



MAFEIP-Tool

Conceptual Framework, analytic approach & implementation

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The views expressed are those of the author and may not in any circumstances be regarded as stating an official position of the European Commission!

Action Group	Action Group Theme	Participating Commitments
A1	Better prescription and adherence to medical plans for older patients	68
A2	Personalized health management, starting with a falls prevention Initiative	68
A3	Prevention and early diagnosis of frailty and functional decline, both physical and cognitive, in older people	131
B3	Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level	125
C2	Development of interoperable independent living solutions, including guidelines for business models	59
D4	Innovation for age friendly buildings, cities and environments	66

Sources: EC. 2011; Abadie et al. 2014

MAFEIP in a nutshell



Step 1

Develop a conceptual framework for monitoring and assessing EIP on AHA outcomes



Framework

Step 2

Create a shortlist of indicators to quantify relevant outcomes on intervention level



Indicators

Step 3

Build a generic model to link diverse outcomes on intervention level to indicators on Partnership level



Model

Step 4

Implement the model in a way that allows remote data input and assessment throughout entire life cycle of a technology



Tool

Step 1

**Conceptual framework for monitoring and assessing
EIP on AHA outcomes**



Economic evaluation in health....

....is the comparative analysis of alternative courses of action in terms of both...*

...their costs

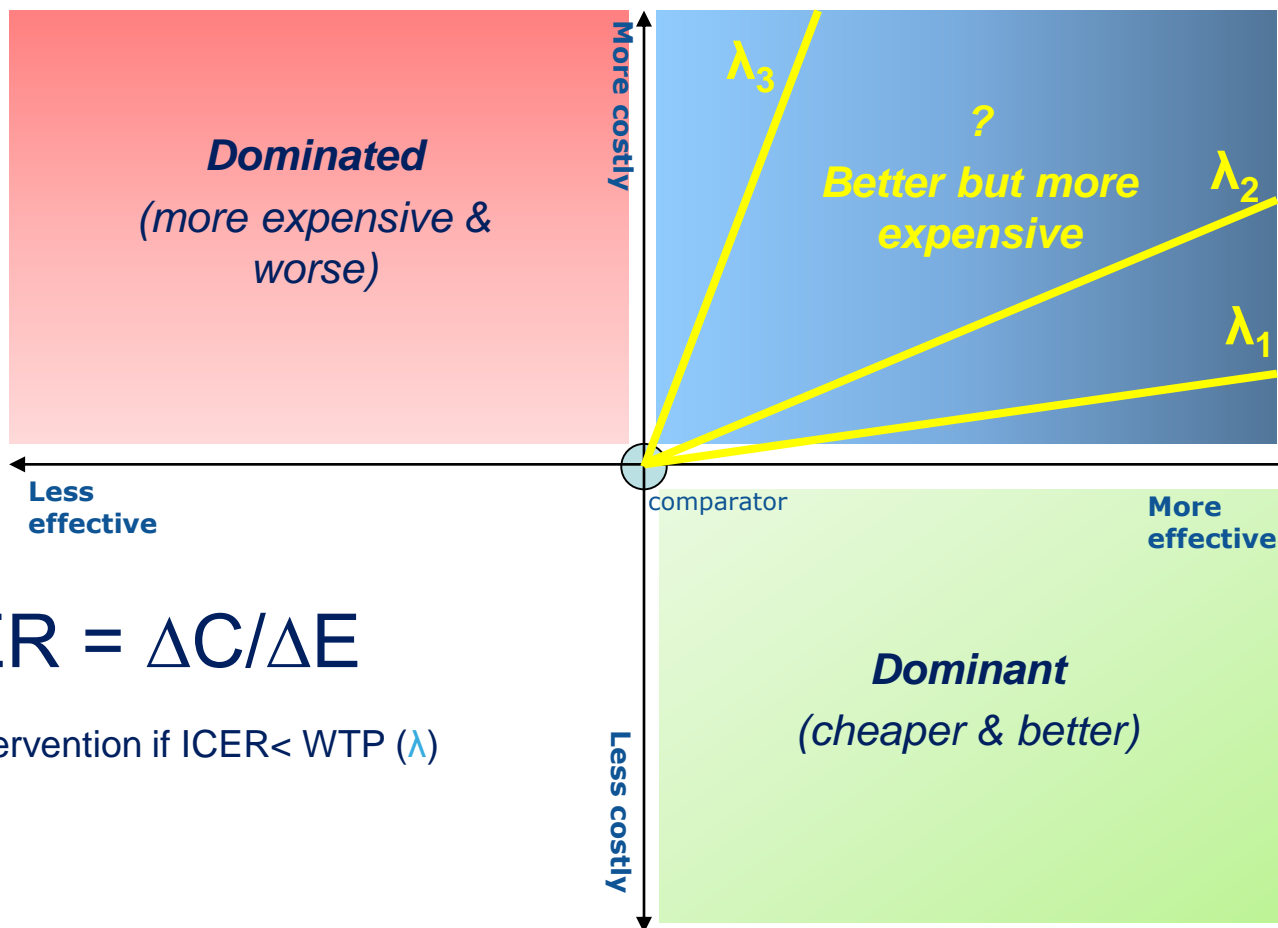
$$\text{Cost}_{\text{intervention}} - \text{Cost}_{\text{comparator}} = \Delta C$$

...and consequences

$$\text{Effect}_{\text{intervention}} - \text{Effect}_{\text{comparator}} = \Delta E$$

$$\text{ICER} = \Delta C / \Delta E$$

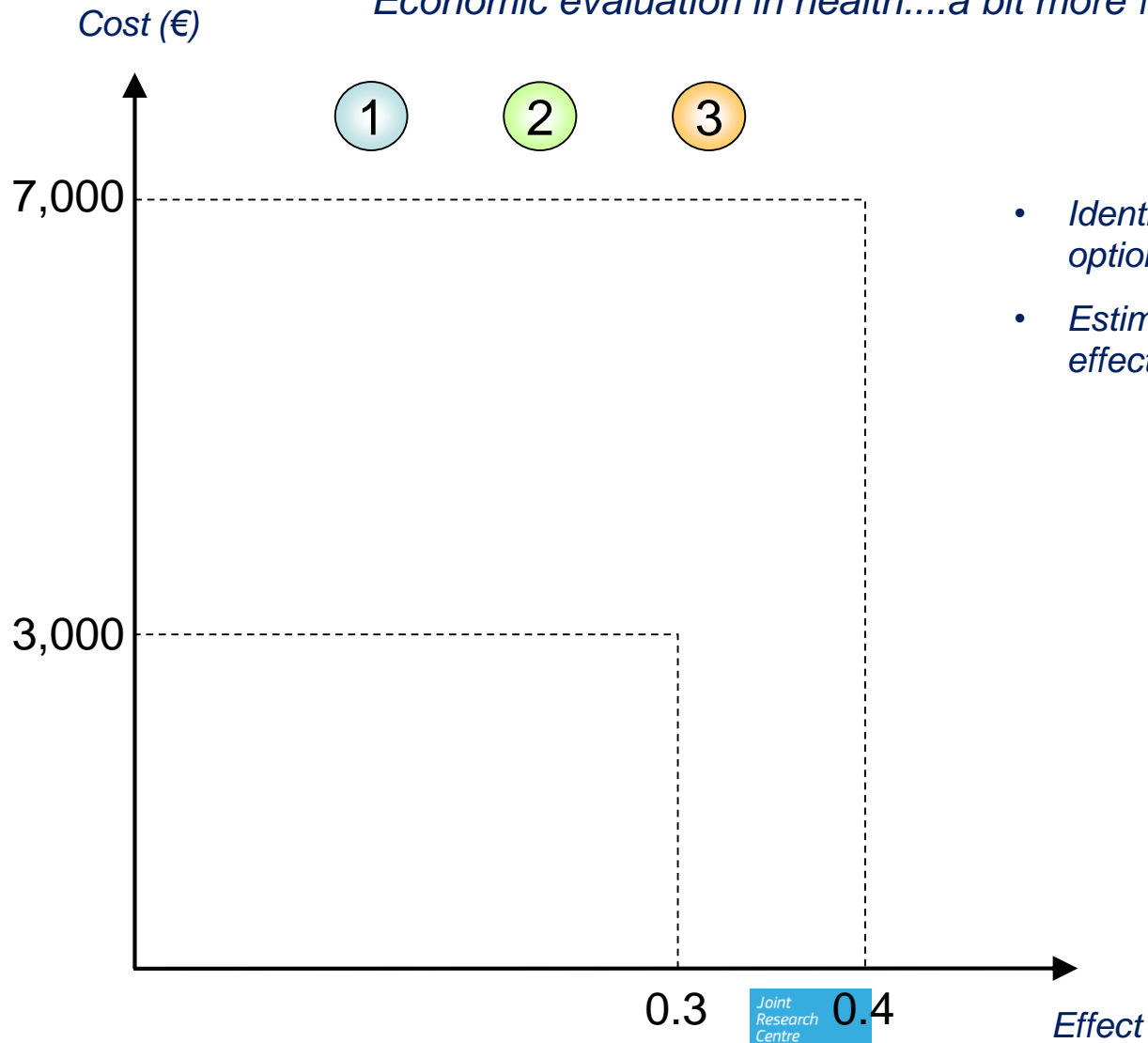
(Accept intervention if ICER < WTP for health gain (λ))



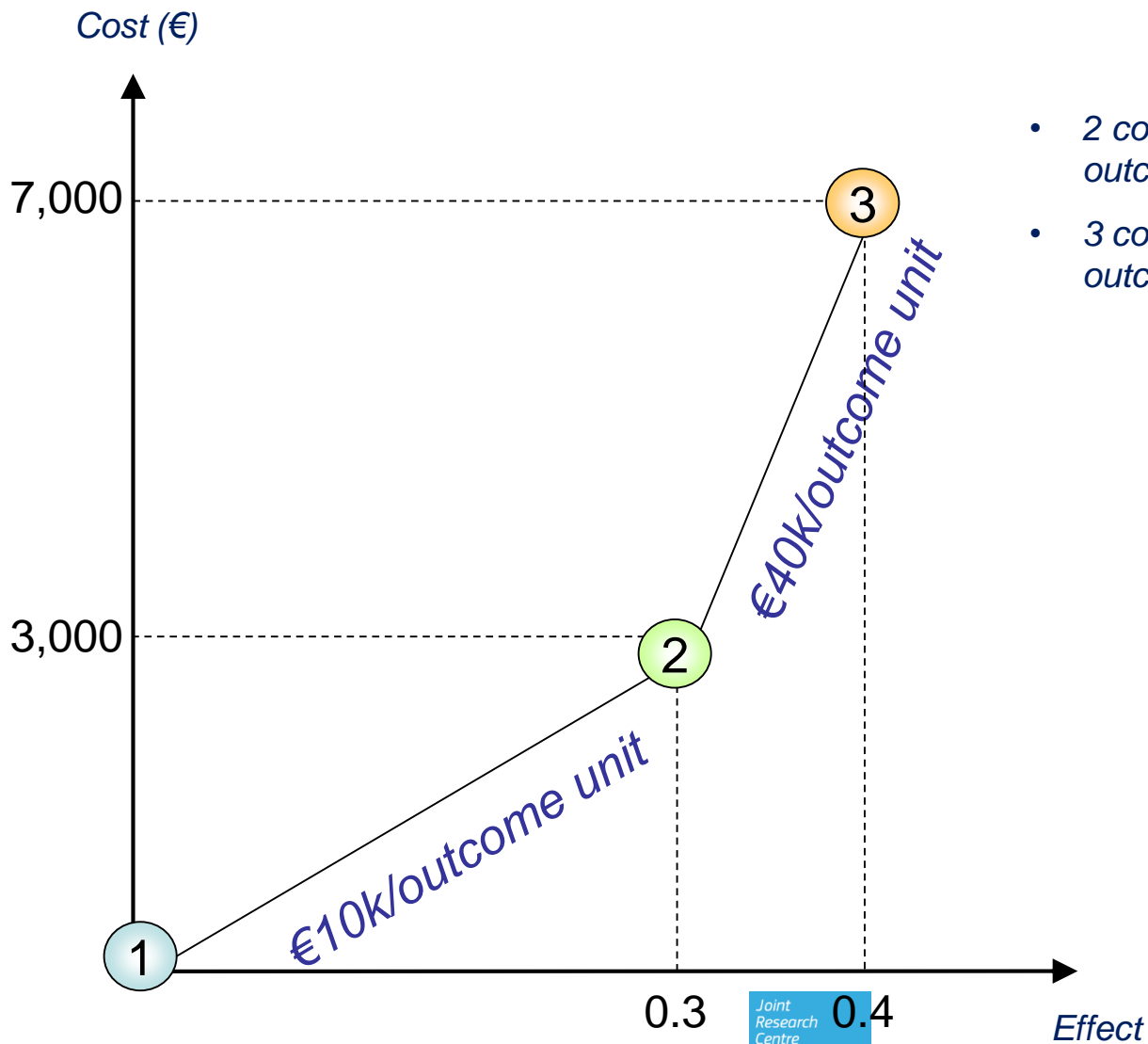
$$ICER = \Delta C / \Delta E$$

Accept intervention if $ICER < WTP (\lambda)$

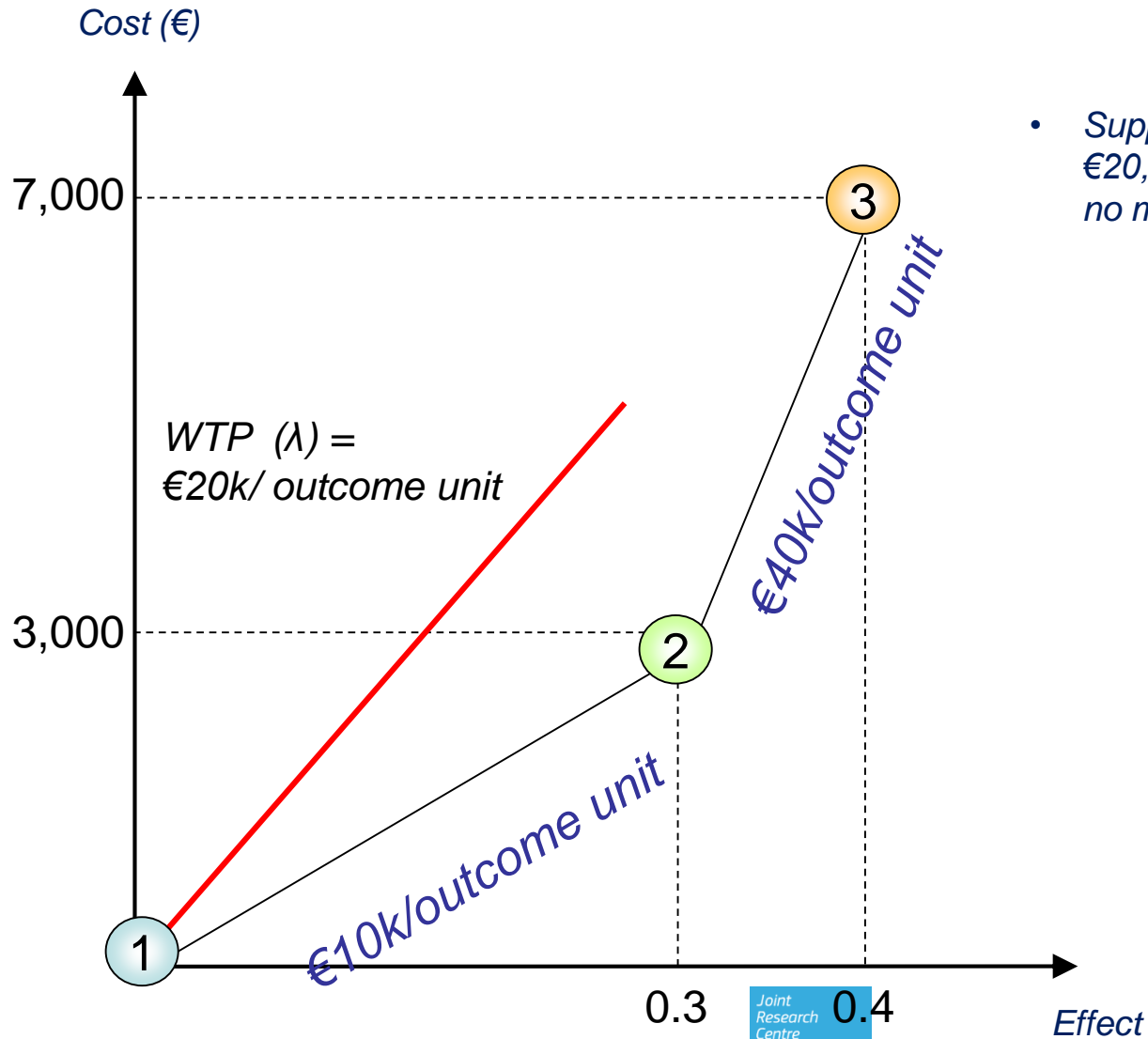
Economic evaluation in health....a bit more formally



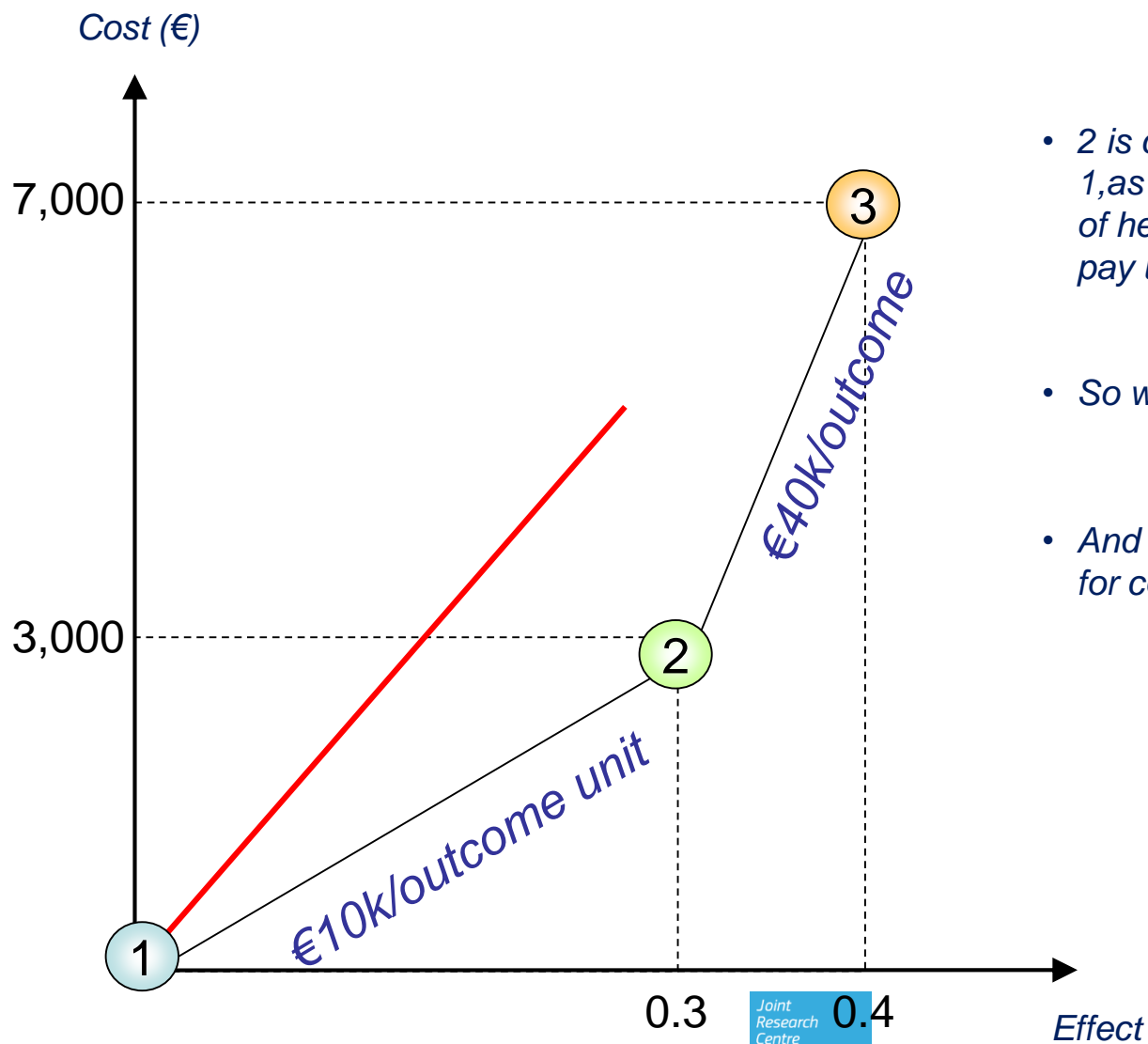
- *Identify all feasible treatment options for a given patient group*
- *Estimate the costs and health effects of each and plot on graph*



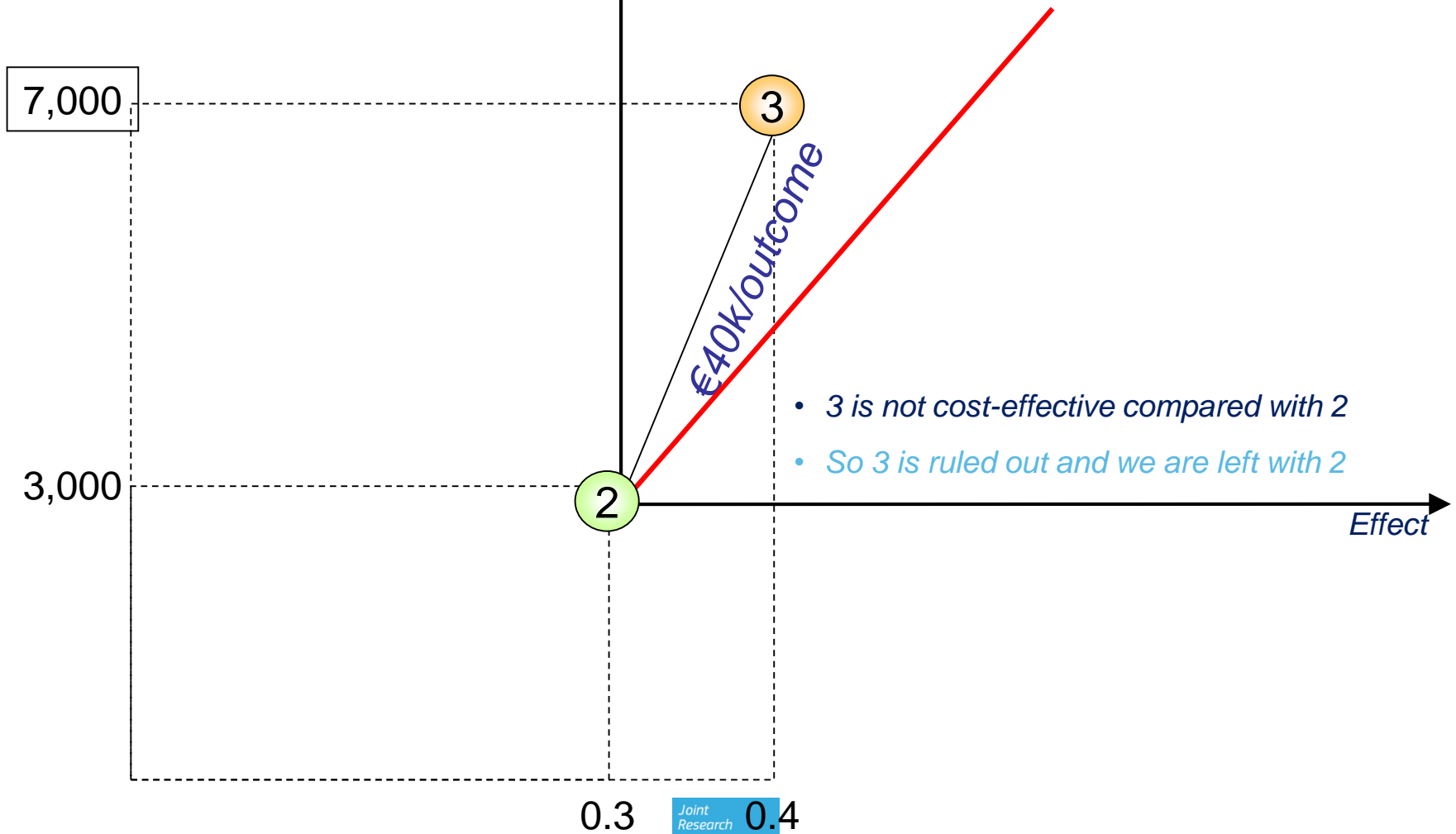
- 2 costs €10,000 per unit of health outcome compared with 1
- 3 costs €40,000 per unit of health outcome compared with 2



- Suppose we will pay up to €20,000 per unit of outcome, but no more



- 2 is cost-effective compared with 1, as it costs €10,000 more per unit of health outcome and we would pay up to €20,000
- So we can rule 1 out
- And 2 becomes the new baseline for comparison





To sum up:

- **MAFEIP builds up from the principles of health economic evaluation**
- **The tool allows a comparative assessment of a certain health technology relative to a suitable standard care scenario**
- **It needs to be highlighted, however, that it is not the intention to compare commitments or Action Groups in terms of their outcomes!**
- **As the standard care scenario will differ for each technology under evaluation:**
 - commitments can use the tool to assess whether they are providing benefit to patients and healthcare systems and
 - the EC can estimate the overall impact generated through the activities of the EIP on AHA,
 - **However, direct comparison across commitments is not feasible (nor was it our mandate) as each assessment is, by definition, context specific!**

Step 2

**Shortlist of indicators to quantify relevant outcomes
on intervention level**

Outcome indicators



Headline Target +2 HLYs

Triple Win Quality of Life Sustainability Innovation & Growth

Outcome indicators on intervention / commitment level

?

Indicators should be:

Legitimate

Credible

Salient



Activities to shortlist potential outcome indicators:

1. Input from Action Groups & experts to compile a long-list of potential indicators (June – August 2012)
2. Review of 71 Reference Sites' good practices (April 2013)
3. Review of macro-level and intermediary indicators from international databases (April – June 2013)
4. Clustering of indicators by Action Groups (October 2013)
5. Literature review on outcome indicators used in Action Groups' scientific domains (April – Dec. 2013)
6. Outcome indicator survey amongst EIP on AHA commitments (April – June 2014)

Outcome indicators



Headline Target

- Interval properties
- Non-discriminatory
- Additive

+2 HLYs

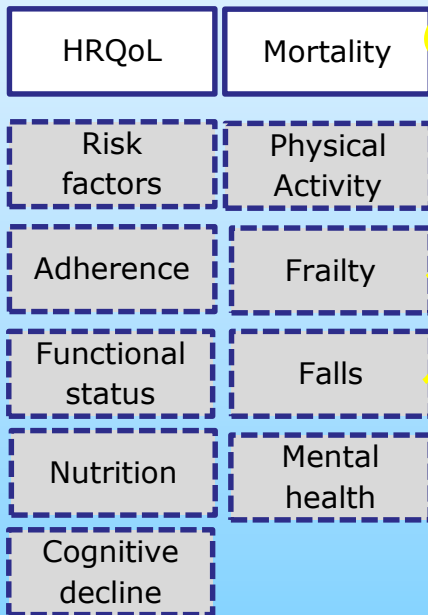
Triple Win

QALYs

Health, care expenditure

Innovation & Growth

Outcome indicators on intervention / commitment level



Incremental change in resources used

X

(Local) unit cost for resources

Nr. of implemented technologies

Nr. of users of new technologies

Nr. of created jobs

Nr. of new SMEs

Step 3

Building a generic model to link diverse outcomes on intervention level to indicators on Partnership level



P

U

R

C

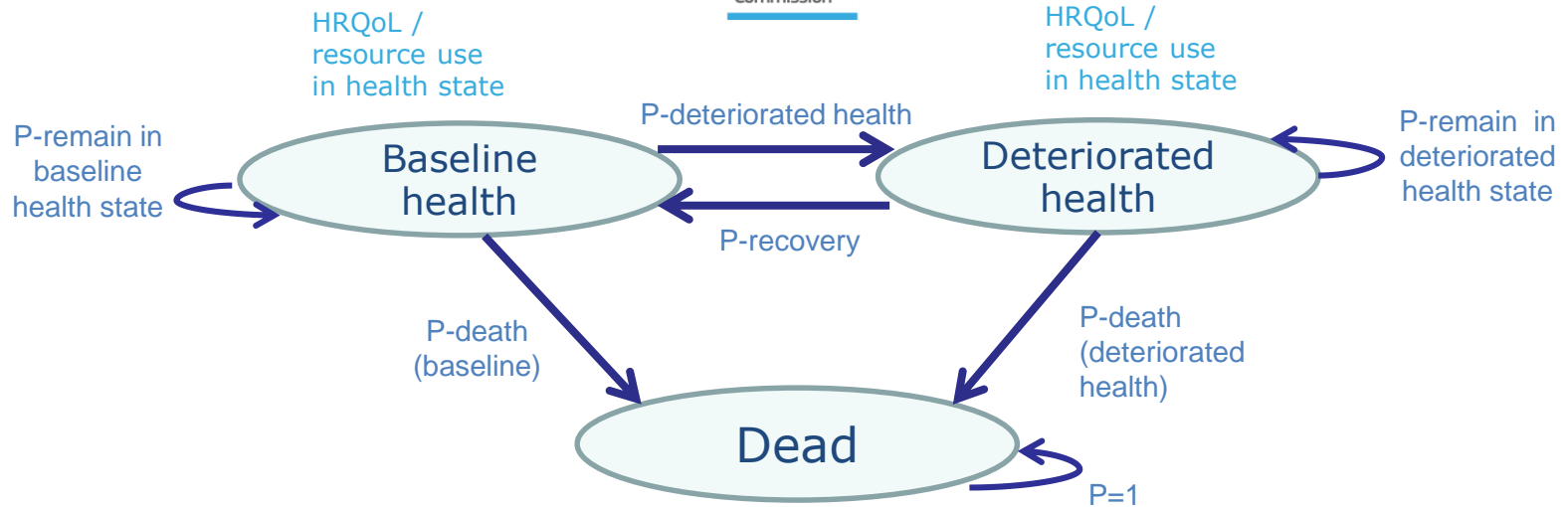


Decision Analytic Modelling
(DAM)

The appeal of DAM for MAFEIP is its tremendous flexibility as the approach:

"pulls together the many needed pieces of information from multiple sources and then stitches them together into a (hopefully) cohesive whole" (O'Brien, 1996*)

DAM allows for the *'maximum of consistency with the minimum of duplicative efforts'* (Steuten et al., 2008**)



Hence, the model essentially consists of:

- Health states a target patient is currently in or may experience in the future
- Probabilities to move from one health state to another, and for each health state
- Costs (resource use valued in monetary units), and
- Values or utilities for health outcomes

Step 4

Implementing the model in a way that allows remote data input and assessment throughout entire life cycle of a technology



Web-implementation

- Implementation of MAFEIP-model as web-based tool
- Aim is remote data-entry by stakeholders from commitments
- The tool provides background data to populate (some) parameters with baseline estimates
- User-friendly web-interface, validity checks, background information and guidance by IPTS should facilitate this process



Web-implementation

**Validity / Quality control
over data inputs**

Coverage of commitments

Data collection
exclusively by IPTS

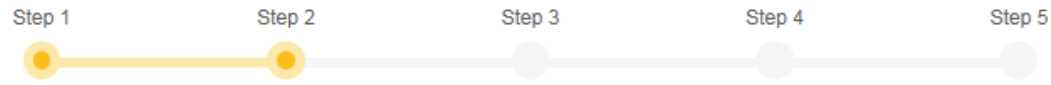
Web
implementation



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The MAFEIP Model

European Commission › JRC Science Hub



Model input

The data to be used in the model should be provided here. The parameters required are divided into four sections: (1) model analysis, (2) costs associated with health states and intervention costs, (3) transition probabilities for moving between health states with and without the intervention, and (4) utilities (also called quality of life weights) that are associated with each health state. A value has to be selected for each input parameter in order to run the model. Each section provides you additional information on the respective parameters.

Set-up

Probabilities

Costs

Utilities

Health-related quality of life weights associated with baseline health and deteriorated health should be provided here.

Health-related quality of life (HRQoL)

The HRQoL as expressed through a quality-of-life weight (utility) represents a particular health outcome. The higher this utility value, the higher the quality-of-life associated with that health outcome. A utility of 0 indicates no quality of life or dead, whereas a utility of 1 indicates quality-of-life in perfect health.

	Control group	Intervention group
Baseline health	<input type="text" value="0.811"/>	<input type="text" value="0.811"/>
Deteriorated health	<input type="text" value="0.755"/>	<input type="text" value="0.755"/>



Using the tool across the entire life cycle

*'Simply speaking, an early health economic model is a standard economic model applied to an early stage of development'**



Using the tool across the entire life cycle

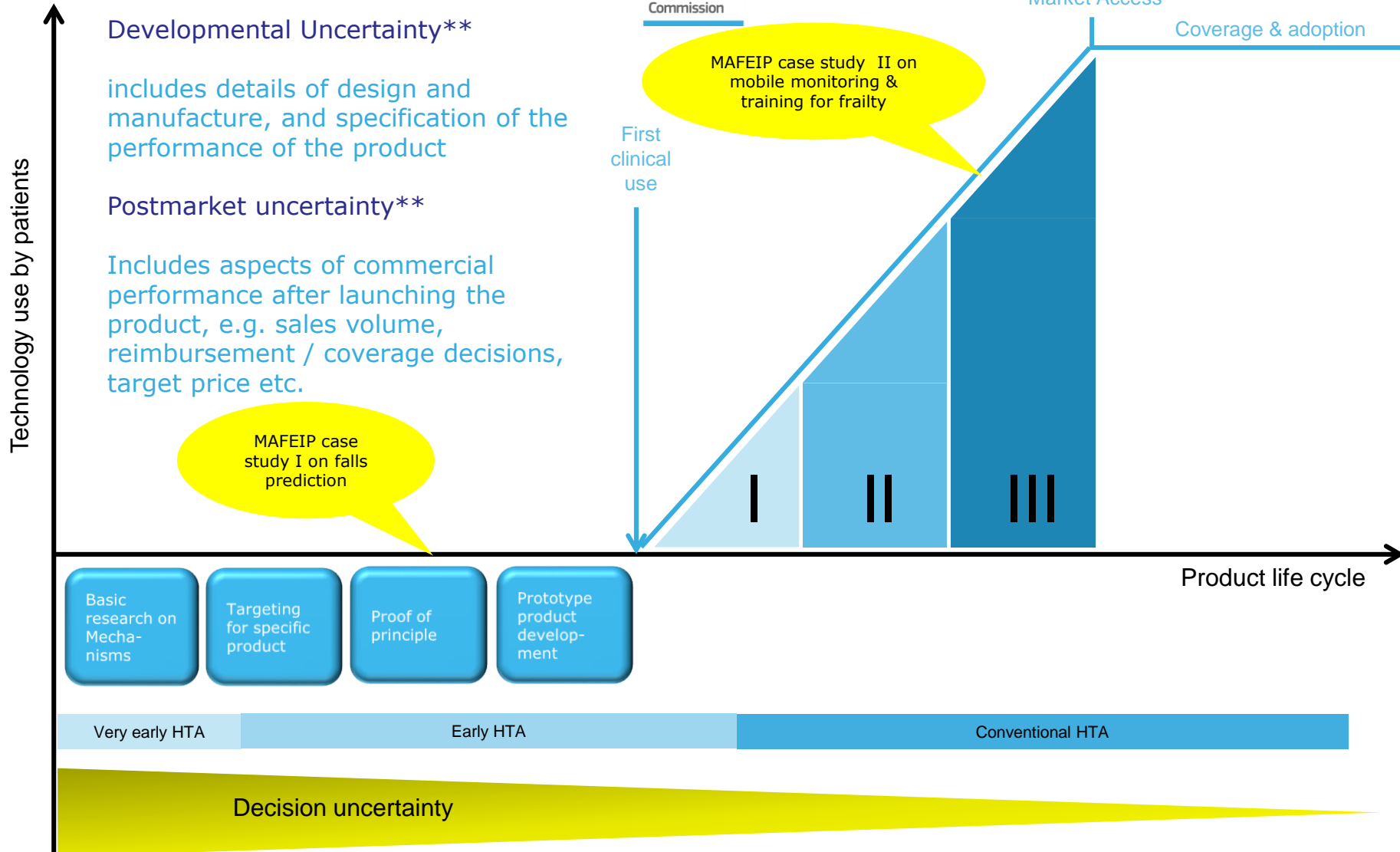
- Due to the early stages of EIP on AHA data is generally scarce and scattered
- This does not mean, however, that monitoring and assessment of the technologies developed and carried out within the EIP on AHA is not possible
- The MAFEIP-tool allows synthesizing the best information currently available from multiple sources for a particular health technology
- This, in turn, allows performing an early assessment of a technology even before it has been clinically tested
- The resulting evidence may help to inform decisions about the future design of the technology, and to estimate its overall market potential at an early stage during the product life cycle



European Commission

Market Access

Coverage & adoption



Developmental Uncertainty**

includes details of design and manufacture, and specification of the performance of the product

Postmarket uncertainty**

Includes aspects of commercial performance after launching the product, e.g. sales volume, reimbursement / coverage decisions, target price etc.

MAFEIP case study I on falls prediction

MAFEIP case study II on mobile monitoring & training for frailty

First clinical use

Basic research on Mechanisms

Targeting for specific product

Proof of principle

Prototype product development

Very early HTA

Early HTA

Conventional HTA

Decision uncertainty

Discussion