

RailCalc

*Calculation of charges for the Use of Railway
Infrastructure*

THE RAILCALC PROJECT OVERVIEW & RESULTS

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RAILCALC WORKSHOP

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Team

European Commission:



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RailCalc Consortium:



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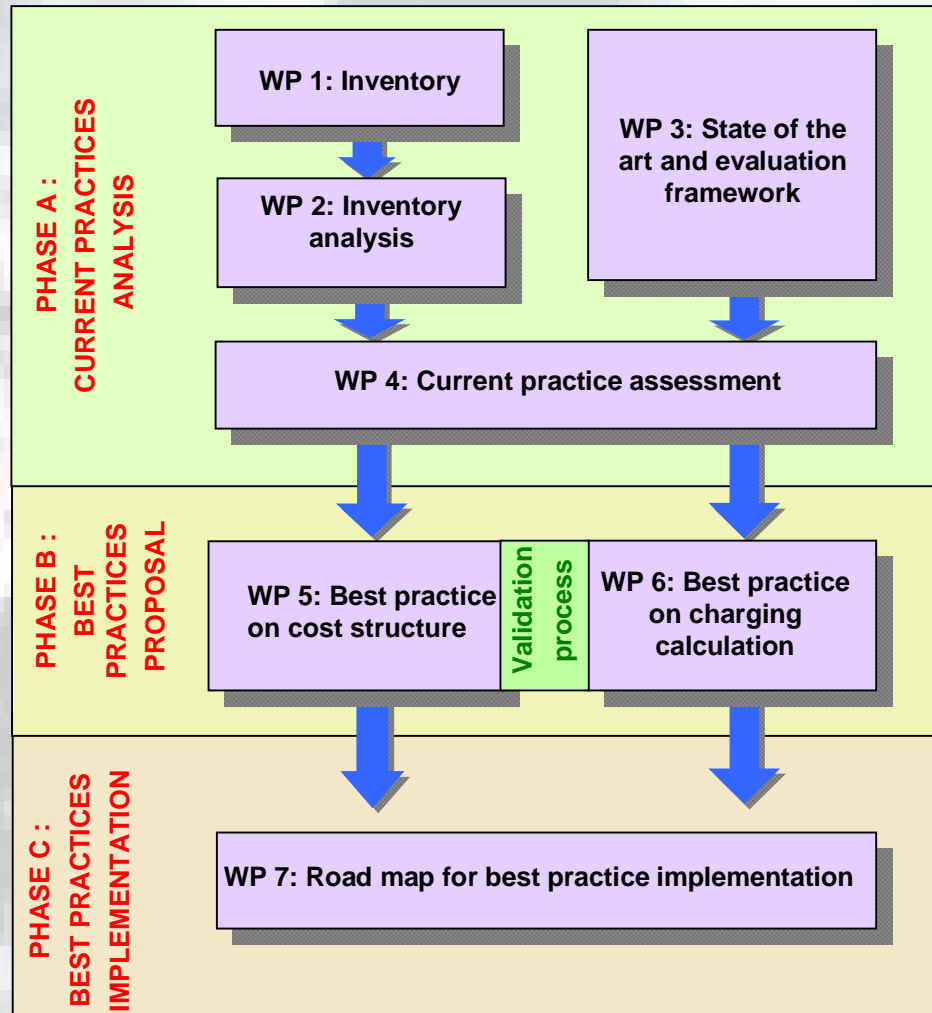
Objectives

- To analyse the estimate of **infrastructure charges** in the Member States (basic charges, mark-ups, performance schemes, reservation charges, scarcity charges, discounts,...)
- To develop a **best practice guide** to set and verify compliance of rail infrastructure charges with the rules of **Directive 2001/14/EC** in close collaboration with rail infrastructure managers, national regulatory bodies and the European Commission.
- To provide a **road map** for infrastructure managers to shift to accounting systems meeting the requirements and general objectives of EC directives.

Scope

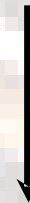
- **32 countries**: the present EU-27 Member States, except Cyprus and Malta, plus Switzerland and the West Balkans

Structure



3 PHASES APPROACH

Diagnostic

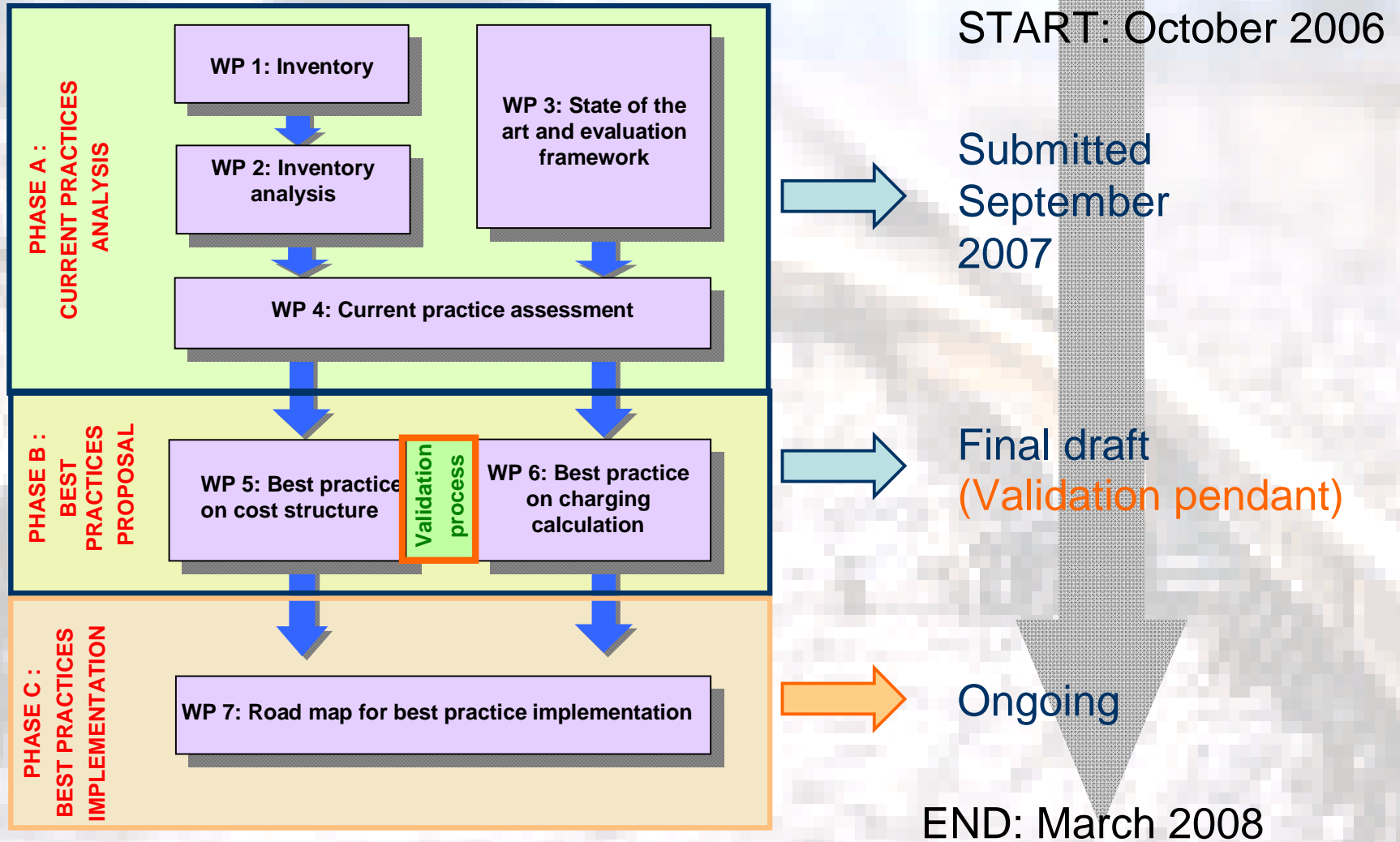


Proposal



Implementation

State of advancement



Contents

OVERVIEW AND RESULTS

PHASE A - DIAGNOSTIC

- Current practices inventory
- Current practices analysis
- Reference framework
- Assessment methodology
- Alignment with Directive 2001/14/EC
- Open assessment

Current practices inventory (1)



Data collection

Inventory

- 21 annual reports (2005)
- 26 network statements (val. 2007)
- Other published information (Previous research projects E.g. RAILIMPLEMENT, TREND, FARU, SERVRAIL, national legislation ...)

Rede Ferrovária Nacional, EP (REFER)		Portugal PT	
CHARGING			
Network Statement	1	Year Starting	2006
Year	2006	Page	1172
From path pricing	0	From path pricing	0
Charging authorities	1	Charging authorities	1
Charging methods	1	Charging methods	1
Price components	1	Price components	1
Base tariff	1	Base tariff	1
Additional terms	1	Additional terms	1
Charging methods	1	Charging methods	1
Price components	1	Price components	1
Base tariff	1	Base tariff	1
Additional terms	1	Additional terms	1

Interaction with stakeholders

- 5 phone interviews
- 8 question lists

Questionnaire

Charging practices

- 21/32 à 66% answers
- 21/26 à 80% of NS

Accounting practices

- 20/32 à 62% answers

Current practices inventory (2)

E.g. **Questionnaire on charging practice** - 27 questions in five blocks

- Charging principles
- Mark-ups
- Congestion and scarcity charges
- Performance schemes
- Discounts

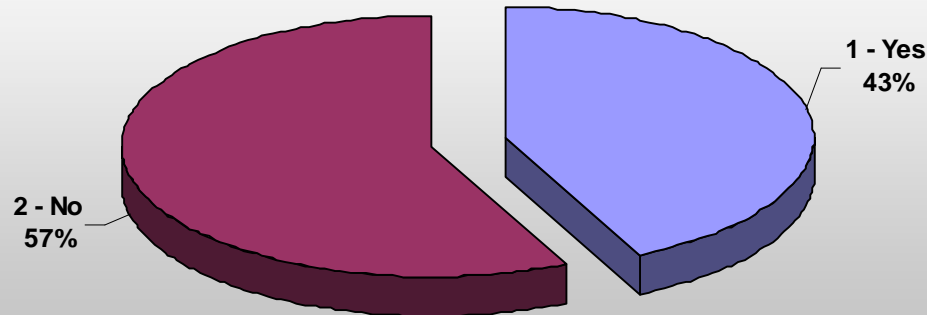
Does your entity consider any of the following charging schemes?

If applying any of the charging schemes based on marginal costs, how does your entity estimate its marginal costs?

How does your entity allocate mark-ups through the charging scheme?

Does your entity consider any performance regime?

Does your entity consider any discount in its charging practice?

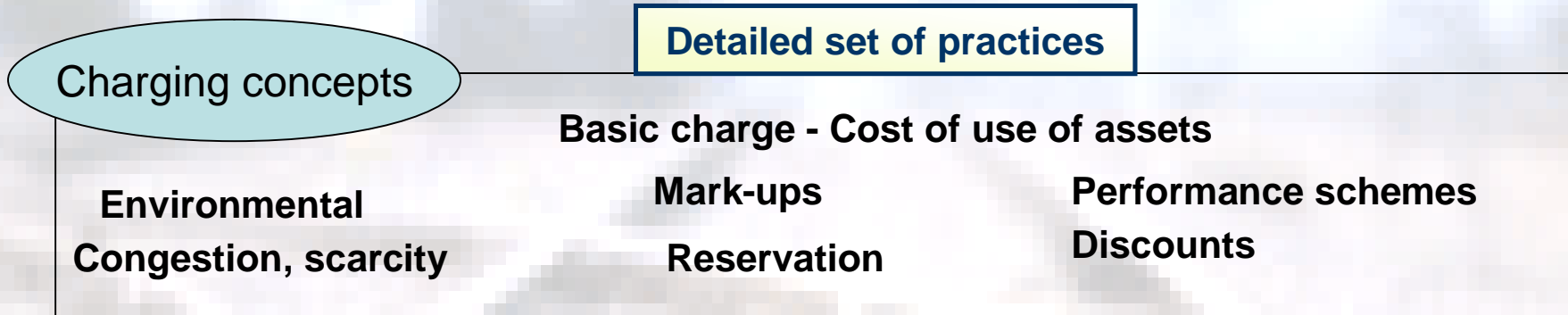


Yes %

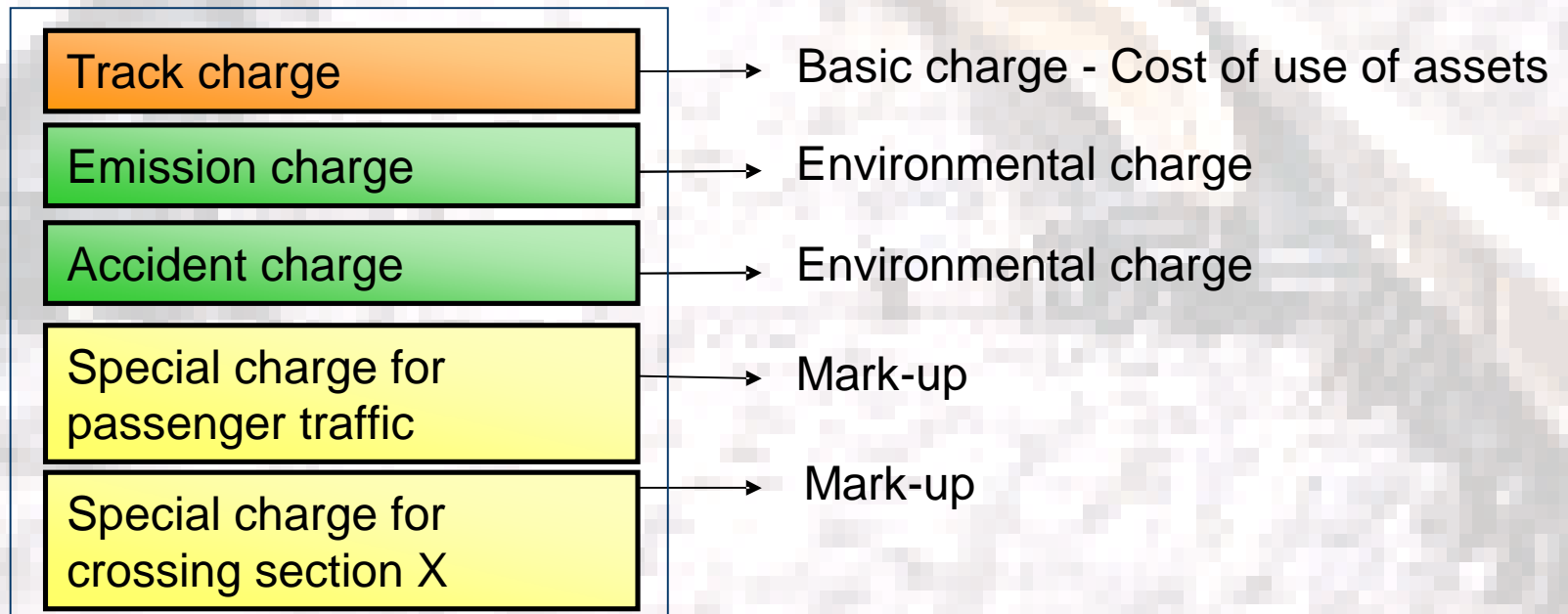
0

Others

Current practices analysis (1)



E.g. 1) Network Statement → Charging concepts



Current practices analysis (2)

E.g.

Basic charge - Cost of use of assets (15)

CUA -01	CUA -02	CUA -03	CUA -04
Marginal costs	Marginal costs	Marginal costs	Marginal costs	
Maintenance costs	Operation costs	Operation, maintenance & renewal costs	Operation, maintenance & renewal costs	
Gross ton-km	Train-km	Gross ton-km	Veh-km	
Non differentiated	Non differentiated	Type of service	Type of vehicle	

These are the practices that will be assessed later on!

Current practices analysis (3)

E.g.

Mark - ups (9)

MUP-01	MUP-02 ...	MUP-05...	MUP-08
New infra costs	New infra costs	Fixed costs	Part of fixed infra costs	
All services (type of service)	All services (Non differentiated)	Pass. services (Geographical areas, traffic)	All services (type of service, line category, time band)	
Modelling WTP	---	WTP through franchising procedure	---	
Levied in new section	Levied in new section	Levied in all network	Levied in all network	
Train-km	Gross ton-km	Fixed amount	Train-km	

Current practices analysis (4)

E.g.

Environmental

- Charges / Compensation
- Noise / Air pollution / Accidents
- Type of service / traction

Discounts

- New link of the network
- Infrastructure backwardness
- Maintenance vehicles /single loc./empty passenger cars/...
- Exceptional events / duration of contracts /..

Reservation

- Administrative / other costs
- Per request / per train-path / per path-km

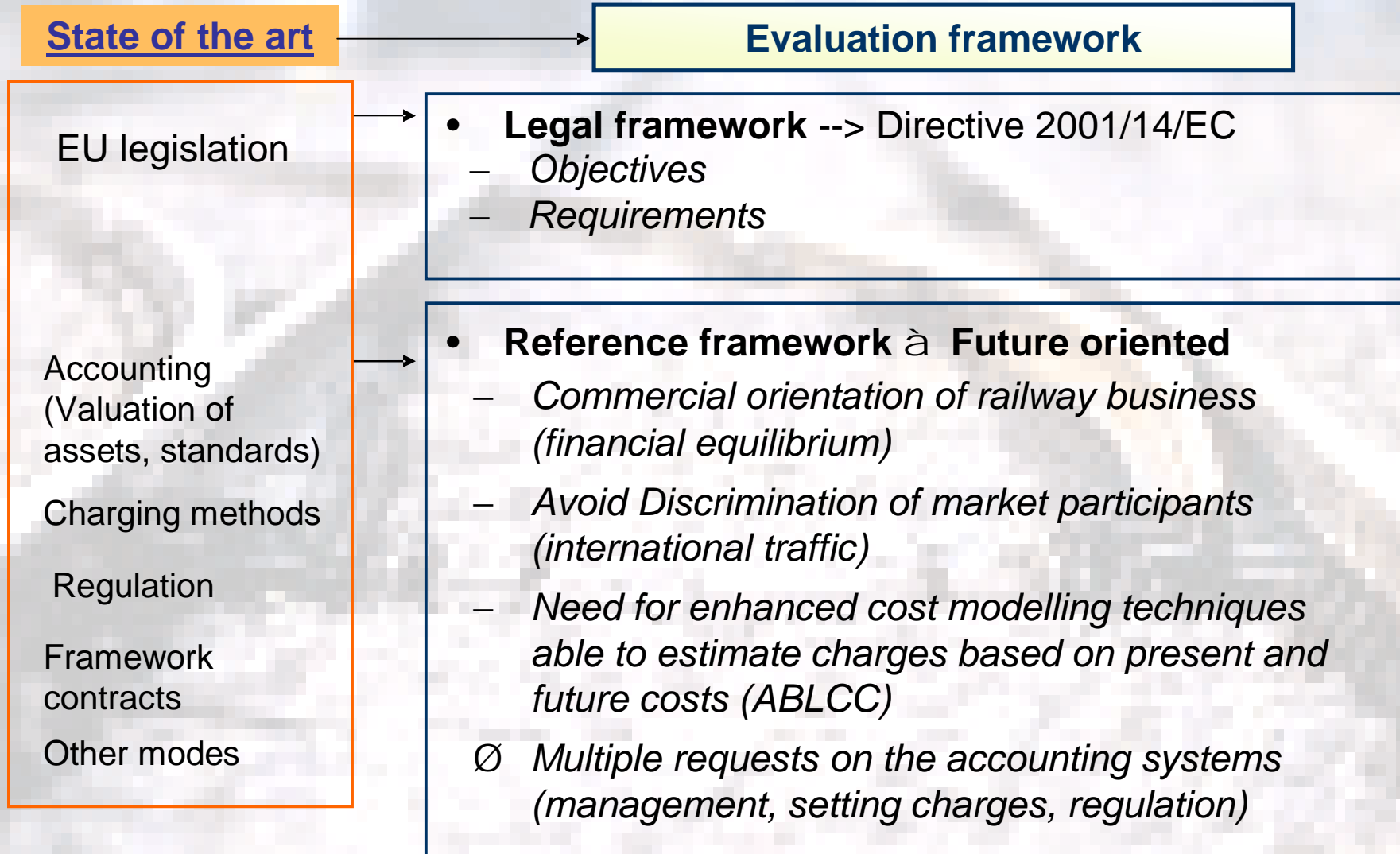
Performance schemes

- To some RU / to all services
- Based on delay minutes / based on a % of refund money to costumers for delays
- Fixed price / secondary delays issues

Congestion

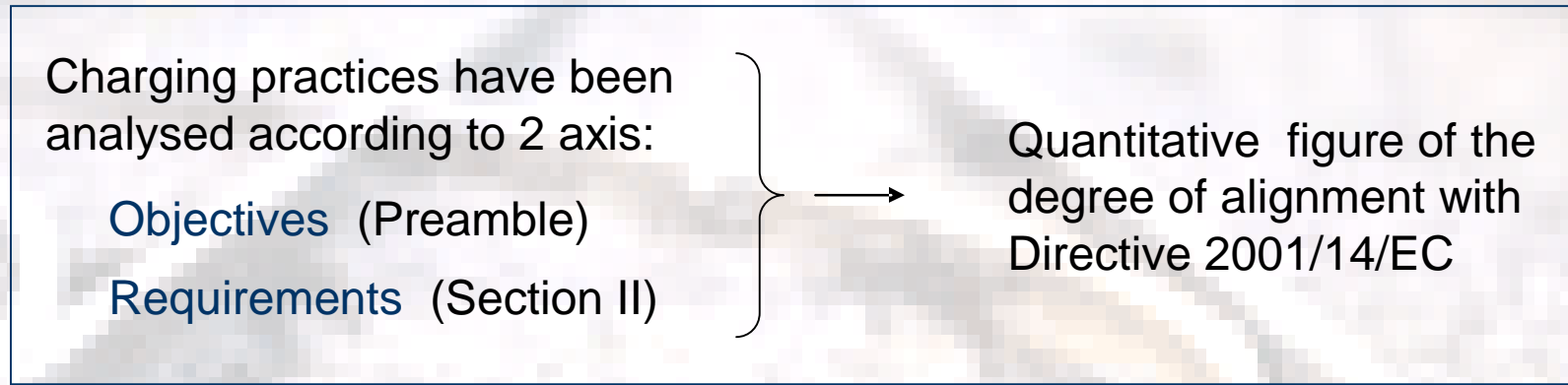
- Variations according to time / speed deviation (fixed speed or regarding allocated train path)
- Types of services

Evaluation framework

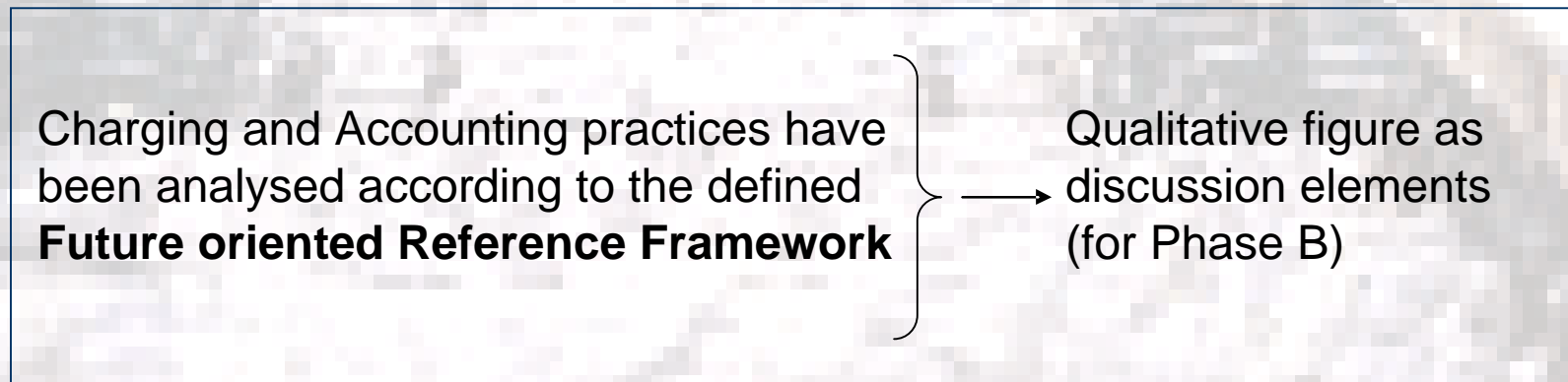


Assessment methodology

1) Alignment with current legal framework (Directive 2001/14/EC)



2) Open assessment (SWOT analysis)



Alignment with Directive 2001/14/EC (1)

Criteria

Recital N ^o /4	Statement	Objective
(11)	(...) Charging schemes should attempt as far as possible to <u>meet the needs of all users and traffic types in a fair and non-discriminatory manner.</u>	Fairness (intramodal)
	<ul style="list-style-type: none"> • Fairness (intramodal): Charging practices will be considered aligned with this objective if they apply in a proportionate way to different services. Proportionality is to be established with respect to each charging concept (e.g. for performance schemes - delay causation, etc.) 	
Practice	Objectives	
PER	Non discriminatory access Fairness (intramodal) Incentives to operational efficiency (PER)	

Identification of objectives and requirements (specific and general)

Formulation of analysis criteria for every objective / requirement

Selection of objectives / requirements for every "charging concept"

Alignment with Directive 2001/14/EC (2)

Output

objectives

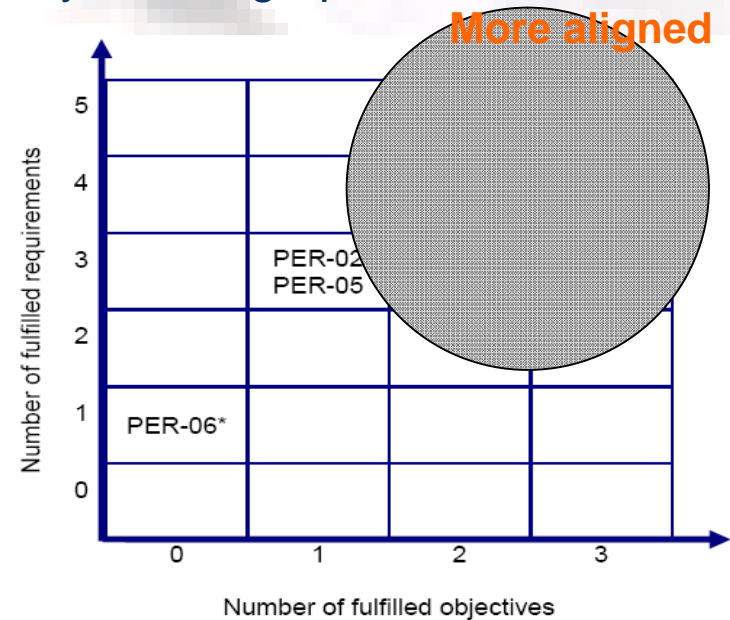
8 Synthesis tables

PER	00	01	02	03	04	05	06
Non discriminatory access	n/a	+	+	+	+	+	-
Fairness (intramodal)	n/a	-	-	+	+	-	-
Incentives to operational efficiency (PER)	n/a	+	-	+	+	-	?
Non discriminatory charges for different RU	n/a	+	+	+	+	+	-
Equivalent charges for equivalent uses and services	n/a	-	-	-	+	-	?
Implementation of a performance scheme (PER)	-	+	+	+	+	+	+
Improvement of operational performance of the network (PER)	n/a	+	-	+	+	-	?
Uniformity of the performance scheme (PER)	n/a	+	+	+	+	+	?

requirements

Relative evaluation of the degree of alignment

8 Synthesis graphs



Alignment with Directive 2001/14/EC (3)

E.g.

TABLE 21 Assessment according to legislative framework. Asset related charges

CUA	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Economic efficiency	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-
Non-discriminatory access	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
						-	+	-	+	-	+	+	-	-	-
according to specificities					+	-	-	+	+						
Uniformity of charging principles	+	+	+	+	+	+	+	-	+						
Non discriminatory charges for different RU	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Marginal cost approach	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-
Relation between charges and costs attributable to infra services	-	-	+	+	+	+	-	+	-	+	+	+	+	-	-

Charges related to the cost of use of assets

CUA-04: Charges recovering operation, maintenance and renewal marginal costs per vehicle-km according to the vehicle characteristics.

Practices codes indicated in §5.1; (+) Positive assessment, (-) Negative assessment

Alignment with Directive 2001/14/EC (3)

E.g.

TABLE 21 Assessment according to legi:

CUA	01	02	03	04
Economic efficiency	+	+	+	+
Non-discriminatory access	+	+	+	+
Incentives to cost efficiency	-	-	-	+
Cost-relatedness (CUA)	+	+	+	+
Differentiation according to specificities	-	-	-	-
Uniformity of charging principles	+	+	+	+
Non discriminatory charges for different RU	+	+	+	+
Marginal cost approach	+	+	+	+
Relation between charges and costs attributable to infra services	-	-	+	+

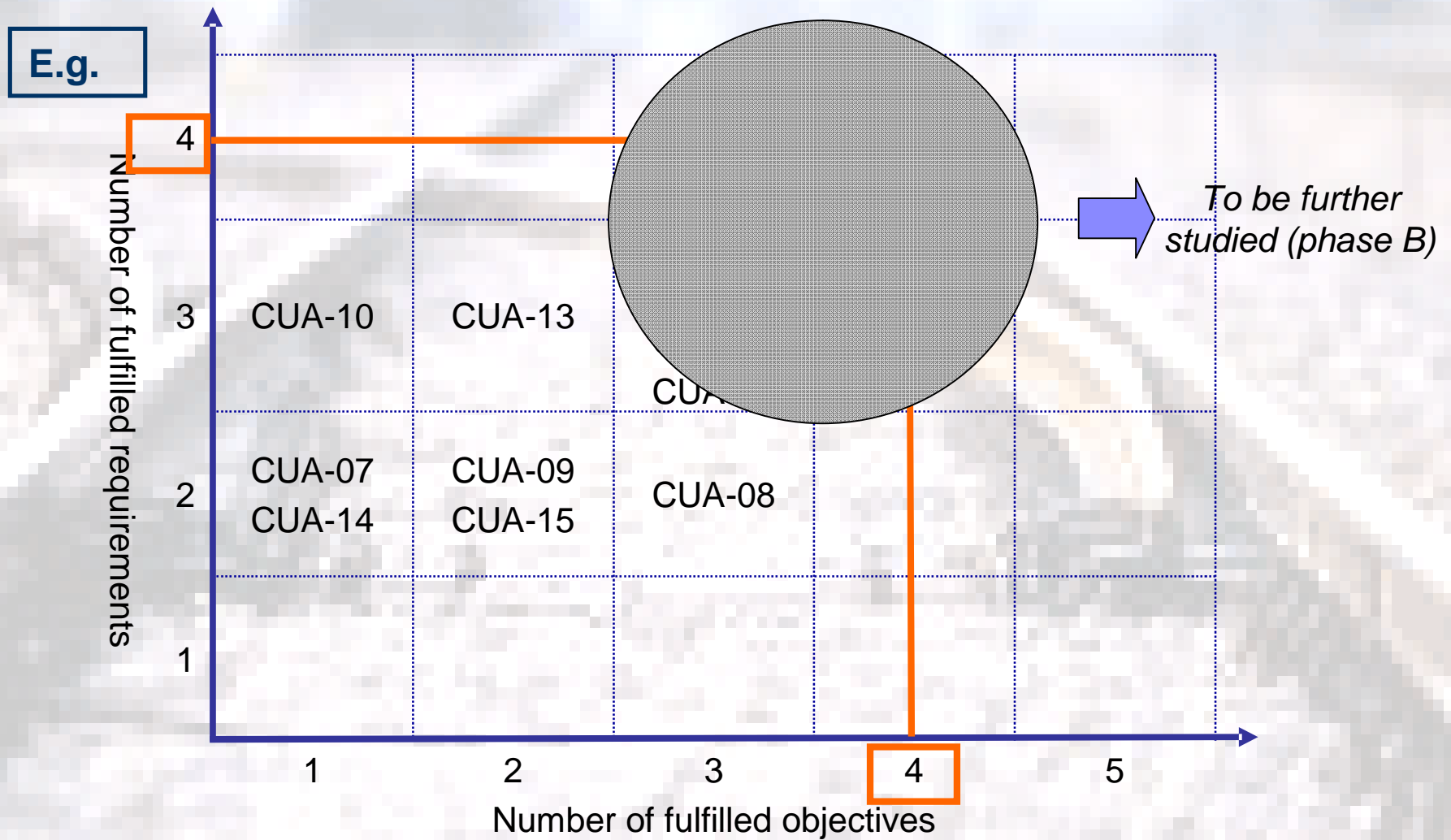
Practices codes indicated in §5.1; (+) Positiv

4 Objectives

- + : Marginal cost based
- + : RU are not discriminated
- + : Vehicle related variables
- + : Marginal cost based
- : No Infrastructure related variables
- + : Same principles in all the network
- + : RU are not discriminated
- + : Marginal cost based
- + : Marginal cost based

4 Requirements

Alignment with Directive 2001/14/EC (3)



Open assessment – Future oriented

Criteria

How do current practices perform regarding the reference framework?

Aspects related to the setting of charges

- Calculation / estimation of MC
- Allocation of costs to charges (railway services, railway infrastructure, services provided)
- Estimation of future costs / Linkage to LCC methods

Aspects related to the verification of charges

- Assessment of IM efficiency
- Establishment of comparisons with similar entities

Open assessment (2)

PHASE A

Assessment

13 SWOT (Accounting)

Accounting units: sections over the network.

Strengths

- Detailed cost knowledge
- Easy correlation to traffic
- Easy correlation to infrastructure data
- Easy correlation to railway services

Opportunities

- Analysis of infrastru cost drivers
- Linkage to marginal / calculation
- Linkage to LCC methodologies

Weaknesses

- Difficulty to define sections
- Requires demanding cost information system

Threats

- Potential difficulties in implementation
- Possible increase of administrative costs

72 SWOT (Charging)

CUA-04 Basic charges recovering operation, maintenance and renewal marginal costs per vehicle-km according to the vehicle characteristics.

Strengths

- Based on a detailed cost calculation procedures
- Levied according to detailed vehicle cost drivers

Opportunities

- Linkage to LCC methodologies
- Incentive to improve rolling stock characteristics and reduce maintenance costs
- Incentive to a balanced distribution of services

Weaknesses

- Evolving calculation methodology
- Not considering network specificities
- Complex calculation procedure (generally)

Threats

- Possible changes over time
- Possible cross subsidization between different types of line

Open assessment (3)

PHASE A

E.g.

Accounting units: sections over the network.

Strengths

- Detailed cost knowledge
- Easy correlation to traffic
- Easy correlation to infrastructure data
- Easy correlation to railway services

Opportunities

- Analysis of infrastructure-based cost drivers
- Linkage to marginal cost estimation / calculation
- Linkage to LCC methodologies

Weaknesses

- Difficulty to define sections
- Requires demanding cost information system

Threats

- Potential difficulties in implementation
- Possible increase of administrative costs

Open assessment (4)

PHASE A

E.g.

CUA-04 Basic charges recovering operation, maintenance and renewal marginal costs per vehicle·km according to the vehicle characteristics.

Strengths

- Based on a detailed cost calculation procedures
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Weaknesses

- Evolving calculation methodology
- Not considering network specificities
- Complex calculation procedure (generally)

Threats

- Possible changes over time
- Possible cross subsidization between different types of line

Phase A results (1)

Identification of relevant practices to be **further studied**

- Basic charges (CUA) recovering marginal operation, maintenance and renewal costs, **incorporating significant cost drivers** able to reflect the contribution (to wear and tear) of different types of **rolling stock** in different types of **infrastructure**. However, such charging systems stresses the need for detailed accounting data and models able to clarify the link of costs to services.
- **Mark-ups** allocated to railway services after having **explored the WTP** of operators (through demand models or through a tendering procedure), taking into **consideration intermodal competition effects**. Both aspects should preferably be approached through variables linked to **railway services (divided into specific market segments)** and **time band**.
- **Reservation charges increasing as the departure time is approaching**. Their level should be set as a compromise between the flexibility of the operator and the planning activity of the infrastructure manager.

Phase A results (2)

Identification of relevant practices to be **further studied**

- **Performance schemes** applied to **all services**, based on the **measurement of the delay minutes** caused or suffered by every stakeholder.
- **Scarcity charges** applied only to sections declared congested, sufficiently **differentiated per time band**. Calculation procedure of WTP of different market segments for specific slots are still an open issue (auctioning?)
- **Environmental charges** reflecting **external marginal costs** and differentiated according to **cost causation-related variables** and taking into consideration the practice followed in **other transport modes**.
- **Discounts** intended to stimulate the use of new links of the network.

Phase A results (3)

Identification of relevant practices to be further studied

Ø Regarding the requirements for **accounting systems**, the analysis according to the reference framework points out the need for a detailed cost allocation to **physical** (preferably **section** based) and **organizational accounting units** (preferably linked to **specific activities**)



From the perspective of charging, as well as regards the commercial orientation of the IM activity and the external control of its performance, the adoption of **activity based costing (ABC)** is of great interest.

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Thank you for your attention !!