INTERDISCIPLINARY LINKS, INTEGRATIVE APPROACH, HEURISTIC METHODS AND ARTIFICIAL INTELLIGENCE IN THE MANAGEMENT OF INNOVATION - PART 1

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Abstract: In this first work, out of the total of twenty-four, are considered: Integrative approach, interdisciplinary relations and transnational language in the technical and economic fundament of engineering and management, for the purpose of competitive innovation and successful business. Approaches to develop the innovation with a high degree of complexity. Interactive heuristic methods and algorithms for inventive activity, for inspiring and developing new industrial products and services for households and production systems. Implementing an effective business vocabulary for organizational renewal. Introduction of gaming and "art" methods in innovation management. Intensifying innovation activities through an attempt to introduce artificial intelligence into teamwork, with simultaneous implementation of an engineering and non-engineering approach...

Keywords: Integrative approach, interdisciplinary relations, transnational language, technical and economic foundation of engineering and management; competitive innovation and successful business; approaches to develop innovations with a high degree of complexity; interactive, heuristic methods and algorithms for inspiration and development of new industrial products; effective inventive activity; an effective business vocabulary for organizational renewal; gaming and "art" methods in innovation management; intensifying innovation activities and attempting to introduce artificial intelligence into teamwork with an engineering and non-engineering approach.

1. INTRODUCTION

The main components of the management work (not just four, according to many authors), are: Ambition to Competence and Enhancement; head of functions; Role in the organization - Leader; Organizational experience and orientation in the market environment; Documentation and qualified work with it; Innovative potential and image; Technical culture and intervention in real technological processes; Expert in the field but with elementary general culture; Special knowledge and skills, such as the ability to protect intellectual property, project development, economic base [1] ...

What is not fully covered in today's scientific innovation management work:

- 1. Integrative approach, interdisciplinary relations and transnational language on the technical and economic basis of engineering and management for competitive innovation and successful business.
- 2. Approaches to develop innovations with a high degree of complexity. Interactive and heuristic methods and algorithms for inspiration and development of new industrial products and services for households and production systems.
- 3. Effective inventive activity. Implementing an effective business vocabulary for organizational renewal.
- 4. Paradigm of vocational training in this area. Introducing gaming and "art" methods in innovation management.
- 5. Intensifying innovative activities by attempting to introduce artificial intelligence into the teamwork of engineers and not engineers,
- 6. WEB-based specialized company and professional formation, development of software platform for electronic and distance learning ...

IT IS NECESSARY TO DEVELOP A NEW HOLISTIC PARADIGM OF THE INNOVATION PROCESS

This book [1] discusses a large number of issues and necessary procedures, methods and techniques for the innovation process and the implementation of inventions in production.

2. EXPOSITION

Deepening in innovations can only take place if earlier, degraded, archaic structures, technical departments, and requirements change, according to the proposed or similar paradigm of the innovation process here. Serious preparation is needed. There are all grounds for establishing a new, international interdisciplinary European Professional Institute (EPI), epicentre for forming, fundamental studies and applied development, with an artificial intelligence, in business, technology and economic sciences, management of innovation, design a new "V" theory [2]. The current work is intended to stimulate and develop the management of innovation activities, including: from market research, through the capabilities of the company and its team to the development and engineering of innovation with a medium or high level of complexity. They have to combine, both a professional instructor and an

entertaining, business game party. As a mediator between a learner and a teacher, a leader and a member of a heuristic team, the WEB application will be included. One of the many examples is given.

The book [1] has developed an epistemological and methodological toolbox that can be used by anyone interested in innovation. While, in most cases, the authors reach imaginary innovation, here realistic researches and developments can be made that are capable of being implemented immediately in practice.

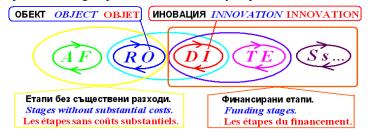


Figure 1. Holistic paradigm of the process of innovation.

Take a look, after figure 1, figures 2-5. In the next works of the author, rest of the paradigm and corresponding algorithms for small, medium and large enterprises are given.

3. CONCLUSIONS

The engineering point of view here is broken through the capabilities of the leader and not the engineer, but vice versa. **Note.** The text of the figures - French - Bulgarian - English. Often, activities related to the development of new products and services are seen as side-by-side, as opposed to the core activities that are the familiar functions of each firm: marketing and sales, accounting and finance, administration, supply and logistics, etc. But fundamentally, innovation management must be closely tied to the strategy of the company. Given that it sets goals and vision in the long run, then innovation management must provide a sustainable and competitive advantage that will ensure that the strategy is implemented and profit is secured. The works of the author received support and recognition in other countries [1, 2, 3 and others].

The proposed work, which is the first of the long series, is intended for a wide range of readers working and interested in the issues of scientific, development and real innovation. The series is also of interest to managers of ambitious manufacturing companies and organizations in the sphere of services. The articles can be used by lecturers in universities who want to attract young people with development interests to carry out innovation activity in companies after graduation. In a trilingual presentation of the paradigm of innovation processes (languages respectively French, Bulgarian and English) and the established "lexicon" business, international teams can be created, creating a favourable environment for creating and disseminating innovation.

LITERATURE

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Figure 2. Example of an overall organization of an innovation process.

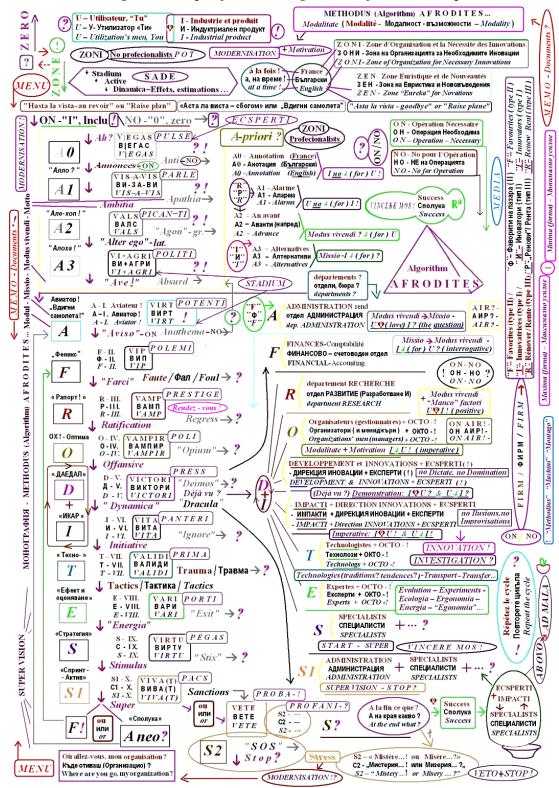


Figure 3. Starting the paradigm of the innovation process in "business game".

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VACANCE POUR CONTENU (fr.)
                                                    ВОЛНО СЪДЪРЖАНИЕ (бълг.)
                                                                                            VACATE CONTENT (engl.)
   EPI-graphe - « quo vadis - lat. » - Où allez-vous ?!
                                                                          Къде отиваш?!
                                                                                                    Where are you go?!
Préambule et avant propos / Предговор и въведение / Preamble (Preface) and Introduction
                                                                                                 A priori = A0 + A1 + A2 + A3
                             <u>(Български)</u>
                                                       (English)
                                                                                                 (lat. - color violet)
(Française)
« Ah! » - «Vegas – hasarde » ou (|) Exactitude des Gestionnaires, Administrateurs, Spécialistes...?
<u>Attractions</u> - «Вегас – хазарт» <u>или (I)</u> Екзактност на Генералното ръководство, Администрацията, Специалистите…? - В | Е Г А С
"Mines?" "Vegas – hazard" or () Exactitude of General managers, Administration, Specialists...?
Acronyms - VAN - «Vandales» ou Avant-garde pour Nouveautés ? ou VEN - Valut et (risque) Eventualité - Nouvelle!
Allegorias - ВАН - "Вандали" или Авангард за Новостите?
                                                                       или В Е Н - «Венчър» - Валутен риск, Евентуално Нов!
Associations - V A N - "Vandals" - Advance guard or for Novelties?
                                                                       or VEN-Venture - Eventual New!
V U L G A R I – Vulgarisation et Utilisation d'un Lexico des Gestionnaires et Administrateurs a la Réalisation des I
В УЛГАРИ - "Вулгарен и Утилизиран - употребяван" Лексикон на Генералното р-во и Администраторите при Реализация на И – Априори ?
V U L G A R I - Vulgarized and Utilized the Lexicon of Generality and Administrators in the Realizations of I
No professionals- POT – Professions (Perçons) Orientent vers la Technique.../ Firmes type IV - M-Minimum activité -"ZOMBI"
      ПОТ - Професии (персони) Ориентирани към (обвързани с) Техниката... / за Фирми тип - IV – М - "Минимум актив" – «ЗОМБН»
      POT-Professions (Persons) and Orientation to the Technique.../ for the Firms type IV-M-Minimal activity - «ZOMBI»
                                                  Profession: PULSI; PARLE ... (vide etiam Acronyms)
                           Abstractions -
A0 - «AH» = Acceleration+Harmonisation - Annotation et ANTI-(vide Acronyms) Ou - A1 - Alarme et VARI-ANTI
  "Vis-à-vis" avec l'Industrie et des Structures de l'Administration, Valorisation des I et SISTEMI
АО - "АХ" = Акселерация + Хармонизиране - "<u>Mimes</u> ?" - <u>Анотация и АНТИ -</u> Или - <u>А1 - Аларма и ВАРИ – АНТИ</u>
 «Визави – лице в лице» с Индустрията и Структурите на Администрацията, Важност (ценност) на И и СИСТЕМИ - В И - З А - В И
A0 - "AH" = Acceleration + Harmonization Aviso - Annotation and ANTI - Or - A1 - Alarms and VARI - ANTI
  "Vis-à-vis" with Industry and the Structures of the Administration, Valorization of I and SISTEMI
          Ino 4 (for) U! PULSI? (vide etiam Acronyms) Ou - VIno 4 (for) I! PARLE!
"Masque?" VIO-, Violences" - Incidents et Obstructions (dans l'Organisation) - ? - pour les firmes "R" - Rente
Men+virtus! В И О - Възможни Инциденти и Обструкции (пречки в Организацията) - ? - за фирми "Р"- Рента / III. В / - «ЗНГ-ЗАГ»
Managers? VIO - "Violence - Incidents and Obstructions (in the Organization)-? - for firms R - Rent /II.B./- "ZIG-ZAG")
V E G E T I – Végétation dans l'Escalassions - Gestion, Ergonomie, Technologies et Investissions – <u>départements...?</u> - Ou – V O T E ?
В ЕГЕТИ - "Вегетиране" при Ескалиране – Генерално ръководство, Ергономия, Технологии, Инвестиции - <u>отдели, бюра?</u> - Или – В ОТЕ?
VEGETI-"Vegetation" in Escalation – Generality - Gestation, Ergonomic, Technologies and Invests – departments...? - Or - VOTE?
          VIRGO-?-Vocabulaire Industrielle et Réalisation (Roulir) de la Gestion (ménage) d'Organisations
         В И РГО - ? - Виртуален Индустриален Речник за Градене (и Ръководене) на Организациите (асоц. Съзвездие Дева) – Априори!
         VIRGO-? - Vocabulary for Industry and Realization (Rule) of the Generation in the Organizations
A2 - An avant "Metamorphose ?" - "Valse" (la dance)/ Valorisation des Administrateurs et Leaders pour le Succès - <u>V A L S</u>
А2 - Аванти (напред)
                                - "Валс" (танцът на) / Валоризация на Администратори и Лидери за Сполука

    ВАЛС

                                - "Vales" (the dance) / Valorization of Administrators and Leaders for Success
A2 - Advance Anecdotes ...
                                                                                                                      - VALS
Modus vivendi? ? 4 (for) U (U – Utilisateur, "Tu"/ U – Утилизатор «Tu» I U – Utilization's men, You) Profession - P I C A N + T I!
  VAGUE-Vagues parmi (Vérification) des Administrateurs et Gestionnaires pour Union et Evolution
 В А Г У Е - «Вълнение - Верификация» на Администраторите и Генералното ръководство за Управлението (Единоначалие)
 VAGUE-"Verification - Vague-non regularity" of Administrators and Generalists for Unanimity and Evolution
V A G-NO-Vagabondes – Anti-industrialistes et Gestionnaires
                                                                 - NO VICTI (dans S1) - pour «R» - Rénover /III.A./ - «ZEBRI»
В А Г. – <u>НЕ</u> - Вагабонти – "Анти – индустриалци" и Генерални ръководители <u>– НЕ ВИКТИ (в С1)</u> - за "<u>Р" - "Ренови" ГП.А. Г. «ЗЕБРИ»</u>
                                                                     - NO VICTI (in SI) - for "R" - Renew/III.A./- «ZEBRI»
VAG - NO - Vagabonds - Anti - industrialists and Generalists
                                                                            NO VULGAR (dans S1) et NO PIC-ANTI?
         VIR? – Vocabulaire Internationale pour Réalisateurs
Mobile! В И Р ? - ( асоциация с «възможен» ) Виртуален Интернационален Речник - НЕ В У Л Г А Р ( в С1) и НЕ П И К - А Н Т И ?
                                                                           -NO VULGAR (in SI) and NO PIC-ANTI?
        VIR? - Vocabulary for International Realizations
    Alternatives - Voyage dans l'Industrie - Administration, Gestion, Réalisation des I (vide etiam Acronyms) - VI + AGRI
АЗ - Алтернативи - Въведение "Воайаж" в Индустрията – Администрация, Главно ръководство (съкр. Гл. р-во)
                   (Господстващия, «генералитета», "гида", Генерален директор, "Главния"), Реализатори на И – В И + А Г Р И
"Memoriam ?"
                    - Voyage in Industry - Administration, General managers, Realizations of I
                                                                                                                -VI + AGRI
   (Viagra – stimule! Виаграта - стимулира! Viagra – stimulate!) <u>Managers!</u> - <u>MODERNISATION?</u> - A + M E N!
"Megachance?" AVENIR (avenir) et "Raiser plan" ou "Hasta la vista - au revoir" - / Asta la Vista - esp.
<u>АВЕНИР</u> (бъдеще – фр.) "Вдигни самолета" <u>или</u> «Аста ла виста – сбогом» <u>A VENIR</u> "Raise plane" <u>or</u> "Asta la vista -goodbye"
  Missio ? I 4 (for) ? ( 1 - Industrie et produit / И - Индуктриален продукт / I - Industrial product ) Profession - POLITI
VIA-«Via» Valeur du I et Analyse (ou AV-méthodique française) - pour les firmes "<u>I"- Innovatrices (type I)</u> - "ZEFIRI"
В И А – «Вървим през» Валоризация на И (стойностен анализ) и Анализи (АВ) - за фирми "U" – Иноватори (тип I) - "ЗЕФИРИ" VIA – "Via" Value of the I and Analysis (AV – French methodique) «Archaisms?» – for "I" – Innovators ( type I ) / "ZEFIRI"
  VOCS - "Vox populus" Voix dans l'Organisation pour Concurrence des SISTEMI (et les produits Industrielles) - VENIR (venir)
  В ОКС - "Вик" ("Вокс попули" = глас народен – глас божи) в Организацията за Конкурентоспособност на СИСТЕМИ - В ЕНИР (идване)
  VOCS - "Vox populi-vox dei (lat.)" Voices in the Organization for Concurrence the SISTEM (and Ind. products) - VENIR (advent)
VIBRO – Vocabulaire Industrielle pour le Business et la Réalisation des Organisations (et Administrateurs) – «Vibration-!» – VOTE!
В И Б Р О - Виртуален Индустриален и Бизнес Речник за Организациите (и Администратори) (асоц. Вибро – вибрации - !)

      VIBRO – Vocabulary for the Industry and Business of the Organizations (and Administrators) – "Vibrations -!" MEMO - DOC? - VOTE!

      Départements, bureau...?
      «Департаменти», отдели, бюра, секция, сектор ...?
      Departements...? (vide etiam)

       (vide etiam Acronyms) AVE pour EPI-EVA? / ABE 3a ENU - EBA? / AVE for EPI - EVA?
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Here is an epistemological and methodological toolkit that can be used by anyone interested in innovation. While, in most cases, a number of authors have reached an imaginary innovation, realistic developments that are capable of being implemented directly into practice come to the fore. The works will be useful for learners on innovation issues - PhD students, masters and students.

Figure 4. An example of starting a small business innovation process.

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F FIRMes - selon les CIBLES / ФИРМи - според поставените ЦЕЛИ / FIRM - AIMS and pretentions
                                                                                                                            FARM – Focus Automatisation
      MEN-Fixez d'Ambition (ECSPERTI) pour Modernisation avec des Effets et de
 Ф А М Е Н - Фиксиране в/у Амбиции за Модернизация с Ефект и Нововъведения – от ЕКСПЕРТИ (!)
                                                                                                                            Ф А Р М - Фокус на Автоматизация
                                                                                                                            Роботизация Механизация
 FAMEN-Fixe of Ambition (from ECSPERTI) for Modernity, Effects and the New products (!)
                                                                                                          FARSI
 F В B - Finances, Equipment, Base + FA N A - Fixez we les Analogues Nouvelles et d'Ambition / FO R U M I \Phi Е B - Финансии на \Phi фирмата, Екипировка, База + \Phi A H A - \Phi Фиксиране B у Аналози и Нови Амбиции / \Phi O P У М И F E B - Finance, Equipment, Base + FA N A - Fixe over Analogues and New Ambitions | FO R U M I
                                                                                                                            FARM - Focus over Automatics
                                                                                                                            Robotic Mechanisatio
                                                                                                                            (voir A V E / ABE/
F – Favorites (type II) / \Phi – \Phiаворити на пазара (II) / F – Favourites (type II)
                                                                                  (!) I – Innovatrices (type I) / И – Иноватори (тип I) I – Innovators (type I)
 ZENITI - Zone euristique d'Elaboration des Nouveautés Industrielles,
                                                                                     ZEFIRI - Zone euristique d'Elaborations Fondamentaux dans
Technologies et Investigations + FINANCE+FOBII
                                                                                  l'Industrie - Recherches et Innovations + FINANCE+FOBII
  ЗЕНИТИ - Зона на (ескалиране) Евристични Новости (нововъведения) в
                                                                                     ЗЕФИРИ - Зона на Евристични и Фундаментални Индустриални
<u>Индустриалните Технологии и Изобретенията +</u> ФИНАНСЕ+ФОБИИ
                                                                                  <u>Разработки на Иновации +</u> Ф И Н А Н С Е + Ф О Б И И
ZENITI - Zone "eureka" of Elaboration a New Industrial Technique & Investigations + FINANCE+FOBII
                                                                                  ZEFIRI - Zone "eureka" of Elaboration and Fundamental
Industrial Research for Innovations + FINANCE+FOBII
           FACORD/ФАКОРД I FA CORD →
FASPIRI – Facilitez et Accentuez le Spirit des Professionnalistes pour Inspirait de Rationnelles Idées (voir ASPIRI)
                                                                                  FASPIRIT - Focus et Actualisation de Spirit des Professionnalistes
                                                                                  pour Inspiritation de Rationnelles Idées - Travail (voir A S P I R I T)
                                                                                   Ф АСПИРИТ - Фокус Актуализиране на Стремеж на Професионалисти
  ФАСПИРИ - Фасилитирайте (улеснете) и Акцентирайте на Стремежа
                                                                                  и Инспириране на Рационални Идеи – Трудности (виж АСПИРИТ)
на Професионалистите и Инспирирайте Рационални Идеи (виж АСПИРИ)
                                                                                   FASPIRIT-Focus and Actualize a Spirit of the Professionals and
  FASPIRI - Facile and Accent over Spirit of the Professionals and
                                                                                  Inspirit the Rational Ideas - Troubles (vue over ASPIRIT)
Inspirit the Rational Ideas (vue over A S P I R I)
                                                                                  FACORDI-Finalisez des Accords pour Coordination
Organisation et Ratio Dynamique + Investissions (!) - ACORDI
          - I - Focus sur Analyse de la Valeur des No
 ФАВН-І- "фавн" Фокус в/у Анализа на Важността (валоризация) на
                                                                                    Ф А К О Р Д И – Финални Акорди за Координирано Организирано
Нововъведения (продължение на АВЕ за оценяване на нов проект – АВЕ)
                                                                                  <u>Рационално и Динамично (действие) + Инвестиции (!)</u> - А К О Р Д И
FAVN-I-Focus over Analyse of the Value of Newsy (vue over AVE)
                                                                                  FACORDI – Final Accords for Coordination Organization Rational 
Dynamic + Invest (!) - ACORDI
                                                                                  FAVN-I/ ФАВН-I/FAVN-I (AVE-I/ABE-I/AVE-I)
 FACTIV-Faits pour Actives pour Constructions, Technologies,
 Investissions pour la Valorisation et l'Accréditation - Archive
Ф А К Т И В - Факти и Активи за Конструкции, Технологии, Инвестиции и
                                                                                 FACTIVI - Forces et Activation des Constructeurs, Technologistes,
                                                                                          eurs nour les Variantes d'Innovations (informa extrémale)
 Валоризация (оценяване) на Акредитирането - Архиви
                                                                                 Ф А К Т И В И – Форсиране и Активиране на Конструктори, Технолози́,
 FACTIV-Facts and Actives for Constructions, Technologies;
                                                                                 Информатици за Варианти на Иновирането (външна информация)
 Infestation for Valorisation and Accreditation - Archive
                                                                                 FACTIVI - Forces and Activation of Constructors, Technologists &
                                                                                 Informalities for Variants the Innovations (external information)
    FRAPANTI – «frant» Frappantes Résolutions d'Administration
pour la Production, l'Automatique et Nouveautés Technologiques nour
   ФРАПАНТИ – «франт» Фрапантни Решения от Администрацията за
                                                                                          FRANTI-«frant» Frappantes Résolutions d'Administration
Производство, Автоматизация, Новаторство в Технологиите за И
FRAPANTI – "frantic-dandy" Frappant Resolutions from Administration
for Production, Automatics & News in Technologies for I
                                                                                          pour Nouveautés Technologiques (pour I)
ФРАНТИ – «франт» Фрапантни Решения от Администрацията за
                                                                                          Новаторство в Технологиите (за И)
F L E C S – Flexibilité entre Leaders, Euristique dans la Création des SISTEMI
                                                                                          FRANTI – "frantic-dandy" Frappant Resolutions from Administration for News in Technologies (for I)
Ф Л Е К С - Флексибилност на Лидерството, Евристика при Креация на СИСТЕМИ
F L E C S - Flexible Leadership, Eureka in Creation of SISTEMI
  FACCREDI
                                                                               FPOP-Focus sur Préparation et Optimisation de Productique
                                                                              ФПОП - Фокус върху Подготовка и Оптимизиране на Производството
                                                                              FPOP-Focus over Preparation and Optimization of Production
 Actualization of Constructions, Creation and Orientation for
 Recipients, for Development & Investition Archive
                                                                               FALCONI – Fonctions et Analyse des Limites et Critères
                                                                               d'Organisation pour Nouveautés et Information /
 F - FIRM San souci Няма грижа No sousing
FASTER (FAST) / ФАСТЕР (ФАСТ) / FASTER — (FAST)
                                                                                Ф А Л К О Н И - Функционален Анализ, Лимити (огран
                                                                               Критерии на Организациятя за Нововъведения <u>и Информация</u>
 FACTUALA4
                                                                               FALCONI - Functional Analyses of Limits and Criteria from
  FAVESTA4
                                                                               Organization for Newish <u>and Information</u>
FASTER (FAST) / ΦACTEP (ΦACT) / FASTER – (FAST)
 F – FIRM «Soie» ("коприна") ₡ Sonde /Сондаж
                                                                                  M - FIRM - Sol / "земя" и грижа
 FALCON-Fonctions et Analyse des Limites et Critères
                                                                               +ФИНАНСЕ
          isation pour Nouveautés (il y a d'information)
  Ф АЛ К О Н - Функционален Анализ, Лимити (ограничения) и Критерии
 на Организациятя за Нововъведения (има вече иннформация)
 FALCON-Functional Analyses of Limits and Criteria from
                                                                         I - FIRM Sortie ("успешен изход за фирмата") et Soit / "да бъде"
 Organization for Newish (here is an information)
                                                                             E C S I – Financiez et Limitez, Evoluez des Conceptions, Sécur
  FAPOGEI / A /
                                                                        Ф Л Е К С И - Финансови Лимити, Еволюция на Концепции, Сигурни Инвестиции
                                                                         FLECSI-Financier Limits, Evolution of Conceptions, Security in Investments
 FAVANTAGE FAVANS
                                        FAIR pas envers
ФОРМАЛНА обратна връзка
                                                                          FAVE-II / PABE-II I FAVE-II
 ФАВАНС-
  FAVANS-
                                        FEET BACK
  FAVN-II/ ФАВН-II/FAVN-II
                                                                  FAVE - PABE - F
  |P| A R T I и A P T E – méthodique et instruments (!)
                                                                 FAST / PACT
                                                                                        IFAST
                                                                                                            FINAL - F
  ! Focus sur les F R O D - nourTI-niveau II / Ф - Фокусиране на етапи Ф Р О II - в/у Функциите на И - ТИ-II ниво IFocus over the F R O D & over TI (rang II)
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Figure 5. Part of the innovation process, for medium and large enterprises, in the first phase "A".

