

# Making Webpages with Interactive Content

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# Contents

- Sitebuilder – Warwick's *In house* development platform.

<https://warwick.ac.uk/services/its/service-support/web/sitebuilder2/>

- Linux and Windows hosting service – Set up your own server from scratch

<https://warwick.ac.uk/services/its/service-support/servers/serverprovisioning/>

# Sitebuilder

- No software to download
- Ready made templates
- Components Editor allows you add and arrange text, images, video etc...
- Accessibility checker
- Access controls
- Version control
- Search engine optimisation

# Sitebuilder components

- WYSIWYG editor
- Forms for data collection
- News & Events streams
- Discussion forums
- Calendars

# Sitebuilder

- Request a page by contacting parent page owner

Page contact: [ITS Web Team](#)

Last revised: Tue 14 Jun 2019

Powered by [Sitebuilder](#) | © MMXIX | [Terms](#) | [Privacy](#) | [Cookies](#) | [Accessibility](#)

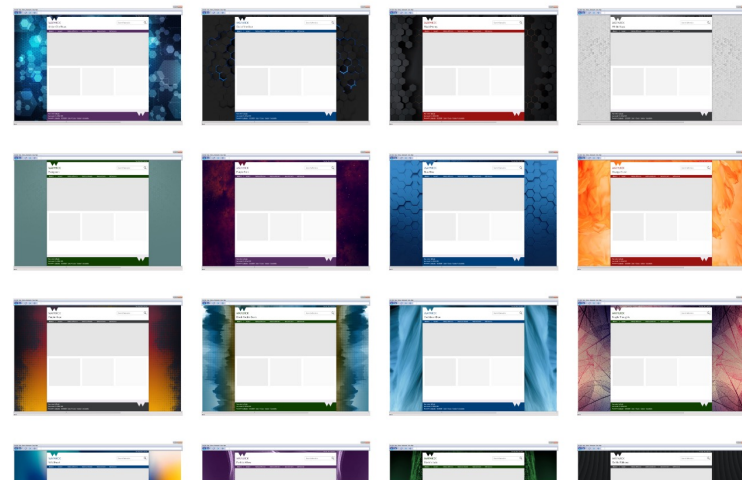
- Choose a template layout, ready made or design your own

## Request a site design

Clear selection

### Colours

- Aubergine
- Warwick Grey
- Ruby Red
- Sky Blue
- Warwick Green



# Main elements of the ID7 common website template



## Masthead

- Utility bar (sign-in, edit links)
- Background image 1170px wide x 110px high
- Background image shows through transparent utility bar and window device
- 'WARWICK' is solid colour
- Search box

## Navigation

- Colour palette styled per site
- Primary navigation shows top-level sections
- Secondary navigation shows breadcrumbs trail
- Tertiary navigation shows child pages (if present)
- Current page is highlighted

## Page content

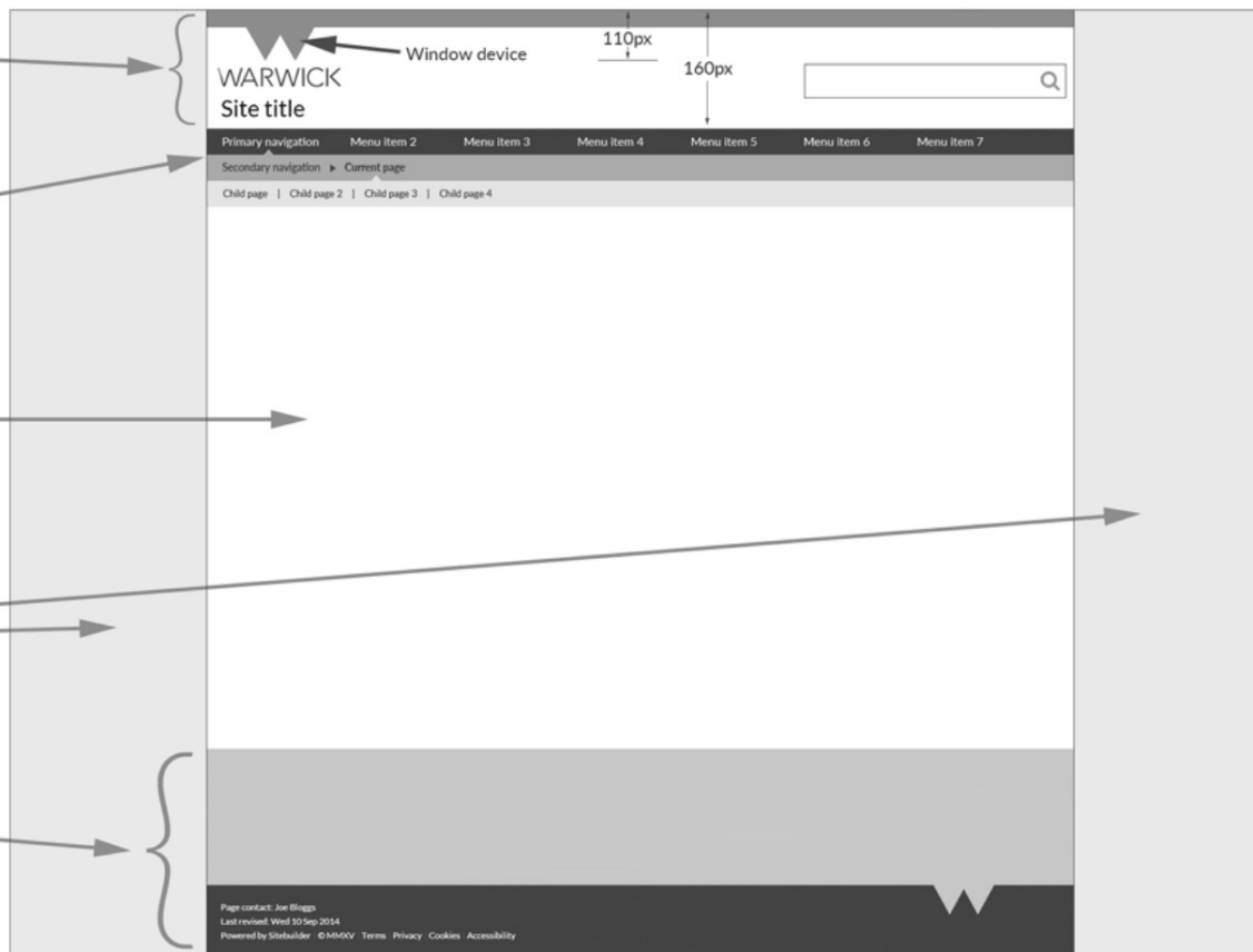
- Lato typeface for text
- Single-column layout
- Two-column layouts: 50/50, 66/33, 33/66, 25/75 and 75/25
- Choose three-column layouts from gallery
- White background

## Page borders

- Styled per site
- 375px wide x 1200px high
- Optional: colour, photography, abstract imagery
- Scales on screens wider than 1920px or taller than 1200px

## Footer

- Styled per site
- Optional custom footer section: contact details, intranet link, social media icons, quick links
- Mandatory: page contact, utility links, revised date



# Main elements of the ID7 common website template

## The Zeeman Institute

Research | SBIDER Management | About Us | People | Opportunities | Calendar | News | Software Downloads | Meeting Groups

Paul Brown

MA925 Student Feedback

### Paul Brown

My background is in experimental biology, but my research interest today is in the development of user-friendly sustainable scientific software for data acquisition, analysis and modelling.

At the present, my time is split between the Zeeman Institute and the [Bioinformatics Research Technology Platform](#).

My work has been funded by a variety of sources including EPSRC, BBSRC, the European Union, The Wellcome Trust and The Bill and Melinda Gates Foundation.

#### Current projects in the Zeeman Institute

- [The HATMEPP project](#). This is an international, multidisciplinary research project funded by the Bill and Melinda Gates Foundation to support planning and implementation of gambiense



- ✍ Edit centre content
- ✍ Edit right content
- 🔑 Edit page properties
- 👤 Edit page permissions
- + Create a new page
- 📎 Upload a file
- 📄 View latest change
- 📊 View page statistics
- ⋮ More...



Forum

## Select Components Editor

Fill in some basic details such as name and title



# Go to Edit centre content


Help Contact us

Editing: testpage

Paragraph **B** *I* ~~S~~  $X_2$   $X^2$   $\equiv$   $\boxplus$   $\boxminus$   $\boxtimes$   $\boxdiv$   $\text{---}$   $\text{Q}$   $\text{<html>}$


Structure  
Presentation  
Icons/buttons  
Feeds  
Links  
Text  
Customisation  
Dynamic

### Three blocks with images




#### Heading

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.



#### Heading


Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.



#### Heading

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

### 2:1 block layout with image



#### Heading

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

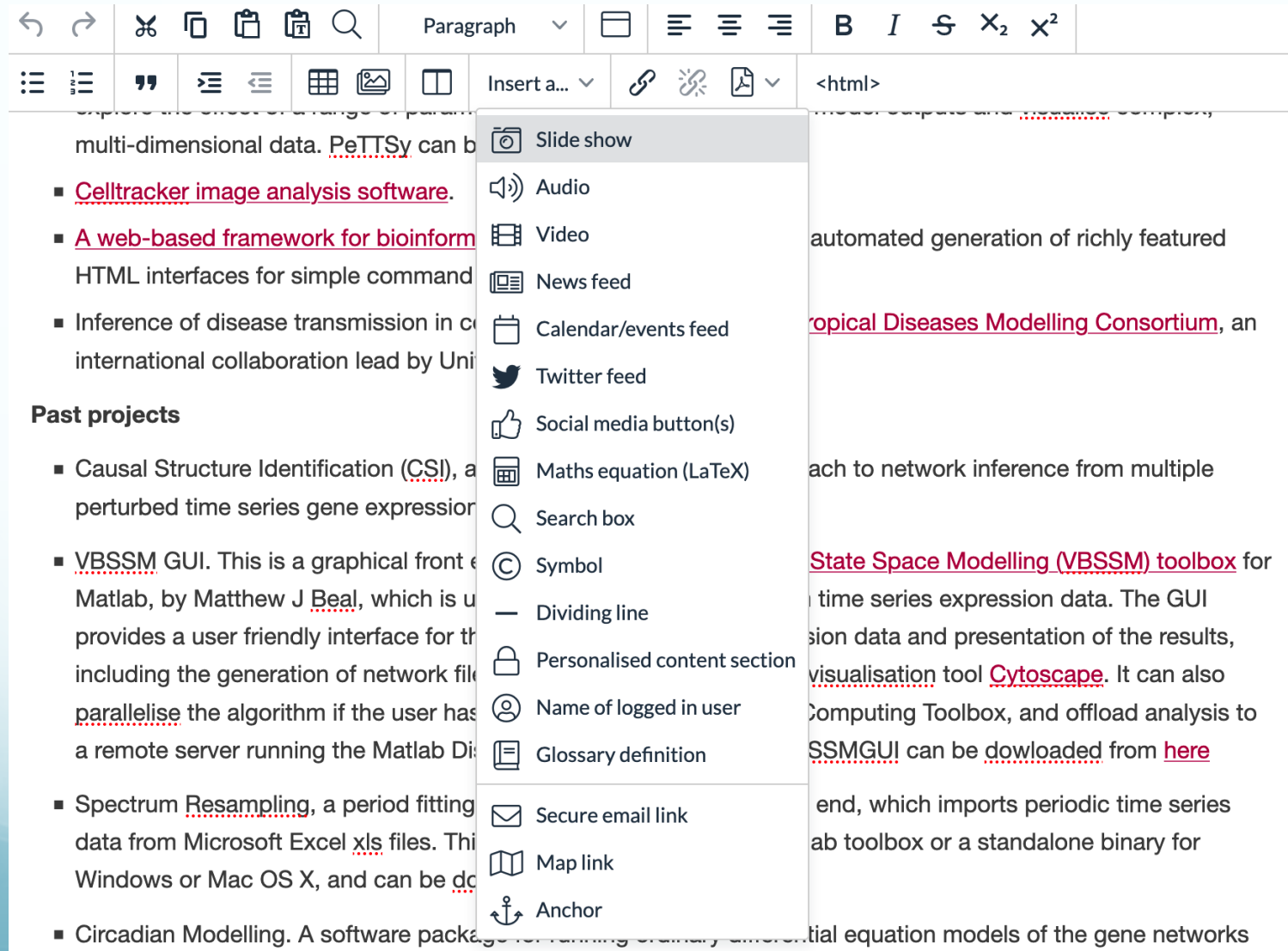
#### Heading

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.



# Editing centre content

- Can be edited like a word processor



The image shows a screenshot of a rich text editor interface. The top toolbar includes navigation arrows, undo/redo, copy, paste, search, paragraph style dropdown, list, bulleted list, bold, italic, strikethrough, subscript, and superscript. Below the toolbar is a menu bar with options for bulleted list, numbered list, quote, indent, outdent, table, image, link, unlink, insert, and source code (<html>). The main content area displays a list of projects under the heading "Past projects". The list includes:

- [Celltracker image analysis software](#).
- [A web-based framework for bioinform](#) HTML interfaces for simple command
- Inference of disease transmission in c international collaboration lead by Uni

**Past projects**

- Causal Structure Identification (CSI), a perturbed time series gene expression
- [VBSSM GUI](#). This is a graphical front e Matlab, by Matthew J [Beal](#), which is u provides a user friendly interface for th including the generation of network file [parallelise](#) the algorithm if the user has a remote server running the Matlab Di
- [Spectrum Resampling](#), a period fitting data from Microsoft Excel [xls](#) files. Thi Windows or Mac OS X, and can be [do](#)
- [Circadian Modelling](#). A software packe

An "Insert a..." menu is open, showing options: Slide show, Audio, Video, News feed, Calendar/events feed, Twitter feed, Social media button(s), Maths equation (LaTeX), Search box, Symbol, Dividing line, Personalised content section, Name of logged in user, Glossary definition, Secure email link, Map link, and Anchor.

Other visible text in the editor includes: "multi-dimensional data. [PeTTSy](#) can b", "automated generation of richly featured", "[tropical Diseases Modelling Consortium](#), an", "ach to network inference from multiple", "[State Space Modelling \(VBSSM\) toolbox](#) for", "time series expression data. The GUI", "sion data and presentation of the results,", "visualisation tool [Cytoscape](#). It can also", "Computing Toolbox, and offload analysis to", "[SSMGUI](#) can be [downloaded](#) from [here](#)", "end, which imports periodic time series", "ab toolbox or a standalone binary for", "differential equation models of the gene networks"

# Editing centre content

- Or switch to html view

Source Code



```
<li><strong>Brown, P. E.</strong> & Dale, N. (2000a). Adenosine A1 receptors modulate high voltage-activated Ca2+ currents and motor pattern generation in the <em>Xenopus</em> embryo. <em>Journal of Physiology</em> <strong>525:</strong> </strong>655-667</li>
<li><strong>Brown, P.E.</strong> & Dale, N. (2000b). Activation of presynaptic glutamate receptors evokes ATP release from Xenopus spinal pre-motor interneurons. <em>Journal of Physiology</em> 528P: 63</li>
<li><strong>Brown, P.E.</strong> & Dale, N. (2000c). Release of ATP from spinal neurones mediated by pre-synaptic glutamate receptors. <em>Society for Neuroscience Abstracts</em><strong>26:</strong> 404</li>
<li><strong>Brown, P.E.</strong> & Dale, N (1999). Purinergic modulation of ionic currents in <em>Xenopus</em> spinal neurones. <em>Journal of Physiology</em> 515P: 115P</li>
<li><strong>Brown, P. E.</strong> & Anderson, M. (1999). Factors affecting the ovipositor probing response of <em>Trybliographa rapae</em> (Hymenoptera: Cynipidae), a parasitoid of the cabbage root fly. <em>Entomologia Experimentalis et Applicata</em> <strong>93:</strong> 217-225</li>
<li><strong>Brown, P. E.</strong>, Frank, C. P., Groves, H. L. & Anderson, M. (1998). Spectral sensitivity and visual conditioning in the parasitoid wasp <em>Trybliographa rapae</em> (Hymenoptera: Cynipidae). <em>Bulletin of Entomological Research</em> <strong>88:</strong> 239-245</li>
<li><strong>Brown, P. E.</strong> & Anderson, M. (1998). Morphology and ultrastructure of the sense organs of the ovipositor of <em>Trybliographa rapae</em> (Hymenoptera: Cynipidae), a parasitoid of the cabbage root fly. <em>Journal of Insect Physiology</em> <strong>44:</strong> 1017-1025</li>
<li>King, F. C. & <strong>Brown, P. E.</strong> (1997). Is experience important? A behavioural and electrophysiological study on the parasitoid wasp <em>Trybliographa rapae</em> (Hymenoptera: Cynipidae). Abstracts of the British Ecological Society Winter and Annual General Meeting, December 1997</li>
<li><strong>Brown, P. E.</strong> & Anderson, M. (1996). Spectral sensitivity of the compound eye of the cabbage root fly, <em>Delia radicum</em> (Diptera: Anthomyiidae). <em>Bulletin of Entomological Research</em> <strong>86:</strong> </strong>337-342</li>
<li>Anderson, M., <strong>Brown, P. E.</strong> & Skilbeck, C. A. (1994). Sensory ecology of insect parasitoids. Abstracts of the British Ecological Society Winter and Annual General Meeting, December 1994, pp. 70</li>
</ul>
```

Cancel

Save

# More Editing

Editing site The Zeeman Institute: SBIDER | page Paul Brown

/ fac / cross\_fac / zeeman\_institute / staffv2 / paulbrown

Current site	Current page	Sub-pages	Files	History	Stats
--------------	--------------	-----------	-------	---------	-------

Manage content	Manage page
----------------	-------------

Edit centre content	Visual editor
Edit right content	Visual editor
Find and replace	
Schedule changes	
<hr/>	
Check for broken links and images	
Check page content for errors	

Edit properties
<hr/>
Edit permissions
<hr/>
Delete this page
<hr/>
Rename this page
Move this page
Copy pages
Save pages as template

- Properties – page heading, search engine options, page template
- Permissions – Any, all Warwick, staff only, groups eg department. Levels are view, edit , admin and password protected

# More Editing

- Sub-pages displays a list of all sub-pages of the current page. Here you can add a new sub-page or rename/delete
- Files displays a list of all uploaded files belonging to this page. You can upload another or rename/delete
- History allows the page to be restored to a previous version

# News and events

- Select News template. Creates a blank page with a button to add new items to the list
- Item has an abstract and details
- News items can be filtered by tag
- Can choose how many to show
- Calendar works in a similar way
- Also social media feeds

# Monday 11 Nov - Sunday 17 Nov 2024

Show selected

Select all / none

Common area
  Deadline
  MSc students
  Mathematics
  Meeting
  Online
  Open Day
  PhD Students
  Reading groups

Seminar Room D1.07
  forum

+ ◀ ▶ 🏠 📅 ⓘ
 Day
4 Days
Week
4 Weeks
Month
Term
Agenda

Mon	Tue	Wed	Thu	Fri
Nov 11	12	13	14	15
11:00 - 12:00 MA9P1 - Topics in C*-Algebras and Unitary Representations Lecture D1.07	11:00 - 13:00 MA9M4 Modelling and Computation of Fluid Dynamics Across Phases and Scales Lecture D1.07	11:00 - 12:00 MA925 Practical Application of Computational Techniques D1.07	10:00 - 12:00 MA947 Graduate Real Analysis Lecture D1.07	11:00 - 12:30 MA925 App development: From ideas to practical tools D1.07
15:00 - 16:00 Junior Analysis and Probability Seminar D1.07	13:00 - 14:00 MA9P1 - Topics in C*-Algebras and Unitary Representations Lecture D1.07	12:00 - 13:10 MathSys PhD Meeting D1.07	12:00 - 13:00 Reading Group - M.Truter (PGR) D1.07	13:00 - 14:00 MA9P1 - Topics in C*-Algebras and Unitary Representations Lecture D1.07
16:00 - 17:00 MA947 Graduate Real Analysis Lecture D1.07	14:00 - 15:00 MA3L2S Support Class D1.07	13:15 - 15:00 EDI Committee Term 1 Meeting D1.07	13:00 - 15:00 MA9M4 Modelling and Computation of Fluid Dynamics Across Phases and Scales Lecture D1.07	15:00 - 16:00 MA946 Introduction to Graduate Probability Lecture D1.07
	16:00 - 17:00 MA4N1S Support Class D1.07	15:00 - 17:00 Maths SSLC Meeting D1.07		



# Forms and data

- Select Form page template
- There are links to add text boxes, file upload controls, drop-down lists, option buttons and checkboxes
- Some non-standard compound controls such as address fields, date picker, rating controls, online payment fields, personal details fields
- The form owner can view submissions and download as a csv or XML file



# Forms and data

## Add/Edit a set of option buttons

**Field name \*** ? *Appears in submissions file*

Opt1

**Label** ? *Displayed on page*

Select an option

**Options \*** ? [Switch to text version](#)

<input type="checkbox"/>	A	<input type="checkbox"/>
<input type="checkbox"/>	B	<input type="checkbox"/>
<input type="checkbox"/>	C	<input type="checkbox"/>

[Add new item](#)

**Selected option button**

A

Label on top ?

Read-only ?

Only visible to editors ?

Ensure answer is one of the valid options ?

User must tick one option ?

[Save](#) [Cancel](#)

Notify | Edit | Paul Brown

WARWICK

Search Warwick

Zeeman Institute

People Paul Brown form

## form

[Edit this form](#) [View recent submissions](#)

**Select an option \***

A

B

C

**\* indicates a required field**

**Privacy statement** This form is anonymous. No data which personally identifies you is collected on the form, and the data you provide is used solely to help us improve the delivery of our courses.

[Send form](#)

[Edit this form](#) [View recent submissions](#)

# Forms and data



formsbuilder

Done

Viewing submissions in page [form](#)

Show

20 submissions



From

11 Oct 2019



To

11 Nov 2019



With text

Filter forms

**Column filters.** Click on the filter icon to add or edit a filter in the corresponding column.

There was only one submission matching the specified filters

Select	Submission ID	Submission time	Opt1
<input type="checkbox"/>	506957984	11/11/2019 16:04	A

Delete selected

Edit selected

Select [all](#) | [none](#)

Summary

Deleted submissions

Not submitted

Download all

Download selected



# Accessibility

Public sector bodies websites must comply with 'Web Content Accessibility Guidelines 2.2' at level 'AA'

<https://warwick.ac.uk/services/its/servicessupport/web/sitebuilder2/best-practice/accessibility/>

# Creating your own webserver

<https://warwick.ac.uk/services/its/servicessupport/servers/serverprovisioning/>

- RHEL 9 or Windows 2019 virtual machine
- Unsuitable for computationally intensive work, eg modelling and simulation, machine learning
- Nightly snapshots taken
- Select webserver and database options or request your own requirements, eg R-Shiny, php
- Containers specifically excluded, eg Docker, Singularity
- No root access is granted

# Software Available

- Red Hat 9
  - Apache
  - MariaDB, PostgreSQL
  - PHP, Python 3, Ruby
  - GitLab
  - R-Shiny Server
- Windows Server 2019
  - IIS
  - MS SQL Server 2019

# Creating your own webserver using Apache

- Webserver document root
  - `/var/www/html` (Linux)
  - `/Library/WebServer/Documents` (macOS)
- Store any private data, such as passwords, outside this to stop the web server accidentally displaying it
- Web server user owning httpd process needs at least read access to this
  - `httpd, apache, www, wwwuser`

# Server-side scripting

- Code which is executed by the *server*, before output is sent to the client browser
- Produces responses customised to the user's request
- Code remains on the server and is hidden from the user
- Downside is that it increases network traffic and load on the server
- Upside is when it requires access to data, this can remain on server



# Simple server-side scripting

The document root in `/var/www/html`

Place `index.html` or `index.php` in here

One or more configuration files, `/etc/httpd/httpd.conf`

You can override its contents using `.htaccess` files in your site folder

Log files are in `/var/log/httpd/`

Your site will be at <https://server-name.lnx.warwick.ac.uk>

# Simple server-side scripting

PHP can be installed and configured by IDG

Configuration file is `/etc/php-fpm.conf`

The error log is found at

`/var/log/php-fpm/www-error.log`

By default PHP cannot send mail, but this can be activated on request

# Server-side scripting

```
<?php
    session_start();
    $list_of_countries = Array();
    $countries_file = "countries.json";
    if (file_exists($countries_file)) {
        //process data
        $list_counties = .....
        echo json_encode($list_of_countries);
    }
?>

<html>
    ....
    <body>
        <?php echo "Welcome ".$username ?>
    </body>
</html>
```

# Client-side scripting

- Executed on the *client* browser, after being sent from the server
- Often used to respond to user actions/events
- Code is embedded in the page and sent to the user
- Offloading processing to the client reduces network traffic and load on the server, and can make websites independent of a network connection. Javascript can even be used to write desktop applications
- Downsides are the limitations on what can be done on then client, and cross-browser compatibility
- JavaScript by far the most common platform
- Many libraries available, eg jQuery and react.js for user interfaces, vue.js and bootstrap for presentation, d3 for plotting data

# Client-side scripting

- Nothing to install, all browsers have a JavaScript engine

- Embed your code in a `<script>` tag

```
<script type = 'text/javascript'>  
    function displayMessage(msg) {  
        alert(msg);  
    }  
</script>
```

- Or in a separate file

```
<script src = 'js/myscript.js'></script>
```

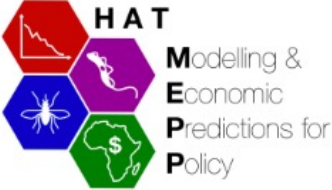
# Example – a login form



login.html

**Welcome to HATMEPP**

Please log in to continue



```
<script src="login.js"></script>  
<div class="loginform">
```

```
<form method="post" action="checklogin.php"  
      onSubmit="return check_form();">
```

```
<h2>Welcome to HATMEPP</h2>
```

```
<h3>Please log in to continue</h3>
```

```
<input type="text" name="name" id="name">
```

```
<input type="password" name="pword" id="pword">
```

```
<input type="submit" value="Login">
```

```
</form>
```

```
<div>
```

```

```

```
</div>
```

```
</div>
```

# Example – a login form

On the client, can access document object model (DOM)

```
login.js
```

```
function check_form (){  
  
    var name = document.getElementById("name").value;  
  
    if( name == ''){  
  
        document.getElementById("name").style.border = "red";  
        alert("Please enter a valid username and password.");  
        return false;  
  
    }else{  
        document.getElementById("name").style.border = "lightgrey";  
        return true;  
    }  
  
}
```



# Example – a login form

- Form ‘action’ attribute indicated where to send data, and use of POST method
- Always use POST for sensitive data, the alternative GET is not secure. It appends data to the URL

`https://myserver.org/checklogin.php?username=pbrown&password=mysecretpassword`

# Example – a login form

## On the server

checklogin.php

```
<?php
    require("/var/www/private/dbase.php")

    $username = $_POST["name"];
    $pword = $_POST["pword"];
    $result = db_login( $username, $pword);
    if (!is_null($result)){
        session_start();
        $_SESSION['name'] = $username;
        header("Location: mainpage.php");
    }else
        header("Location: login.html");

?>
```

mainpage.php

```
<?php
    session_start();
    if(!isset($_SESSION['name'])){
        header("Location:login.html");
        exit;
    }
?>
<html>
    <head>
        ...
    </head>
    <body>
        <?php
            echo "Hello ". $_SESSION['name'];
        ?>
        ...
    </body>
</html>
```

# Web Libraries and Frameworks

- JavaScript libraries let you create components and build webpages
  - jQuery general purpose
  - React or bootstrap for UI development
- Frameworks can be used for full stack development, front end and backend.
  - They handle routing and data fetching, asynchronous functions
  - Provide a set of templates you replace with your own structures
  - Next.js is based on React
- Frameworks can provide their own simple web server, removing need for apache
  - Nodejs runtime environment
  - Python eg Flask
  - R/Shiny-R

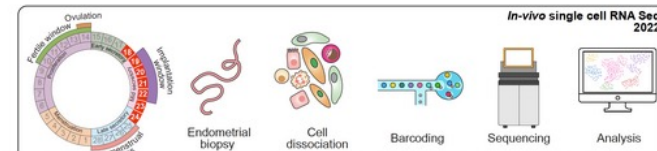
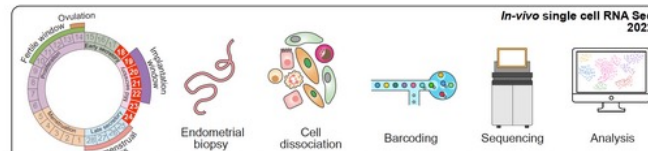
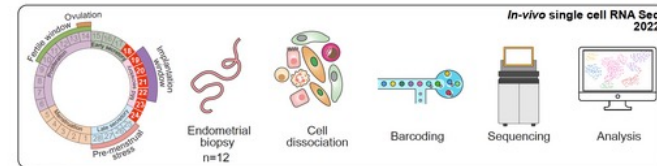
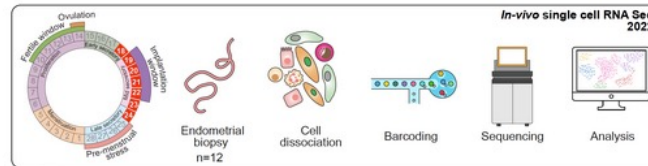
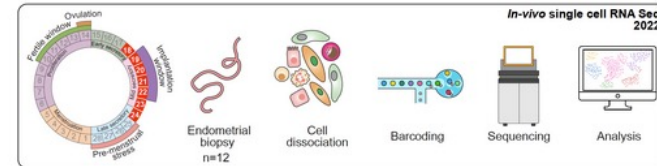
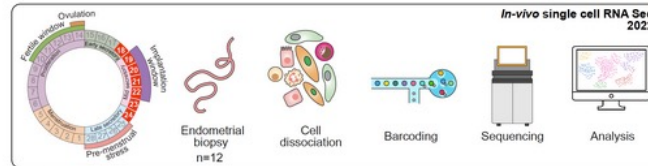
# Welcome

Content will go here

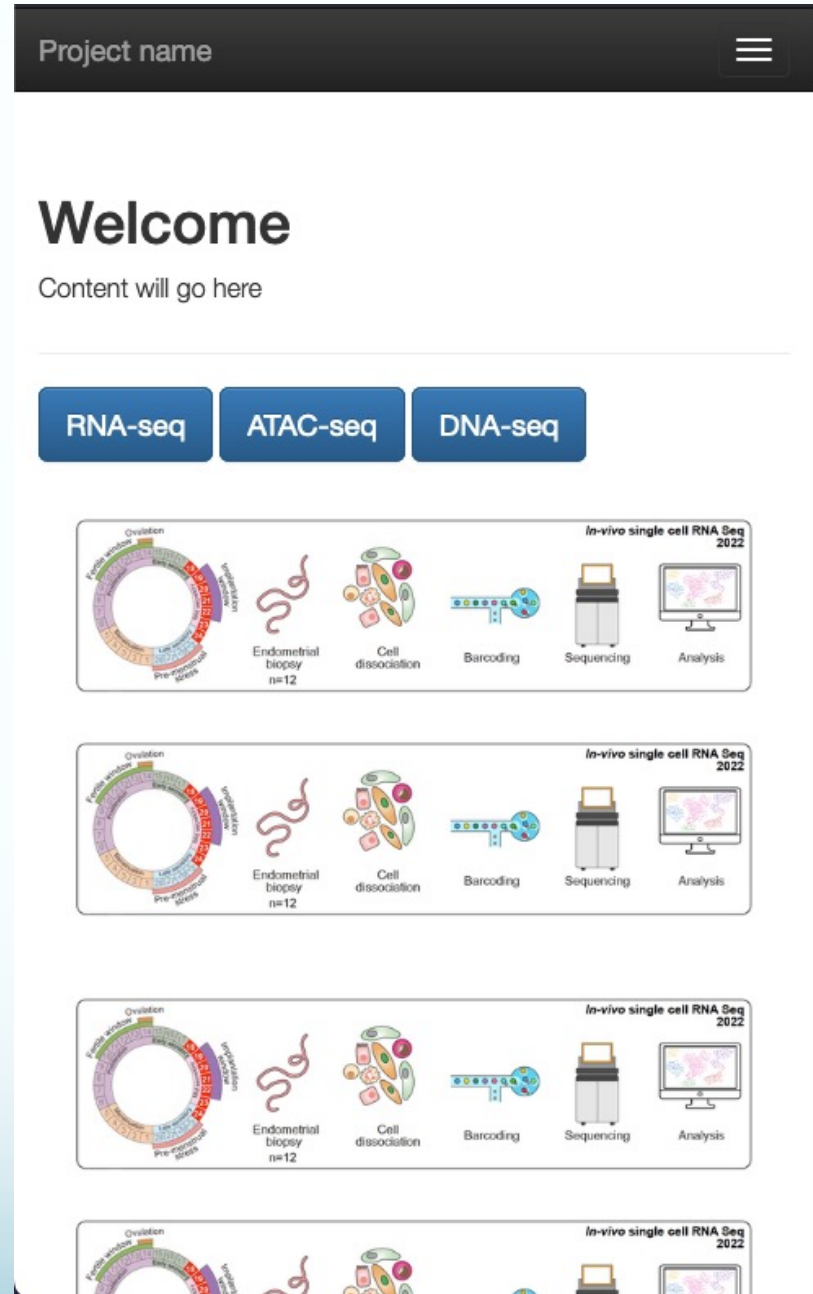
RNA-seq

ATAC-seq

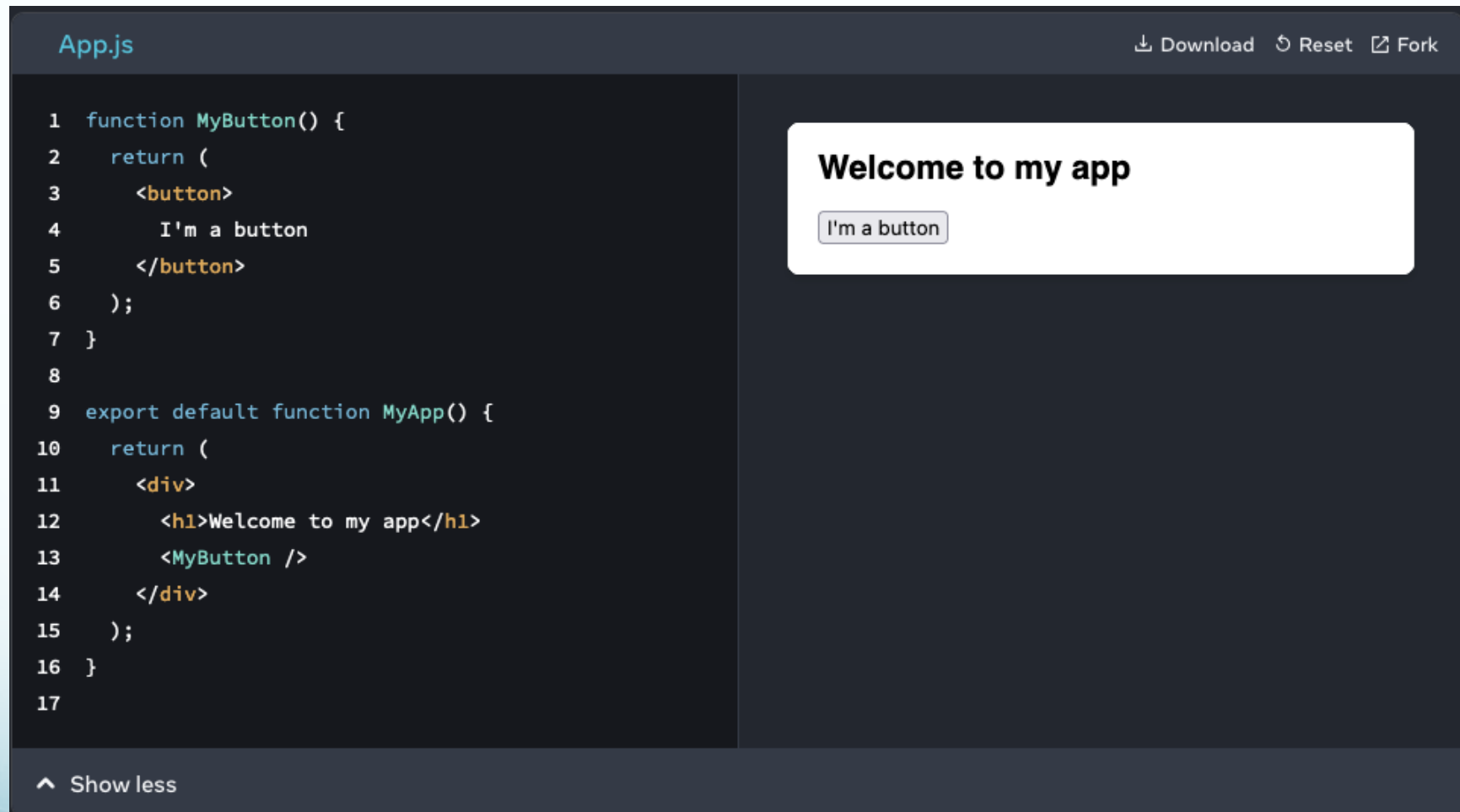
DNA-seq



Bootstrap can re-organize the GUI to fit screens of different sizes or orientations



React lets you build a user interface from individual components. Combine them to create entire web pages and applications.



```
App.js Download Reset Fork  
  
1 function MyButton() {  
2   return (  
3     <button>  
4       I'm a button  
5     </button>  
6   );  
7 }  
8  
9 export default function MyApp() {  
10  return (  
11    <div>  
12      <h1>Welcome to my app</h1>  
13      <MyButton />  
14    </div>  
15  );  
16 }  
17  
^ Show less
```

Rendered UI:

**Welcome to my app**

I'm a button

Include some JavaScript logic...

```
function VideoList({ videos, emptyHeading }) {  
  const count = videos.length;  
  let heading = emptyHeading;  
  if (count > 0) {  
    const noun = count > 1 ? 'Videos' : 'Video';  
    heading = count + ' ' + noun;  
  }  
  return (  
    <section>  
      <h2>{heading}</h2>  
      {videos.map(video =>  
        <Video key={video.id} video={video} />  
      )}  
    </section>  
  );  
}
```

### 3 Videos



#### First video

Video description



#### Second video

Video description



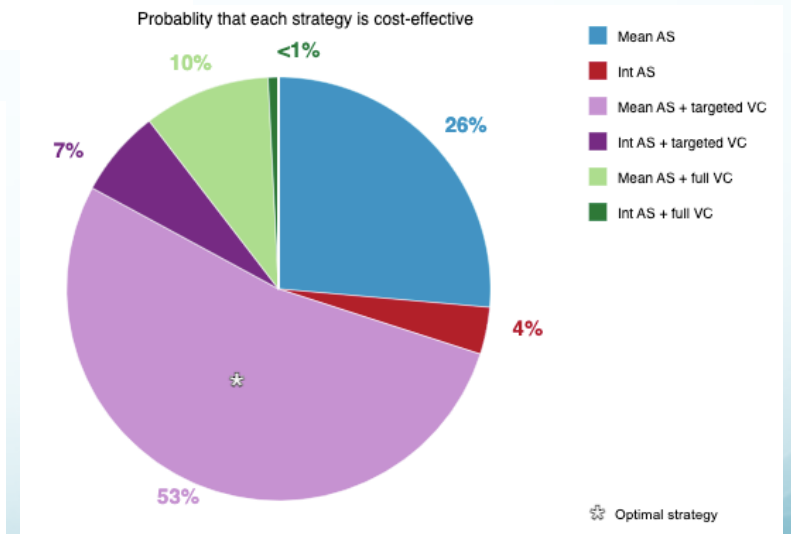
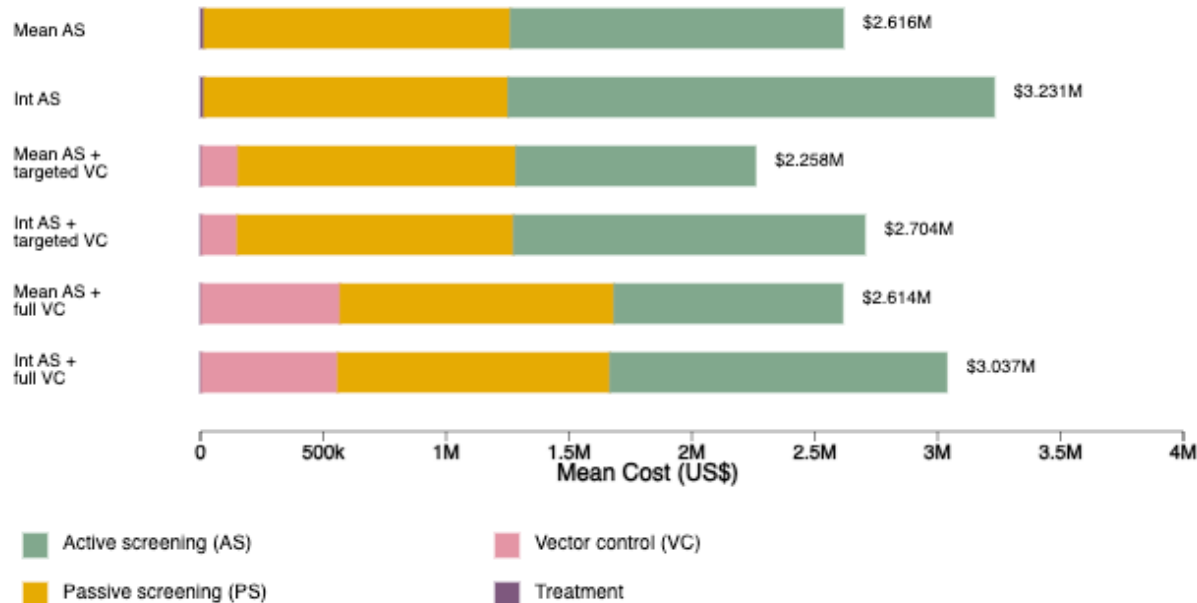
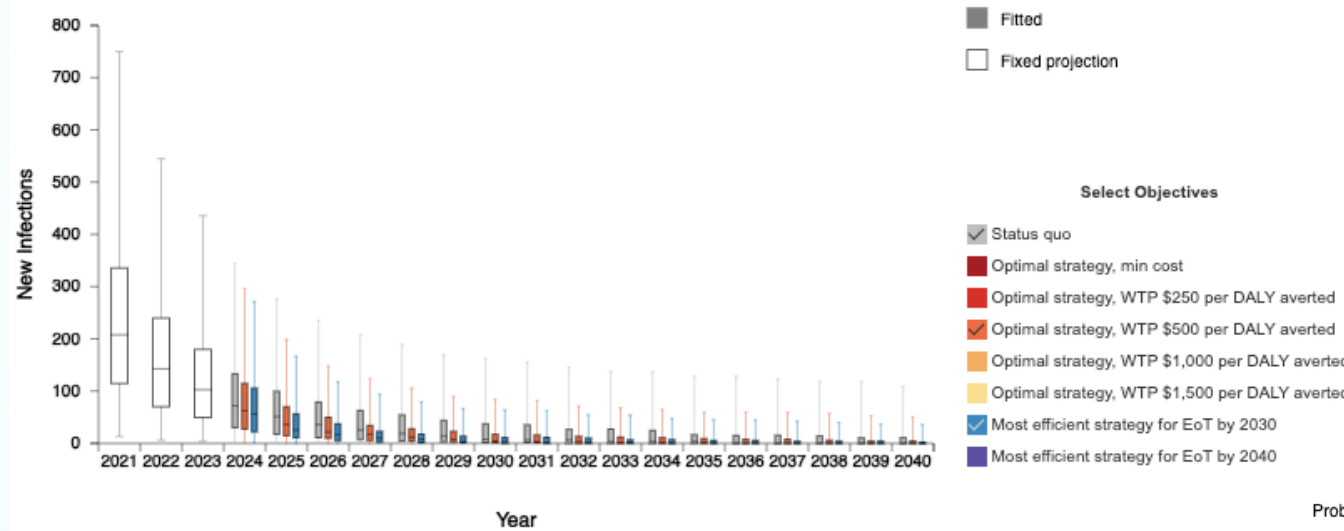
#### Third video

Video description





D3 binds data to HTML elements, which can be automatically updated as data changes



# Helpful resources

- For sitebuilder queries [webteam@warwick.ac.uk](mailto:webteam@warwick.ac.uk)
- For Warwick linux hosting  
[https://warwick.ac.uk/services/its/service-support/unix/linux\\_hosting](https://warwick.ac.uk/services/its/service-support/unix/linux_hosting)
- [www.w3schools.com](http://www.w3schools.com) for html, css, javascript, php, python and lots more