



TU1406: Quality Specifications for Roadway Bridges, Standardization at a European Level (BridgeSpec)

Start date: 16 April 2015

José Matos

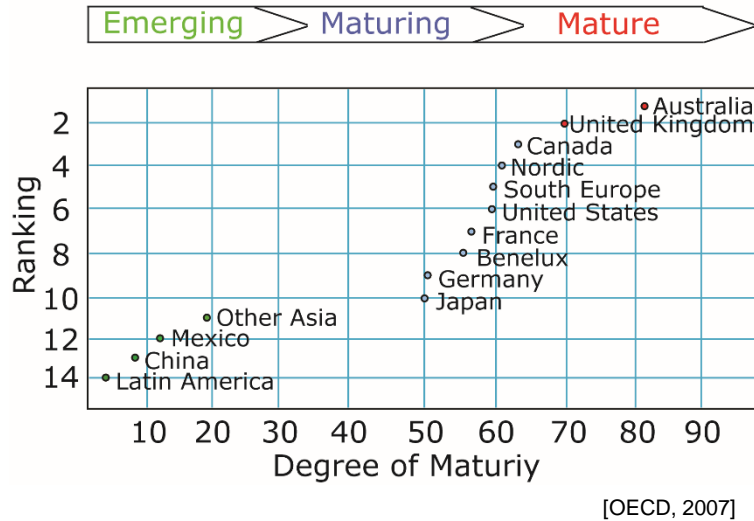
TU1406 MC1, COST Office, Brussels, 16 April 2015

AGENDA

16/04/2015

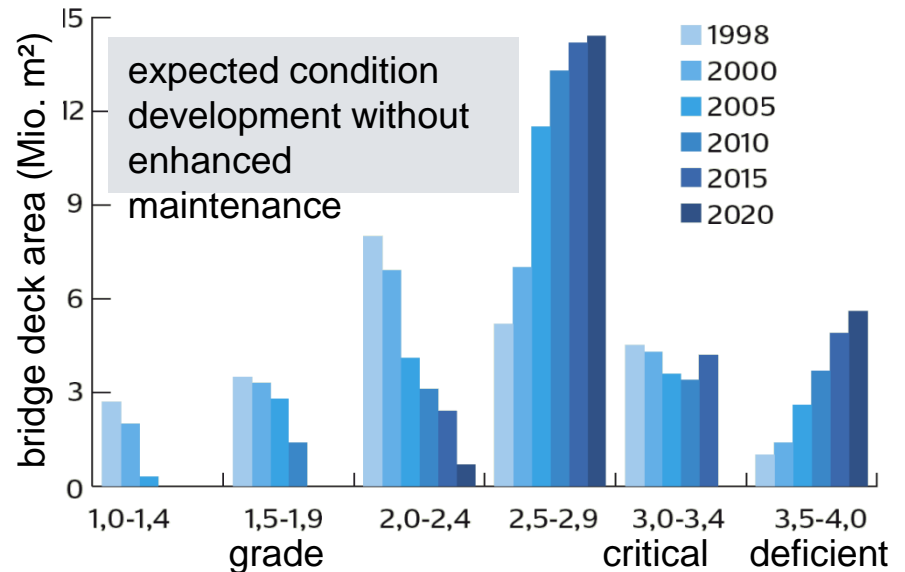
1. Background
2. Reasons for the Action
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 - COST countries
 - COST policies
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 - Grant Holder
 - Vice Chair
5. Horizontal Roles
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1. Background

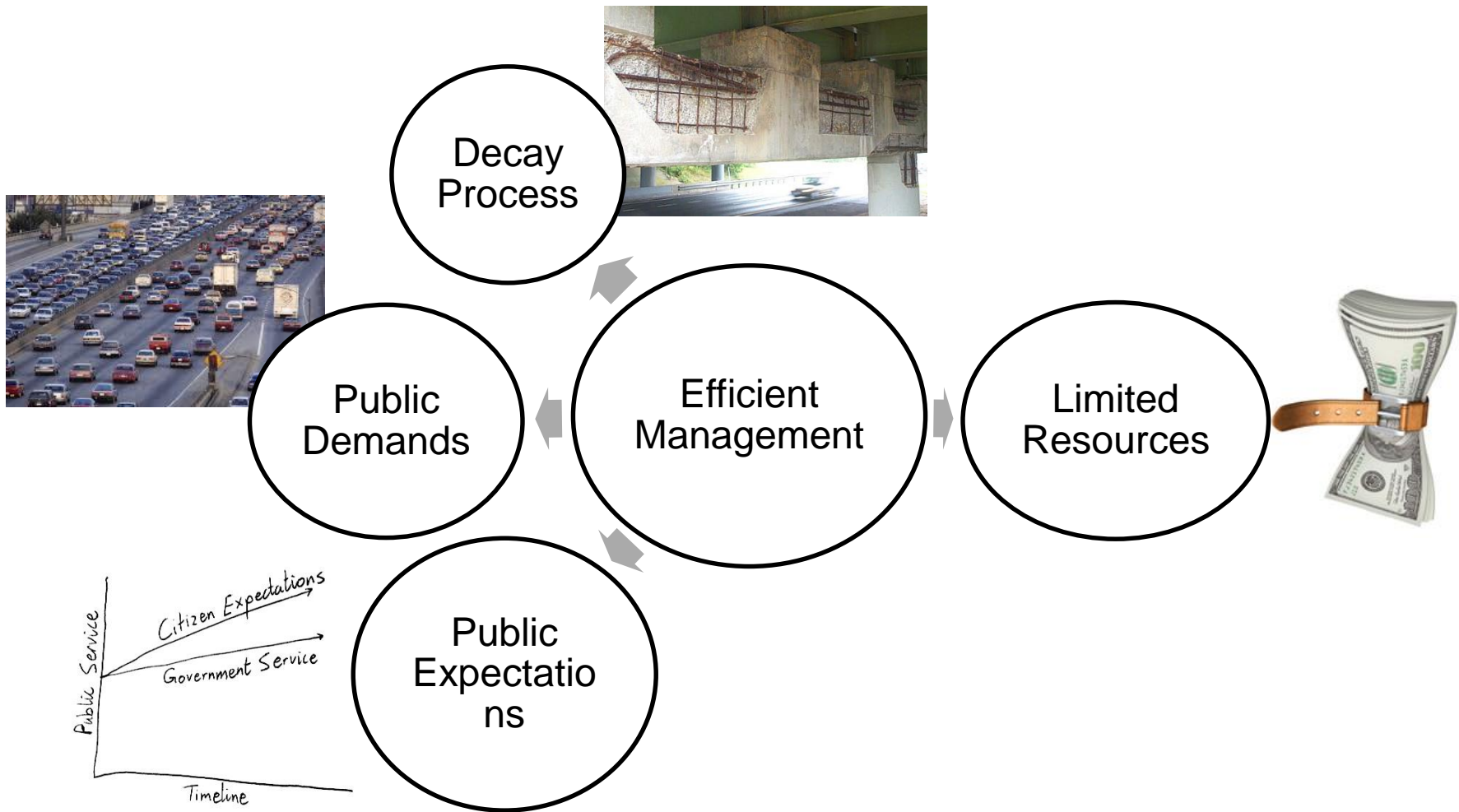


The OECD noted that by 2030 “... a larger effort will need to be directed towards maintenance and upgrading of existing infrastructures and to getting infrastructures to work more efficiently”

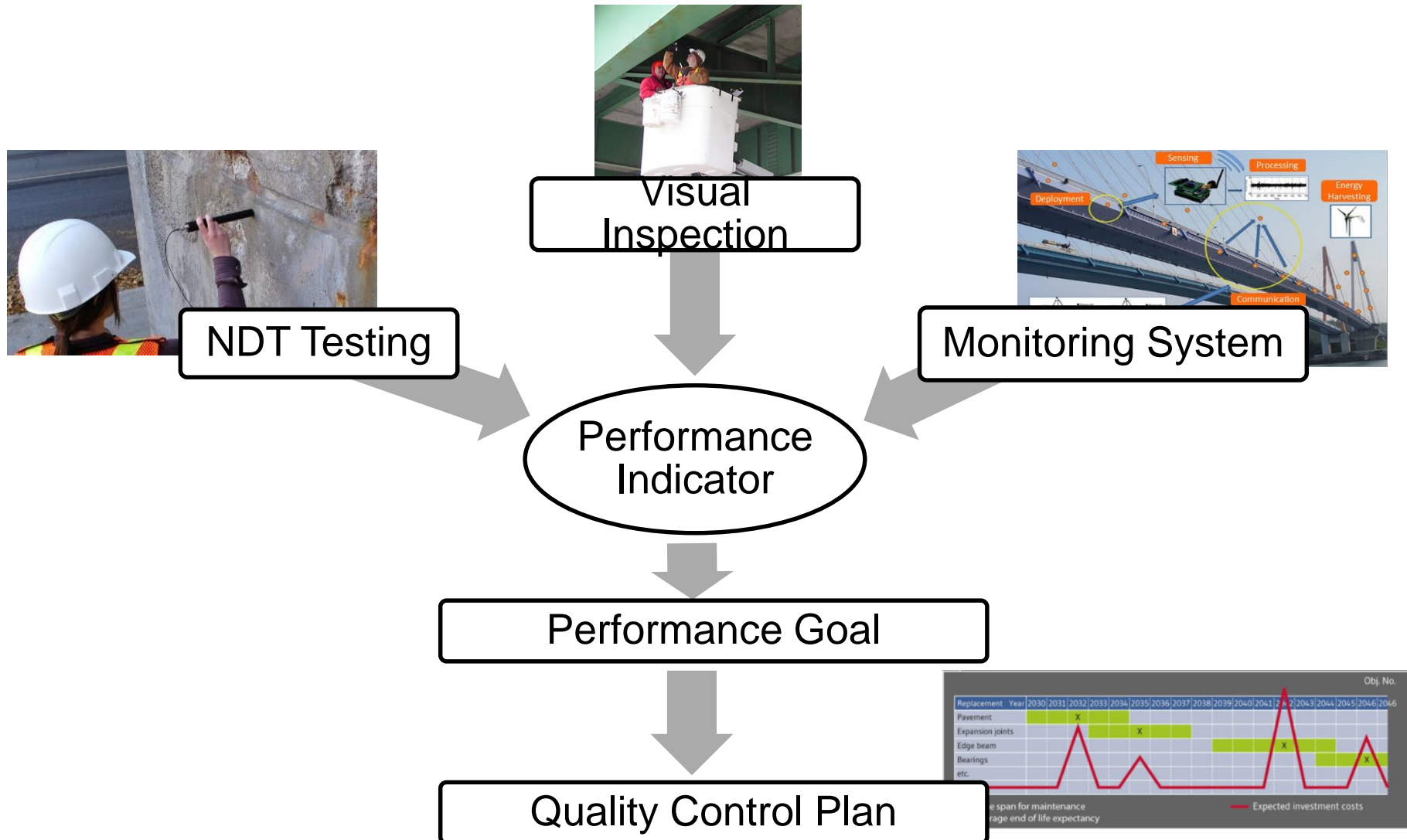
“... it is therefore extremely important for countries to prioritize their budget expenditures in this topic by improving the way infrastructures are being managed.”



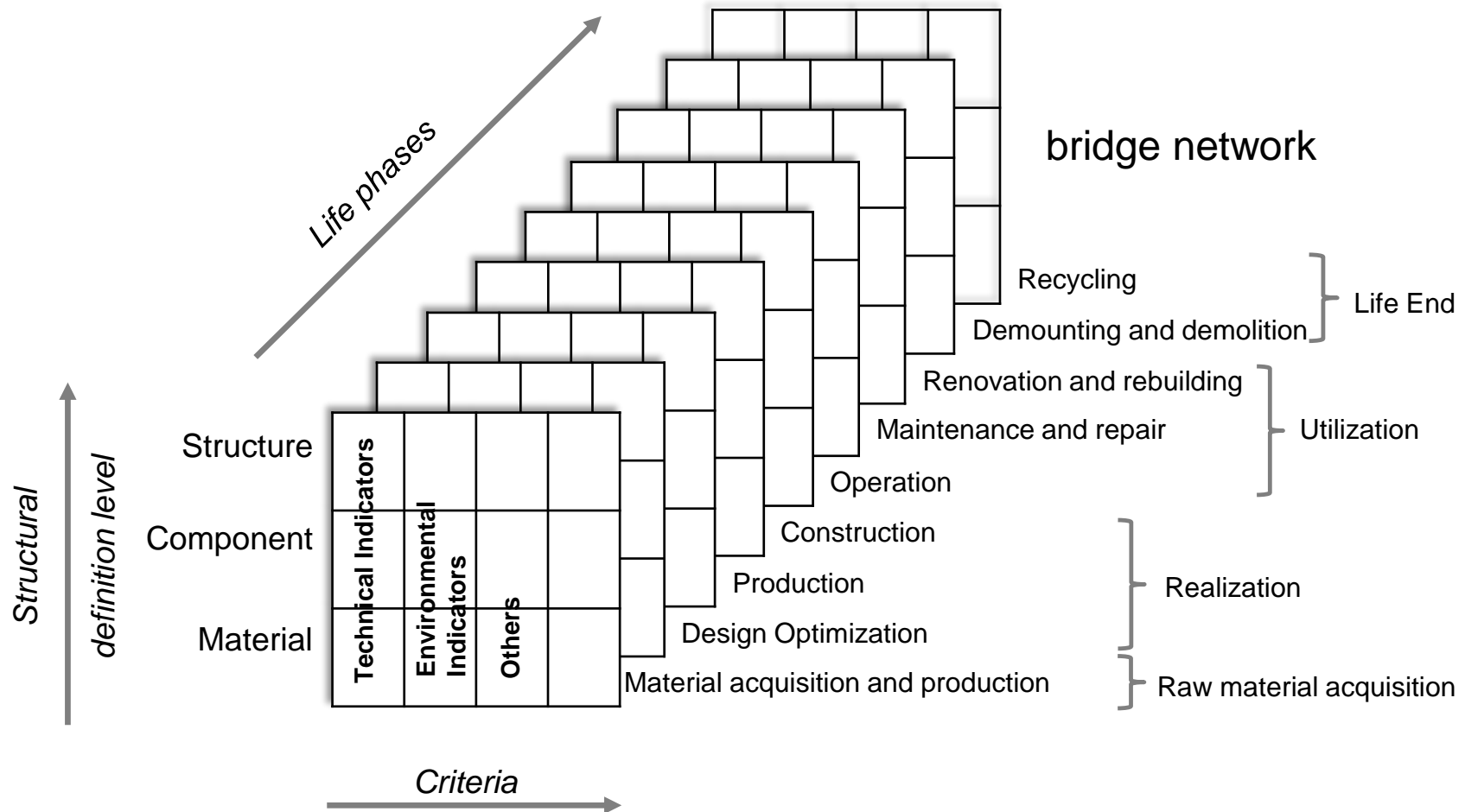
1. Background



1. Background



1. Background



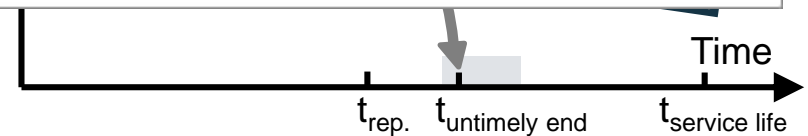
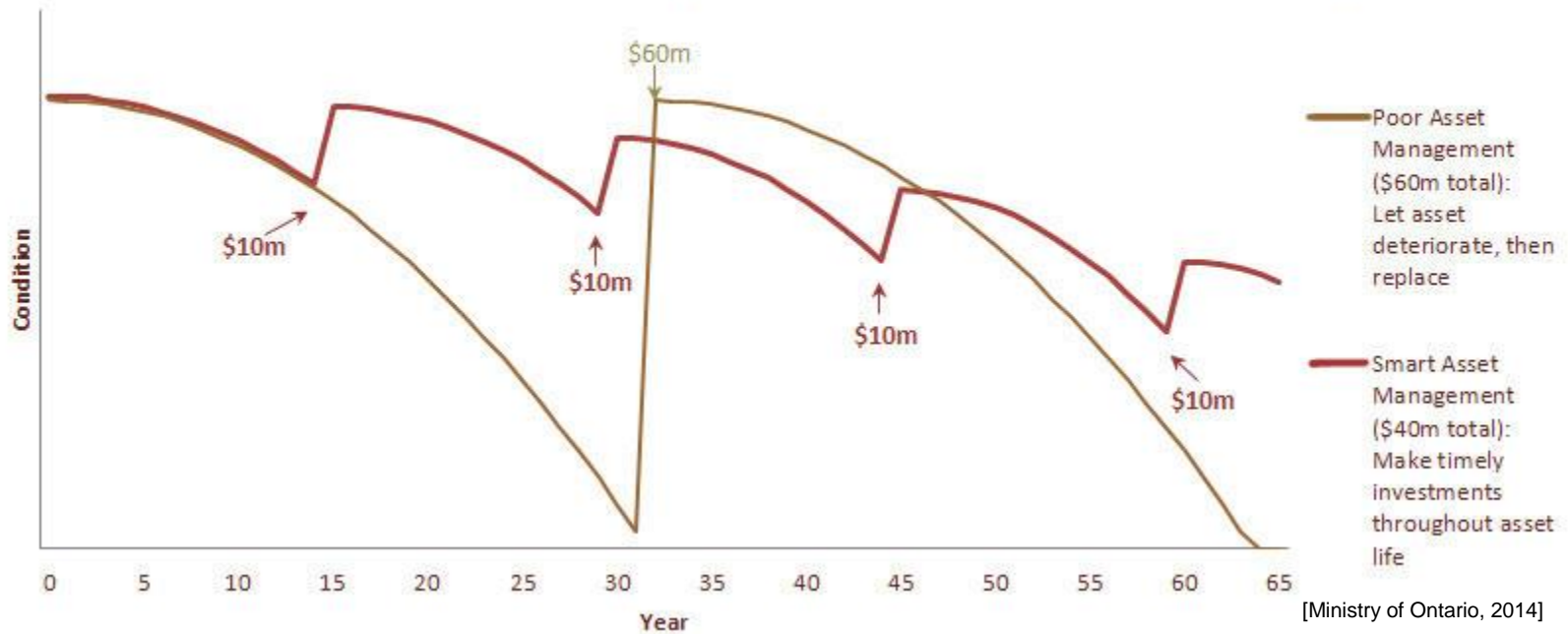
1. Background



A Bridge Management System is used to store the quality control plans of the bridge

In
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mc
alg
be

Small but timely renewal investments save money



2. Reasons for the Action

- **Denmark** – DANBRO (DANish Bridges and Roads)
- **Finland** – FinnRABMS (Finnish National Roads Administration Bridge Management System)
- **Italy** – SAMOA (Surveillance, Auscultation and Maintenance of Structures)
- **Netherlands** – DISC
- **Sweden** – BMS
- **United Kingdom**
 - STEG (Structures REGister);
 - HiSMIS (Highway Structures Management Information System)
 - SMIS (Structures Management Information System)
 - BRIDGEMAN (BRIDGE MANagement system)
 - COSMOS (Computerized System for the Management Of Structures)

2. Reasons for the Action

Main Functions of BMS	D	E	F	UK	NO	FIN	SI	CA	NY (state)
Name	S Bauw		Edouard and OA	NATS	Brutus				
Time of operation (years)	new			15	2	3	5		4
Number of bridges managed	34 600		22 000	9 500	17 000	15 000	1760	25 000	10 000
Inventory of existing stock	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Schedule of inspection	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Condition of structures (rating, ...)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bid for maintenance funds	No	Yes		Yes	Yes	?		Yes	Yes
Prioritising of maintenance work	No	Yes		Yes	Yes	?	Yes	Yes	Yes
Budget planning (long term)	No	Yes		Yes	Yes	Yes			Yes
Registering detailed cost information for actions	Yes	Yes							Yes
Safety assessments	No			Yes					Yes
Taking into account alternative maintenance strategies	No			Yes					Yes
Application of whole-life costing	No		No						Yes
Road user delays	No		No						
Deterioration prediction	No	No	No	No	No	Yes	No	Yes	Yes

2. Reasons for the Action



A similar problem was addressed in the past for pavements. It was solved through COST 354 – Performance Indicators for Road Pavements (<http://cost354.zag.si/>).



The main objective of the Action is the definition of an uniform European performance indicators for road pavements taking the needs of road users and road operators into account.

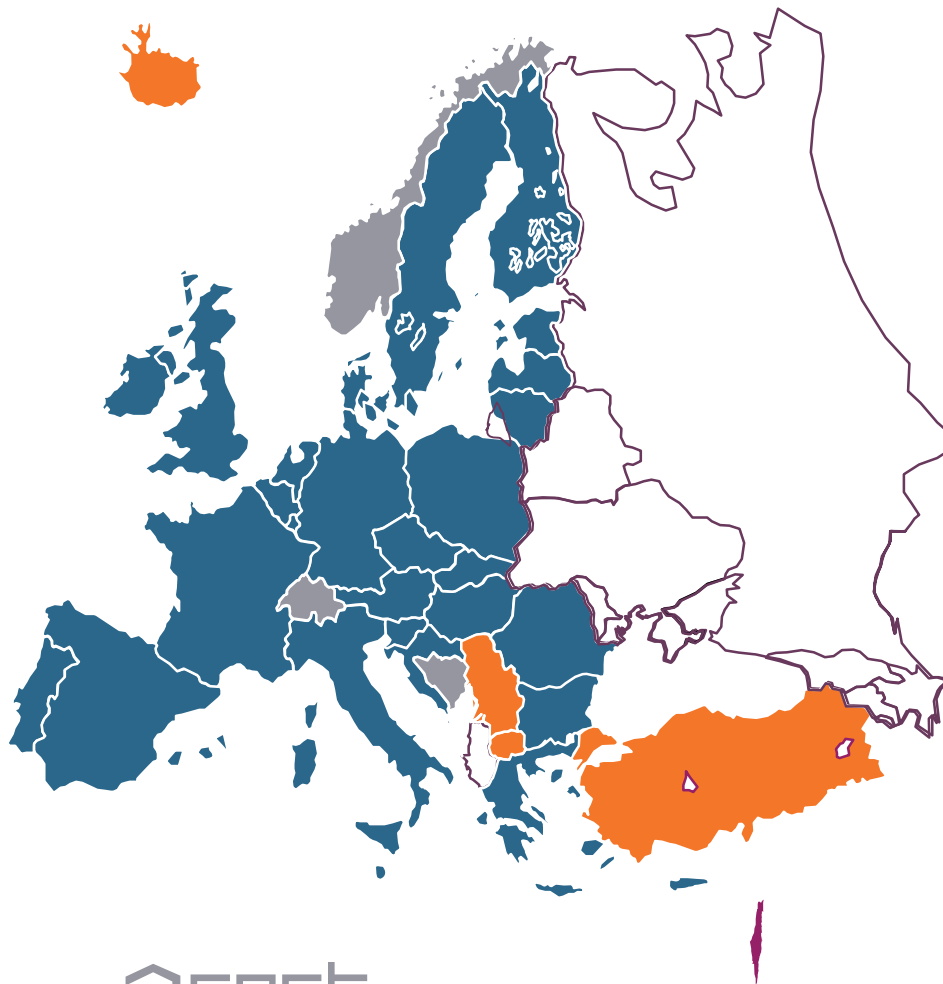
2. Reasons for the Action



There is a **REAL NEED** to standardize the quality assessment of roadway bridges at an European Level

3. General Information

Thank you and welcome aboard !



■ The 28 EU Member States

■ EU Candidate Countries

- ▶ former Yugoslav Republic of Macedonia
- ▶ Iceland
- ▶ Republic of Serbia
- ▶ Turkey

■ Other Countries

- ▶ Bosnia and Herzegovina
- ▶ Norway
- ▶ Switzerland

■ COST Cooperating State

- ▶ Israel

3. General Information

COST Policies

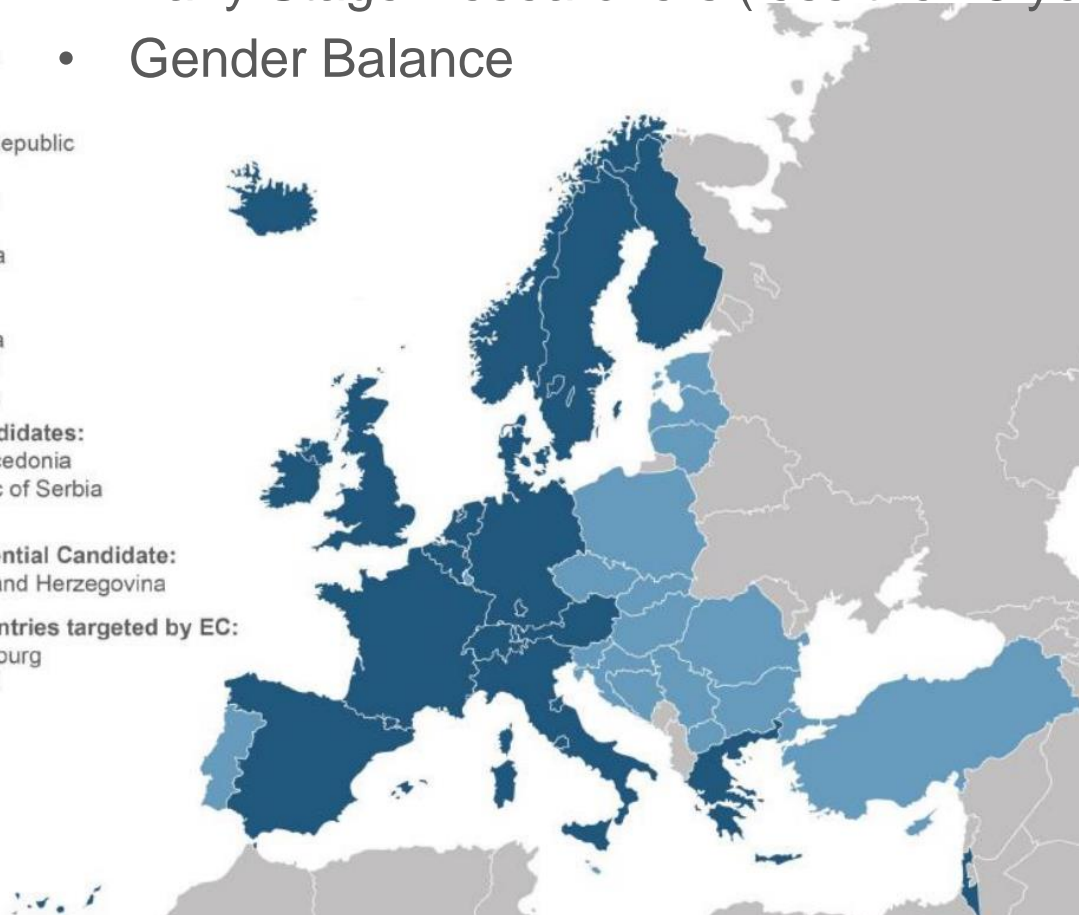
- Inclusiveness
- Early Stage Researchers (less than 8 years after PhD)
- Gender Balance

● **EU 13:**
Bulgaria
Croatia
Cyprus
Czech Republic
Estonia
Hungary
Latvia
Lithuania
Malta
Poland
Romania
Slovakia
Slovenia

EU Candidates:
fYR Macedonia
Republic of Serbia
Turkey

EU Potential Candidate:
Bosnia and Herzegovina

EU Countries targeted by EC:
Luxembourg
Portugal



4. Election

Chair:

Jose Matos (PT)

COST Action TU 1406 Proposer



Jose Matos
Professor
Minho University, Portugal
jmatos@civil.uminho.pt

4. Election

Grant Holder:

Usually coincides with Chair Institution



Universidade do Minho

Minho University (PT)

Scientific Representative:

Grant Holder MC member

Jose Matos

4. Election



Universidade do Minho

FSAC (common value) = 15% of Scientific Expenditure
170.000,00€ (overall budget) = 147.826,00€ + **22.174,00€**

FSAC – Financial and Scientific Administration and Cooperation
(secretariat, non-eligible VAT, general expenses)



Use online COST Action management tool: e-COST

4. Election

Vice-Chair:

Joan Casas (SP)

COST Action TU 1406 Proponent



Joan Casas
Professor
Catalunya Technical University, Spain
joan.ramon.casas@upc.edu

5. Horizontal Roles

Position	Name
WG1: Performance Indicators	Leader: Alfred Strauss (AT) Vice Leader: TBA
WG2: Performance Goals	Leader: Irina Stipanovic (NL) Vice Leader: TBA
WG3: Quality Control Plan	Leader: Rade Hajdin (SB) Vice Leader: TBA
WG4: Case Study	Leader: TBA Vice Leader: TBA
WG5: Standardization	Leader: TBA Vice Leader: TBA
WG6: Dissemination	Leader: TBA Vice Leader: TBA

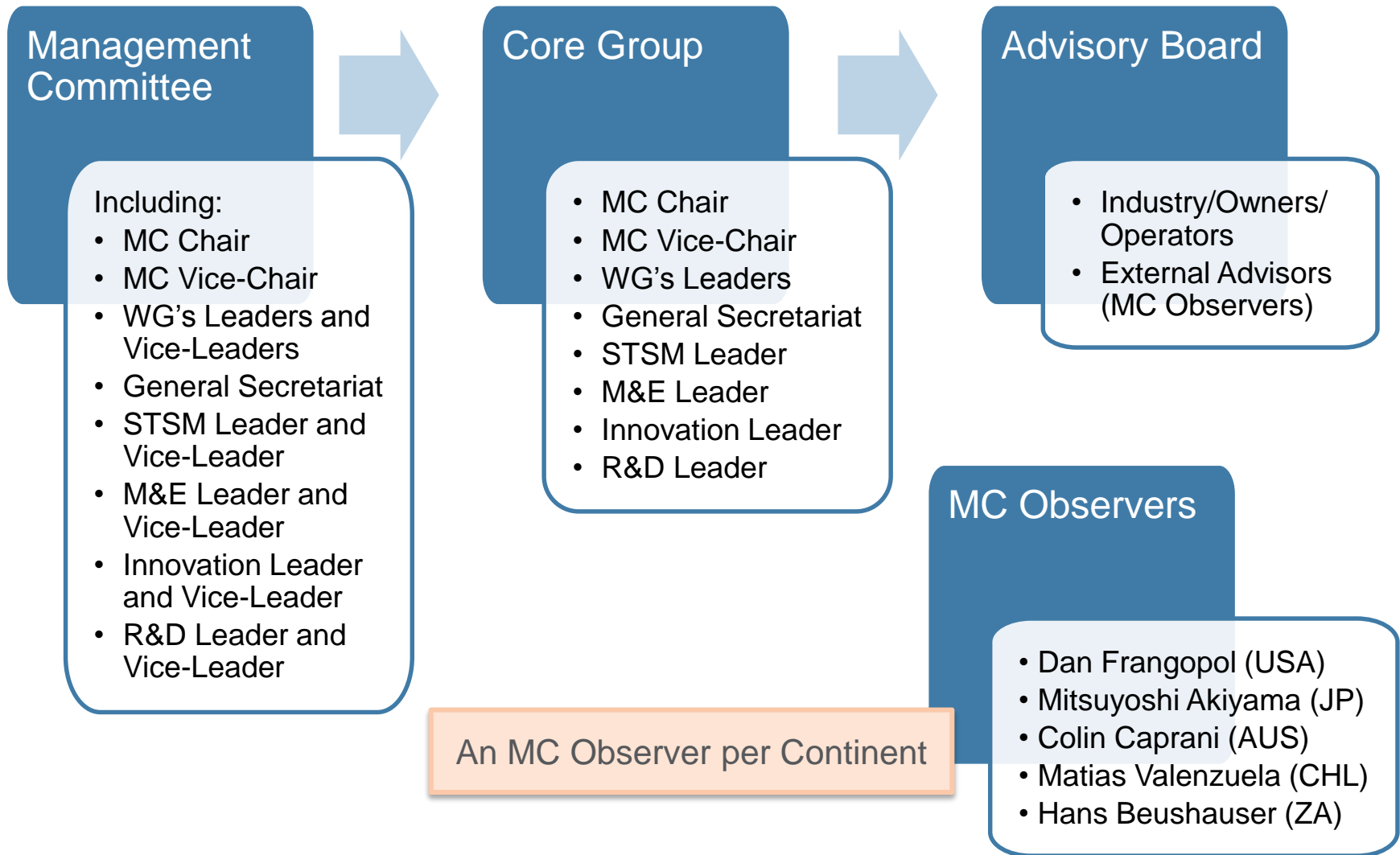
COST Policies: Inclusiveness, ESR, Gender Balance (+ Representability)

5. Horizontal Roles

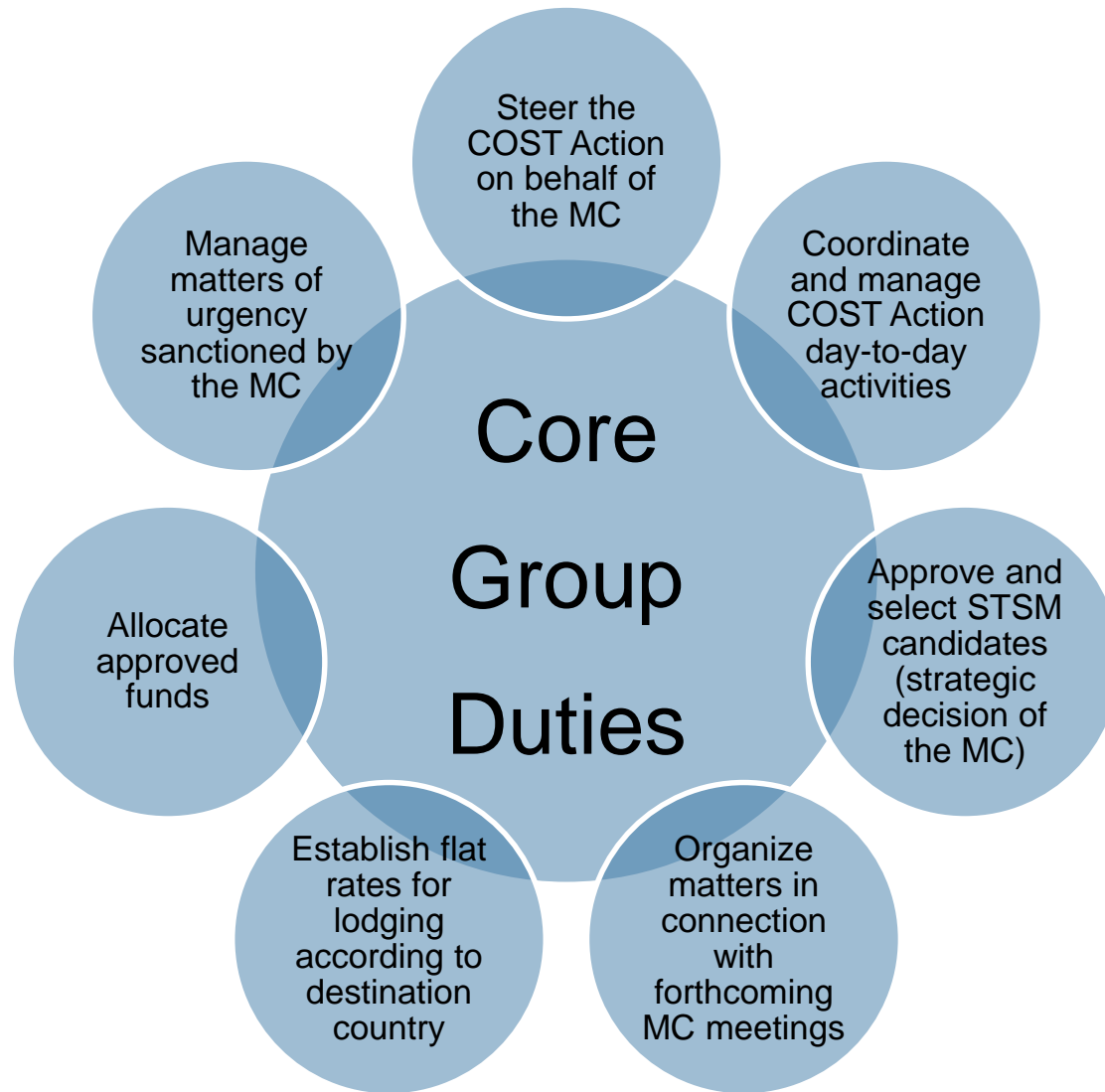
Position	Name
General Secretariat	Eleni Chatzi (CH)
STSM	Leader: Jan Bien (PL) Vice Leader: TBA
Monitoring & Evaluation	Leader: Raffaele Landolfo (IT) Vice Leader: TBA
Innovation	Leader: Andre Orcesi (FR) Vice Leader: TBA
Research & Development	Leader: Kenneth Gavin (IR) Vice Leader: TBA
Website Institution	Minho University

COST Policies: Inclusiveness, ESR, Gender Balance (+ Representability)

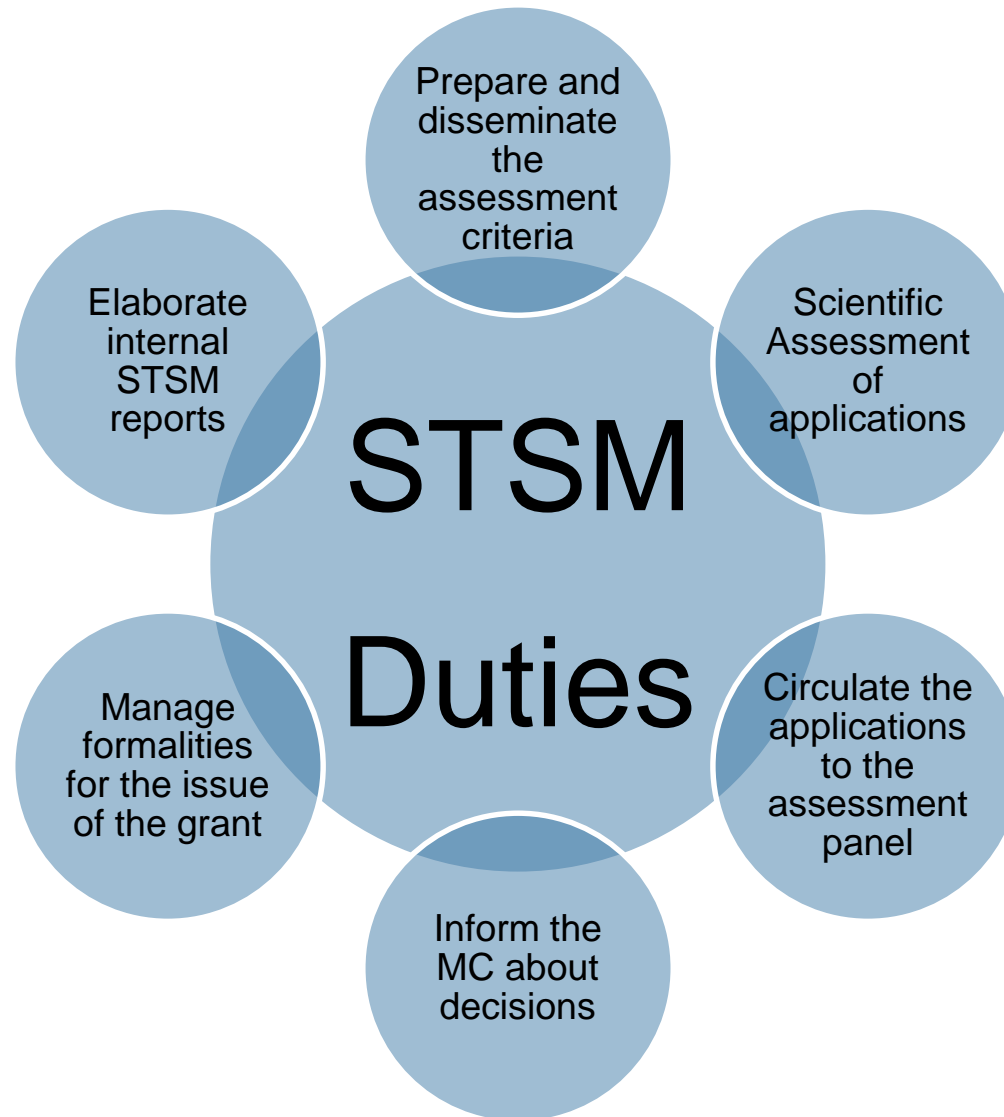
5. Horizontal Roles



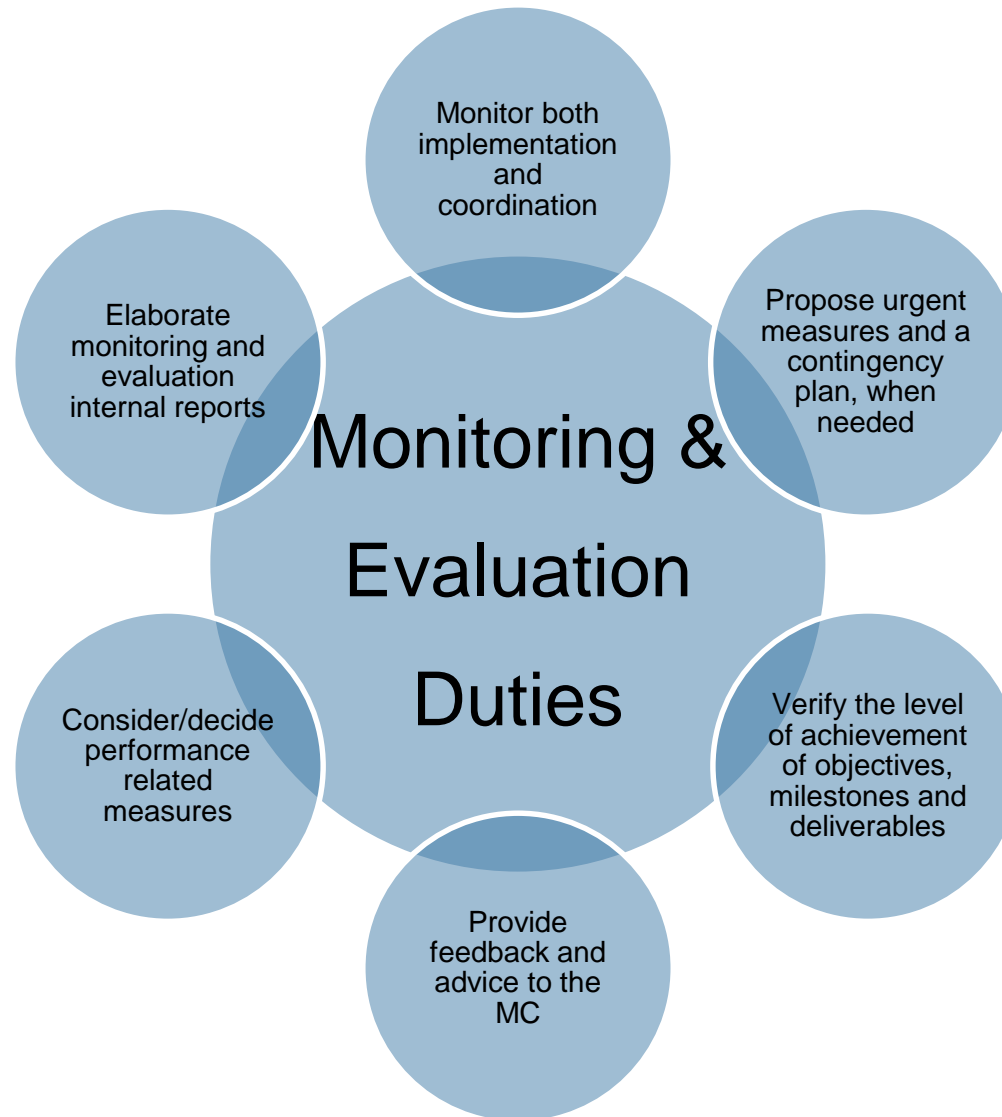
5. Horizontal Roles



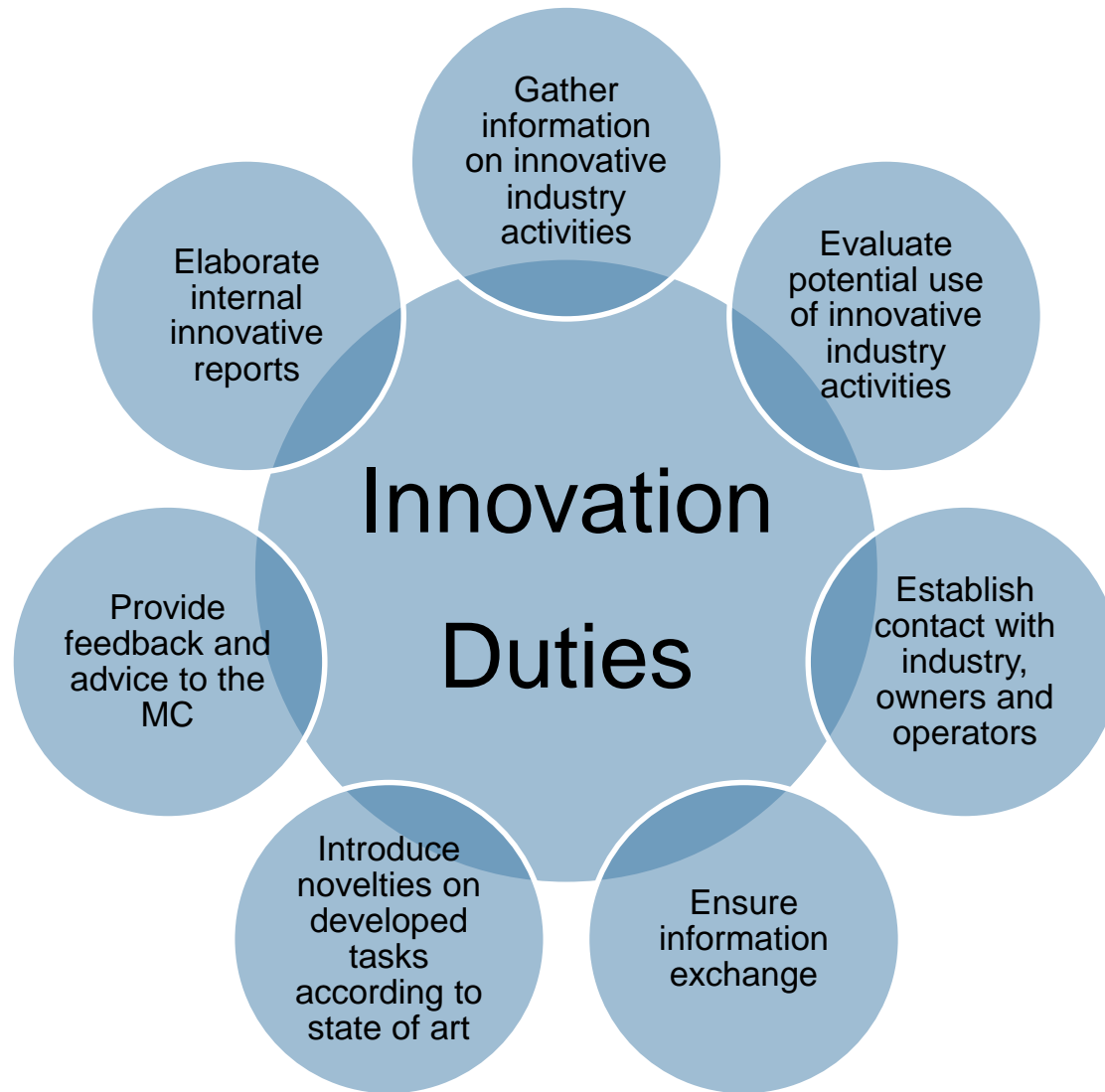
5. Horizontal Roles



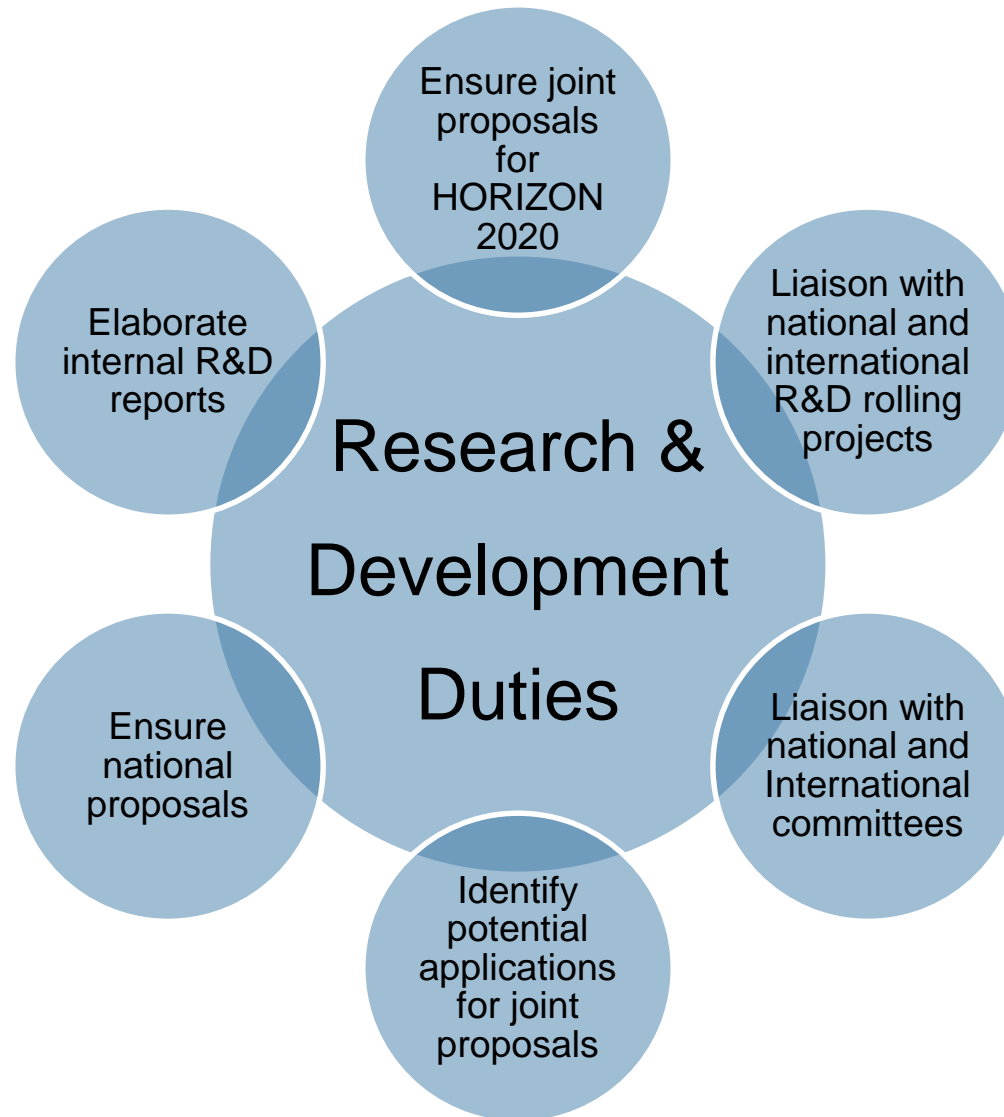
5. Horizontal Roles



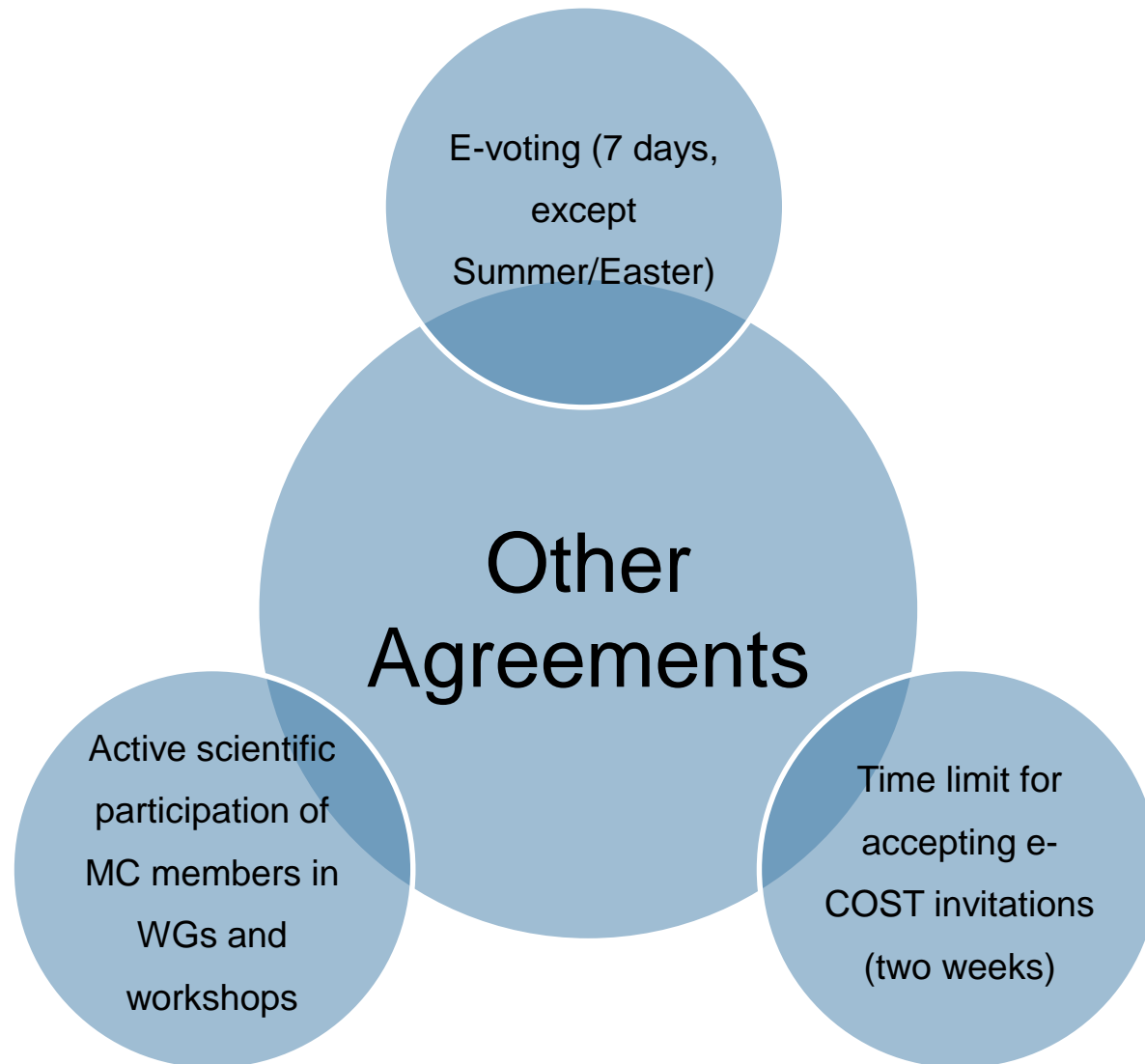
5. Horizontal Roles



5. Horizontal Roles

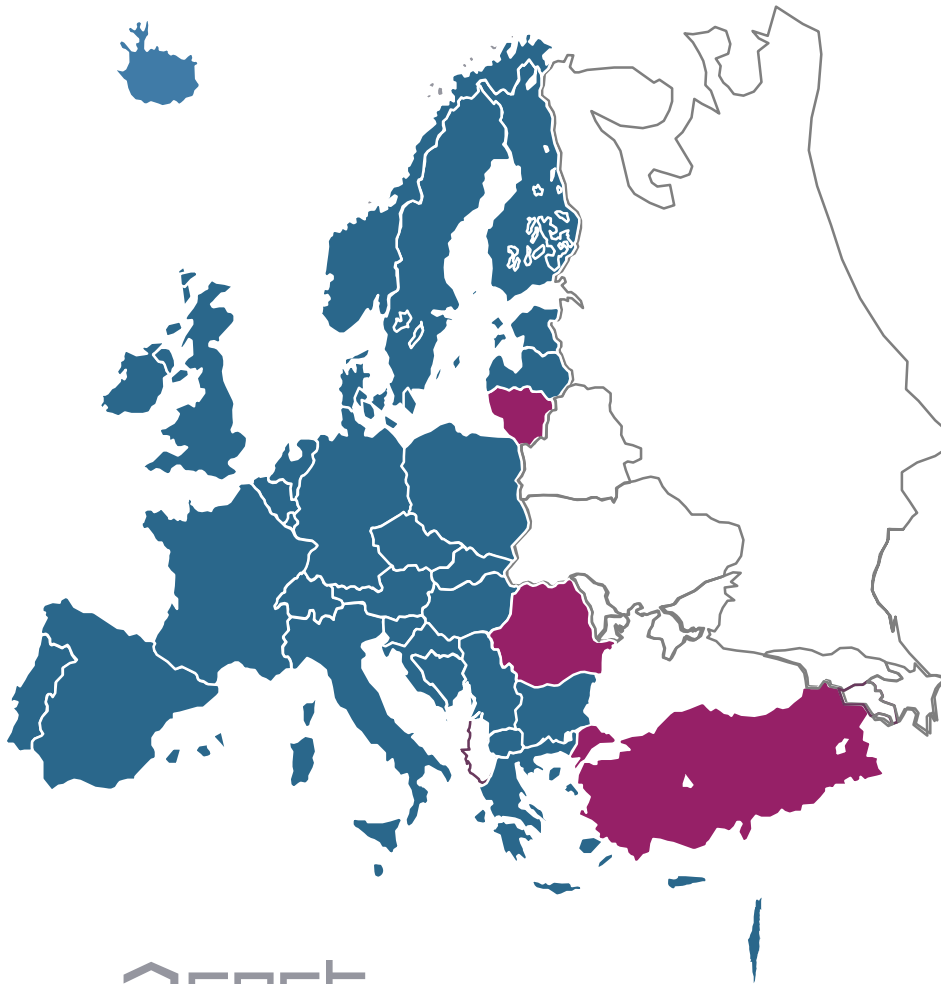


5. Horizontal Roles



6. Expansion

COST Countries



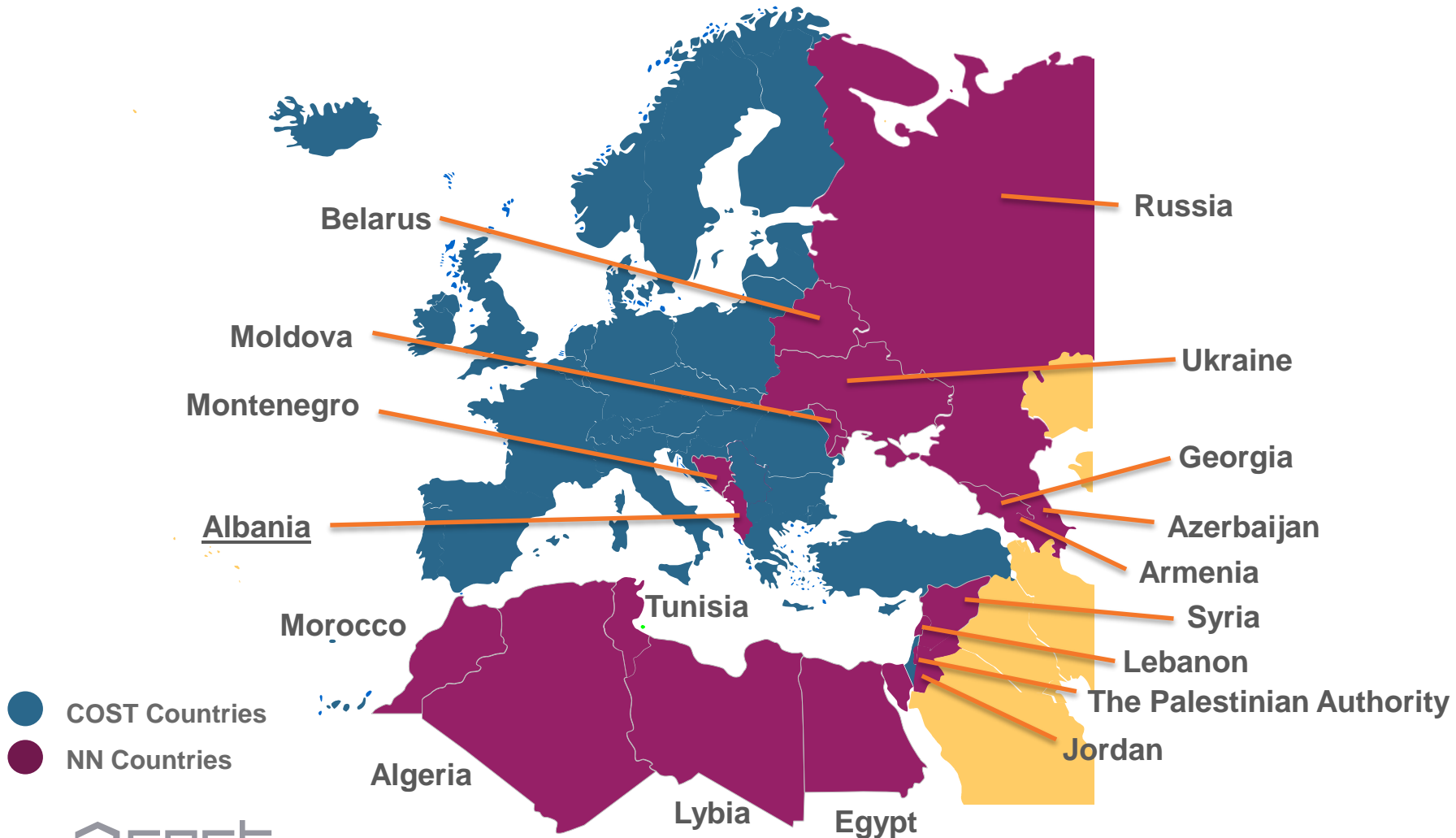
■ Action represented countries

■ Missing Countries

- ▶ Lithuania
- ▶ Romania
- ▶ Turkey

6. Expansion

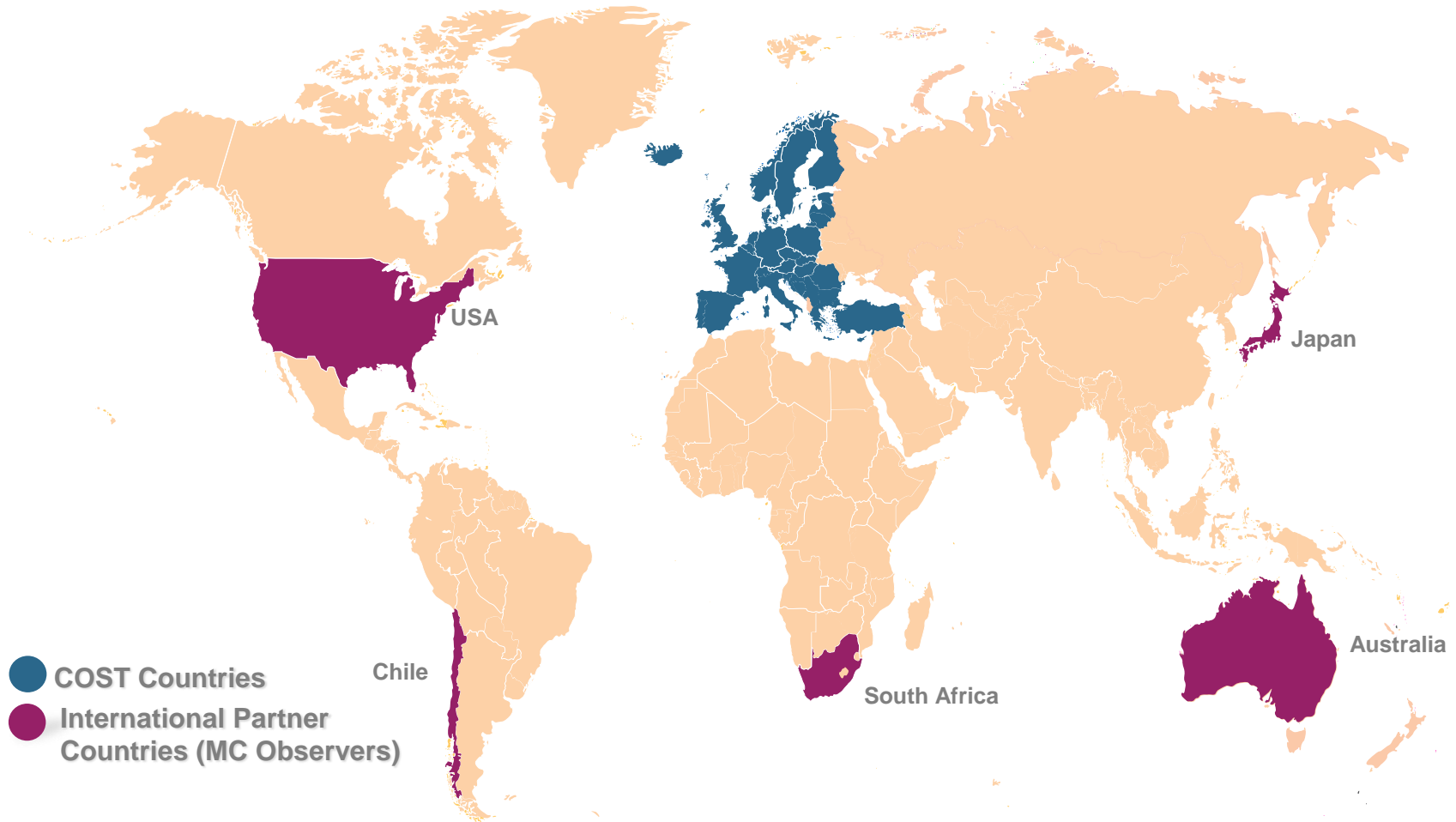
Near Neighbour Countries



 **COST**
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

6. Expansion

International Partner Countries





7. Objectives and Benefits

Aim

The main objective of the Action is to

develop a guideline for the establishment of QC plans in roadway bridges

by integrating the most recent knowledge on performance assessment procedures with the adoption of specific goals. This guideline will focus on bridge maintenance and life-cycle performance at two levels: (i) performance indicators, (ii) performance goals.

- Developing a state-of-art report
- Creation of a database
- Incorporation of sustainable indicators



7. Objectives and Benefits

Objectives

- (i) Systematize knowledge on QC plans for bridges, which will help to achieve a state-of-art report that includes performance indicators and respective goals;
- (ii) Collect and contribute to up-to-date knowledge on performance indicators, including technical, environmental, economic and social indicators;
- (iii) Establish a wide set of quality specifications through the definition of performance goals, aiming to assure an expected performance level;
- (iv) Develop detailed examples for practicing engineers on the assessment of performance indicators as well as in the establishment of performance goals, to be integrated in the developed guideline;



7. Objectives and Benefits

Objectives

- (v) Create a database from COST countries with performance indicator values and respective goals, that can be useful for future purposes;
- (vi) Develop a webpage with information about the Action and its participants, as well as, video-streaming from presentations at training schools, workshops and conferences, e-lectures, written material (e.g. technical reports),etc.;
- (vii) Support the development of technical/scientific committees;
- (viii) Disseminate activities, such as Short-Term Scientific Missions (STSM), training schools and other teaching activities (e.g. e-lectures), for practicing engineers and researchers, regular workshops, a conference and special sessions at international conferences.



7. Objectives and Benefits

Impact

Economic and societal

- New jobs associated to new quality control services (equipment, software, consultancy, ...)
- Improved economic efficiency and, at same time, user satisfaction regarding the quality of the provided service

Environmental/Sustainability

- Improve ecological footprint of bridge structures (maintenance, life-cycle cost)
- Enhanced management of risks to individuals, environment and economy

Well-being of general public

On the research community

- Better perception of real practice problems through an improved cooperation between research community and practicing engineers (sustainability, life-cycle analysis)
- Improvement on research developments and practical procedures regarding bridge asset management in European countries

8. Work and Budget Plan

Deliverables

WG1 : Performance indicators

- Report of Performance Indicators (incorporating new indicators)

WG2: Performance goals

- Report of Performance Goals (incorporating new indicators)

WG3: Establishment of a QC plan

- Recommendations for the Establishment of a QC plan (with detailed examples for practicing engineers)

WG4: Implementation in a Case Study

- Database from Benchmarking (from COST countries)

WG5: Drafting of guideline / recommendations

- Guideline for the Establishment of a QC plan

8. Work and Budget Plan

Scientific Program

WG5. Drafting of guidelines/recommendations

Existing documentation
(format and content)

Document preparation

Easy to use document

WG4. Implementation in a case study

Benchmarking

Validation

Discussion

WG1. Performance indicators

Technical indicators

Environmental indicators

Others

WG2. Performance goals

Technical goals

Environmental goals

Others

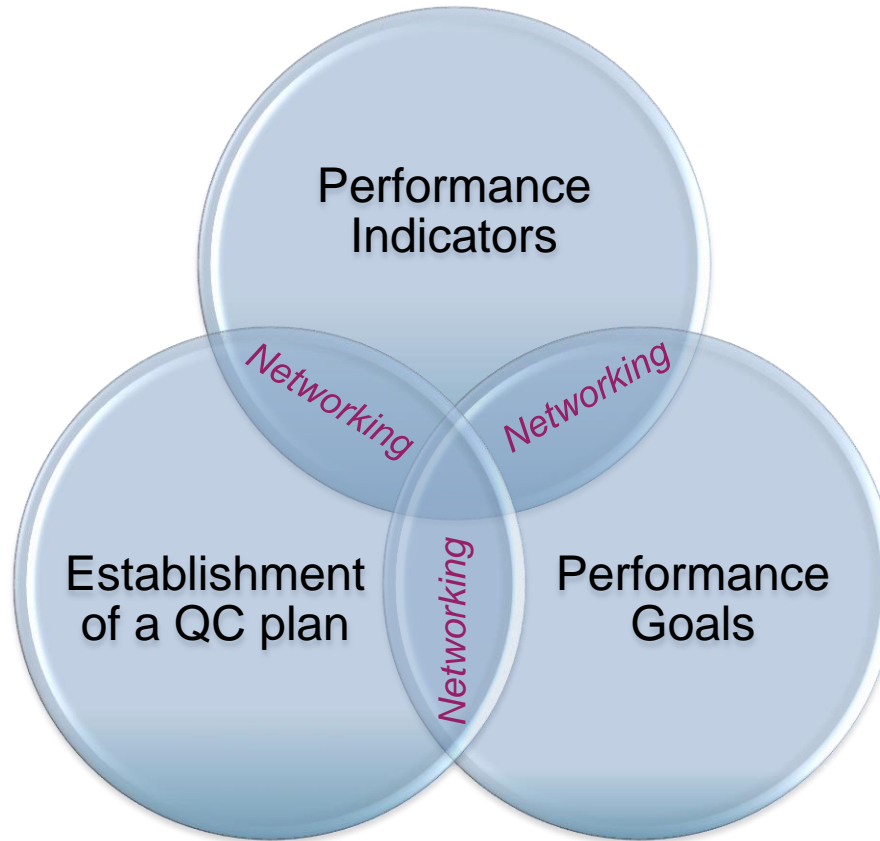
WG3. Establishment of a QC plan

Bayesian nets

Procedure to develop a QC plan for a single bridge

8. Work and Budget Plan

Networking



8. Work and Budget Plan

Group priorities

WG1. Performance indicators

- a) Technical indicators
- b) Environmental indicators
- c) Other indicators

WG2. Performance goals

- a) Technical goals
- b) Environmental goals
- c) Other goals

WG3. Establishment of a QC plan

- a) Survey of European roadway QC plans
- b) Procedures for the establishment of a QC plan

WG4. Implementation in a Case Study

- a) Selection of case studies
- b) Benchmarking
- c) Application of a QC plan

WG5. Drafting of guideline / recommendations

- a) Standardized performance indicators
- b) Standardized goals
- c) Standardized QC plan

WG6. Knowledge dissemination

8. Work and Budget Plan

Engagement strategy for WG members

- Online form calling for experts in view of the objectives of each WG (MC members should also fill the form)
- Discussion of the form among MC members until 30th April 2015 (WG leaders should send to General Secretariat a set of technical questions)
- MC Members disseminate nationwide (standard email to be approved until 30th April 2015)
- Dissemination starts on the 15th May 2015 (until 14th May 2016)

GOOGLE FORM
(coordination assured by the General Secretariat)

8. Work and Budget Plan

General plan of the Action

Activity/Months	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
Meeting	X			X		X		X		X		X		X		X
Workshop				X				X				X				
Conference																X
Training school								X				X				X
STSM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Website	X			X		X		X		X		X		X		X
Milestone				M1				M2		M3				M4		M5

General Principles:

- MC and CG meetings will take place every 6 months (same or sequential days)
- One workshop per year (end of each year)
- One training school per year (end of each year except for the first)
- STSMs occur through the entire project
- WG meeting dates coincide with workshops and MC meetings (to reduce costs)

8. Work and Budget Plan

General plan of the Action

WG		Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
WG1	Technical indicators	X	X	X	X												
	Environmental indicators	X	X	X	X												
	Other indicators	X	X	X	X												
WG2	Technical goals					X	X	X	X								
	Environmental goals					X	X	X	X								
	Other goals					X	X	X	X								
WG3	Survey of European roadway QC plans	X	X	X	X	X	X										
	Procedures for the establishment of a QC plan							X	X	X	X						
WG4	Selection of case studies							X	X	X							
	Benchmarking										X	X	X	X	X		
	Application on a QC plan											X	X	X	X		
WG5	Standardized performance indicators				X	X	X	X									
	Standardized goals							X	X	X	X						
	Standardized QC plan										X	X	X	X	X	X	X
WG6	Dissemination	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

8. Work and Budget Plan

Milestones

Activity/Months	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
Milestone				M1				M2		M3				M4		M5

- M1: WG1 – Performance indicators
Elaborate a report of performance indicators
- M2: WG2 – Performance goals
Elaborate a report of performance goals
- M3: WG3 – Establishment of a QC plan
Prepare recommendations for the establishment of Quality Control plan
- M4: WG4 – Implementation in a Case Study
Prepare database from benchmarking
- M5: WG5 – Drafting of guideline/recommendations
Prepare guideline/recommendations for the establishment of QC plan

8. Work and Budget Plan

Milestones

Activity/Months	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
Milestone				M1				M2		M3				M4		M5

Month 1: All MC, CG and WG leaders assigned (also GP leaders)

Month 3: Initiate Website, Facebook, Youtube, Leaflet/Brochure

Month 12: At least 4 STSMs launched
Database + Report (Performance Indicators, WG1)
Workshop

8. Work and Budget Plan

Milestones

Activity/Months	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
Milestone				M1				M2		M3				M4		M5

M1 – Report on performance indicators

- General description
- Assessment methods (e.g. visual inspection, non-destructive tests, monitoring systems, etc.)
- Frequency of assessment
- Obtained values
- General recommendations
- Publication in refereed scientific journal papers (special issue) and in international conferences
- Workshop at the end of this task

M2 – Report on performance goals

- Description of technical, environmental, economic and social factors
- Goals computation methods
- Frequency assessment
- General recommendations
- Publication in refereed scientific journal papers (special issue) and in international conferences
- Workshop/Training School at the end of this task

8. Work and Budget Plan

Milestones

Activity/Months	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
Milestone				M1				M2		M3				M4		M5

M3 – Recommendations for the establishment of a QC plan

- Bayesian nets or other heuristic rules (used worldwide)
- Establishment of a procedure for the definition of QC plan for each individual bridge/component
- Publication in refereed scientific journal papers (special issue) and in international conferences
- Workshop/Training School at the end of year 3

M4 – Preparation of a database from benchmarking

- Obtained results will validate the outcomes of WG1, WG2 and WG3
- Publication in refereed scientific journal papers (special issue) and in international conferences
- Conference/Training School at the end of year 4

M5 – Guideline/recommendations

- Development of a new guideline for the establishment of QC plans
- Publication in refereed scientific journal papers (special issue) and in international conferences
- Conference/Training School at the end of this task

8. Work and Budget Plan

Dissemination activities (WG6)

- **Website**
- **Web 2.0** (facebook, youtube)
- **Leaflets/Brochure**
- Poster/Roll-up
- **Workshops/Conferences**
- **STSM** (especially promoted to early-stage researchers)
- **Dissemination meetings** (e.g. conferences, etc.)
- Training schools
- Close interaction with TV channels, radio stations and online service news
- **Journal special issues**
- **Peer-reviewed articles**
- **Reports issued by the Action**
- **E-book**
- Guideline and link to standardization



8. Work and Budget Plan

Dissemination rules

- Dissemination strategies in conferences (e.g. COST and TU1406 logo)
- Acknowledgments in papers and reports
- Leaflet/Brochure dissemination within each member's institution and in all activities in which the members are evolved
- Direct mention of COST involvement in each member's website, together with links to the COST Action, etc.

8. Work and Budget Plan

Specific goals and actions for 1st grant period

	Activity	Location	Date	LOS
1	Integrated MC + WG meeting IABSE15 - www.iabse.org/geneva2015	Geneve (CH)	21-22 Sep. 2015 (2D)	Eleni Chatzi Niels Peter Hoj
2	MC + WG meeting + Workshop	Belgrade (SB)	21-23 Mar. 2016 (3D)	Rade Hajdin Snezana Markovic



4 STSM's should be started

8. Work and Budget Plan

Budget for the 1st Grant Period

Description	Value
A – COST Networking Tools	
A.1 – Meetings	128.880,00 €
A.2 – Training Schools	0,00 €
A.3 – Short Term Scientific Missions (STSM)	10.000,00 €
A.4 – Dissemination	8.460,00 €
A.5 – OERSA	486,00 €
B – Total Science Expenditure (sum A.1-A.5)	147.826,00 €
C – FSAC (máx. 15% of B)	22.174,00 €
D – Total Expenditure (B + C)	170.000,00 €

8. Work and Budget Plan

An outlook into upcoming years

	Activity	Location	Date
1	IABMAS16 - http://www.iabmas2016.org/	Foz do Iguaçu (BZ)	26-30 Jun. 2016

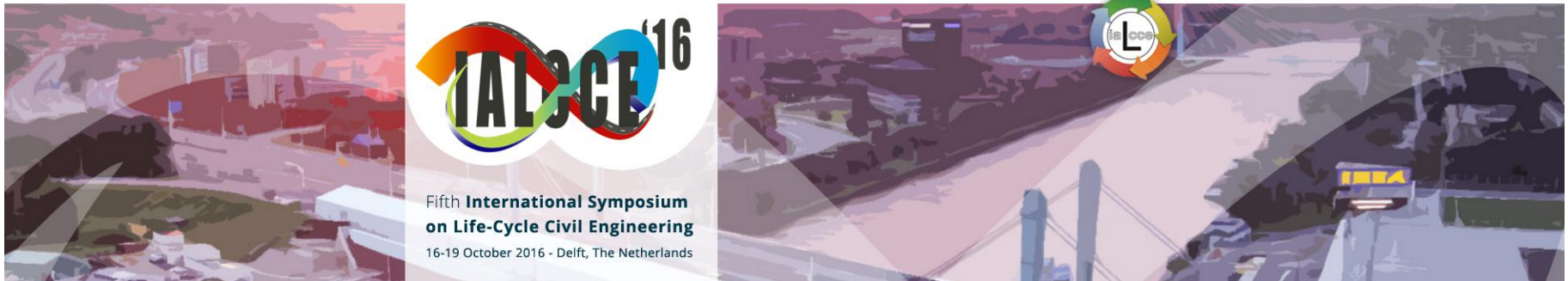


Special Session of COST TU 1406
(invitation to submit abstract – **15th May 2015** - and papers)

8. Work and Budget Plan

An outlook into upcoming years

	Activity	Location	Date	LOS
2	Integrated WG meeting IALCCE16 - http://ialcce2016.org/	The Delft (NL)	20-21 Oct. 2016 (2D)	Irina Stipanovic Andreas Hartmann



Special Session of COST TU 1406
(invitation to submit abstract – **1st June 2015** - and papers)



8. Work and Budget Plan

Scientific goals per WG

Three short presentations:

Alfred Strauss: WG1 – Performance indicators

Irina Stipanovic: WG2 – Performance goals

Rade Hajdin: WG3 – Establishment of a QC plan

9. Any Other Business



10. Closing

Acknowledgments

- COST TU 1406 proponents
- COST TU 1406 MC members
- COST Association

Thank you and see you in Geneve!



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Actions/TU1406](http://www.cost.eu/COST_Actions/tud/Actions/TU1406)