Understanding VSE Management Perspective and Sentiment Towards the Adoption of the ISO/IEC 29110 Standard for Software

Professor Rory V. O'Connor

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Who am I?

JTC1 / SC7
Software & System Engineering

- **Rory V. O'Connor**
  - Professor of Computing, Dublin City University
  - Head of School of Computing, Dublin City University
  - Senior Researcher with Lero the Irish Software Research Centre, Ireland
  - Head of Delegation (Ireland) to ISO/IEC JTC1/SC7
  - Active member of ISO/IEC JTC1/SC7 WG24
  - Editor of ISO/IEC ISP 29110-2:2011 and ISO/IEC 29110-2-1:2015

THE IRISH SOFTWARE ENGINEERING RESEARCH CENTRE

My research collaborators

Mary-Luz Sanchez-Gordon

Ricardo Colomo-Palacios

Outline of talk

- **Background**
  - VSE
- **Research Study**
  - Objectives
  - Method
  - Results
- **Implications**
  - What next?

Background

- From Prof. Laporte’s presentation you now understand ISO/IEC SC7/ Working Group 24 and the ISO/IEC 29110 family of standards

- So let us explore standards usage

My prior research into standards

- In 2005 – 2007 I was involved in in-depth research projects investigating the adoption and usage of software engineering standards / software process standards / best practice models by SMEs (not VSEs)
- Context: both Ireland and internationally
- Results…

My prior research into standards

- There is evidence that the majority of small and very small software organizations are not adopting existing standards / proven best practice models
- Why?
  - They perceive the standards as being developed by large organizations and orientated towards large organizations, thus provoking the debate the in terms of number of employees, size does actually matter.
  - Studies have shown that small firms' negative perceptions of process model standards are primarily driven by negative views of <u>cost</u>, <u>documentation</u> and <u>bureaucracy</u>

My prior research into standards

- In addition, it has been reported that SMEs find it difficult to relate standards to their business needs and to justify the application of the international standards in their operations.
- Most SMEs cannot afford the resources for, or see a net benefit in, establishing software processes as defined by current standards (e.g. ISO/IEC 12207 and ISO/IEC 15504) and maturity models (e.g. CMMI).

ISO/IEC 29110 for VSEs

- So now we have a “solution” to the “standards problem” celebrating its 10th anniversary
- So now we must ask the question is it working…

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Our Motivation

- We are concerned with understanding VSEs issues regarding adoption of standards and their willingness to engage with the new ISO 29110 standards' in particular
- Accordingly the research question addressed by this study is
  - **What is the opinion, attitude, sentiment and feeling towards the potential benefits of adopting a VSE specific standard such as ISO/IEC 29110 by VSE management and staff?**
  - Focus: Software not Systems

Ecuador – Ireland study

Our Research Study

What is the opinion, attitude, sentiment and feeling towards the potential benefits of adopting a VSE specific standard such as ISO/IEC 29110 by VSE management and staff?

Data Collection

One-to-one interview

Focus Group

Study Participants

- Limit the scope to software product companies
  - To ensure the participation of software development professionals who would be familiar with the process and SPI models
- Limit to indigenous software product companies
  - Indigenous can provide the historical information required to understand process foundation and evolution
  - Multinationals processes may been initially developed / used within parent company and then devolved to the Irish subsidiary

Data Analysis

- We followed the qualitative contents analysis method called “Grounded Theory”
- It allows for data coding process to analyze all collected data and have a systematic data coding activities
- Very rigorous analysis methodology

Study Findings

- Grounded Theory - Themes, core categories and categories

Sub Category	Category	Main Category
High Awareness on Standard	Level of Interest and Awareness	Quality Standard Acceptance Level
Standard Benefit Awareness		
Low Acceptable	Level of Acceptance	
Less Priority		
Perceived Need	Barriers Towards Adoption	
Resource Demand		

Findings

- Level of Interest and Awareness
  - Our analysis shows there is an interest and awareness about software process standards and the potential benefits from having a quality standard especially the ISO standards
  - Leading to a quality product, create consistency, improve company image, create consistency in development work, improve work process and good for business are the main points that the interviewees gave, which indicates VSEs high awareness and interest about the benefit of having software quality standard

Level of Interest and Awareness

- "Yes we do plan too, but since we started we have growth so quickly… we spend time learning how we want to do… we started to put those processes in place so when we grow we have a good platform."
- "They [software quality standard] are nice. It would be great to have them in order to have a consistence software process up and running."

Findings

- Level of Acceptance
  - The interviews analysis also indicates that a software quality standard is a low priority task in software development process and activities in VSEs.
  - The interviewees have explained several reasons, which indicate this situation.
  - Not compulsory or low demand of the accreditation to standards from their client is the main reasons given by all the interviewees.

Level of Acceptance

- If you want to get done quickly then what you need is focusing to the output not the process
- There is still a lot to do, to document
- Standard is just a sale tool.

Findings

- Barriers to Adoption
  - This category explains the barriers to adoption in particular die to a lack of Perceived Needs and a high level of perceived Resource needs.
  - The data analysis indicates that VSE believe that they do not need it because they are small and have limited resources in the company.
  - They were not interested in adopting any quality standard due to the cost, time and effort involved.
  - In addition, there are perceived difficulties in implementing a new process that everyone can understand and follow clearly

Interview Extracts

"We had never had a problem selling our stuff or not selling our stuff because we don't follow an ISO standard"

"I never heard anything from sales that we couldn't sell because of lack of ISO standard."

"In a company of our size they [standards] would not necessarily add value… we would need more sophisticated process if we were a larger company"

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Implications

- We have many success stories of implementing ISO/IEC 29110, e.g. Canada
- We still suffer from “poor image” of standards with VSEs (as opposed to MSE and MNC)
- Need to “sell” ISO/IEC 29110 better
  - One solution is “nice” easy to read short success case studies of deployment with VSEs

QUESTIONS

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