ISAHP2011
ANALYTIC HIERARCHY/NETWORK PROCESS

HEALTH TECHNOLOGY ASSESSMENT: NEEDS ANALYSIS VIA AHP

L. Pecchia. M. Bracale
Department of Biomedical. Telecommunication and Electronical Engineering
University of Naples “Federico II”. Italy
leandro.pecchia@unina.it

leandro.pecchia@unina.it

A. Ragozzino. C. Iovine
Azienda Ospedaliera S.Anna e S. Sebastiano di Caserta
Caserta. Italy
angelarag56@virgilio.it

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GOAL OF THIS STUDY

- **Problem:**
  - a Multi-Slice Compute Tomography (CT) is one of the most costly technology in a Hospital
  - the acquisition of a CT is a complex process requiring multimodal decision-making
- **Health Technology Assessment (HTA)** is a multidisciplinary and multidimensional decision-making process. which aims to identify useful technologies. alternative and competitive. and from these. select the “best” technology
- **In this study:** we used the AHP to measure the relative importance that each clinician. according to his specialization. give to all the factors which affect the quality (and therefore the costs) of a CT scan.

Corresponding Author: Leandro Pecchia. leandro.pecchia@unina.it

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SCENARIO

- In healthcare settings "**Best**" is:
  - a relative condition;
  - complex to represent;
  - peculiar for each Hospital according to: its locations; dimensions. asset. specializations. mission. etc.

- **In democratic countries with a public NHS**. decision makers and stakeholders. are responsible to the citizens about their decisions. In other words they are not the owners of the money they spend!

- **Stakeholders/Decision-makers** do not appreciate complex mathematical methods

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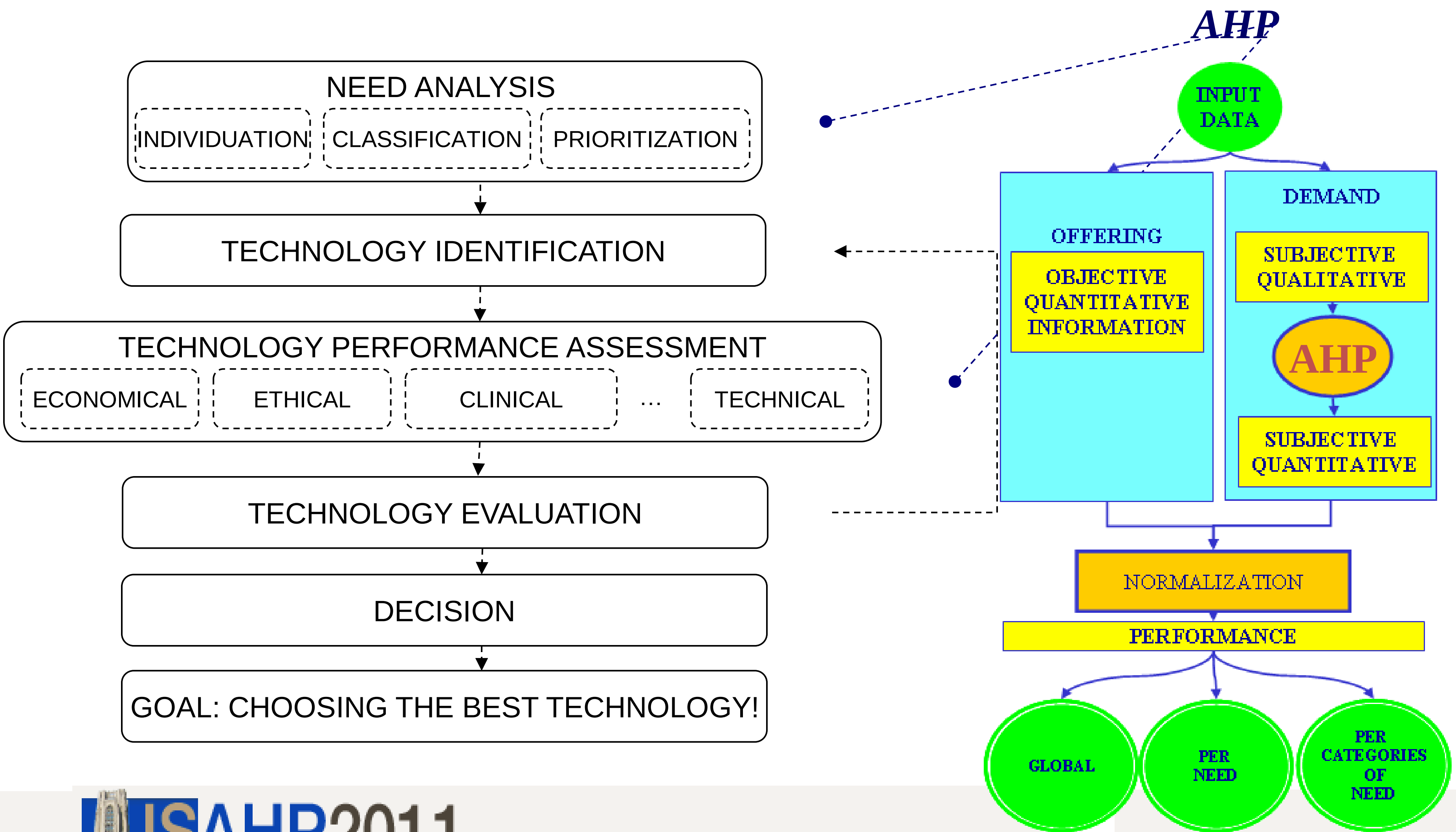
METHOD (1/2): AHP in HTA for need analysis



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TREE OF NEEDS

Expert panel: 5 clinicians with (>20ys experience). working in a public hospital of medium dimension. Each one had experience of different clinical theaters: radiology. emergency. minimally invasive ear surgery. neurology. emergency neurology.

DIMENSIONS	NEEDS
PERFORMANCE	SPATIAL RESOLUTION
	SPEED RUN
	PROCESSING SOFTWARE TOOL
PATIENT SAFETY	PATIENT RADIATION DOSE
	PATIENT MONITORING
	CONTRAST MEDIUM CONTROL
USABILITY	PERSONNEL EDUCATION
	USER-FRIENDLY GUI
	INTEROPERABILITY WITH OTHER HIS
TECHNICAL ISSUES	TECHNICAL ASSISTENCE
	MAINTENANCE
	DATA STORING

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TREE OF NEEDS

According to your experience. how important is
each element on the left compared with each element on the right?

Performance	is	*much less*	*less*	*equally*	*more*	*much more*	important hen	***Safety***
Performance	is	*much less*	*less*	*equally*	*more*	*much more*	important hen	***Usability***
Performance	is	*much less*	*less*	*equally*	*more*	*much more*	important hen	***Maintenance***
Safety	is	*much less*	*less*	*equally*	*more*	*much more*	important hen	***Usability***
Safety	is	*much less*	*less*	*equally*	*more*	*much more*	important hen	***Maintenance***
Usability	is	*much less*	*less*	*equally*	*more*	*much more*	important hen	***Maintenance***

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CATEGORIES' PRIORITY

According to your experience. how important is each element on the left compared with each element on the right?

	radiology unit	election ear surgery	neurology unit	emergency neurology unit	emergency unit
PERFORMANCE	0.22	**0.44**	**0.39**	0.19	0.18
SAFETY	**0.48**	0.34	0.29	**0.57**	**0.60**
USABILITY	0.19	0.14	0.22	0.17	0.13
TECHNICAL ISSUES	0.11	0.08	0.10	0.08	0.09

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INTRA-CATEGORY NEEDS' PRIORITY

	radiology unit	election ear surgery	neurology unit	emergency neurology unit	emergency unit
Performance					
Spatial Resolution	0.32	**0.64**	**0.48**	**0.43**	0.30
Speed Run	**0.46**	0.11	0.11	**0.43**	**0.52**
Processing software	0.22	0.26	0.41	0.14	0.18
Safety					
Patient radiation dose	0.33	0.33	0.33	0.14	0.19
Patient Monitoring	0.33	0.33	0.33	**0.58**	**0.66**
Contrast medium control	0.33	0.33	0.33	0.28	0.16
Usability					
Personnel Education	**0.69**	**0.52**	0.32	**0.48**	0.33
User-friendly GUI	0.23	0.18	0.22	0.11	0.33
Interoperability	0.08	0.30	**0.46**	0.41	0.33
Technical Issues					
Technical Assistance	0.33	0.33	0.22	**0.66**	**0.46**
Maintenance	0.33	0.33	0.32	0.16	0.32
Data Storing	0.33	0.33	**0.46**	0.19	0.22

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GLOBAL NEEDS' PRIORITY

	radiology unit	election ear surgery	neurology unit	emergency neurology unit	emergency unit
Performance					
Spatial Resolution	**0.14**	**0.28**	**0.19**	0.08	0.05
Speed Run	**0.20**	0.05	0.04	0.08	0.09
Processing software	0.10	**0.11**	**0.16**	0.03	0.03
Safety					
Patient radiation dose	**0.16**	**0.11**	0.10	0.08	**0.11**
Patient Monitoring	**0.16**	**0.11**	0.10	**0.33**	**0.40**
Contrast medium control	**0.16**	**0.11**	0.10	**0.16**	0.09
Usability					
Personnel Education	**0.13**	0.07	0.07	0.08	0.04
User-friendly GUI	0.04	0.02	0.05	0.02	0.04
Interoperability	0.01	0.04	**0.10**	0.07	0.04
Technical Issues					
Technical Assistance	0.04	0.03	0.02	0.05	0.04
Maintenance	0.04	0.03	0.03	0.01	0.03
Data Storing	0.04	0.03	0.04	0.01	0.02

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CONCLUSIONS

- **The relative importance of each category of needs, change according the intervention required.**
    - In election surgery (ear and in neurology) the performance was considered the most important cluster of need.
    - In emergency the safety of the patient is considered crucial.
    - All the clinicians considered quite important the patient safety.
    - All the clinicians considered as the less important the category of technical issues (not a surprising result!)

- **AHP allows a fully understandable prioritization of clinical needs.**

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