

The ePIC website development – an overview

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The ePIC Website Development Meeting

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The goal

- ◎ The goal of today's meeting is to help you get started with making contributions and modifications of the ePIC website
- ◎ This is an iterative process and people will have differing level of proficiency with the tools involved – you are encouraged to ask questions (in e-mail or by any other means)
- ◎ There will be follow up meetings – the idea is to keep each of the meets brief, and address various issues as needed

Overview

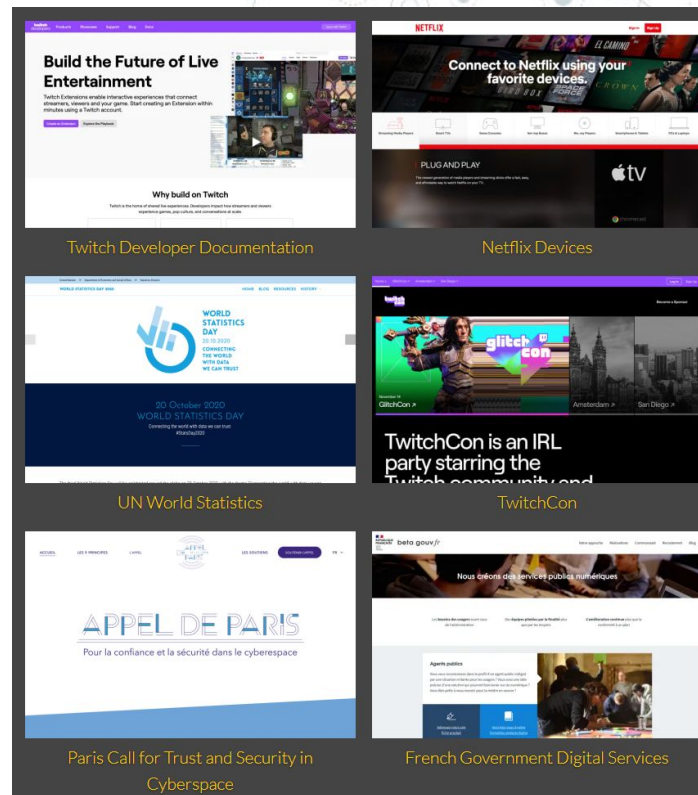
- ◎ ePIC needs an efficient website to fulfill its mission
- ◎ This is a (considerable) collaborative effort
- ◎ We'll review the technology background, and proceed to the conventions and the workflow
- ◎ A word of encouragement – it's not too difficult and I'm here to help

The technology choice

- ◎ Simplicity of the website **long term** maintenance is an important factor in this decision. This reduces the appeal of **PHP**-based applications with a DB backend, such as Wikis and Drupal. Examples:
 - PHENIX was effectively offline for many months due to PHP cybersecurity issues
 - There has been a very real security breach of the ATHENA Wiki, had to rebuild
 - Maintenance of the legacy EICUG website (Drupal) proved a challenge due to compatibility matrix of the application modules vs PHP versions – which keep evolving due to cybersecurity and other concerns. Customizations can be quite difficult to carry forward, as experienced by STAR.
- ◎ The HEP/NP and EIC communities have a positive experience with other solutions, cf websites like <https://www.eicug.org/> <https://hepsoftwarefoundation.org/>

The “static website generator”

- ◎ **Jekyll**: the “static website generator” technology
 - ...meaning: HTML is generated automatically from the users’ material and deployed on a web server
- ◎ Well established in industry — mainstream acceptance
- ◎ Based on the easy-to-use and familiar **Markdown** text format (cf. README on GitHub)
- ◎ Existing experience in the EIC community, HEP/NP etc
- ◎ Motivation
 - Security (static material is easy to secure)
 - Speed (static material is fast to serve)
 - Information protection (version control and access control such as implemented on GitHub)
 - From experience — great for long-term maintenance, no need to update PHP or the DB server versions



Example of a Markdown source

title: "The GPU Server"

layout: base5

name: hardware

The GPU Host (Marquis C543-GTT)

- * Supermicro X13SWA-TF W790 ATX motherboard
- * Onboard Realtek ALC888S 8-channel (7.1) High Definition audio
- * Onboard Intel i210-AT 1G and Marvell AQC113 10G Ethernet controllers
- * 6xPCIe x16 v5

...

The rendered page



The screenshot shows a web page for 'The GPU Server' on the ESI website. The page has a teal header with the ESI logo on the left and the title 'The GPU Server' on the right. A left sidebar contains navigation links: Home, CUDA Notes, The GPU server (highlighted), Opticks, Fast Simulations, and ESI on DockerHub. The main content area features a section titled 'The GPU Host (Marquis C543-GTT)' with a list of hardware specifications. Below this is a section titled 'Kernel compatible with the installed drivers' with a paragraph of text.

The GPU Server

The GPU Host (Marquis C543-GTT)

- Supermicro X13SWA-TF W790 ATX motherboard
- Onboard Realtek ALC888S 8-channel (7.1) High Definition audio
- Onboard Intel i210-AT 1G and Marvell AQC113 10G Ethernet controllers
- 6xPCIe x16 v5
- 4xUSB 3.2 Gen2x1, 2xUSB 3.2 Gen2x2, 2xUSB 2.0 ports
- 1 x Intel Xeon W7-3445 2.6ghz (4.8Ghz Turbo), 52.5M L3, 20-core, 40 threads, 270W TDP
- 8 x Micron MTC10F1084S1RC48BA1R 16GB DDR5-4800 ECC registered module, 1Rx8
- 1 x Samsung 990 Pro MZ-V9P4T0B/AM 4TB NVMe PCIe4 SSD, 7450/6900MB/s (R/W), 2400 TBW (M.2 2280)
- Two PNY VCG409024TFXPB1 RTX 4090 (Ada Lovelace) VERTO,24GB GDDR6X, 16384 CUDA,1xHDMI 2.1,4xDP 1.4a,450W (3-slot) + custom 12VHPWR 16-pin cables
- Fractal Design Torrent, 2x18cm, 3x14cm, Seasonic SSR-1600PD 1600W PSU (Platinum-Level), Modular, Black
- Logitech Wireless Combo MK345 USB Keyboard & Optical Mouse, Black
- Rocky Linux 8.8 (based on Red Hat Enterprise Linux 8.8), 64-bit

Kernel compatible with the installed drivers


There are two kernels with matching installation of the NVidia drivers, on that machine. We are using `4.18.0-513.9.1.el8_9.x86_64`. This is supposed to be the default the machine would boot into.

How it works

- ◎ The “layout” (mentioned on top) is essentially a template which hides the complexity of HTML and styling from the user. All you need to edit is text, in most simple cases. Any editor will work.
- ◎ For help with the Markdown syntax, please see helpful documents posted by Thomas, in this agenda.
- ◎ To validate your edits, you optimally need to run the “**Jekyll**” software on your computer, which will build the complete website and serve it on your machine, one the port of your choosing.
- ◎ Once committed to GitHub, the latter will do this work for you (for free) and will render the complete website for anyone to browse, e.g.


<https://eic.github.io/epic.github.io/>

Jekyll

- ① The main website with helpful information: <https://jekyllrb.com/>
- ① From experience, installing Jekyll requires a modest effort – should be doable for anyone. Installation can be done on a variety of platforms. 
- ① Running Jekyll:

```
bundle exec jekyll serve --port 8000
```
- ① Point your browser to localhost:8000

Installation

 Improve this page

Jekyll is a **Ruby Gem** that can be installed on most systems.

Requirements

- **Ruby** version **2.5.0** or higher, including all development headers (check your Ruby version using `ruby -v`)
- **RubyGems** (check your Gems version using `gem -v`)
- **GCC** and **Make** (check versions using `gcc -v`, `g++ -v`, and `make -v`)

Guides

For detailed install instructions, follow the guide for your operating system.

- macOS
- Ubuntu
- FreeBSD
- Other Linux
- Windows

The organization of the project materials

- ◎ The layout the files of the site material was designed to minimize the probability of clashes when using a common version control system, which is git in our case. The main menu items correspond to folders.



```
maxim@LP0-168166:~/projects/eic/epic.github.io (maxim)$ ls -l
404.html
apple-touch-icon.png
assets
_collaboration
_config.yml
css
_data
_detector
favicon-16x16.png
favicon-32x32.png
Gemfile
Gemfile.lock
images
_includes
index.html
index-internal.html
layouts
LICENSE
_meetings
_news
_physics
_posts
_public
_publications
```

- ◎ Each folders contains files, one per item in the dropdown menu
- ◎ You will likely be working on one file at a time

GitHub

◎ The repo: <https://github.com/eic/epic.github.io>

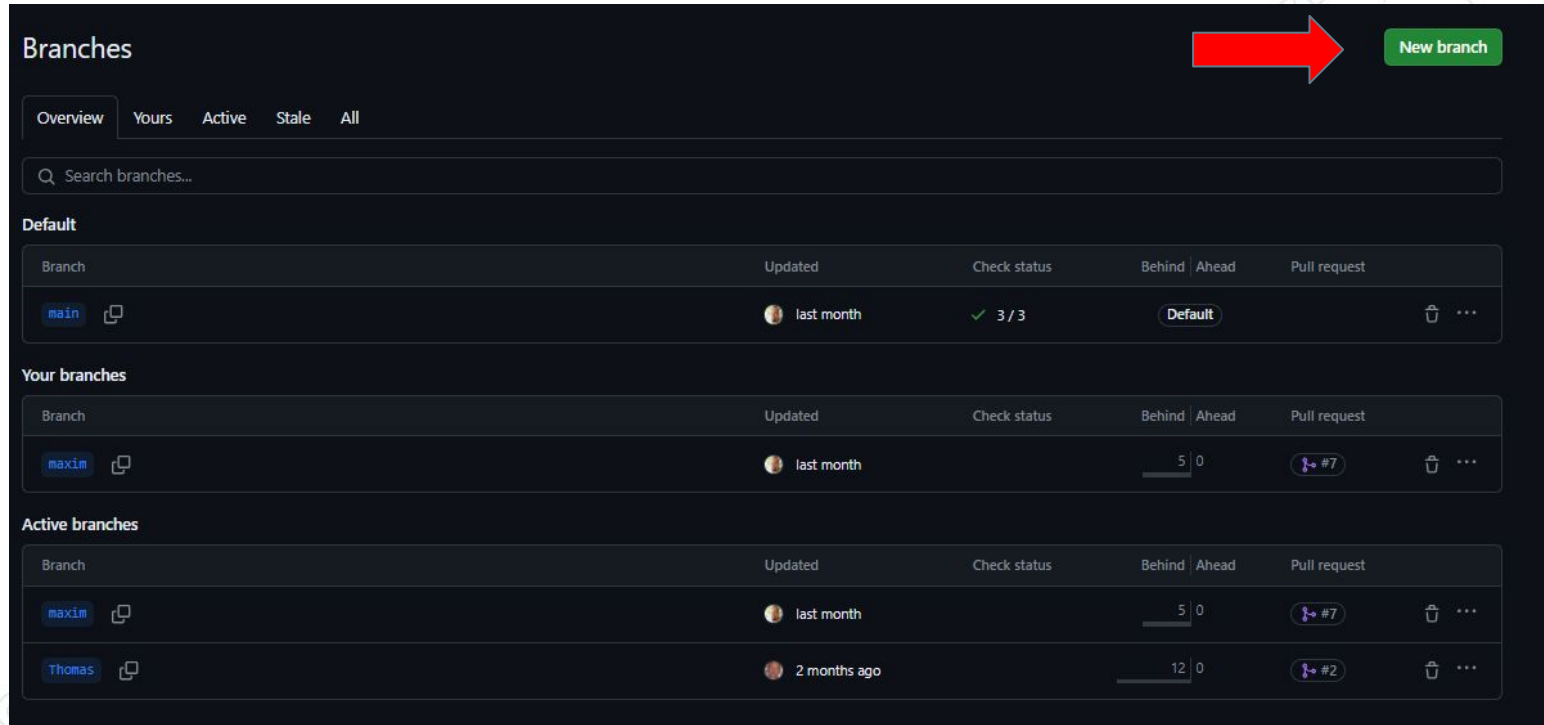
◎ NB: branches



The screenshot shows the GitHub repository page for `epic.github.io`. The repository is public and has 3 branches and 0 tags. The current branch is `main`. The repository is owned by `buddhasystem` and has 47 commits. The repository description is "No description, website, or topics provided." The repository is licensed under Apache-2.0. The repository has 0 stars, 13 watchers, and 0 forks. The repository is reported as a repository. The repository has no releases published. The repository has no packages published. The repository has 2 contributors: `buddhasystem` (Maxim Potekhin) and `ullrich-bnl` (Thomas Ullrich). The repository has 38 deployments, with the most recent deployment being `github-pages` last month. The repository has 37 deployments in total. The repository has 2 languages: HTML (55.9%) and CSS (42.1%).

File	Description	Time Ago
<code>..collaboration</code>	Updates on the coll tools page	last month
<code>..data</code>	Added more WGs to the site. Data file updated.	2 months ago
<code>..detector</code>	Added a stub for "technical coordination" and a full page for...	3 months ago
<code>..includes</code>	Added a data-driven way of generating the WG pages	2 months ago
<code>..layouts</code>	Added a properly configured and referenced link to the desi...	3 months ago
<code>..meetings</code>	added item 3	3 months ago
<code>..news</code>	Close to final "publications" and "news" sections.	4 months ago
<code>..physics</code>	Added more WGs to the site. Data file updated.	2 months ago
<code>..posts</code>	Adding the first stub for the future site, currently a replica of...	4 months ago
<code>..public</code>	First working out, close to final	4 months ago
<code>..publications</code>	Close to final "publications" and "news" sections.	4 months ago
<code>..sc</code>	Finished the stub for the S&C section	4 months ago
<code>..assets</code>	Added a properly configured and referenced link to the desi...	3 months ago
<code>..css</code>	Adding the first stub for the future site, currently a replica of...	4 months ago
<code>..gitignore</code>	Added a data-driven way of generating the WG pages	2 months ago
<code>404.html</code>	Adding the first stub for the future site, currently a replica of...	4 months ago
<code>Gemfile</code>	Adding the first stub for the future site, currently a replica of...	4 months ago
<code>LICENSE</code>	Adding the first stub for the future site, currently a replica of...	4 months ago
<code>README.md</code>	Added more WGs to the site. Data file updated.	2 months ago
<code>..config.yml</code>	Added a properly configured and referenced link to the desi...	3 months ago

GitHub branches



The screenshot shows the GitHub 'Branches' page. At the top right, there is a green 'New branch' button, which is highlighted by a red arrow. Below the title, there are tabs for 'Overview', 'Yours', 'Active', 'Stale', and 'All'. A search bar is present with the text 'Search branches...'. The page is divided into three sections: 'Default', 'Your branches', and 'Active branches'. Each section contains a table of branches with columns for 'Branch', 'Updated', 'Check status', 'Behind | Ahead', and 'Pull request'.

Branch	Updated	Check status	Behind Ahead	Pull request
main	last month	✓ 3 / 3	Default	🗑️ ⋮

Branch	Updated	Check status	Behind Ahead	Pull request
maxim	last month		5 0	#7 🗑️ ⋮

Branch	Updated	Check status	Behind Ahead	Pull request
maxim	last month		5 0	#7 🗑️ ⋮
Thomas	2 months ago		12 0	#2 🗑️ ⋮

GitHub: the workflow

- ◎ All of you are members of the team with “write” access to the repo
- ◎ Create a branch of the repo — it might be a good idea to use your name or your GitHub moniker as the name of the branch or its part, to identify active contributors and coordinate work in general
- ◎ Clone the repo on your machine
- ◎ Checkout the branch
- ◎ Edit the files, run Jekyll to check the result
- ◎ Commit and push to your branch
- ◎ Create a Pull Request so the changes can be reviewed and merged

GitHub: useful features

- ◎ Sophisticated version control, audit trail
- ◎ “Issues” – an excellent way to track and manage collaborative development



Pit stop: questions?

“Public” and “For Collaborators Only” parts of the site

- ◎ By design, there will be (limited) pages on the website which are world-readable, and a protected section which can be accessed only by members with proper authorization
- ◎ Implementation of this functionality is deferred until the content is mature and we are ready to deploy. For now, we do have both sections on the prototype website and they are visible to all.
- ◎ An example of the “internal” page which will eventually be protected: <https://eic.github.io/epic.github.io/detector/dsc.html>

Documents

- ◎ There will be (naturally) many documents of various types, made available to the visitors of the website
- ◎ It is not a good practice to store PDF files or any other type of files of non-trivial sizes as part of the site content (i.e. files in the repo) – it won't scale and will impact the performance of git and GitHub, plus there are limits on storage on GitHub which can be reached quickly
- ◎ For these reasons, it is recommended that the files are stored externally, e.g. on the InvenioRDM instance being commissioned at BNL, Google Drive, Dropbox etc
- ◎ Exceptions to this rule: diagrams and plots which are integral to the web pages on the website

Advanced topics

- ◎ Jekyll has the ability parse a layout language called **Liquid**, which in turn can process files formatted in YAML or CVS
- ◎ This effectively gives the website a database-like capability, because various selection criteria and other operations (including those on multiple files) can be applied to the data as the page is being rendered
- ◎ This is an extremely powerful feature which avoids hardcoding tables etc in HTML, and allows many parts of the website reliably reference same data
- ◎ We will address this feature in one of our follow-up meetings, for now let's look at a simple example on the PHENIX website (next slide)

Example of a YAML data component rendering(PHENIX)

```
# 2024
- name: wwnd24
  title: 'The 39th Winter Workshop on Nuclear Dynamics (2024)'
  url: 'https://indico.cern.ch/event/1345629/'
  year: 2024

# 2023
- name: zs23
  title: 'Zimanyi School 2023'
  url: 'http://zimanyschool.kfki.hu/23/'
  year: 2023

- name: pic23
  title: 'International Symposium on Physics in Collision 2023'
  url: 'https://indico.cern.ch/event/1190468/'
  year: 2023

- name: spin23
  title: 'Spin 2023'
  url: 'https://indico.jlab.org/event/663/'
  year: 2023

- name: qm23
  title: 'Quark Matter 2023'
  url: 'https://indico.cern.ch/event/1139644/'
  year: 2023

- name: lomcon23
  title: 'Lomonosov Conference (2023)'
  url: 'https://lomcon.ru/'
  year: 2023

- name: ismd23
  title: 'International Symposium on Multiparticle Dynamics (2023)'
  url: 'https://indico.cern.ch/event/1258038/'
  year: 2023
```



Conference Presentations by PHENIX Members

The tables below contain three columns:

- Conference title, which is also a link to the conference webpage
- PHENIX presentations committed to Zenodo (as a link to the relevant Zenodo query page)
- The official list of PHENIX authors approved for this specific conference (optional)

2024

The 39th Winter Workshop on Nuclear Dynamics (2024)	Presentations
---	---------------

2023

19th International Workshop on Hadron Structure and Spectroscopy	Presentations
Adding Value (to) and Preserving Scientific and Technical Data (2023)	Presentations
Deep Inelastic Scattering (2023)	Presentations
Hard Probes 2023	Presentations
High Energy Physics in the LHC Era (HEPChile) 2023	Presentations
Initial Stages 2023	Presentations
International Conference on New Frontiers in Physics 2023	Presentations
International Symposium on Multiparticle Dynamics (2023)	Presentations
International Symposium on Physics in Collision 2023	Presentations
Lake Louise Winter Institute 2023	Presentations
Lomonosov Conference (2023)	Presentations
Quark Matter 2023	Presentations
RHIC & AGS Annual Users Meeting (2023)	Presentations
Rencontres de Moriond 2023	Presentations
Spin 2023	Presentations
The 38th Winter Workshop on Nuclear Dynamics (2023)	Presentations
Zimanyi School 2023	Presentations

Deployment

- ◎ At this time, we develop, test and validate the content using the free hosting feature of GitHub, the “GitHub pages”
- ◎ This is temporary situation
- ◎ Going forward, the website will be deployed on a proper Web server hosted at one of the labs
- ◎ Auth/auth issues will be resolved at that time
- ◎ Thanks to the technology used, deployment can be as simple as copying a directory tree from one location to another – the site is just a collection of files after all

Summary

- ◎ We will be using git/GitHub for this team effort
- ◎ Getting comfortable with GitHub (branches, PRs etc) is a prerequisite, however that is the case with using all of the ePIC software so it's not an extra hurdle
- ◎ Installing and running Jekyll on your machine may present a modest investment of effort but it's doable and in the end well worth it
- ◎ I'm always available to help
- ◎ Start, experiment, provide feedback, ask for help!