



**LVD** Low  
Voltage  
Directive  
**ADCO** Administrative  
Cooperation



Co-funded by  
the European Union

# Joint Action 2015 EMC- LVD on LED Floodlights

*25<sup>TH</sup> MEETING*

*LOW VOLTAGE DIRECTIVE (2014/35/EC) WORKING PARTY*

*BRUSSELS, 19 SEPTEMBER 2017*

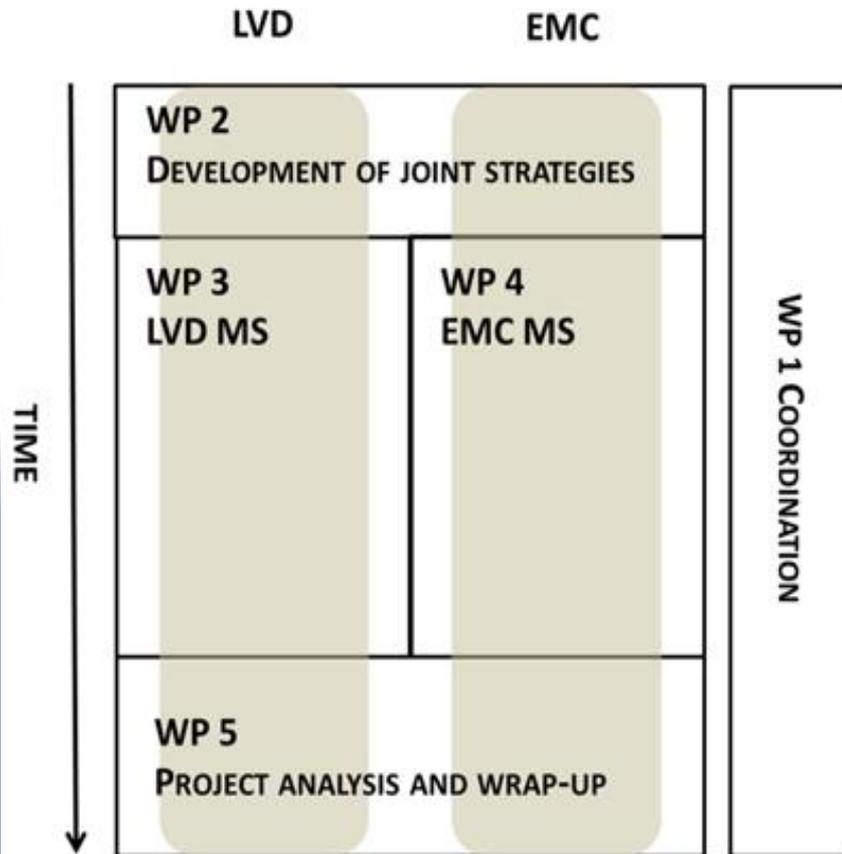
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# Joint Action 2015 EMC-LVD

- The primary purpose of the joint action was to assess both the technical and administrative compliance of the LED floodlights ("samples") taken from the European market, with the provisions of both the EMC and **Low Voltage Directives**.
- Other objectives were:
  - to increase the co-operation between EMC and LVD ADCOs and MSAs
  - to harmonize testing procedures and MS actions of EAs
  - to increase the usage of different EU MS databases
  - to widely disseminate the results to EOs and end-users

# Joint Action 2015 EMC-LVD



- 1.1.2016 – 31.8.2017 (20 months)
- 17 countries (20 MSAs)
- 2 ADCOs in the same JA !
- Coordinated by Tukes (FI)
- Co-funded by the EU under the Grant Agreement no. SI2.715516

# LED Floodlights

- Small, low-power and low-cost floodlights are widely used by consumers (non-professionals) in many domestic (household) lighting applications.
- “Older halogen lamp based floodlights” have been replaced by their more energy efficient LED counterparts in the way that nowadays practically all new low-power floodlights for normal household usage are based on LED technology.
- However, lately several LED floodlights which do not comply with the requirements of the EMC and LVD directives have been found on the European market.

# LED floodlights



# Selection of LED floodlights

- The JA targeted to assess the compliance of the LED floodlights used by “**normal consumers**”.
  - The selected LED floodlights had rated **wattage (power) less than or equal to 50W** or were otherwise **clearly intended** to be used by consumers.
  - The selection was based on “**risk based**” **approach** with the target to try to identify the LED floodlights with a high probability of being non-compliant:
    - new (“private label”) brands
    - customer complaints
    - inadequate or “suspicious” labelling/markings
    - previous MS data (national campaigns, LVD notifications, ICSMS, RAPEX)
    - price and appearance (if deviating considerably from the “normal or standard” level)

# LED floodlights - Issues to look at

Resistance to dust and moisture  
IP classification (IP44, IP54, IP65)

Markings & Instructions for for the safe use of the product, to enable the user to install, operate, maintain, repair, and dispose of the product.

EMC disturbance  
Conducted & radiated emissions  
Harmonic current emissions

Design/construction/components  
Mechanical strength (frame, cover)  
Insulation resistance, electric strength  
Protection against electric shock

Supply cord & cord anchorage



$\Omega$  kV



# LVD Test Programme

- Test programme was based on the selected tests from:
  1. EN 60598-2-5:1998 in conjunction with EN 60598-1:2008 + A11:2009 or
  2. EN 60598-2-5:2015 (doc\* date 10.9.2018) in conjunction with EN 60598-1:2015 (doc\* date 20.10.2017)
- The mostly safety relevant tests for “small LED floodlights” were selected.
- The standard version to be applied depended on the DoC issued by the manufacturer. If no DoC was available, EN 60598-2-5:1998 was applied.

\*Date of cessation of presumption of conformity of superseded standard

# LVD Test Programme

The performed tests were selected from the following clauses of EN 60598-2- 5 (EN 60598-1):

- Clause 5.5 (3) Marking and instructions
- Clause 5.6 (4) Construction
- Clause 5.7 (11) Creepage distances and clearances
- Clause 5.8 (7) Provision for earthing
- Clause 5.10 (5) External and internal wiring
- Clause 5.11 (8) Protection against electric shock
- Clause 5.12 (12) Endurance test and thermal test
- Clause 5.13 (9) Resistance to dust, solid objects and moisture
- Clause 5.14 (10) Insulation resistance and electric strength

# Failure Code List

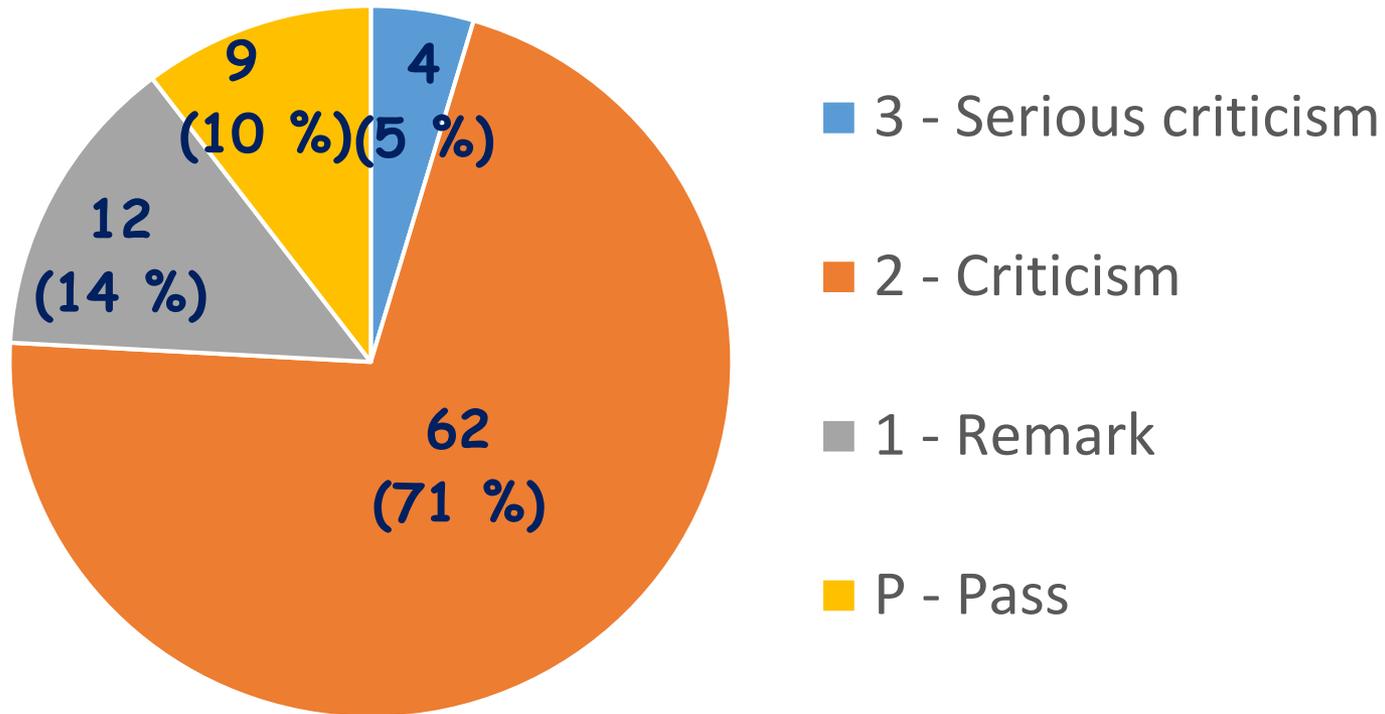
- To assure uniform initial evaluation of the defects found in LVD testing the (Nordic) Failure Code List\* was used.
- The FCL classifies specific shortcomings frequently found in electrical equipment in three categories of increasing severity:
  1. Remark / Defects that do not significantly endanger the safety
  2. Criticism / Defects that may endanger the safety
  3. Serious criticism / Serious defects that endanger the safety

\*FCL can be found e.g. in Annex F in the EMRAS Best Practice Book "Best practice techniques in market surveillance" that has been published by PROSAFE in the framework of EMARS1 project.

# Failure Code List

- FCL is a tool to make a clear connection between requirements of standards and risk assessment
- The FCL is not a complete risk assessment -> the final RA has to be done by the Authority
- As the current joint action involved many test laboratories (both commercial ones and authorities' own laboratories) the achievement of harmonized (uniform) test results was of primary interest for the successful accomplishment of the joint action.

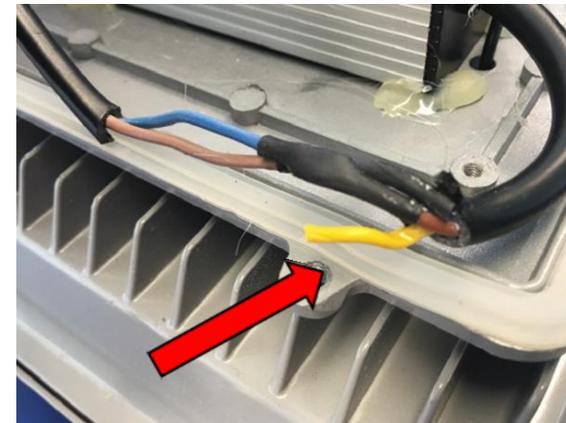
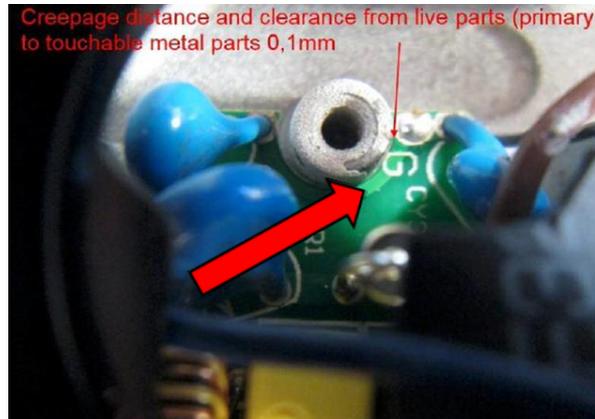
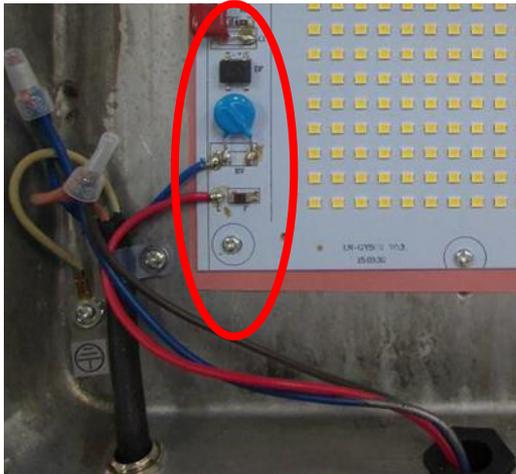
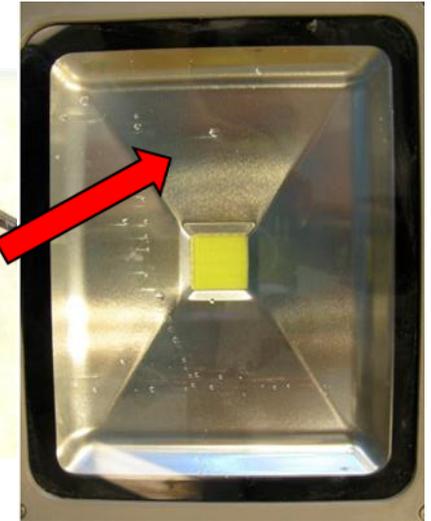
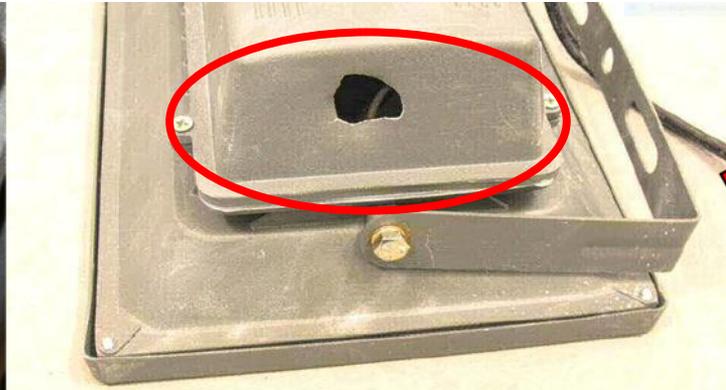
# Overall evaluation of LED-floodlights ("LVD"/safety testing)



**87 LED Floodlights**

3. Serious criticism / Serious defects that endanger the safety
2. Criticism / Defects that may endanger the safety
1. Remark / Defects that do not significantly endanger the safety

# LVD tests



# EMC tests

- Electromagnetic compatibility (EMC) was also checked (conducted and radiated emissions and harmonic current emissions).
- More than half of the products, 54 %, were found non-compliant.
- Conducted emissions were the most common type of disturbance.

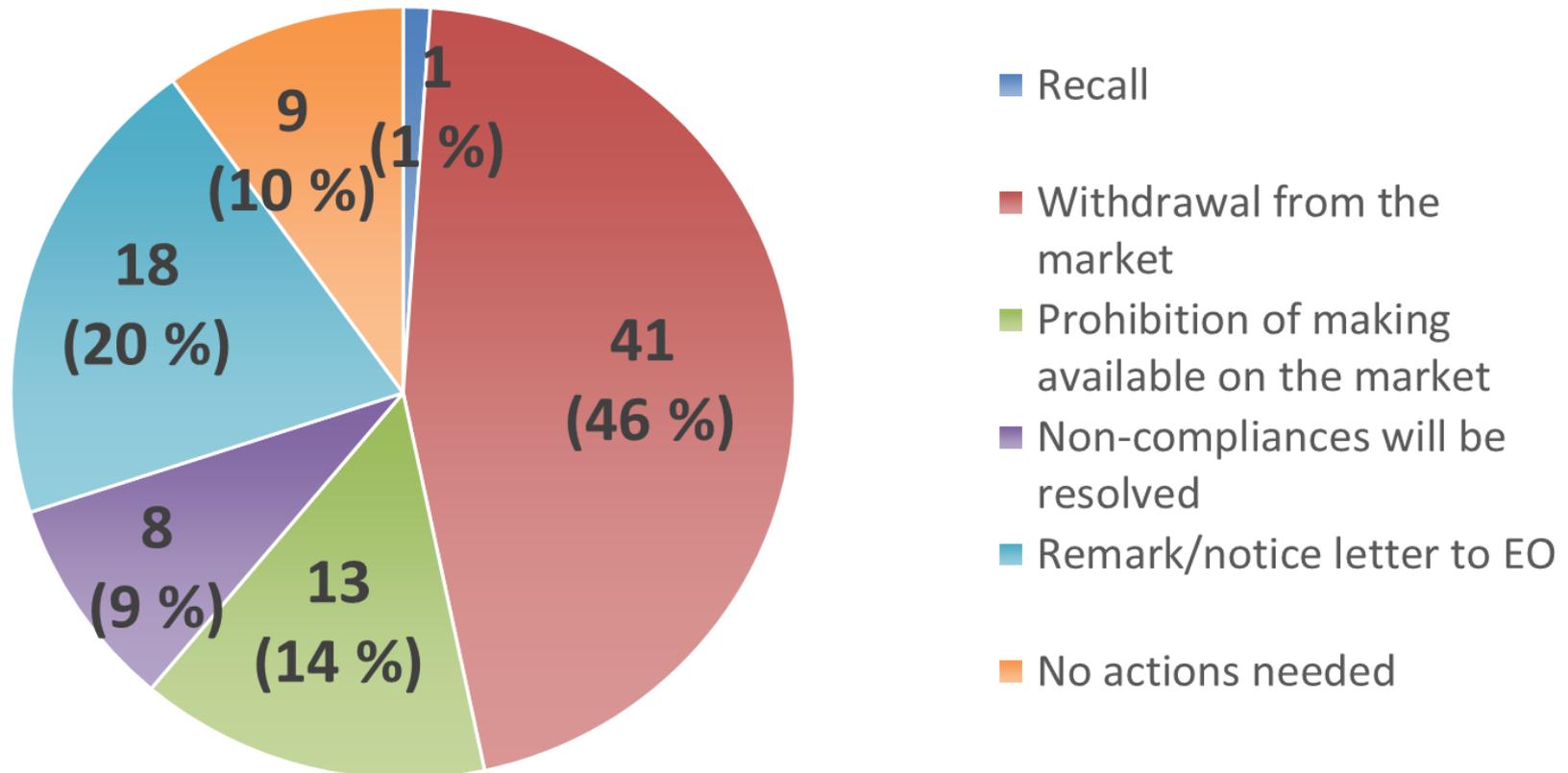
Compliance with emissions requirements		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
<b>85</b>	<b>35</b>	<b>41</b>

# Administrative requirements

- Administrative requirements were also checked:
  - Traceability
    - Identification (type, batch or serial number)
    - Name or registered trademark and address of the manufacturer/importer
  - CE marking
  - EU Declaration of Conformity
  - Technical Documentation (test report)

Compliance with administrative requirements		
Number of assessed LED floodlights	Number of compliant LED floodlights	Compliance (%)
85	38	46

# Corrective measures JA2015 EMCLVD



**90 LED Floodlights**

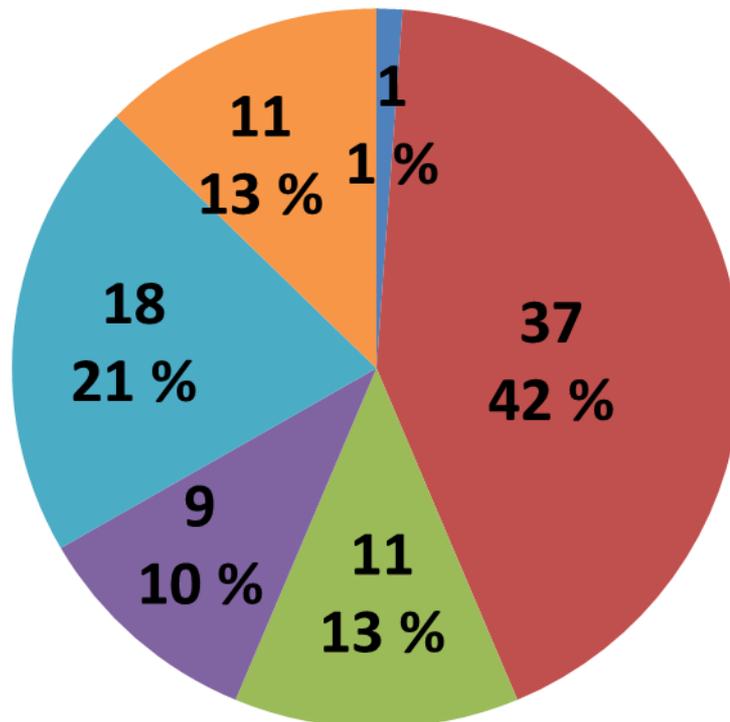
# Corrective measures JA2015 EMCVLD



<b>Recalls</b>	<b>1</b>
<b>Withdrawals</b>	<b>41</b>
<b>Prohibitions of making available on the market</b>	<b>13</b>

# Corrective measures JA2015 EMCVLD

## "LVD actions"

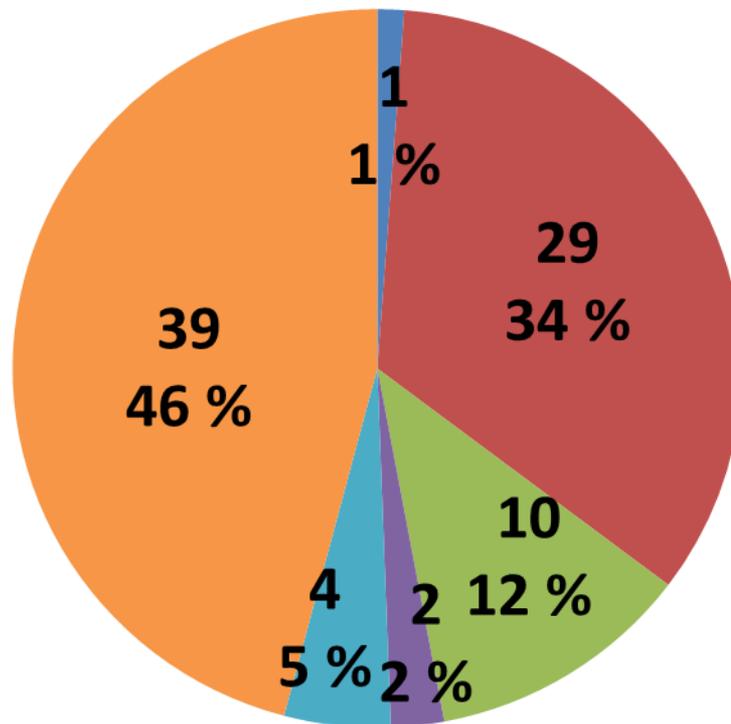


- Recall
- Withdrawal from the market
- Prohibition of making available on the market
- Non-compliances will be resolved
- Remark/notice letter to EO
- No actions needed

**87 LED Floodlights**

# Corrective measures JA2015 EMCVLD

## "EMC actions"



- Recall
- Withdrawal from the market
- Prohibition of making available on the market
- Non-compliances will be resolved
- Remark/notice letter to EO
- No actions needed

**85 LED Floodlights**

# LVD & EMC Test results

- For **82** LED Floodlights both LVD and EMC tests were performed
  - 45 failed in both tests
  - 5 were OK in both tests
  - 33 failed only with LVD tests
  - 4 failed only with EMC tests

# Summary

- **47%** of the tested LED floodlights were withdrawn from the European market (either ordered by MSA or taken voluntarily by EO).
- MSAs considered that for **87%** of the LVD (safety) tested LED Floodlights some measures were needed.
- MSAs considered that for **54%** of the EMC tested LED Floodlights some measures were needed.
- For **42** LED Floodlights measures were based on the detected shortcomings on **both** “LVD and EMC “ requirements.
- Only 2 LED floodlight models out of 90 were compliant with the all assessed requirements (LVD, EMCD and administrative requirements).

# Future actions

- Active dissemination of the results to EOs and consumers (e.g. press releases)
- Continuation of MS actions for LED floodlights on the national markets by MSAs
- "Follow-up" tests/evaluations for the LED floodlight brands and models that failed in the JA
- MSAs should take the results of this JA into consideration when making their multi annual market surveillance plans



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**Thank you.**