

Agricultural news service system front page development based on responsive web design

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Abstract. For the demand of farmers' access to agricultural news information through more terminals, the technology of responsive web design was used to develop the agricultural news service system which webpage was shown well to computer and mobile phone. It achieves a good display and dissemination of the system information in more terminals.

Introduction

Agricultural news is an important way for farmers to know the national agricultural policy and development trends. Along with the diversified development of electronic information equipment, there is a surge demand for information multiple transmission^[1]. According to the statistic of CNNC and Ai Rui, the number of mobile users is close to the PC. The proportion of mobile market economy will increase rapidly. In Beijing, the mobile phone ownership rate of 100 households in rural areas is 234.9%. 8.3% higher than urban areas^[2]. It has been a part of life that farmers access to the news by mobile phone. As agricultural news providers, there is an urgent need to solve the problem that helps users to obtain the required information conveniently by any kind of intelligent device. The web page developed by the technique of responsive web design can be flexible layout according to PC, phone and ipad. It has advantages that percept device type, layout page elements, adapts to different application scenarios automatically, once development is compatible with more terminal, the style is unified, good user experience, and etc. Therefore, development agricultural news service system based on responsive web design, can promote the agricultural information resource utilization and effective communication, and also be greatly convenient for the user access to the agricultural news.

Responsive web design

The main characteristic of responsive web design is that it can make the system compatible with multiple terminals by adjusts the layout flow type automatically depending on the access terminal screen size. It no needs to develop different versions for every terminal. And in the process of layout adjustment, it just need to design the front page, does not involve the background code changes. It reduces the development and maintenance costs significantly, and improves the user's experience at the same time.

Media query. Media query is utilized to obtain the attributes of access equipment. Attribute information determines layout style. It includes screen width and height, direction, width and height of the window display area, resolution, pixels, etc. Build the attribute expression of device type by "and" or "not", and then, adjust the page layout and load corresponding style.

Flow layout. Flow layout is that the position of each block is floated to accommodate different terminals. It mainly uses the percentage to set the width of each module, and utilizes the "float" to set the attribute of elements in the CSS. By this way, it can let unit adjust the page width and position itself to adapt to the different screen size automatically. Whether the user switches the

screen orientation ways of devices, or transfer from PC to mobile phone or ipad, on the browse, the webpage is full of elasticity and orderly display automatically.

Page elements set. Page elements are the kind of text, image and video. For text, use the “em” as unite of size instead of “px”, so that the text can be scaled according to the application scenario changes automatically. For image, design different resolution, according to different kinds of terminal equipment load different images. For video, set the aspect ratio of container and video is consistent, make it can be adapted with the container change proportionally. On a small screen, provide a video link to improve the loading speed of the page.

Agricultural information service system front end development

Organize the information resources of news, policies and regulations, decision-making reference, agricultural intelligence, the new rural construction, low carbon economy, progress of science and technology, life science, rich experience, design database, provide data support for the news service system. On this basis, use Dreamweaver + HTML5 to develop the front page.

Farmers’ intelligent terminal screen size investigation. By investigation, seize the main types of farmers’ intelligent terminal, and classify several typical ways of response. According to the survey, the classification of user equipment screen specifications is: $\geq 479\text{px}$, $480\text{px}-767\text{px}$, $768\text{px}-959\text{px}$, $960\text{px}-1199\text{px}$, $\leq 1200\text{px}$. Based on it, plan different way of page rendering.

Webpage design. Based on the classified specification, design the page template to plan the visual effect for different terminal preliminary. And then, set the “Meta” tag, program the CSS by Media query, and deal with the page element.

① Set the tag of Meta

By Meta setting, it can make the width of the device as the view width, and ban zoo. The way is as follows:

```
<meta name="viewport" content="width=device-width, initial-scale=1, maximum-scale=1, user-scalable=no">
```

② Set the media query

By Media Queries setting, it tells the browse how to load a page according to different screen size. According to the survey result, the Media Queries is set as follows:

```
@media screen and (min-width: 1200px) { }
```

```
@media only screen and (min-width: 960px) and (max-width: 1190px) { }
```

```
@media only screen and (min-width: 768px) and (max-width: 959px) { }
```

```
@media only screen and (min-width: 480px) and (max-width: 767px) { }
```

```
@media screen and (max-width: 479px) { }
```

③Page elements processing

The width of elements on the page is expressed by percentage:

```
#head { width: 100% }
```

```
#content { width: 50% }
```

Set the max-width percentage for pictures. If a picture is over, narrow. If the picture is small, output the original size.

```
#img { width: auto; max-width: 100%; }
```

Other properties, such as ‘pre’, ‘iframe’, ‘video’, etc., all need to control the width like ‘img’. For the "table", don't increase ‘padding’ attribute, center content under the low resolution.

④The system debugging

Debug system through the computer and mobile phone browse. On the computer, adjust the window size, on the mobile terminal, access to the system through the browser. It indicates they are running well(Fig.1, Fig2).



Fig1. The display on computer



Fig2. The display on mobile phone

Conclusions

The development experiment indicates that, the front page of agricultural news service system based on the responsive web design presents its content well on PC and mobile phone. It implements a set of system more terminal transmission. In addition, the diversity of unified style, also facilitate users to find the columns and according to their own habit. It provides good experience on the webpage for farmers.

In addition, due to the agricultural news service system mainly display text and image, it has the beneficial effect. But for the table with multiple fields, it is prone to extrusion and disordered. There are further research is needed on this aspect that how to make the table element on webpages in adaptive express.

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