基于情境的汽车内饰灯光用户体验研究与实践

Scenario-based user experience research in automobile interior lighting innovation

华南理工大学设计学院 欧阳波
Ouyang Bo, School of Design, South China University of Technology

前瞻探索设计研究
Advanced design research

工业设计、服务创新、交互设计相融合的用户体验设计
UX design integrated with industrial design, service innovation, interaction design

人机工效、可用性评价
Ergonomics / Usability test & evaluation

跨学科研究平台 Cross-discipline research Platform

教育部文科综合实验示范中心 Demonstration Lab Center of Liberal Arts of Ministry of Education

广东省交互设计与人因工程技术研究中心 Interaction design & Human factor engineering research center of Guangdong

广东省虚拟仿真实验平台 Virtual simulation Lab platform of Guangdong

本田技研科技中国-华南理工大学联合设计实验室 Joint Design Lab of HMCT(Honda China) and SCUT

华南理工大学设计学院
交通工具设计工作室
SCHOOL OF DESIGN. SCUT.
TRANSPORTATION DESIGN STUDIO

中央高校基本科研业务费重点项目-城市新能源汽车造型设计研究
Research of new energy city car styling design
Principal Investigator: key project; Supported by “the Fundamental Research Funds for the Central Universities”

教育部人文社科青年项目交叉学科项目----新能源汽车造型设计演化研究
New energy automobile design evolution research
Principal Investigator: Supported by Humanity and Social Science Youth foundation of Ministry of Education of China

Autodesk研究院汽车A级曲面软件竞争力比较分析
Sponsored by Autodesk: Competitive Comparison Analysis and User Research in Alias

FSAE赛车数字化样机开发
Sponsored by Autodesk& GAC: FSAE race car digital prototype development

本田技研科技中国有限公司—2030中国电动汽车---设计研究/设计概念/设计原型展示
Sponsored by Honda China: 2030 Honda EV car for China

奥迪内饰灯光创新项目--设计研究/设计概念/设计原型展示
Audi interior lighting innovation project---design research/ concept design/ demo& prototyping

奥迪智能座舱创新课题--设计研究/设计概念/设计原型展示
Audi Intelligent Cockpit Innovation design research Project

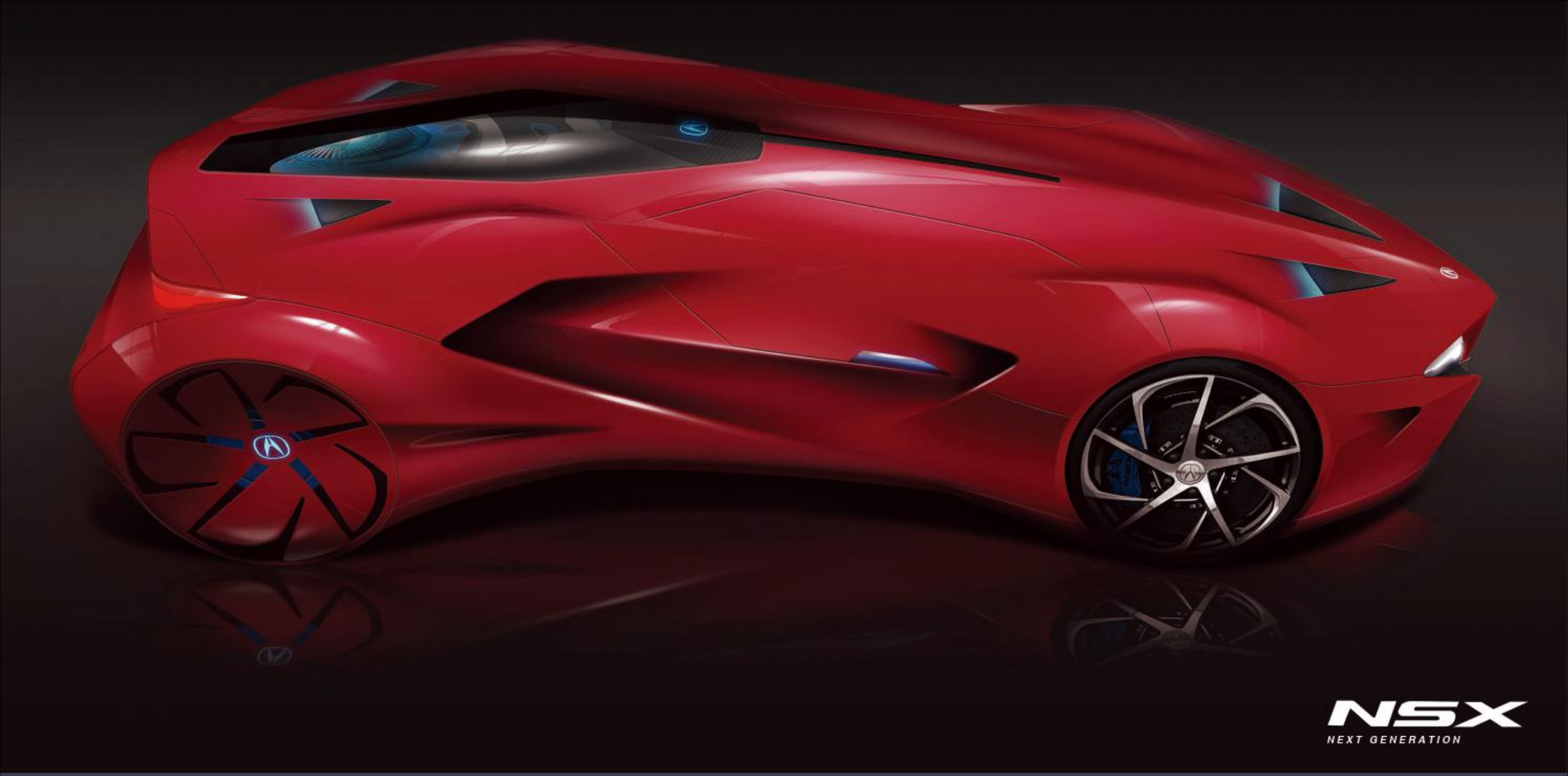
广汽研究院毕业设计赞助项目
GAC graduation sponsorship project

汽车中的“设计”
Design in Automobile

造型
Styling

外造型 内造型 色彩材质 人机工程（物理属性）
Exterior Interior Color& Trim
Ergonomics (human scale)

体验与服务
Experience & service



Next NSX
Graduation project

HMCT sponsored

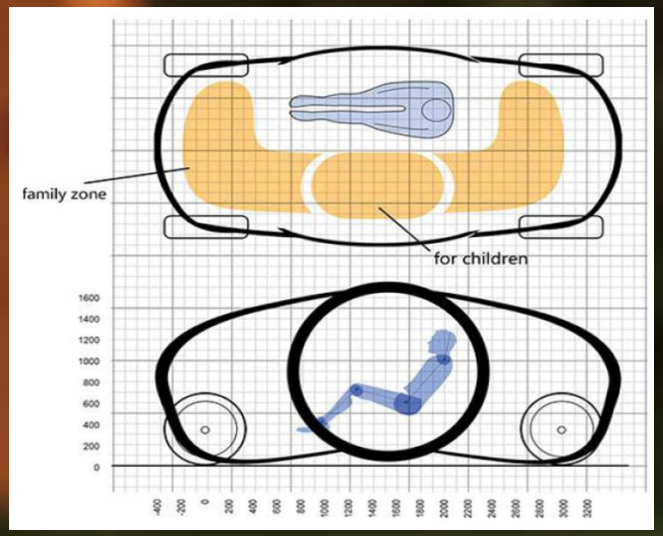
Coupe Interior Concept

GAC sponsored
Graduation project

Chinese family EV
Graduation project

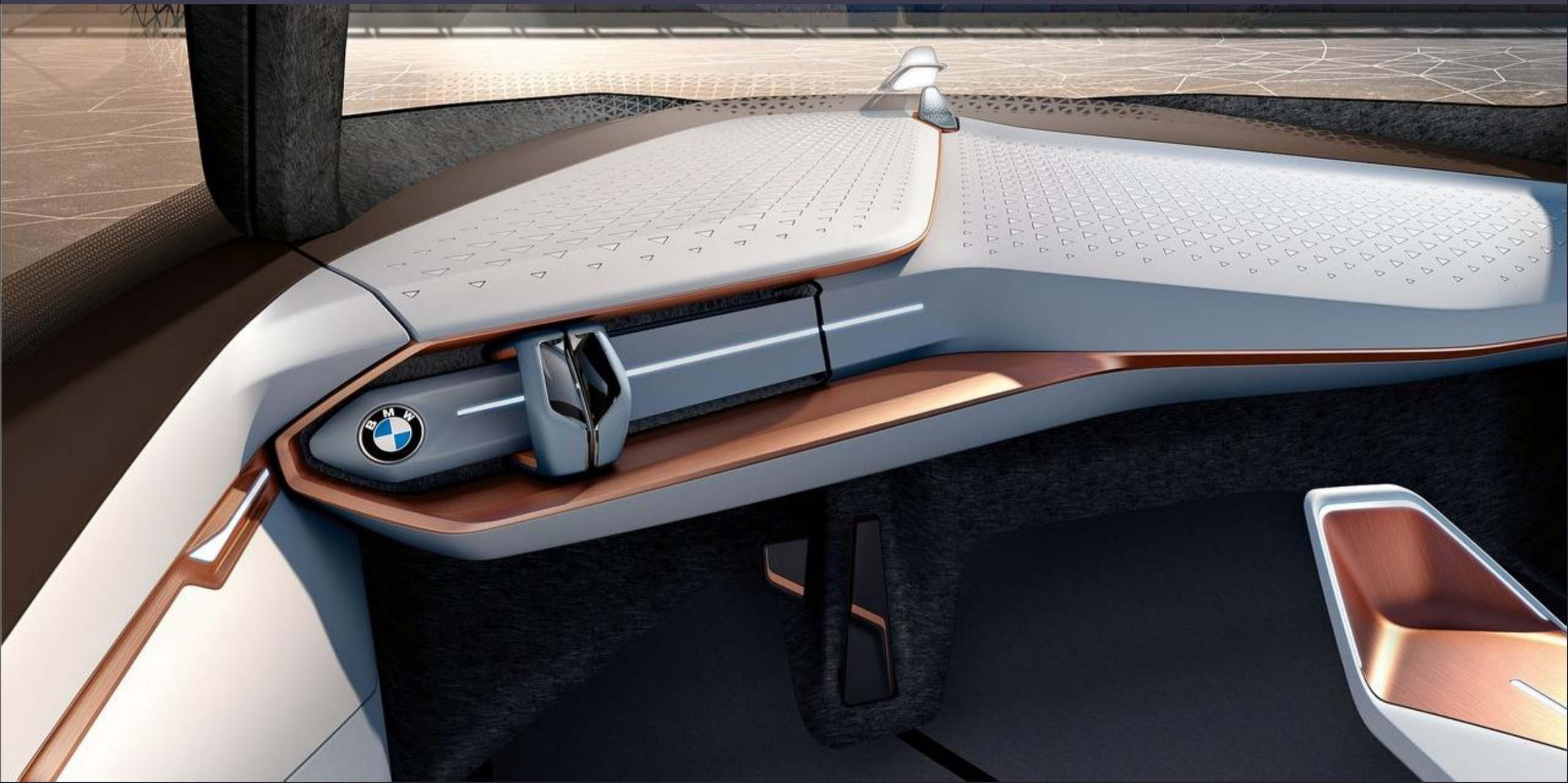
HMCT sponsored

South China University of Technology

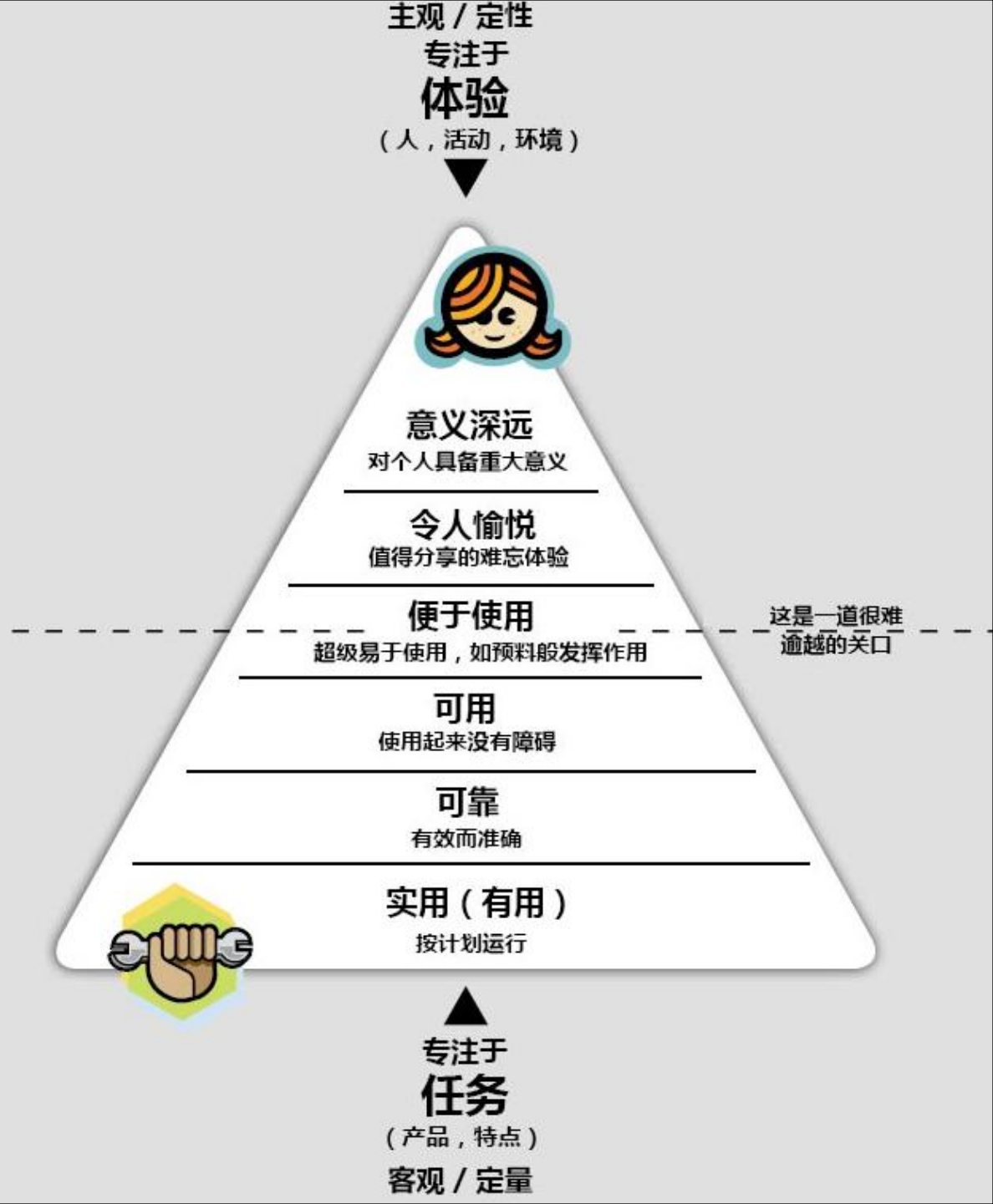


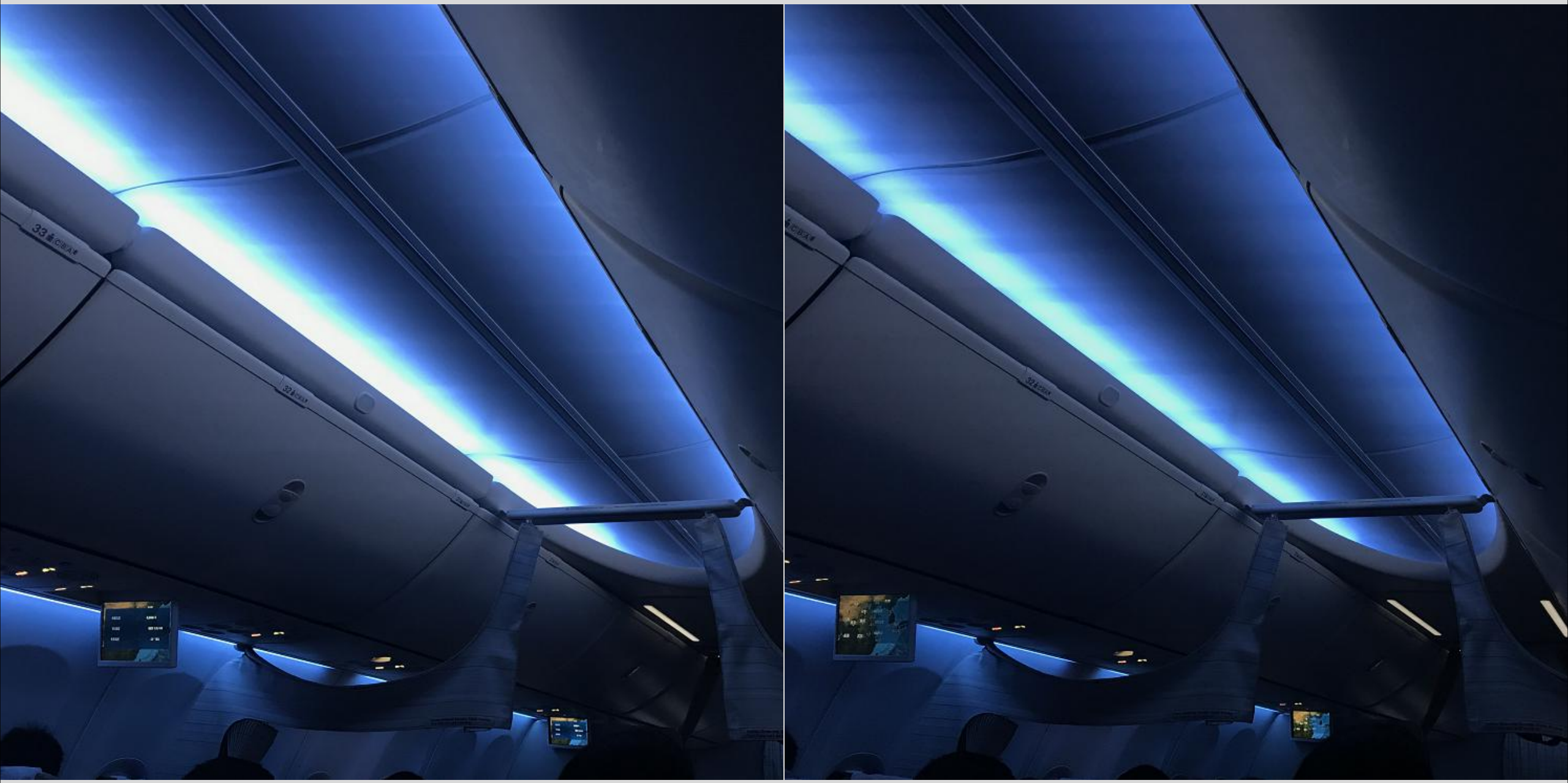
汽车是产品和服务感知体验的标杆

Car - a experience benchmark of product and service



体验


主观 / 定性
专注于
体验
（人，活动，环境）
意义深远
对个人具备重大意义
令人愉悦
值得分享的难忘体验
便于使用
超级易于使用，如预料般发挥作用
这是一道很难
逾越的关口
可用
使用起来没有障碍
可靠
有效而准确
实用（有用）
按计划运行
专注于
任务
（产品，特点）
客观 / 定量

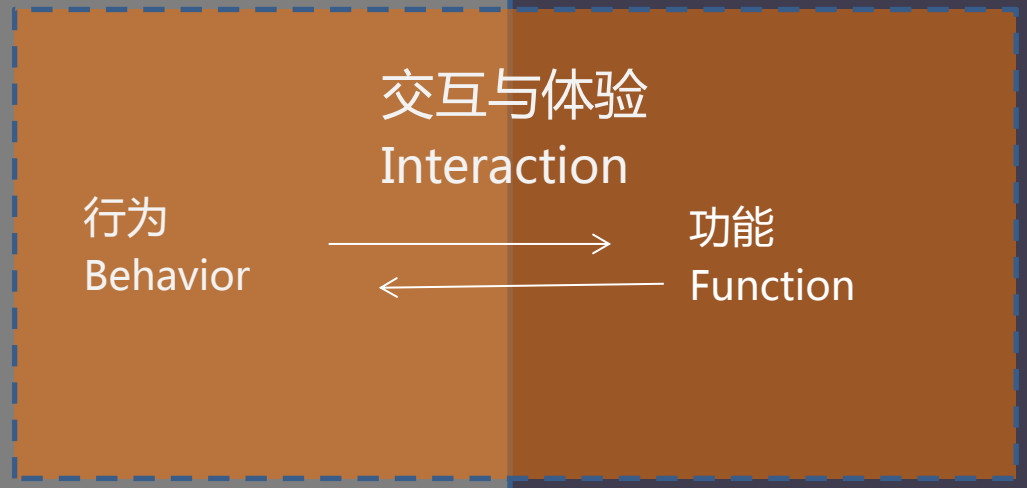


人眼对灯光的感知

灯光的物理属性

界面Interface

人
Human



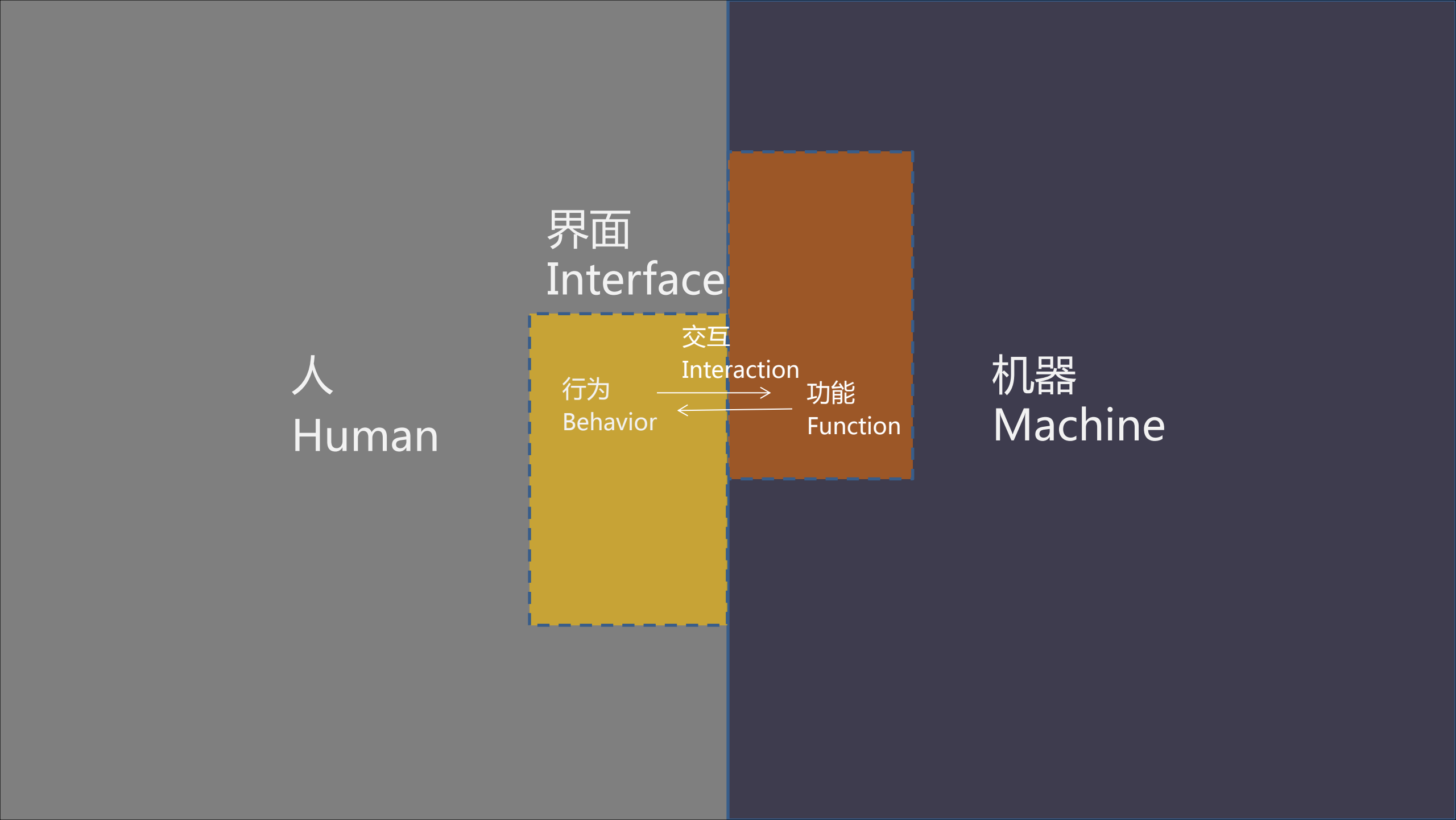
机器
Machine

人的行为模式在一段时期内相对固定
Human behaviors are relatively stable in such period

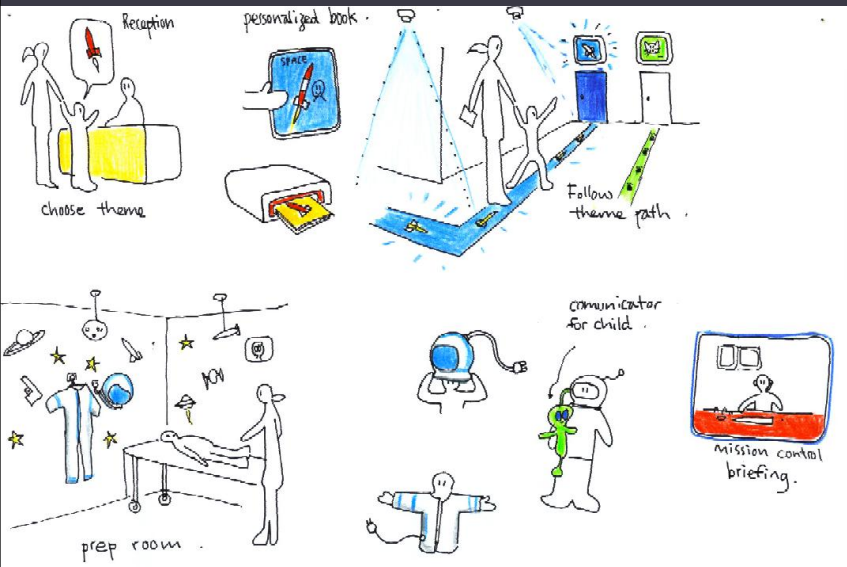
人的行为会因为情境而改变
Human behaviors will change depend on scenario

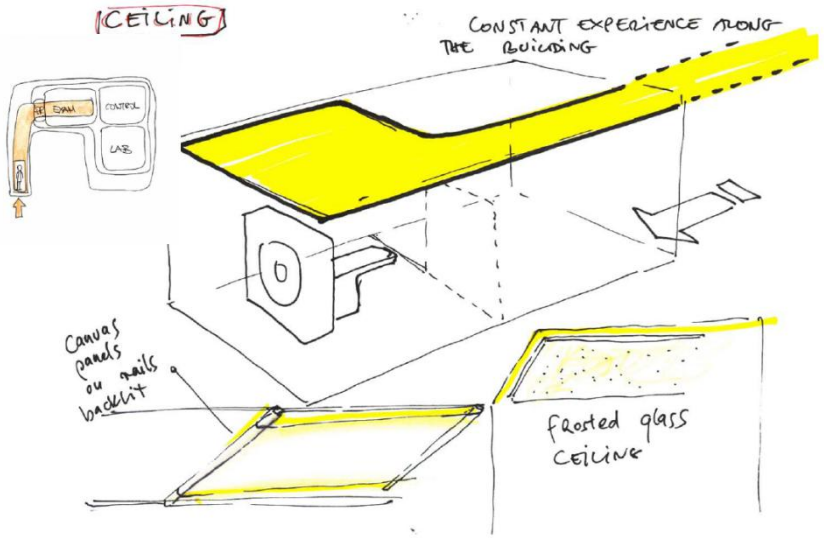
地域文化差异
Culture difference

… …

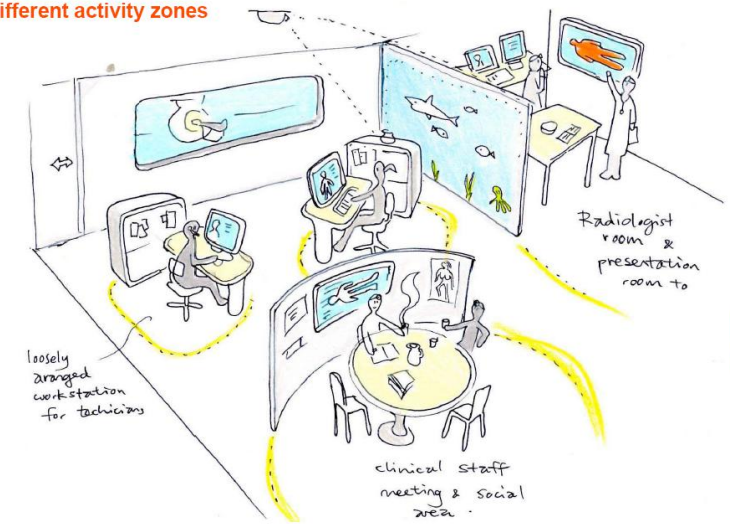

界面
Interface
交互
Interaction
人
Human
行为
Behavior
功能
Function
机器
Machine

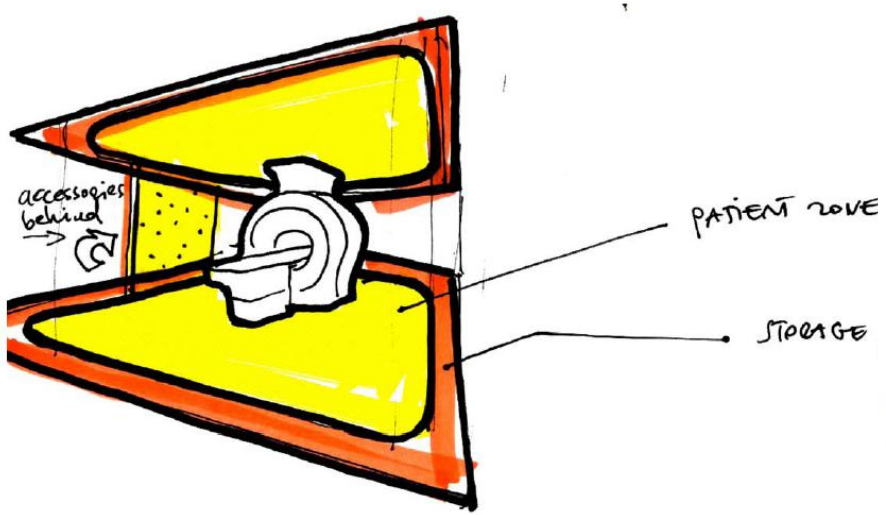
回顾过去看待未来的挑战
Look back to see the future

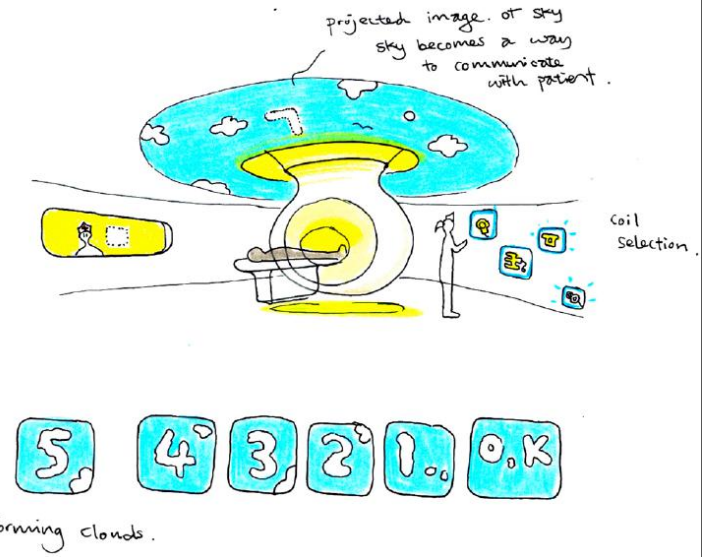




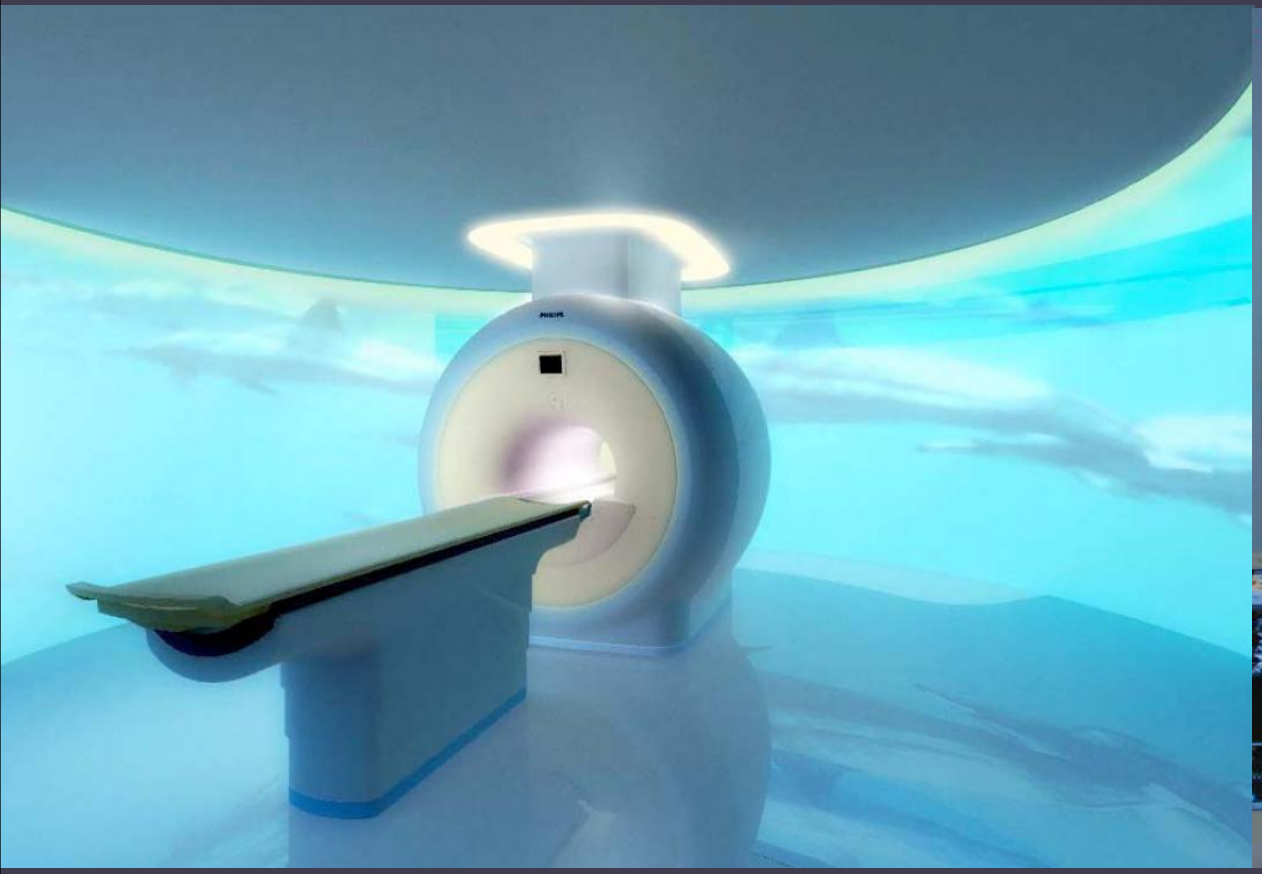
Creating different activity zones



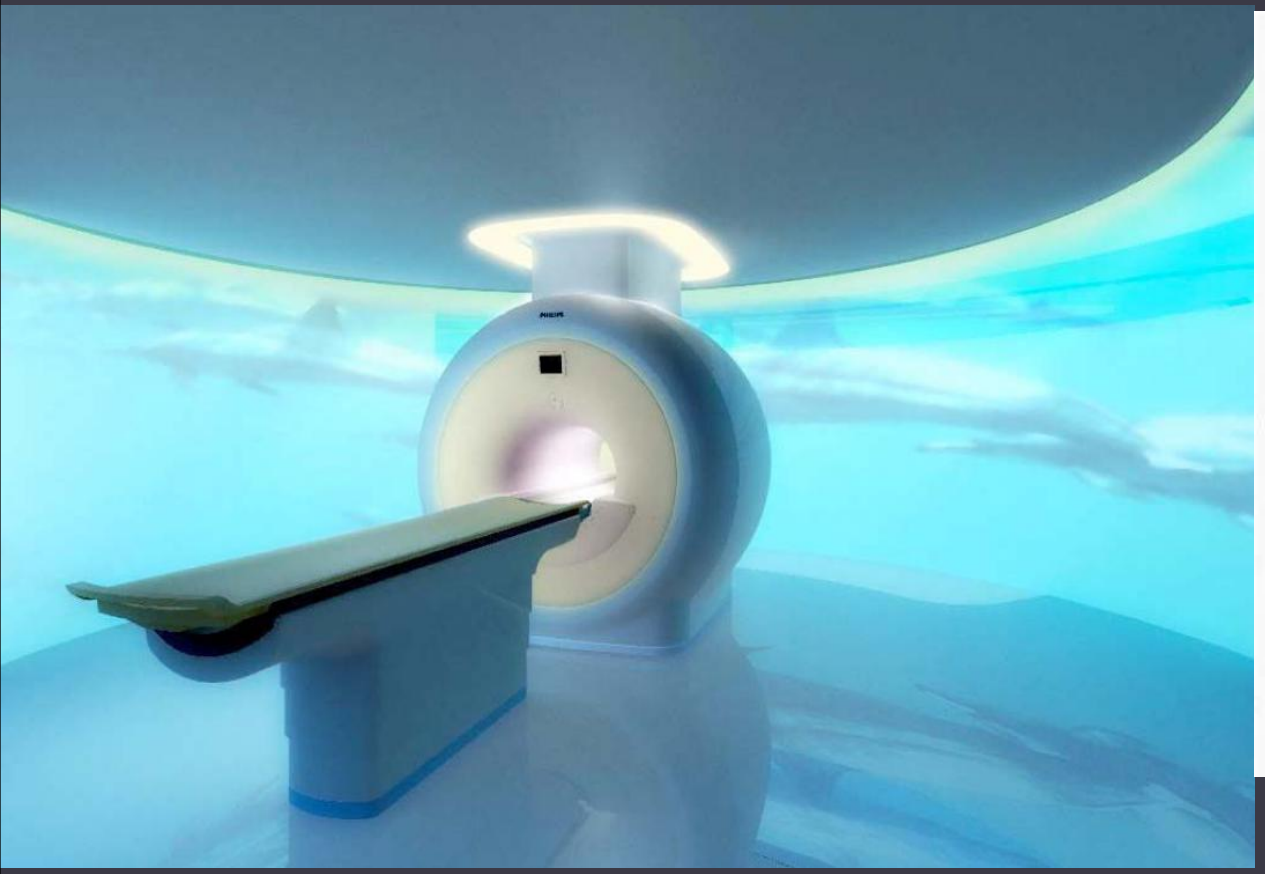




回顾过去看待未来的挑战
Look back to see the future



回顾过去看待未来的挑战
Look back to see the future



回顾过去看待未来的挑战
Look back to see the future

Impact

- Sedation rates reduced by 30-40 %
- Radiation dosage reduced by 50-75 %
- Improved capacity utilization as a result of 15-20 %
- Reduced number of preparatory steps prior to scan
- leading to greater patient and staff satisfaction
- Higher quality images

案例引发的思考

解决问题，赋予涵义

典型情境

用户视角

汽车后市场
After market

TMALL天猫

内饰氛围灯 搜索

汽车氛围灯 | 汽车内饰 | 蒙迪欧氛围灯 | 马自达氛围灯 | 汽车内饰装饰 | crv氛围灯

手机天猫新人
抢10-15元红包!
扫码享福利

全部 > 内饰氛围灯

共 3012 件相关商品

3012件

品牌	众晟	车上生活	龙傲九洲	蓝牧	虹展	峰雅莱	MATTEO/马迪奥	旺唯妮	点缤	韦斯特	MJ/铭佳丽	梦奇	舒语	+ 多选 更多
分类	汽车内外饰用品	汽车零配件/油品	车载电子/影音	汽车养护	居家日用/节日用品	更多								

综合 | 人气 | 新品 | 销量 | 价格 | 收货地: 广州 | ¥请输入 - ¥请输入 | 包邮 | 折扣 | 搭配减价 | 更多 | 店铺 | 大图 | 1/51

¥56.00

汽车氛围灯车内免改装车载LED脚底灯

舒乐达汽车用品专营店

月成交 1.2万笔 评价 1.4万

¥38.00

通用汽车氛围灯led免改装车载七彩声控

嘉唯斯车品专营店

月成交 1804笔 评价 2888

¥49.00

汽车氛围灯车内usb气氛灯脚底灯汽车

骏途车品专营店

月成交 5697笔 评价 3525

¥13.80

汽车氛围灯led免改装内饰灯冷光线车顶

车上生活旗舰店

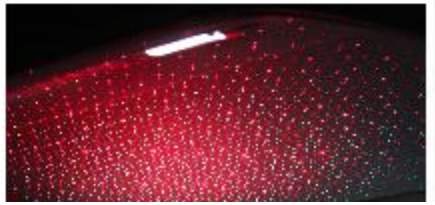
月成交 2188笔 评价 771

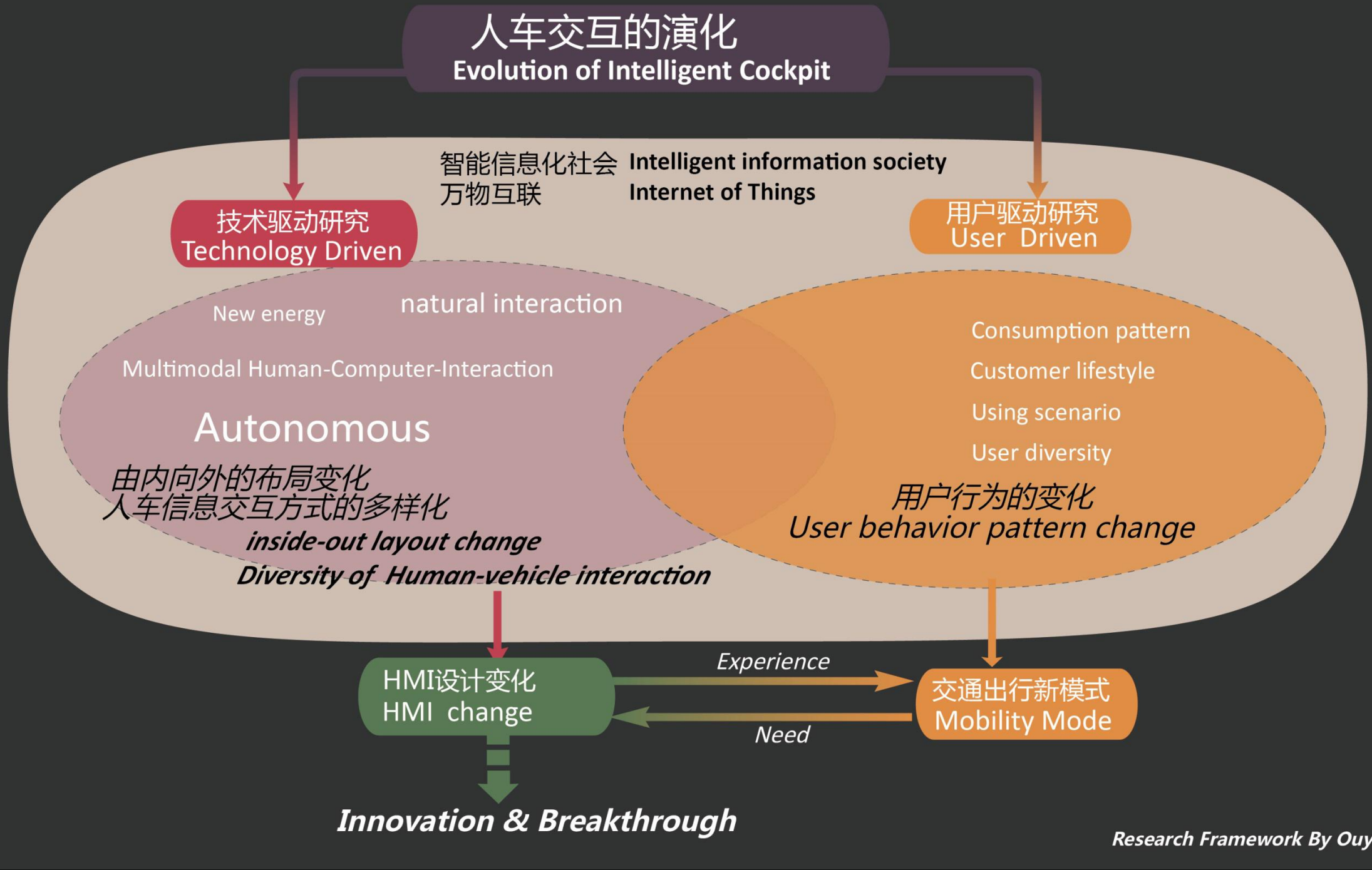
¥260.00

车内冷光线氛围灯led免改装气氛灯汽车

蓝天宇汽车用品专营店

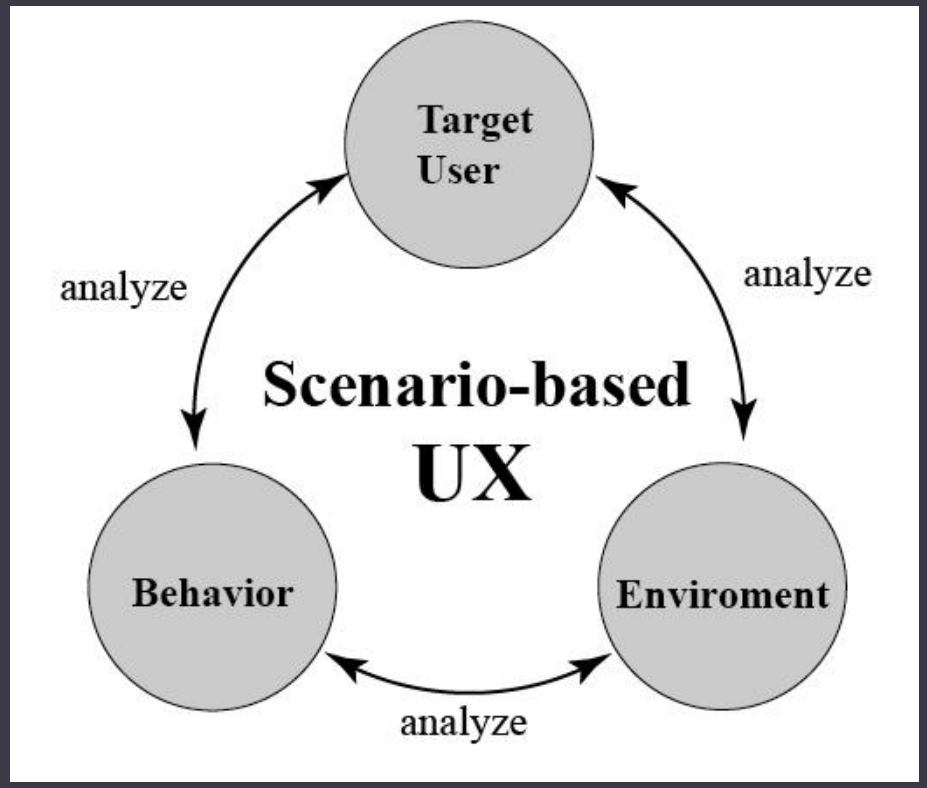
月成交 995笔 评价 190




人车交互的演化
Evolution of Intelligent Cockpit
智能信息化社会 Intelligent information society
万物互联 Internet of Things
技术驱动研究
Technology Driven
用户驱动研究
User Driven
New energy
natural interaction
Multimodal Human-Computer-Interaction
Autonomous
由内向外的布局变化
人车信息交互方式的多样化
inside-out layout change
Diversity of Human-vehicle interaction
Consumption pattern
Customer lifestyle
Using scenario
User diversity
用户行为的变化
User behavior pattern change
HMI设计变化
HMI change
Experience
Need
交通出行新模式
Mobility Mode
Innovation & Breakthrough
Research Framework By Ouyang Bo

单一的灯光效果解决不了复杂的体验问题

基于情境的用户体验设计人机系统模型

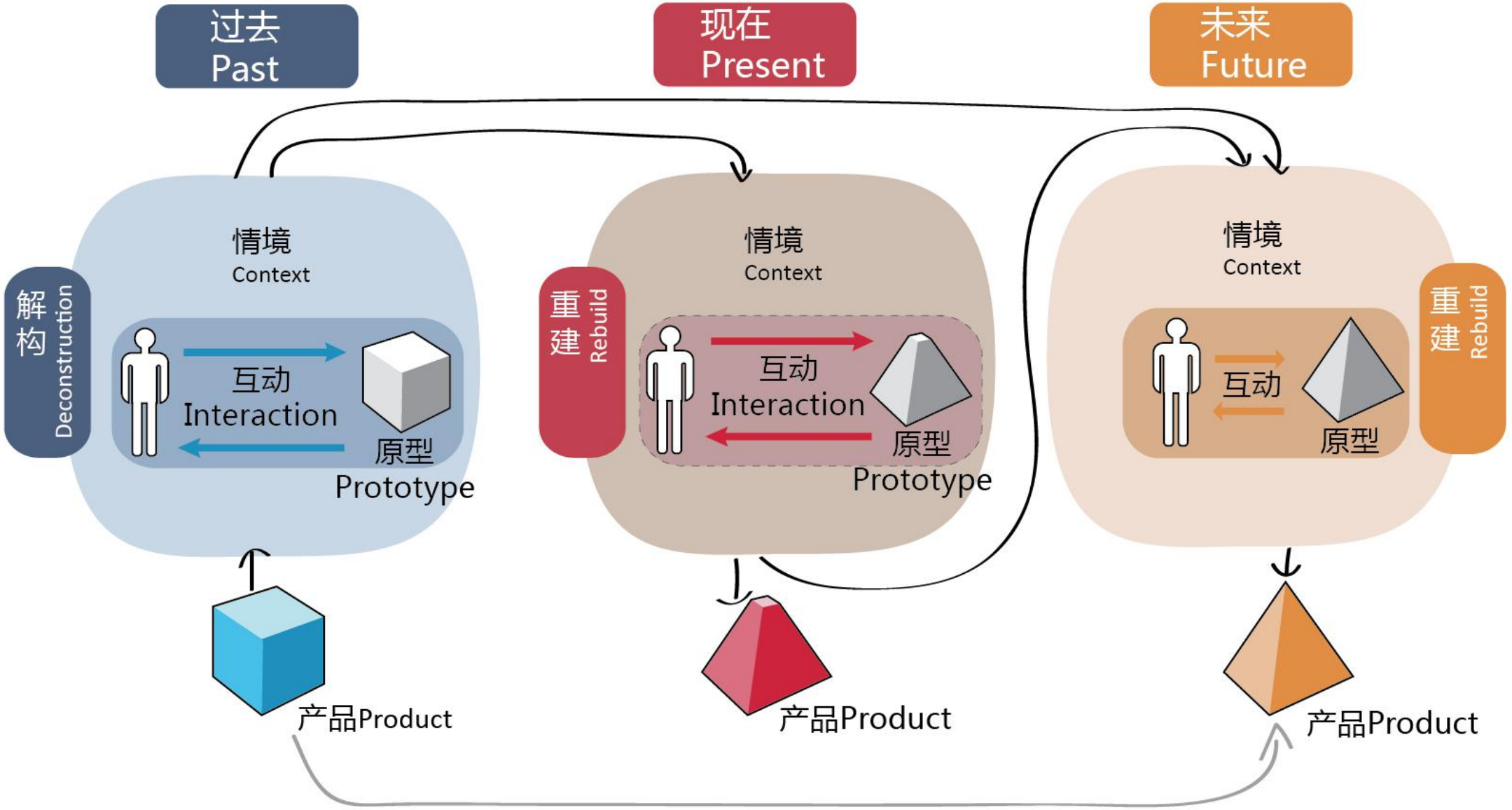


Use behavior study in School of Design, SCUT

基于情境的用户行为的研究

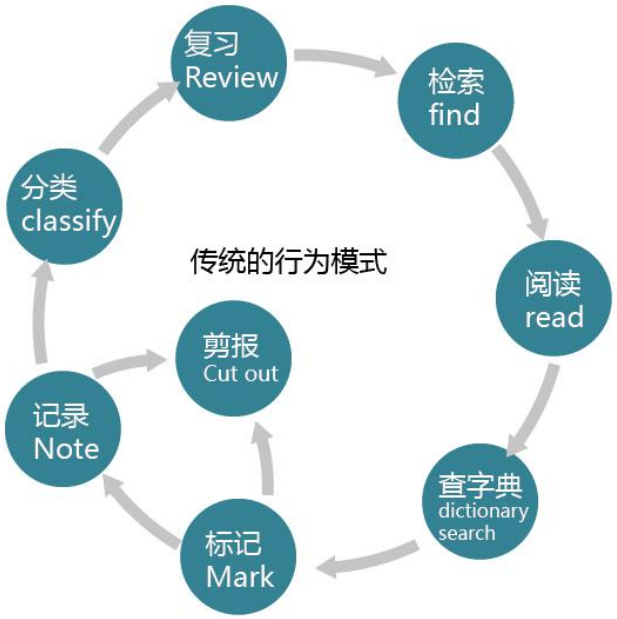
User behavior study based on scenario

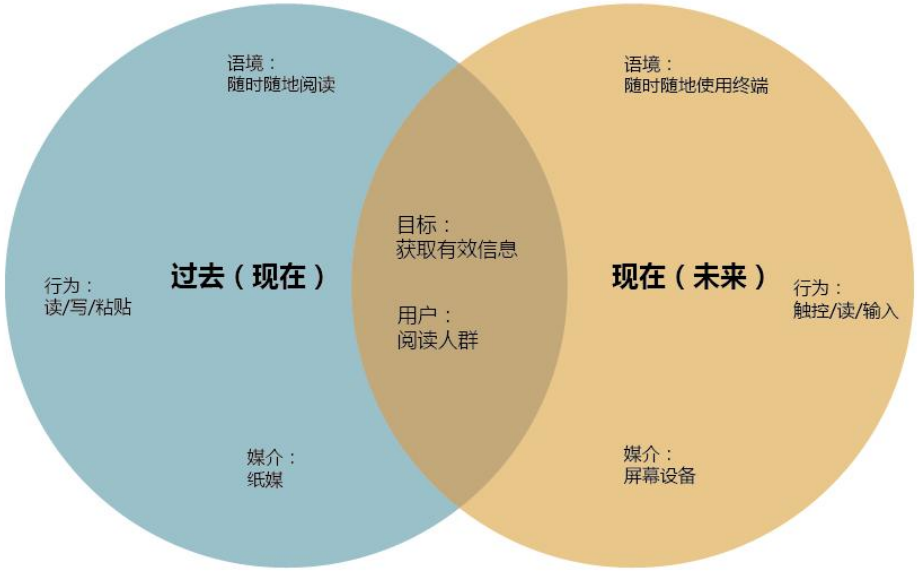
研究方法 Research approach



EXAMPLE：右图针对用户“阅读”行为在传统纸质条件下与互联网科技下的不同交互情景进行分析呈现

Deconstructe“Reading”behavior in traditional context (paper media), then rebuild it in a new context (digital media in internet technology)



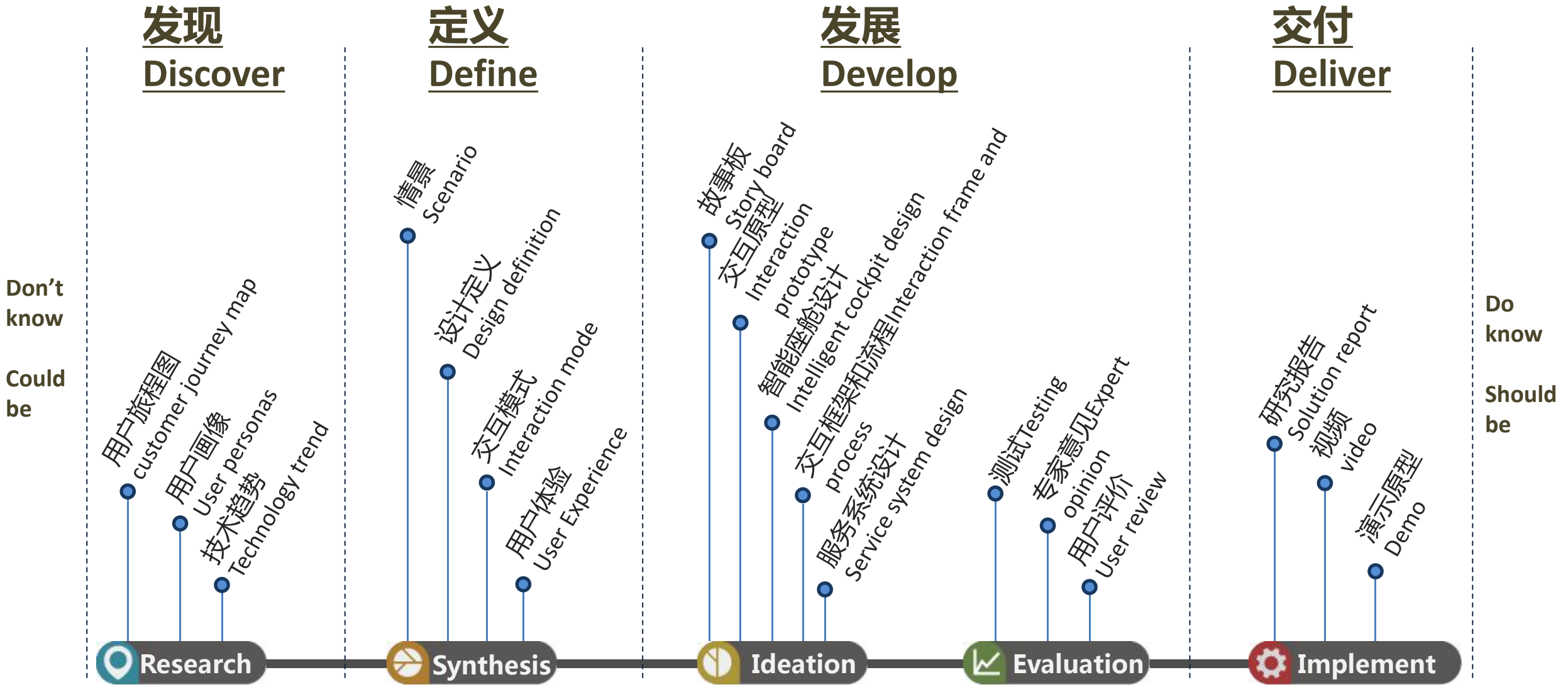


基于情境的用户行为模式研究User behavior study based on scenario

基于生活方式的用户行为模式研究
Lifestyle influence user behavior

新技术条件下用户的行为认知研究
User cognition & behavior in new technology

流程和方法 Methodology



案例 CASE

内饰灯光用户体验创新研究 Interior lighting UX innovation study

OBJECTIVES

Insight *in South Chinese perception and attitude towards behaviors in and around vehicle lighting experience and provide* ***design*** *solutions to cater to latent and innovative needs.*

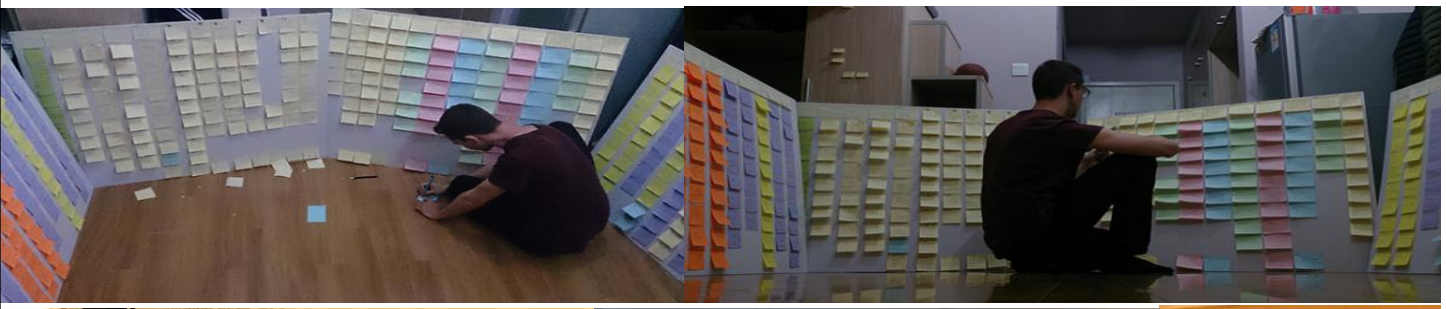
Product / User Context

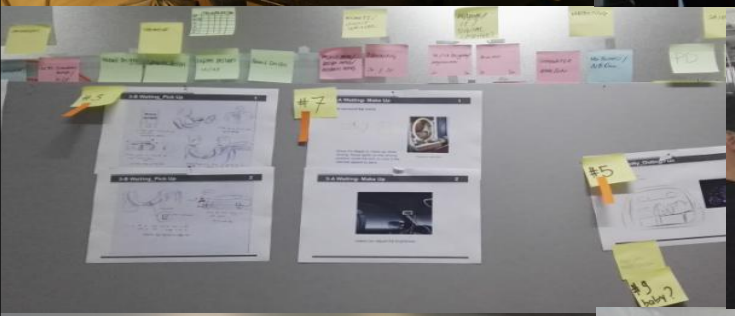
- Light inside the car
- Product-User interaction and context specific behaviour

Key Objectives

- Acceptance: Insight into consumer behaviour and (South) China user context
- Vision: Innovative creative ideas that are pragmatic but out of the box
- Proof of Principle results that are visual, 2D/3D and explain the core idea and insight with a "***WOW***" Factor

内饰灯光创新研究Interior lighting UX innovation study



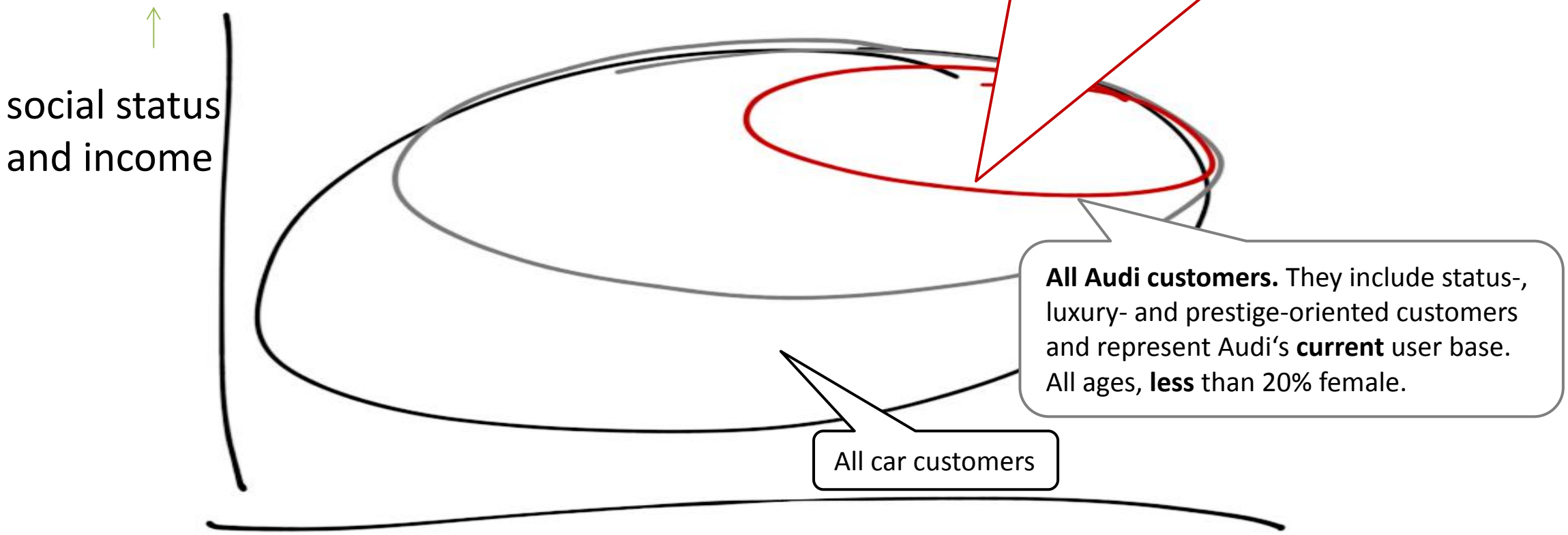


深度访谈，调查问卷，焦点小组
Deep interview / questionnaires / focus group

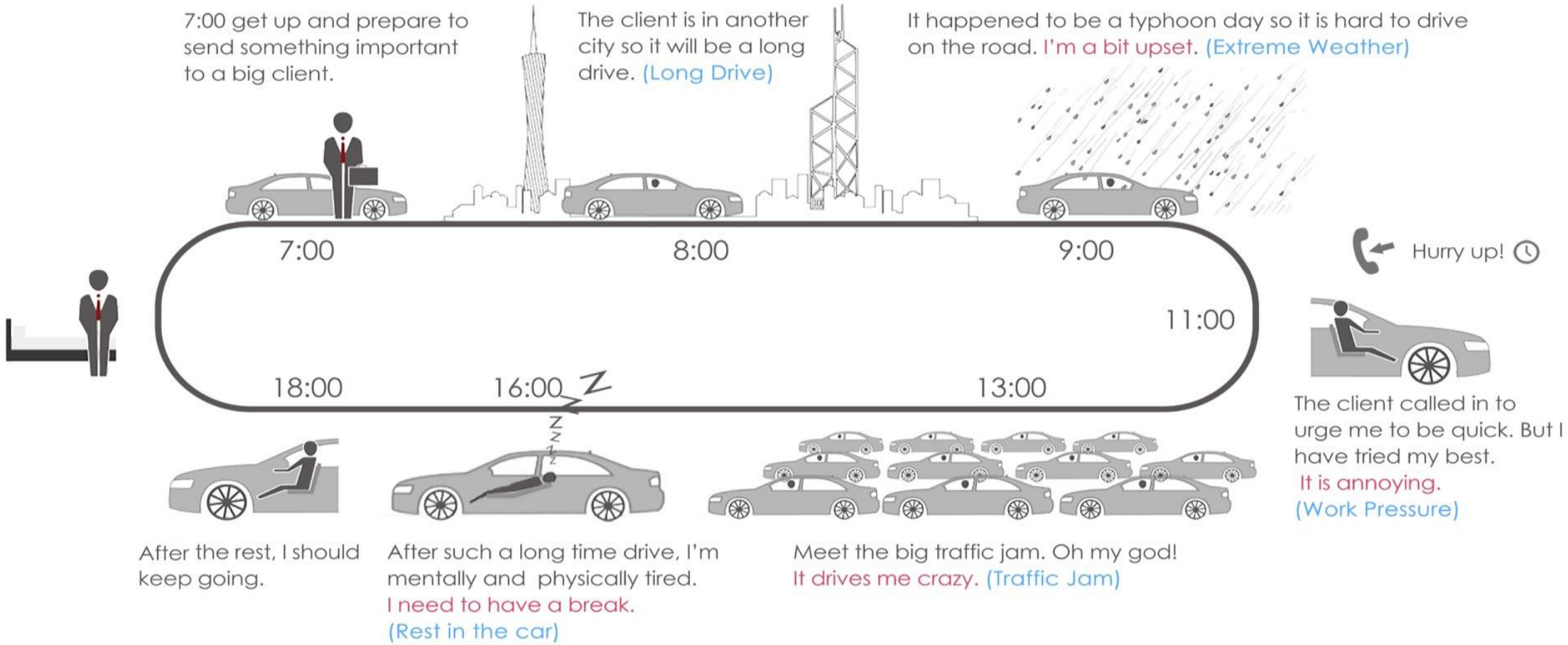
用户聚类

Audi Customers

Audi target customers. The are China‘s new business elite or metropolitan avantgarde. Therefore they are setting trends. Other customers will follow them. Between 20-40, well educated, **more** than 20% female.



用户旅程customer journey



Audi Innovation

We can design a lighting system to detect user's situation prevent the possible bad feeling to optimize the mentally and physically driving experience.

03:00 pm

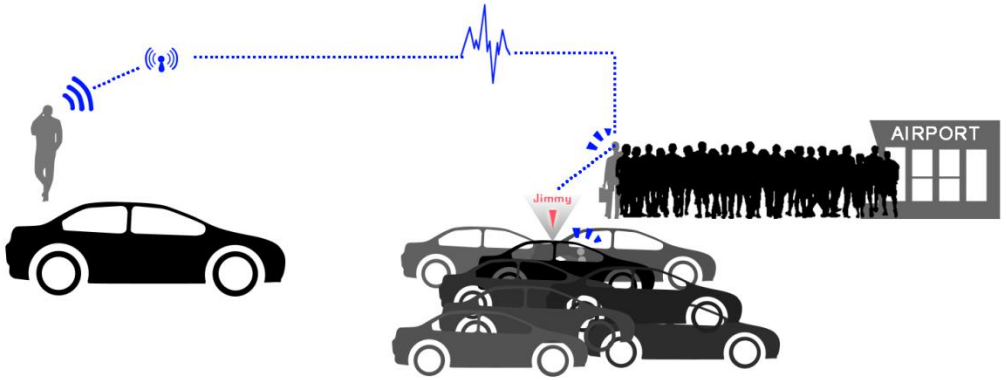
The phone call comes, I have to pick up a client.

03:40 pm

I arrive at the airport, but there are so many cars and people, I can't find my client!

04:10 pm

Finally I find my client, but it takes a long time, he seems not very happy, I feel so sorry.



内饰灯光创新研究Interior lighting UX innovation study

	Scenarios				Scenarios							Scenarios				
Target Group	Waiting				Stress & Safety Physical Tiredness *				Emotional*			Activity				
	*Make up**	*Pick-up **	*Playing Kids ***	*selfie **	*Darkness**	*Jet lag**	*Marathon Day **	*Long Distance **	*Extreme Weather **	*Traffic Jam **	*Pressure ***	*Desiination ** **	*Work in Car ** **	*Wechat Mobile **	*Outing Fun **	*Dating**
	A	B	C	D	E1	E2	E3	E4	F1	F2	F3	G	H	I	J	K
1. Lifestyle	√	√		√	√				√			√		√	√	√
2. Young Family		√	√		√				√			√		√	√	
3. Business	√	√			√				√				√	√		

Explanation: **** priority 1*** ***** priority 2*** ****** priority 3***

概念设计 concept design

原型测试与迭代 lo-fi prototype test

研究报告和概念原型输出 research report & concept demo

谢谢！Thanks

欧阳波 ouyangbo@scut.edu.cn