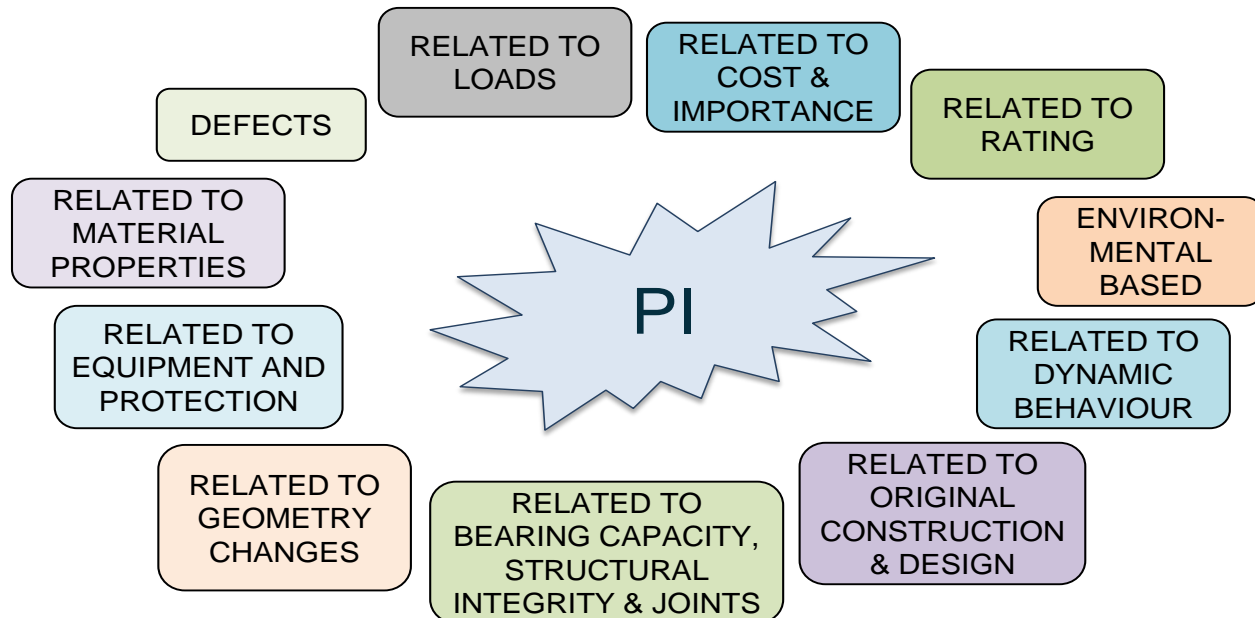
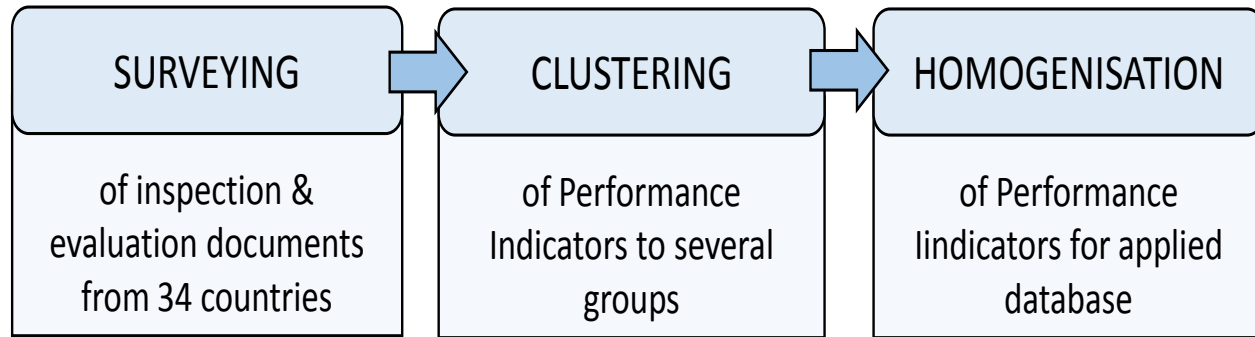


# Performance specifications for road bridges- harmonisation between TU 1406 & TU 1402?

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# TU1406 / WG1: Performance indicators

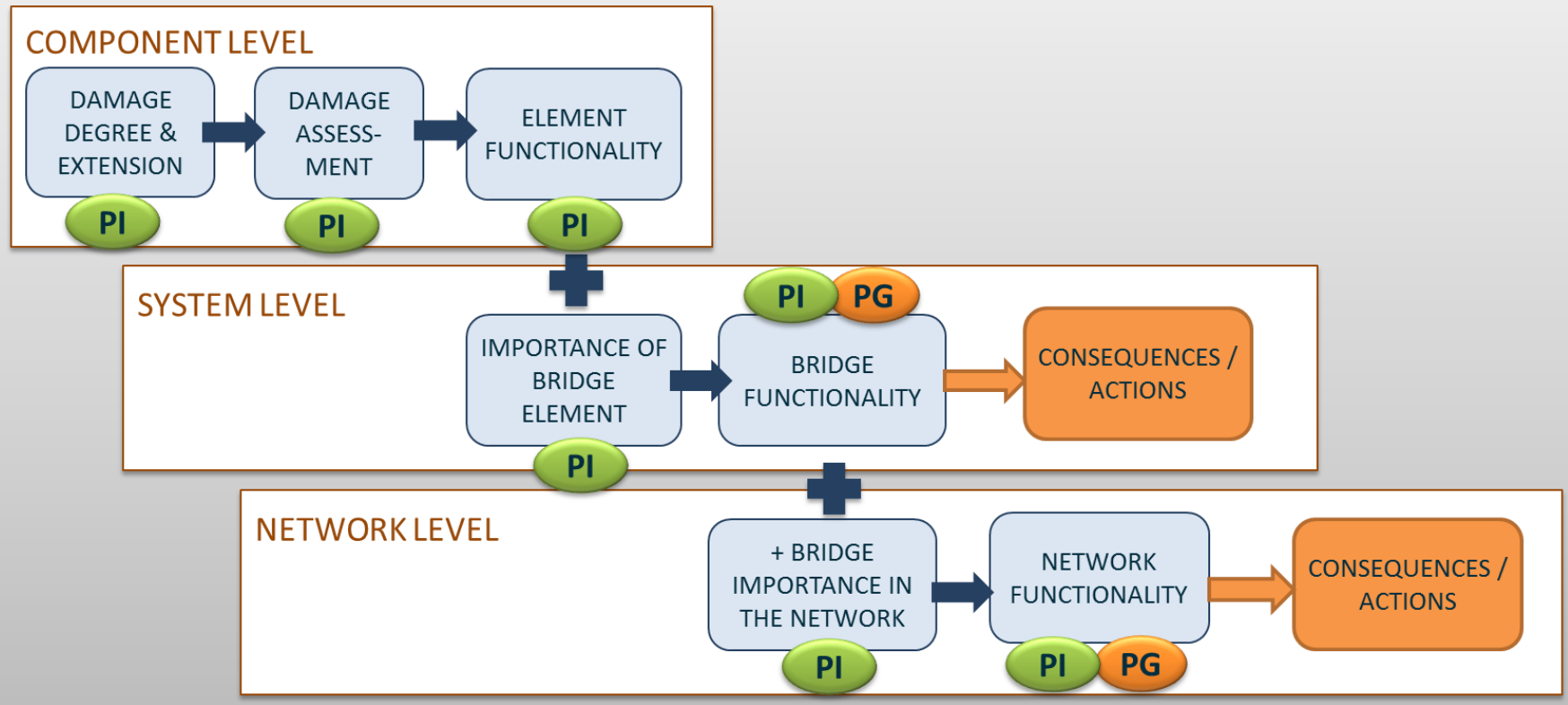


# TU1406 / WG1: Performance indicators

# TU1406 / WG2: Performance goals

# TU1406 / WG3: Establishment of QC plan

QUALITY CONTROL PLAN

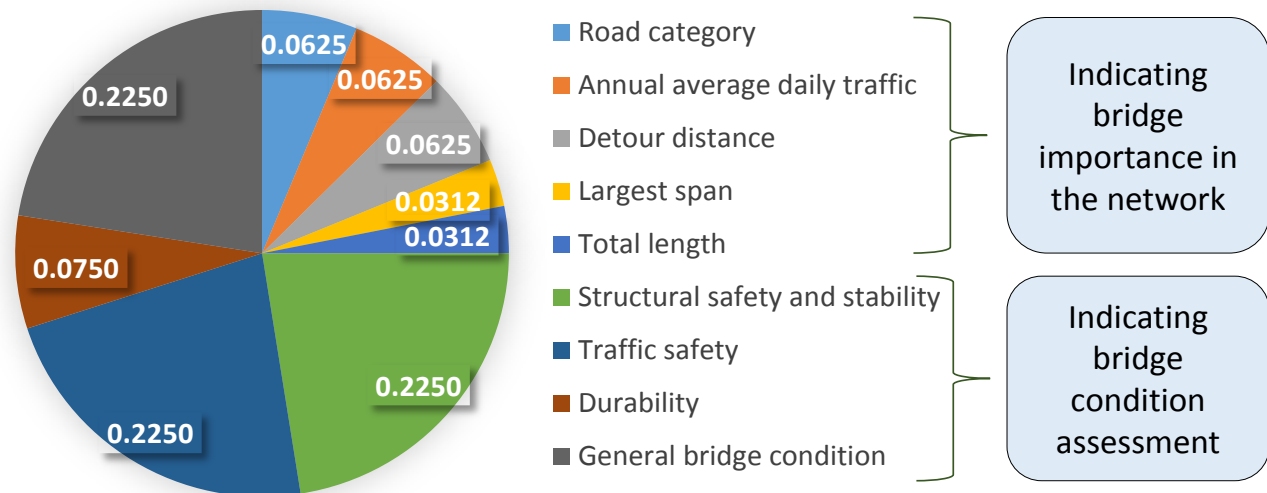


# TU1406: following task

More than 200 PI identified within WG1 (and research-based indicators survey is still ongoing) !

Select

1. the most important PI for achieving PG that are crucial for optimal QC and bridge management and
2. to allocate them with appropriate weights (importance level).



*Example of weight of performance criteria for priority repair ranking*

# TU1406: following task

How to select important PIs?

1. Define crucial PGs
2. Categorise PIs in relation to PGs
3. Answer following questions (Casas):
  - Is it measurable? YES/NO
  - Is it quantifiable? YES/NO
  - Is target value available? YES/NO
  - Is it valid for ranking purposes? YES/NO
  - Allows decision with economic implications? YES/NO

# TU1406: following task

How to select important PIs?

1. Define crucial PGs
  - SAFETY
  - SERVICEABILITY
  - RELIABILITY
  - DURABILITY
  - AVAILABILITY
  - MAINTAINABILITY
  - SUSTAINABILITY
  - COST- EFFICIENCY
  - .?.
  - ...

# TU1406: following task

How to select important PIs?

1. Define crucial PGs
  
2. Categorise PIs in relation to PGs
  - at different levels
    - component
    - system
    - network
  - taken into account different aspects
    - technical
    - sustainability
    - socio-economic

ex: CRACK WIDTH

# TU1406: following task

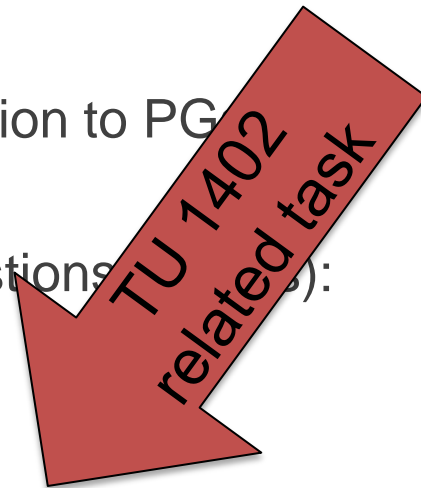
How to select important PIs?

1. Define crucial PGs
2. Categorise PIs in relation to PGs
3. Answer following questions (yes/no):

- Is it measurable?
- Is it quantifiable?
- Is target value available?
- Is it valid for ranking purposes?
- Allows decision with economic implications?

ex: CRACK WIDTH

YES/NO  
YES/NO  
YES/NO  
YES/NO (*locally*)  
YES/NO





# TU1406: following task

How to select important PIs?

1. Define crucial PGs
2. Categorise PIs in relation to PGs
3. Answer following questions :

ex: CHORD ROTATION CAPACITY

- Is it measurable? YES/NO (experiments)
- Is it quantifiable? YES/NO
- Is target value available? YES/NO (EN 1998-3 + Research)
- Is it valid for ranking purposes? YES/NO
- Allows decision with economic implications? YES/NO

## TU1406 - TU 1402 related task

Identify PI that may be detected/evaluated and possibly quantified with available SHM technologies:

- Monitoring of corrosion progress
- Monitoring of cracks evolution
- Monitoring of deflection evolution
- Monitoring of fatigue damage evolution
- Monitoring of score criticality
- WIM monitoring
- ...?.....
- ...?....

**PROPOSAL FOR A JOINT WORKSHOP**

# ZAGREB JOINT WORKSHOP

- Title: The Value of Structural Health Monitoring for the Reliable Bridge Management
- Date: 2-3 March 2017 (+ extra day?)
- Place: Zagreb (Faculty of Civil Engineering)



# ZAGREB JOINT WORKSHOP

- Schedule:
  - Prior to the workshop: separate WG, MC and WC1 meetings
  - Joint Workshop in 3 modulus:
    1. Monitoring based performance indicators
    2. Quantifying the value of PI
    3. Performance assessment of existing structures for their reliable management
  - Post workshop activity: Technical Visit



# ZAGREB JOINT WORKSHOP

## **1. Monitoring based performance indicators (PI)**

*Overview of research-based performance indicators in order to reveal those that are already applicable in practice as well as those in whose development is worth investing (e.g. monitoring of corrosion progress, cracks evolution, fatigue damage evolution, score criticality, local traffic loading, ...)*

## **2. Quantifying the value of PI**

*Application of the framework of COST TU1402 to PI with consideration of performance goals (PG), such as safety, serviceability, durability, reliability, robustness, availability, sustainability...; Quantification of the value of PI.*

## **3. Performance assessment of existing structures for their reliable management**

*Creation of procedures applicable in practice based on scientific achievements (in for example linear and nonlinear analysis methods, semi and full probabilistic based assessment methods, treatment of uncertainties, Bayesian update...) is envisaged to improve existing performance assessment methods within bridge management systems.*

# **Performance specifications for road bridges- harmonisation between TU 1406 & TU 1402?**

Thank you for your attention!

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