Stephen L Arnold

Systems Engineer/Architect and Scientist

Address:	USA (Santa Maria, CA)	**Degrees:**	BS/MS	
Tel:	+01 (805) 863-8299	**Languages:**	English Math	
Email:	stephen.arnold42@gmail.com			

Education

1995-Present: Graduate/short courses in Risk Assessment, C, Ada, Zope, Doppler and Polarimetric Weather Radar, 595th TEG Test and Evaluation Course, AMS Faculty Workshop, AHC Professional Development courses.

1990: MS Degree in Geophysics, San Diego State University. Thesis topic: Atmospheric Resonance Waves Over the Sea of Cortés: An Experimental Case Study

1986: BS Degree in Geophysics, San Diego State University.

Technical skills

CS/SE: Strong knowledge of programming languages and tools, system performance, design, testing, and administration, as well as the software lifecycle, CI, software processes, requirements engineering, and system architecture

Operating Systems: Unix/Linux/Embedded (Gentoo, OE, RHEL, Debian/Ubuntu), Android, CyberSecurity

Project Management: OpenAdams, SCM tools, Make/Autotools, trac, doxygen

DataBase: SQL, Postgres/spatial, sqlite, redis/nosql

Software: Libre/Open office tools, docutils, graphviz, Dia, Inkscape

Embedded Systems: Gentoo, OpenEmbedded, design/deployment of applications for ARM and other embedded systems, Android, debian/Ubuntu

Languages

English: Native

Spanish: Conversational(-ish)

Math: Fluent

Programming: Python, Ada, Bash/POSIX Shell, AWK, FORTRAN, C, Java, C++, Perl, js

Markup: reStructuredText, HTML, DTML, XML, Markdown

Architectures: x86/x86_64, ARM/AVR, Sparc, PowerPC, MIPS

Engineering: IV&V, OOD/P, UML, DoDAF, 2167/498/12227, toolchains/SDKs, CI/Agile, jenkins/apache/trac/svn/git workflows, open document production

Business Experience

2014 - Present: Startup Mentor and Tech Adviser - Technology and Open Source adviser, Santa Maria Startup Weekend and local startup meetups. Open source presentations, technology training, demos.

2014 - Present: Principal Scientist, Systems Architect, Business Development - VCTLabs, Inc - Goleta, CA. VCT Product/Project management, conferences/expos, open source outreach & education. Launch Range Systems Subject Matter Expert (SME), education & training instructor. Systems Architecture and CyberSecurity on Gentoo, OpenEmbedded, RHEL, and Debian/Ubuntu. Linux development/build/deployment testing. Linux kernel/u-boot and software testing on various ARM devices (Gentoo Linux, OE). Business/community development (event support, outreach, presentations, proposals).

Open Source Experience

2015 - Present: Co-maintainer of imx233-olinuxino boards for the FSL Community BSP (tested with Yocto/OpenEmbedded and meta-fsl*).

2014 - Present: Founding member Central Coast Open Source Solutions Exchange, an open source technology-focused meetup.

2012 - Present: Contributing developer - OpenEmbedded and Yocto.

2003 - Present: Senior Developer - Gentoo Linux. Maintainer of developer tools, GIS/scientific libraries, mentor of new developers, currently primary maintainer of Gentoo ARM overlay and my own dev overlay.

2000 - Present: Upstream developer and/or maintainer of several tools and utility libraries for source code metrics, graphics, science, and education. See the maintenance release page and the individual github project sites for more information.

Education Experience

1999 - 2009: Associate Faculty - Allan Hancock College (senior geography and meteorology instructor). Taught Physical and Human Geography courses and ocassional technology courses, updated official geography course outlines, created new introductory meteorology course.

Projects

- Member of the development team of stellarium.
- Created a few open source video games for desktop: guisterax, helvin space trip.
- Made a mobile version of stellarium for the nokia N900: stellarium mobile. awarded the first price (25000$) in Nokia calling all innovators contest, category "Best application for the Nokia N900".
- Laoshi: an open source Chinese learning software.
- Chatocracy: meet new friends and talk to them with your webcam.
- Super Medusa: video game for symbian phones.

Personal

Home site:	http://www.gentoogeek.org
Repositories:	https://github.com/sarnold
Papers:	http://www.researchgate.net/profile/Stephen_Arnold4
Hobbies:	Guitar/Bass/Pecussion, Science Fiction, Open Source

Appendix A

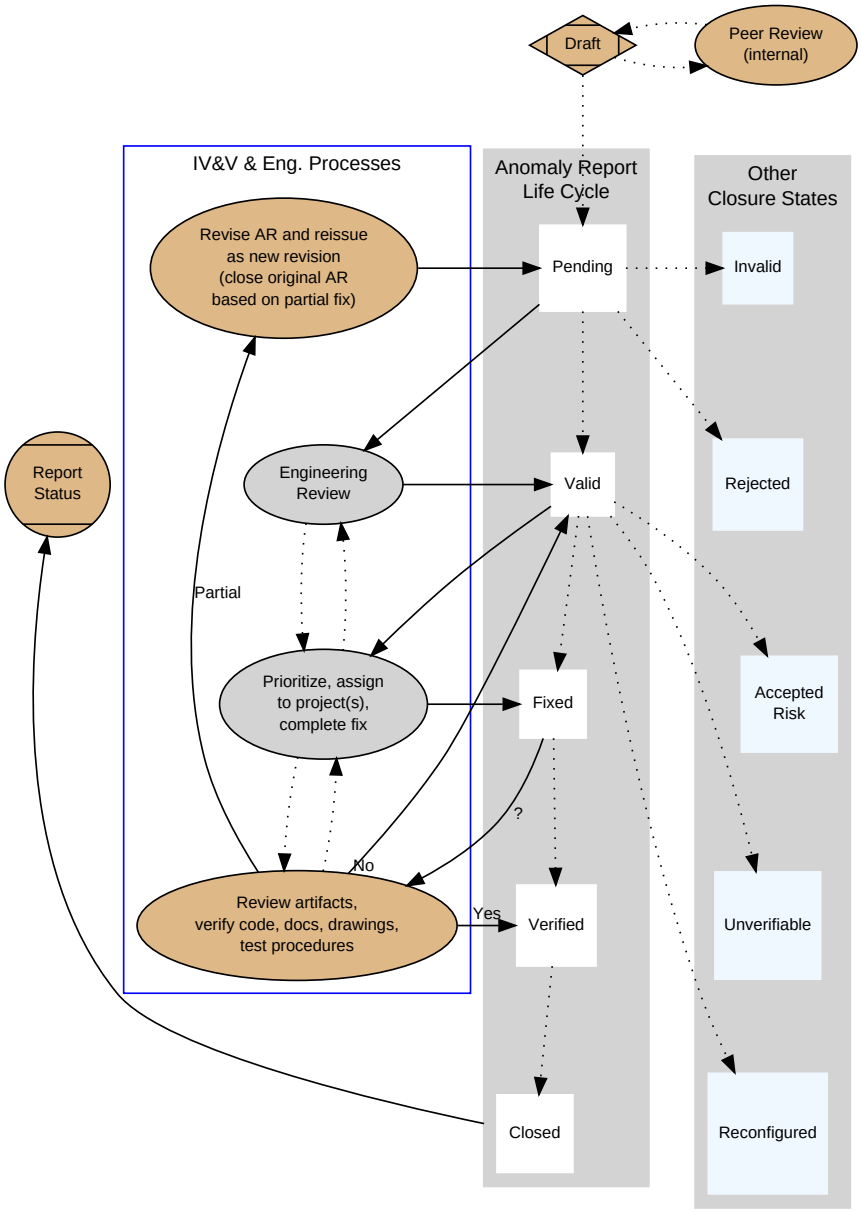
Example of open source use in engineering; graphviz diagrams and IV&V.

Overall IV&V and Engineering Processes

- Revise: Problem described in AR was partially fixed but needs additional work; a new revision of an AR has been written.
- Validate: Developer/customer validates ARs in the Pending state.
- Prioritize: Developer/customer prioritizes ARs and assign to project(s).
- Verify: IV&V verifies ARs declared fixed by the developer. Partial fixes generate a revision of the original AR (the latter is closed based on the partial fix).
- Report: IV&V reports AR State changes and status of open ARs.

AR States and Status

- Draft State: Anomaly Reports begin in a draft status for IV&V peer review; refined drafts may be circulated outside IV&V if warranted.
    - Draft Status: IV&V peer review of potential anomalies results in publication of draft AR.
- Open State: Open ARs begin with a status of "Pending" when an approved draft AR is published. Engineering review leads to the next status change, typically "Valid". Valid ARs are prioritized and assigned to an appropriate project; when engineering considers the problem fixed, the AR status is changed to "Fixed". Fixed ARs are verified by IV&V, and their status changed to "Verified" if the problem was fixed. In the case of a "partial" fix, a the original AR is declared "Verified" and closed based on the fix, and a new revision of the AR is written to describe any remaining issues.
    - Pending Status: An original or revised AR is generated, entered in the database, and delivered to project distribution list.
    - Valid Status: Developer (or customer) validates that AR identifies an error or problem condition that must be fixed.
    - Fixed Status: Problem described in AR is considered fixed by developer but has not been verified by IV&V.
    - Verified Status: Problem has been fixed by developer and IV&V has verified the fix.
- Closed state: Typically closed ARs have the status "Verified" (verified by IV&V), however, there are several other potential status flags for closed ARs, depending on the circumstances (see below).
    - Invalid Status: AR is considered technically inaccurate and does not describe an error.
    - Rejected Status: AR is technically accurate but the problem will not be fixed due to non-technical reasons.
    - Accepted Risk Status: Cost/benefit ratio does not justify fixing the problem.
    - Unverifiable Status: Original problem cannot be recreated in order to verify fix, and there is no other recourse.
    - Reconfigured Status: System has changed such that the original problem no longer applies.



Anomaly Report And Tracking State Diagram

The Dot source code for the graphviz diagram is included below.

```
digraph G {
  node [shape=doublecircle];
     draft [label="Draft", style=filled, fillcolor=burlywood];

  node [shape=ellipse];
     peer_review [label="Peer Review\n(mostly internal)", style=filled, fillcolor=burlywood];

  node [shape=rectangle];
     pending [label="Pending"];

  node [shape=ellipse];
      dev_review [label="Engineering Review\n(and/or customer)", style=filled, fillcolor=grey89];

  node [shape=rectangle];
     valid [label="Valid"];

  node [shape=rectangle];
     invalid [label="Invalid"];

  node [shape=ellipse];
     prioritize [label="Prioritize, assign\nto project,\ncomplete fix", style=filled, fillcolor=grey89];

  node [shape=rectangle];
     fixed [label="Fixed"];

  node [shape=ellipse];
     verify [label="Review artifacts,\nverify code, docs,\drawings, test\nprocedures", style=filled, fillcolor=burlywood];

  node [shape=ellipse];
     revise [label="Revise AR and reissue\nas new revision\n(close original AR\nbased on partial fix)", style=filled, fillcolor=burlywood];

  node [shape=rectangle];
     verified [label="Verified"];

  node [shape=ellipse];
     report_verified [label="Report verified status", style=filled, fillcolor=burlywood];

  node [shape=rectangle];
     closed [label="Closed"];

  node [shape=doublecircle];
     report_closed [label="Report newly\nclosed ARs and\ntrack totals", style=filled, fillcolor=burlywood];

  ranksep=.75;

  { rank = same; "draft"; "peer_review"; };
  { rank = same; "fixed"; "revise"; };
  { rank = same; "closed"; "report_closed"; };

  draft -> peer_review [label="iterative"];
  peer_review -> draft;
  draft -> pending [label="Official release to distro"];
  pending -> dev_review [label="Valid?"];
  dev_review -> valid [label="Yes"];
  dev_review -> invalid [label="No"];
  valid -> prioritize;
  prioritize -> fixed [label="Yes"];
  fixed -> verify [label="Fixed?"];
  verify -> valid [label="No"];
  verify -> verified [label="Yes"];
  verify -> revise [label="Partial"];
  revise -> pending;
  verified -> report_verified;
  report_verified -> closed;
  closed -> report_closed;
}

```