

## NFR Scenario 1

<b>Authentication and integrity</b>	
<b>Source</b>	User who is legitimate with full/limited access; User who is imposter/unknown to the VRR system.
<b>Stimulus</b>	Access service(s); Attempt to display/modify data.
<b>Environment</b>	Normal operation; Degraded (failsafe) mode.
<b>Artifact</b>	Data to be displayed/modified: <ul style="list-style-type: none"> <li>• Recycled parts;</li> <li>• Recycled parts' suppliers;</li> <li>• Recycled parts' audit reports;</li> <li>• Repair facilities' ratings;</li> <li>• Vehicles' damaged parts information;</li> <li>• Vehicles' collision estimations.</li> </ul>
<b>Response</b>	Grant/deny access: <ul style="list-style-type: none"> <li>• Only adjusters can request recycled parts audit reports;</li> <li>• Only adjusters with a supervisor role can update preferred repair facility ratings;</li> <li>• Only collision estimators shall search for recycled parts;</li> <li>• Only validate data shall be entered into the system.</li> </ul>
<b>Response measure</b>	Time /effort/resources to circumvent security measures with probability of success

## NFR Scenario 2

<b>Fault tolerance</b>	
<b>Source</b>	Users/services internal or external to VRR system
<b>Stimulus</b>	Write/overwrite VRR data, including: addresses, recycled parts, recycled parts' audit reports, recycled parts' suppliers, and repair facilities' ratings.
<b>Environment</b>	Normal operation (read and write); System integration.
<b>Artifact</b>	Persistent storage; VRR system user interface; Data objects in memory.
<b>Response</b>	Log the failure and notify users; Rollback to a previous, consistent state.
<b>Response measure</b>	Mean time to failure: the VRR system shall not fail more than 2% of the online time; Data integrity: consistency state and time.

### NFR Scenario 3

<b>Performance</b>	
<b>Source</b>	A number of services both external and internal to VRR system
<b>Stimulus</b>	Periodic/sporadic/bursty events Search for: <ul style="list-style-type: none"> <li>• Recycled parts;</li> <li>• Recycled parts' audit report;</li> <li>• Repair facility ratings.</li> </ul>
<b>Environment</b>	Normal mode; Overload mode; Reduced capacity mode.
<b>Artifact</b>	VRR system user interface; Searched components.
<b>Response</b>	Search result (or lack of) display and operation
<b>Response measure</b>	Latency: <ul style="list-style-type: none"> <li>• The search for recycled parts shall take no longer than 15 seconds</li> <li>• The search for repair facilities shall take no longer than 8 seconds</li> <li>• The recycled parts' audit reports shall be returned to the users within 10 seconds</li> <li>• The repair facilities' ratings shall be saved within 5 seconds</li> </ul>

## NFR Scenario 4

<b>Scalability</b>	
<b>Source</b>	Legitimate users
<b>Stimulus</b>	Concurrent operations: The VRR system shall perform with 1,500 users at a time Customized operations: The average number of recycled parts records shall be 50,000
<b>Environment</b>	Normal mode; Overload mode; Reduced capacity mode.
<b>Artifact</b>	VRR system users interface; Search components.
<b>Response</b>	Regular or customized search result display and operation
<b>Response measure</b>	Latency, throughput, miss rate, data loss.