OASIS SARIF TC

Defining a standard output format for static analysis tools

Chairs: David Keaton & Luke Cartey, Chair
Secretary: Stefan Hagen, stefan@hagen.link

```
1  #include "string"
2  char secure(char * foo) {
3      char a[4];
4      strcpy(a, foo);
5      printf("%s\n",a[6]);
6      return a[0];
7  }
8  int main(int argc, char **argv) {
9      secure(argv[0]);
10 }
```

```
$ cppcheck happy_coder.cpp
Checking happy_coder.cpp ...
[happy_coder.cpp:5]: (error) Array 'a[4]' accessed at index 6, which is out of bounds.
```

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OASIS Static Analysis Results Interchange Format (SARIF) TC

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David Keaton, dmk@dmk.com, Chair
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- OASIS Open Source Repositories Sponsored by the Committee
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Announcements

See press release: Industry leaders collaborate to define SARIF interoperability standard for detecting software defects and vulnerabilities: Common data format for static analysis tools is being advanced by CA Technologies, Cryptsoft, FireEye, GrammaTech, Hewlett Packard Enterprise (HPE), Micro Focus, Microsoft, New Context, Phantom, RIPS, SWAMP, Synopsys, U.S. DHS, U.S. NIST, and others; 12 Oct 2017.

The first meeting of the OASIS SARIF Technical Committee was held via teleconference on September 06, 2017. David Keaton (Individual) and Luke Cartey (Semmle) were elected TC Co-Chairs.

Participation in the OASIS SARIF TC is open to all interested parties. Contact join@oasis-open.org for more information.

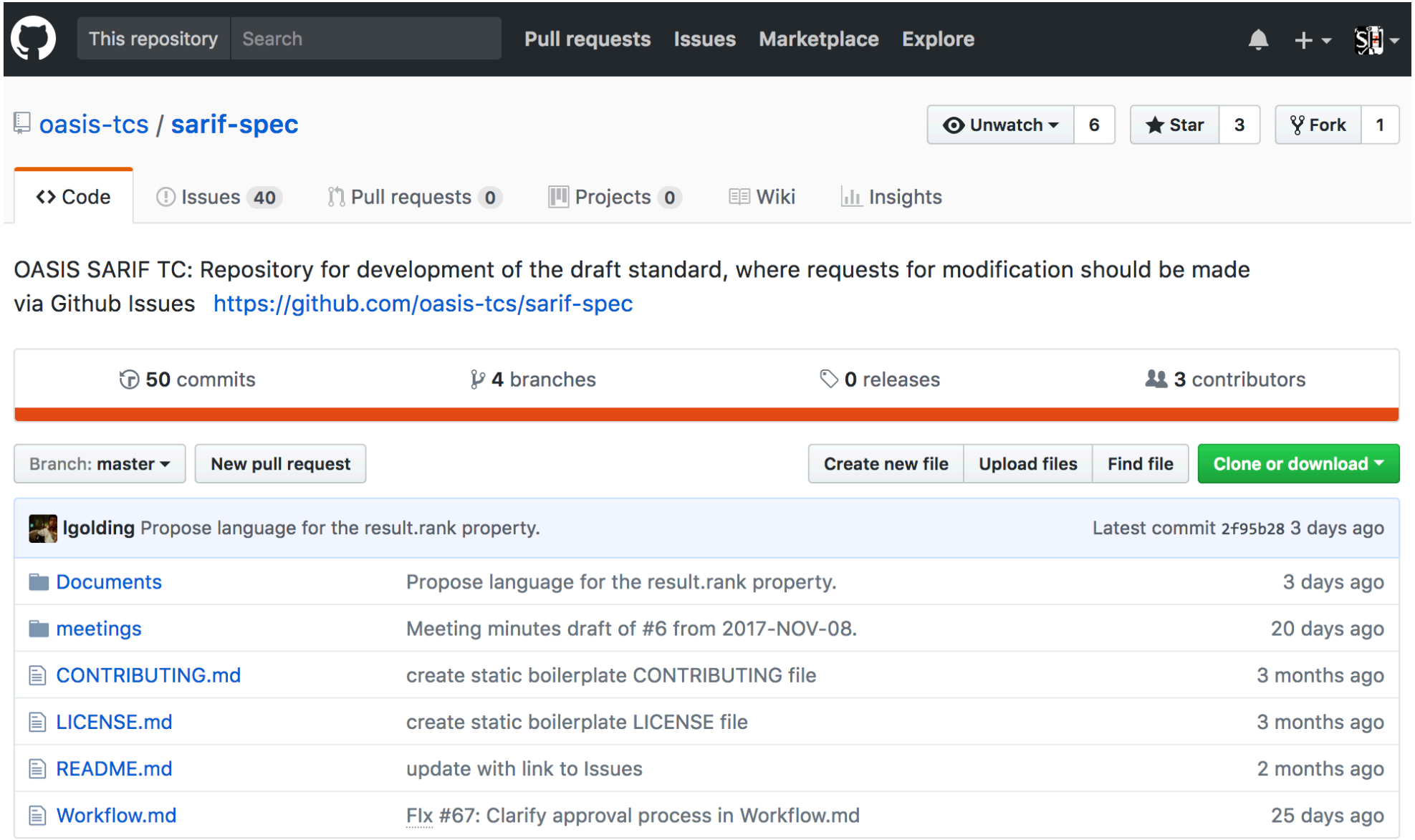
TC Participants

Representing these OASIS Foundationals and Sponsors:

CA Technologies
Cryptsoft Pty Ltd.
FireEye, Inc.
GrammaTech, Inc.
Micro Focus
Microsoft
New Context Services, Inc.
Phantom
RIPS Technologies
Synopsys

View full TC roster from 'Membership' link above.

Real people and really open!



Purpose (from contributor slides)

Make developers more productive by enabling them to interact with results from multiple analysis tools in a uniform way.

- Enable uniform viewing experiences (*e.g.*, IDE integrations)
- Enable uniform storage in and retrieval from a back end
  - “result management systems”

Other applications (from contributor slides)

- Dynamic analysis tools
  - code flow support with location.kind
- Web scanning tools
  - analysis targets expressed as URLs

Design goals (from contributor slides)

- Comprehensively capture range of data produced by commonly used static analysis tools.
- Be a useful format for analysis tools to emit directly,
  - and also an effective interchange format into which the output of any analysis tool can be converted.
- Be suitable for use in a variety of scenarios related to analysis result management,
  - and be extensible for use in new scenarios.
- Reduce cost & complexity of aggregating the results of various analysis tools into common workflows.
- Capture information useful assessing project compliance with
  - corporate policy or conformance to certification standards.
- Adopt a widely used serialization format that can be parsed by readily available tools.
- Represent analysis results for all kinds of programming artifacts
  - including source code and object code.
- Represent logical construct against which a result is produced
  - such as a function, class, or namespace.
- Represent physical location at which a result is produced
  - including problems detected in nested files
    - ... such as a source file within a compressed container

History (from contributor slides)

- 2013: Originated in Microsoft's security organization
  - to unify results produced by several security-related static analysis tools.

- Developed "in the open": https://github.com/sarif-standard/sarif-spec
  - Open issues in the repo are reported in OASIS
    - for resolution by the SARIF TC –
      - including concepts from related formats such as:
        - SATE and SWAMP/SCARF.

- Supported by latest Microsoft C#/VB/C++ compilers, a variety of publicly available Microsoft tools, as well as tools from …..

Features (from contributor slides

- Multiple runs per file
- Tool information
- Run/invocation information
- Rich description of “results” including:
  - “Physical” and “logical” locations
  - Multiple locations per result
  - Code flows
  - Stacks
  - Fixes
- Rule metadata
- File metadata
  - Hashes
  - MIME type
  - Embedded contents
- Support for both text and binary files
- Support for “nested” files
- Tool notifications (*e.g.* capture tool console output)
- Support for “baselining"

Example:


```
{
  "version": "1.0.0",
  "runs": [
    {
      "tool": {
        "name": "CodeScanner",
        "semanticVersion": "2.1.0"
      },
      "files": {
        "file:///user/builder/work/src/collections/list.cpp": {
          "mimeType": "text/x-c"
        }
      },
      "results": [
        {
          "ruleId": "C2001",
          "message": "Variable \"count\" was used without being initialized.",
          "locations": [
            {
              "analysisTarget": {
                "uri": "file:///user/builder/work/src/collections/list.cpp",
                "region": {
                  "startLine": 15
                }
              },
              "fullyQualifiedLogicalName": "collections::list:add"
            }
          ]
        }
      ],
      "rules": {
        "C2001": {
          "id": "C2001",
          "fullDescription": "A variable was used without being initialized. This can result in runtime errors such as null reference exceptions."
        }
      }
    }
  ]
}
```

One sample free OSS “Integrator” – SWAMP

SWAMP Funding and Support

The SWAMP is funded by the Department of Homeland Security (DHS) Science and Technology Directorate, Homeland Security Advanced Research Projects Agency, Cyber Security Division (DHS S&T/HSARPA/CSD)

Thanks.