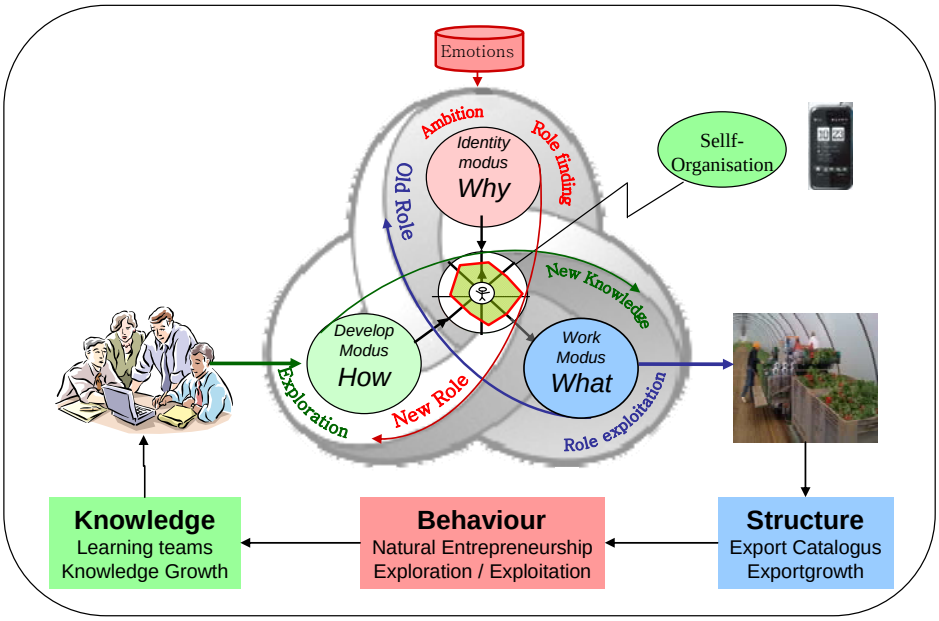
AcadeMi - IO

Concept Proposal

Innovation Workshop

International Innovation Research
Train the Innovation Trainer
Innovation Standard

How the liberation of Human Talents
can accelerate Export Growth in Value Chains
for Total Solutions in a Sino-Dutch Cooperation



Actor Approach to speed up the Innovation Ability

Document C. 4.1.1.

AcadeMI - IO

Colofon

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Secretariaat, Almkerk, tel. 0183-403399 of 078-6410011.

Met bijdragen van de TU Delft, de WUR Wageningen en dank aan de gemeenten Gorinchem. Nieuw-Lekkerland, en Westland en de provincie Zuid Holland voor de ondersteuning van dit MKB initiatief met onderwijs.

Piet IJssels, burgemeester Gemeente Gorinchem
Rinus Houtman, burgemeester Gemeente Nieuw-Lekkerland
Sjaak van der Tak, burgemeeter Gemeente Westland / Greenport
Wiebe Brandsma en Jean Spapens, economische en internationale zaken / Provincie Zuid-Holland.

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August 1012 v2

AcadeMI-IO

Jan Hak	President / Entrepreneurial Innovation / President FME-GMV / Agro-Food (sector A&F)
Theo Lohman	Vice president / Systems Innovation / Education Research / Transition
Wim Gielingh	Vice president / Systems innovation / Education Research / Cognition
Pieter t Hart	Systems Innovation / Education Research / Water
Áad van den Berg	Systems Innovation / Education Research / Horti-Culture (Sector T&U)
Bart Gerritsen	Systems Innovation / Education Research/ Sensory Robot Systems (TUD)

De AcadeMI-IO stelt zich tot doel om innovatie in bedrijfsleven en onderwijs te bevorderen door transdisciplinair onderzoek op het gebied van innovatie, talentgroei en transitie te vertalen naar praktische en voor iedereen bruikbare methoden en technieken. Deze worden getoetst in concrete projecten met ondernemingen die op internationaal topniveau acteren. De toepassing van internationale en nationale standaards voor leren, werken, presteren en innoveren garandeert het open karakter van deze aanpak. Belemmeringen worden uit de weg geruimd door een multi-level transitie benadering. De stichting beoogt een brede verspreiding van de ontwikkelde innovatiekennis, nationaal en internationaal. De Stichting AcadeMI-IO is opgericht in september 2006 en heeft een publiek-privaat karakter. Voor meer informatie, zie www.AcadeMi-IO.nl.

Rabobank Projectenfonds

Het Rabobank Projectenfonds steunt innovatieve projecten die een duidelijke bijdrage leveren aan een duurzame toekomst voor de leden van de bank en daarmee voor de Nederlandse samenleving als geheel. Het fonds wordt al 25 jaar ingezet als één van de MVO-instrumenten voor de zakelijke markt. Voor de aanjaagfase van enkele nieuwe ontwikkelingen kunnen bedrijven en andere organisaties een beroep doen op het fonds. Voorwaarde is dat het project door de belanghebbende doelgroep breed wordt gedragen. Hiervan is zeker sprake bij de doelstellingen en de activiteiten van de AcadeMI-IO. Daarin wordt op een vernieuwende manier ingespeeld op de behoefte van continue en hoogwaardige kennisontwikkeling in het (industriële) MKB, waarbij professionele samenwerking tussen bedrijven en onderwijsinstellingen de kern vormt en de mens centraal wordt gesteld. De bijdrage van het Rabobank Projectenfonds stelt ondermeer klanten van de bank in de gelegenheid hiervan de vruchten te plukken. Deze nieuwe wijze van samenwerken en kennis uitwisselen is van strategisch belang voor het concurrentievermogen van het bedrijfsleven in Nederland.

Inhoudsopgave

Context

This quotation is about a starting project in China, as a first step forward to handle the challenging Metropolitan Food Security (MFS) projects for total and sustainable solutions for the future. It is part of a Sino-Dutch MFS pilot that started two-and-a-half years ago and has another two-and-a-half years ahead.

The vision behind the Sino-Dutch project fits three components. The first is the awareness that an approach on chain level is needed to find the new solutions for MFS. The second is that building talents, not only individual but even more via collaboration, is a key factor in making progress. The third is the use of semantic tools as carriers of knowledge networks, enabling innovation teams to connect, communicate and speed up.

The approach of the Sino-Dutch project is based on Methodical Innovation, a method worked out during the past decennium in the Netherlands to realize solutions for complex problems and challenges on an organization level. The method itself now is going to be upgraded to the higher level of chains. In the Netherlands one sees it as an important development because the integrated collaboration between the sectors Agro, Horti and Education in the project will learn a lot about handling MFS projects in the future.

The upgrade within the MFS project to chain level requires new thinking and support from industry, education and government. Issues are e.g. how to specify (new) needs together, learning innovation on the job and self organization based on an export structure around MFS.
In the Netherlands 20 SME's and four Education Institutes already joined the project. Dutch government of EL&I (Economics, Agriculture and Innovation) developed a successful IPC instrument (Innovation Performance Contract) tot promote informal learning and the development of innovation ability on the workplace.

The History of the Sino-Dutch project goes back to 2010. The first two years (2010-2011) were used to grow awareness and build networks in the Netherlands and China. This year (2012) we worked out the parts of the project on Dutch side, from the mirror perspective to China.
Now the point is reached to connect them by the adoption of the plan for China, adapted to the culture of China. During the next years (2013-2014) partners involved in the project can grow together in competences tot realize a Sino-Dutch MFS pilot. Ambitious and scope are multi-level and plans are prepared on regional, province and national level.

Plan stage in the Netherlands finished with the production of three plans: one for the Agro-food (Top) sector (Jan Hak), one for Horti-culture (Sjaak van der Tak) and one for the design of an export structure involving 20 SME's, education (Topsector Agro-horti) and the government of EL&I. China plan phase started with our visit to China this year. May 2012 we signed a letter of intent with our partner the education bureau of Hebei and promised to prepare a quotation on a starting project (Chapter 6 and 7). This quotation provides for two workshops in October 2012 as a base for decision making about the participation in a sustainable project on innovation research, standardisation and further cooperation in FMS-projects.

The involved costs of these –start-up- workshops will be in euros:

1.	Workshop Train de Trainer on innovation		50.000
2.	Workshop on Innovation Research and Standards		50.000
		Total	100.000

In the document we describe the learning goals, the programs and a list of possible attendees to the workshops who we met during presentations earlier on the job in Hebei. More information can be found in our document –International Innovation Research – which is as an appendix part of this quotation.

AcadeMi-IO Holland.

1. Workshops: Train the Innovation Trainer

1.1. Learning Goals of the Innovation Coach Workshop

Main learning Goals

1. Understanding the Dutch Innovation program to accelerate export growth of total solutions to China and learning together how to explore the knowledge sustainable.
2. Understanding the actor approach in making better usage of talents of people to speed-up the innovation rate and ability of organisations, chains and regions.
3. To be prepared to develop a pilot program with the Netherlands on the development of FMS-systems in learning networks with the Dutch partners and to sign in November.

Sub learning Goals

1. Understanding the trends to the Knowledge Economy

a. Technological trends, changes in Network Technology and Semantics (L.. van Ruijven, Croon)
b. World Wide Opportunities in building social brain-like Systems: Organisations, Chains, and Regions. (see FNS Steering Report , Augustus 2006, C.C. Wood)
c. Actor approach to the Self: Growth of Knowledge, Performance and Productivity (AcadeMi-IO, T. Lohman, F. Heylighen University of Brussels)
d. Talent management to accelerate informal learning on the job *70-20-10* (Charles Jennings, Industry / Canfield University)
e. Impact on education: building curricula for complex learning, skills and organisation (van Merrienboer, University of Maastricht)
f. Impact on research: building transdisciplinar organisations (W. Gielingh).

2. Understanding the Why, How and What of Methodical Innovation on the Job

a. Why; Self - Management of meta-cognitive competences to realise complex projects in cooperation between education and industry WHO-ICF (H. ten Napel)
b. How; Self – innovation in learning teams to grow together to a higher Performance level in relation to the CMMI standard of World Class Performance (T. Lohman)
c. What; Self – creation of added Value in learning to understand the principles of the creation process (methodical) and integral structuring the output (product models) in relation to the ISO standard for Systems Engineering. (W. Gielingh, AcadeMi-IO.
d. Context: Self directed learning environment (Living Labs, M. Kiemen VUB)

3. Understanding the levels of Actor Performance (AcadeMi-IO + Education)

Understanding the activity model to develop entrepreneurial behaviour

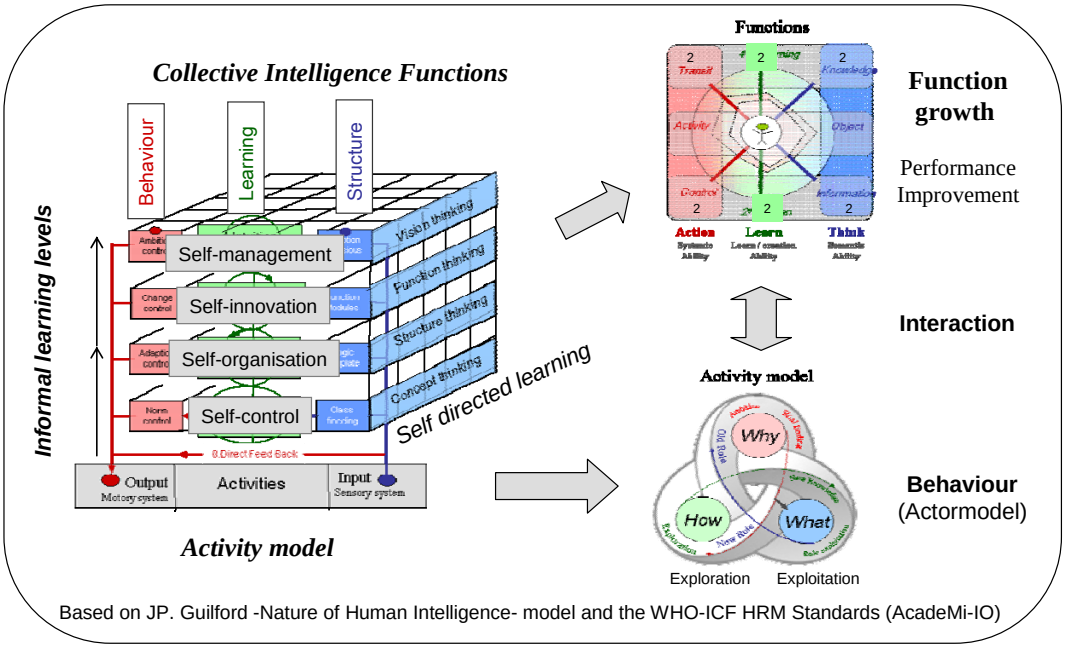
a. Understanding the Function model 3x5x5 Cubic. Three brain functions, 5 function levels and 5 steps to build the knowledge in the memory in a structured way
b. Understanding self-organisation to realise complex projects in teams
c. Leadership to coach informal learning and Performance growth (70-20-10)

4. Understanding the three Mi-programmes experienced in Holland (AcadeMi-IO +)

Minor Methodic Innovation (Mi) for Bachelor level, the Master-Mi for alumni students and an Innovation Program to speed-up the innovation ability of the industry. Elements per Program are:

a. Exchange experiences on Best-Practices.
    i. Bachelor/ Master level (5 years experience with alumni's in industry)
    ii. Minor for students to help SME's learn to innovate on the job (still in development)
    iii. Mi-program for Industrial Enterprises (Machine industry, Shipbuilding and Installation Sector.)
b. Instruction plans each Program: activities, time schedule, competences
c. Content: eight Modules to develop the talents on the job
d. Requirements to the Professors Capabilities / coaching Students on the Job
e. Explanation of the Portfolio's developed by the students in Industry

Program 1: Speeding-up Innovation Rate of Social Systems



Based on JP. Guilford -Nature of Human Intelligence- model and the WHO-ICF HRM Standards (AcadeMi-IO)

1.2. Program Train the Innovation Trainer

course Week 42	**Topics and assignments**	**Tutor**
Day 1 4 hours 8-12	**<u>1. Understanding the trends to the knowledge economy</u>** *Topic(s):* - Semantic Wave (Mills Davis, Project19X) - Informal learning in networks (70-20-10) - Knowledge productivity (exploration – exploitation) - Speed-up the learning and innovation rate *Assignment(s):* - In a small group (2 to 4 students) investigate the impact for your specific situation and present the results to each other Tools: Tutor: Literature: • Carlson, C.R. Innovation (2006). Exponential Growth • Mills Davies; Semantic Wave (2009) • Lohman. T. e.a. Paper Scet Congres Xi,an China (2012) • Xin-She Yang, Global Optimazion in Engineering. What can we learn from Nature (2012)	
4 hours 13-17	**<u>2. Understanding the levels of Performance</u>** *Topic(s):* - The activity - function interaction model (collective behavior) - The Performance standard: work as managed, defined and learned - The actor model: Natural entrepreneurship (3 working modes) - The compass as a feedback tool for talent growth *Assignment(s):* - In small groups (2-4 students) measure the Performance for a specific industrial situation with the compass and present the results to each other Tools: The Innovation Compass for Industrial Environment Tutor: Literature: • Innovation toolbox instruction manual • CMMI – standard: Evaluation Paper.	

Day 2 4 hours 8-12	**3. Understanding the Why, How and What of Methodic Innovation** Topic(s): - Third order learning strategy - The Mi-activity plan: Triple Helix innovation model - The work analyses model: Steady State model - *Assignment(s):* - In small groups (2-4 students) analyze measure the Performance for a specific industrial situation with the compass and present the results to each other Tools : Mi-activity plan, Tutor : Literature: • AcadeMi-IO: Mi – Course Material	
4 hours 13-17	**4. Understanding the tools of knowledge management** Practical use for modeling functions, products, processes and facilities. Topic(s): - Creation of new knowledge in learning teams - Describe the knowledge function and reduce the variety - Connect the knowledge with semantic tools *Assignment(s):* - In small groups (2-4 students) find out the functionality on semantic tools by doing a small practical casus Tools : Relatics Tutor; Literature: • Relatics, Semantic applications in industry / Flyers of Applications • Ozgur Eris. Engineering Design Thinking, Teaching, and Learning	

Day 3 4 hours 8-12	**<u>Understanding the Mi-education program; how to innovate on the job</u>** Practical use for modeling functions, products, processes and facilities. Topic(s): - Present the innovation cooperation model with industry - Present the PDM-MI module structure (Bachelor / Master level) - Present the Learning program for coaching students in practice - Present portfolio's from students in different sectors of Industry *Assignment(s):* - In small groups (2-4 students) reflect on the program and find out how to fit it into the own situation Tools : Community of innovation Practice Tutor: Literature: • Bachelor and Master Program PDM and Methodical Innovation • Shafrir, U. Learning Engineering in the Digital Age with Pedagogy for Conceptual Thinking • Kiemen, M. Living Lab & Stigmergy Prototyping: towards a convergent approach (practical cases)	

Day 3 4 hours 13-17	**<u>Understanding the Mi-industrial program; how to innovate on the job</u>** Practical use for modeling functions, products, processes and facilities. Topic(s): - Present the cooperation model with industry - Present the cafeteria wits innovation tasks to perform - Present the activity coach model for coaching organizations - Present 3 portfolio's of different types of industry *Assignment(s):* - In small groups (2-4 students) reflect on the program and find out how to fit it into the own situation Tools : Tutor: Literature: • Portfolio from SME's Innovation Implemantations • Evaluation of Practical Experiences on Organization and Sector Level • Beers, PJ. Food chain Management and Design	

2. Workshop on Research and Standards

2.1. Innovation Research

Main learning Goals

Create the specifications of a common Innovation Research Program:
1. Understanding the Dutch Innovation program to accelerate export growth of total solutions to China. Understanding the Chinese specification and needs in their context.
2. Understanding the roles of the innovation research network Partners (Universities) and their expertise.
3. Understanding the concept of brain-like Social Systems in the Chinese Context (culture and priorities) and the implications of this concept for Technical and Social Systems
4. How to Create a Chinese innovation research network on Provincial and National level for the exchange of universal innovation knowledge and common activities.

Sub learning Goals

1. Build / adapt a common Reference Model for Innovation Research

The research program on innovation will have a theoretical and an applied component. The applied components are described in the plan on International Innovation Research (chapter 4) For the theoretical aspects and the innovation context we refer to the NSF paper of august 21-22, 2006. Brain Science as a Mutual Opportunity for the Physical and Mathematical Science, Computer Science and Engineering. The R&D area's are

a. Instrumentation and Measurement
b. Data-analysis and informatics
c. Concept, theory, dynamic structures
d. Opportunities in building and development of Brain like systems
e. Opportunities / Impact for science education and science organisation

2. Focus on the building and development of social, brain like systems.

Our research activities will focus on brain like systems (ad 4), especially the building on innovation ability of social systems. In the workshop we will refer and discuss your publication CHINA'S SCIENCE, TECHNOLOGY AND EDUCATION, (Xi Quajaun and Zhang Aixiu) 2010 where the subject of innovation ability is recognized of national importance (p.124). From our side we will refer to our definition report –*International research on Innovation*- (document P.4.2.4.) next subjects will be discussed.

a. Chapter 1: The organisational context and the fundamentals of self-innovation on the job in organisations (industry and education)
b. Chapter 2: the Sino-Dutch innovation networks and the signed MOU's.
c. Chapter 3: A three days workshop in Holland on policy level with the education burro of Hebei and two Universities. Visit University in Delft and Wageningen and IHC Dredger Company, pioneer on innovation on the job.
d. Chapter 4: a concept innovation program is worked out. Critical success factors are defined to realise total Solutions in realising Metropolitan Food security Systems in a – one time rights approach- with involvement of Dutch and Chinese organisation.

Brainstorm session: What can we learn from projects and what are possible opportunities for the future on the area of water and Harbour infrastructure and total solutions for Care (Province of Gelderland and Brabant in Holland).

2.2. Main Learning Goals on the Innovation Standard

Create a uniform reference model on innovation to prepare a common plan on standardisation (directory and grammar) on innovation.

1. Understanding the importance of a common innovation language to speed up international cooperation.
2. Understanding the role of national and International Standardisation Institutes
3. Get an impression about the already existing standards, related to innovation
4. Define a common plan, the interests on national level, the activities and costs involved.
5. Foundation of an (virtual) Innovation Portal to Europe.

Sub learning goals

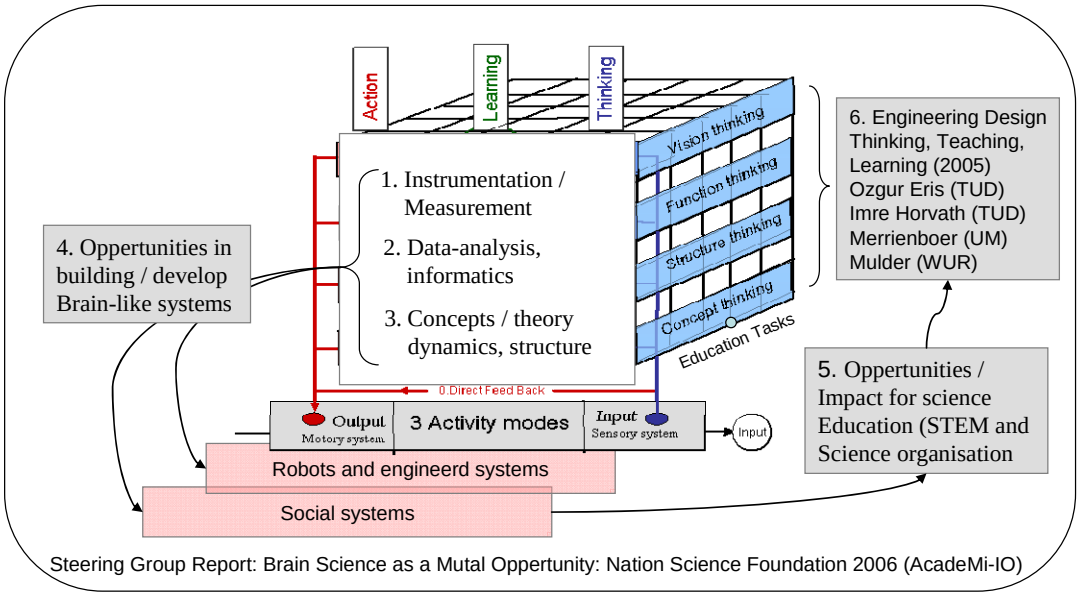
1. Recognize the function of the existing Standards, related to Innovation.

a. Understanding the ontology model based on the GARM and the Collective Intelligence model based on J.P. Guilford's model of Natural Human Intelligence
b. Understanding the existing International Standards on Performance (CMMI), on Value Creation (SE-ISO) on, brain functions and activities (WHO, ICF) and on Knowledge (NEN 8211) and on make people employable (NEN 6070)
c. Understanding the synergy between the standards on a meta-level.
d. Understanding the importance of the generic knowledge for Education Institutes

2. How to develop an innovation Standard, steps and estimation of costs

a. Presentation of the Dutch approach to make standards operational and map this we the Chinese approach.
b. Define the experts involved, their function in the model and the roles
c. Define the way of working and chose a communication network
d. Introduce the MI-concept on ISO level in the HRM-network (ISO TC 260) and extend the two Dutch standards on knowledge modelling and employability (NEN NTA 8211 and NPR 6070) with a Standard on Innovation (not existing right now)

Program 2: Opportunities in Developing Brain-Like Systems



Steering Group Report: Brain Science as a Mutal Oppertunity: Nation Science Foundation 2006 (AcadeMi-IO)

2.3. Program on innovation Research and Standards

Day 1 4 hours 8-12	**Present the common Brain Reference Model** Topic(s): - Present the Brain Science Reference Model (NSF Steering Report) - Opportunities in building Brain like system o Robots and engineered systems (TUD) o Social Systems (WUR) o Impact for Science Education and science organization (UB) o Impact for Education design (UM) *Assignment(s):* - In small groups (2-4 students) reflect on the program and find out the status and estimate the actuality and priorities Tools : Industrial Program Tutor: Literature: • NSF Steering Group Report on Brain Science • Merreinboer, van. Ten Steps to Complex Learning (UM) • Gerittsen, B. Ubitiques Systems for Self Organization (TUD)	

Day 1 4 hours 13-17	**Priority one to accelerate export: Social brain like systems** Practical use for modeling functions, products, processes and facilities. Topic(s): - Present / find out the Multi-level approach to social systems - Present / find out the organization system as a brain like system - Present / find out the chain as a brain like system - Present / find out the Region as a Brain-like System *Assignment(s):* - In small groups (2-4 students) reflect on the program and find out the opportunities for the existing structural problems Tools : Industrial Program Tutor: Literature: • Lohman T. Multi-level approach, transition of Social Systems • Gielingh. W. Report on Innovation Research • Beers, P.J. Food chain Management end Design	

Day 2 4 hours 8-12	**The Chain innovation pilot with China** Topic(s): - Present / find out the project scope, goals and status - Present / find out the networks in China and Holland - Present / find out the research theme's described *Assignment(s):* - In small groups (2-4 students) reflect on the program and define the research priorities Tools : Industrial Program Tutor: Literature: • Hak, J. Metropolitan Food Security Ambitions, Organization, Plans • Beer, D.J. and Kupper, H: Report on Innovation in Food Chains	

Day 2 4 hours 13-17	**The standardization on innovation** Topic(s): - Presentation of the interrelated Standards on Innovation - The role and planned activities in the NEN-ISO comity - The experts involved - The organization and the role on Government Level. *Assignment(s):* - In small groups (2-4 students) reflect on the program and find out the opportunities of a Common Innovation Language and find out the experts on standardization in China. Tools : Tutor: Literature: • Horvath, I., Gielingh.W. A GARM based Innovation Standard. • Ruijven: ISO standards for Systems Engineering and NTA 8211 • Schaik, R. van. NPR 6070 Managing sustainable employability • Napel, H. ten. WHO-ICF classification of Human Functions in Health	

3. Cost Calculation of the two workshops

	Costs workshop			Week 1							Week 2			Costs Stay		
Names **Concept!!!**	Tariff A day	work shop days	Total Costs	1	2	3	4	5	x	x	1	2	3	Hotel costs 120 /d	Trans costs 2.000	
AcadeMi-IO				**Train the Trainer on Innovation**							**Innovation Research+ Standards**					
T. Lohman	1.200	8x	9,6	x	x	x	x				x	x	x	10d	2,0	
W. Gielingh	1.200	8x	9,6	x	x	x	x				x	x	x	10d	2,0	
T de Trainer																
Kiemen UB	1.000	4	6	x	x	x	x							5d	2,0	
Fontys	800	4	4,8	x	x	x	x							5d	2,0	
Inholland	800	4	4,8	x	x	x	x							5d	2,0	
Research																
Beers WUR	1000	3	4,5								x	x	x	5d	2,0	
GerritsenTUD	1000	3	4,5								x	x	x	5d	2,0	
Schaik NEN	1000	3	4,5								x	x	x	5d	2,0	
			50													
Materials			**10**													
Diverse costs			8													
Organisation																
Wang Lee	300	7x2	4,2	x	x	x					x	x	x			
Floriske	850	6	5.1													
			10													
Total 100.000			**78**											**6**	**16**	

4. Name list of possible Participants (concept)

Institute	Name	Discipline	T the T	Research
MOU Handan Polytechnic College				
Director	Wang Zhiyong	Science /Biology		
Vice director	Dr. Bai Minzhi +		1	1
Education dep	Zhao Haojun		1	
Education Dep.	Yan Xiuzong			
1.Professors			1	
2. Professors				
3. Professors				
MOU Hengshui Vocational and Technical College with Inholland				
Director				
Vice director	Chunjiu Liu			1
Education dep	Hou Guining	Secr. Chief Buro	1	
Office of Education	Ren Zhonggxiu	Vice-president		
1.Professors			1	
2. Professors			1	
3. Professors				
MOU Luquan				
Director	Liu Zhenguo			
Vice director			1	1
Education dep				
1.Professors			1	
2. Professors			1	
3. Professors				
Is planned to visit in week 35 of August 2012 Bohai Area Zhongjie and Canzhou				
Zhongjie Voc	Mr Sun Yuhe	Rector +	1	1
Cangzhou Voc coll	Liu Chong	Professor	1	
1. Professors			1	
2. Professors				

Institute	Name	Discipline	T the T	Research
University of Hebust				
Director				
Vice dean	Yang Wenhui	Mech. Eng. Workshop 2011	1	1
International dep	Xu Youngzan			
Dir, Int.Language	James Zhai			
Education dep				
1.Professors	Wang Zhiyonh	Fysics / Biology	1	1
2. Professors	Hui Chen	Mechanical Engin.	1	
3. Professors				
Hebei University of Agriculture				
Director				
Vice president	Li Junqing	Work Shop 2011	1	1
International	Ran Longxiang	Deputy direct. Work.Shop 2011	1	1
Education dep				
1.Professors			1	
2. Professors				
3. Professors				
Hebei Education Bureau / Z.Holland / AcadeMi-IO				
Deputy Director G	Haihun Zhai	2e visit		
Deputy Director G	Yan Chunlay	Den Haag		
Deputy Director Int	Liu Jiangy (Johny)	Intern. Workshop 2011		
DD of education	Mrs Guo Jingru	Education. Workshop 2011		
National Ministry of Education				
Director division Of International Organisations	Luo Ping	Before First Secretary In Holland	1	2
Director division Of European Affairs	Yang Xiaochum		1	2
			20 man	**12 man**

5. Global Transdisciplinair Innovation network

Belgium, Prof. Francis Heylighen en Mixel Kiemen, Free University Brussels.
Cybernetic, Complexity theory, Evolution theory. Stigmergie University.
Canada, Prof. Uri Shafir and Masha Etkind University of Toronto, faculty of Information, Learning engineering in the Digital Age. Pedagogy for Conceptual Learning.
China, Prof. Liu Junqing Hebei University of Agriculture, Vice president, Agriculture engineering applications.
China, Prof. Yang Wenhui, Hebei University of Technology, Dean.
Mechanical engineering applications and innovation
China, Prof. Chang-Hong Miao Henan University, Sustainable Development,, China Technological Learning and Innovation in China in the context of Globalisation.
Germany, Prof. Eberhard von Goldammer, FH. Dortmund, Fachbereich Informatics.
The logic categories of learning and communication. Methodology on Heterarchy.
Holland, Prof. Dr. I. Horváth en Dr.ir. H.P.M. Veeke Technical University Delft.
Systems Engineering and Systems Dynamics. TMCE seminars leader.
Holland, Prof. dr. Tom van Woensel, Technische Universiteit Eindhoven.
Logistics, chain optimalisation.
Holland, Prof. J. van Merrienboer, PhD, Maastricht University for Healthcare, Research in Education, Pedagogy for Complex Learning Tasks.
Holland, Prof. Martin Mulder en Dr. Hendrik Kupper, P.J. Beers Wageningen University Educatie en Competentie Studies, learning Chains, design methodology and transition theory
Holland, Prof. Damste, University of Utrecht,
The concentric man. Interaction of Verbal, Neural and Limbic systems.
Holland, drs. Huib ten Napel, WHO Organisation, Ministerie van Volksgezondheid. Nederland. ICF, International classification of human functioning, Healthcare, Modelling Performance
Holland, drs. Remco van Schaik, NEN Dutch Standardisation Bureau.
NTA 6070, Improve people quality of work and learning. NTA 8611 Object modelling
UK, Prof. Xin-She Yang, National Physical Laboratory, London, United Kingdom
Global Optimization in Engineering. What can we learn from Nature?

Not yet completed

6. Context: Letter of Intent

International Research on Innovation Ability

Letter of intent

between Province Hebei Education Department, Provinci of Zuid-Holland
and AcadeMI-IO foundation

This Letter of Intent should be regarded as a next step towards a common Sino-Dutch agreement on an innovation programme to be signed in august 2012 in China. The aim is to develop a Common research program on Innovation, a common ISO international dictionary on Innovation and a train the trainer program on innovation to accelerate the exchange of knowledge between Education and Industry and between South Holland and Hebei. On individual level the aim is to develop human capabilities concerning continuous learning, improvement and innovation in educational institutes and in the context of an entrepreneurial business culture. Such capabilities reinforce each other and guide companies to World Class Performance. The approach followed will be in line with postmodern organizational thinking and bridge the gap between education and industry (subject/object).

In the approach, Organisational Interoperability is essential and requires not only trans-disciplinary personal skills of employees, but also the adoption of a common language for collaboration and innovation. As such a common language cannot be developed and accepted by a single organisations, it requires joint involvement of businesses and education on multiple levels, individual, organisational and the value chain for total solutions. The development of such a multi-level knowledge infrastructure will therefore be facilitated by the responsible regional and/or national authorities.

From the innovation system it requires a more integrated approach of semantics, learning and systemics to make better use of the talents of actors; people, organisations and value-chains. A practical proven methodology enables People to empower their Talents, self-learning capabilities form Role to Role and form Job to Job. Employees are given the time and freedom to develop their personal talents as well as their team skills, so that they can optimize their value to their own ambitions and the organisation goals. This approach is fully in line with the Confusius way of thinking and the performance is in line with the CMMI-standard.

The Political interoperability is a shared vision on innovation on National Level as described
1. In Chine's vision on Revitalizing China through Science, Technology, Education (p.35)
2. In Dutch vision on Revitalizing entrepreneurship; To the Top. A new innovation strategy with a focus on nine topsectors and five integration aspects (Topsectoren).

This letter of intent is on Provincial level and in line with the 3 MOU's signed on City level in Hebei and South-Holland in the context of the development of Metropolitan Food Security Systems with the support of Dutch expertise on Agro-food, Horti-culture, Water Supply and Harbour Management and High-tech Machinery and with the innovation language as an essential integrator. See Addendum. It is also in line with the ambitions and the findings of the three-day workshop-results of the delegation of the Province Hebei under coordination of Mrs. Gou Jingru and Mayor Sjaak van der Tak of Greenport in juni 2011 in Holland.

Province of Zuid Holland Eurepean and International Department	Province Hebei Education Department International Division	AcadeMI-IO foundation Education & Research On Methodic Innovation
Mr. J. Spapens	Mr. Hou Jianguo	Mr. T. Lohman
Date:	Date: 29/05/2012	Date: .....

7. Addendum Letter of Intent: Common Ambition

Towards sustainable growth of leading economic sectors.

T.A.M. Lohman, J. Hak, W.F. Gielingh (Foundation AcadeMi-IO[1]) in cooperation with Universities.

The Chinese and Dutch governments encourage growth in vital economic sectors, such as the industrial production of cutting edge technological products, the agro-food chain and the construction of infrastructures for mobility, logistics and knowledge. Sustainable growth in these areas requires close co-operation between industry, science, education and government. This document presents a proven approach that enables sustainable realisation of these national ambitions. It is based on a human centred, integrated innovation methodology, which was developed in a sequence of projects involving science, education and industry.

Knowledge as a production factor

The most important production factor that all economic sectors have in common is *knowledge*. In classic thinking, knowledge is developed in science, is transferred through education, and is applied in industry. This model needs urgent revision. Knowledge is developed everywhere, in industry as well as in science. The transfer of knowledge requires therefore a new kind of organization.

Knowledge resides mainly 'between the ears' of people. But modern products are made – and services are offered – by (chains of) organizations. How do people share knowledge within these structures? How do learning organisations and chains emerge?

An organisation or chain that doesn't learn cannot innovate, and looses at the end its lead. The speed with which old knowledge can be substituted by new knowledge determines therefore the performance level of enterprises in value-chains.

Learning to learn

Traditionally organized companies make a distinction between people who think (white collar workers) and people who execute the work (blue collar workers).

Also this artificial division needs to be reconsidered. Workers who use their hands have also brains, while employees who are paid for thinking have also hands. Learning is not restricted to young people when they visit school, but continuous throughout their life. Blue collar workers have a lot of experience and insight which is now hardly utilized. And, reversely, white collar workers can learn a lot by being occasionally exposed to the reality of the work floor. The removal of barriers between disciplines, jobs and responsibilities is one of the pillars of integral (concurrent) design and engineering.

Integral entrepreneurship

Employees should be given the time and freedom to rethink their work within the organisation, and to rethink the way in which they add value to the process. Once they possess the tools that enable them individually and jointly (in teams) to communicate and implement new ideas, a learning organization turns into an entrepreneurial organization. Entrepreneurship is then not

[1] *AcadeMi-IO is a foundation dedicated to quality assurance of Integral Entrepeneurship for the benefit of Sustainable Innovation in the Netherlands. The mission of AcadeMi-IO comprises the reinforcement of knowledge creation, knowledge exchange and the transition of industry and education. AcadeMi-IO develops and manages instruments for successful innovation in enterprises and schools.*

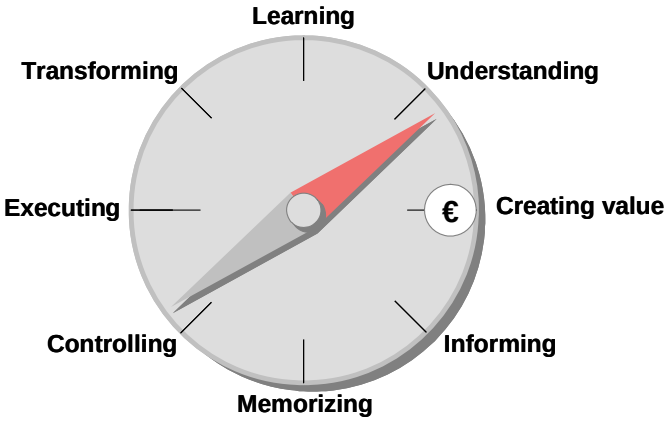
restricted to the top of an enterprise, but settles itself into the capillary system of the enterprise. The joint thinking and innovation power of all employees becomes available. This concept is called *integral entrepreneurship*.

A common innovation language

A person can understand and control ones own work. But how can such knowledge be communicated or transferred to other people? How can entrepreneurial knowledge be shared between employees within the enterprise, and communicated to other enterprises in the value chain? These questions or not easy to answer, especially not if one realises that every discipline within a company and outside a company uses its own 'language'.

Hence, there is a need for a common 'language' that makes work debatable. This language must be sufficiently precise and unambiguous so that it can avoid misunderstandings. For the eight most important aspects of business innovation, methods and languages have been developed that meet these requirements. Their usage was up to now restricted to consultants who applied them in 'top down' organizational change processes. However, in simplified form they can also be used by employees for the innovation of their own job and work environment. The resulting 'bottom-up' approach makes methodic innovation also accessible for small and medium sized enterprises.

The aforementioned eight aspects for innovation are united in a compass (figure below).



The compass for Methodic Innovation...

The need for a new form of Human Capital.

The approach sketched above requires a fundamental change of the educational system. Current education is too much focussed on the learning of facts and skills needed for the (assumed) primary job of an employee. Much of that knowledge may already be obsolete once a student enters business practice. Businesses require employees that are not just prepared for a predetermined job function, but which are also capable to understand what happens 'on the other side of the fence'. They require employees who can contemplate their work critically, and know how they can improve it jointly with colleagues. They require also employees who continue to develop their talents, and know how to exploit these to their own benefit and to the benefit of the company.

Learning, entrepreneurial and innovative organizations require learning, entrepreneurial and innovative employees.

A dynamic cycle of knowledge and sustainable human capital.

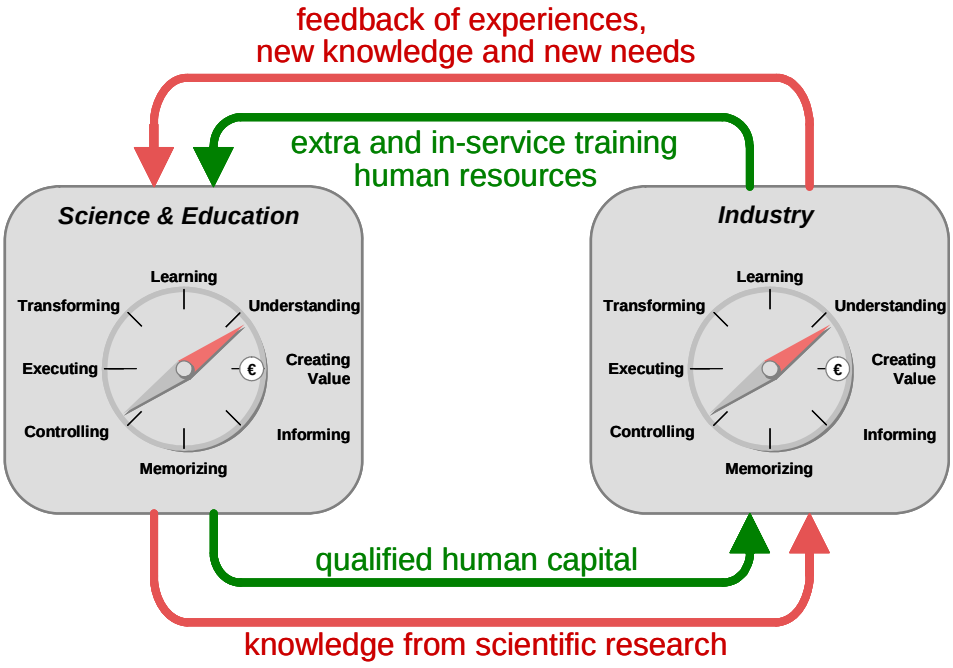
Schools should focus on the development of sustainable human capital, in the form that is sketched in this paper. Concurrently, enterprises should facilitate the education of students through 'on the job' learning. While the initial education phase of students can be shortened through this shift in focus, schools will play a new role in re-education of employees who whish to explore and exploit new talents in new job roles.

Students who are familiar with the basic principles of Methodic Innovation can be involved in the production of models of existing and new work practices in enterprises. This makes them rapidly familiar with these practices. But, after generalization and anonymization of the models, they can also be added to the subject matter of schools. The subject matter will thus be adapted automatically to the latest insights and working practices of enterprises. This leads, without the need of extra investments, to a *dynamic school curriculum*.

Specific models can also be made available to clusters of enterprises, such as industrial sectors or chains. In that form they become the base material for sectoral innovation or chain integration.

Results from scientific research and/or patents that are of interest to industry can also be made available in the form of models. This enables an enterprise to be informed about the practical usage of this research, and to consider its applicability within new products or services, or weave them into new working practices.

This approach results in a double cycle of knowledge and human capital, such as sketched in the figure below. Teaching, learning, innovation and the development of human talents become part of an integrated, sustainable, cyclic system of growth.



A dynamic cycle of knowledge (red) and human capital (green) between education and science on one hand, and business on the other hand, which results from the application of Methodic Innovation.

Acceleration of innovation through corporate memory

Learning requires the availability of a memory. Individual employees learn from personal experiences. But what about the experiences of colleagues? For an enterprise it is not sufficient to build only on the knowledge and experiences of individuals. They need to build on corporate knowledge and experiences. An enterprise that possesses a corporate memory will not 'reinvent the wheel' over and over again, but is capable to build new knowledge on top of existing knowledge. A memory function contributes significantly to the acceleration of the innovation cycle.

Experiences with Methodic Innovation

Methodic Innovation is the result of a sequence of national and international projects in industry and education during the last 25 years. In its most recent form it is successfully applied in a project involving 19 small and medium sized enterprises that manufacture processing and packaging machines for the food industry, and 3 universities for applied sciences.

Elementary innovation languages for aspect innovation and models described in these languages have also been developed in collaboration with the installation sector and the shipbuilding sector. They now merge into a single integrated innovation language, called SOIL (Standard Open Innovation Language).

The models are made available on the internet for each industrial sector, at www.miplein.nl
One can find here also testimonials and practical results for several enterprises and projects (in Dutch only).

An earlier project involving schools for lower and medium education showed that Methodic Innovation improves the motivation of students. On these schools, the number of students that were not able to follow the courses reduced to almost zero (i.e. no 'drop-outs') and the number of students which decided to take follow-up courses on a higher level increased. This clearly demonstrates that the approach results in a better utilization of human talents.

Programmatic development

Methodic Innovation can now be considered as a proven approach and is ready for use on a larger scale in the Netherlands.

Application in China

Thanks to the success of the pilots in the Netherlands, a program for collaboration with China will now be conducted. Students and professionals who have successfully followed a course in Methodic Innovation will be employed in new factories that are currently being built in Hebei province. Amongst these are facilities for a new 'Greenport' near Hengshui and the Hak Handan Agricultural Industrial Park near Handan City. Discussions about application in the development of a new harbour complex at the Gulf of Hobai have also started.

Methodic Innovation forms the 'linking-pin' between the Dutch knowledge economy and its valorisation in the rapidly growing Chinese industrial economy.

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Holland