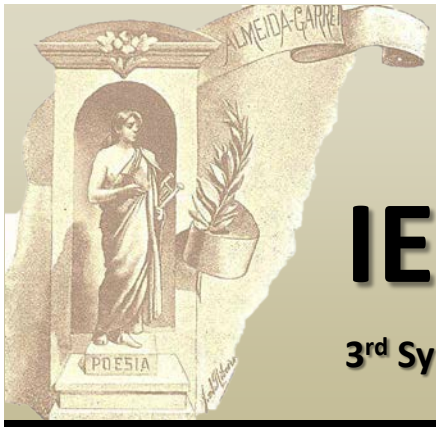

IEMS'2012

3rd Symposium on Industrial Engineering and Management

The Impact of DEGI research on Society

Biblioteca Almeida Garrett
5th January 2012

U.PORTO
FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

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Maria Henriqueta Nóvoa

Teresa Galvão Dias

Nuno Soares

Organised by:

DEGI – Department of Industrial Engineering and Management

Faculty of Engineering

University of Porto

Biblioteca Almeida Garrett, Porto, January 5$^{\underline{\text{th}}}$, 2012

Welcome

Dear Participant,

On behalf of the Organizing Committee it is my pleasure to welcome you to IEMS'12, the 3rd Industrial Engineering and Management Symposium. This is a joint organization of the Department of Industrial Engineering and Management and of the Doctoral Program in Industrial Engineering and Management of the Faculty of Engineering of the University of Porto (FEUP).

The objectives of this symposium are both internal and external. It aims to be an instrument of team building and of increasing self-awareness of FEUP's research community in the area of Industrial Engineering and Management, and it is also meant to be a showroom of what we are able to do, of our achievements and our skills, not only in scientific terms but also in putting science at the service of society. This is our vocation and the essence of our nature.

In this 3rd edition of the symposium, and after the brave start in 2010, and the clear consolidation that the 2011 symposium has brought (a word of gratitude and praise is due to Bernardo Almada-Lobo for this initiative), it was the moment to assume the lemma "The impact of DEGI research on Society" and to invite actual and potential partners from companies to join us in the symposium. With their presence, that we warmly thank, we expect to have the opportunity to make a balance of past activities and to launch new collaborations, based on new ideas and applied research opportunities, which may be identified and consolidated during the symposium or as its consequence.

The research collaboration with the Department of Industrial Engineering and Management is not limited to the Doctoral Program. Nevertheless, as Director of the PhD program, I would like to state very clearly how much we value the work of our PhD students with concrete problems from companies and truly applied research. I am aware of the ever proclaimed difficulties in the Industry-University cooperation. It is not the moment to analyze why some joint research fails, but it is the moment to state that it is our will to make this collaboration more effective. By working I mean improving the outcomes delivered to companies, both in quality and in readiness, but also improving the conscience of what should be expected from a PhD student working in a company real-world problem.

First of all, a research problem, in opposition to a consultancy task, has components that have never been tried before or that have an unknown solution. Therefore, there is a risk attached to a research project, and in general the risk is higher when we are talking about a PhD project, more speculative by nature. But, in a PhD project, the company will gain with a bright full-time student working on its problem, supervised by an experienced senior researcher from the university. Therefore, with the right level of commitment from the company, the return of the investment will be high. And this is another major distinctive mark of a PhD project: it requires a true involvement and time investment from the company.

Furthermore, as a PhD takes 3 to 4 years to complete, companies may not be able to afford waiting so much time for a deliverable. It is likely that either the problem becomes irrelevant in the due course, and consequently also our answer, or the company needs to address it in a different way. Our methodology is to design efforts and to structure the research project in a way that after an initial phase a possible answer is available. It may be either a first working draft of the solution or the grounded belief that it cannot be solved. Then, the next years should be used to intensify the scientific component of the project, the speculative side of the approach, the risky bets for higher stakes. In the end the company may end up with an improved solution for its problem but meanwhile it has been working with the first solution approach for a couple of years.

In economic terms, times are difficult both for companies and for universities. Nevertheless, it is the moment to invest and to prepare for the period of economic growth that will follow the current crisis. Bright young people find it worthwhile to engage in a tough and demanding training process as PhD students. This is an opportunity for companies and universities to build a true partnership that can turn their effort valuable to society.

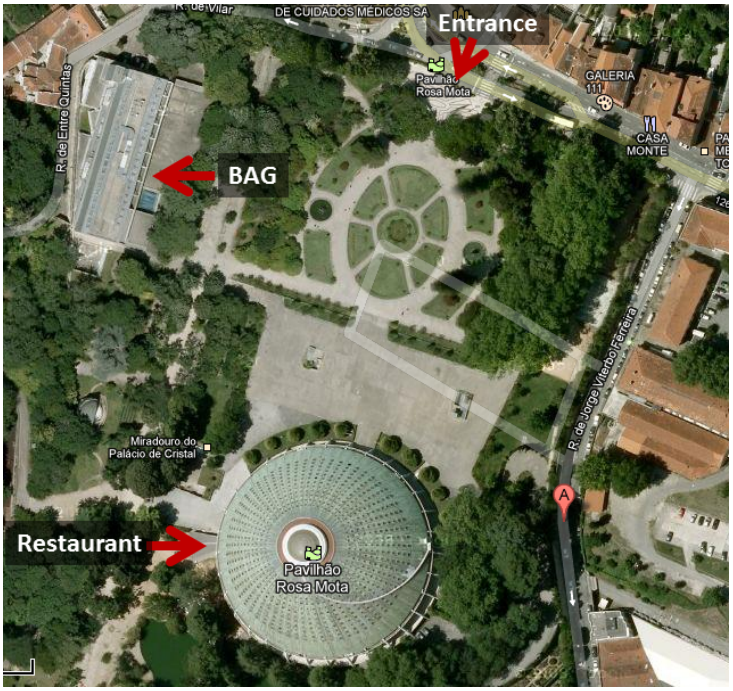
José Fernando Oliveira
Director of the Doctoral Program in Industrial Engineering and Management

Biblioteca Almeida Garrett, Porto, January 5th, 2012

Information for Participants

Symposium Venue

The symposium takes place at BAG - Biblioteca Almeida Garrett. BAG is located in the gardens of Palácio de Cristal (Pavilhão Rosa Mota), accessible from Rua de D. Manuel II.



Address: Rua de Entre-Quintas, 328, 4050-239 Porto
Tel.: (+351) 226 081 000

BAG is served by public transportation, through STCP lines 200, 201, 207, 302, 303, 501, 601, ZM and Resende lines 104, 119. Nearby public car parks are located at Rua Jorge Viterbo Ferreira and Rua D. Manuel II:

Lunch

A working lunch will be served at Restaurante do Palácio de Cristal. Located in the ground floor of the the building Pavilhão Rosa Mota, the restaurant is accessible through the gardens.

Internet

To use the internet, you should access Eduroam. Do not forget to use your complete institutional email address, not just the username, to login (e.g. username@fe.up.pt).

Guidelines for Speakers

- Arrive at your session at least 5 minutes before it begins and copy your presentation to the laptop available in the room.
- Time your presentation to fit in the allotted time (15 minutes plus Questions & Answers).
- The room is equipped with a video projector and laptop computer.
- Presentation certificates will be available in the end of the symposium.

Guidelines for Voting for the Best Elevator Pitch Award

The elevator pitches are available in this Book of Abstracts, near each extended abstract, and in the IEMS'12 website: `http://www.fe.up.pt/~deig/iems12`. During the breaks, the elevator pitches will also be displayed in the hall of BAG.

The voting process will be on the internet. You may use your own laptop or smartphone to access the website, or the laptop that will be available near the display. All participants in the symposium are entitled to 3 votes.

Program Schedule

Thursday, January 5th

9:00 – 9:30

Reception and Opening Session (*Auditorium BAG*)

Chair: José Fernando Oliveira

9:30 – 10:30

Session A (*Auditorium BAG*)

Chair: Maria Antónia Carravilla

A.1 – Retail Shelf Space Allocation in a Supermarket Chain
Teresa Bianchi-Aguiar, Maria Antónia Carravilla, José F. Oliveira

A.2 – Enhancing Customer Store Experience in Fashion Retail
João Guichard, B. Almada-Lobo, J. L. Borges, A. Leão Sousa, M. Soares

A.3 – Creating a Model for the Quality of Wine from the Douro Region
António Corte-Real Sousa, José Luís Borges

10:30 – 11:00

Coffee-Break (*Hall BAG*)

11:00 – 11:45

Invited Talk (*Auditorium BAG*)

Chair: José A. Sarsfield Cabral

I – To be announced
Carlos Brito

11:45 – 12:45

Session B (*Auditorium BAG*)

Chair: Alcibíades Guedes

B.1 – Solving Production Planning Problems when Setups are Sequence-Dependent
Luis Guimarães,Diego Klabjan, Bernardo Almada-Lobo

B.2 – Management Agent-Based Simulation Framework
Carlos Bragança de Oliveira, António Carvalho Brito

B.3 – Influence of Consumer Purchasing Behaviour on the Production Planning of Perishable Food
Pedro Amorim, A.M. Costa, B. Almada-Lobo

12:45 – 14:00

Lunch (*Palácio de Cristal Restaurant*)

14:00 – 14:45

Guided Visit to VIARCO's Exhibition (*BAG*)

14:45 – 15:45

Session C (*Auditorium BAG*)

Chair: João Falcão e Cunha

C.1 – Designing the Travel Experience: Identification and Incorporation of Passengers' Experience Requirements in New Bus Body Development
Rui Carreira, Lia Patrício, Renato Natal

C.2 – Applied Research on the Automated Generation of Spider Maps
João Mourinho, Teresa Galvão, João Falcão e Cunha

C.3 – How Efficient and Innovative are Portuguese Construction Companies?
Isabel M. Horta, Ana S. Camanho, J. Moreira da Costa

15:45– 16:00

Break (*Hall BAG*)

16:00 – 17:00

Session D (*Auditorium BAG*)

Chair: Lia Patrício

D.1 – Applying Creativity to Research Methods - An Analysis of Innovation Antecedents Using the Business Narrative Modelling Language (BNML)
Manuel Au-Yong Oliveira, João José Pinto Ferreira

D.2 – Service Design for Sustainability: Towards a More Sustainable Home Energy Consumption
Rita Viana, Lia Patrício

D.3 – Optimization Approaches to Staff Scheduling Problems
Marta Rocha, José F. Oliveira, Maria Antónia Carravilla

17:00 – 17:30

Coffee-Break (*Hall BAG*)

17:30 – 18:30

Session E (*Auditorium BAG*)

Chair: João Claro

E.1 – Business Intelligence and Data Mining in Operating Room Scheduling
Carlos Gomes, Arnon Peles, Fabrício Sperandio, António Carvalho Brito, José Borges, Bernardo Almada-Lobo

E.2 – Conceptual Framework for Organizational Model Assessment of Hospital Centers
Ana Simões, Américo Azevedo, Suzete Gonçalves

E.3 – Supporting Cooperative Purchasing Strategies in Health Care Supply Chains
Nazaré Rego, João Claro, Jorge Pinho de Sousa

18:30 – 18:45

Award for the Best Elevator Pitch and Closing Session (*Auditorium BAG*)

Chair: Bernardo Almada-Lobo / José A. Sarsfield Cabral

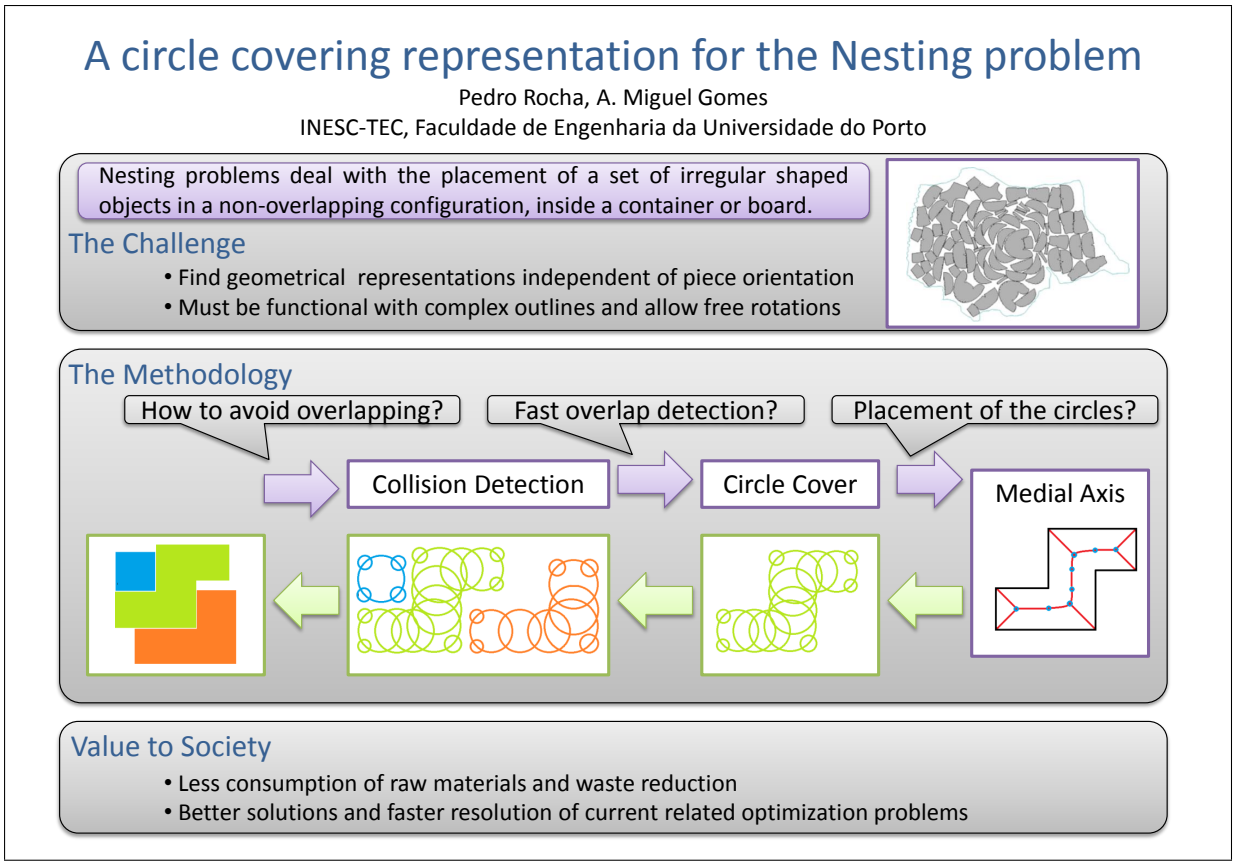
Biblioteca Almeida Garrett, Porto, January 5$^{\underline{\text{th}}}$, 2012

Elevator Pitches

A Circle Covering Representation for the Nesting Problem

Pedro Rocha*, Rui Rodrigues*, A. Miguel Gomes*

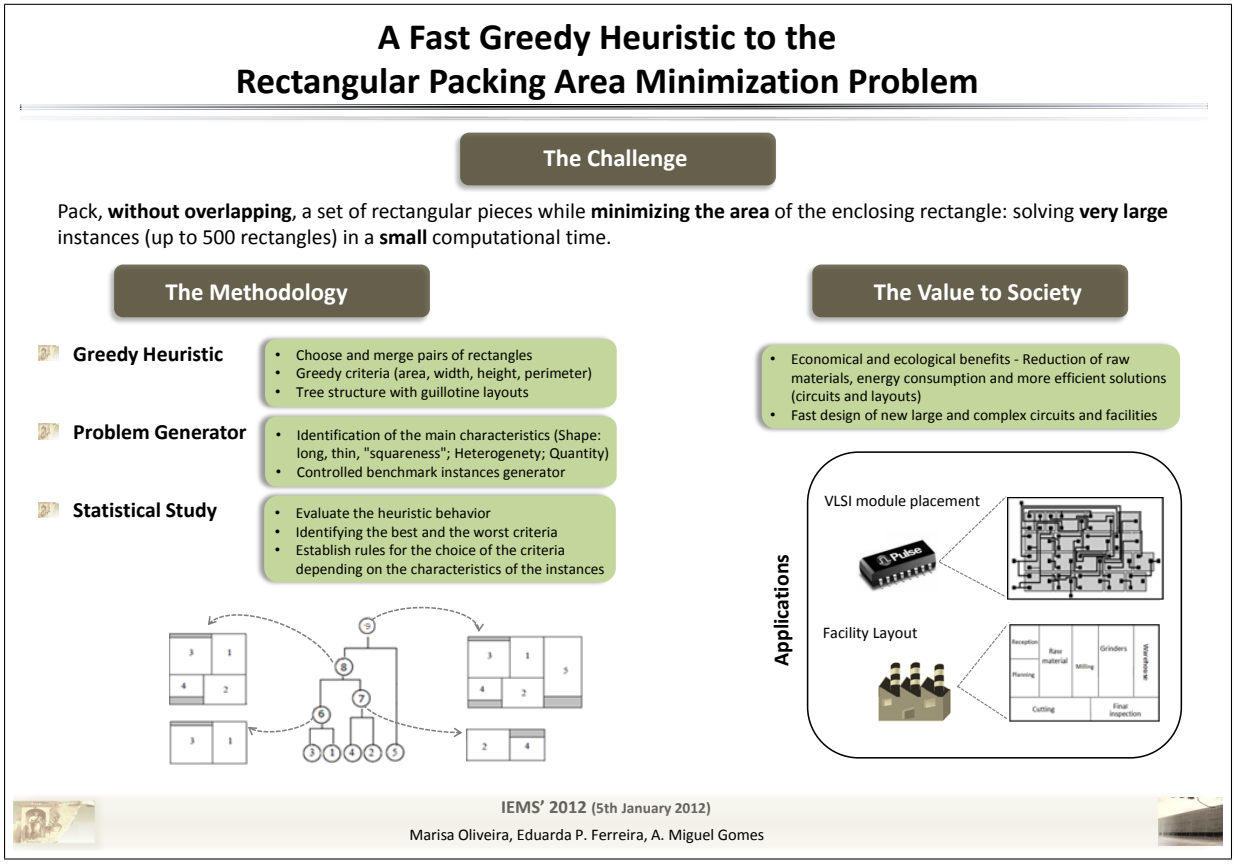
* *INESC Porto, Faculty of Engineering, University of Porto*



A Fast Greedy Heuristic for the Rectangular Packing Area Minimization Problem

Marisa Oliveira*, Eduarda Pinto Ferreira† , A. Miguel Gomes ‡

* *School of Engineering, Polytechnic Institute of Porto,* † *GECAD - Knowledge Engineering and Decision Support Research Center,* ‡ *INESC Porto, Faculty of Engineering, University of Porto*



A Simulation Optimization Enhanced with Data Mining Approach to the Operating Room Planning and Scheduling Problems

Fabrício de Reuter Sperandio, Bernardo Almada-Lobo, José Borges

* *Faculty of Engineering, University of Porto*

Operating Room Scheduling via Simulation Optimization

Universidade do Porto FEUP Faculdade de Engenharia

Fabrício Sperandio, Bernardo Almada-Lobo, José Borges
{frsperandio, balobo, jlborges}@fe.up.pt

U.PORTO 100

The Challenge

Motivation

Health care costs have been rising for several years due to an increasing demand for surgical services. Additionally, the current **financial crisis** requires challenging cuts on health care budget. In this context, the managerial aspect of hospitals and especially **surgical services** are particularly important because they represent the largest share on health care costs. It is imperative to **improve operating room efficiency** to control surgical **waiting lists**.

Problem

Surgical services management is a **complex task** due to **strong uncertainty**, **limited resources** and **conflicting objectives**.

To manage such complexity researches split the problem into three decision levels: strategic, tactical and operational. This project focus on the **operational level**.

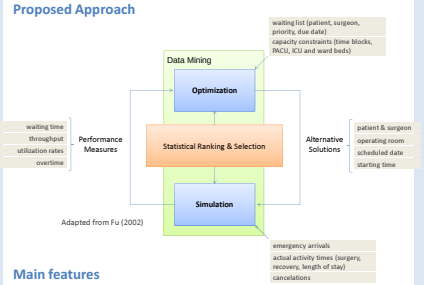
The problem consists on **selecting patients** from the waiting list and **schedule surgeries** over a 1-week planning horizon subject to resource **availability** and **capacity** constraints.

The **combinatorial** and **stochastic** nature of the problem makes it **computationally challenging** taking researchers to focus on deterministic approaches.

Our approach takes into account **uncertainty** in patient arrivals and surgical times, downstream **capacity constraints** (PACU, ICU and surgery wards) and **multiple objectives**.

The Methodology

Proposed Approach



Main features

Optimization: runs a MOEA to search for the set of Pareto optimal solutions. The choice for this algorithm considers the discrete variable and multi-objective characteristics of the problem.

Simulation: features a discrete event simulator based on DEVS formalism for high performance simulation [2]. It uses simulation to both model the problem and assess alternative solutions' performance under uncertainty.

Ranking & Selection: links simulation and optimization modules. MO-OCBA is an effective method to reduce the estimation cost and improve efficiency. It determines the number of simulation replications based on the mean and variance of the alternative solutions being compared [3].

Data Mining: supports simulation and optimization modules on two distinct ways: to model random variables in the simulation and reduce variability; to reduce estimation cost through a metamodel that estimates the performance of the simulation.

The Value to Society

Expected Results

To find more **realistic** and **robust** surgical schedules to allow decision makers to **proactively** manage the effects of uncertainty on the performance measures.

To build an **efficient** simulation optimization solution allowing **quality solutions** to be found on a practical amount of time.

To increase OR efficiency allowing managers to **reduce costs** while preserving **quality of care**.

Contributions

This project takes **simulation optimization** theory and practice into the operating room management field as never done before. It understands the **stochastic nature** of the system and combines different methods to address the efficiency issue. In doing so it expands the literature on **operating room scheduling** setting up new levels of model detail and respective solution efficiency.

References

[1] Fu, M.C., 2002. Optimization for simulation: Theory vs. practice. *INFORMS Journal on Computing*, 14(3), pp.192–215.

[2] Zeigler, B.P., Praehofer, H. & Kim, T.G., 2000. *Theory of Modeling and Simulation*, Academic Press.

[3] Chen, C.H. & Lee, L.H., 2010. *Stochastic simulation optimization: an optimal computing budget allocation*, World Scientific Pub Co Inc.

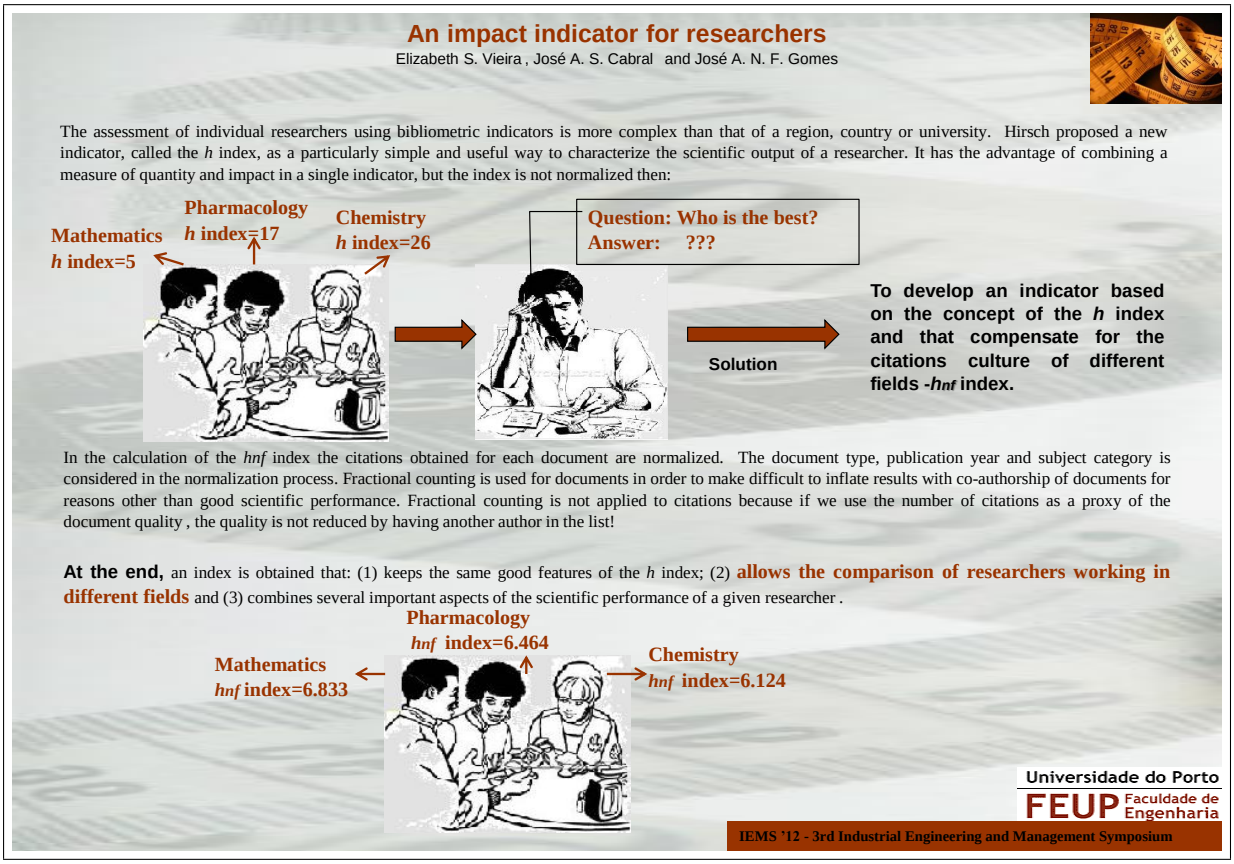
Acronyms

MOEA – Multi-objective Evolutionary Algorithm
MO-OCBA – Multi-objective Optimal Computing Budget Allocation
DEVS – Discrete Event System Specifications
PACU – Post Anesthesia Care Unit
ICU – Intensive Care Unit

An Impact Indicator for Researchers

Elizabeth S. Vieira* †, José A. S. Cabral†, José A. N. F. Gomes*

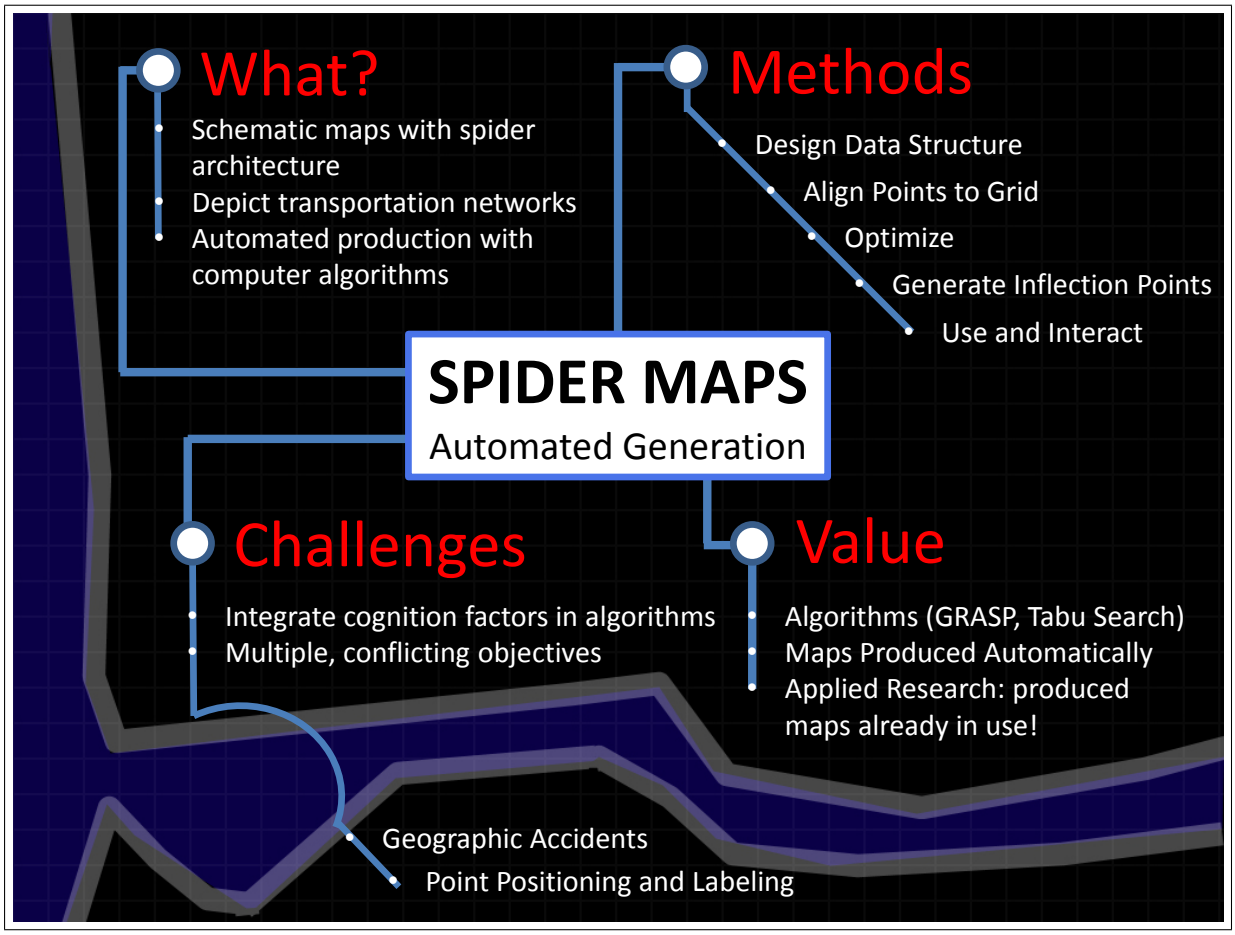
* *REQUIMTE, Department of Chemistry e Biochemistry, Faculty of Sciences, University of Porto,*
† *Faculty of Engineering, University of Porto*



Applied Research on the Automated Generation of Spider Maps

João Mourinho*, Teresa Galvão*, João Falcão e Cunha*

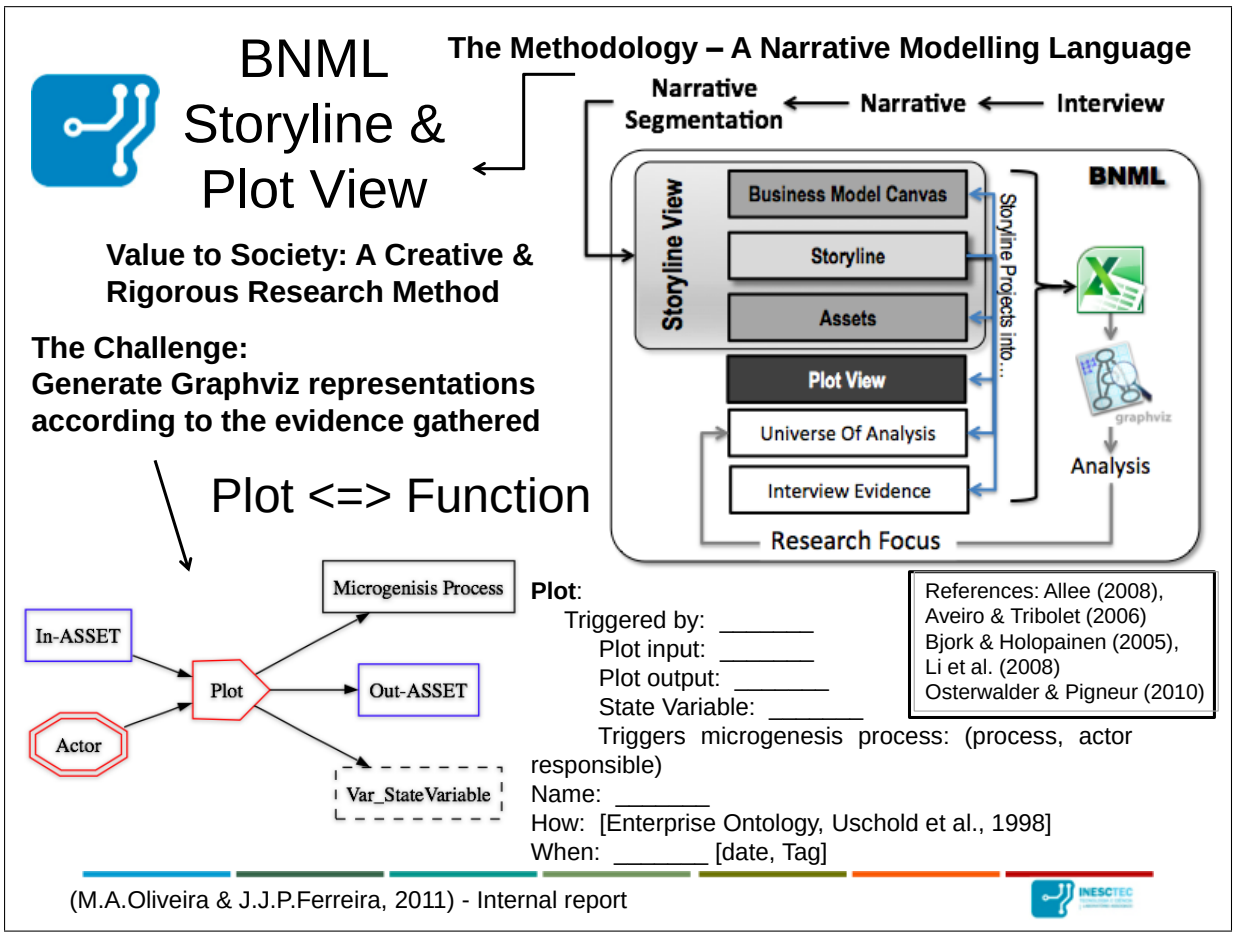
* *Faculty of Engineering, University of Porto*



Applying Creativity to Research Methods - An Analysis of Innovation Antecedents Using the Business Narrative Modelling Language (BNML)

Manuel Au-Yong Oliveira*, João José Pinto Ferreira*

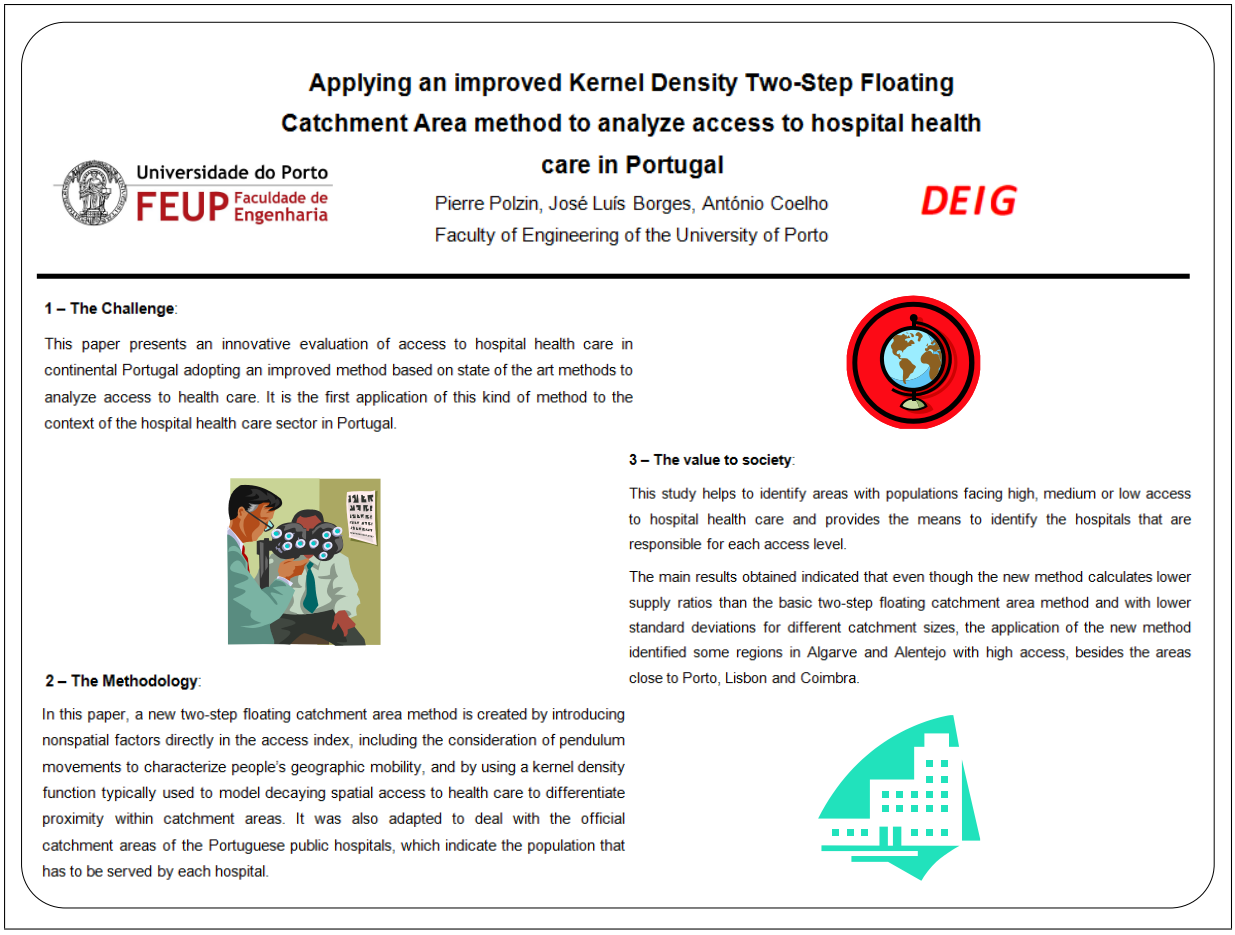
* *Faculty of Engineering, University of Porto*



Applying an improved Kernel Density Two-Step Floating Catchment Area method to analyze access to hospital health care in Portugal

Pierre Polzin*, José Luís Borges*, António Coelho*

* *Faculty of Engineering, University of Porto*



Business Intelligence and Data Mining in Operating Room Scheduling

Carlos Gomes*, Arnon Peles*, Fabrício Sperandio*, António Carvalho Brito*, José Borges*, Bernardo Almada-Lobo*

* *Faculty of Engineering, University of Porto*

Bi&DM@OR

Business Intelligence and **Data Mining** in **Operating Room Scheduling**

Carlos Gomes, Arnon Peles, Fabrício Sperandio, António Carvalho Brito, José Borges, Bernardo Almada-Lobo

THE PROBLEM?

In Portuguese hospitals, surgeons are responsible for scheduling surgeries and planning their lengths. However, these decisions are often empiric. As such, **problems arise:**

- **Increased uncertainty:** Deviations from planned surgery length.
- **Poor performance:** OR low utilization rate / over-time.

GOAL?

Create a decision support system, placing the necessary infrastructure to give the **hospital personnel** the ability to monitor and analyze their operations in order to correct their scheduling and allocation errors.

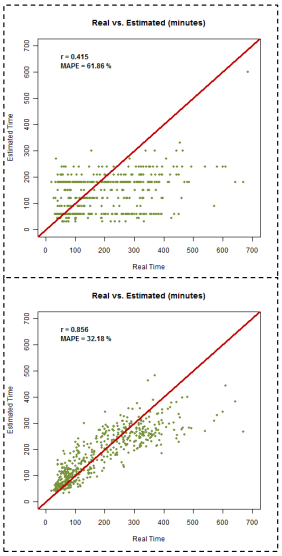
By doing so, **operating room resources** will be used more effectively and efficiently. In a long-term perspective**, more surgeries will be performed** and **less disruptions will occur**.

OUR SOLUTION?

A **business intelligence** module, integrated into a DSS, allowing monitoring and analysis of the OR status. Using a **data mining** solution **improves surgery length estimates**.

This solution not only allows better decision making, but also improves OR overall performance.

DATA MINING:
DURATION ESTIMATION
Before and after



Complex Services Require Holistic Design: An In-depth Study of Creating an Electronic Health Record System

Nelson Pinho*, Lia Patrício*, Raymond Fisk† , Nuno Nunes‡

* *Faculty of Engineering, University of Porto,* † *Texas State University - San Marcos,* ‡ *University of Madeira*

U.PORTO

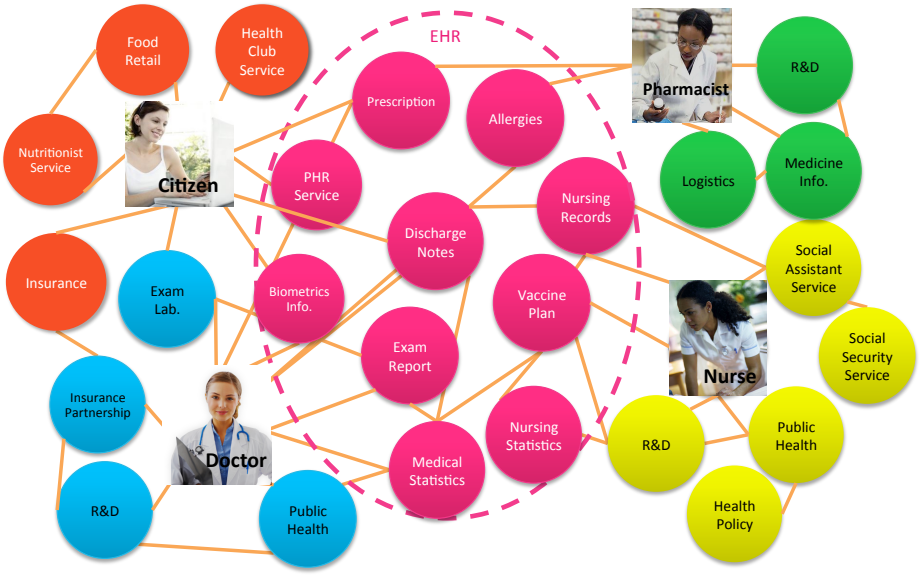
FEUP FACULDADE DE ENGENHARIA UNIVERSIDADE DO PORTO

Nelson Figueiredo de Pinho
Lia Patrício
Raymond Fisk
Nuno Nunes

Methodology:
Qualitative Study based on grounded theory: 47 individual stakeholders from public and private organizations.

Value to society:
The study contributes to improving healthcare by supporting the design of the EHR service concept for the multiple stakeholders involved, identifying the service requirements, and describing the EHR service adoption inhibitors and facilitator factors.

Complex services require holistic design: An in-depth study of creating an Electronic Health Record system

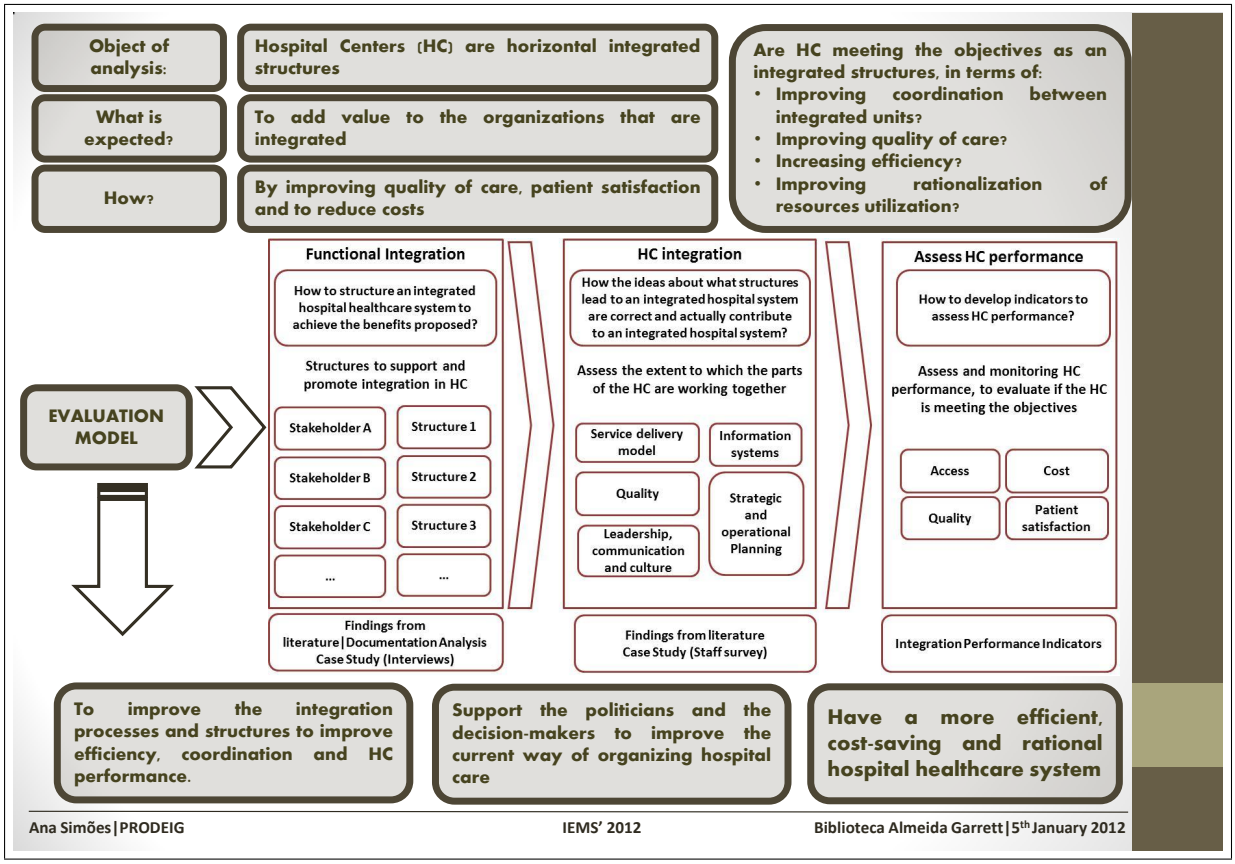


The challenge: A reductionist approach to the design of complex services suggests breaking the system into small parts that reduce its complexity. However, by splitting into subsystems, there is the risk of local optimization, losing sight of the systemic context. In a systemic approach the service concept must consider all subsystems related with the service that is being designed, and take into account that they have dynamic configurations. **Current service design methodologies do not address this level of complexity.**

Conceptual Framework for Organizational Model Assessment of Hospital Centers

Ana Simões*, Américo Azevedo*, Suzete Gonçalves†

* *Faculty of Engineering, University of Porto,* † *Institute of Social Service of Porto*



Conceptual Model for Decomposing the Value for the Customer

Susana Nicola*, Eduarda Pinto Ferreira*, J. J. Pinto Ferreira†

* *GECAD - Knowledge Engineering and Decision Support Research Center, School of Engineering, Polytechnic Institute of Porto,* † *INESC Porto, Faculty of Engineering, University of Porto*

Conceptual Model for Decomposing the Value for the Customer

IEMS'12

Student: Susana Nicola
Supervisors: João José Pinto Ferreira & Eduarda Pinto Ferreira

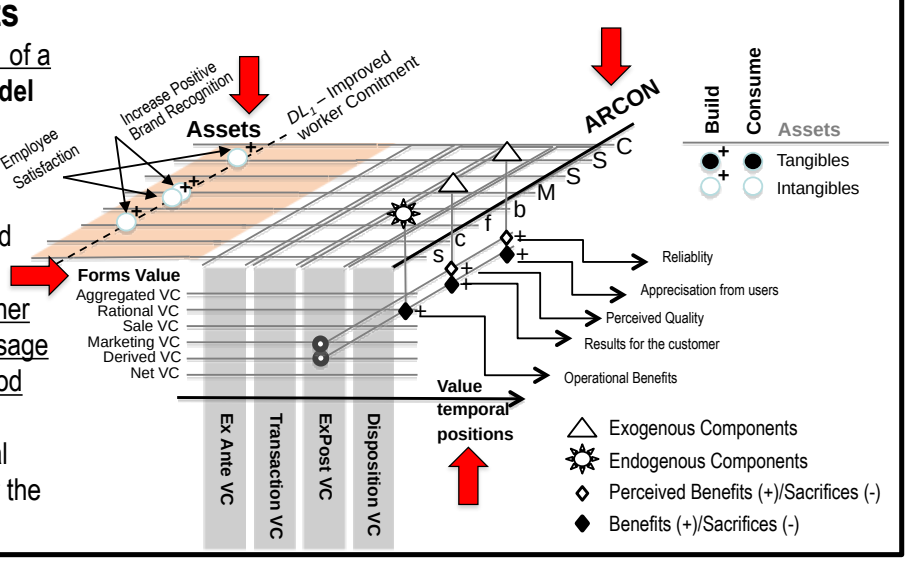
Methodology

Design Science in Information Systems Research proposed by Hevner, A. R., S. T. March, et al. (2004), combined with the **Case Study Approach** as described by Dubé, L. and G. Paré (2003). The actual data collection and processing followed the **BNML** proposed by Oliveira & Ferreira (2011).

Research Results

Proposal and Validation of a novel **"Conceptual Model for Decomposing the Value for the Customer"** integrating the illustrated concepts.

This validation was further achieved through the usage of the Fuzzy AHP Method that enabled the development of a formal mathematical model for the CMDVC.



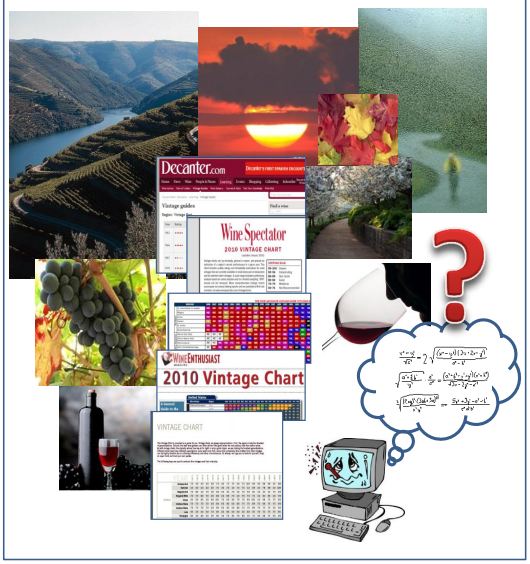
Creating a Model for the Quality of Wine from the Douro Region

António Corte-Real Sousa*, José Luís Borges*

* *Faculty of Engineering, University of Porto*

Creating a model for the quality of wine from the Douro region

António Corte-Real Sousa
José Luís Borges



The aim of this work is to relate the year's average quality of wines from the Douro region, as perceived by consumers and tasters, to the weather variables, the climate variables and other type of variables that may have influence on it.

Research questions:

- How to define "wine quality"?
- What information can one use to assess the average quality of wine of a vintage?
- How to rank different years by wine quality?
- Which weather variables influence wine quality?
- Will climate change influence wine's quality over time?

Research goal:

To find a mathematical/statistical model able to translate the influence of the variables on the quality of wine.

Research relevance:

A model that helps to understand factors that influence the variability of wine vintages will potentially be invaluable for the economic sustainability of wine regions, helping winegrowers to anticipate actions that may lessen the impact of yearly weather specificities and the impact of climate changes.

Customer Experience Modeling: A Multidisciplinary Method to Improve Experience Understanding and Communication

Jorge Teixeira* †, Lia Patrício*, Leonel Nóbrega†, Larry Constantine†

* *Faculty of Engineering, University of Porto,* † *M-ITI, University of Madeira*

Universidade do Porto
FEUP Faculdade de Engenharia

PhD Student: Jorge Grenha Teixeira

Supervisor: Dr. Lia Patrício

IEMS' 2012
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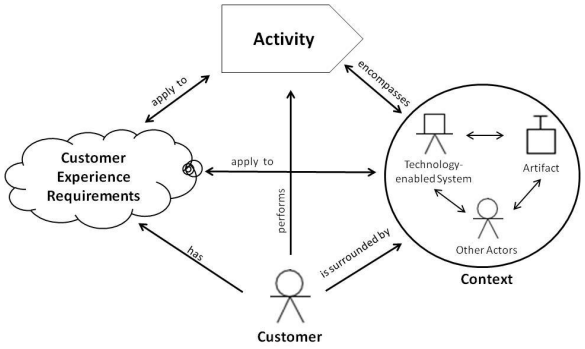
Customer Experience Modeling:

A multidisciplinary method to improve experience understanding and communication



Challenge

- Service Design orchestrates the service elements that enable customers to co-create their desired experiences.
- Experiences are, holistically perceived by customers.
- A single ill-designed element can damage the whole experience.
- Current techniques are focused on single elements, not in the rich picture.
- Proliferation of concepts and notations from different research areas damage multidiscplinary team communication.

Methodology

- Design research approach.
- First iteration with seventeen semi-structured interviews, following Grounded Theory precepts.
- Second iteration with contextual inquiry and observations.

Value to Society

- Capture, systematize and evaluate customer experiences.
- Clear set of concepts and notation.
- Adapted to the service mindset.
- Business modeling support.
- Includes Infrastructural and organizational impacts.
- Reduce uncertainty of service design projects

Designing the Travel Experience: Identification and Incorporation of Passengers' Experience Requirements in New Bus Body Development

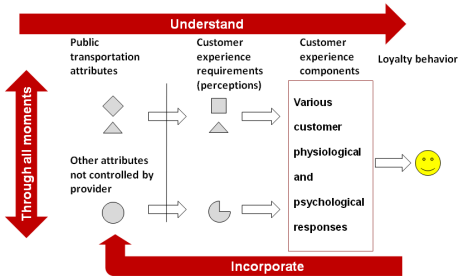
Rui Carreira*, Lia Patrício*, Renato Natal*

* *Faculty of Engineering, University of Porto*

Designing the travel experience: identification and incorporation of passengers' experience requirements in new bus body development

Rui Carreira ruicar@fe.up.pt Advisors: Lia Patrício (lpatric@fe.up.pt), Renato Natal (rnatal@fe.up.pt)

The challenge: Customer experiences are increasingly important. The understanding of customer experience (see top of Figure) and the development of methods for systematically incorporate these requirements (see bottom of Figure) into the combined product and service development process still deserve further attention (Patricio et al. 2009). Public transportation involves the vehicles, services and even other aspects which may be incongruent to the customers.



The Methodology: A design-science research (Hevner et al. 2004) approach involved: (1) Observation and interviews to mid-distance bus passengers in order to obtain rich qualitative data (Neuman 2006) about the travel experience. (2) Development and administration of a questionnaire to perform a scale development approach (Churchill 1979). (3) Action research (Harris 2007) was implemented in an extended Kansei engineering methodology to involve passengers, vehicle manufacturers and transport providers.

The value to society: The Travel-Experience scale consists of 28 items aggregated into 7 dimensions. The extended Kansei engineering method enabled the association of three bus interior aesthetic properties to passenger sensorial and emotional assessments.
The work contributes to the (1) identification of several experience requirements, which are combined to specify the Travel-Experience scale , (2) elicitation of customer internal responses, and their antecedents and consequences, and (3) incorporation of experience requirements into new public transportation development.

Dynamic Supply Chains: Models, Organizational Issues and Supporting Technologies

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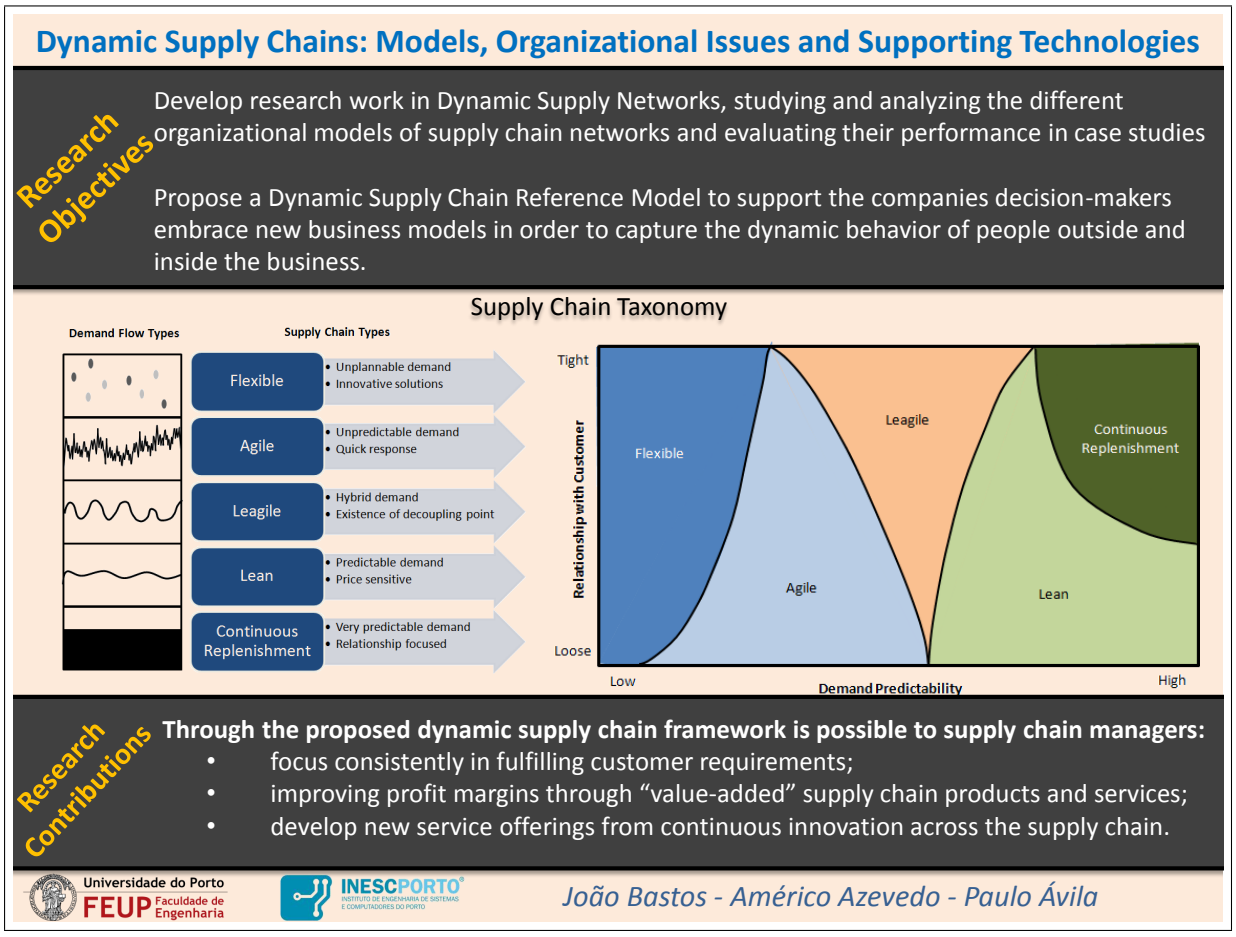

Dynamic Vehicle Routing for Demand Responsive Transportation Services

Rui Gomes*, Jorge Pinho de Sousa*, Teresa Galvão*

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MIT Portugal

Dynamic Vehicle Routing for Demand Responsive Transportation Services

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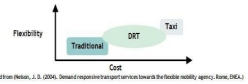
CHALLENGE

- Economic efficiency of public road transportation relies on solid demand levels and well-established mobility patterns
- Public transportation in low, unpredictable, variable demand scenarios such as urban night periods and rural areas, for instance, is expensive, leading to sparse frequencies and low perceived quality

Demand Responsive Transportation (DRT)

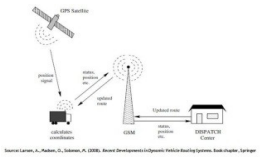
- DRT: possible solution with flexible routes and frequencies according to the observed demand



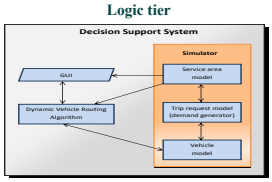
- Routes planned shortly before their start, with better occupancy rates and vehicles with characteristics better suited to users' necessities
- Users specify transportation requests at any time, from anywhere to anywhere, requiring the (re-)design of solutions in real-time

METHODOLOGY

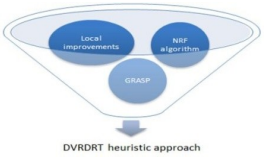
Physical tier



Logic tier

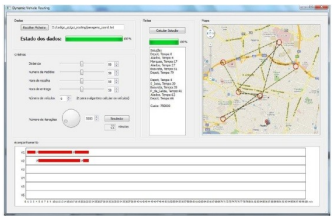


Algorithm

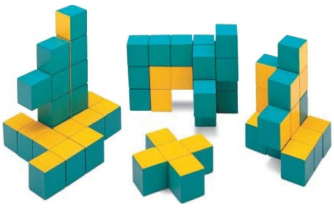


RESULTS

Decision Support System



DRT design patterns



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Enhancing Customer Store Experience in Fashion Retail

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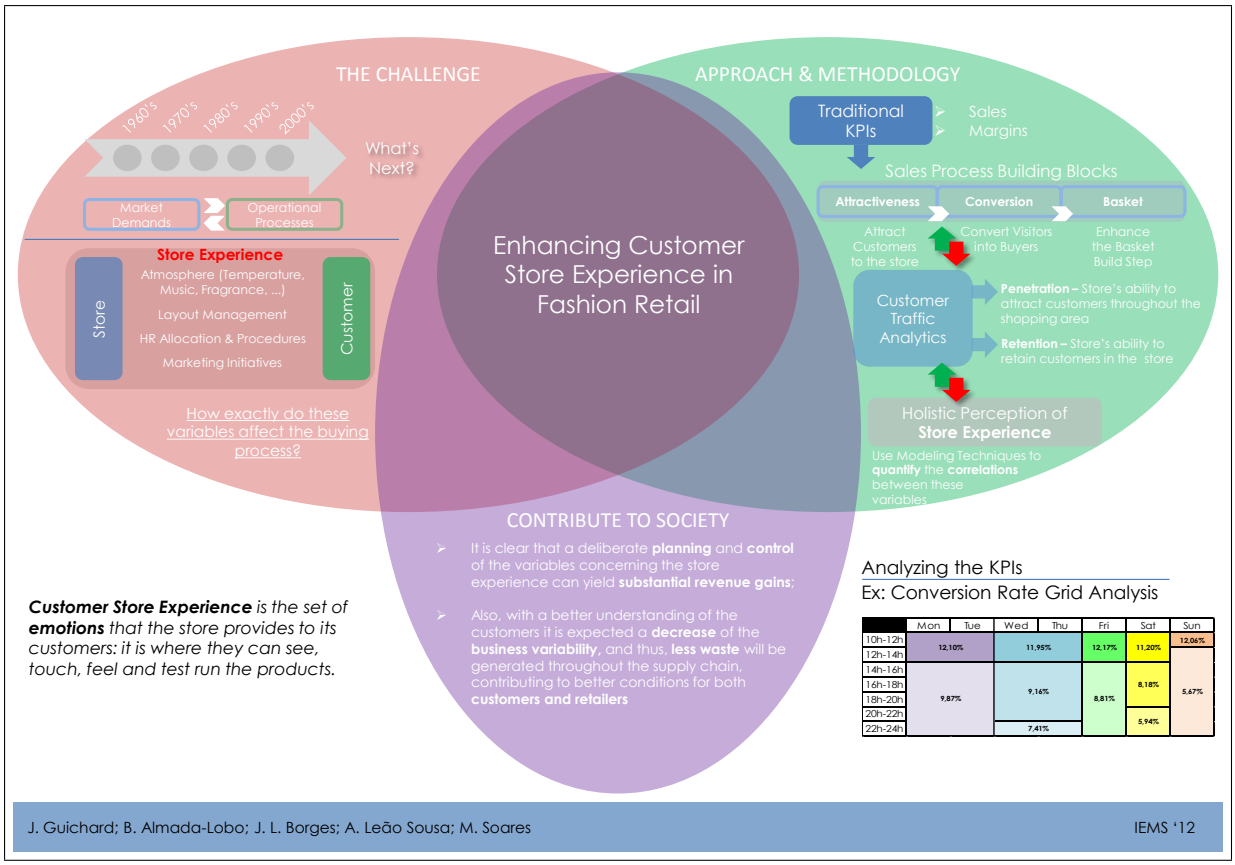

Forest Fire Management Systems Analysis and Design

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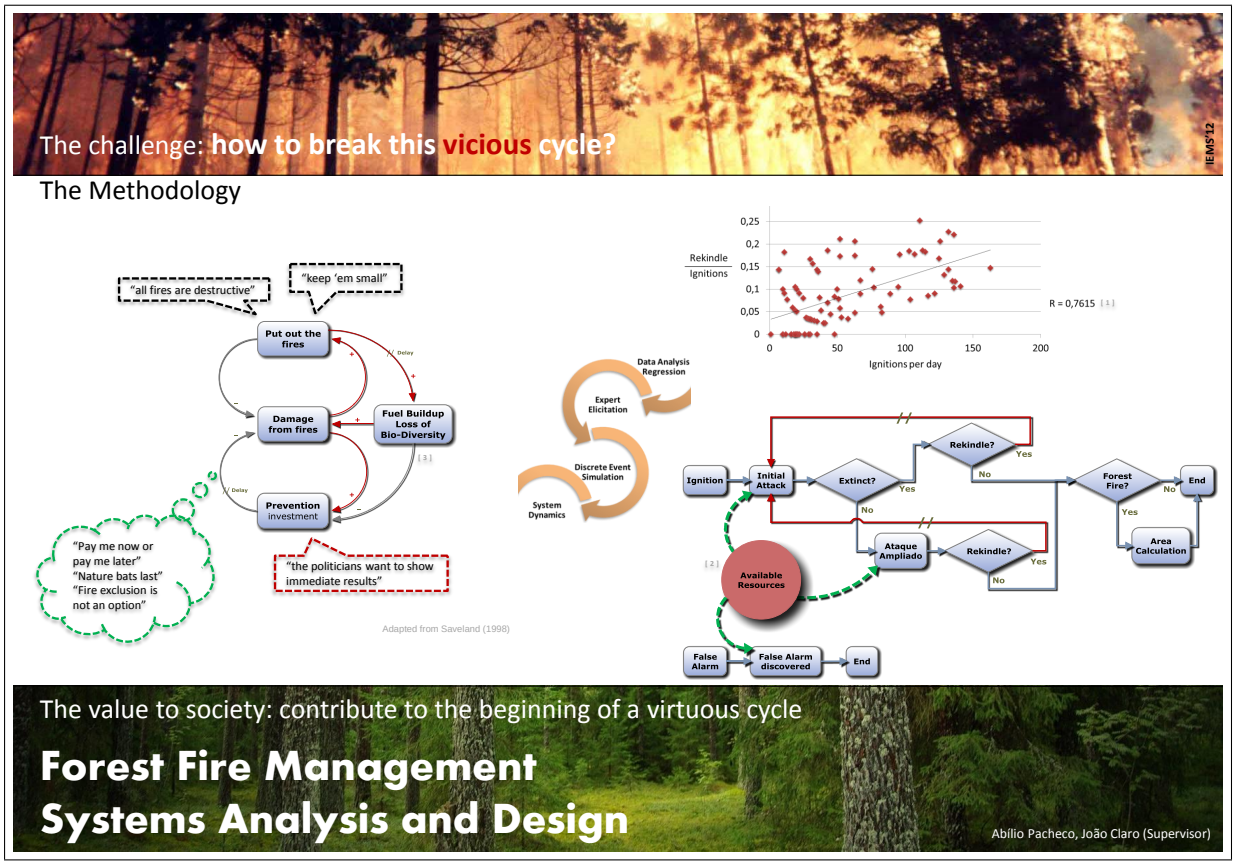

How Efficient and Innovative are Portuguese Construction Companies?

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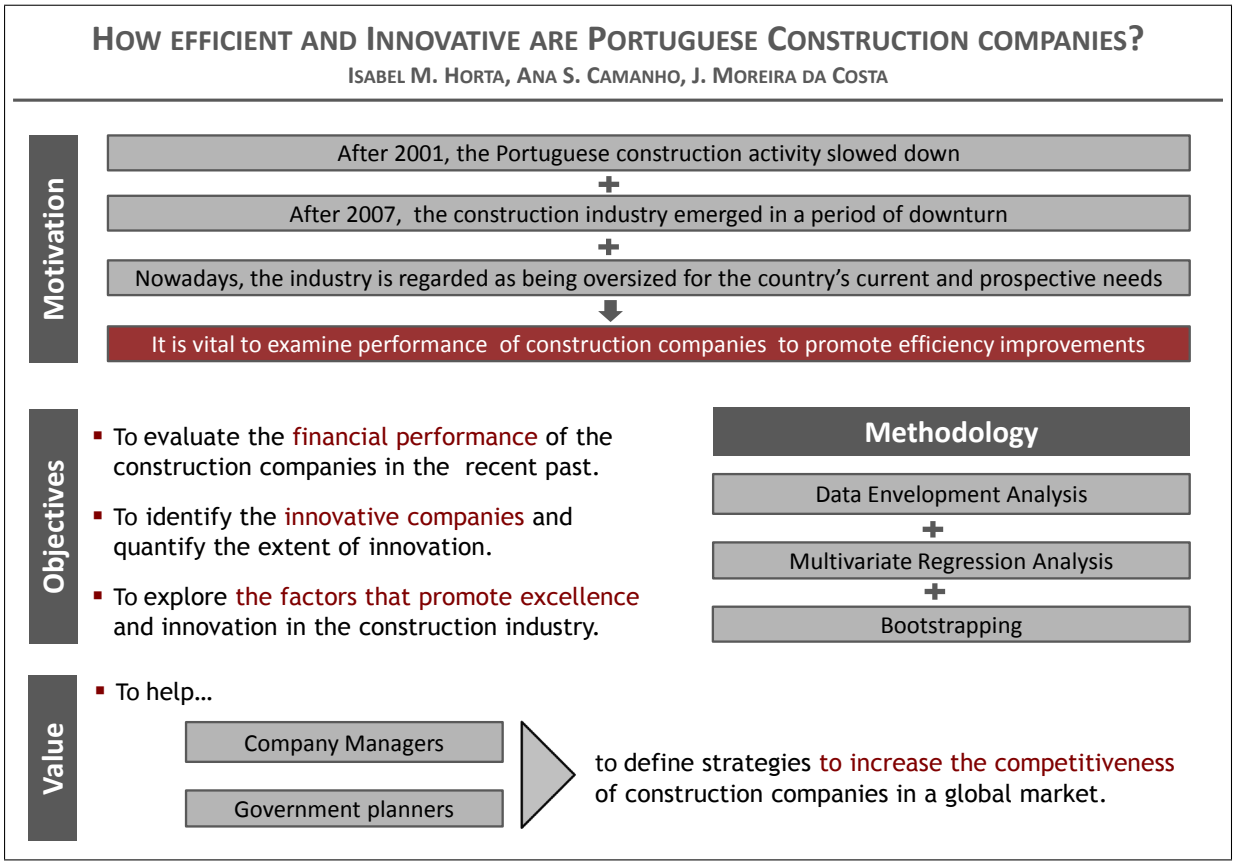

Hybrid Algorithms for Production Planning in the Pulp and Paper Industry

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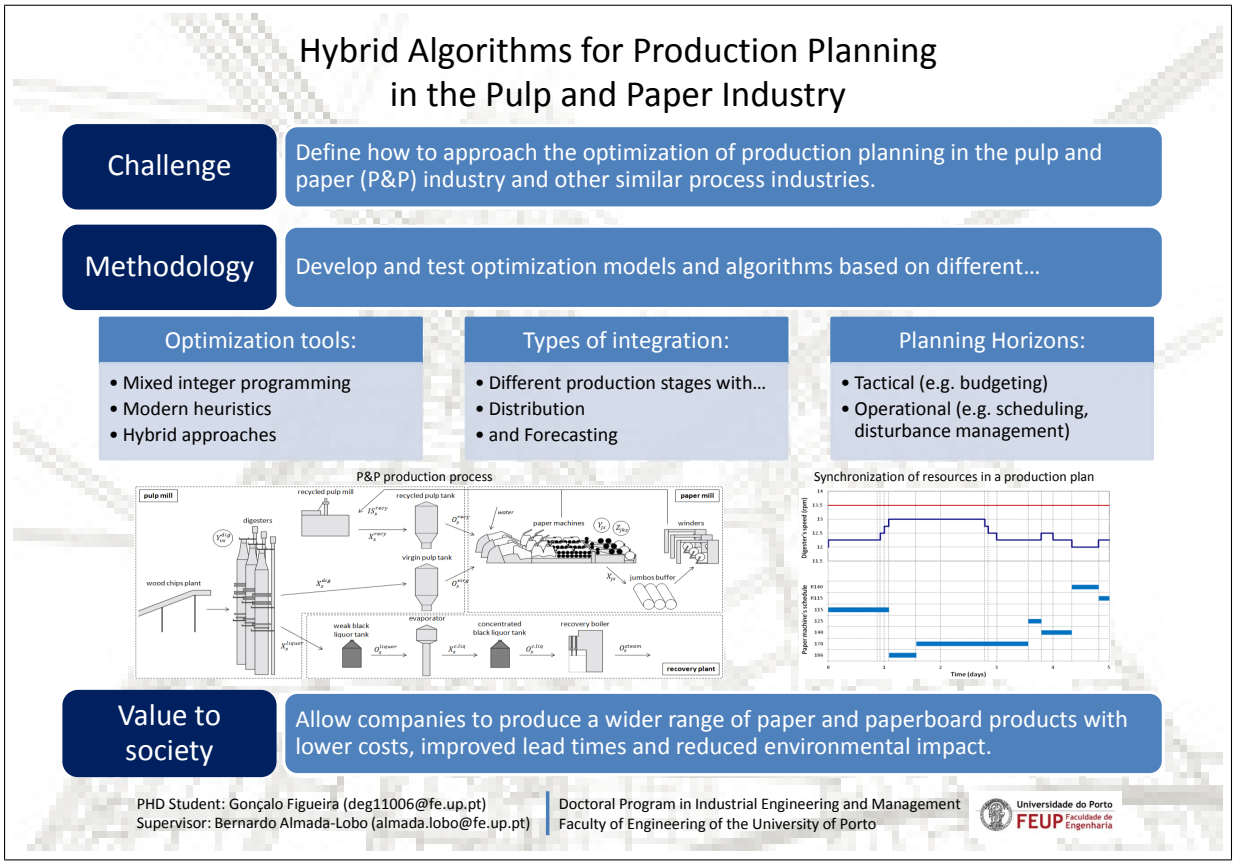

Impact of Ethics and Cultural Values in International Business of Technological Basis

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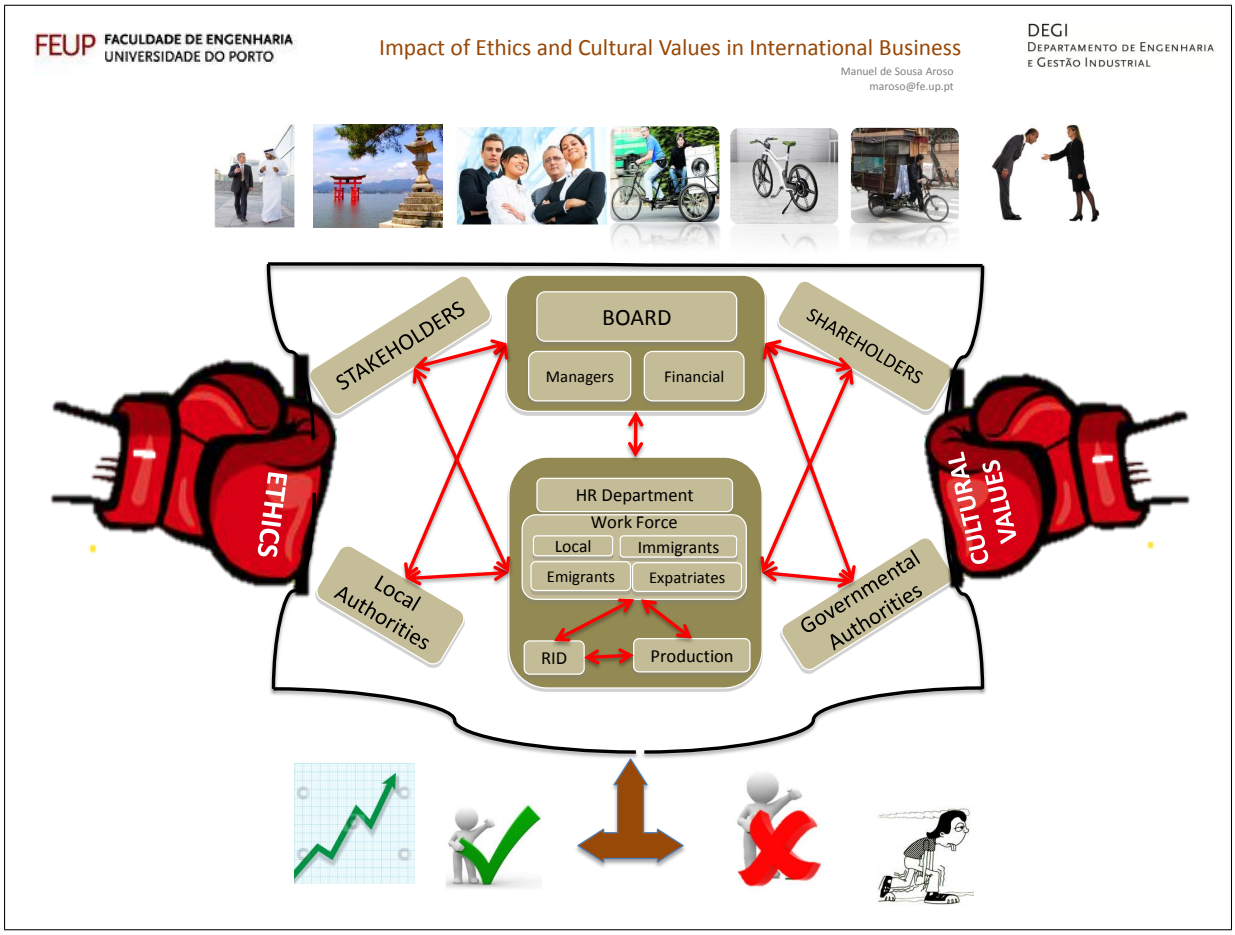

Influence of Consumer Purchasing Behaviour on the Production Planning of Perishable Food

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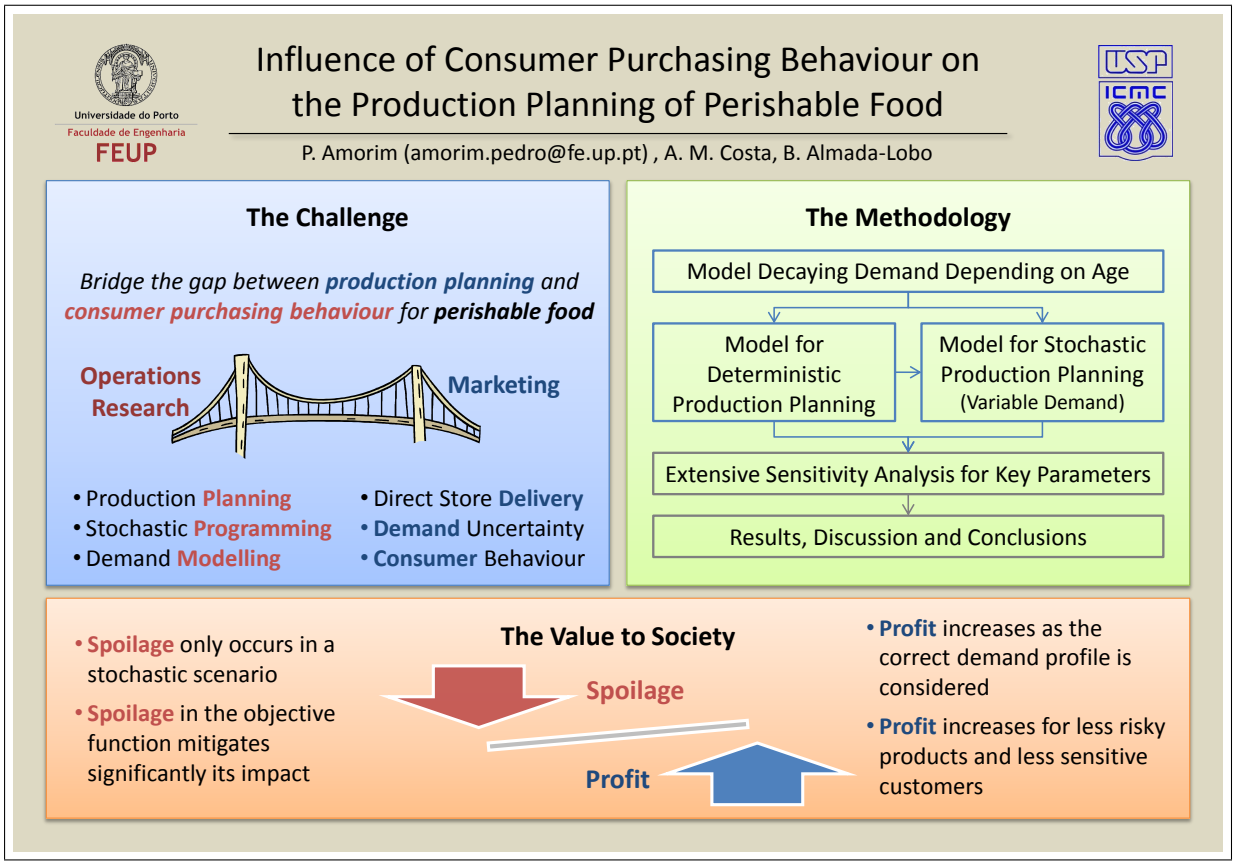

Interactions Between Technology Complexity and Operations Distribution in Disease Management Programs

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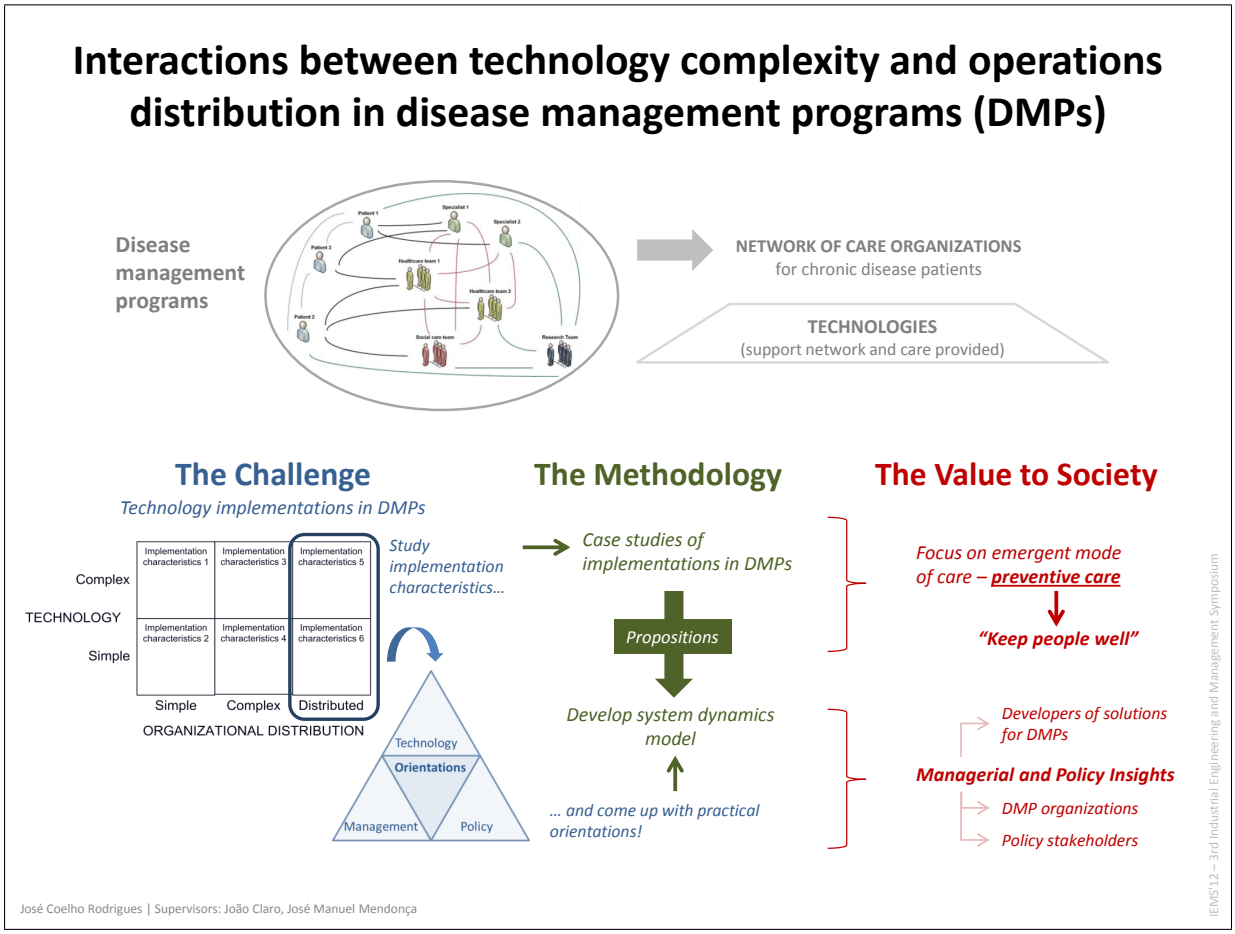


IT impact on Portuguese Healthcare Institutions – A Case Study

Miguel Oliveira*, António Carvalho Brito*, Lia Patrício*

* *Faculty of Engineering, University of Porto*

IT Impact on Portuguese Health Care Institutions – A Case Study

The challenge: Many of the recent electronic health records have failed as they are not well fitted to the health care professionals practices. A deep understanding of the daily routine of health care professionals and the impact of the introduction of Electronic Health Record (EHR) systems is necessary to support the development of EHRs that are well adapted to the organizations' operational processes and are successfully adopted.

Research questions:

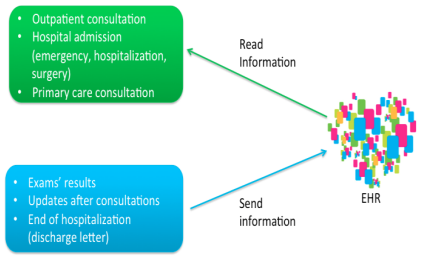
- How do Information Systems impact the daily routine of health care professionals?
- How do inter-institutional IS affect the institutions functioning?
- How will an EHR system impact current organization processes?

	Institution type	Type of care	Size
ARS Norte	Public (NHS)	Primary	~10.000 collaborators
ACES Gondomar	Public (NHS)	Primary	~400 collaborators
Hospital da Prelada	Social	Secondary / Hospital	~530 collaborators
Hospital de Vila Nova de Gaia e Espinho	Public (NHS) with private administration	Secondary / Hospital	591 beds

Results: The implementation of EHR systems usually require long projects that face many challenges that need to be addressed since the early stages of the projects. These challenges can have different dimensions:

- Technical (e.g. information systems integration)
- Infrastructural (e.g. network broadband, performance)
- Change management (change of current operational processes).

The EHR can be a driver to promote internal and inter-institutional interoperability. Relevant information sharing improves the data quality available for clinical decision-making, thus improving the quality of care.



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Management Agent-Based Simulation Framework

Carlos Bragança de Oliveira*, António Carvalho Brito*

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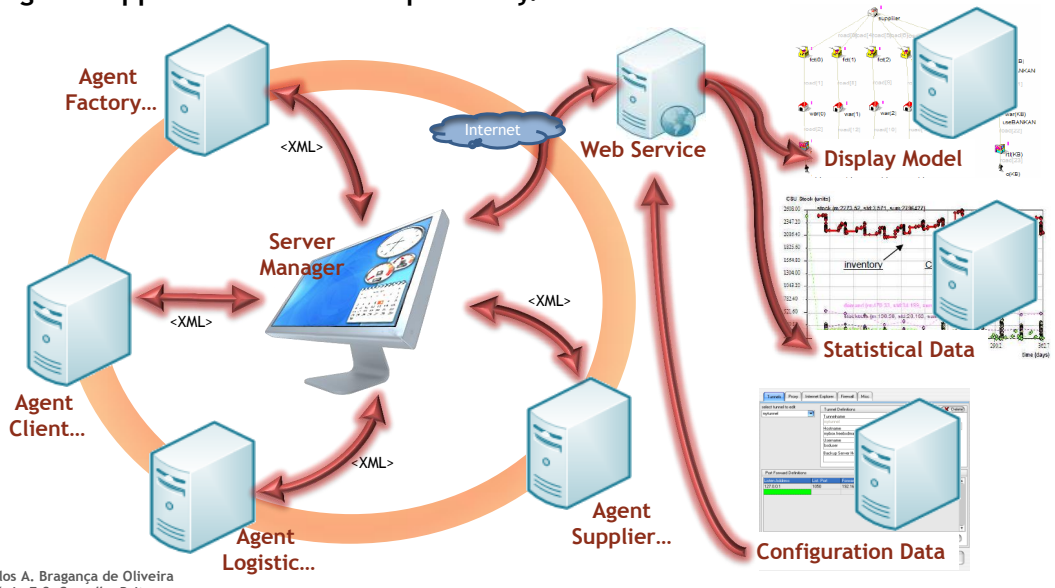
Management Agent-Based Simulation Framework

Objective:

Develop a simulation framework combining the discrete-event approach and the Agent-based modeling and simulation (ABMS) to create and integrate simulation models, using TCP/IP and web services to communicate between agents and XML based business language to support semantic interoperability.



Student: Carlos A. Bragança de Oliveira
Advisor: António E.S. Carvalho Brito

Modeling Undesirable Outputs in the Construction of Composite Indicators

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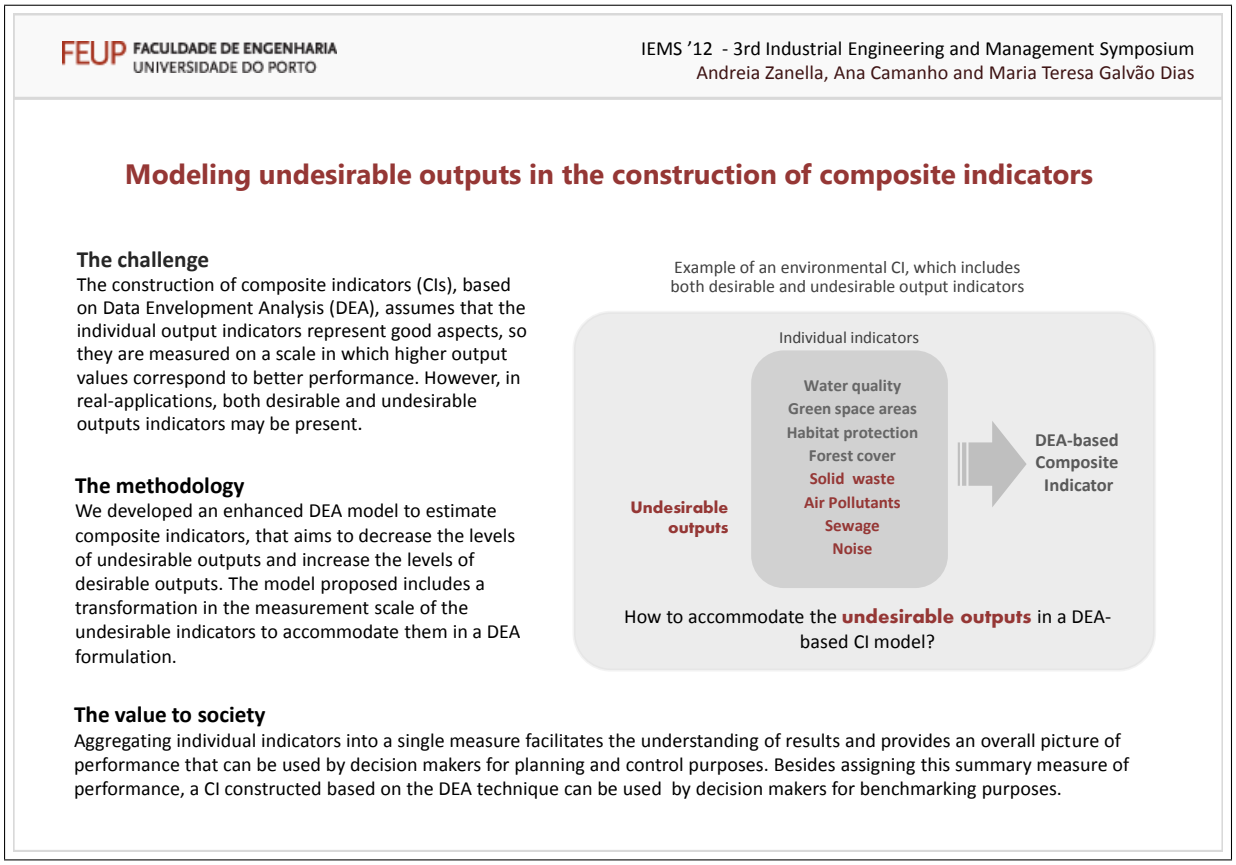

Multi-Perspective Performance and Risk Estimation for Complex Manufacturing Environments

António Almeida*, Américo Azevedo*

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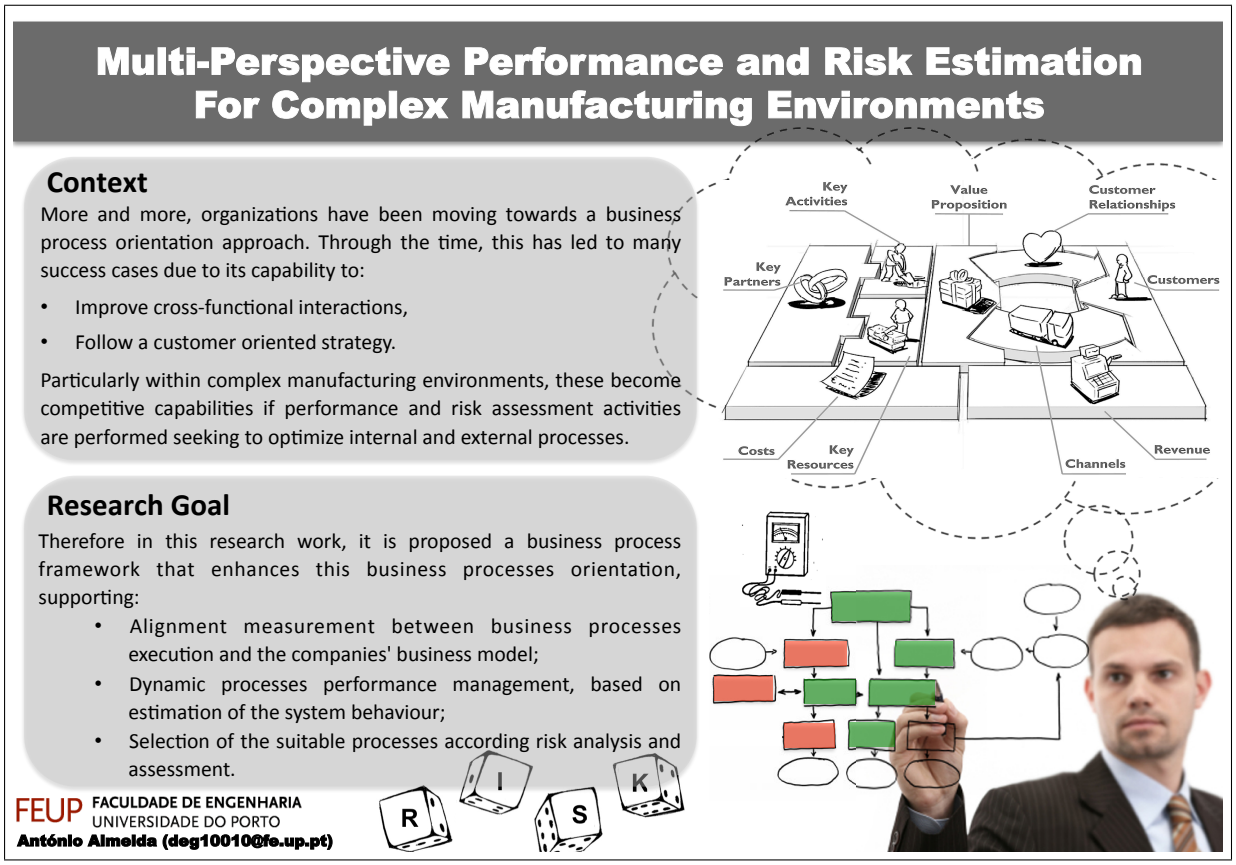

Optimization Approaches to Staff Scheduling Problems

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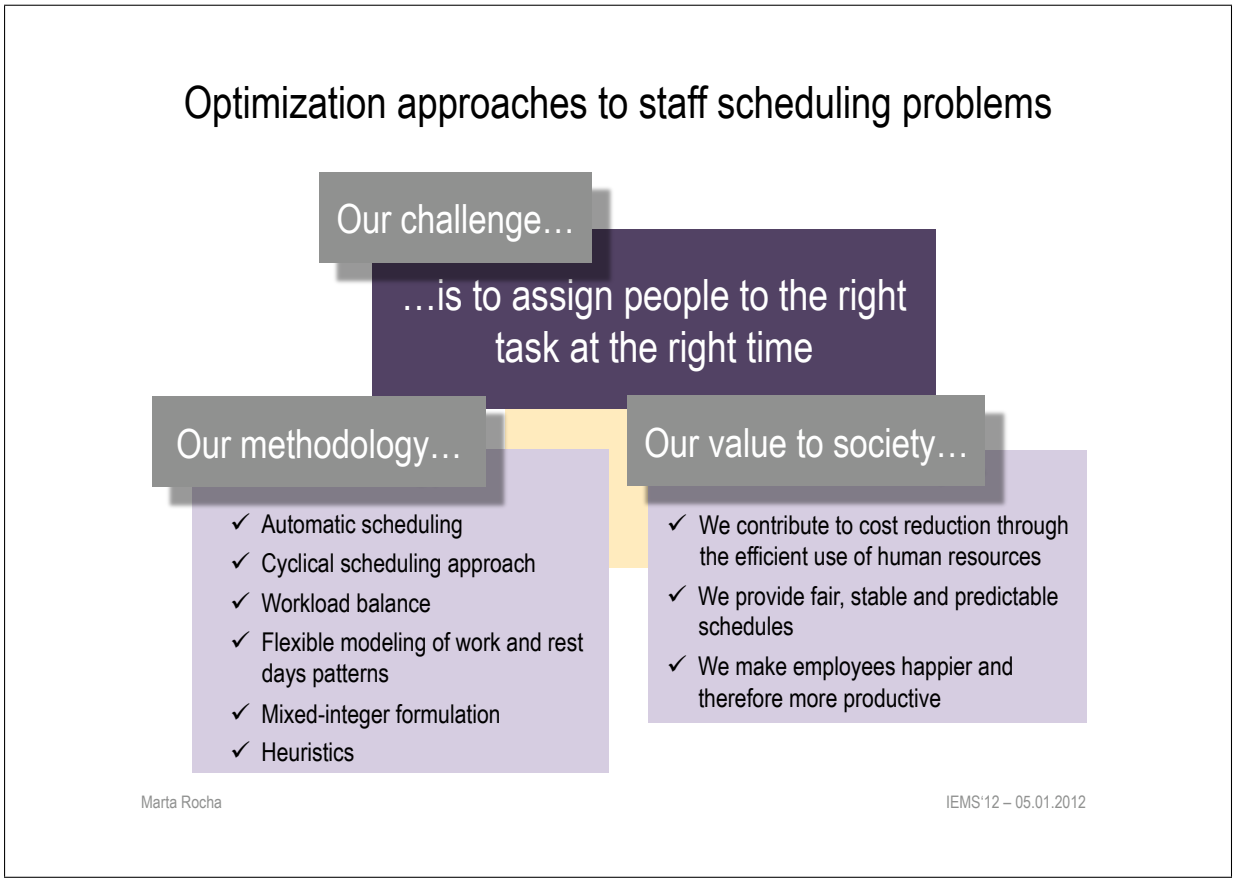

Predicting Partial Customer Churn: On the Value of the Purchasing Sequence

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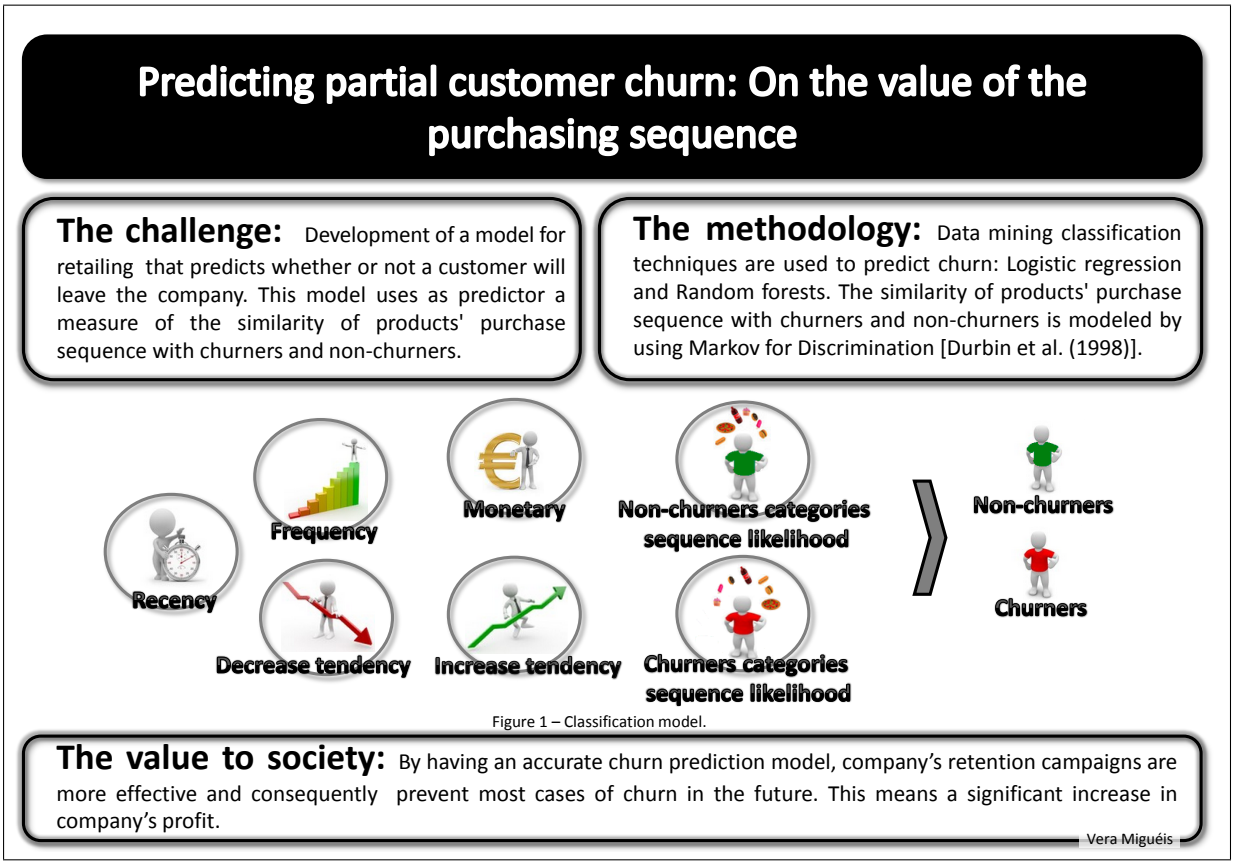

Figure 1 – Classification model.

Retail Shelf Space Allocation in a Supermarket Chain

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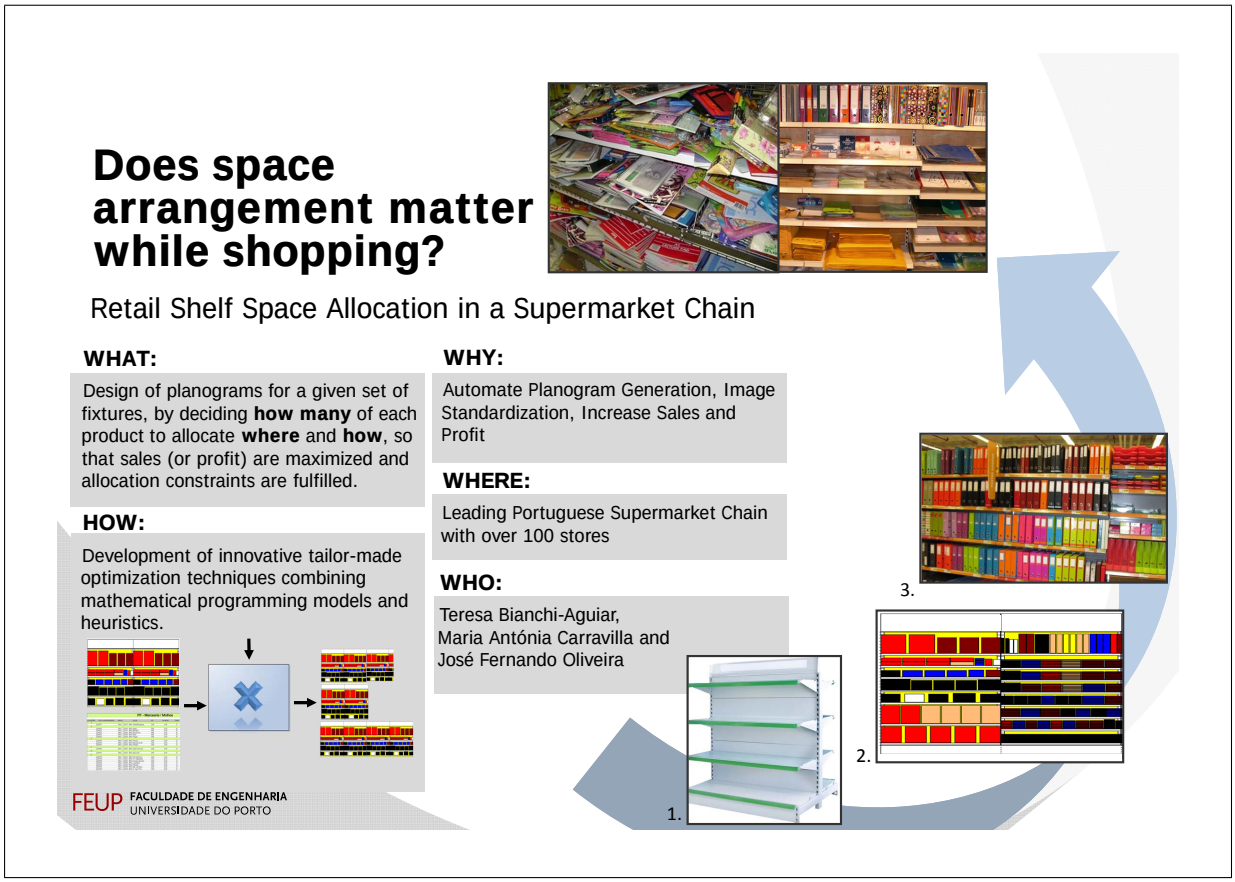

Service Design for Sustainability: Towards a More Sustainable Home Energy Consumption

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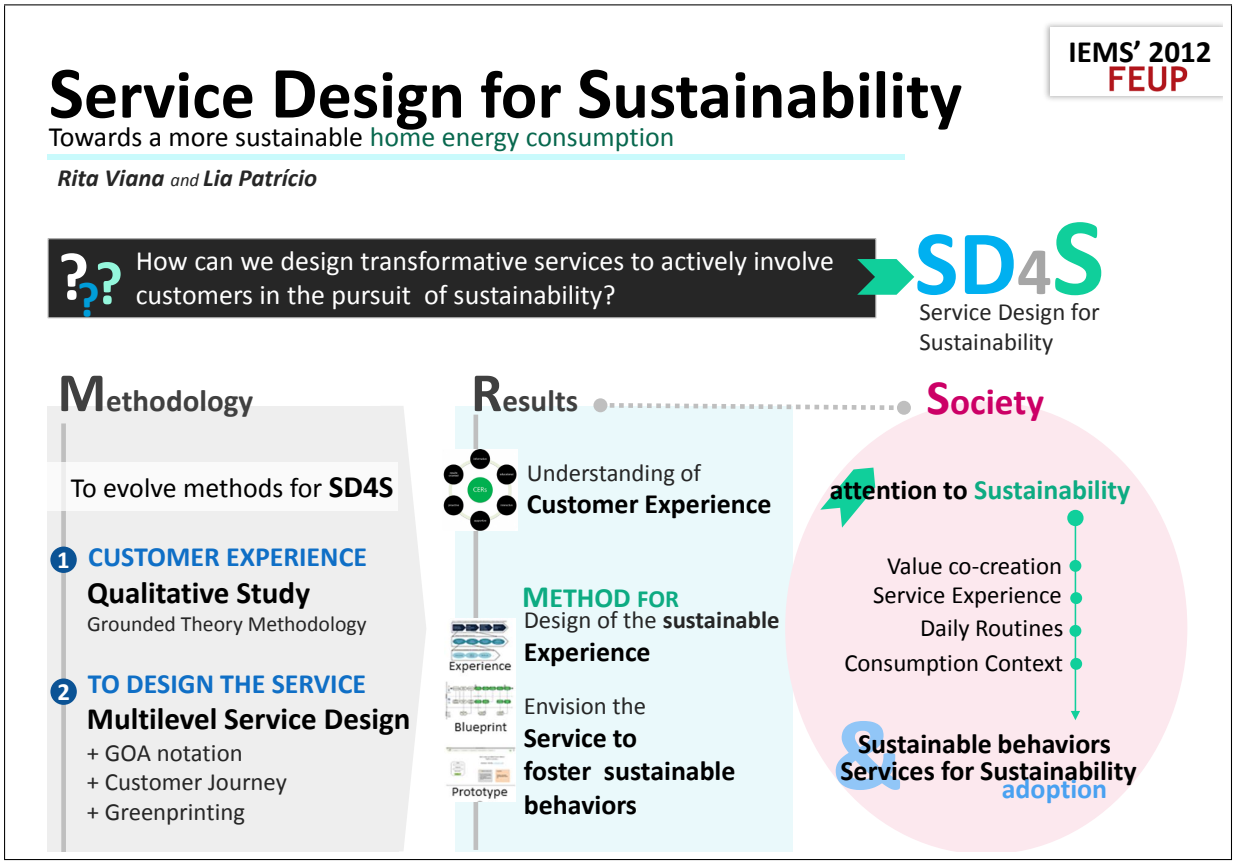

Solving Production Planning Problems when Setups are Sequence-Dependent

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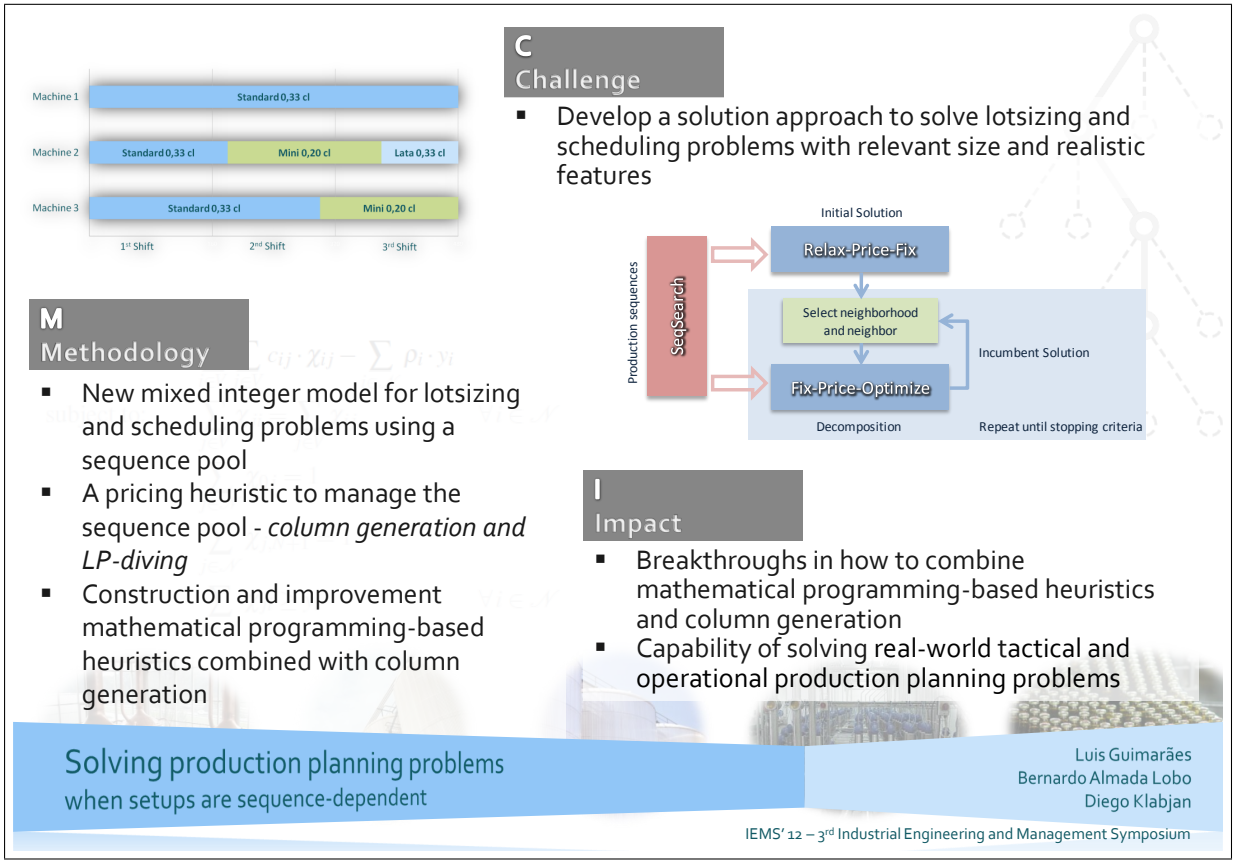

Supply Chain Risk Assessment: A Holistic Approach

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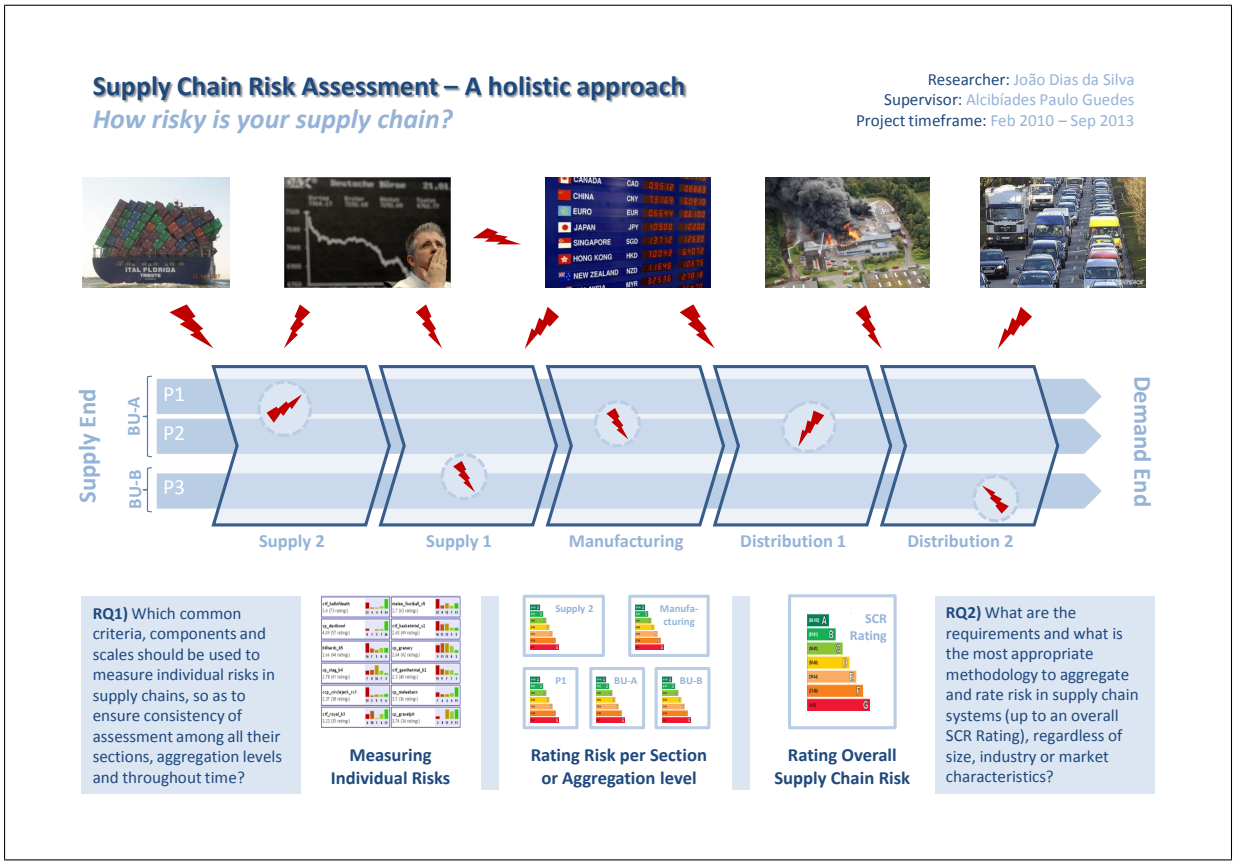

Supporting Cooperative Purchasing Strategies in Health Care Supply Chains

Nazaré Rego†, João Claro*, Jorge Pinho de Sousa*

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Supporting cooperative purchasing strategies in health care supply chains

Challenge

group of hospital systems with cooperative intentions

usual problems:

communication

leadership

conflicting interests

distribution of costs and benefits

supporting the definition of cooperative purchasing strategies

Method

exploratory qualitative data

(3 hospitals systems belonging to 1 informal GPO)

group purchasing related literature

Model

GPO structure optimization for a group of hospitals

(Tabu search/VNS)

Value to society


NOMIA 7/12/2011

Hospitais públicos vão receber menos 300 milhões de euros em 2012

Subida «preocupante» da despesa com medicamentos em meio hospitalar - alerta Secretário de Estado da Saúde

Cooperative purchasing can **significantly reduce costs** related to hospital purchasing

Success of cooperation depends on previous negotiation of distribution of costs and benefits

Understanding Mobile Service Experience Factors: from Exploratory Research to a Quantitative Study

Teresa Sarmento*, Lia Patrício*

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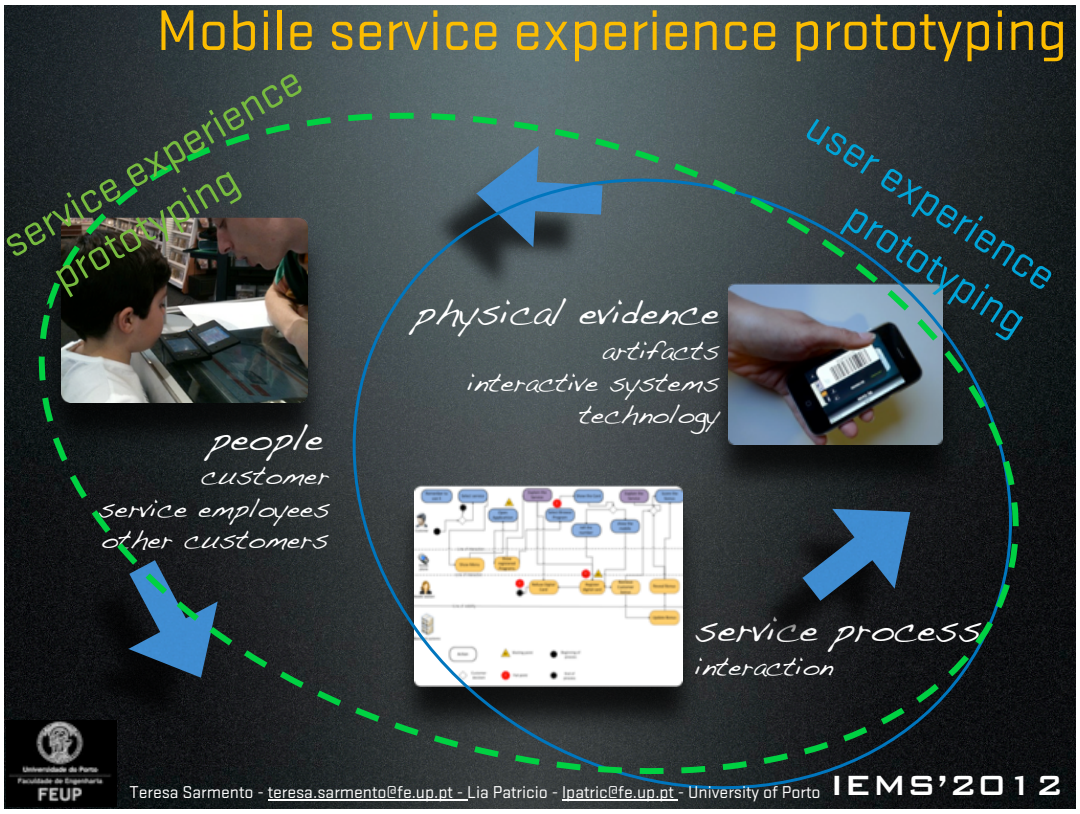

Understanding Participation in Company Social Networks Online: Drivers of Membership and Factors of Satisfaction

Carla Martins*, Lia Patrício*, José Miguez

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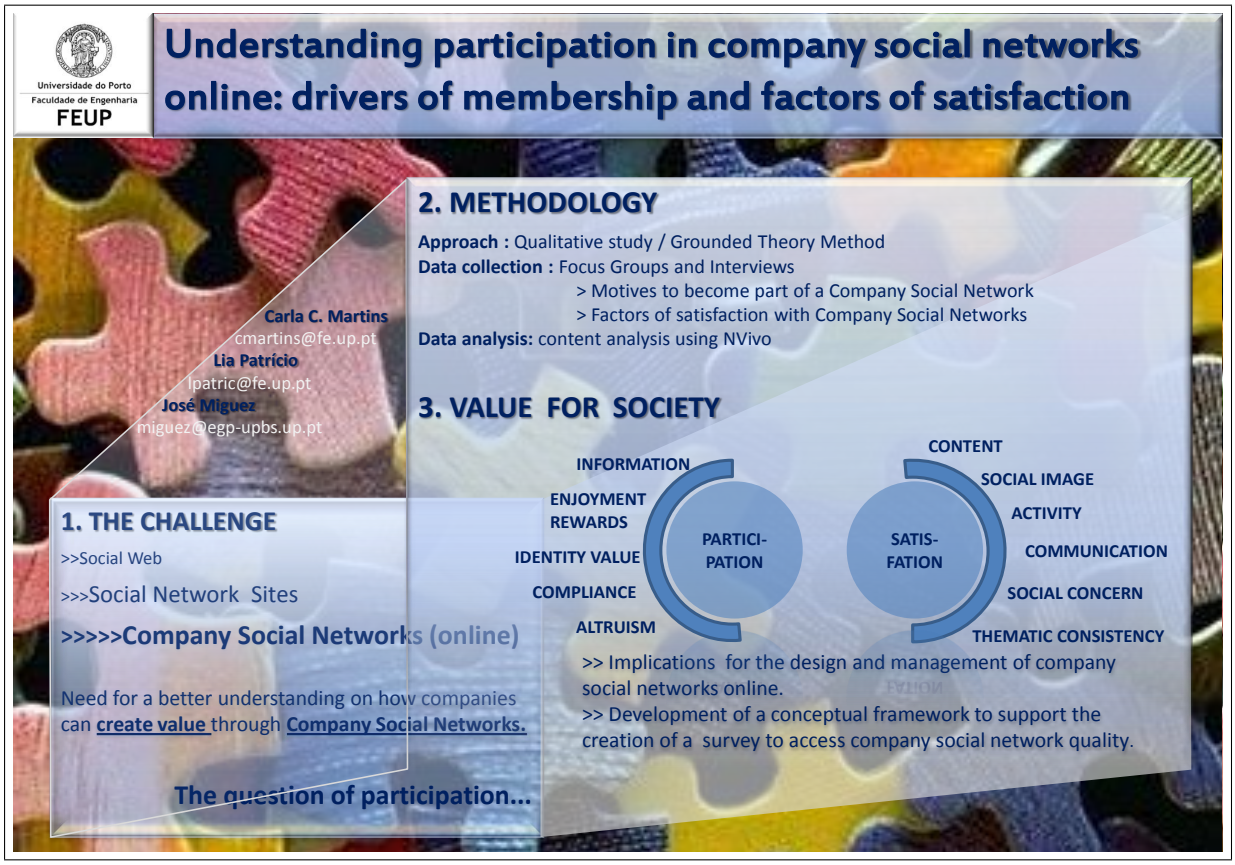

Using Business Narrative Modelling Language (BNML) for Entrepreneurial Narrative Analysis

Elga Pereira da Costa*, João Pinto Ferreira*

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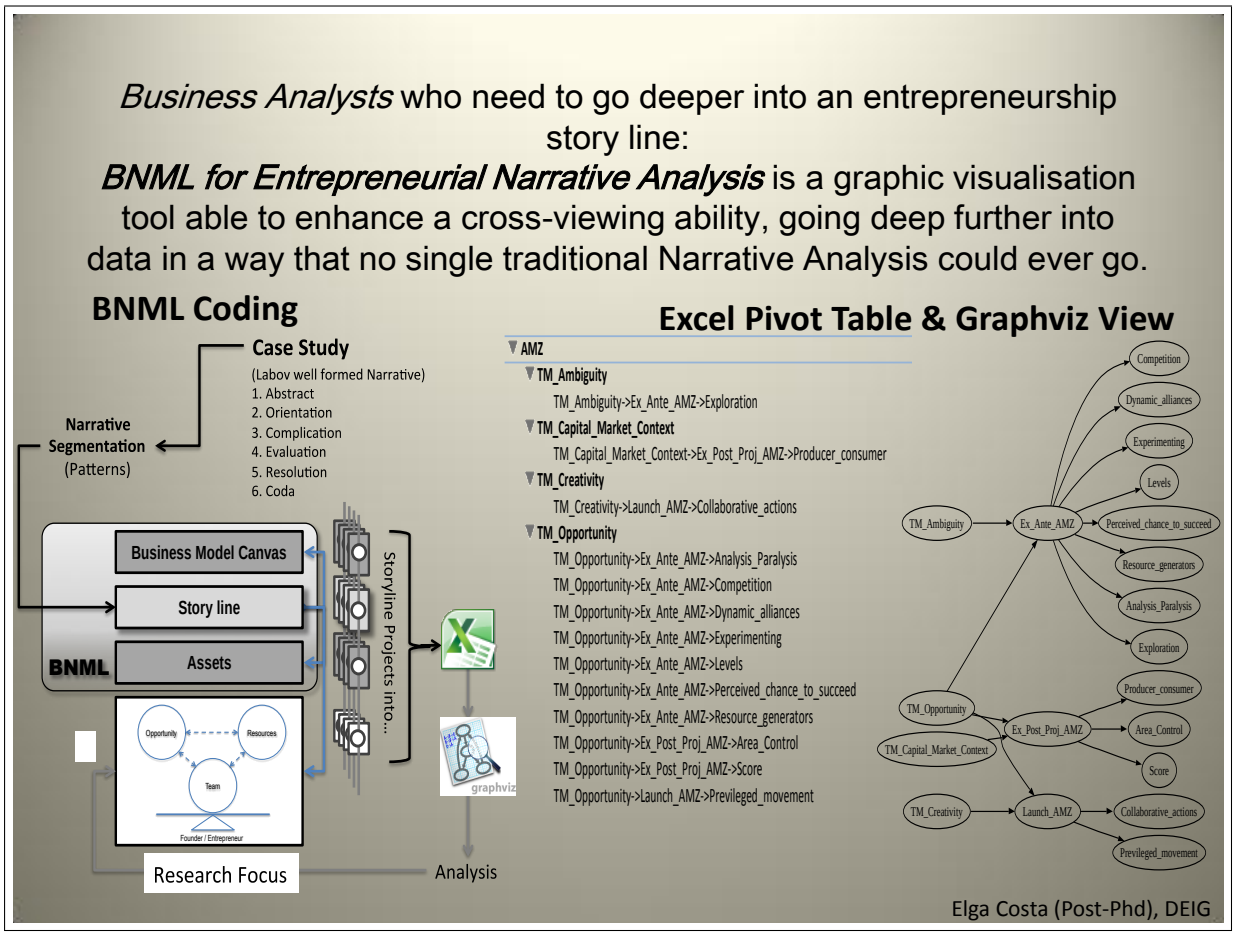

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