

## Public Welfare Behavior Design Based on Integral Driving Mechanism

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**Abstract.** This paper theoretically discussed a greening service system on the basis of the integral driven mechanism from the perspective of interactive design by analyzing the current citizens' concern about urban greening, so that citizens' awareness care for urban trees can be improved. By understanding and analyzing the situation of the integral driven system, the paper analyzed the advantages and problems of existing apps. Combined with individual creativity, the project team provided successful user service and user interaction from parts like integral driven mechanism, service blueprint, and use flow, so as to psychologically close the relationship between individual users and public trees. In order to find a solution to increase the online and offline interaction between users and trees, a interactive design system needs to be established and the operating cost of the system and the moderation of integral driven mechanism need to be fully considered, so as to design the appealing system design scheme for users to use.

### Introduction

Urban greening provides people with a sustainable living environment. Green plants and greening can also bring people material resources and spiritual enjoyment, and the greening development of modern city can bring benefits in society, economy and environment[1,2]. However, the current urban green planting work is not yet in place, which requires the participation of all people. For promoting the coordinated development of "community of shared future for mankind" and enhance the responsibility and awareness of green planting of citizens, we need to guide, encourage and praise the public welfare behavior committed to planting green plants and greening urban environment and try to think about the service guide design that can accumulate integrals for users because of their green public welfare behaviors. Through the design of specific greening service objectives, users can try to add green to the living environment as much as possible, and acquire general integrals for their public welfare behaviors at the same time. By doing so, we can encourage more people to participate in it and help the urban greening development, so as to increase environmental awareness and social civilization.

### Integral Concepts and Functions

**Concept of Integral.** The integral system is a management mechanism aiming to quantify the user behavior, and give users cumulative score for moderate rewards or punishments[3]. Integrals are used in many fields, such as credit integrals, consumption integrals, public welfare integrals, learning integrals, etc., which are positive. The behavior of integrals has existed since ancient times. In the Song and Yuan dynasties, students were assessed by quantitative integrals to continue studies and be officials. In Ming dynasty, the system of assessment and regrading was established according to the standard of integral quantification. In the Qing dynasty, only students whose scores reached the specific value were qualified to participate in government affairs. The general method is: In monthly exam, those who get excellent scores win one integral, those who get average test scores win half an integral, and the rest get no integral. At the end of the year, those who score more than 8 integrals will be deemed to have passed the examination and promoted to be senior government students or officials. Those who fail to pass the examination will still be detained for study. Those

who don't study or violate the rules will be punished. Once a student gets three penalties, he/she will be expelled[4]. At present, the integral system is mainly used to maintain and manage credit security, and is applied in the bank and commercial personal credit management. For example, USA FICO[5] quantifies users' personal performance and credit information and provides specific scores through weighted average, which is convenient for banks and credit companies to identify and make relevant decisions.

**Function of Integral.** Catalyzed by intelligent technology, the credit system is active on the intelligent platform. It not only facilitates the management of merchants and various financial institutions, but also provides users with methods to prove their personal identity value and credit. For example, the function of integrals in e-commerce can be simply summarized as earning and consuming. While using integrals to attract customers, customers can earn certain integrals and then consume integrals to buy or get a discount on goods. As a result, integrals accumulated by customers can be used. In this way, both customers and merchants can feel the value of integrals, and the two parties further promote the interconversion of integrals, develop user habits, improve customer loyalty[6], so as to bring steady stream of consumers, provide data support for merchants, promote merchants to provide better services and carry out more integrals marketing activities, thus completing the integral system of merchants. Moreover, one of the important functions of integral is to provide relatively fair, scientific and reliable estimate bases. For example, in the group stage of the World Cup, 32 teams are divided into 8 groups to obtain different degrees of integrals through the competition, and the two who score the most are advanced to the last 16. This method ensures the transparency and persuasiveness of the game data, and facilitates the management of the team's promotion and unforeseen circumstances at the same time.

## **Integral Mechanism**

**The Business Activities of Integral System.** Bank credit integral, Jingdou integral, ant integral and reading integral are taken as examples to describe the application of the integrals in the practical field.1) Bank credit integral. Credit companies and banks centralize and quantify all kinds of information about personal credit records, and record integrals by means of grading. Different Banks have different grading standards. The grading is in inverse proportion to the borrowing costs, and too low scores may lead to disqualification of borrowing. In order to make it more convenient for auditors to judge and make decisions, the grading is divided into levels, and the auditors can make decisions according to relevant guide specification. The scientificity and evaluation system of bank credit points supervise users to perform personal credit more prudently and make bad records nowhere to hide.2) Jingdou integral. Jingdou is a kind of reward integral for jingdong mall to promote consumption. When consumers do some relevant activities such as shopping, evaluation and unboxing on jingdong mall, they can get jingdou, which can be used to offset a certain amount of cash discount when they shop again on jingdong mall. Jingdou integrals encourage consumers to develop good online shopping habits and facilitate more transactions.3) Ant integral. It can be obtained by using Alipay to do the act of paying for consumption or complete integral task. Ant integrals can be exchanged or discounted to buy cooperative goods and get more service rights and interests. Alipay increases user viscosity[7] through ant intergrals.4) Reading integrals. The library uses integrals to quantify reading performance and use of book resources of users or their participation in various activities within a certain period of time. To manage and motivate readers, the library gives them different levels of service rights and resources according to the number of integrals or levels[8]. Under the promotion of the integral system, the cultural effect in the library can be improved, readers are guided to fully participate in cultural activities, and scientific basis for cultural communication and book promotion are offered.

**Public Welfare Behaviors of Integral Driven Mechanism.** Public welfare behavior refers to the gratuitous behavior of people who volunteer to give property and labor services for public interests and other people's interests[9], including poverty alleviation, student aid, donation, volunteer service, greening, ecological protection, public education, and adoption and so on.

Among them, there are some quantifiable and digital public welfare behaviors including donation, greening and ecological protection and so on. In the era of Citizens Supporting the Community, public welfare is for everyone. Each user owns integral right, and can obtain the corresponding title of integrals through the using the integral system. Through the integral system, the integral organization can not only timely understand the enthusiasm of users' participation in public welfare activities, but also modify and improve the integral mechanism according to the integral state[10], so as to bring better service and experience to users. Under the integral system, users can judge each other's public welfare level according to their titles, so they will be guided to actively participate in public welfare activities, so as to improve the awareness of civilization and social responsibility, and strive to make users doing public welfare activities more normal and active. For instance, the volunteer APP rights and interests mall was launched for the first time and add volunteer incentive integrals in shaoshing. Citizens can acquire love integrals through doing voluntary public welfare activities, and the accumulated points could be exchanged for different rewards, thus encouraging citizens to participate in public welfare activities.

### **Public Welfare Greening System Service Design of Integral Driven Mechanism**

**Basic Connotation.** The public welfare greening behavior driven by integral mechanism refers to recording the welfare greening behavior in the form of integrals. Users can exchange integrals they earn for the systematically reserved and socially acceptable equivalent, so as to form a sustainable benign management and incentive mechanism between the welfare greening behavior and integrals, and jointly create a green living environment. In the process of greening, users will be given different integrals according to their quantifiable greening behaviors. Greening behavior includes growing plants, watering trees, caring plant, and posting specific greening task and so on. When the number of integrals reaches a certain standard, the system will award a grade of integrals title, integrals credit or use integrals to release the agent watering task. The essential purpose of public welfare greening behavior driven by integral mechanism is to sustainably stimulate the initiative of the users for public welfare behavior, increase the interaction between the user and the interaction between the user and the environment, motivate users to participate in urban greening subjective, and to try to combine the user mobile phone idle time with executable public welfare greening behaviors near living areas, so as to let users participate in public welfare activities as much as possible, increase awareness of environmental protection, jointly construct social and natural ecological environment, and to lead a healthy and sustainable lifestyle.

At present, users' public welfare behaviors are jointly driven by integrals system , and other incentive methods in most public welfare apps, such as the green energy of ant forest. For example, users can get green energy through the Alipay low-carbon behavior and consumption behavior of Alipay, or be given green energy by friends. When the green energy reaches a certain value, users can exchange and claim the offline physical trees (such as Suosuo Tree). And then the public welfare organizations or environmental protection enterprises cooperated by Alipay will plant in the desert to improve its environment. In a word, the application of integrals in some public service systems is flexible and extensive at present, but it is not the public welfare behavior for the purpose of integrals. Instead, integrals system is attached to the business model, which can be regarded as the "thickening" of consumption habits. Their real purpose is to retain consumers and stimulate consumption. For example, in ant forest, users need to pay by APP, Fotition support the brand and OFO needs to use Shared bicycle for riding.

However, in real life, there are few public welfare service behaviors that are merely driven by integrals. It's because previous developers has strategically underestimated people's desire for public welfare behavior and the dramatic changes of people's lifestyle caused by mobile phones to a large extent. In the future digital era, mobile phone lifestyle makes it possible for users to do various public welfares at any time. With mobile phone as the platform, we try to explore new and public welfare greening service online and offline, which is merely driven by integral, designed for changing environment. The core idea is to encourage the "interaction" between users and real trees.

The integral mechanism drives and normalizes users' greening behavior, so as to give play to the sense of ownership of "greening" city and makes everyone shoulder the responsibility of eco-environment protection; Connect users and plants through online records and reminders; In the process of expecting the plants to grow, users can experience the cozy sense of achievement that is obtained by their usual warm-hearted efforts and get the chance to realize that the trees they have personally maintained are included in the urban greening environment, so as to guide citizens to pay attention to and care for urban greening from the heart.

**Element of Design.** In greening service system design, in addition to making the operation easy to understand, it's also necessary to set clear tutorial and establish clear route for use and structure for information, so that the bearing capacity of users wrongly using the product and users' independent thinking ability can be improved. By analyzing the elements of user scenarios and building models according to the design process, users' needs can be controlled and objectivity can be deepened. Build user scene model before design, create user portrait, and understand user task-flow. In the core stage, target scenes that meet users' basic needs are set up, storyboards are drawn, and information structures are visualized to understand what physical operations are required in APP system design for completing the goal and the system feedbacks need to be offered to users.

**Service Blueprint.** A service blueprint is a tool that accurately describes service system. Through the description of the service blueprint, the service is reasonably resolved into the steps of the service provision process, the tasks and the methods to complete the tasks[11]. For the greening service system, the blueprint is divided into the following structures: 1) Contact evidence. Service contacts are the contact points where users interact with the system. Users produce information and the system outputs results. In this greening service system, users associate with the system through the client, socket, identification evidence, green plants, etc., and these contacts provide path to the entry to use the system for users and to obtain feedback for developers, so as to promote reasonable distribution of contacts. 2) User behavior. The user touches off the contact evidence that triggers steps, choices, actions, interactions, and then personal goals. By registering, logging in, and viewing the tutorial, users can understand and deeply know about the service system, and then operate the APP to fulfill the user's own needs and obtain the target results, and finally leave the system after receiving the integrals and gaining benefits. 3) Foreground behavior. When the system receives the user's behavior, it produces visible display that users can directly feel, which reflects the service process of the whole system. Correspondingly, the system helps users to complete the login, display tutorial, and provides users corresponding services. If the user operates the APP, the system will provide map navigation and recognition tutorial, and finally give a score and reward to the user. This part closely focuses on user behavior and is parallel to user behavior. It is the most straightforward interaction and feedback between the system and users, which is helpful to understand user needs and improve service quality. 4) Background behavior. The activities started by the system, which are centered on foreground behavior, are hidden in the background to complete the front desk behavior of the system operation. It systematically verifies the information provided by users to help users log in, provides data information and permissions for map navigation, and offers feedback and data collection. Background behavior is the system behavior not observed by users, which saves time and simplifies the interface. 5) Supporting process. The data, technologies, services produced when the system supports the whole process, cover the steps, behaviors and various interactions that occur during the delivery of services. Systematically identifying users information, such as telephone numbers and verification code, to complete the verification, the cloud database[12] allocates and receives different data, calculation results and data interaction. Supporting process is the important support for the perfect operation of the service system, and can provide scientific supply for users' good experiences and memories.

**Process Design.** For the problem that need to be solved, the following modules are formed :(1) Entering the navigation information can directly view the current nearby plants that need to be watering and user's location information who need help of watering, and to view the task details of the need for helping watering; (2) Identify green plants and obtain the information of green plants

through the APP, you can choose to view the watering tutorial, water the trees properly, and complete the collection of tree cards and daily watering card, or submit the information of uncollected trees to the system to obtain the corresponding bonus integrals; (3) After the completion, the system will automatically record the watered plant information, and save it in the personal preferences, after completing the registration and login in the personal information, users can selectively view the growth of trees, the system will remind the users of the growth nodes such as when the plant blossom and bear in a particular season or holiday, and users can share the node for integrals and close the remind in the settings, or view the individual integrals and conduct integral exchange. (4) After the use, users can post dynamic experience in the main information, check the clock-in status of other users and interact with each other, participate in check-in sharing, earn integrals from activity tasks, and read information in spare time. Therefore, the flow chart of the design of the inspiring public welfare APP system is summarized, so as to make the visual interface of the APP system.

Greening service system design is an interactive innovation activity. Good interface design can build a bridge between users and the system for communication and information transmission, so that users can more easily accept it. In the process of human-computer interaction, interface design should highlight users experience and follow the philosophy of "user-centered"[13]. The size of Interface is similar with that of touch screen smartphone. To respect most users' habits when they operate interface, the interface buttons and controls sort are designed according to users customary gesture. The neat and beautiful block surface and list layout are used, the simple style of flat[14] design is adopted, and the use of plane elements and color block surface collocation make the composition of the interface clear and highlight the main information. Follow the green design concept, the interface button is green, the background is white, which is simple and fresh and consistent with the theme.

## Conclusions

In the rapid development of modern cities, except continuously building the ice-cold buildings, human beings have also consciously developed urban greening and focused on the people-oriented sustainable urban construction, Citizens hope to make their own contributions to greening environment. At the early stage of the design, through the research analysis of the concept and function of integral, we understand the type of integral system serving in business mode and the way driving public welfare behavior, and learned that at present most of the public welfare APP under the integral driven mechanism adhere to the business practices to a certain extent, which provide the terms of creative background and ideas for greening design of service system on the basis of the integral driving mechanism. Then, we try to analyze the design elements of the interactive system, construct the service design path from the perspective of the designer and the user, and intuitively show the steps and relations of the two different elements. Based on the service blueprint, we conceive the service system process aiming at the problems to be solved by the system, and hereby design the interface visual scheme. In order to improve citizens' participation in urban greening, we should consider the use of integral driven mechanism and system recording and reminding function in the design, which are not available in some public welfare apps at present. In the long term, the APP has certain possibility of use and promotion space, and it is hoped to provide certain reference value for the incentive design of similar public welfare behaviors.

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