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ORIGINAL ARTICLE

Discussion on sustainable design of urban streets under the background of Internet

-- with Online * C 2 C Eco-street as an example

Wang Jian

Abstract: Street is closely related to People's Daily life , is not only a heavy for city life to be part of , is one of the urban construction priorities ,hosts rich meanings and prices value . however , along with the rapid development of the economy , constant expansion of city size ,environmental pollution intensifies , today 's urban streets have lost their vitality . This article introduces the " from " cradle to Cradle '(Cradle to Cradle , abbreviation ""C 2 C ") Idea , selects comparisons with Regional Representative City street one by one Zaozhuang Xuecheng District River Block , trying to use " C 2 C Circular Thinking , Build a new eco-street , for people who live here provides a security , Healthy Outdoor Recreation Site . at the same time , binding internet + "" Feasibility Innovation Development , presents new trends in the future development of street design , to accommodate each other requirements for development in the networking era .

Keywords city street ; Internet + ";" C 2 C Loop Idea ; to persist

1. Introduction

century is the age of the Internet . with the mobile network , Internet of things , ptz accounting for new round of information technology wide application , People say goodbye to industry 1.0 era features , officially entered innovation 2.0 Information Age . now , Information technology constantly Innovation and Development , Internet changes traditional means of communication and media interface , gradually applied to various industries , The forms the Internet + New Society for Development Form . Internet not only widely used in traditional industries , also in environmental protection , Service service , people 's , play an active role in urban construction such as public safety , for People Create a better life , promoting harmony and development in cities . from This , city Development entered " smart city " new phase of .

In recent years , Zaozhuang City development adapts to protect the ecological environment , Promote civilized process Development Requirements , gradually Eco City " and " Smart city "" Development Direction Author profile transition . in this urban development trend , Author will Internet + era

Wang Jian , Southeast University College of Art , Student background vs C 2 C"" Loop idea combination , Efficient via internet , Convenient propagation

Ways and means , to let more users know about cradle to Cradle Idea , To improve public interaction with city streets , actively participate in urban street construction ,, to gradually improve eco-environmental problems with urban development .

2. Idea Overview

C 2 C ------ cradle to Cradle (Cradle To Cradle)- by United States

ecologist McDonald (McDonough) with German chemist Blangat (Braungar) A circular economy based on the growth pattern of cherry trees Read :The cherry tree absorbs nutrients from its surroundings , To bear Fruit , Fruit and

petals The fall of not only provides food for creatures such as birds , also moisturizes surrounding soil , with , - soil provides the necessary nutrients for the growth of cherry trees , This is a " cradle to "Cradle "" Circular development mode . This idea is designed to follow the cherry tree pattern , impersonate from then bounds everything is nutrients , can return to nature The circular function of the principle , apply to human activities , keep production and living material circulating , to eliminate the traditional " Waste "" concept .

Urban Landscape design and construction should never be cosmetic makeup and landscaping , instead of in the coordinator and Nature ,,relationships with people , is created in human aesthetic and yet is a real life place , safe and healthy ecosystems . 'c2c loop idea is providing a new way for eco-streets to be sustainable in the future . Perspective , Regardless of the innovative nature of interdisciplinary nonporous ,Practice and Theory's knot the compatibility , or final urban Street presentation has a prominent rationale. on value and relevance .

3. Project Background Overview

3.1 Regional Air quality index (AQI)

Zaozhuang Xuecheng District is located in the south of Shandong Province , The is located in the south-central Low Hill Hills Region , part of Huang Huai Hai alluvial plain (diagram 1). zaozhuang Mineral Resources Rich, is a ""born from coal , hing for coal "" modern city . Mining industry flourishing , not only brought economic development ,also caused a series of environmental questions title : dust , greenhouse gas , industrial waste water , pollution issues such as exhaust fumes are severely affected City Air quality , To make the Xuecheng District air quality index (aqdHigh , Guide The city is shrouded in gray all year round . 2015 year 5-6 Month AQI index display , Xuecheng District's air quality index is hovering around the " Mild pollution"

3.2 offline experience policy

under online policy , Street Design Response Eco-City policy Guidelines , with cradle to Cradle idea for guidance , To build a security , Health , Ecological Street Street Environment , provide an eco-recreational outdoor space for street residents . at the same time , " C 2 C The idea of looping provides a to address the environmental problems associated with urban development today feasible policy , Increase public awareness of environmental protection and awareness of participation , people go through Online mode feedback to relevant government departments or street community organizations , for street ecology Build a contribution force .

Is based on the C 2 C Physical environment planning for

3.3 Is based on the C 2 C Eco-cycling design for

eco-streets with C 2 C Loop idea for guidance , with offline Policy is a guide toward , Internet for Media , using Energy and resource recycling ,Shape To life cycle , production cycle , the biological cycle and the Internet cycle four follow ring mode (6) .

(1) life cycle

life cycle including renewable energy use , waste recycling and water cycle The Loop uses three links . 'c2c Eco-streets advocate the use of solar energy and other renewable clear Clean Energy , provide Living and production power for street dwellers , Mitigating energy shortage ask Problems and environmental pollution caused by non-renewable energy sources ; life , Production-formed Waste discard " use recycle or upgrade using , provide materials and resources for street construction The source ,Rainwater and living water can be recycled by collecting device , filtering process feedback to site , Improve the status of water in the area .

(2) production cycle

Factory Links Use landscape materials or manufactured products with recycled value as far as possible ; Standardized production , except for the necessary outdoor construction , all machining activities in the factory Set Complete , then assemble in site , Minimizes greenhouse gases and construction dust damage to the surrounding environment ; later street maintenance and updates generated the, landscape material can also be

transported to the factory for a new round of recycling .

(3) Biological Loop

Biological Loop simulates the growth pattern of a cherry tree , Improve regional air quality quantity . plant root , stem , leaves and microorganisms have nitrogen fixation, Carbon features , can be effective adsorb harmful elements from human activity and industrial production ; These trace elements can be

The root of the plant as the nutrient required for plant growth , stem , leaf absorption , Promote into plant growth .

(4) Internet Cycle

Internet life cycle , production cycle , biological loops are concatenated together , Shape to complete "C2 C" circulatory system " . eco-Street use internet media to the home People's Government department provide feedback , Promote sustainable street development ; Interconnect NET community events organized on the streets and real-time construction of the street played a "" Certain information delivery ; residents can provide the government with the internet off Street building comments and suggestions , can also be used for government construction process A certain oversight effect .

3.4 Is based on the C 2 C the land-form design of

in the planning utilization of the original base , Local conditions , by Street View View the relationships and properties of system elements , to divide project land form into four Large level : public Space level , eco-level , Water management level and education level (= 7).

(1) Public Space level

public spaces are primarily for community activities and outdoor sports for street dwellers A public space formed by .. This scheme respects the original topography and the people of the street. Line system , Minimal manual intervention on the original site , Preserving native ecology green space system , place removable , combined artificial facilities , convenient for residents with different shapes Activity Requirements .

(2) Ecosystem level

The street community will use the C 2 C The cherry Tree mode of is modelled on , by preserving the original Regional plant communities and building local plants group natural means , combine clean to source and stereo artificial means , Improve zone's carbon balance , for surrounding moves Plants provide habitats , Rich species diversity ,form a benign ecology system cycle .

(3) Water management level

Eco-Street will build a complete water collection , Water cycle , Water Filtration system and Rain Flood management system . for atmospheric precipitation and life ,Production water layer filter , rich " groundwater resources and providing for plant and animal survival in the region " , to improve the use of the original site The Water Environment ; Rain Flood management system can adjust the water retention problem caused by rainstorm , and square Daily travel of residents .

(4) Education Level

measures through the above three levels , Eco-Street preliminary shaping . but , long maintenance is the key to the success of this street planning program . Street construction with residents are interdependent , eco-Streets provide people with healthy outdoor venues , People can also use mobile terminals to scan the ground for two-dimensional code, etc. paragraph , Understanding Project planning details and "C2 " C"" loop idea , participates in topic discussions , Send table own views and street building views , increasing public interaction , gradually Cultivate public awareness of the ecological protection of the streets , to form a positive value-oriented and social Public opinion , to promote c2c" Sustainable development of eco-streets .

3.5 Is based on the C 2 C stereo space design for

Eco-cycle design and land form design more at the macro level Street planning , Base on entity environment -- Street Stereo space , to the street for space design . The design of the stereoscopic space in this street is divided by Space hierarchy to : Landscape Space , vertical space and vertical space .

(1) Landscape Space

Horizontal space is centered on the street plane . original street layout ecological locks break , " Dirty , chaotic , Bad "" Severe , Ribbon Set clutter , and affect residents outdoors Travel . based on the status of the above planar layouts , Street Landscape Space Design Preserve original field Reasonable traffic flow , on C 2 C based on the idea of a loop , uses Ecology overall "" design Practices , combines circuit Board Planar texture of , for Horizontal shape trend , based on human behavior and aggregation area ,set new landscape node and person Line Streamline , for outdoor travel of surrounding residents , Establish a harmonious ecological order , Battalion create A 'c2c "" Eco Street View Community (* 8).

(2) Vertical Space

The vertical space is mainly based on the vertical terrain of the site , resident Activity ins , River flows , The traffic streamline and other factors form different functional partitions . in this count Scenario , Vertical space is based on the flow of rivers , combining local residents activity habits for different months of the year , space partition ,The forms an upstream Eco-recovery area , Middle-midstream sports open area , downstream topic experience Area three large points area (9). in upstream eco-recovery area , with natural ecological fix primary , People can take an aerobic stroll , green space View etc close to nature activities ; midstream movement The Sitting-out area mainly provides some outdoor recreational facilities for The residents of the community, people can root perform different forms of outdoor sports according to your preferences and corresponding landscape facilities ;

The downstream theme experience area is the main place to spread the street culture , Here is the main Appliance for question element , show street life , Wetlands with natural ecology ... above three partition feature properties different , but the actual value is the same , all for Make street dwellers more colorful in their daily lives .

(3) Vertical Space

Vertical space is mostly based on terrain profiles in landscape design perspective . because there are a lot of vertical design nodes in this scenario , so not -- column lift ,Simply select the three vertical design nodes in which they are representative Show (See figure 9) . diagram 9 The first picture in the upper -left corner is the spatial profile of the upstream channel face . The is visible from the diagram , the upstream River is the source of the entire ecological street , so The upstream river is particularly important for water quality . for this issue , This scenario the combines both natural and manual interventions . first , use channel Terrain , build upstream channel into a number of classes , at the intersection of each hierarchy set artificial overfall appliance , slows the flow of water . simultaneous , using hydrophilic plant purification role for water layer filtering , providing a healthy water environment for the middle and downstream . Chart 9 The second picture in the upper-left corner is the section of the middle of the ecological street . due to channel save on original levees , So you can take advantage of the levee trapezoid terrain Advantage , to the atmosphere Precipitation forms a natural guide , laying natural filtration system in open zone , benefit with plants , Natural purification of sand and gravel , to ensure a horizontal flow of water into the channel . Chart 9 The third image in the upper-left corner is the topographic section of the downstream ponds of ecological streets . to change the site of a hardened pond edge to a natural ecological gentle slope by in the original venue , slows into Enter the pond's water flow rate . and construct multi-level trapezoid at the inlet of the pondwater Storage dam , guarantees the water quality of the pond at the same time , filtered impurities can be planted around Fertilizers for soil and soils , form the ecological cycle of a small area .

diagram Ten Virtual Environment Planning diagram

4. Is based on the C 2 C Virtual Environment planning and experience

4.1 Virtual Environment Planning

The contents of the preceding text of the are mainly targeted at urban streets in the physical environment planning Practical application of the level . In fact , Virtual Environment planning is the design More highlights , Because this is not only a creation of the traditional street experience pattern new , also new attempts at future Urban street development .

Virtual Environment planning is compared to traditional physical environment planning , in Internet thinking on the basis of , platform via internet , To Plan the physical environment with graphics and A new landscape experience pattern for information presented to the user (10). Physical environment planning because of the people's immersive participation in the field , it's highly emotional. affect features , and virtual environment planning has the experience of convenience and dissemination of information Advantage of , online *C 2C Eco Street " the advantages of combining entity Environment Planning with virtual environment planning are combined with , Break the traditional single street planning pattern , lead the public Online and offline The joint participation , To actually practice C 2 C , Rich Multiple Experience .

4.2 Virtual Environment Experience

to make the virtual environment planning no longer stay in the conceptual and theoretical phase , author Special combination Internet thinking , will c2c The eco-street experience process is designed as a set full interactive prototype diagram , and APP (application) The form of is rendered to the user online virtual experience .

First , Street Users scan the ground two-dimensional code , or using a micro-letter , Weibo information dissemination platform , get Online * C 2 C Eco-street APP . Click "C2C*Online " icon , go to Action main Menu interface " . The menu interface contains a project background , project concept , site information , planning details Nine action options , Each option has detailed text , picture or even video description , users can either Click an option in which you are more interested , go to the appropriate content interface ,
Online Virtual experience design details for eco-streets , Understanding Street Planning Concepts (map all) .

Second , Online * C 2 C Eco-street APP Is also based on different age groups The different preferences of the are in-depth design . such as , Now some young user groups more interested in moving games , this APP " Street story " game module , Addresses the needs of this user community . in street Games , users can root free combination of street model and landscape design elements , move , passes through different element Reorganization get " benefit " ,Street Building . and the process and the knot of the game fruit , can be used not only to share with users on the Internet , and can upload to relevant government department , make valuable comments or suggestions on street construction ,, promoting street design updates and improvements (diagram ?. through this way , not only for 'c2c "" city streets play a good publicity and promotion role , can also call for more people to join together to create an eco-city ..

last , users can take a mobile terminal or camera device , Depth Offline For the , active experience , and record the moment of the field experience , witness new city Street Experience mode and understanding the actual ecological cycle concept .

5. Epilogue

Internet + Technical Background , New development for traditional industries machines , Traditional Urban street design can adapt to the development trend of the times to make a new taste try . This article with " online • " c2c Eco Street is a case , from elimination of waste send , make resources available for local use , Promote renewable energy , Is based on the C 2 C The eco-cycle design of the loop idea , Land Form Design , Stand body Space

design , Creating a variety of solutions and experiences , for City street on The physical environment planning level provides a workable design strategy . at the same time , in entity ring Landscape planning based on , Breaking the thinking of traditional street planning design , uses Internet route , Media and unique perspective , forms a pass " virtual " propose environment plan "" bring users "" Virtual Environment Experience "" Street design Ideas , and Implementing users " Online Experience and offline Experience Interaction , to make the body of a city street Maximum effect , to Promote future sustainable development of city streets .

(This picture is provided by the author)

Note : This project is designed to get Purple Gold Award Bronze Award , Student Group Third prize

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