Value of Innovation Partnerships
for Smart Cities and Communities

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Episode 16: Procurement for SSCs: innovative mechanisms for Digital transformation

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- Introducing IP

- Problems when deploying IP

- Strategic option approach

- Valuating the contract

- The case of IPR

- Safeguard clauses

2014 Directive defining what is an Innovation Partnership (IP)

Article 31

Innovation partnership

1. In innovation partnerships, any economic operator may submit a request to participate in response to a contract notice by providing the information for qualitative selection that is requested by the contracting authority.

In the procurement documents, the contracting authority shall identify the need for an innovative product, service or works that cannot be met by purchasing products, services or works already available on the market. It shall indicate which elements of this description define the minimum requirements to be met by all tenders. The information provided shall be sufficiently precise to enable economic operators to identify the nature and scope of the required solution and decide whether to request to participate in the procedure.

The contracting authority may decide to set up the innovation partnership with one partner or with several partners conducting separate research and development activities.

The minimum time limit for receipt of requests to participate shall be 30 days from the date on which the contract notice is sent. Only those economic operators invited by the contracting authority following the assessment of the information provided may participate in the procedure. Contracting authorities may limit the number of suitable candidates to be invited to participate in the procedure in accordance with Article 65. The contracts shall be awarded on the sole basis of the award criterion of the best price-quality ratio in accordance with Article 67.

2. The innovation partnership shall aim at the development of an innovative product, service or works and the subsequent purchase of the resulting supplies, services or works, provided that they correspond to the performance levels and maximum costs agreed between the contracting authorities and the participants.

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0024

The reference context

Introducing an **easy-to-implement methodology** that can be used by public buyers during the evaluation and negotiation phase of a contract based on the Innovation Partnership (IP) procedure, to

- **Define a "price limit" for the contract**, which ensures that no undue price is paid.

- **Allow us to compare the offers of different suppliers** and to determine the best one for the administration.

The reference context

As we know, an IP procedure entails the possibility for an administration to purchase a product or service in need of development:

- In the first phase, providing financial support to research and innovation activities.

- Then, purchasing the product/service – in line with predefined contractual conditions - once the target performance has been achieved.

Such structure **generates some difficulties when a buyer wants** to:

Determine the objective value of the supply for the administration

Verify compliance against the conditions imposed by the State-aid rules

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Determining the objective value of the supply

- The **initial investment** - intended to support the research and innovation process - is carried out **without a guarantee** that the project will manage to obtain a product / service with the required performance.

- Since there is a time lag between when the administration decides to finance the development phase and when the product will be available, **some other company could independently create a solution with characteristics equal to or better than the objective of the IP**

The Investment is certain, benefits are uncertain

Verify compliance with State-aid rules

According to the market economy principle, the **contract price should be the same as that which a hypothetical market operator would pay for a supply with the same characteristics**. However:

- Such characteristics cannot be expressed in terms of "tangible" items of already available products and services, but rather in terms of "expected performances".

- Available offers cannot be analysed just in terms of price and tangible characteristics. The administration must also estimate the likelihood that the supplier will be able to reach the expected performance, which will depend on its innovation and development competences.

How can we verify respect of the market economy principle?

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The strategic option approach

These issues **do not only characterise IP**, but **rather any R&D decision** taken by a market operator, where there is:

- a **delay** between the time when the investment is made and when the economic benefits are apparent.

- **uncertainty** about the results. Research does not directly generate positive cash flows; However, if it proves to be successful, it will enable a company to create and sell the products and services that represent the result of the research activity.

A more specific reading of the market-economy principle

Operating according to market logic means acting the way "a market operator would if they had the same information available as a public administration".

In a similar way to the decision-making process of a market operator investing in R&D, a public administration:

- can create - through an IP contract, thanks to the initial investment - the possibility to buy a product with better performance than those already on the market, at a predefined price.

- If the development activity does not allow to achieve the expected results, the administration will not make the purchase, thus limiting the losses to the initial investment.

Applying the market-economy principle in IP

Stage 1, t = 0

When the IP contract is signed, the administration finances, with an investment I, the development of a product/service, with target characteristics, which must be available within a certain time T. The Net Cash Flow is: $NCF(0) = -I$

Stage 2, t = T

At time T, there will be two possibilities:

- If the innovation process is successful, the administration will undertake the purchasing of the product, under predefined economic conditions (C). If we define PV the expected benefits for the administration, we have: $NCF(T) = PV - C$

- If the innovation process will be unsuccessful, the administration will not purchase the produce. We have: $NCF(T) = 0$

- If p is the estimated probability of success, the expected value of NCF will be:

$$(PV-C)*p + 0*(1-p) = (PV-C)*p$$

Applying the market-economy principle in IP

Final Value

The net value of this contract (V) – for the administration – can be expressed as the expected value of the benefits that the product generates compared to existing ones, net of the development and supply costs, and is expressed as:

$$V = \frac{p*(PV-C)}{(1+i)^T} - I$$

where i is the risk-free interest rate

- For the administration it is convenient to activate the IP procedure if it manages to negotiate values of I and C that make V greater or at the limit equal to zero.

- The boundary condition for ensuring compliance with the market economy principle is that V is equal to 0.

Data required

Data	Definition	Availability
I	Investment for the development phase	Known, in the contract
C	Cost of the purchase	Known, in the contract
T	Duration of the research phase	Known, in the contract
i	Risk free rate	Known, at Country level
PV	Expected value of the benefits for the administration, if research will be succesful	To be determined by the administration according to the target performance
p	Probability of success of the research	To be determined

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Operationalize the methodology

Once we define the key elements of a possible IP (initial investment (I), price of purchase (C), length of the development stage (T)), the application of the method requires that the administration:

1. **Calculates the present value of expected benefits (PV), according to the target performance**

2. Estimates the **probability of success (p)**

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Calculation of PV

- Three cases:

1. The product/service allows the administration to reduce its costs compared to the solutions on the market today

→ PV is determined as the cumulative, discounted value of the cost savings of the administration.

2. The product/service allows to improve the performance of the services that the administration provides to users or to create new services.

→ PV is the sum of two terms: any additional revenues generated by the services, and the economic quantification of the benefits for users and for the community;

3. The product / service allows to obtain both cost savings and an improvement in the performance of the services provided.

→ PV is the sum of the first two cases

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Estimating the probability of success

The probability of success of a development process can be estimated according to three different approaches:

- benchmarking,

- analysis of the supplier's historical track record, and

- estimations by a group of experts.

Benchmarking

- **Benchmarking** assumes that the probability of success of the development phase will be the average success rate of similar new product development processes.

- A useful reference is represented by the dataset reported in Lee and Markham (2016), according to which the average success rate is estimated at 61%

Industry	Success Rate
Capital goods	61.3%
Chemical and materials	56.5%
Industrial services	53.2%
Tech. hardware	54.0%
Software and services	66.5%
Consumer services	60.3%
Health care	59.4%
FMCG	51.1%

Analysis of the historical track record

In the **analysis of the historical track record**:

- The administration asks the potential supplier data on the success rates in its product development processes.

- The average success rate of the supplier is then used as an estimate of the probability of success for the IP.

Commission of experts

A third possibility is **to entrust the estimation of the probability of success to a group of experts**.

- This solution is generally more expensive, but if the administration already appointed a set of experts for comparing different technical offers, the burden may be contained.

- To facilitate and make more objective the work of the evaluators, the administration can provide a set of elements from which to estimate the probability of success

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A comparison

Approach	Strenghts	Weaknesses
Benchmarking	Inexpensive, easily available	Does not allow comparison between different suppliers
Track record	Inexpensive, always applicable	Could penalize smaller or newer suppliers.
Commission of experts	Allows the comparison between solutions provided by different suppliers	Expensive, not objective

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The first condition

The first condition requires that the investment (I) and duration (T) for each stage of development are consistent with the level of innovation of the proposal.

The survey by Lee and Markham can help an administration to check such a condition, providing some benchmarks for the duration of the product development process in different industries and for different levels of innovation.

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The second condition

The second condition means that the Investment-Cost (I/C) ratio is not disproportionate and can be read in two ways:

- Not setting C too low

- **If** C is too low, the supplier will get the main share of its income from the development stage. This means that if the development will be unsuccessful, the "cost" of the failure will be mostly borne by the administration.

An administration can balance such risk dividing the financing of the product development into several phases and by binding those after the first to the achievement of the specific intermediate targets

The final decision

- In case of a single supplier

IP procedure is justified if the value is greater than zero.

- In case of different possible suppliers

The administration should prioritise the offer with the maximum net value of the option

Even in case of many possible suppliers, **obviously, only offers with a net value greater than zero must be considered.**

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In any case, IP implies a certain level of risk. To limit it, an administration may introduce safeguard clauses. In part, these clauses derive from what is provided for in European directives, that impose a double proportionality test:

- *The duration and value of the different phases should reflect the degree of innovation of the proposed solution*

- *The estimated value of supplies, services or works shall not be disproportionate in relation to the investment required for their development*

European Commission

Principles:

- Citizen-centric design

- A city-led approach at EU level

- Technologies as key enablers

- Socially responsible access, use, sharing and management of data

- City as an open, living space

- Interoperable urban platforms with open standards, open/public APIs and shared data models

Multi-level governance

European Commission & Committee of the Regions, Finnish Presidency, EUROCITIES, OASC (Open & Agile Smart Cities), ENoLL (European Network of Living Labs), Digital Transition Partnership and cities

- **Commitments:**
  - Financial
  - Technical
  - Legal
  - Education & Capacity building
  - Monitoring and measuring

  - Steering Board

Thank you!

European Parliament Think Tank - Artificial Intelligence and Urban Development (fresh from the print):

https://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU(2021)690882