Cross-Platform FOSSS
Computer Tech 2018

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What do you expect from this presentation?

My purpose is to give you an introduction to available Free and Open Source Software (FOSS) for scientists and other technical persons.

I hope the parents and grandparents of children interested in a technical career can benefit from the information and pass that on.

- **F**ree and **O**pen **S**ource **S**oftware (FOSS) for Windows, Mac, and Linux
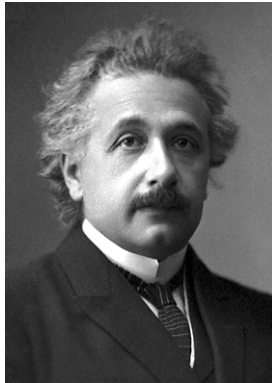- **F**ree and **O**pen **S**ource **S**cientific **S**oftware (FOSSS)

- **S** - Science
- **T** - Technology
- **E** - Engineering
- **A** - Art(s)
- **M** - Mathematics

STEM(M)

Okaloosa County

- **S** - Science
- **T** - Tecnology
- **E** - Engineering
- **M** - Mathematics
- **M** - Medicine

Characteristics

- Curious?
- Passionate?
- Range of interests?

Geniuses

You don't have to be a genius to be a scientist, but I believe you do have to have a curiosity and a passion for technical details in one or more areas to be successful in STEAM fields.

My objective today is to expose you to some software that may be useful in one or more of those fields.

- Perhaps you have a child or grandchild who might benefit from the information.

The beauty of the software is it is free, runs on a wide variety of hardware, and thus has a low or no cost for those needing access to it.

- Perhaps your civic club or church can use it for helping underserved children or adults.

Background

- Retired USAF fighter pilot, retired engineer with ManTech Corporation
- Programmed computers since 1961, had my own programmable computer(s) since 1974
- Used Unix and GNU/Linux and FOSS professionally for over 23 years
    - Use them daily in my personal projects as well as my work on FOSS projects
- I'm curious about lots of things, I'm passionate about computer programming

Free STEAM Programs (Apps)

(Pay attention, there will be a quiz at the end!)

Following are some of the programs I have used for professional
and personal projects:

Graphical

- **Gimp** (replace **Photoshop** for bitmap images)
- **Inkscape** (replace **CorelDraw** for vector images)

Office suites

- **LibreOffice** (replace **MS Office**)

Free STEAM Programs (Apps)

Typesetting

- **LaTex**

CAD

- **BRL-CAD**

Version control

- **Git**
- **Subversion**
- **Bazaar**

Free STEAM Programs (Apps)

Version control hosting and collaboration

- **Github**
- **Bitbucket**
- **SourceForge**

Text Editors

- **Emacs**
- **Vi**
- **Gedit**

Specialized Editors

- **TexStudio** (for LaTeX and TeX-based languages)

Free STEAM Programs (Apps)

Other programs:

Mathematical programming

- **SciLab** (replace **MatLab**)
- **Octave** (plotting and visualization)
- **Maxima** (symbolic mathematics)

Publishing (page layout)

- **Scribus** (replace **MS Publisher** or **Adobe PageMaker/InDesign**)

Statistical programming

- **R (R-base)** (replace **SAS** or **SPSS**)

Why do we recommend and use FOSS?

- Source is available for inspection
- Fixes are available from the community of developers
- Two major variants:
    - Free for non-commercial use
    - Free for any use
- Why do developers work on FOSS?
    - Fun, pride, self-interest, altruism, competition
    - Some are paid by companies with a vested interest in a particular FOSS project
- Why do companies give it away?
    - Constrained by licensing
    - Sell support services
- Doesn't it seem like socialism?

Publishing cycle

A technical student will have to deal with the publishing cycle:

- plan and execute programs or experiments
- collect data
- post-process data
- document results

Many of the programs introduced so far can be used for that cycle to produce beautiful results, such as my thesis (available for inspection) which used:

- **LaTeX**
- **Encapsulated PostScript**

Stay for the next session for more details.

Summary

- Today we have looked at a few of the thousands of free programs available for Windows (and Mac and Linux).
- There is something out there for nearly any interest. I encourage you to venture forth, have fun, and expand your knowledge and skills.

- **Please make sure you're on the attendance roster**.
- **Feel free to contact me at any time regarding this session or any other of my sessions (please mention CTech '18 in the subject):**
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