|--|---|
| 1. software security | 11. hardware security,
hardware-based
security | 18. telecomm
infrastructure (cel
networks) |
| 2. network security | 12. digital forensics | 19. insider threat |
| 3. privacy | 13. usable security | 20. OSN |
| 4. malware | 14. cyber ethics | 21. cybercrime |
| 5. mobile device
security | 15. digital signature and
certification | 22. digital currency |
| 6. anonymity | 16. web security | 23. authentication |
| 7. cryptography | 17. trust | 24. wireless security |
| 8. e-voting security | | 25. protecting intellectual
property |
| 9. intrusion detection | | |
| 10. cloud security | | |

SELECTED GLOBAL PROBLEMS, US GROUP

- | | | |
|------------------------------|--|--|
| 1. software security | 11. hardware security,
hardware-based
security | 18. telecomm
infrastructure (cel
networks) |
| 2. network security | 12. digital forensics | 19. insider threat |
| 3. privacy | 13. usable security | 20. OSN |
| 4. malware | 14. cyber ethics | |
| 5. mobile device
security | 15. digital signature and
certification | |
| 6. anonymity | 16. web security | |
| 7. cryptography | 17. trust | |
| 8. e-voting security | | |
| 9. intrusion detection | | |
| 10. cloud security | | |

SELECTED GLOBAL PROBLEMS, BR GROUP (*)

- | | | |
|--|---|--|
| 1. network security | 12. wireless security | 23. protecting intellectual property |
| 2. software security | 13. cybercrime | 24. telecomm infrastructure (cell networks) |
| 3. information security | 14. digital forensics | 25. hardware security, hardware-based security |
| 4. cloud security | 15. authentication | |
| 5. malware | 16. digital signature and certification | |
| 6. cryptography | 17. insider threat | |
| 7. mobile device security | 18. anonymity | |
| 8. usable security | 19. OSN | |
| 9. e-voting security | 20. web security | |
| 10. privacy | 21. digital currency | |
| 11. intrusion detection/traffic analysis | 22. trust | |

(*) based on interests stated on the website/CV of researchers (and papers)

(*) ties solved in arbitrary order

SELECTED GLOBAL PROBLEMS, BR GROUP

1. network security
2. software security
3. information security
4. cloud security
5. malware
6. cryptography
7. mobile device security
8. usable security
9. e-voting security
10. privacy
11. intrusion detection/
traffic analysis
12. wireless security
13. cybercrime
14. digital forensics
15. authentication
16. digital signature and
certification
17. insider threat
18. anonymity

OUTLINE

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MATCHMAKING

- ▶ based on the list of problems that have been looked at recently by any workshop participant (challenge: participation changed amidst the process)
- ▶ topic present when appears to be a common interest
- ▶ initial list, likely to be expanded during discussions

as in brazil, everything boils down to football...



MATCHMAKING (ORDERED BY COMMON INTERESTS)



Topics according to groups (not communities)	Brazil	x	US
network security	14	x	9
software security	6	x	15
privacy	1	x	8
malware	2	x	5
information security	6	x	1
mobile device security	2	x	4
cryptography	2	x	3
cloud security	3	x	2
social engineering, usable security	2	x	2
e-voting security	1	x	2
intrusion detection & traffic analysis	1	x	2
digital forensics	1	x	2
hardware security, hardware-based security	1	x	2
insider threat	1	x	1