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## Web Services Security Testing with a focus on XML Signature

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## Web Services Security Testing

Focus on XML Signature

### Speaker – Parth Srivastava

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- BE (Electrical) M.N.N.I.T Allahabad 1998
- With Infosys since 1998
- Specialization in Performance Testing and Performance Engineering
- Currently working as Test Manager managing performance, security, automated, and functional testing projects
- Interests in Web Services Security and its validation needs

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## Session Objectives

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- Security Testing
- Web Services validation needs
- Web Services Security
  - Security in Web Services
  - Basics of WS-Security framework
  - Web Services Security mechanisms
- XML Signature
  - XML Signature and message security
  - How XML Signature works
- Issues and Test scenarios for XML Signature

## Security Testing

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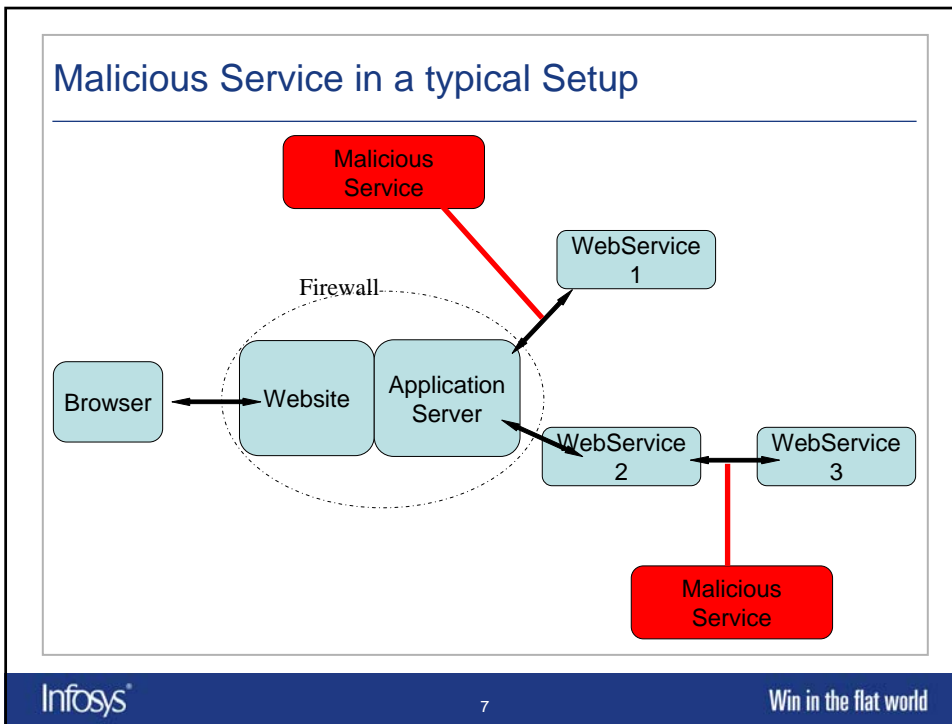
- Traditional thoughts associated with Security Testing
  - Very complex activity
  - Requires highly skilled testers
  - Testers have to first identify security risks and then device security tests
  - No standard process
  - Web Services complicate security implementation
- WS-Security framework defines security implementation for Web Services
- Web Services security testing can be conducted with the help of WS-Security specifications

## Web Services validation needs

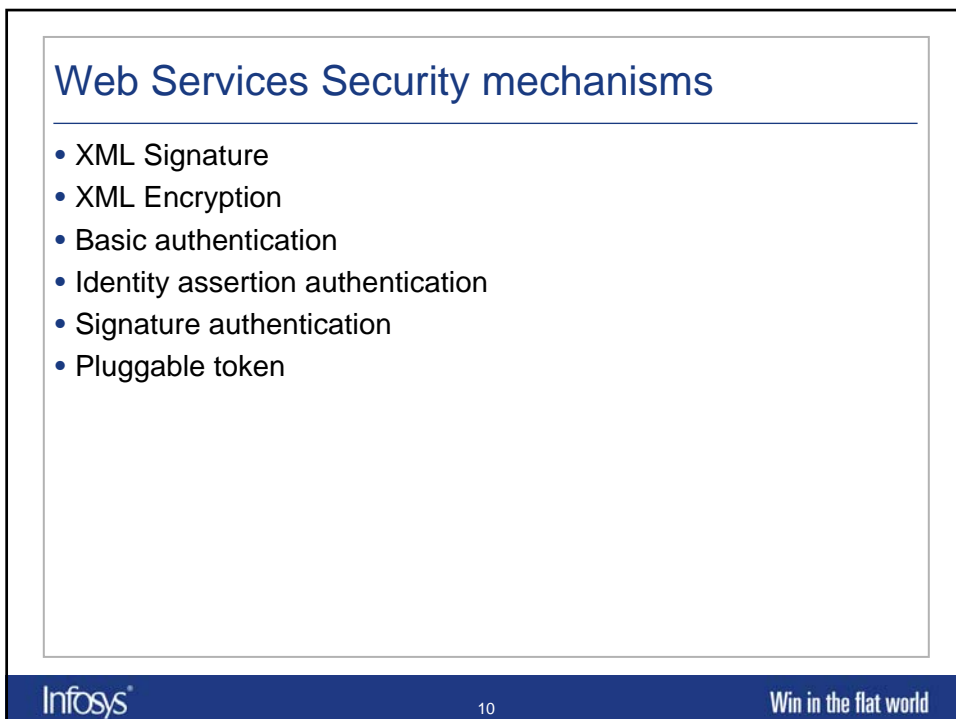
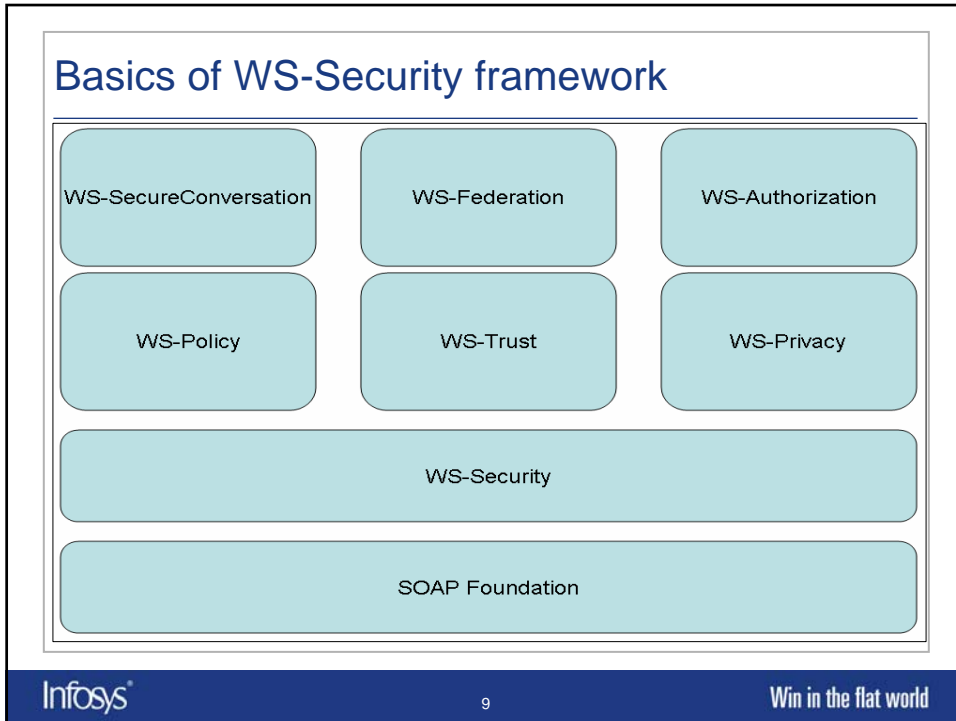
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- Functionality Testing
  - Ensuring proper functioning of the service
- Performance Testing
  - Ensuring good performance of the service
- Security Testing
  - Ensuring integrity and confidentiality of SOAP messages
- Interoperability Testing
  - Ensuring platform and language independence of Web Services

## Web Services Security



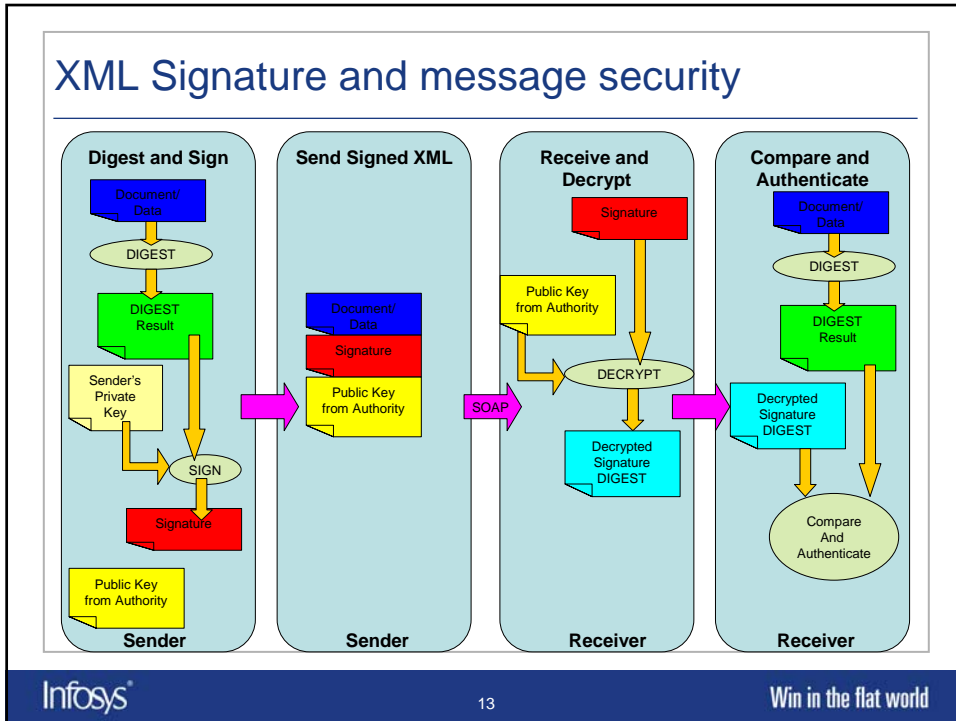
- ### Security in Web Services
- Security requirements from Web Services
    - Authentication
    - Authorization
    - Integrity
    - Confidentiality
    - Audit
    - Availability
    - Administration
    - Non Repudiation
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## XML Signature

## XML Signature and message security

- XML Signature has been standardized by
  - Internet Engineering Task Force (IETF)
  - W3C XML Signature Working Group
- Security requirements ensured by XML Signature are
  - Authentication of sender
  - Integrity of message
  - Non Repudiation of transaction



## Issues and Test scenarios for XML Signature

- Repudiation due to expiry of public keys
- Message Replay
- Problems with size of data for canonicalization
- Problems with Certifying authority
- Secrecy of private key in public key and private key cryptosystems
- Sign what is seen and see what is signed

