Société, entreprise, économie: les transformations à l’oeuvre

Transition industrielle vers le service
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Designing and improving the overall performance of organizations from a sustainable and responsible development perspective.
Research group on Servitization at Fayol Institute

Mines Saint Etienne - FAYOL Institute
Manage the Overall and Global Performance of Industrial Companies

Product-Service-Systems Research Group
Manage the industrial transition towards the integration of services within industrial businesses

Project Examples

**ServINNOV**: Diagnose, Manage and Instrument SME servitization process

**CLEAN ROBOT**: PSS Solution for an autonomous Robot in industrial cleaning

**OCEF**: Operationalisation of functional economy Business Model

**AFFINID**: PSS Solution using RFID technology to improve cheese production

**European KA21 project**: enterprise engineering methodologies applied to PSS engineering

**VALBOM**: Circular Economy and PSS for Mechanical Waste treatment
Product-Service-Systems (PSS) ? Examples.....

Common Points ?
- Offer a solution
- Purchase the usage
- Share the product functionalities among multiple users

Change of Business model ?
- Understand the processes of your customers
- Take in charge a full & optimized function
- Transform the economic model….but also all the process of value creation

PSS in B to C
- Car Sharing Solution
- Mobile power solution
- Medical support Solution

PSS in B to B
- Mobility Solution
- Automobile Industry Machinery
- Air Compression Systems

Provider of Sustainable Energy
Provider of Manufacturing Capacity
Provider of Mobility Provider
PSS & Functional Economy: a central role in the transformation of the industry and society

PSS in a cyber-physical world?

- Product-Service-Systems embed the relationship between FoF and the citizen.
- The client is no more reduced to a ‘buyer/consumer’: he becomes a user, a functionality consumer, a stakeholder of the value creation process.
- PSS enlarge the vision of value creation. Sustainability can emerge from a transformation of consumer behaviors and provider-consumer relationships.
Research Issues?

- Interdisciplinarity is necessary to answer the needs of industrial companies
- Transition: deep change of Business Model. What does this mean for SMEs?
- Examples of research issues
  - Diagnosis of servitisation potential
  - Design & engineering of PSS offers
  - Economic model analysis & configuration
  - Business model transformation
Interdisciplinarity: FAYOL Institute

PSS Research Group

Production Systems, Industrial engineering and management

- Modelling architectures and frameworks (networks, supply chains, value chains…)
- Quantitative performance evaluation: simulation, optimisation
- Decision aid systems for change management,

Strategy, Economic models, Performance management

- Servitization and financial performance
- Economic viability of new business models
- Value chain configuration and simulation
- Assessment of cost/revenue models

Sustainable Evaluation

- PSS specificities for environmental evaluation
- Integration of environmental evaluation within multi-dimensional decision-making process

Enterprise Change Management

- Servitization and corporate culture (CC)
- Organisational transition & cultural change
- Human resources, individual and collectives competencies
Change of Business Model: Is it pertinent and feasible for our manufacturing SMEs?

It is always a progressive path!
- Nearly all industrial companies are already in the path towards service offers
- Different level of maturity on services in the same company, depending on the business

The industrial transition has to be very customized …
- But this customization process is well managed today
- It requires the involvement of the key decision-makers in the company

For SMEs it requires collaboration and some strategic guidance.
- But methods are mature and supporting expertise is available

This transition appears…necessary: many example are available today, with a transition spreading throughout all levels of the supply chain.
Example of Collaborative Research Issue

Analyse your servitization potential

Build the change trajectory of the company, through the anticipation of organisation and competence transitions

Issue: GO / NO GO....HOW TO GO?

✓ Large variety of business opportunities to develop services. *What is the right progressive path?*

✓ Lack of experience of PSS. *Is the innovation level accessible?*

✓ Both a change of offer and an internal transformation of competencies and processes. *Which anticipation of the required change management?*

✓ Several organizational alternatives, more or less integrated for PSS Deployment. *How to assess various forms of risks?*

✓ *How to structure the whole strategical analysis approach?*
Example of Collaborative Research Issue  
Design and Engineering of PSS Offers

Case Study

**Industrial context:**

**CLEAN Robot Project**

**Context:**
- Business to Business solution for a large variety of industrial users
- Need of a global "industrial cleaning solution"
- Key objectives:
  - Cost reduction
  - Quality of cleaning
  - Operational flexibility improvement

**Objective of the collaboration:**
To transform a technological innovation...into an Integrated Product-Service offer, requiring to create a new Value-Creation-Network

**Service Life-cycle analysis:**

- Service ideation
- Service selection
- PSS implementation
- PSS evaluation

Autonomous Robotic Cell to clean agro-alimentary industry environment
Concrete Results

- **Technical impacts of Services** have been anticipated for product design
- The first prototype of the Robot is available… and effectively cleaning
- **All Product-Service (PSS)** opportunities have been identified and characterized
- The PSS economic model simulator is under building
Example of Collaborative Research Issue
Economic model analysis and configuration

Identification and modelling of alternative value chains

Simulation platform for rapid development of economic model simulator

- Market
- Product/Services
- Competences
- Contract Duration
- ...

Interpretation of simulation results; Identification of key economic parameters; Industrial recommendations

PSS Parameters
Quantitative simulator
Indicators

- Industrial perf. (capacity, stocks ...)
- Financial perf. (costs / revenues)
- ...

GUI
Simulator
Indicators
Example of Collaborative Research Issue
Decision-making for BM transformation

**Project**: build a full Framework to support the reconfiguration of Business Models, through servitisation and digitisation. The framework will be based on an integrated toolset of evaluation and decision-aid solutions, to support the whole decision process of BM reconfiguration.

**Diagram**:
- **Initial Business Model**
  - Already Implemented PSS BM (real firm data)
  - Traditional BM, expecting transition (real firm data)

- **BM Sensing**
  - Assessment of Servitization readiness level & identification of the most effective strategies for capacity management and servitization

- **Seizing Value Opportunities**
  - Digital and KET-enabled BM redefinition, based on collaborative decision-making and risk assessment

- **BM Transforming**
  - PSS BM change & implementation through pilot projects and cultural enhancement

- **Transformed Business Model, enabled by digital & KET solutions**
  - Sustainable PSS Business Model, enabling fast capability & capacity adaptations

- **Readiness results and interpretations**

**PSS BM Implementation Scenarios**
- For better capacity adaptability
- For higher sustainability
Thank you for your attention!!

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First references