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Nexa Center for Internet & Society
Politecnico di Torino

Assessment of Open Source Software for Public Administrations

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Summary

- Context
- Goal
- Our work
- Evaluation of our work
- Conclusions and future developments

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CONTEXT

In May 2019, AgID (the **Agency for Digital Italy**) publishes the "**Guidelines on acquisition and re-use of software for the Public Administration**"

They promote the **use of open source software** and re-use of already available software

When searching for software, PAs **must first consider open-source software** and software already developed by other PAs

GOAL

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To produce **a procedure to assess and compare open source software** for PAs

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The procedure considers **both technical and economical** aspects

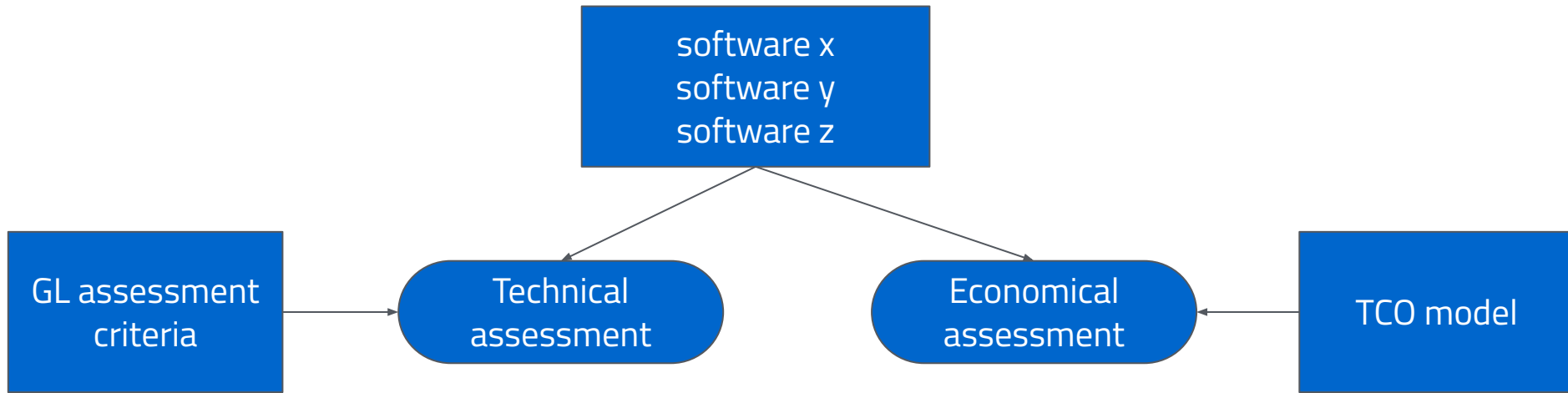It fully conforms to the AgID Guidelines
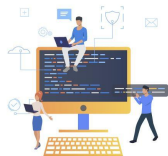
OUR WORK

OVERVIEW

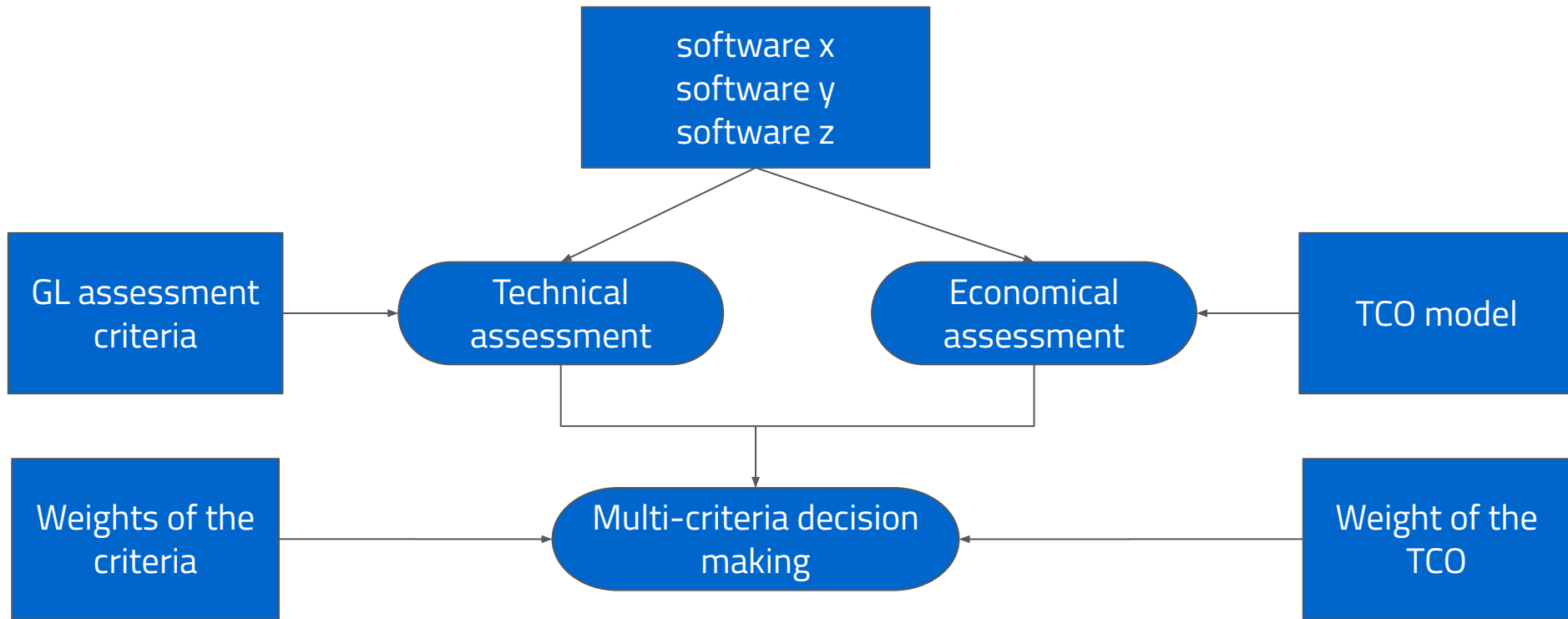The procedure is implemented in a spreadsheet that can be easily compiled by PAs
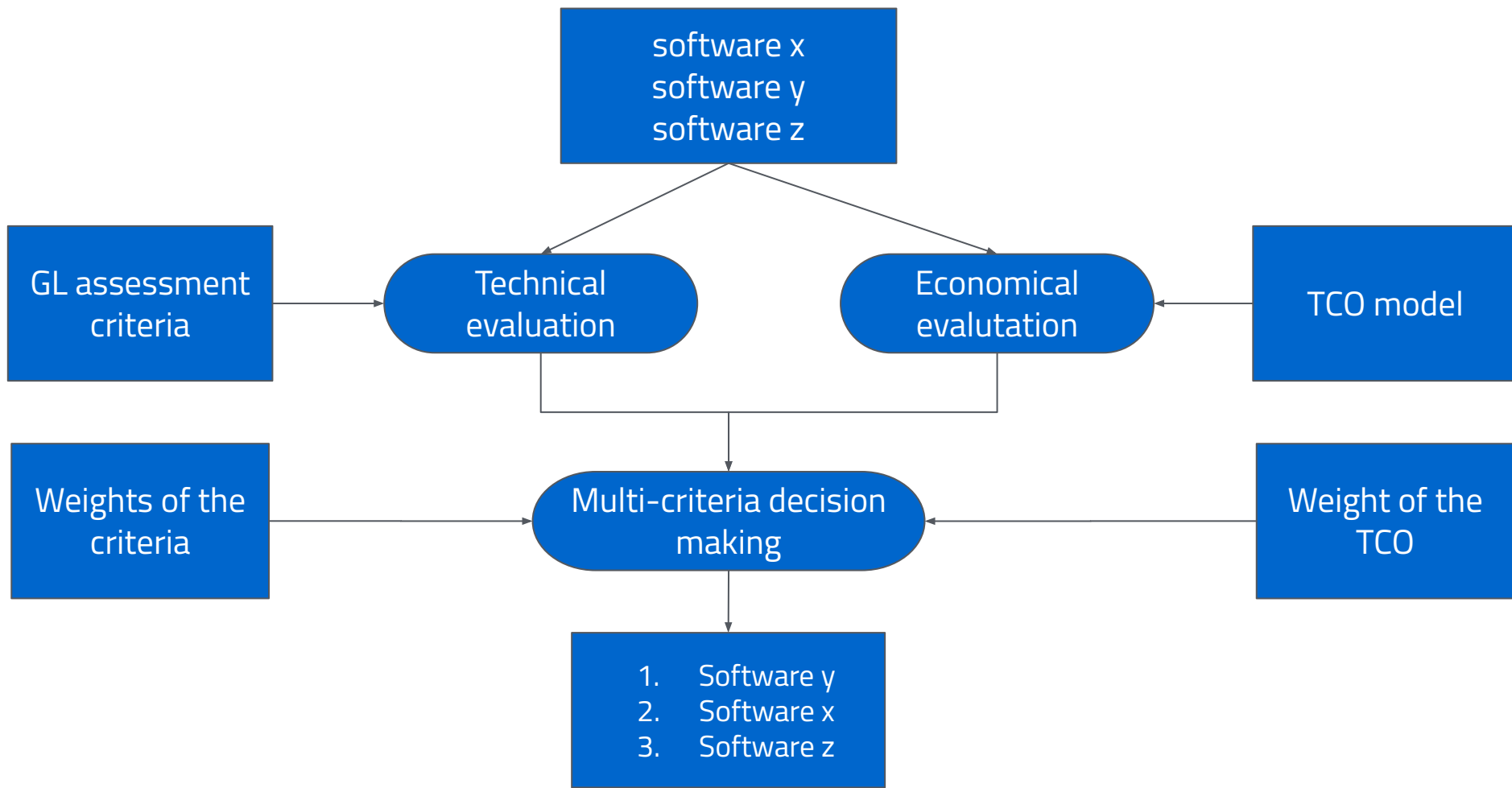
The procedure consists of 3 phases:
1. Technical assessment
2. Economical assessment
3. Comparison

software x
software y
software z

TECHNICAL ASSESSMENT

Each software is technically assessed according to the assessment criteria of the guidelines

We defined a **quantitative measurement** of the criteria

Technical assessment criteria

- **Coverage of functional and non-functional requirements**
- **Interoperability**
- **Protection of personal data**
- **Security**
- **Accessibility**

- Presence of a maintainer
- Presence of support
- Dependencies
- Skills of the PA
- Number of PAs interested
- Vitality

Presence of a maintainer		1
	No maintainer	
	Maintainer outside the PA	✔
	Maintainer inside the PA	
Dependencies		3
	Number of dependencies with proprietary software	0
	Number of dependency with open-source software	3

ECONOMICAL ASSESSMENT

The **Total Cost of Ownership** (TCO) of the software is estimated

Our TCO model

- Developed on the bases of the literature and already existing TCO models

- Reviewed together with the Piedmont Region

CAPEX costs

- Integration with the existing systems
- Hardware
- Compliance to the specs
- Verification of compliance to the legislation
- Service design
- Installation
- Data migration
- Training of the users

OPEX costs

- Annual cost of SaaS
- Software licenses (if any)
- Annual support
- Maintainance
- Damages

Additional parameters of TCO

- Estimated number of years of adoption (default: 5)
- Number of PAs that divide costs

It is not mandatory to estimate each cost

But it is mandatory to estimate the TCO

COMPARISON

The softwares are compared using **TOPSIS**, a multi-criteria decision making algorithm (suggested by the Italian anti-corruption agency)

As input, the algorithm takes the results of the technical and economical assessment and the weights of the criteria

As output, it produces a **rank of the softwares**

	TCO	Interoperability	Data protection	Security	Accessibility	Requirements coverage	Maintainer	Support	Dependencies	PA skills	Number of PAs	Vitality
Weight	1	1	1	1	1	1	0,7	0,7	0,7	0,7	0,6	0,8
Sw A	8.805.230,00 €	1	2	2	2	92,47%	1	1	3	2	3	517,45
Sw B	9.005.230,00 €	4	3	2	2	72,93%	2	2	0	2	338	105,55
Sw C	9.205.230,00 €	4	3	2	2	69,90%	1	2	4	2	11	92

	Rank
Sw A	2
Sw B	1
Sw C	3

We proposed a set of weights of the criteria, which depend on the category the software belongs to (e.g. management software, networking)

EVALUATION OF THE PROCEDURE

In January 2020, **7 PAs tested the procedure and evaluated it** using a questionnaire we presented them

Main results

- The difficulty of the procedure was evaluated as **low or medium**

- The majority of PAs compiled the procedure **in 2 or 4 hours**

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EXTENSION OF THE ASSESSMENT CRITERIA

We proposed a possible extension of the assessment criteria of softwares

Proposed extensions

- The quality characteristics defined in the **ISO/IEC 25010:2011 standard**

- Aspects of context (e.g., degree of responsiveness and activity of the community, presence of trusted software developers)

CONCLUSIONS AND FUTURE DEVELOPMENTS

Conclusions

- We developed a procedure **for technically and economically assessing open-source software**

- The procedure can be an **easy-to-use tool** supporting PAs in choosing software

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Future developments

- Extension of the assessment criteria

- The information necessary to compile the procedure can be included in the software description

Acknowledgments

- AgID

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- Piedmont Region

- CSI Piedmont

- The PAs that evaluated the procedure

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THANKS

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