Automated Test Case Generator Web Service

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Automated Test Case Generator (ATC-Gen) Web Service

- Automated Test Case Generator (ATC-Gen)
  - Link 16 Compliance Testing
    - MIL-STD-6016D
    - STANAG 5602
  - Web Service
    - Will be accessible via
      - Web Browser
      - InterTEC Net-centric Evaluation Services Toolkit (NEST) Add-In
  - Combines previous standalone versions of ATC-Gen into one platform
    - Reactive Mode (Currently used at JITC)
    - Active Mode (ATC-Gen provides its own Truth Data)
  - Located on the JMETC Network and CFBL
    - Will run off the DTEN when available
• ATC-Gen (Continued)
  • Part of InterTEC
  • Link 16 sent/received as Simple J
  • For Active Mode Test Cases Truth Data can be sent as
    • Test and Training Enabled Architecture (TENA)
    • DIS
    • Simple DIS
  • User Interface will support the complete configuration of the application and test cases
    • Application configuration (protocols and addresses) separated from test cases
      • Simplifies the test case configuration
Web Service History

• Derived from Active Mode version of ATC-Gen
  • Currently in use to support US Joint Testing
  • Currently in use to support NATO TDLITS Testing
• Proof of concept developed in 2010
• Decision to place that version online October 2010
• Development to proceed on full web version
  • Improved single user version
  • Multiuser version online
How ATC-Gen Supports TDL Testing

A Combat Support Agency

What are the "Deadly Sins"?

- **Time**: Lack of a common time standard
- **Nav**: INS/GPS integration factors
- **Tracking**: Poor tracking performance & inaccurate Track Quality calculations
- **Connectivity**: BLOS relay requirements & throughput limits
- **Gridlock**: Failure to achieve common geodetic coordinate frame
- **ID**: Automated ID processing differences
- **Message standard implementation**
- **JTCP shortfalls**
- **Network design/management shortfalls**

"Deadly Sins" inhibit interoperability

ATC-Gen focus on critical Link 16 elements

The "Deadly Sins" inhibit Interoperability
ATC-Gen Supports the Full Acquisition Lifecycle

ATC-Gen Testing Supports the Full Acquisition Cycle

Testing Early in the Development Phase
Continuous Lifecycle Testing

ATC-Gen
Just-in-Time Testing Test on the Users Schedule
Benefits

• Supports Agile Testing
• Allow JITC Subject Matter Experts (SMEs) to focus on emerging technologies
  • Lets an automated tool do the repetitive work
  • Automates parts of the certification process
• System Under Test (SUT) can do their own testing
  • Test at the convenience of the SUT
  • Test earlier in the acquisition cycle
    • Fix problems earlier
  • Use same system JITC uses
• Reduce risk in the certification process
• Results can be made available to JITC Action Officers
Benefits (Continued)

• Rapid and Repeatable testing
• Provides Pass/Fail results
• Standardizes testing
• Ease of use – Graphical User Interface
• User account access
  • Own configuration files for application and test cases
  • Own log files
• Solve difficult testing problems
  • Problems hard for a human analyst to detect
    • Correlation/Decorrelation
• Web service simplifies distribution
  • Remotely accessible, so application can be located on a server at any Defense Enterprise Computing Center (DECC) location
  • Updates easier
    • Do not have to send out copies
    • Available to everyone at the same time
ATC-Gen Use

DECC, USA

ATC-Gen

Test Support

System Under Test

TENA/DIS/SIMPLE DIS

JMETC

Test Control/Results HTTP

Support (CHAT & VOIP)

System Operator

Sensor Simulator

Test Operator
Test Cases

• Approximately 100 Test Cases
  • Includes both Reactive and Active Mode
• Focus on critical Link 16 Elements
• Current test cases cover
  • Track Management
  • Reporting Responsibility
  • Combat Identification
  • Correlation and Decorrelation
• Test cases are Verified and Validated
• Traceable to Rule Set or Standard
Test Case Example

Reporting Responsibility (R2) Shift

ATC-Gen

- TNA TQ = 14
  - Evaluated R2
  - TNA TQ = 14
    - Assumed R2
    - TNA TQ = 12
      - Maintained R2
      - TNA TQ = 10
        - Maintained R2
        - TNA TQ = 8
          - Maintained R2
          - TNA TQ = 6
            - Maintained R2
            - TNA TQ = 6
              - Relinquished R2

SUT

- TNA TQ = 9
  - Held R2
  - TNA TQ = 9
    - Relinquished R2
    - TNA TQ = 9
      - Evaluated R2
      - TNA TQ = 9
        - Evaluated R2
        - TNA TQ = 9
          - Evaluated R2
          - TNA TQ = 9
            - Evaluated R2
            - TNA TQ = 9
              - Regained R2

Test Case Example

Reporting Responsibility (R2) Shift
A Combat Support Agency

Testing Process

1. Remote Tester requests web service scheduling from JITC ATC-Gen Help Desk

2. JITC Action Officer and Help desk personnel coordinates resource request, support resources and test requirements

3. Network, Access, Training

4. ATC-Gen Web Service Test Ready

SUT
Help Desk

- Help Desk has been established
  - Separate telephone number
  - Email distribution list
  - Personnel to support testing
  - Web page on JITC Web Site

- User manual developed