

Collaboration with Africa / BRICS for human oriented approaches to security, privacy and trust – Jan Eloff

Speaker: Jan Eloff is currently appointed as Research Director at **SAP Meraka UTD / SAP Research Pretoria** and as an Extraordinary Professor in Computer Science at the University of Pretoria. At the University of Pretoria, he is a co-founder of the Information and Computer Security Architectures (ICSA) research laboratory. He represented South Africa as an expert member on IFIP Technical Committee 11 (Information Security).

Although traditional / developed world ICT markets will experience growth in the future, the growth will be relatively slow since these markets are widely saturated. The next big growth market will likely come from areas that are seen as under-developed, such as the Africa / BRICS region, where ICT use is currently at comparatively low levels.

To ensure that the potential of the Africa / BRICS market can be addressed, it is necessary to understand the needs and challenges of this market. International cooperation between European and Africa / BRICS partners is therefore necessary to establish this understanding and to create solutions appropriate for the target market.

To begin this cooperation, we provide the following recommendations with regards to the research and technology outputs as well as with regards to the collaboration methodology.

Recommendations for cooperation - research and technology outputs

Collaboration should be based on context awareness. Traditional user-centered approaches for technology development do not consider cultural and contextual needs. This results in deriving user requirements that do not give the right view of the real needs, leading to technology failure. Example of contextual factors that should be considered include:

- Cultural norms and tradition
- Appropriate tactics for community entry and engagement
- Appropriate research techniques that involve the users and communities
- Appropriate needs assessment practices
- Infrastructure capacity of the targeted community
- Solution maintenance costs

The technology developed should be advantageous from the viewpoint of the local users. Therefore, technology development should be based on an understanding of the real requirements as well as an understanding how existing technology can be adapted to meet contextual requirements. Lastly, solutions developed should be relevant to local users, their needs and the available infrastructure.

Recommendations for cooperation - collaboration methodology

European funding opportunities (e.g. Framework Programmes) should encourage

collaboration with partners in Africa / BRICS. European Project consortia should be more open to accept African / BRICS partners, which should not just provide use cases, but should also develop and adapt technology for their local needs.

We also recommend the following three areas of research topics for international cooperation with regards to security, privacy and trust.

1. Research topics for international cooperation - Security

In Africa / BRICS, mobile phones are the most common ICT device used. Typical users of such devices may not fully understand the security vulnerabilities the use of these devices pose. Security configuration of such devices for most users will therefore be a challenge. Therefore, the research challenge to address with regards to facilitating usable security is: How to quantitatively analyze and design appropriate user interfaces for mobile devices to enable a typical user to make informed decisions about different security settings?

2. Research topics for international cooperation - Privacy

Privacy and information utility are conflicting requirements. As the level of privacy increases, the level of information utility decreases. This is because as we hide more information to preserve privacy, the usefulness of the released information decreases. Local context and culture also influence what information should be regarded as private, and what information is considered as useful. Therefore, the research challenge to address with regards to privacy is: How to ensure an optimum balance between privacy and utility, taking into account local contextual needs and preferences?

3. Research topics for international cooperation - Trust

In African communities, trust is influenced by social network position. Social position governs activities within rural communities. For example, the chief of a village can influence business collaborations. Rural communities therefore require a different approach to business due to unique social structures, social norms, and traditions. Therefore, the research challenge to address with regards to trust is: How to ensure that trust management takes into account concepts relevant to the target context?

Conclusion

In conclusion, by facilitating international cooperation to provide human oriented approaches to security, privacy and trust, we believe that both European and African / BRICS partners will benefit. The great potential of the Africa / BRICS market can be exploited, while at the same time, these markets will be provided with solutions that are appropriate, affordable and contextually-relevant.