



GRID SECURITY

for Grid Computing

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Grid Security

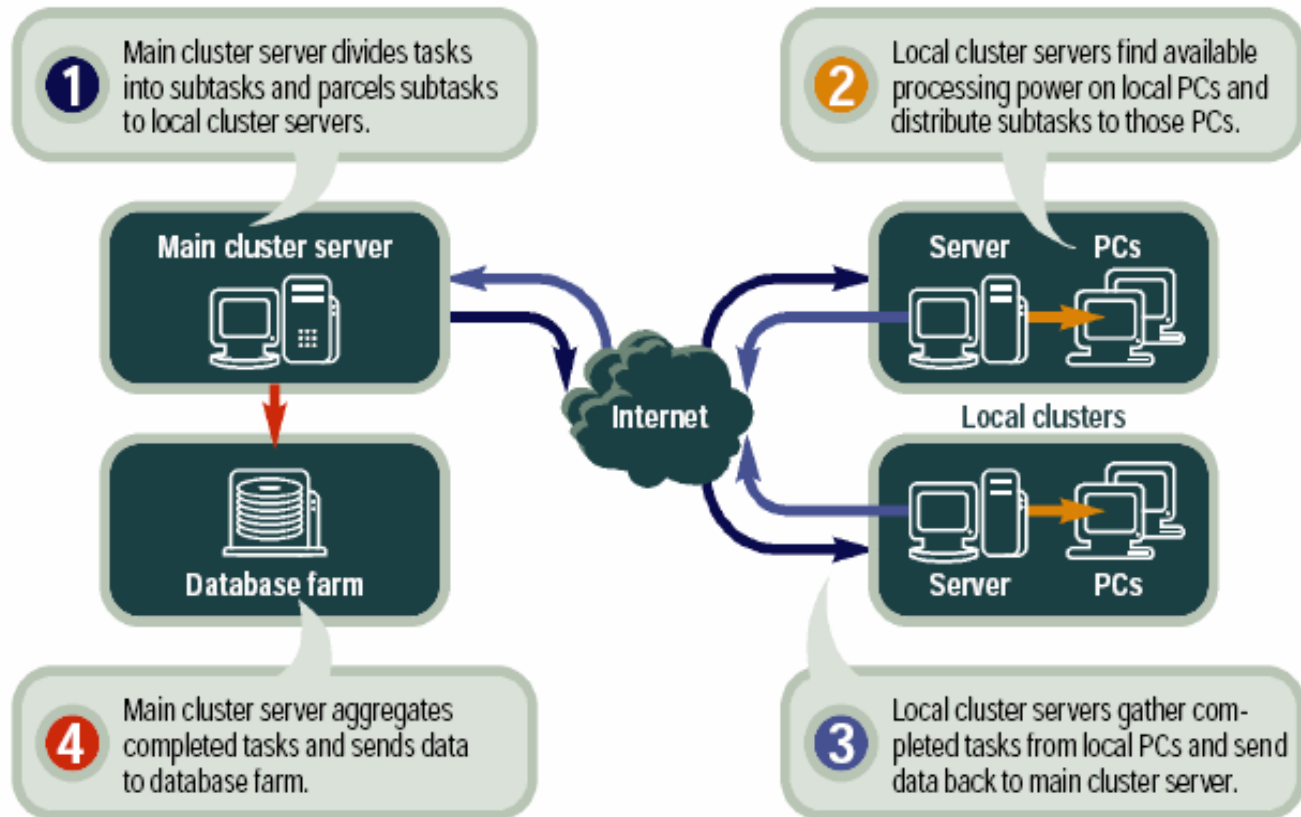
Grid Security - Outline

- Brief introduction to grids
- Grid security basics
- How grid security really works
- Good and bad facts about grid security
- Proposal
- Conclusions
- References

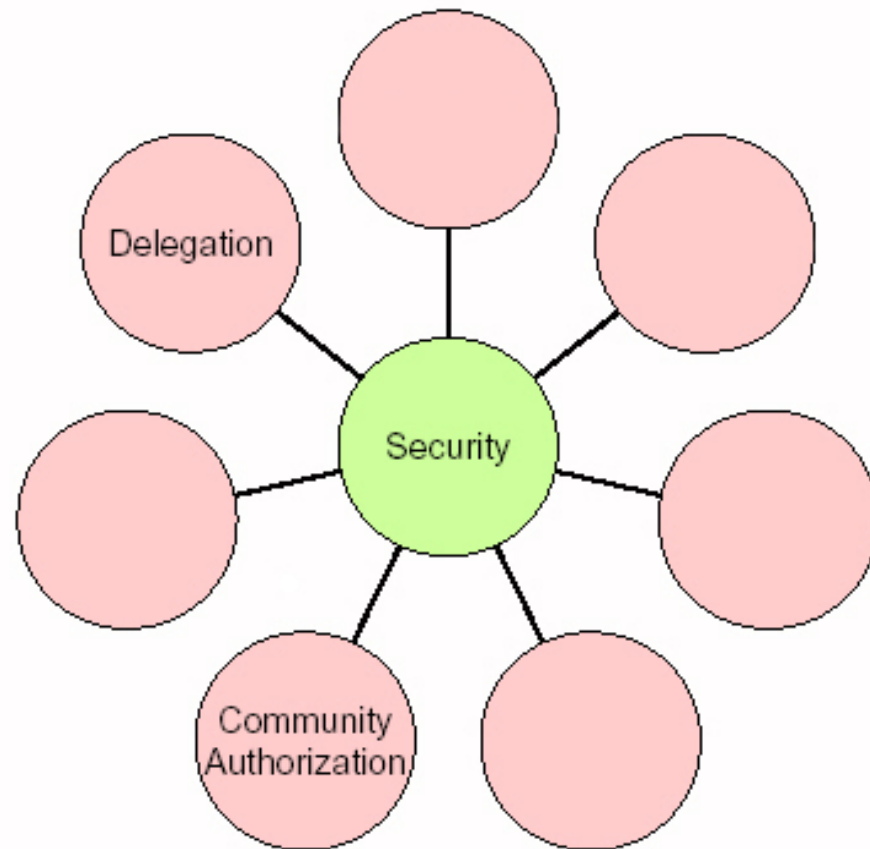


Grid Security – Background

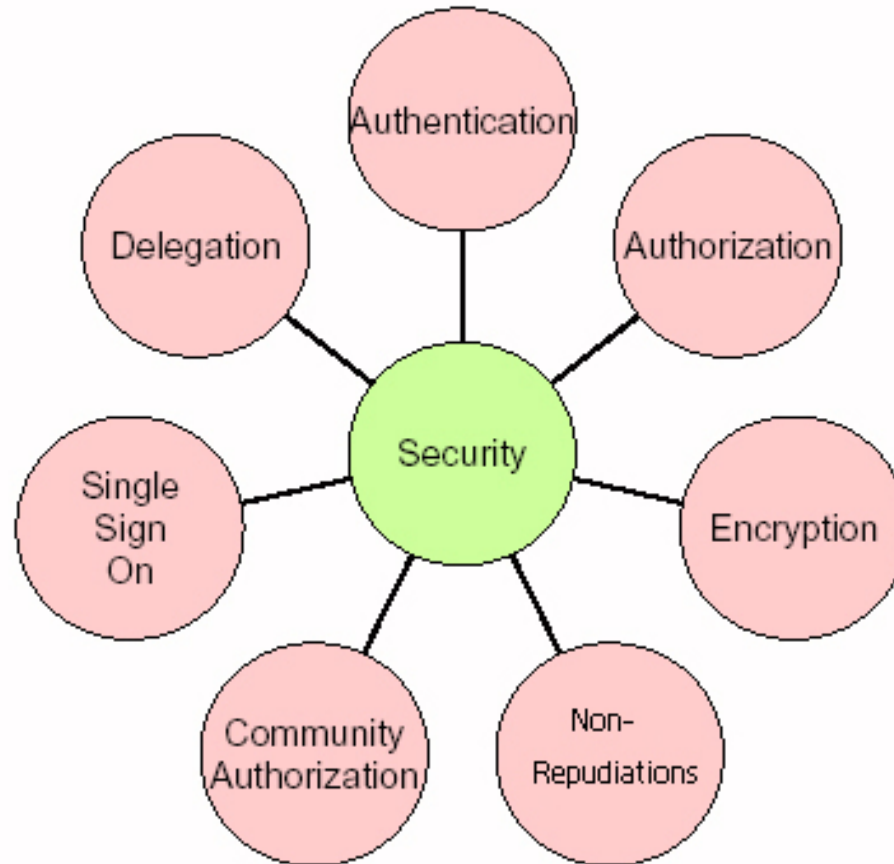
How It Works *In the global grid computing scenario, unused processing power on local clusters of computers scattered across the Internet would be harnessed to address a single, complex application.*



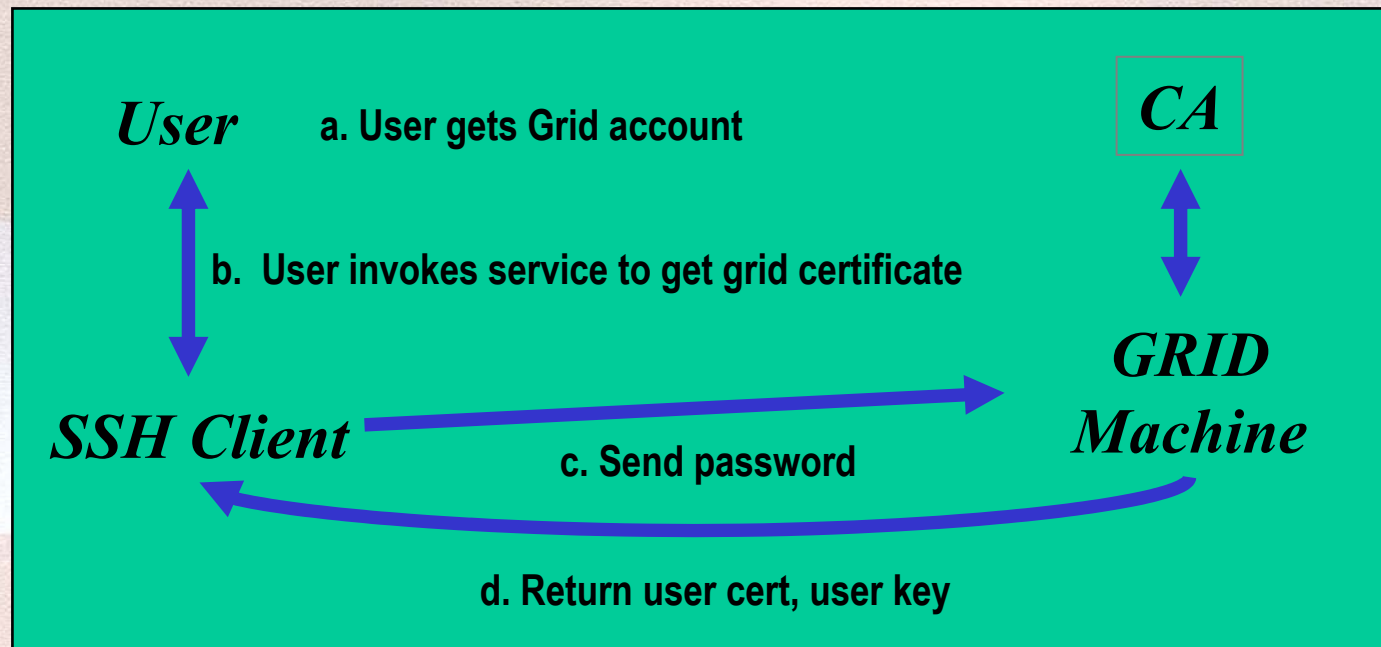
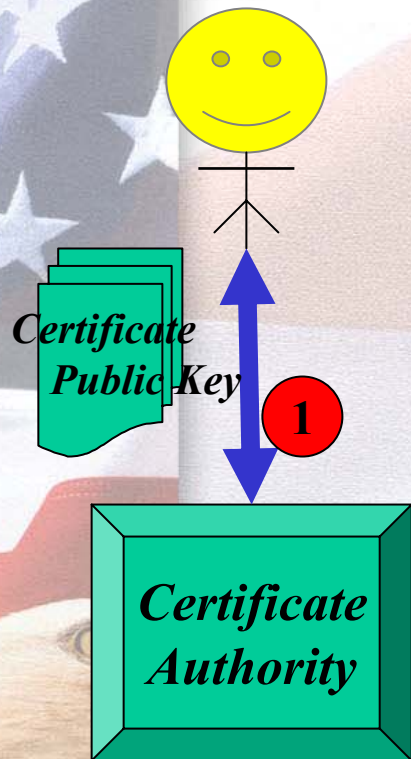
Grid Security - Basics



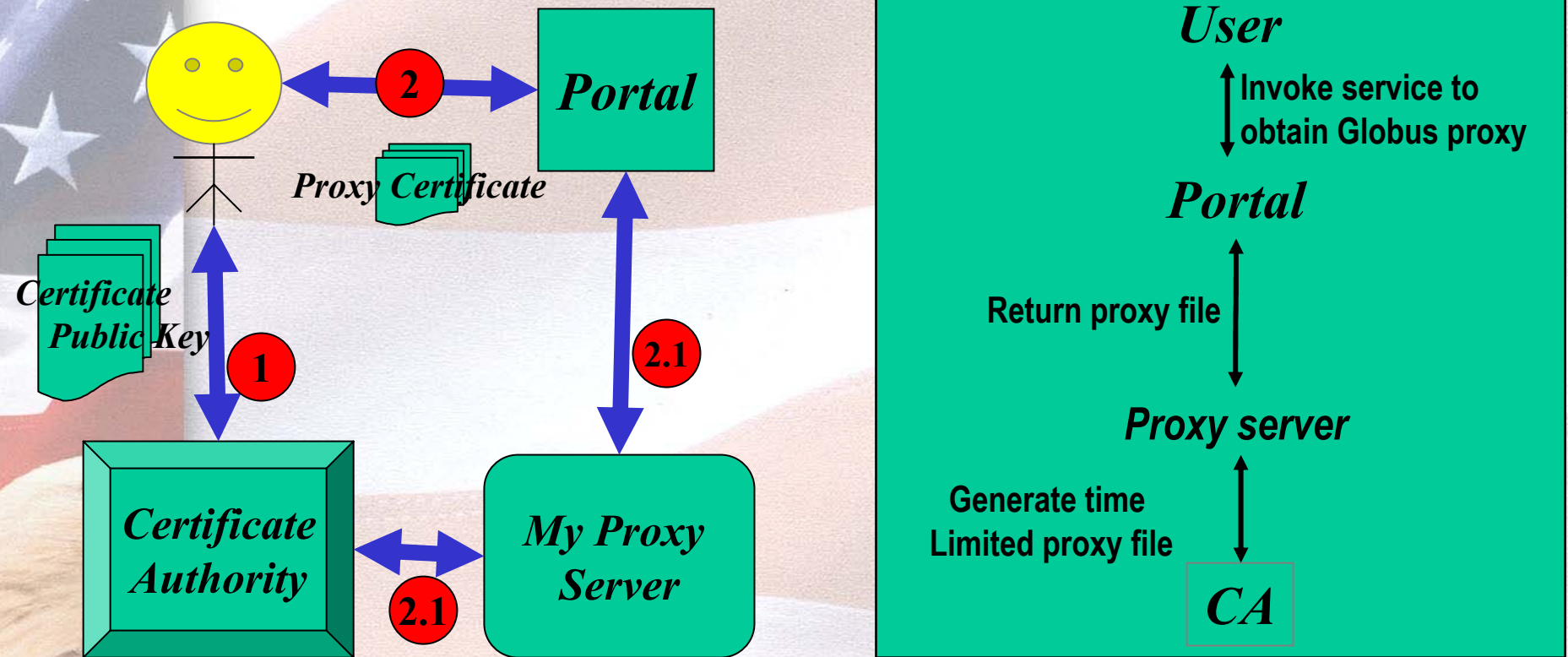
Grid Security - Basics



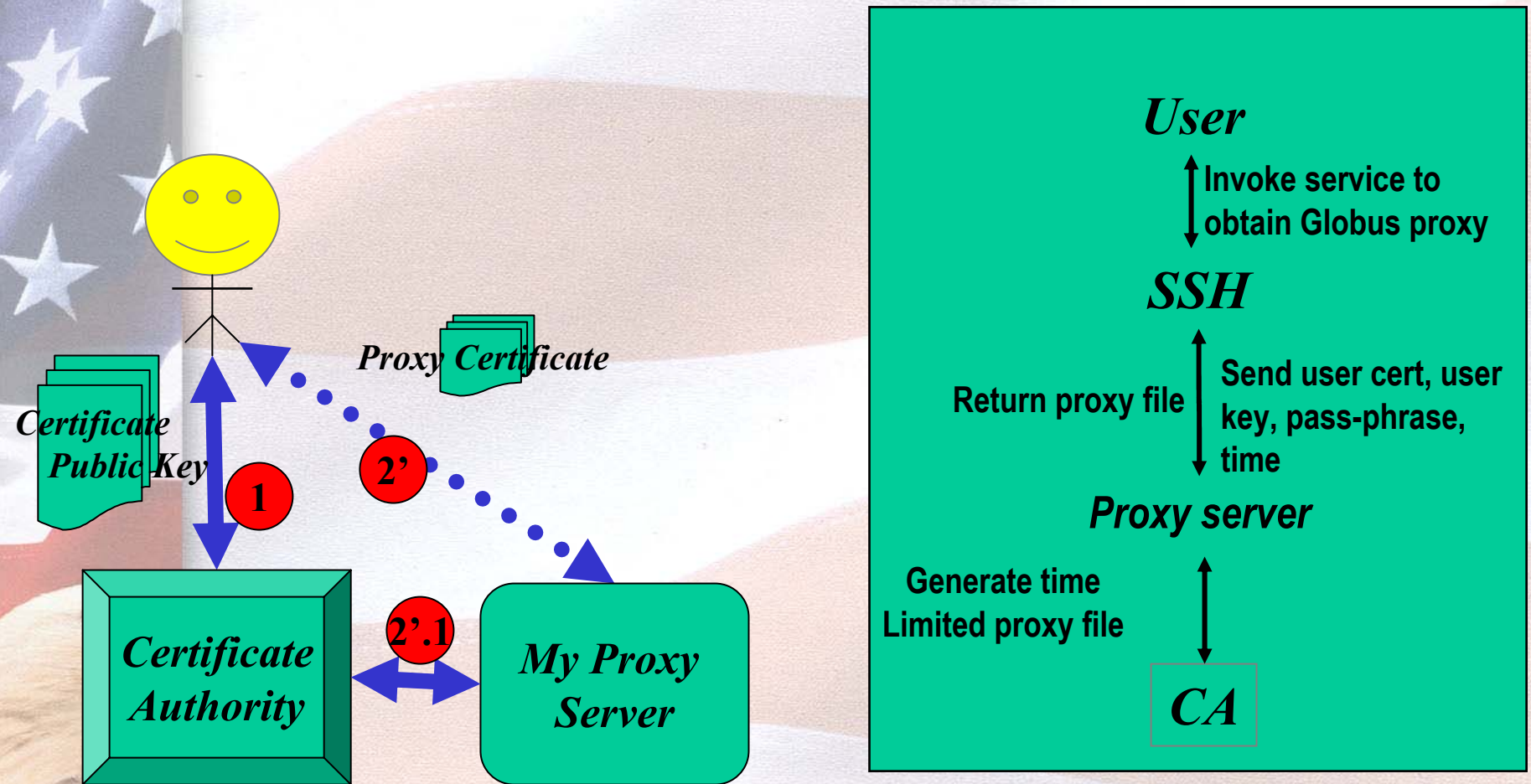
Grid Security - How does it really work?



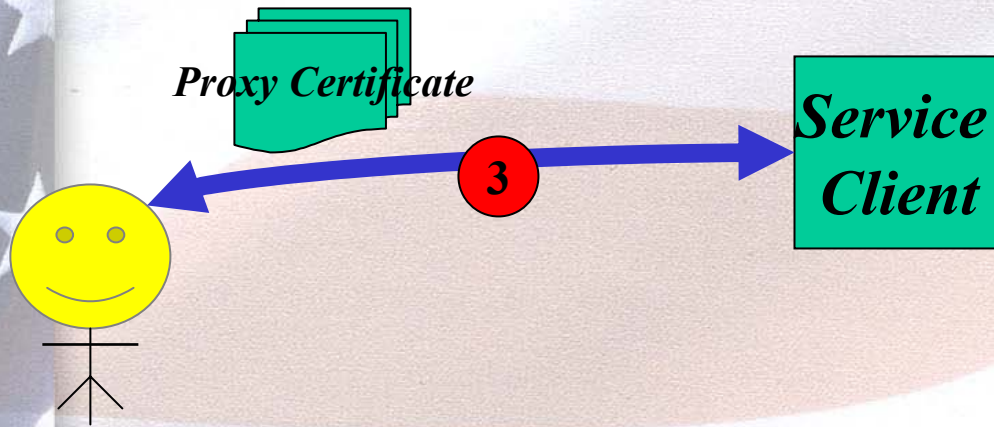
Grid Security - How does it really work?



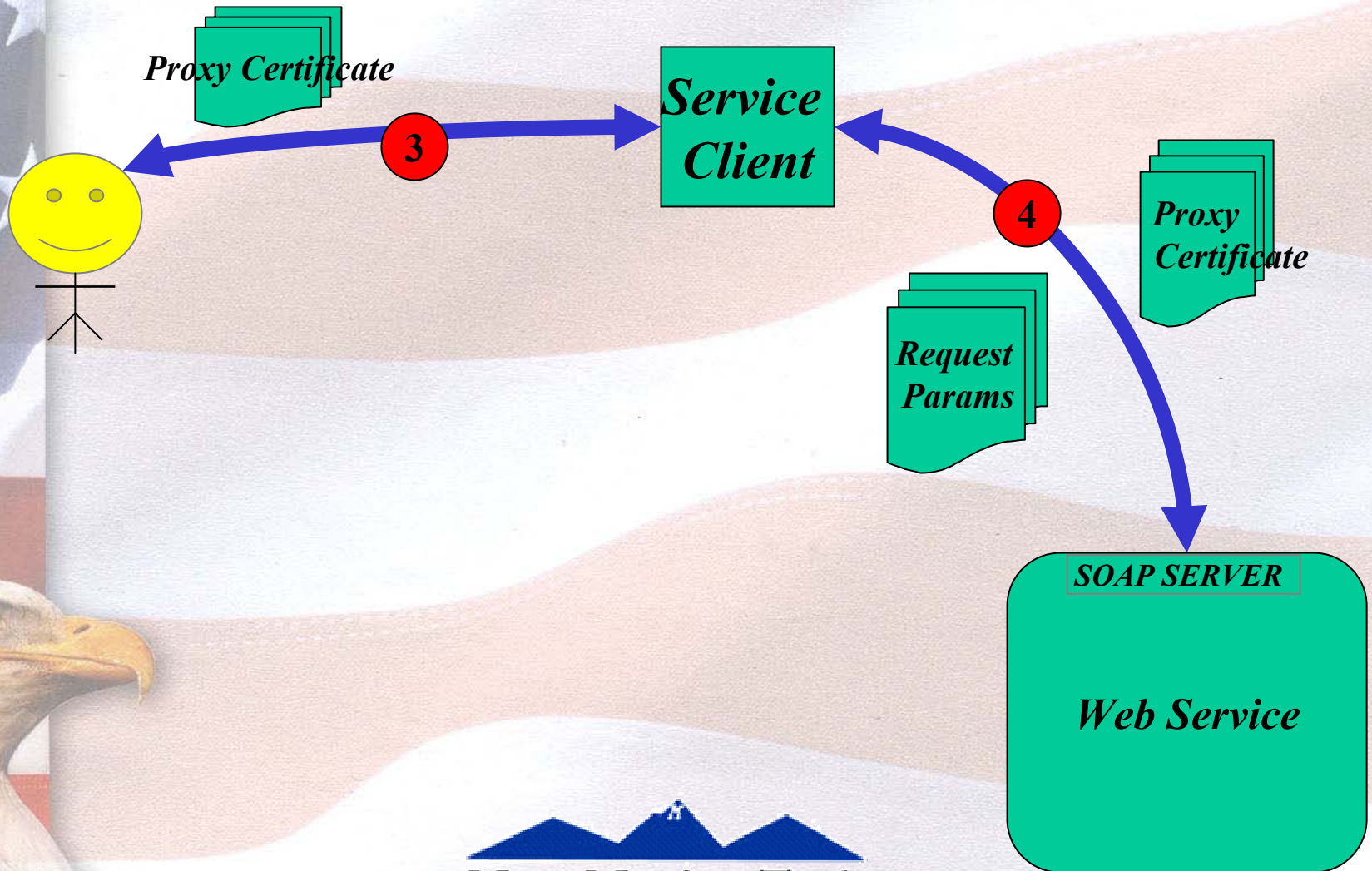
Grid Security - How does it really work?



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Grid Security - Pluses

- Employs a single-sign-on, run-anywhere authentication service
- Uses Public Key Infrastructure (extensions of X.509)
- Time limited proxy certificate



Grid Security - Problems

- Grid Security Infrastructure (GSI) security

Using X.509 certificates has various limitations. For example:

- If a user does not use a pass phrase, anyone that puts a hand on the certificate can use it.

- Others

- Weak accounting (due to distributed control system)
- ‘The firewall problem’: In order to submit a Globus job, some Internet ports must be opened.

Grid Security - Proposal

- Research (and implement) three middleware toolkits
 - Alchemi
 - Condor-G
 - Globus
- Study security vulnerabilities of each toolkit



Grid Security - Conclusions

- Security aspects in grid computing have such an important role due to the diverse and/or scattered resources and services.
- Continuing research in grid security is a challenge for a more secure grid computing environment.

Grid Security - References

Akiva and Front. Introduction to Globus with Condor-G. May 1, 2003.

Ashraf Memon. GSI Authentication on Web Services.
http://www.gridsummit.com/Multimedia/Security/GSI_Authentication_files/frame.htm

Cooke, et al. Grid Computing.
<http://web.syr.edu/~jraphael/Grid%20Computing.ppt>

Laszewski et al. Gestalt of the Grid. May 12, 2004.