

# **FINCODA**

## **Framework for Innovation Competencies Development and Assessment**

### DOCUMENT IDENTIFICATION

|                                                             |     |          |            |
|-------------------------------------------------------------|-----|----------|------------|
| D2.1                                                        |     |          |            |
| WP2, Needs analysis: Current practices, gaps and challenges |     | Version: | 1          |
| Author:                                                     | MMU | Date:    | 04/06/2015 |

### DOCUMENT CHANGE RECORD

| Date | Version | Author | Change Details |
|------|---------|--------|----------------|
|      |         |        |                |
|      |         |        |                |
|      |         |        |                |
|      |         |        |                |

## Contents

|                                                                                      |    |
|--------------------------------------------------------------------------------------|----|
| D 2.1 Needs analysis: Current practices, gaps and challenges .....                   | 3  |
| 1. Introduction .....                                                                | 3  |
| 2. Work Package tasks and data collection.....                                       | 3  |
| 3. Innovation and Innovation competencies from the perspective of Companies .....    | 5  |
| a. Meanings of innovation .....                                                      | 5  |
| b. Innovative attributes, skills and behaviours .....                                | 6  |
| 4. Perceived usefulness of assessment of innovation competencies.....                | 14 |
| 5. User priorities for an assessment tool .....                                      | 16 |
| 6. Overview and analysis of existing tools .....                                     | 17 |
| a. Who are Existing Tools Designed For?.....                                         | 18 |
| b. What do Existing Tools Measure?.....                                              | 19 |
| c. How do Existing Tools Measure Innovative Capabilities?.....                       | 20 |
| c. Summary .....                                                                     | 21 |
| 7. University Enterprise collaboration .....                                         | 22 |
| 8. Conclusions and next steps.....                                                   | 24 |
| a. Key messages .....                                                                | 24 |
| b. Questions and provocations .....                                                  | 25 |
| 9. References .....                                                                  | 28 |
| Figure 1 Example of a worksheet on innovation competencies with post-its.....        | 7  |
| Figure 2: Example from the Creative4Business toolkit.....                            | 21 |
| Figure 3 Employee Innovation Scale .....                                             | 22 |
| Figure 4 Example of a completed worksheet on University – business co-operation..... | 24 |

## D 2.1 Needs analysis: Current practices, gaps and challenges

### 1. Introduction

Work Package 2 is entitled “Needs analysis in all partner companies”. Its remit is to assess, analyse and report on perceptions of innovation, and the competencies necessary to achieve it, from the perspective of organisations as **employers** of innovators. This is important because FINCODA aims to extend the benefits of the INCODE Innovation Competencies Barometer into the workplace, which was developed for Institutions of Higher Education as **educators** of innovators.

Competencies are one aspect of human capital, incorporating knowledge, skills and personal characteristics. Competencies can only be inferred from observable behaviours that act as indicators of the underlying characteristics (Hayton and Kelley, 2006). In other words they are latent constructs, not measured directly (Marin-Garcia et al, 2013). INCODE provides a validated instrument to assess the innovation competence of students. The Barometer was initially constructed on the base of a broad literature analysis concerning the concept of innovation. Its development was informed by the expert judgment of human resource managers from firms well known for their innovation, as well as academics (Watts et al, 2012). It was piloted and refined through extensive testing with university students (Watts et al., 2013; Marin-Garcia et al., 2013). INCODE supports teaching professionals to assess the degree of development of innovation competence in their students. In doing this, it contributes to enhancing the innovation potential of higher education, and to connecting working life with universities. FINCODA aims to take a further step up towards more active university-enterprise cooperation by producing a new set of resources for companies who expect their current and future employees to have innovation competencies that cannot be assessed with traditional tools. The Work Package 2 team was therefore tasked with eliciting and analysing input from innovative companies (project partners and others) to guide the project towards the most promising and value adding issues for employers.

### 2. Work Package tasks and data collection

The WP2 tasks were:

- Site visits and interviews with UK business partners
- On-line consultation with innovative organisations
- A facilitated workshop for partner companies
- Desk research reporting on currently available tools

The plan and tasks were modified from the original outline in the bid by negotiation between partners during the kick-off meeting held in Helsinki at the end of January 2015. The original intention for the “Needs analysis in all partner companies” was to undertake site visits, interviews and observation with each of the partner companies, followed by a dedicated workshop for the partners. Participants in the kick-off meeting, however, thought it pressing that

perspectives from a wider range of innovative organisations were required. Also, the project budget was not able to support international travel for Work Package fieldwork. A modified strategy was agreed: WP2 undertook site visits and interviews with the UK partners and an on-line consultation with company partners and other selected organisations recommended as innovative through the local knowledge of project teams.

The on-line consultation was based on the Delphi technique, which is widely used in studies of practice and policy as a way of gathering views of diverse experts on a given topic. It is a technique the MMU WP2 team has used successfully in research with businesses (Antcliff et al., 2014). For FINCODA, we took the view that the ‘experts’ are leaders and HR specialists in innovative organisations. Potential participants were selected purposively, meaning they were chosen on the basis that partners thought they were innovative and likely to make a contribution based on their special knowledge and experience of innovative people in the workplace. The questions were mainly open ended and respondents were invited to write as much or as little as they chose. This was important because we wanted them to answer on their own terms and express opinions freely. Responses were collected anonymously but respondents were invited to give an email address if they wished to receive a summary of the consultation. We aimed for a target of around 50 companies but finally received 31 responses. A summary of responding organisations by size is given in Table 1. The length of replies varied enormously, some respondents supplied very thorough and detailed information.

Through the consultation, interviews and workshop, we sought to assess: Companies innovation achievement and ambitions; recruitment and staff development practices seen to relate to innovation; any current assessment undertaken of skill, knowledge and personal characteristics for innovation; and what observable behaviours are thought to act as indicators of underlying innovative characteristics. It was also agreed at the kick-off meeting that there was a gap in our knowledge of the current state of the market and what kinds of tools already exist for assessing innovation competencies in the workplace. FINCODA needs an overview of what tools, guidelines and instruments are on offer that claim to assess or measure individual competencies and behaviour for innovation in employees (private public and voluntary sectors). A desk based research exercise was undertaken to fill this gap.

**Table 1: Organisations responding to consultation by number of employees**

| <10 emps | 10-49 emps | 50-249 emps | 250+ emps | Not given |
|----------|------------|-------------|-----------|-----------|
| 5        | 5          | 3           | 9         | 10        |

The one-day workshop was held in Manchester, 5<sup>th</sup> May 2015. Participants were facilitated to work in groups on tasks around innovation competencies, university-company co-operation, and company priorities for the FINCODA tool. Representatives were present from all the FINCODA business partners and two other businesses also attended by invitation, acting as critical friends. Data were collected on specially prepared worksheets, on which participants were encouraged to write or stick notes, and on flip charts. This was supplemented with contemporaneous notes taken by facilitators. A full list of business participants is given in Appendix 1.

### 3. Innovation and Innovation competencies from the perspective of Companies

In this section, we draw upon site visits, on line consultation responses, and the group activity at the workshop in which participants were asked to consider and comment on INCODE items in the context of their businesses.

#### a. Meanings of innovation

Innovation is a multi - dimension concept that refers to the implementation of new ideas, processes or products, with positive change for businesses and beneficial externalities for society (Committee of the Regions of the European Union, 2015). Innovation encompasses products, services, processes, intra-or inter-organizational relationships, business models, and markets (OECD, 2005). Innovations may be transformational or incremental; some are new to the world while others are new to the nation, the region or the firm (Patterson et al., 2009). Innovations may repurpose what already exists, responding creatively to limitations in resources (Bound and Thornton, 2012). The INCODE Barometer recognises that Innovation has an inherent social dimension (Watts, García Carbonell et. al., 2013). The term ‘Social innovation’ has dramatically risen in popularity over the last decade to denote novel, effective, sustainable, and just solutions that benefit society as a whole (Phills et al. 2008; Grimm et al., 2013).

Responses from the consultation on meanings of innovation were dominated by a technical orientation. Respondents referred repeatedly to developing technologies and bringing to market new products. These were variously described as game changing, ground breaking, pushing boundaries and award winning. For some, the emphasis was not so much on newness as imaginative repurposing. Intellectual property was a significant issue for technical innovators. For example, IP is “lifeblood” in the words of a small medical technology business owner. Outside the domain of technology, there were reference to service innovations in the social care, leisure and financial sectors. Others consider they are innovative because they are entering new markets (sectoral and geographic) or experimenting with new forms of organisation to eliminate bureaucracy, reduce errors and save clients’ money. One of the interviewees, who is a technical innovator, made the point that not all innovation is about technology, “there’s innovative working practices, there’s innovative ideas and thinking, as well as innovative approaches to product development, sales and marketing”. Another interviewee reflected that we should not be “too hung up” about definition because, “the whole idea is that we want new solutions to new problems and old problems”.

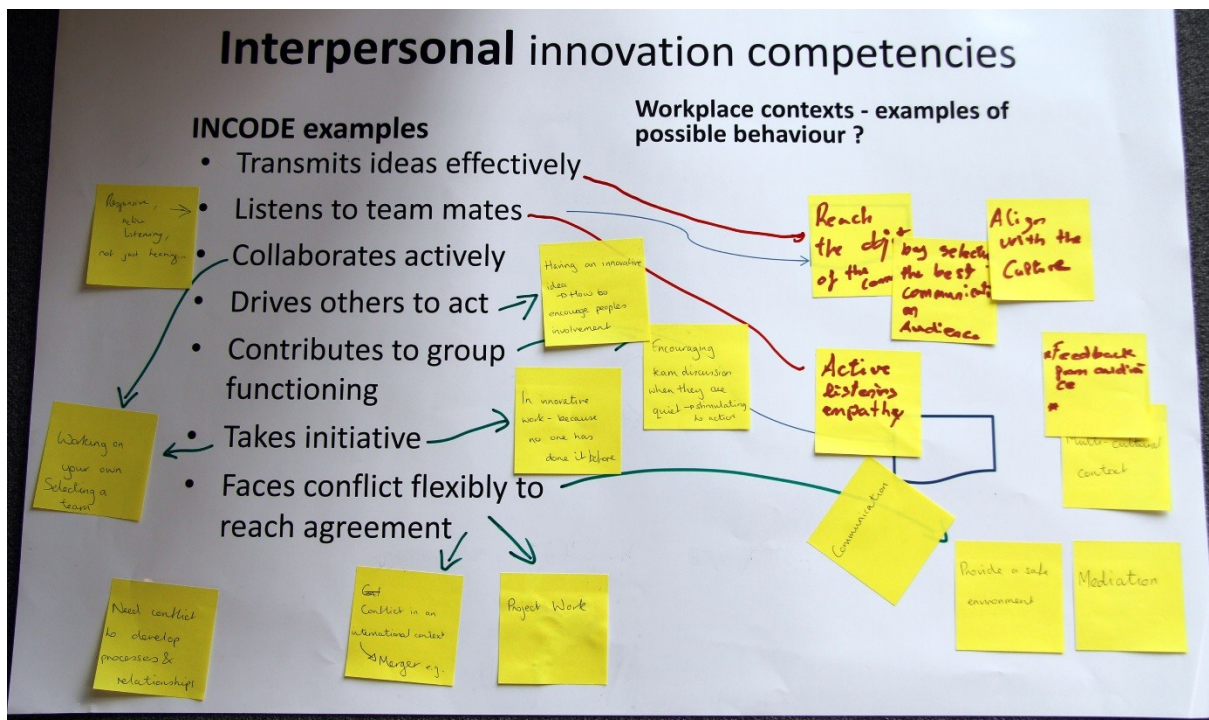
|                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>New products to the market [some] major shifts in design or operation, others far more subtle</i>                                                     |
| <i>Using existing (low risk) technology and re-packing to suit novel applications.</i>                                                                   |
| <i>The company .... was founded on a novel intellectual property (IP) platform and continues to generate and protect new IP (patents, design rights)</i> |
| <i>We have moved into markets which are growing like far east (Asia)</i>                                                                                 |
| <i>We provide innovative solutions to our customers [making] our design work faster and cheaper</i>                                                      |
| <i>I consider the business model we use to be innovative.</i>                                                                                            |

**Box 1: Examples of ways respondents said their organisations are innovative**

Companies were contacted for the consultation because they were believed to be innovative by partners. One respondent, however, commented that the organisation is not innovative, perhaps reflecting the flexibility and multiple dimensions of the concept.

#### **b. Innovative attributes, skills and behaviours**

The consultation asked respondents to think about, and comment in their own words upon, innovative people at the individual, interpersonal and “network” levels from the perspective of their organisation. One of the activities in the workshop also focused on this question but with closer reference to the items from each of the three INCODE dimensions of innovation competencies. Large, laminated worksheets were provided, one for each dimension, with items shown. Participants were asked to discuss each dimension in turn and then – working together – to propose workplace contexts in which the innovation competencies measured by the INCODE barometer were relevant. They were asked to identify, where possible, examples of observable workplace behaviours that might serve to demonstrate elements of the innovation competencies from a business perspective. Business partners worked on this task in small groups, each facilitated by a member of the MMU research team and observed by the other HEI partners. There is an example of a completed worksheet in Figure 1.



**Figure 1 Example of a worksheet on innovation competencies with post-its**

### *i. Individual competencies*

At the individual level, the most typical consultation responses were about creativity, proactivity, optimism, willingness to challenge and ability to make new connections. A selection of responses highlighting these characteristics are shown in Box 2. Perseverance was also portrayed as positive, eg in the words of one consultation respondent, “believing in an idea and not giving up easily when first obstacles occur”. However, perseverance has limitations for innovation in the workplace if it goes with inflexibility. Innovation is not advanced, we were told, when employees are “wedded to any one single approach” or “once an innovative solution is found and it becomes difficult to hold that to one side whilst others are explored”. Perseverance was valued when it meant not being discouraged if the employee’s idea did not get implemented and to continue offering new ones, as in the example in Box 3.

|                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Being pro-active and aware of changes within the environment. Flexibility and creativity by problem solving. Not afraid of making mistake - Trial &amp; error. Having a sense of direction but no prescribed route</i>              |
| <i>Innovator employees are original, visionary, optimistic, creative, different, dynamic and curious people eager to learn and to tolerate, manage and promote changes ..... always learning, improving and driving new solutions.</i> |
| <i>Deconstruction of problems to identify different solutions, cross platform knowledge and ability to link solutions to problems in different areas</i>                                                                               |
| <i>Individuals need to be optimists to be innovative</i>                                                                                                                                                                               |
| <i>Flexibility and creativity by problem solving - not afraid of making mistake</i>                                                                                                                                                    |
| <i>A way of making connections between technologies</i>                                                                                                                                                                                |
| <i>Taking calculated risks and changing tactic when required</i>                                                                                                                                                                       |

**Box 2: Individual innovation characteristics - from the consultation**

Risk taking was mentioned although usually qualified (e.g. taking 'calculated risks'). In the workshop, participants made a distinction between risks that are 'daring' and those that are 'reasonable' and were somewhat sceptical about risks that may be too daring. Behaviours that may be associated with risk taking such as being brave, comfortable with trial and error, and not afraid of making mistakes were important and positive.

*"I will take one employee as an example. He realises that a task is done in different ways or 2 people are doing the same. He then comes up with an idea how this unproductive behaviour could be avoided - workload can be reduced for the business unit- and presents his solution to me. Even though not every proposal is implemented (some are, some aren't) he keeps on coming up with new ideas"*

**Box 3: An innovative employee**

## ii. *Interpersonal competencies*

A summary of the workshop group discussions and suggestions on the subject of individual innovation competencies is given in Box 4. The businesses in the consultation repeatedly made references to individual innovators in the context of customers and ability to respond to problems presented by customers. This was reflected and reinforced in the workshop, where customer focus was especially important when presenting new ways to implement ideas and looking at tasks from different viewpoints. Workshop participants said it is necessary to be aware of cost effectiveness when looking at the INCODE item about using available resources ingeniously. In this, they echoed the words of an interviewee who said that being "happy to be creative on a budget is important for SMEs".

Responses on the interpersonal dimension were less varied than those on the individual one. The main themes were: Being a good communicator; sharing ideas with colleagues, boosting interaction, stimulating others and ability to listen and take feedback. An important element of

interpersonal innovation competencies from a business perspective was the need to exercise some degree of 'emotional intelligence' or 'social intelligence'. There was agreement that effective interpersonal relationships required an ability to mix leadership skills with empathy and respect for other points of view in order to encourage innovation.

Customers figured prominently with comments such as "meet and listen to customers' needs in order to find innovative and creative solutions for them". There was strong consensus with the view that that "communicating the innovation is as important as arriving at it". Workshop participants disagreed somewhat about the importance of listening, with some considering it rather passive while others thought that it represents valuable qualities for innovation that complement more active ones such as taking initiative and driving others to act.

The last two items from the interpersonal INCODE dimension are "Takes initiative" and "Faces conflict flexibly to reach agreement". Both of these elicited animated discussion in the workshop and wide ranging commentary on their variety and complexity in the workplace. Participants readily offered examples of real life contexts in which these were difficult to put into practice, or could only be thought about usefully with reference to local contexts, company histories, and workplace cultures. Participants had trouble suggesting relevant observable behaviours. These, more than other INCODE items, seem potentially problematic to transplant directly from the learning environment into the workplace.

### *iii.      Networking / holistic competencies*

Recent studies of how innovation happens in the workplace emphasise the importance of collegial relationships and informal networking that transcend organisations (Daniel and Dawson, 2011). One interviewee explained the ability to synthesise complex knowledge from disparate sources and disciplines in these words:

I'm thinking of it like an intellectual DJ, it's the mixing of skills and topics and to come up with something new - that alchemy.

Networking / holistic innovation competencies spanned aspects of social values, using contacts and personal relationships to achieve goals, and working across disciplines and cultures. Participants mentioned the importance of maintaining and nurturing constructive and creative relationships with external organisations including other businesses, universities and charities. There were also a few comments that intercompany collaboration can cause conflict and potential risks to intellectual property.

Some respondents to the consultation emphasised that company resources exist to facilitate networking and knowledge sharing (eg. a professional media platform) and that employees are expected to use them.

The consultation did not raise implications for wider society but these were discussed enthusiastically and in some detail in the workshop. One company participant in particular (not a partner) offered several examples of his employees suggesting and implementing new ideas for social and community benefit as a result of working closely with community groups.

| INCORE Individual items                       | How applied to workplace contexts                                                                                                                                                                                                                                                                                                                                                                                                                    | Observable behaviour                                                                                                                                                                                                  |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Presents creative ideas</b>                | <b>Definitions of creative ideas</b> <ul style="list-style-type: none"> <li>• “Out of the box” ideas</li> <li>• Ideas that are different</li> <li>• “Unsuitable” ideas!</li> </ul> <b>What creative ideas can do</b> <ul style="list-style-type: none"> <li>• Add value</li> <li>• Enhance what exists</li> <li>• Involve new applications</li> </ul>                                                                                                | Provide a new solution to an existing problem                                                                                                                                                                         |
| <b>Presents suitable ideas</b>                | <ul style="list-style-type: none"> <li>• Can find new ways of putting a vision from the top into practice</li> <li>• Understands context to know if suitable</li> </ul>                                                                                                                                                                                                                                                                              | You can observe the employee's behaviour in a meeting<br>Ideas presented are SMART                                                                                                                                    |
| <b>Presents new ways to implement ideas</b>   | <ul style="list-style-type: none"> <li>• Customer oriented</li> <li>• Able to learn from others</li> <li>• Willing to consult people “outside”</li> </ul>                                                                                                                                                                                                                                                                                            | Creates new systems & process;<br>Provides solutions to customers<br>Looks at alternatives to implementation e.g. simulation                                                                                          |
| <b>Uses available resources ingeniously</b>   | <ul style="list-style-type: none"> <li>• Aware of being cost effective</li> <li>• Can find new ways of putting something not new into operation</li> <li>• Can think of new applications for existing systems and equipment</li> <li>• Able to repurpose/recycle</li> </ul>                                                                                                                                                                          | Saved £0.5million for a public sector client by showing them how to upgrade and repurpose existing equipment in a new way<br>Use interns to research and consultants to run “learning lunches” (training each other). |
| <b>Evaluates advantages and disadvantages</b> | <ul style="list-style-type: none"> <li>• Is open minded</li> <li>• Able to stimulate discussion</li> <li>• Forward thinking</li> <li>• “Don’t paralyse with analysis”</li> </ul>                                                                                                                                                                                                                                                                     | Reviews financial v environmental v people’s points of view                                                                                                                                                           |
| <b>Faces tasks from different viewpoints</b>  | <b>Customer focus</b> <ul style="list-style-type: none"> <li>• Able to look at the viewpoints of Customers, employees &amp; the company</li> </ul> <b>Focus on wider society</b> <ul style="list-style-type: none"> <li>• Sees the bigger picture</li> </ul> <b>General comments</b> <ul style="list-style-type: none"> <li>• Can respond when unexpected problems or opportunities arise</li> <li>• Can use theory leading to creativity</li> </ul> | Asks customers to challenge what they say they want<br><br>Puts self in the shoes of the customer (or competitor)                                                                                                     |
| <b>Takes daring but reasonable risks</b>      | <ul style="list-style-type: none"> <li>• Taking risks = doing something different</li> <li>• Has an appetite for change</li> </ul>                                                                                                                                                                                                                                                                                                                   | Sells something that doesn’t exist;<br>Pilots new ideas                                                                                                                                                               |
| <b>Foresees how events will develop</b>       | <ul style="list-style-type: none"> <li>• Anticipates; has long term vision</li> <li>• Able to make use of local business knowledge</li> </ul>                                                                                                                                                                                                                                                                                                        | Makes different scenarios/horizon scanning<br>Started something with Kickstarter <sup>i</sup>                                                                                                                         |

**Box 4: Individual INCORE items in the workplace: summary from the workshop**

| INCODE inter-personal                             | How applied to workplace contexts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Observable behaviour                                                                                          |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Transmits ideas effectively</b>                | <b>Style/content – ability to:</b> <ul style="list-style-type: none"> <li>• Simplify complex ideas</li> <li>• Adapt style for different audiences</li> <li>• Be focused</li> </ul> <b>Workplace Culture</b> <ul style="list-style-type: none"> <li>• Can communicate in alignment with the workplace culture</li> <li>• Willing to respond to questions</li> </ul>                                                                                                                                                                                                                    | Gets buy-in<br><br>Demonstrates ability to secure resources<br><br>Does things outside of the normal job role |
| <b>Listens to team mates</b>                      | <b>Active Listening</b> <ul style="list-style-type: none"> <li>• Responsive, not just hearing</li> <li>• Empathy</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Allows space for other people's opinions to be heard in meetings                                              |
| <b>Collaborates actively</b>                      | <b>Collaborative attitudes</b> <ul style="list-style-type: none"> <li>• Prepared to ask questions</li> <li>• Willing to listen outside the team</li> <li>• Able to build on existing ideas</li> </ul> BUT Can involve working alone e.g selecting a team<br><b>Workplace culture</b> <ul style="list-style-type: none"> <li>• Hold each other to account for actions</li> </ul>                                                                                                                                                                                                       | Finds new partners in new places<br><br>Finds “ways around the system”                                        |
| <b>Drives others to act</b>                       | <b>Positive approaches</b><br>Willing to give people responsibility<br><b>Less positive approaches:</b> <ul style="list-style-type: none"> <li>• Provoking people; questioning their ideas</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                 | Intervenes where necessary;<br>Gives encouraging feedback                                                     |
| <b>Contributes to group functioning</b>           | <b>Emotional intelligence</b> <ul style="list-style-type: none"> <li>• Ability to see other people's point of view</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Encouraging discussion team when appropriate                                                                  |
| <b>Takes initiative</b>                           | <b>Workplace context</b> <ul style="list-style-type: none"> <li>• Depends on normal role i.e. position within the company</li> <li>• May not have authority to take responsibility Different attitudes/practices regarding workplace hierarchies across Europe</li> </ul> <b>General comment:</b> <ul style="list-style-type: none"> <li>• Depends on workplace culture/size</li> </ul>                                                                                                                                                                                               | Voluntarily accept responsibility for a project or action                                                     |
| <b>Faces conflict flexibly to reach agreement</b> | <b>Types of workplace conflict</b> <ul style="list-style-type: none"> <li>• Conflict in an international context (e.g following mergers and acquisitions)</li> <li>• Project work (short term with insufficient time for relationships to cohere)</li> </ul> <b>Positive aspects of conflict</b> <ul style="list-style-type: none"> <li>• Need conflict - accept it as part of the innovation process</li> <li>• <b>Resolving conflict</b></li> <li>• Understand need to compromise</li> <li>• Appreciate diversity, it leads to better ideas</li> <li>• Develop tolerance</li> </ul> | Provide a safe environment to discuss conflict; use mediation                                                 |

**Box 5: Interpersonal INCODE items in the workplace: summary from the workshop**

| INCODE Network / holistic items                        | How applied to workplace contexts                                                                                                                                                                                                                                                                                                                                                                                                                               | Observable behaviour                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Takes account of implications for society</b>       | <b>Cultural concerns</b> <ul style="list-style-type: none"> <li>• Able to anticipate different cultural needs</li> </ul> <b>Social and environmental responsibility</b> <ul style="list-style-type: none"> <li>• Willing to encourage and facilitate volunteering</li> <li>• Aware of sustainability in relation to materials used</li> </ul> <b>Marketing</b> <ul style="list-style-type: none"> <li>• Aware of market branding via charitable acts</li> </ul> | <p>Generates new idea for corporate social responsibility, innovating around needs that are not self-evident</p> <p>Introduced new ideas for social and community benefit as a result of working closely with external groups. One was the development of an App. to combat loneliness for LGBT people suggested by a community LGBT group.</p> |
| <b>Able to work in multi-disciplinary environments</b> | <ul style="list-style-type: none"> <li>• Interdisciplinary outlook</li> <li>• Rejection of insularity</li> <li>• Recognises the potential of other fields and ideas</li> </ul>                                                                                                                                                                                                                                                                                  | <p>Works across sectors including businesses, charities and social enterprises</p> <p>Undertakes project work that involves translating the jargon of other disciplines</p>                                                                                                                                                                     |
| <b>Able to work in multi-cultural environments</b>     | <ul style="list-style-type: none"> <li>• Anticipation of different cultural needs</li> <li>• Possesses communication and language Skills</li> <li>• Respectfulness and understanding of different cultural practices.</li> <li>• Observation: awareness of difference, openness to learn and ability to adapt</li> </ul>                                                                                                                                        | <p>Works well with customers from other cultures and countries</p> <p>Generates ideas for entering new markets</p>                                                                                                                                                                                                                              |
| <b>Uses networks to achieve goals</b>                  | <ul style="list-style-type: none"> <li>• Getting information from diverse sources</li> <li>• Learn from other companies' mistakes/success</li> <li>• Cross-pollination of skills</li> <li>• Thinking how can others help you? How can we help them?</li> </ul>                                                                                                                                                                                                  | <p>Uses favours to get work done free of charge</p> <p>Initiates case studies with students via business / university cooperation</p> <p>Cultivates professional relationships with others</p> <p>Keeps records of personal networks and taps them when needed.</p>                                                                             |

**Box 6: Networking / holistic INCODE items in the workplace: summary from the workshop**

#### *iv. Summary on competencies*

Business participants in the workshop and consultation provided numerous insights from their experience of how INCODE items might be reflected in the workplace. Various aspects of organisational culture were mentioned in relation to individual and interpersonal innovation competencies. For example, some business partners asked, “does it [the organisation] tolerate and encourage risk?” They also mentioned differing workplace cultures and practices across Europe. German partners, for example, stressed the hierarchical nature of workplaces in their country and the formality of relationships between management and workers, which some of them thought could limit the ability of individuals to initiate innovative processes or behaviours. Finnish partners, on the other hand, stressed the open, egalitarian nature of workplace relations in their country. Some participants seemed to find it difficult to separate individual characteristics, attitudes and behaviour from the wider organisational context and culture.

Business partners repeatedly drew a distinction between small businesses and larger organisations. Owners of SMEs in the workshop thought they were very different from their larger counterparts. They stressed, for example, that in order to survive and compete against larger organisations they need to come up with innovative ideas all the time. Participants from larger businesses pointed to the many different business functions and levels in the hierarchy, and the stages of employees’ careers. Sometimes they said that it was difficult to talk about competencies relevant to all situations across the organisation.

In summary the main themes were

- Individual: Proactive, creative, new ideas, enthusiastic, persistent, making connections
- Interpersonal: Communication and team work
- Networking: Use of contacts, working across boundaries, social awareness

In all this, the innovative characteristics of people in the participant organisations closely resemble those identified in the INCODE Barometer for HE students. Some themes that do not map so clearly onto INCODE are:

- Emphasis on customers
- Cost effectiveness
- Commercial value and intellectual property
- Organisational level variables such as leadership, management styles and workplace culture

#### *4. Perceived usefulness of assessment of innovation competencies*

The consultation asked respondents to indicate their view on the likely benefits of assessment of innovation competencies for staff recruitment, and for staff development. They were asked to do this by positioning their views on a 5 point Likert scale, and to explain their answers in a

free comment box. Responses to the scale questions are given in Tables 2 and 3. (Note that not all respondents chose to answer these questions.) We can see that FINCODA partners (where they identified themselves) were positive. Other innovative organisations however gave predominantly neutral answers and in some cases negative ones.

**Table 2: Views on assessment of innovation competencies for staff recruitment**

| To what extent do you agree that your organisation would benefit from tools and knowledge to assess innovation competencies in recruitment activities? |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Strongly agree</b>                                                                                                                                  | 5  |
| <b>Agree</b>                                                                                                                                           | 6  |
| <b>Neither agree nor disagree</b>                                                                                                                      | 10 |
| <b>Disagree</b>                                                                                                                                        | 3  |
| <b>Strongly disagree</b>                                                                                                                               | 0  |
| <b>TOTAL responses</b>                                                                                                                                 | 23 |

**Table 3: Views on assessment of innovation competencies for staff development**

| To what extent do you agree that your organisation would benefit from tools and knowledge to assess innovation competencies in staff development? |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Strongly agree/agree</b>                                                                                                                       | 4  |
| <b>Agree</b>                                                                                                                                      | 6  |
| <b>Neither agree nor disagree</b>                                                                                                                 | 6  |
| <b>Disagree</b>                                                                                                                                   | 4  |
| <b>Strongly disagree</b>                                                                                                                          | 1  |
| <b>TOTAL responses</b>                                                                                                                            | 21 |

The open ended questions give some insight into their perspectives. One large non partner business (a household name in social media) gave a neutral answer on the scales but commented that it is an “interesting concept”. Another large company in the software sector gave a negative answer and claimed that, “you don't need tooling or difficult assessments .... you must look them in the eye, talk about the stuff that matters”. There were also sceptical comments such as “measuring everything can be self-defeating”. Some smaller businesses indicated that they have less time or resource to spend on assessing competencies to the level that might be possible for HR departments in larger organisations.

Only three companies reported currently using any tool to measure individual skills, characteristics or knowledge in relation to innovation. Consultation responses to this question are given in Table 2. One large company (a project partner) said that they currently identify several competencies for leadership, two of them linked with innovation. These fit into the individual domain “Take and manage risk with a sense of accountability”, and the interpersonal “foster collaboration and networking”. One interviewee (a HR specialist) pointed to the

inadequacy of current recruitment profiling when it comes to measuring innovation. Existing tool, in her estimation

Look at are you a “blue-sky” thinker, or are you a pragmatic thinker. I don’t think they’re necessarily mutually exclusive. Then the next thing they look for is to what degree are you conventional. But there is little that looks at innovation in application.

**Table 4: Use of existing tools**

| Does your organisation currently use a tool to measure individual skills, characteristics or knowledge in relation to innovation? |                 |           |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
|                                                                                                                                   | Yes             | <b>3</b>  |
|                                                                                                                                   | No              | <b>17</b> |
|                                                                                                                                   | TOTAL responses | <b>20</b> |

In the consultation and workshop, business participants commented that not all work roles are appropriate for innovators. “Some of our jobs”, one noted “would quickly become boring to anyone innovative”.

## 5. User priorities for an assessment tool

The UPV team led a session in the workshop focussed on the proposed tool itself and the priorities of participating companies. The companies worked in small groups to consider responses to the following questions.

### **What is the priority of innovation competency assessment?**

Recruitment, career progression and promotion, learning and development)

### **Who should (should not) provide data for assessment?**

Self; peers; supervisors; internal experts (HR); external experts (consultants)

### **When should assessment happen?**

Periodically; once a year; ad hoc, when hiring

### **How long should it take? (per employee assessed)**

5 -10 minutes; 15-20 minutes ; 60 minutes or more

Each of the groups firmly identified recruitment of new staff as the strongest priority. One participant from a project business partner said she had started the project assuming it was all about external recruitment but could now also see potential value for internal development of staff at different stages in their careers. Other company representatives similarly expressed

some interest in the possibility of use for internal promotion or the selection of teams, but as a lower priority than recruitment. To a lesser extent, the tool was also seen as potentially useful to evaluate internal and external training programmes, to help develop new courses for staff, and assess culture within the organisation.

The main answer to the question about timing was when hiring. For large companies, the use of a tool needs to fit within existing recruitment processes and timescales. It will need to complement other tests used in recruitment, as innovation is only one of the qualities companies assess in applicants. One participant from a multi-national enterprise suggested, for example, that they could deploy an innovation assessment tool before or after interview, or between first and second interview. If the tool is used for purposes other than recruitment, its timing will probably be ad hoc depending on the purpose.

Assessment will normally be undertaken by internal HR specialists and supervisors. Some, but not all, saw possibilities for self-assessment, peer review and use by external experts. For recruitment, an appropriate version of the tool could be given to applicants for self-completion in the early stages of the selection process. Final selection decisions, however, will require observation of how somebody performs a challenge. One participant thought future colleagues may participate in observing candidates work with the tool, although there could be issues about the confidentiality of applications. It was also suggested that for graduate recruitment, “universities could do it”. Some participants thought there was potential for the tool to be used with peer review in training and development for existing staff, perhaps complementing 360 degree feedback used in some companies. Views on self-assessment were mixed. Some flatly declared they did not like it at all while others considered there could be a place for it alongside other assessment. In general, there was consensus that externals are too expensive. Exceptions are for very senior people in large organisations, and leaders in small family businesses, where an external viewpoint may be valuable.

With regard to the length of the assessment, most said that definitive answers would depend heavily on the context and purpose. Anything from 10 minutes to 2 hours was possible. There was a general preference for shorter, less time-consuming exercises with 15 – 20 minutes suggested as optimum, “with a definite report at the end”. One company representative expressed impatience with the many nuances of the INCODE barometer and its proposed development for the workplace. “I want to have an innovation score - I don’t want 20 different skills I want a score”. This viewpoint was somewhat countered, however, by many discussions that emphasised the importance of sensitivity to differences and local contexts in the workplace.

## 6. Overview and analysis of existing tools

As part of the analysis of needs of businesses, researchers at Manchester Metropolitan University (MMU) undertook a short exploratory exercise to investigate the range and scope of existing English language tools available to businesses seeking to measure innovation capabilities among their employees. The exercise set out to determine what *types* of tools are available, rather than produce a quantitative summary of the number of tools. To this end we asked four

principal questions: ‘who are existing tools designed for?’, ‘what do they measure?’, ‘how do they measure it?’ and ‘are there any financial costs involved for the business?’

#### a. Who are Existing Tools Designed For?

Our desk research uncovered a distinct set of tools designed to measure innovative behaviour in **public sector organisations**. A number of these were designed to capture innovation at national level. For example, the pilot project “Measuring public sector innovation in the Nordic countries (MEPIN)” set out to develop a measurement framework for collecting internationally comparable data on innovation in the public sector. The initial questionnaire was based on the four types of innovation defined in the Oslo Manual (i.e. product, process, organisational and market innovation). Following the pilot study a set of questions were developed to better reflect how innovation was understood in the public sector. For example, innovations in marketing were changed to reflect innovations in communication, because this better reflected the way in which public sector organisations promoted their services (OECD, 2005).

In the UK the innovation charity National Endowment for Science Technology and the Arts (NESTA) began work to develop an ‘Innovation Index’ in 2008. As part of that project, in 2010 NESTA developed a public sector innovation index, based on a scorecard approach. The NESTA framework centres on three areas of innovative: innovative activity; innovative capability and impact on performance. A fourth area, described as ‘wider sector conditions for innovation, looked at how well the sector in which the organisation operates helped or hindered innovation. The NESTA tool included quantitative and qualitative measures, including workplace culture and leadership, as part of the ‘innovative capabilities’ dimension (Hughes et al. 2011).

The majority of existing tools appear to be designed for use by **large organisations**. Although not explicit in descriptions of the tools, the language frequently reflected the structures and concerns of larger organisations. These included reference to human resource departments and large scale surveys of employees, together with case studies of large organisations. Typical examples included the [Creative4Business innovation toolkit](#), which, while offering a bespoke service to businesses of all kinds, gave examples of typical outcomes based on an analysis of the innovative capacities of two airlines. Likewise, the American [Cymeon innovation measurement software](#) claimed to be designed for ‘HR professionals who want to make their organisations more innovative’ and ‘learn which organisational and management structures and practices best lead to innovative capability’.

Finally, we found very few tools designed to measure innovation competencies specific to **small businesses**. As part of the Creativity in Micro Enterprises (CIME) initiative in Wales, Creative4Business had developed a series of [‘modules’](#) that they made freely available via their website. However, these provide advice rather than explicit metrics for assessing innovative competencies

## b. What do Existing Tools Measure?

Tools to measure innovation fall into two broad categories, object based and subject based. Object-based' tools aim to measure those aspects of innovation in business that are easily quantifiable. This corresponds roughly to the first two definitions in the Oslo Manual (OECD, 2005) innovation in products and processes, and to a lesser extent, the fourth definition, innovation in markets. A typical example of an object-based tool is the [Return on Product Development Expense](#) (RoPDE) measure developed by the Balanced Scorecard Institute, and based on accounting data. A number of large-scale national and European surveys designed to measure innovation collect quantitative data from businesses based on the four definitions in the OSLO manual. Questionnaires for the European [Community Innovation Survey](#) are available to download and provide good examples of the types of metrics commonly used to quantify innovation in a business context. These include numbers of patents applied for, money spent on research and development and diversification into new markets.

Subject-based' tools, in contrast, focus on softer measures of innovation. They are concerned with less tangible outcomes for actors who initiate or implement innovation in a business context. As the aim of the FINCODA project is to develop a tool to measure *individual* level innovation competencies, this set of tools is of particular interest. In business and management research, a substantial body of literature has explored innovation at the level of the organisation. The quest to identify the characteristics and determinants of innovative organisations has focused on qualitative measures of, for example, workplace culture, organisational attitudes to risk and management strategies in relation to innovation. Recent cross-disciplinary work has drawn on management studies and psychology to look at innovation within groups or teams in the workplace. Here again workplace culture is important, along with leadership, goal setting and management support for innovation.

A final body of work has looked at individual traits and behaviours that determine innovation competencies (Patterson et al, 2009). Of particular relevance to the FINCODA project is the notion of innovative workplace behaviours (IWB), associated with the work of and Janssen (2000) and de Jong & den Hartog (2008). The IWB approach proposes that innovation can best be understood as four distinct stages: idea generation; idea exploration; idea championing and idea implementation, although in practice innovation may be an iterative rather than a linear process. Typically, IWB approaches rely on both individual self-ratings and supervisor assessments of innovative behaviours and can be used to measure innovative behaviours in *all* employees not only those in innovation-focused roles.

The online tool [INNDUCE.ME](#) illustrates how the three levels of analysis, organisation, team and individual can be combined, using an IWB approach. INNDUCE.ME was developed by CREAX, a private sector innovation consultancy and The Department of Personnel Management, Work and Organizational Psychology at Ghent University with input and advice from a number of large organisations including AXA Bank and H.B.Fuller.

INNDUCE.ME is described as an HR analytics tool and claims to enable organisations to: ‘ build successful innovation teams; measure innovation skills; hire the right people; unleash hidden innovation talent’. Rather than the four dimensions of IWB, INNDUCE.ME is based on three measures: ideation (recognising and analysing problems, generating ideas, evaluating and selecting ideas); championing ideas; implementing ideas. For individuals INNDUCE.ME calculates a personal score on three main innovation skills. This score is benchmarked against different norm groups and each individual receives a personal report which details the result and highlights potential to improve. Organisations receive a detailed report of all participants in an organization allow the management to gain insights into the HR aspect of innovation. Larger organizations have access to a management dashboard, which contains the innovation profile of all employees. This dashboard gives oversight and allows managers to assemble innovation dream teams.

### c. How do Existing Tools Measure Innovative Capabilities?

The majority of the tools we discovered used a **questionnaire** to measure innovation capabilities at both organisation and individual level. There are numerous questionnaires available online, many free of charge. The Creative4Business toolkit, for example, measures innovation at the organisational level using four different questionnaires to produce spider diagrams designed to represent the different dimensions of innovation. The example below (Figure 2) illustrates the overall innovative capacity of a budget airline. The [Cymeon innovation measurement software](#) to measure innovation at organisational level contains ten self-assessment questionnaires to be used in conjunction. The designers suggest that users may wish to consider asking a number of colleagues to complete the questionnaire and their software will average the scores and return an easily-comprehensible result.

A typical questionnaire designed to measure individual level innovative behaviour is the James *Individual Innovativeness* measure designed by Professor James McCroskey at the University of Alabama in the United States. It comprise a series of 20 short statements focussing on willingness to accept change. This *Individual Innovativeness* measure is intended for self-completion and users are directed to work quickly through each statement indicating their agreement or disagreement on a 5-point Likert scale<sup>1</sup>. The *Employee Innovation Scale* is much more specifically about the workplace, skills and projects. It similarly offers Likert scale questions to measure individual level behaviours (see Figure 3).

---

<sup>1</sup> <http://www.jamescmccroskey.com/measures/innovation.htm>



**Figure 2: Example from the Creative4Business toolkit**

In contrast to the questionnaires, the INNDUCE.ME toolkit is based on **simulation testing**. A simulation test is a type of psychological test that presents the subject with realistic scenarios. The subject is then asked to identify the most appropriate response. The scenarios had been developed after interviews with more than 50 international innovation experts from the CREAX network.

#### d. Summary

The majority of those resources that are freely available have been developed by academics and undergone rigorous validation. However, other organisations only provide their questionnaires, or analytical software, after a fee has been paid. It is therefore difficult to assess the quality of what is on offer. INNDUCE.ME, for example, costs 59 euros per person for a small business (minimum 10 employees) and 79 euros per person for a large business (minimum 500 employees).

In a business context, almost all the tools we found combined organisational and individual level measures of innovative competencies. In some cases, a capacity to build innovative teams was included. There is a need to be aware, therefore, that from a business perspective, workplace cultures and structures play an important role in determining the type of individual innovative behaviours that are regarded as appropriate and effective in driving innovation.

### Employee Innovation Behaviour Scale

| INSTRUCTIONS                                                              |                      |                            |                          |                        |                          |                    |                         |
|---------------------------------------------------------------------------|----------------------|----------------------------|--------------------------|------------------------|--------------------------|--------------------|-------------------------|
|                                                                           | 1 = Very Ineffective | 2 = Moderately Ineffective | 3 = Slightly Ineffective | 4 = Somewhat Effective | 5 = Moderately Effective | 6 = Very Effective | 7 = Extremely Effective |
| 1. Operating new technologies, processes, and techniques                  | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 2. Tackling undefined or ambiguous problems                               | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 3. Mastering new skills                                                   | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 4. Securing funds for new proposals and projects                          | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 5. Generating creative or novel ideas                                     | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 6. Seeking out relevant people who can evaluate new proposals             | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 7. Assessing how marketable a new idea will be                            | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 8. Finding new ways to perform one's job with scarce or limited resources | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 9. Gathering relevant information in order to evaluate new projects       | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 10. Seeking new business opportunities                                    | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 11. Evaluating new proposals and ideas                                    | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 12. Pursuing projects with unclear guidelines                             | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 13. Tackling unsolved problems                                            | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |
| 14. Finding solutions for difficulty problems                             | 1                    | 2                          | 3                        | 4                      | 5                        | 6                  | 7                       |

Note: Employee Innovation Scale is an adapted version of the Innovative Behavior Scale, Scott & Bruce, 1994 and reproduced by Sherman, D. M. (1999).

**Figure 3 Employee Innovation Scale**

## 7. University Enterprise collaboration

By creating joint concepts, understanding and processes related to innovation competencies development and assessment, FINCODA aims to advance cooperation between universities and companies from “single knowledge transfer operations towards continuous cooperation”. In this section, we draw upon a workshop activity to suggest some of the most promising ways for university-company cooperation.

Participants in the workshop were asked to work in small groups consisting of both HE and business representatives. As stimulus material, they were provided with large laminated worksheets with sections on Teaching & Learning, Research and Business Engagement. We asked them to use these to share ideas about added value for both HEIs and business partners, and record their deliberations on the worksheets in writing. One of the completed worksheets is shown in figure 3

The section on teaching received the most attention and the largest number and variety of comments, suggestions and examples. The mutual goals of HEIs and businesses were agreed to be work-ready graduates, and curricula fitted to business needs. There was just one dissenting voice – a reference to a case where a university had put effort into meeting the skill needs of a company that was in a declining industry and had ceased to be a significant employer. Practical examples for business contributions to student learning and curricula were: Employer visits and presentation to talk to students about their workplace environment and the expectations for employees; various internships, placements, and student volunteering; and student projects supplied by companies in ways that integrate student work and company problems. An outstanding example of the latter is real-life learning within ‘hatcheries’ at TUAS, steered by assignments from companies. Universities that offer business support programmes to industry are able to make links with businesses. These programmes offer the opportunity for businesses to benefit more indirectly from university teaching.

Under the heading of Research, businesses said that there is a need to make University research accessible to businesses (e.g. reporting research in suitable formats for different audiences) and allowing businesses access to expert knowledge and product development in Universities. HEI participants mentioned using business ideas as the basis for academic research and working with companies that carry out research. There were examples of collaborative and / or jointly funded doctoral research; internships and placements were also mentioned under this heading. Engagement with businesses was mainly seen as a way to enable universities to identify future research, training and teaching needs that would benefit businesses. Another example was exchange of personal in the form of taking part in advisory boards (business to university or vice versa).

In WP 3 we will build upon this base and go on to examine and evaluate forms of university-company cooperation that promote real and equal partnerships between employers and HEIs.

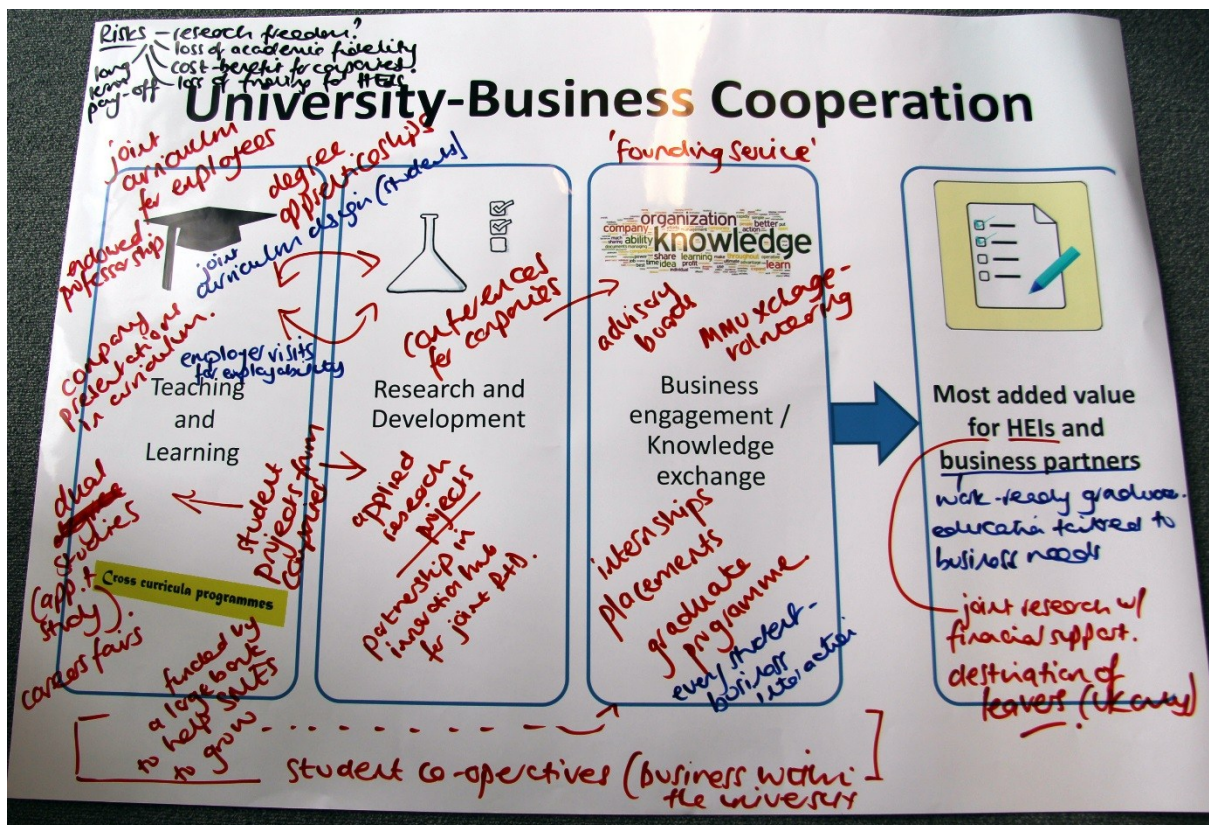


Figure 4 Example of a completed worksheet on University – business co-operation

## 8. Conclusions and next steps

Needs analysis inevitably generates more needs than a project can fulfil. Conversations in the workshop point to the importance of choices about the scope of the project and identifying priorities that will deliver on the most promising and value adding issues for employers and HEIs. This section is intended to support the next steps with a summary of messages followed by a series of provocations in the form of questions based on what we have learned in WP2. The key messages below need to be considered in order to refine the INCODE barometer to more comprehensively meet also the needs of companies:

### a. Key messages

- Overall, company participants in all the WP2 activities talked of innovative people in ways that align with the items embedded in the INCODE Barometer.
- Examples of innovative behaviour from INCODE can generally be translated quite readily to workplace contexts.

- The participating companies said that recruitment rather than internal promotion was their main priority for the application of an assessment tool.
- Innovation competencies at the individual and interpersonal levels are often articulated by companies in terms of customer focus, which will need to be reflected in scenarios and supporting material such as video vignettes.
- For some companies, especially large international ones, the tool will need to be fitted into existing recruitment processes and timescales in order to be usable.
- Small firms may have limited resources to utilise a tool
- Innovativeness is only one of the qualities companies recruit for and is more relevant to some job roles than to others.
- Company participants found it hard to talk about innovation competencies without reference to workplace cultures and management styles. This was especially true of some of the interpersonal items.
- For companies innovation takes place in a context of cost constraints and employees need to be aware of this.
- Intellectual Property (IP) is vital to many innovative companies especially in technical areas. Some awareness of IP – although not necessarily detailed knowledge of it – will be required
- Inter-organisational networks are recognised as productive but for some (not all) there are concerns about competition

#### b. Questions and provocations

##### **To what extent can the new tool be generic for roles and levels in company hierarchies?**

Most companies emphasised the presence of many different levels, functions, and specialisms in the workplace. Some said that it was difficult to talk about competencies relevant to all situations across the organisation. Evidence from the research hatchery approach pioneered at TUAS suggests that innovation competences are generic by nature and expected in all study fields/disciplines in Higher Education (Räsänen and Kyllönen, 2013). The wider literature on workplace innovation, however, highlights some different priorities for competencies (as well as some common ones) for managers and for technicians (Marin-Garcia et al., 2013). A tool that is too generic could fail to capture what is important in specific contexts.

##### **Should the tool be intended for primarily recruitment, and for which group?**

Recruitment is clearly a priority. Companies recruit new personnel, however, at various levels of seniority and for different roles, which may or may not require innovation. Would it make most sense to deliver on the project's objectives to concentrate on a tool that can be used to support the young innovators path from university to working life in organizations?

### **What is really distinctive about the FINCODA barometer?**

Innovation overlaps with other qualities that are valued in organisations such as leadership, creativity, problem solving and team working. Leadership qualities are present within the INCODE barometer; 'moving others to act', for example, has its origin in leadership (Marin-Garcia et al., 2013). As one of the project business partners pointed out, for some companies especially large international ones, tools are currently in use to assess leadership, and innovation is included as a sub category within them. It will be important to differentiate the FINCODA tool and articulate the distinctiveness of its offer against a background of alternatives that partially deal with individual innovativeness.

**Will it always be necessary to apply the complete innovation competencies barometer?** Items in INCODE are related to different parts of the innovation process associated with different roles. Marin-Garcia et al., (2013) make this point, drawing on the influential work of Belbin (1993) about behavioural strengths and weaknesses for performing team roles in the workplace. "Materializing ideas", they note, has its origin in the role of the implementer within a team while "critical analysis" comes from that of monitor/evaluator (Belbin, 1993; Marin-Garcia et al., 2013). Can the new barometer be formulated to select the most relevant part or parts to the role in question?

### **Who will be trained to use the barometer and how?**

For INCODE extensive and thorough training for raters was undertaken for educators, which ensured the quality of the barometer and was an indispensable component of INCODE. Although participants in the workshops were generally positive about the promise of the new barometer, especially for recruitment, some expressed impatience with lengthy and complex processes. It is obvious, of course, that company recruitment priorities are very different from educators' interest in assessing learning outcomes, developing curricula and integrating pedagogical knowledge into working life. Any training material will need to reflect the background, skills, professional development, and time constraints of HR professionals and supervisors.

### **What kinds of material are relevant to the organisational setting in which the new barometer will be used?**

Customer focus, cost-effectiveness, IP and potential IP conflicts are aspects of innovative workplace settings that do not have direct equivalents in HE. They will need to be reflected in written or video recorded scenarios showing examples of behaviour that demand innovative thinking and reactions in the workplace.

***Can we think about a certificate of innovation skills?***

Can (or should) a FINCODA barometer support graduates to represent themselves to employers as well as assisting employers to select graduates? Is it possible to build upon INCODE with a 'portfolio' that graduates can use as supplementary evidence to their formal academic records, transferable internationally, helping them to make their competencies more visible in recruitment situations. This would help to deliver on FINCODA's promise to help students in universities develop their competences towards real working life needs (BID IV.1)

## 9. References

- Antcliff, V., Baines, S. and Carter, J (2014) Exploring the potential of the Northwest's small firms to drive forward the UK's economic recovery <http://www.mmucfe.co.uk/what-we-do/research/exploring-the-potential-of-the-northwests-small-firms-to-drive-forward-the>
- Belbin, R. (1993) Team Roles at Work, Butterworth Heinemann.
- Bound, K, and Thornton, I. (2012) OUR FRUGAL FUTURE: Lessons from India's innovation system, London, NESTA <http://www.nesta.org.uk/publications/our-frugal-future-lessons-india%C2%92s-innovation-system>
- Committee of the Regions of the European Union (2015) Fostering innovation at regional level: lessons from the European Entrepreneurial Region (EER) experience <http://bookshop.europa.eu/en/fostering-innovation-at-regional-level-pbQG0415264/>
- Daniel, L. and Dawson, P. (2011) The sociology of innovation and new biotechnologies, *New Technology, Work and Employment*, 26 (1): 1- 17.
- De Jong, J.P.J. & D.N. den Hartog (2008) Innovative Work Behavior: Measurement and Validation, SCALES <http://www.entrepreneurship-sme.eu/pdf-ez/h200820.pdf>
- Grimm, R, Fox, C., Baines, S, and Albertson, K. (2013) Social innovation, an answer to contemporary societal challenges? Locating the concept in theory and practice *The European Journal of Social Sciences*, 26 (4): 463 – 455.
- Hayton, J. C. and Kelley, D. J. (2006), A competency-based framework for promoting corporate entrepreneurship. *Hum. Resour. Management*, 45: 407–427.
- Hughes, A., Moore, K., and Kataria, N. (2011). Innovation in Public Sector Organisations: A pilot survey for measuring innovation across the public sector, NESTA [www.nesta.org.uk](http://www.nesta.org.uk)
- Janssen, O. (2000), Job demands, perceptions of effort-reward fairness, and innovative work behavior, *Journal of Occupational and organizational psychology*, 73: 287-302.
- Marin-Garcia J, Perez-Peñalver M, Vidal-Carreras P and Maheut J (2012) How to Assess the Innovation Competency of Higher Education Students *Book of Proceedings of the 7th International Conference on Industrial Engineering and Industrial Management - XVII Congreso de Ingeniería de Organización*.
- Marin-Garcia J.A.; Pérez-Peñalver, María José.; Vidal-Carreras, PI.; Maheut, J. (2013) HOW TO ASSESS INNOVATION COMPETENCE IN SERVICES: THE CASE OF UNIVERSITY STUDENTS *Dirección y Organización* 50 (2013) 48-62  
<http://www.revistadyo.com/index.php/dyo/article/viewFile/431/451>

Marin-Garcia, J., Aznar-Mas, L. and González-Ladrón-de-Gevara, F. (2011) Innovation Types and Talent Management for Innovation, Working Papers on Operations Management Vol 2, Nº 2 (25-31) 25

OECD (2005) OSLO MANUAL: GUIDELINES FOR COLLECTING AND INTERPRETING INNOVATION DATA, OECD/EUROPEAN COMMUNITIES

Patterson, F, Kerrin, M., Gatto-Roissard, G. (2009) Characteristics & Behaviours of Innovative People in Organisations, NESTA  
[https://www.nesta.org.uk/sites/default/files/characteristics\\_behaviours\\_of\\_innovative\\_people.pdf](https://www.nesta.org.uk/sites/default/files/characteristics_behaviours_of_innovative_people.pdf)

Phills, J.A; Deiglmeier, K; Miller, D.T. (2008) Rediscovering social innovation. Stanford Social Innovation Review, 6 (4): 34-43

Räsänen, M. and Kyllönen, A. (eds.) (2013) Research Hatchery as a Cradle for New Innovators: Handbook for implementation,  
<http://julkaisumyynti.turkuamk.fi/PublishedService?pageID=9&itemcode=9789522164216>

Watts, F., Aznar-Mas, L., Penttilä, T., Kairisto-Mertanen, L., Stange, C. and Helker, H. (2013) INNOVATION COMPETENCY DEVELOPMENT AND ASSESSMENT IN HIGHER EDUCATION, Proceedings of the 7th International Technology, Education and Development Conference pages: 6033-604.

Watts, F., García Carbonell, A. and Andreu-Andrés, A. (eds.) (2013) Innovation Competencies Development: INCODE Barometer and User Guide  
<http://julkaisut.turkuamk.fi/isbn9789522164254.pdf>

Watts, F., Marin-Garcia, J., García Carbonell, A. and Aznar-Mas, L. (2012) VALIDATION OF A RUBRIC TO ASSESS INNOVATION COMPETENCE Working Papers on Operations Management . Vol 3, Nº 1 (61-70) <https://ojs.upv.es/index.php/WPOM/article/view/1159/1246>

---

<sup>i i</sup> UK Crowdfunding platform for creative or product-based ideas