

# APPLYING RESEARCH FINDINGS TO LIGHTING RETROFIT PROJECT

the project process with stakeholders and evaluation

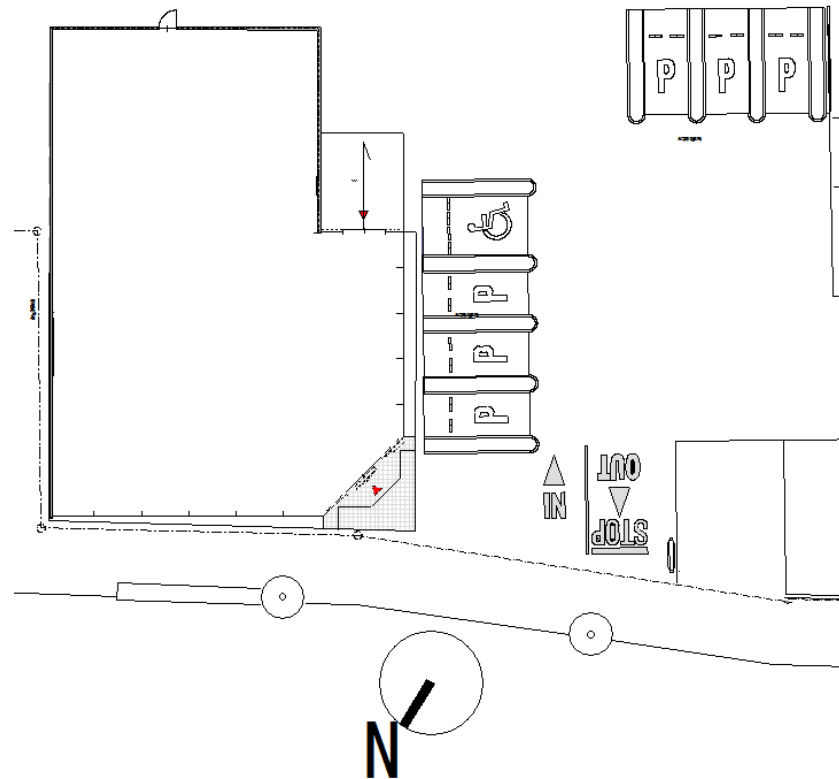
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# OUTLINE

1. **Project overview**
  - Background information: Retrofit site
  - Time line of the project processing
2. **Academic point of view**
  - Investigation items
  - Applied research findings
  - Survey, evaluation and investigations before and after
3. **Project processing with stakeholders**
  - Problems and difficulties
  - Positive effects
4. **Social influence**

# 1. PROJECT OVERVIEW

## BACKGROUND INFORMATION



Before retrofit

● Show room area  $227.618\text{m}^2$

# 1. PROJECT OVERVIEW

## TIMELINE

Date	Event
July 2011	Study group of lighting planning for retail started
	Visited newly built shops
Aug 2011	Retrofit project arose
Sept 2011	1 <sup>st</sup> investigation (before renovation)
Oct 2011	Presentation to the workers (why and how)
Dec 2011	Final lighting plan set
	1 <sup>st</sup> renovation
Jan 2012	2 <sup>nd</sup> investigation (after renovation)
May 2012	2 <sup>nd</sup> renovation
June 2012	3 <sup>rd</sup> investigation (after 2 <sup>nd</sup> renovation)
Sept 2012	Final presentation (accomplishments)

## 2. ACADEMIC POINT OF VIEW INVESTIGATION ITEMS

### Investigations

- Luminance distribution
- Horizontal and vertical illuminance
- Reflectance of furniture and building materials
- Evaluation of the lighting environment (15 items)

### Problems

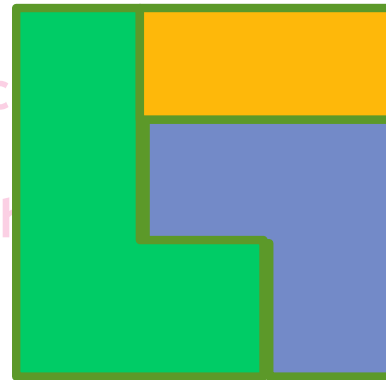
1. Dark
2. Glare
3. Messy

## 2. ACADEMIC POINT OF VIEW APPLIED RESEARCH FINDINGS

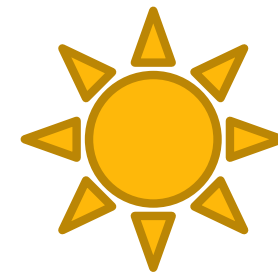
- ✓ Redesign location of space and set a lighting environment for each function
- ✓ Effective usage of light by increasing wall reflectance
- ✓ Lighten walls considering both horizontal and vertical illuminance
- ✓ Consider results of evaluation from both inside and outside the building
- ✓ Full usage of highly efficient LED
- ✓ Effective usage of daylight

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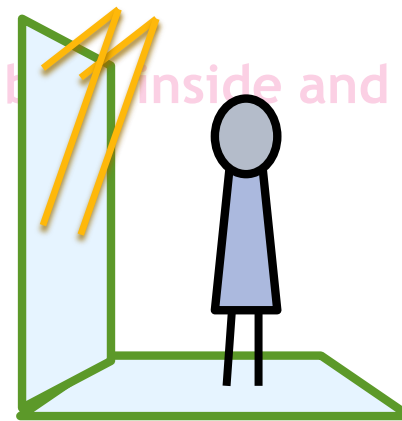
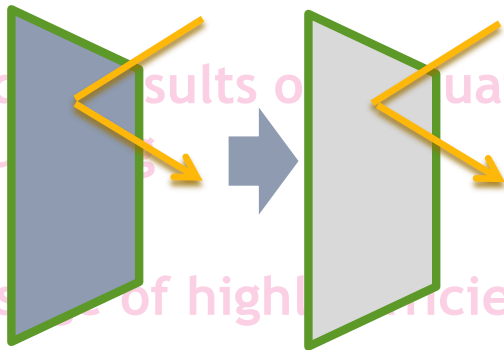


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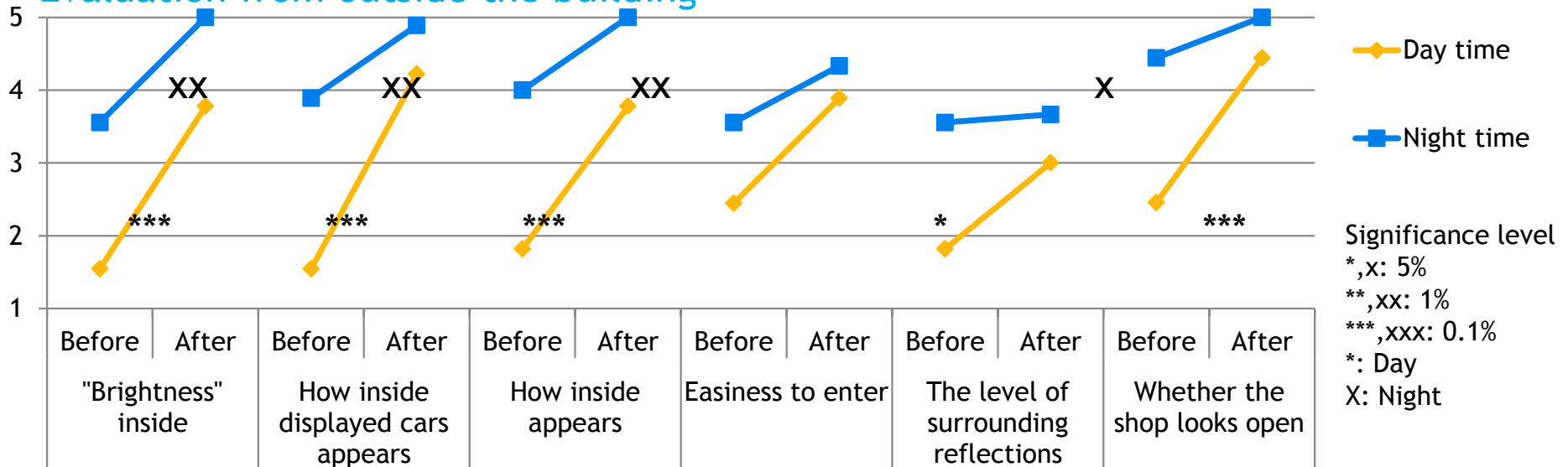


- ✓ Consider the results of evaluation from both inside and outside the building
- ✓ Full usage of high efficient LED
- ✓ Effective usage of day light

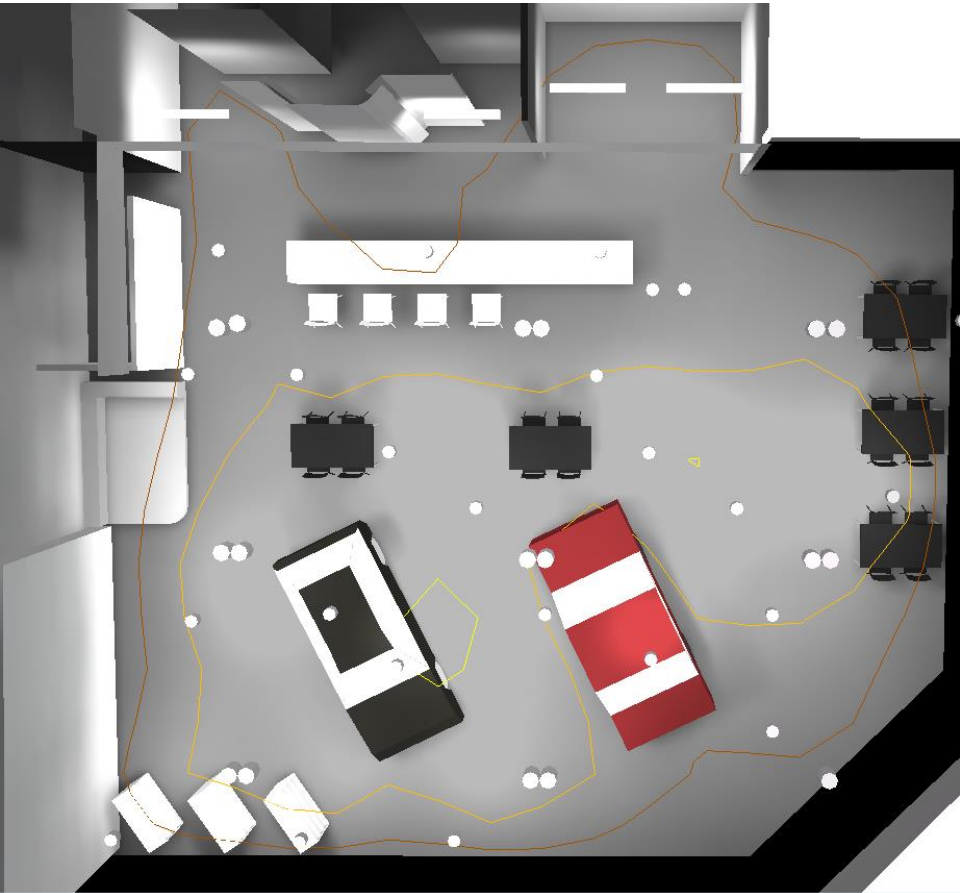


# 2. ACADEMIC POINT OF VIEW COMPARISON OF BEFORE & AFTER

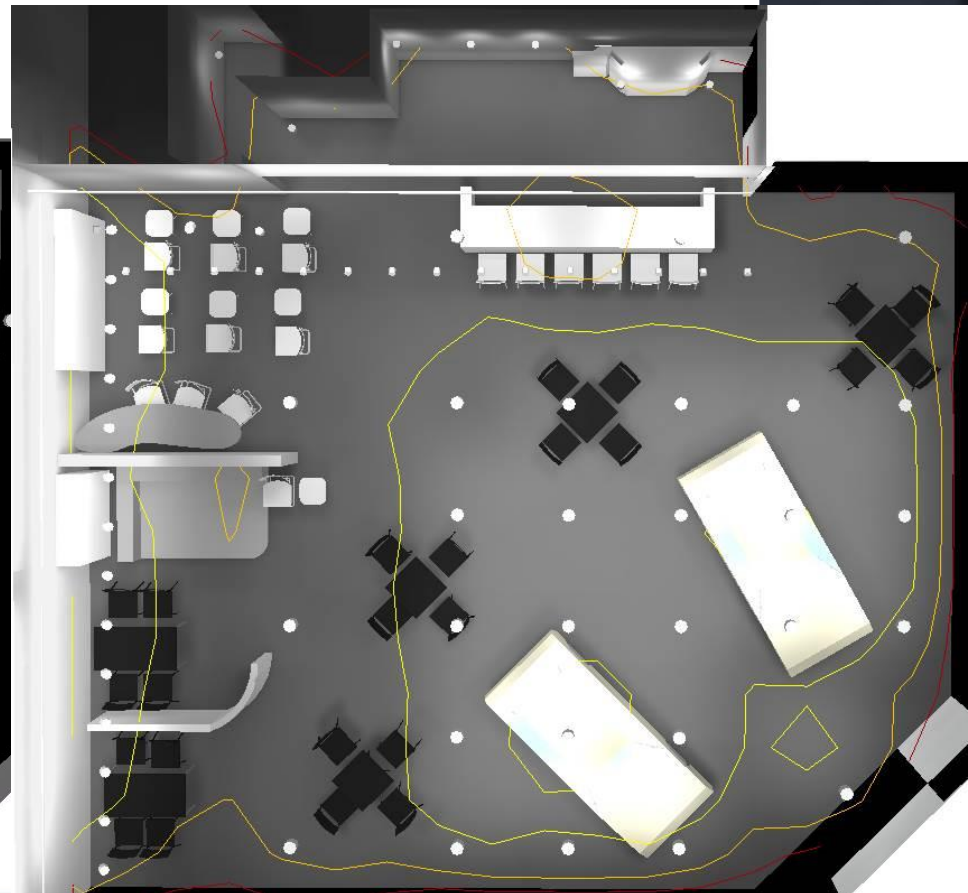
Evaluation from outside the building



## 2. ACADEMIC POINT OF VIEW COMPARISON OF BEFORE & AFTER



Before

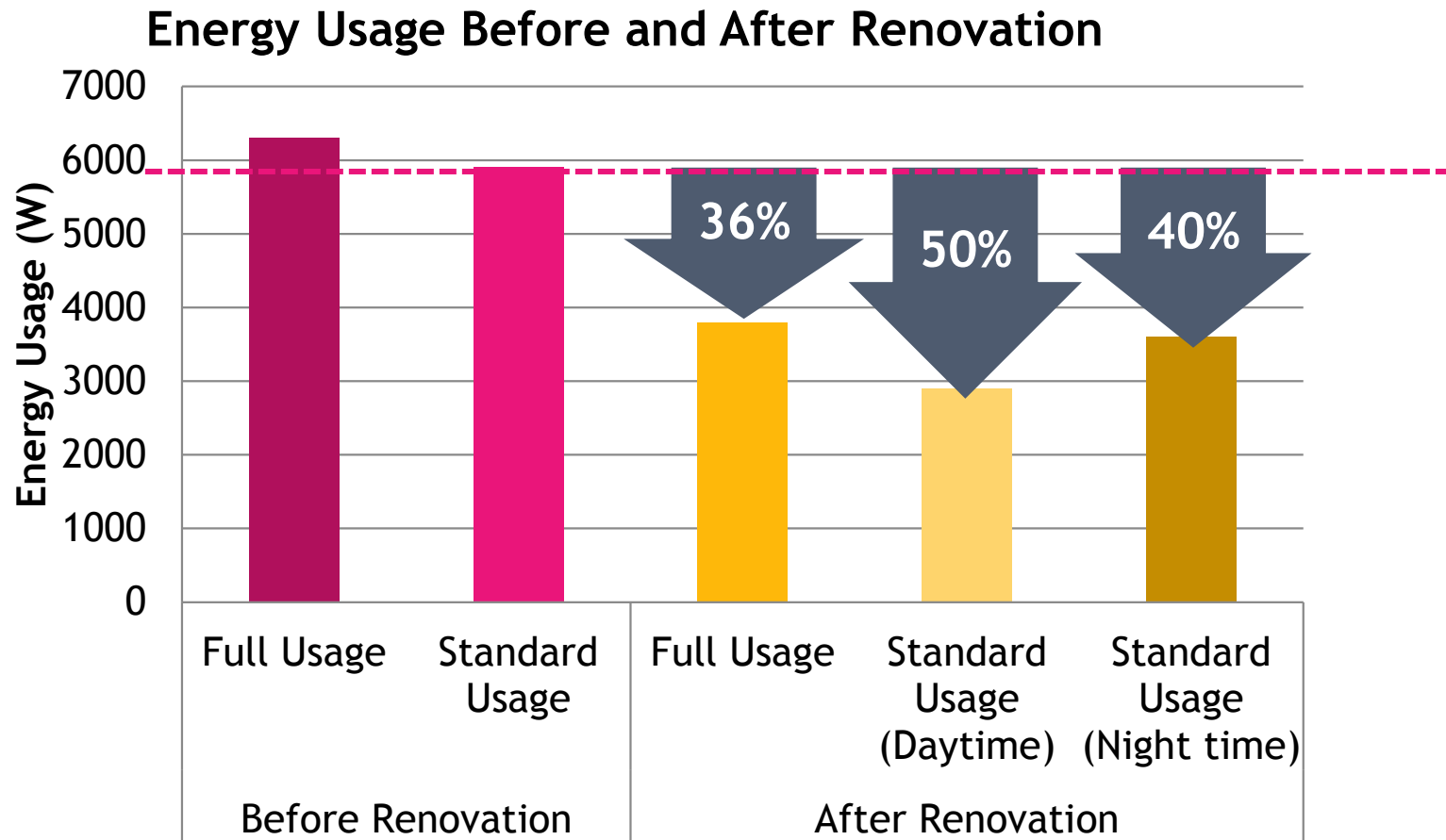


After

Illuminance distribution at H= 1000mm

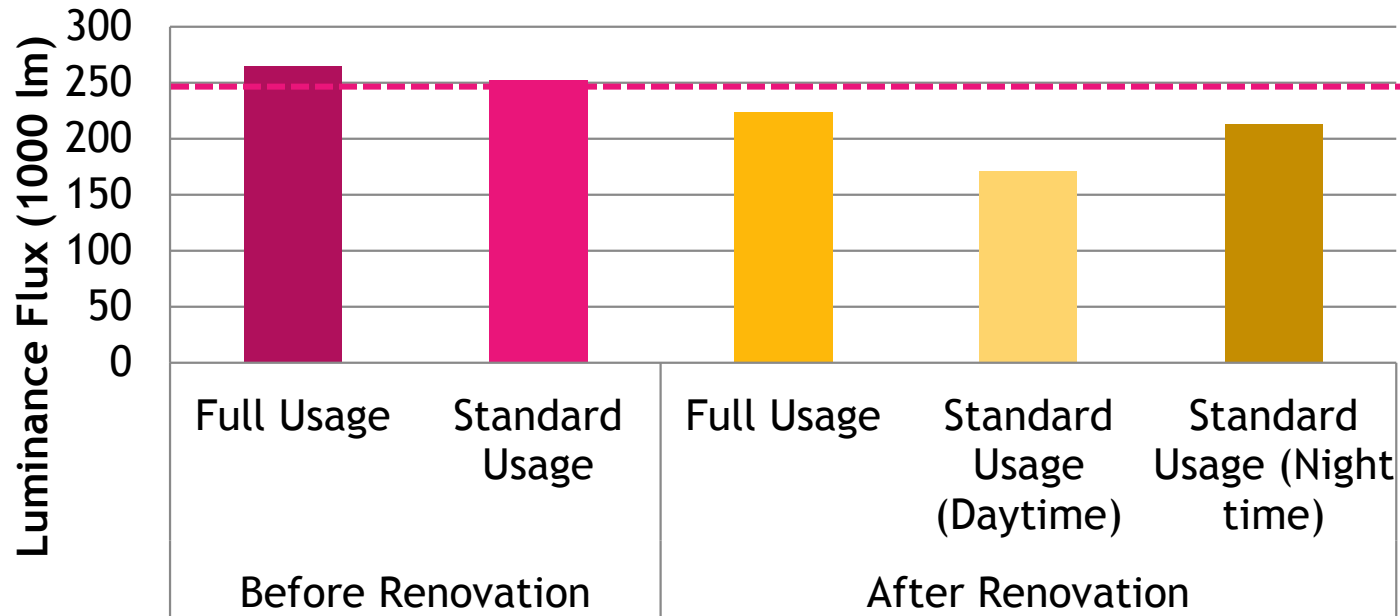


## 2. ACADEMIC POINT OF VIEW COMPARISON OF BEFORE & AFTER



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Luminance Flux Before and After Renovation



## 2. ACADEMIC POINT OF VIEW

### SURVEY TO THE WORKERS

- ◉ Having problem with VDT work
- ◉ Many claims about the darkness during daytime
- ◉ ⇔ don't see the necessity from inside the store
- ◉ Clients from nearby dealer come in by mistake
- ◉ Little uneasiness caused by color temp difference

Before

After

# 3.PROJECT PROCESSING WITH STAKEHOLDERS- DIFFICULTY

- ◎ Many people involved
  - Car dealer owner
  - Workers
  - Automobile manufacturing company
  - Design company
  - Lighting design company
- ◎ Need to share **WHY** (problem and necessity) and **HOW** lighting is going to be changed

# 3.PROJECT PROCESSING WITH STAKEHOLDERS- POSITIVE EFFECTS

- ◉ Speeded up the research
- ◉ Increased the value of the research:  
+ social application
- ◉ Other use of simulated results
- ◉ Learned how and why lighting is important

Academic point

Others

# 4. SOCIAL INFLUENCE

## ◎ Social awards

- Ministry of Environment
- The Illuminating Engineering Institute of Japan

## ◎ Within the company

- Revising visual identity (VI)
- Applying it to other stores



## 4. SOCIAL INFLUENCE

- ◎ Energy- efficient lighting design awards 2012
  - Commercial facilities and accommodations
  - Award for excellence
  - Ministry of the Environment
  
- ◎ Tokai branch encouragement prize
  - Tokai branch of The Illuminating Engineering Institute of Japan

THANK YOU FOR LISTENING