

Full Paper

EVENTPLAN: A FRAMEWORK FOR WEB-BASED INTEGRATED EVENT PLANNING AND MANAGEMENT SYSTEM

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ABSTRACT

All events involve working closely with the client to design an event that reflects the client's vision of the gathering and meets the event's objective and at the same time creating, coordinating and managing all the different components of it as well as the teams of people responsible for each aspect. Currently, these multitasks are manually being carried out and/or semi-automated. In this paper, a framework for web-based integrated event planning and management system was developed. The system was designed based on MVC model in which M and C part utilized the Laravel Framework while V part utilized Vue Js. In order to increase the speed of the web application and enhance User Experience, the system backend and frontend were implemented with PHP and MySQL, and JavaScript programming languages, respectively. Simulations and evaluation were carried out on three major web browsers: UC browser, Mozilla Firefox and Google chrome. The results showed that the proposed system achieved user interface consistency across the browsers. In terms of speed and performance the proposed system was faster on UC browser in terms of average page load with 503ms and average database access time with 331ms compared to the other two browsers.

Keywords:

Cross-party communications, Event planning, Management system, Web-based integration

1. INTRODUCTION

Most event planning and management systems available today only covers or takes care of one or very few aspects of event planning and management. The planning and management of events requires the management and coordination of many resources over an extensive period. Planning for an event may begin more than a year prior to the actual occurrence of event. The initial planning includes developing a budget for the event and planning an event within the budget. Planning an event include booking of a hall for the event or appropriate facility, booking for decoration and catering services, hiring a Master of Ceremony (MC), Disk Jockey (DJ), photographer, publicity service, design and production of invitations, and coordinating personnel for the event. Typically, an Event manager works with the client to plan the event, and makes all the necessary arrangements to put everything in place for the event. Thus, the Event manager must coordinate activities with the client, service providers, various personnel and contractors. The chronological order of the steps taken by the planner of an event and individual vendors during the event planning process is shown in Table 1 [1].

For this purpose, communication between the client, event manager and suppliers is extensive. Information must be shared and provided to a number of parties. Frequently, changes are made during the planning of an event, which could necessitate copious communications among multiple parties, including those who must effect such changes and those affected by the changes. The cross-party communications often give rise to considerable confusion, resulting in expensive error(s), undesirable delay, precious time consuming, and/or undue budget adjustment. Up to date, there is no existing single portal in Nigeria through which all of these steps in Tables 1 (invariably refers to as functions) are carried out. Additionally, no existing single portal that maximizes convenience for the event planner by integrating all searches, selections, and contracts negotiation. Hence, there is a need to provide a combination of vendor-side flexibility and customer-side integration that previous proposals for web-based event planning have not even been considered.

In light of the foregoing, in this paper, we developed a framework for an integrated event

planning and management system. We divided the system into two main sections: the event webpage section and the administration section. The administration section is further divided into three subsections for functionality separation and role-based access control. The three subsections include; event planner subsection, event vendor subsection and event client subsection. We evaluated the speed, performance (in terms of average page load and average database access time) and user interface consistency on three major web browsers.

This paper continues as follows: Section 2 briefly describes the background and related works. Section 3 describes the framework and its components. Section 4 presents implementation results and discussions, and Section 5 gives concluding remarks.

Table 1: The Process of planning an event

Step	Activity/Function
1.	Planner creates an event plan.
2.	Planner searches for vendor(s).
3.	Planner contacts vendor(s).
4.	Vendor ask for Planner's requirements.
5.	Planner provides information about event and his or her requirements.
6.	Vendor prepares and submits a proposal.
7.	Planners repeats steps 2 through 6 to obtain proposals from more vendors to compare
8.	Planner compares proposals received
9.	Planner negotiates with chosen vendor
10.	Vendor(s) prepares contract or agreement
11.	Planner and vendor enter into contract
12.	Planner pays booking/signing amount to vendor for the event

2. RELATED WORK

In this section, a review of most popular event planning and management systems was carried out. The review is mostly based on their features and functionalities.

Eventbrite [2] is a platform that allows event Planners to plan, promote, and sell tickets to events and publish them across Facebook, Twitter, and other social-networking tools directly from the

site's interface. Eventbrite's platform and mobile apps serve two audiences: the people who organize events of all types and sizes and the people who attend these events. Hundreds of thousands of event Planners use Eventbrite to streamline all aspects of their event management – from selling tickets, collecting payment and tracking sales, maximizing event promotion, managing attendees and information, to enabling event entry for attendees. Eventbrite can customize the event page to match the look and feel of the brand as well as provide better insight into generated revenue. However, it has no other event management functionality apart from ticketing system. It has no live integration with social networks nor has the ability to email attachment such as pdf invitation to attendees.

TicketLeap [3] is an online ticket sales and event marketing application. Ticketleap differentiates itself from large ticket vendors by catering its ticketing services to small companies and events, as well as larger events. On August 2, 2010, Ticketleap launched a new platform, integrated into the social media sites Facebook and Twitter. In January 10, 2011, the company announced an Android ticket scanning application, allowing event Planners to scan tickets for Ticketleap events with an Android phone and ensure that all tickets are authentic. On May 13, 2011, Ticketleap launched Ticketleap Box office Ticket Sales, allowing event Planners to sell tickets anywhere there is an Internet connection. The product keeps online and onsite sales all in one system. On April 30, 2012 Ticketleap released a “self-service seating” feature, this feature enables event Planners to build and control custom seating for event attendees and allows event goers to choose their own seats at a specific price point. However, it has cumbersome cancellations and other admin functions. Very little customization is available to customize an event registration page.

Bookitbee [4] is an online events booking system, which allows users to sell tickets and promote events. The system was designed to give small events the same access to professional ticketing and promotional services as their larger counterparts. Using this platform, planners can plan, market and track the success of their strategy using in-built reporting tools. After creating an event page on the Bookitbee website, planners can share the event on Facebook and Twitter directly

from the site's interface. Bookitbee permits event coordinators to set-up an event and offers tickets online in minutes. It allows administrators to get ticket stores inside seven days of procurement utilizing Stripe. Bookitbee permits the page to be altered in the event planner's look and feel. The framework has limited time apparatuses for online networking and allows supervisors to speak with participants using email. Participants get a PDF ticket. QR codes on the ticket enable them to be checked using a QR code peruser or essentially by utilizing an entryway list. The application has an extensive ‘Film industry’ segment that permits occasion coordinators to examine in arriving participants at high volume times, offer tickets on the day and speak with members amid events.

ThunderTix [5] is an occasion ticketing programming and film industry management application. ThunderTix is a full administration framework from occasion creation and setting ticket costs to online deals, film industry apparatuses and reports, print-at-home tickets with standardized tags, a standardized identification-examining framework with a choice of scanner rental or buy, and online networking sharing to expand the occasion's permeability. Compelling advertising effort does not need to be time concentrated. With ThunderTix coordinated online networking, mass email combination, investigation follow-up, and group on bringing in apparatuses, one can tackle the force of all one's outside promoting assets close by one's occasions and best use one's most rare ware - time. However, ThunderTix does not allow customization of tickets.

Eventzilla [6] lets you sell tickets online and manage attendees from one integrated application. It covers Conferences, Fundraisers, Classes, Festivals, Parties, Concerts, Sports, Networking and more. The Eventzilla is simple to set up and attendee payments go directly into the Planner's PayPal account. However, the platform has very little ability to customize the look and feel of the event registration page, slow page load and cumbersome user interface.

3. EVENTPLAN SYSTEM

The proposed Event Planning and Management system (EventPlan system for short) is an integrated system that can be accessible online anywhere in the world through computers or mobile phones. The entire system is divided into

two main sections, the event webpage section for the public consumption, which is peculiar or unique to every event created on the system, and the administration section that is used for planning and managing an event. The administration section is further divided into three subsections for functionality separation and role-based access control. The three subsections include; Event planner subsection, Event vendor subsection and Event client subsection. The EventPlan system employs robust and efficient tracking mechanism for comprehensive information about an event; flexible manipulation of event information and real time updates with speed and lightweight data response. It has an easy, user-friendly and simple user interface to make its usage self-explanatory. It provides a function to allow easy search of event vendors with their respective pricing information and to book the right vendor for an event. It provides extensive information about an event: this includes date of event, venue for event, program of events, the event's vendors, pre-event and post-event photos, other resources etc.

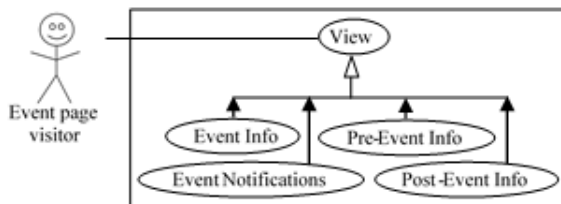


Figure 1: Event webpage use case

3.1 Functional requirements

The EventPlan system's functional requirements divided into set of use cases: Event webpage use case (see Figure 1) and Administration use case (see Figure 2). The Event webpage use case consist of four use cases. This include view pre-event info, view event info, view event notifications and view post-event info use cases. While the administration consist of ten use cases.

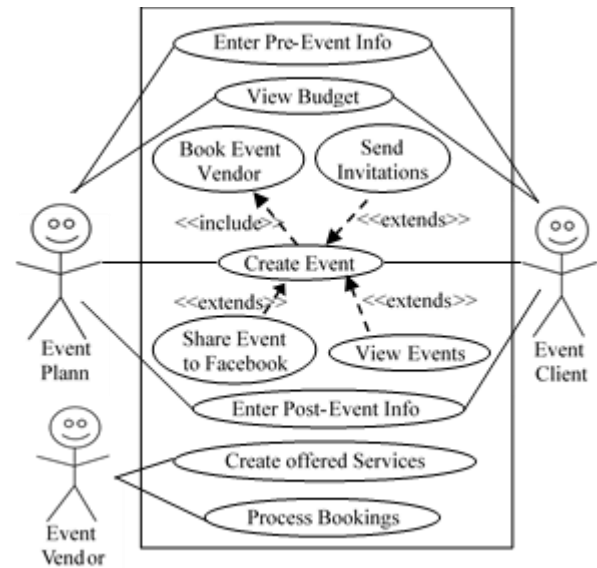


Figure 2: Administration use case

3.2 System architecture

The proposed Integrated Event planning and management system was designed based on MVC (Model, View, and Controller) model as shown in Figure 3. A further breakdown of the system from the main layers to other sub-layers is shown to help give a better insight into the sub-modules. The Model part of the MVC provides an interface for manipulating the database, each table in the database is represented with a model for manipulating it. The Controller part of the MVC handles all the application logic, it communicates with both the model and the view. The view of the MVC is the User interface with which the system user interacts.

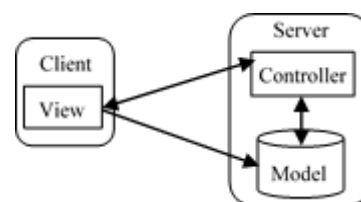


Figure 3: An MVC architecture

Therefore, based on the MVC model, the EventPlan system architecture has mobile or PC web browsers as the clients and the database server, web server and application server as the server (see Figure 4).

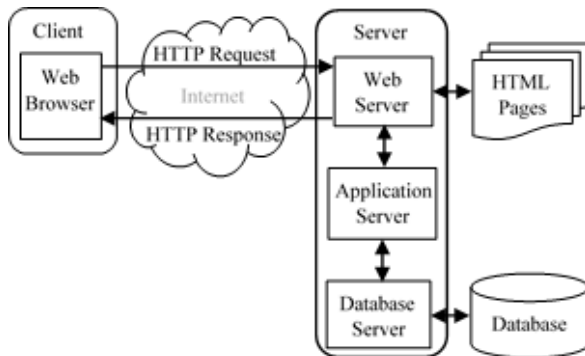


Figure 4: The EventPlan system architecture



Figure 5: Event visitors interface structure

3.2.1 Interface structure

The entire system consists of two parts, as earlier mentioned; the part visible to the event visitors (i.e. Event webpage interface structure as shown in Figure 5), and the other part for administering an event by the event planner or event vendors or event client (i.e. Event Administrators Interface structure as shown in Figure 6). The first subsection of the administration interface structure is for planner to oversee the general planning of event (s) as well as managing it by booking vendors and providing necessary information to the client (s). The second subsection is for vendor to make his/her services available and at the same time respond to booking orders. The

third subsection is for the client to monitor progress of his/her event (s).

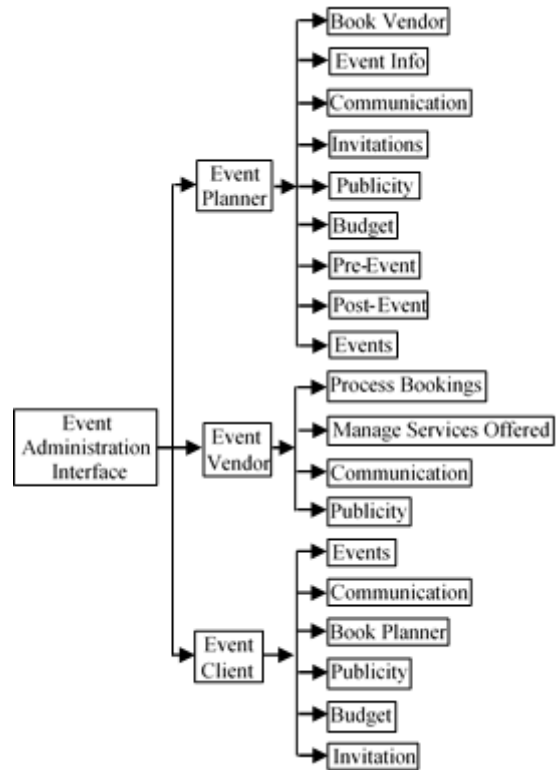


Figure 6: Event administrators interface structure

3.2.2 Database schema and representation

This application utilizes MySQL as its database engine for storing all the application data. The name or identifier, schema and representation of the database and its relationships are shown in Table 2 through 10.

Table 2: Event's Table

S/No.	Field Name	Data Type	Data Size
1	id	Integer	11
2	name	Text	50
3	event_id	Integer	11
4	planner_id	Integer	11
5	client_id	Integer	11
6	created_at	Timestamp	
7	updated_at	Timestamp	

Table 3: Vendor's Table

S/No	Field Name	Data Type	Data Size
1	id	Integer	11
2	name	Text	50
3	type	Text	100
4	address	Text	100
5	phone	Integer	11
6	email	Text	100
7	facebook_id	Text	50
8	created_at	Timestamp	
9	updated_at	Timestamp	

Table 4: Schedule Table

S/No	Field Name	Data Type	Data Size
1	id	Integer	11
2	program	Text	50
3	time	Text	100
4	venue	Text	100
5	others	Text	150
6	created_at	Timestamp	
7	updated_at	Timestamp	

Table 5: Pre-Event's Table

S/No	Field Name	Data Type	Data Size
1	id	Integer	11
2	type	Text	50
3	url	Text	100
4	content	Text	100
5	created_at	Timestamp	
6	updated_at	Timestamp	

Table 6: Post-Event's Table

S/No	Field Name	Data Type	Data Size
1	id	Integer	11
2	type	Text	50
3	url	Text	100
4	content	Text	100
5	created_at	Timestamp	
6	updated_at	Timestamp	

Table 7: Invitations Table

S/No	Field Name	Data Type	Data Size
1	id	Integer	11
2	name	Text	50
3	phone	Integer	11
4	email	Text	100
5	status	Text	5
6	created_at	Timestamp	
7	updated_at	Timestamp	

Table 8: Bookings Table

S/No	Field Name	Data Type	Data Size
1	id	Integer	11
2	event_id	Integer	11
3	vendor_id	Integer	11
4	service_id	Integer	11
5	date	Date	12
6	time	Time	6
7	amount	Decimal	65
8	status	Text	6
9	created_at	Timestamp	
10	updated_at	Timestamp	

Table 9: Messages Table

S/No	Field Name	Data Type	Data Size
1	id	Integer	11
2	Sender_id	Integer	11
3	Receiver_id	Integer	11
4	message	Text	500
5	created_at	Timestamp	
6	updated_at	Timestamp	

Table 10: Users Table

S/No	Field Name	Data Type	Data Size
1	id	Integer	11
2	surname	Text	50
3	First_name	Text	50
4	email	Text	100
5	phone	Text	100
6	Facebook_id	Text	50
7	username	Text	50
8	password	Text	100
9	type	Text	10
11	created_at	Timestamp	
12	updated_at	Timestamp	

4. RESULTS AND DISCUSSION

This integrated event planning and management system focuses only on types of general activities involve in planning and managing events in Nigeria, such as booking a caterer, hiring an MC and DJ, sending out invitations and budgeting. Therefore, two frameworks that conform to the MVC model was utilized to develop the EventPlan system. The Laravel framework was used to develop Model and Controller part of the MVC, while Vue Js framework was used to develop the view part of the MVC

model. The Laravel is a PHP based backend framework for developing web application, it is very powerful with many features. The Vue Js is a JavaScript frontend framework for developing very interactive web applications. It increases the speed of a web application and enhances User Experience (UX).

4.1 Menu Description

The event planner menu (see Figure 7) has different submenus that enables the event planner to carry out various functions of planning an event, these submenus include; Events, Event Information, Vendors, Communication, Invitations, Pre-Event, Post-Event, Publicity and Budget.

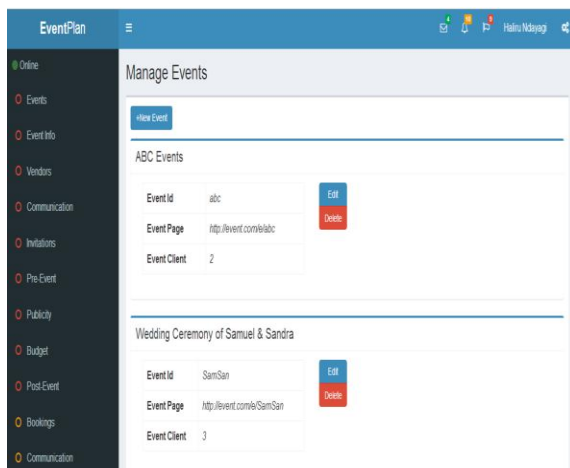


Figure 7: Event Planner Menu Section

The event planner creates an event by clicking on Event on the menu; the page immediately loads all the events if there is any, and a button for creating new events as shown in Figure 8. When the new event button is clicked, a form for creating events pops up, the planner fills the necessary information into the form and clicks save to create the event.

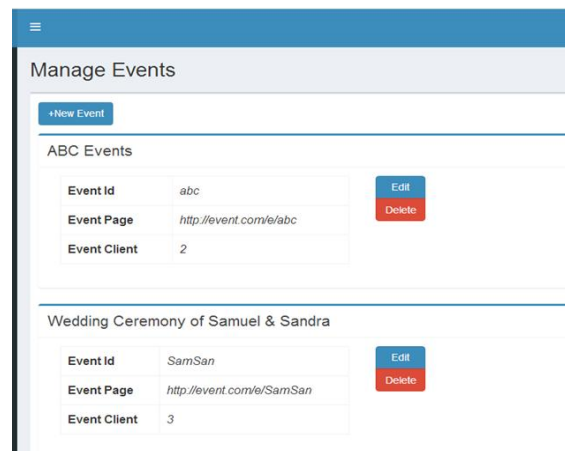


Figure 8: Events Page

Event Information such as programme of events can also be created using steps similar to the one of creating an event, with a slight change of clicking event information on the menu, instead of clicking event. The same process of creating events and event schedule is applied for booking vendors (see Figure 9), sending messages, sending invitations, viewing budget, posting pre-event or post-event contents.

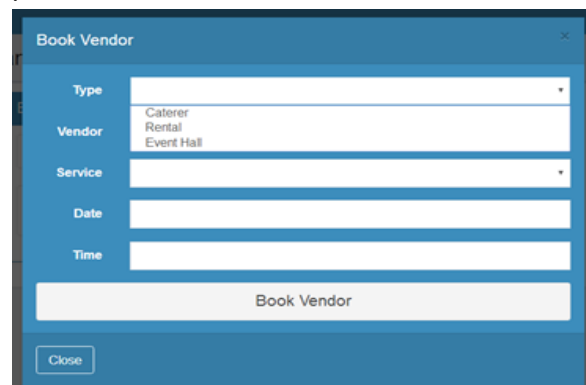
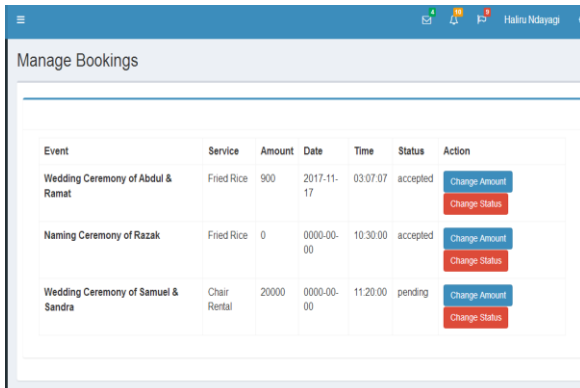


Figure 9: Vendor Booking Form

The event vendor can view a list of bookings he/she has received by clicking on Bookings on the menu. A list of bookings for the vendor is shown where he/she can either change the amount or change the status of the booking to either accepted or declined (see Figure 10).



Event	Service	Amount	Date	Time	Status	Action
Wedding Ceremony of Abdul & Ramat	Fried Rice	900	2017-11-17	03:07:07	accepted	Change Amount Change Status
Naming Ceremony of Razak	Fried Rice	0	0000-00-00	10:30:00	accepted	Change Amount Change Status
Wedding Ceremony of Samuel & Sandra	Chair Rental	20000	0000-00-00	11:20:00	pending	Change Amount Change Status

Figure 10: Bookings Management Page

4.2 Security and reliability features

4.2.1 Security features

Security measures were taken to help secure the system, most noticeable among these measures is the Cross-Side-Request-Forgery (CSRF) offered by the Laravel framework used to build the application. With this functionality, third-party request cannot submit user credentials underground and gain access. Another security feature in place is the token sent with every login request, this token is refreshed on every request and computed using some hash function that is very difficult to decrypt.

4.2.2 Error handling feature

Error handling for wrong user credentials or other forms request errors were properly handled and a readable message is always returned to the user interface. For example, on provision of correct username and password, a planner is redirected from the login page to the event-planning dashboard.

4.3 Comparison of Key Functionalities and Performance Evaluations

4.3.1 Comparison of key functionalities

The comparison of the various reviewed systems and the proposed system using key functionalities is shown in Table 11.

Table 11: Comparison of reviewed systems and the proposed system

Key Functionalities	Eventsbrite	Ticketleap	Bookitbe	ThunderTix	Eventzilla	Proposed System
Vendor Registration	No	No	No	No	No	Yes
Events Webpage	Yes	Yes	Yes	Yes	Yes	Yes
Comprehensive Ticketing	Yes	Yes	Yes	Yes	Yes	No
Attendance Tracking	Yes	Yes	Yes	Yes	Yes	Yes
Social Media Publicity	Yes	Yes	Yes	Yes	Yes	Yes
Easy Communication	Yes	No	No	No	No	Yes
Pre-Event Information	No	No	No	No	No	Yes
Post-Event Information	No	No	No	No	No	Yes
Email Invitations	No	No	No	No	No	Yes
Event Vendor Registration	No	No	No	No	No	Yes
Integrated Functions	No	No	No	No	No	Yes
Budgeting	No	No	No	No	No	Yes

4.3.2 Performance evaluation

The performance of EventPlan system was evaluated in terms of speed and performance on three major browsers; Mozilla Firefox, Google Chrome and UC browser. The system maintained its User Interface layout on all the browsers, i.e. the system achieved User Interface consistency across all the browsers. The performance metrics used are average page load (APL) in milliseconds and average database access time (ADAT). The results is shown in Table 12.

Table 12: System performance on three browsers

Browser	APL (ms)	ADAT (ms)
UC Browser	503	331
Mozilla Firefox	1142	621
Google Chrome	871	747

From the Table 12, it was observed that the EventPlan application system was fastest on UC browser compared to other browsers it was tested on and slowest on Mozilla Firefox.

The total average page load of the system $(503+1142+871)/3 = 838\text{ms}$.

The average database access time of the system $(331+621+747)/3 = 566\text{ms}$.

5. CONCLUSION

A framework for an integrated event planning and management system was developed to allow addition of task relating to event components. The system was designed based on MVC model in which M and C part utilized the Laravel Framework while V part utilized Vue Js. In order to increase the speed of the web application and enhance User Experience, the system backend and frontend were implemented with PHP and MySQL, and JavaScript programming languages, respectively. Extensive simulations were carried and the results showed the system was user friendly, reliable, secured and has fast response time.

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